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March 2019

**Shore Crest Drainage Feasibility Study Phase** 

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Phase I - Drainage Feasibility Study Report

NE Bayshore

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**Prepared By** 





# City of Miami Phase I – Shore Crest Drainage Feasibility Study Report

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March 2019

# City of Miami

# Phase I – Shore Crest Drainage Feasibility Study Report

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# **1.0 EXECUTIVE SUMMARY**

The Shore Crest area is located at the northeast end of the City of Miami (City) and is generally bound by NE 87th Street to the north, Biscayne Boulevard to the west, the South Florida Water Management District (SFWMD) C-7 Canal (Little River Canal) to the south and Biscayne Bay to the east. During the last five to 10 years, King Tides have progressively increased to the point that during normal King Tide conditions, most of the low-lying areas within Shore Crest experience significant tidal flooding, even without any rainfall events.

The purpose of this project is to perform a pilot drainage feasibility study within one of the most critically impacted area of Shore Crest. This area is located at the southeast end of Shore Crest (approximately 40 acres) and is bound by NE 79th Street to the north, NE 8th CT to the west, Little River Canal to the south, and Biscayne Bay to the east. **Figure 1.1.1** depicts the limits of the study area.



Figure 1.1.1 – Shore Crest Pilot Study Area Limits

As part of this drainage feasibility study, the existing condition impacts due to King Tide events with and without rainfall events were evaluated, and planning-level short-term and mid-range solutions were identified and evaluated to determine the most cost-effective solutions to be considered by the City.

A.D.A. Engineering, Inc. (ADA) was contracted by the City to complete the Shore Crest Phase I Drainage Feasibility Study in accordance with WO#1 (Project Number: B-17365), which is part of the City's Professional Services Agreement for Miscellaneous Civil Environmental Engineering Services RFQ 16-17-063, City Code Section 18-87 between the City and ADA.

WO#1 was subdivided into seven (7) project activities (tasks) with the final task consisting of preparing the Phase I – Shore Crest Drainage Feasibility Study Report. Task 1 includes the required project coordination and progress meetings. The results and findings of the remaining tasks were summarized in three (3) task-specific Technical Memorandums (TM). The Technical Memorandums that were prepared as part of this projects are as follows:

- Technical Memorandum No. 1 Data Collection and Evaluation
- Technical Memorandum No. 2 Existing Conditions Assessment
- Technical Memorandum No. 3 Short-term and Mid-Range Conceptual Stormwater Improvement Projects

During the Progress Meeting on February 28, 2019 it was agreed to postpone the Longrange Conceptual Stormwater Improvement Projects and Resiliency Assessment task from the study, due to the high uncertainty of the projected sea level rise for periods beyond 50 years.

TM No. 1 through 3 were combined to develop the Phase I – Shore Crest Drainage Feasibility Study Report. Comments and revisions from the City on each technical memorandum were incorporated into this Report.

### 1.1 Data Collection and Evaluation

Readily available data was collected and evaluated from the City, County, and State agencies for the Shore Crest pilot study area. That data collected as part of this project are cataloged in **Appendix 3A** and **Appendix 3B**. These data were used to develop an existing conditions integrated one dimensional/two dimension (1D/2D) hydrologic/hydraulic model using the ICPR4 model. The data was also used to assess the current seawall elevations relative to the current design high water (DHW) elevation, October 2017 recorded King Tide and recorders high tide elevations during Hurricane Irma. **Appendix 4A** includes the current seawall elevations relative to these tidal elevations.

Based on the available data provided by the City and obtained from various other agencies during this task, it was determined that there is sufficient data to complete the Phase 1 – Shore Crest Drainage Feasibility Study and develop the existing conditions hydrologic/hydraulic model to evaluate short-term and mid-range stormwater improvement projects.

The City should continue to monitor all flooding that occurs within the study area whether driven by rain or tidal events, documenting findings with photos and flood delineation maps. While the plugs installed by the City are a temporary solution to the King tide flooding, they should continue to be used until such time that a more permanent solution is available to be installed.

### **1.2 Existing Conditions Assessment**

Using the available data collected as part of this project, an existing condition integrated one dimensional (1D)/two dimensional (2D) hydrologic/hydraulic model was developed using the ICPR4 model. The existing conditions ICPR4 model node/link schematic and input reports are included in **Appendix 4E** and **Appendix 4F**, respectively.

Data including topography, land use, soils, existing stormwater drainage infrastructure, rainfall, and current tidal stages were incorporated into the ICPR4 model. Both the hydrologic and hydraulic data was entered and the 2D mesh was generated.

Following the model setup and to ensure the accuracy of the model, a validation run was created to simulate the flooding experienced during the October 2017 King tide event. Concurrence was obtained from the City verifying the model accuracy. The inundation flood map for the validation simulation is included in **Appendix 4B**.

Following the model validation, the model was simulated under the following conditions:

- 1. Highest King Tide conditions with a 5-year, 1-day design storm event
- 2. Highest King Tide conditions with a 100-year, 3-day design storm event.

Inundation flood maps were created for each of these conditions to verify the model and represent the aerial extent and depth of flooding within the study area. These inundation flood maps are included in **Appendix 4C**. This information was then translated into establishing the current flood protection level of service (LOS) provided by the existing drainage systems.

The results showed significant roadway flooding with both design storm events and the flooding of four properties with the 100-year, 3-day event. A Flood Protection Severity Score (FPSS) was computed for the study area using the procedures implemented in the 2012 Stormwater Master Plan update. The computed existing conditions FPSS is 17.10. The LOS map and FPSS calculations are included in **Appendix 4D**. This value provides a basis for comparison with existing conditions for future Sea Level Rise (SLR) conditions and also for the implementation of Short-Term and Mid-Range capital improvement projects.

### **1.3 Short-Term and Mid-Range Conceptual Stormwater Improvement Projects**

The existing condition validated, integrated one-dimensional (1D)/two-dimensional (2D) hydrologic/hydraulic model was used to identify Short-Term and Mid-Range Stormwater Improvements. The Capital improvements for the Mid-Range (2050) Planning Horizon include increased stormwater pipe sizes, expanded stormwater pipe infrastructure interconnectivity, a stormwater pump station, raised road elevations to a minimum 3.5 feet relative to the North American Datum of 1988 (ft-NAVD), added backflow preventers for private existing outfalls to remain, grouted select existing City gravity outfalls to remain, and a raised the seawall to a minimum 3.78 ft-NAVD (the predicted King tide of 2050).

Iterations of the capital improvements within the ICPR4 model were performed by increasing pump capacity, increasing pipe sizes, and expanding and interconnecting the pipe network, in order to accommodate the projected 2050 sea level and groundwater rise. These iterations of increasing the stormwater infrastructure capacity were performed until the roads were no longer flooded for the 5-year, 1-day storm event, and structural flooding was eliminated (as much as feasible) for the 100-year, 3-day storm event.

After the ICPR4 iteration analysis was completed, the Mid-Range Stormwater Improvements require an 80,000 gallons per minute (GPM) pump station. This pump station will be located within the Little River Pocket Mini Park parcel that is owned by the City. **Appendix 5A** shows a schematic of the Mid-Range stormwater pump station, and **Appendix 5D** shows a conceptual layout of the pump station within the Little River Pocket Mini Park. **Appendix 5B** shows typical section and map of the proposed roadway raising. **Figure 5.3.3** below shows the elements of the proposed capital improvements for the Mid-Range (2050) planning horizon.

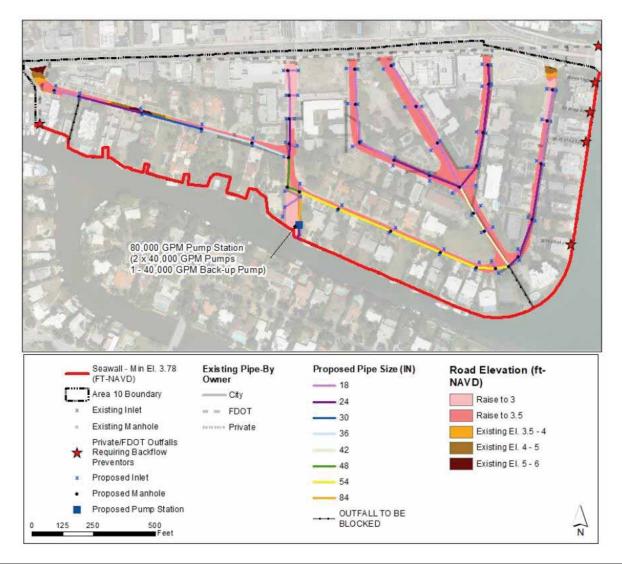


Figure 1.3.1 – Mid-Range Planning Horizon (2050) Capital Improvements

The Mid-Range (2050) stormwater improvement project was simulated under the following conditions:

- Sea level rise dictated by the *Unified Sea Level Rise Projection for Southeast Florida (2015)* NOAA High Curve for the year 2050 in conjunction with a 5-year, 1-day design storm event
- Sea level rise dictated by the *Unified Sea Level Rise Projection for Southeast Florida (2015)* NOAA High Curve for the year 2050 in conjunction with a 100-year, 3-day design storm event.
- Increase rainfall intensity for both the 5- and 100-year design storm events.

Appendix 5G shows the inundation flood maps for these simulated conditions.

For the Mid-Range planning horizon, the infrastructure improvements within the study area are not predicted to lower the Flood Protection Severity Score (FPSS). The FPSS for the existing conditions is 17.1 due to 0.4 miles of roadway and four buildings being flooded; for the Mid-Range planning horizon, the FPSS is increased to 28.0. This increase is primarily due to six structures having estimated finished floor elevations lower than the 2050 DHW elevation of 2.44 ft-NAVD. Due to the extent of flooding within the properties, the FPSS increases even though the roadway flooding has been eliminated. Since pumping groundwater is not possible, these low-lying structures will have to be abandoned or have their finished floor elevation raised in the future.

For the short-term stormwater improvement project, elements of the mid-range conceptual project that could be separated out were examined. Viability was based on future available funding and the ability to be constructed within the next two fiscal years with available funding.

Several of the Mid-Range (2050) planning horizon capital improvements are able to be implemented in the short-term. They are as follows:

- Raising of the roads
- Expanded, interconnecting and upsized pipe network
- Backflow preventers on City, private, and FDOT outfalls

The improvements were then implemented into an ICPR4 model with the existing tidal boundary conditions and existing DHW elevation in order to illustrate how constructing the short-term improvements will improve the flood protection LOS. The pump station and raising of the seawall were not included for this scenario. **Figure 5.3.7** below shows the details of the proposed capital improvements for the short-term planning horizon. The upsized outfall that will lead to the pump station in the Mid-range conditions will need to be optimized to a smaller diameter during the detailed design phase.

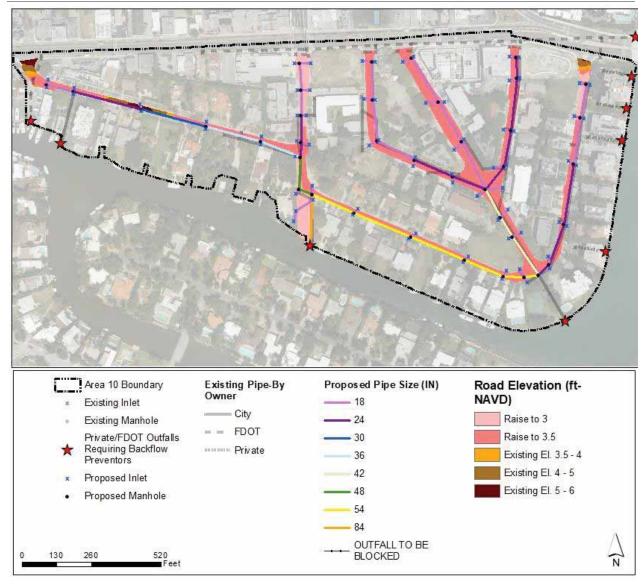


Figure 1.3.2 – Short-Term Planning Horizon Capital Improvements

The Short-Term Scenario was simulated under the following conditions:

- Highest King Tide conditions (identical to existing conditions from *Technical Memorandum No. 2*) in conjunction with a 5-year, 1-day design storm event
- Highest King Tide conditions (identical to existing conditions from *Technical Memorandum No. 2*) in conjunction with a 100-year, 3-day design storm event.

Appendix 5I shows the inundation flood maps for these simulated conditions.

The street flooding was eliminated by the proposed short-term stormwater improvement projects, but four buildings within the study area will still experience some level of flooding. The houses flooded during the 100-year event sit below 2.44 ft-NAVD and flooding cannot be eliminated even with the use of a pump station. The FPSS for the Short-Term Capital

Improvements Modeling was calculated to be 16.0, while the Existing Conditions Modeling had an FPSS of 17.1. However, if we compare the existing finish floor elevation with the current DHW of 0.47 ft-NAVD, the FPSS or the short-term improvement project will be 0, and the FPSS will remain 0 until the DHW reaches 2.44 ft-NAVD.

Planning-level cost estimates were developed for the Mid-range and Short-term stormwater improvement projects were based on the Florida Department of Transportation (FDOT) cost databases, costs from recent projects constructed within the City and ADA's own construction cost databases. The preliminary cost estimates for both the Short-Term and Mid-Range Capital Improvement Projects are provided in **Table 5.4.1**. **Appendix 5J** contains the detailed cost breakdown for both the Short-Term and Mid-Range Cost Estimates.

| Table 1.3.1 – Mid-Range and Short-Term Improvement Project Opinion of Probable Construction Cost | st |
|--|----|
|  |    |

| Capital Improvement Projects            | Opinion of Probable Construction Cost* |
|---|--|
| Mid-Range Capital Improvement Projects  | \$12,788,425.56                        |
| Short-Term Capital Improvement Projects | \$4,421,658.06                         |

### **1.4 Conclusions and Recommendations**

Utilizing the existing conditions 1D/2D model created, Short-Term and Mid-Range capital improvement projects were analyzed for viability and cost effectiveness for both the 5-year, 1-day, and 100-year, 3-day events occurring in conjunction with the existing King tide and 2050 King tide events. The rainfall depths for the 2050 design storms were increased by 25 percent over existing condition to account for potential rising trend of rainfall depth.

Required capital improvements for the Mid-Range (2050) Planning Horizon include increased stormwater pipe sizes, expanded stormwater pipe infrastructure reach, added a stormwater pump station, raised road elevations to a minimum 3.5 ft-NAVD, added backflow preventers for select existing outfalls, grouted select existing outfalls and a raised the seawall to a minimum 3.78 ft-NAVD (the predicted King tide of 2050) at an estimated cost of \$12,788,425.56. Since the vast majority of the seawall is privately owned, the City will need to pass wfordinances that require the raising of the seawall and adding backflow preventers within the private properties. For the 2050 planning horizon, the FPSS is increased to 28.0, even with the implementation of the capital improvement projects due to several properties lying below the 2050 DHW of 2.44 ft-NAVD. These properties will have to be abandoned or raised by 2050 as they will not be able to be protected from the groundwater rise. If the subject properties are abandoned or raised, the FPSS can be reduced to 0.0.

Several of the Mid-Range (2050) planning horizon capital improvements are able to be implemented in the short-term including raising of the roads; expanding, upsizing, and interconnecting the stormwater pipe network; and installing backflow preventers on private and FDOT outfalls, at an estimate cost of \$4,421,658.06. With the implementation of the short-term capital improvements, the FPSS with the DHW of 2.44 ft-NAVD is lowered to 16.0. At less than about a third of the cost of the Mid-Range Capital

Improvement Project, the Short-Term Improvement Projects provide an immediate solution to the flooding within the Shore Crest study area and provides the City time to implement the Mid-Range Capital Improvement Projects. Geotechnical investigations and utility locates will need to be done prior to finalizing any design, but with the topographic survey has already being complete. Therefore, the design lead time for the short-term stormwater improvement project will be greatly reduced and will aid in addressing the current flooding conditions.

# **2.0 INTRODUCTION**

### 2.1 Background

The Shore Crest area is located at the northeast end of the City of Miami (City) and is generally bound by NE 87th Street to the north, Biscayne Boulevard to the west, the South Florida Water Management District (SFWMD) C-7 Canal (Little River Canal) to the south and Biscayne Bay to the east. During the last five to 10 years, King Tides have progressively increased to the point that during normal King Tide conditions, most of the low-lying areas within Shore Crest experience significant tidal flooding, even without any rainfall events.

The purpose of this project is to perform a pilot drainage feasibility study within one of the most critically impacted area of Shore Crest. This area is located at the southeast end of Shore Crest (approximately 40 acres) and is bound by NE 79th Street to the north, NE 8th CT to the west, Little River Canal to the south, and Biscayne Bay to the east. **Figure 2.1.1** depicts the limits of the study area.



Figure 2.1.1 – Shore Crest Pilot Study Area Limits

As part of this drainage feasibility study, the existing condition impacts due to King Tide events with and without rainfall events were evaluated, and planning-level short-term and mid-range solutions were identified and evaluated to determine the most cost-effective solutions to be considered by the City.

#### 2.2 Feasibility Study Purpose and scope

A.D.A. Engineering, Inc. (ADA) was contracted by the City to complete the Shore Crest Phase I Drainage Feasibility Study in accordance with WO#1 (Project Number: B-17365), which is part of the City's Professional Services Agreement for Miscellaneous Civil Environmental Engineering Services RFQ 16-17-063, City Code Section 18-87 between the City and ADA.

WO#1 was subdivided into seven (7) project activities (tasks) with the final task consisting of preparing the Phase I – Shore Crest Drainage Feasibility Study Report. Task 1 includes the required project coordination and progress meetings. The results and findings of the remaining tasks were summarized in three (3) task-specific Technical Memorandums (TM). The Technical Memorandums that were prepared as part of this projects are as follows:

- Technical Memorandum No. 1 Data Collection and Evaluation
- Technical Memorandum No. 2 Existing Conditions Assessment
- Technical Memorandum No. 3 Short-term and Mid-Range Conceptual

Stormwater Improvement Projects

During the Progress Meeting on February 28, 2019 it was agreed to postpone the Longrange Conceptual Stormwater Improvement Projects and Resiliency Assessment task from the study, due to the high uncertainty of the projected sea level rise for periods beyond 50 years.

TM No. 1 through 3 were combined to develop the Phase I – Shore Crest Drainage Feasibility Study Report. Comments and revisions from the City on each technical memorandum were incorporated into this Report.

# 3.0 DATA COLLECTION AND EVALUATION

### 3.1 Data Collection

Data was collected from the City of Miami, the South Florida Water Management District (SFWMD), the Florida Department of Transportation (FDOT), the National Oceanographic and Atmospheric Administration (NOAA), the Florida Department of Environmental Protection (FDEP), the Southeast Florida Regional Climate Change Compact, and the Miami-Dade Water and Sewer Department. The data collected from these various sources is described in the following sections and summarized in **Appendix 3B** 

### 3.1.1 City of Miami

ADA collected data associated with stormwater infrastructure, construction projects, and studies from the City of Miami. The City provided files which include the City's current catch basins and outfalls, drainage structures, drainage complaints, and overall basin areas for the study area within Shore Crest. Additional data collected from the City also includes the following:

- King tide observations from October 5, 2017 (photos and a flood delineation map)
- Tidal Flood Prevention Action plan
- Percolation test data or geotechnical reports in or near the Shore Crest study area
- Limits of City-owned seawall with the Shore Crest Area

The data catalog presented in **Attachment 3A** provides a listing of the City project data collected for incorporation into the hydrologic/hydraulic models. The data catalog also includes a section of pertinent GIS data collected from the City. The following subsection provide a summary of the most pertinent data collected.

### 3.1.1.1 Project Data

The City of Miami provided design plans for the original construction of the stormwater infrastructure from July 1958. Since then, the only drainage improvement completed within the study area was the installation of temporary plugs in September 2018 to mitigate the tidal flooding.

### 3.1.1.2 GIS Data

The City currently maintains stormwater infrastructure data in GIS shapefile format showing the layout the systems but very limited information about the systems themselves. Detailed structure information or pipe sizes and lengths are not available from the City GIS shapefiles. The City is currently in the process of using collected field data to update the current GIS database with pipe sized, material and inverts.

### *3.1.1.3* ALERT5 Data

ALERT5, who provides unmanned aerial systems (drone) assisted surveying and mapping, was retained by the City to survey the Shore Crest study area. Working in conjunction with the surveying and mapping firm, Stoner and Associates, Inc., ALERT5 created a detailed survey of elevations in point cloud formatting for the project area from the top of sea wall to the finished floor elevations of buildings of accessible buildings. The study also captured the inlet/manhole rim elevations and the roadway elevations. **Figure 3.1.1** shows an excerpt of the post-processed point cloud survey of the Shore Crest study area.



#### Figure 3.1.1 – ALERT5 Point Cloud Data

### 3.1.2 Other Data Sources

In addition to the main data contributions from the City of Miami, other sources of information were accessed to help support the development of the existing conditions 1D/2D hydraulic/hydrologic model for use in TMs 2 and 3. The following subsections provide a description of the entity and applicable data collected to support development of the Phase 1 – Shore Crest Drainage Feasibility Study. **Attachment 3B** provides a full list of data collected for this project from agencies other than the City.

### *3.1.2.1* South Florida Water Management District (SFWMD)

The SFWMD maintains an extensive water resources database, titled DBHYDRO, which includes hydrologic, meteorological, hydrogeologic and water quality data. The data contained within DBHYDRO includes historical and current data for the 16 counties

governed by the SFWMD. In order to facilitate the access of this data, the SFWMD has developed a browser accessible via the web, at the following location:

- Main DBHYDRO portal:
  - o <u>http://www.sfwmd.gov/portal/page/portal/xweb%20environmental%20moni</u> toring/dbhydro%20application
- DBHYDRO Browser Menu for accessing all SFWMD data:
  - o <a href="http://my.sfwmd.gov/dbhydroplsql/show\_dbkey\_info.main\_menu">http://my.sfwmd.gov/dbhydroplsql/show\_dbkey\_info.main\_menu</a>

A screen capture of both the main DBHYDRO portal and the DBHYDRO Browser Menu website are shown in **Figure 3.1.2** and **Figure 3.1.3**.

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A listing of the active stations within and near the study area is shown in **Table 3.1.1**. A figure showing the location of the stations listing in **Table 3.1.1** is shown in **Figure 3.1.4**.

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### Phase I – Shore Crest Drainage Feasibility Study Report

Figure 3.1.3 – DBHYDRO Browser Menu

| Table 3.1.1 – Active DBHYDRO Stations near the Shore | Crest Study Area |
|--|------------------|
|  |                  |

| Station | Agency | Class    | Status | Start Date | End Date   |
|---------|--------|----------|--------|------------|------------|
| S27_R   | SFWMD  | Rainfall | Active | 01/08/1991 | 11/01/2018 |
| S27_H   | SFWMD  | Stage    | Active | 01/01/1978 | 10/31/2018 |
| S27_S   | SFWMD  | Flow     | Active | 01/01/1978 | 10/31/2018 |
| S27_T   | SFWMD  | Stage    | Active | 05/31/1985 | 10/31/2018 |

Phase I – Shore Crest Drainage Feasibility Study Report

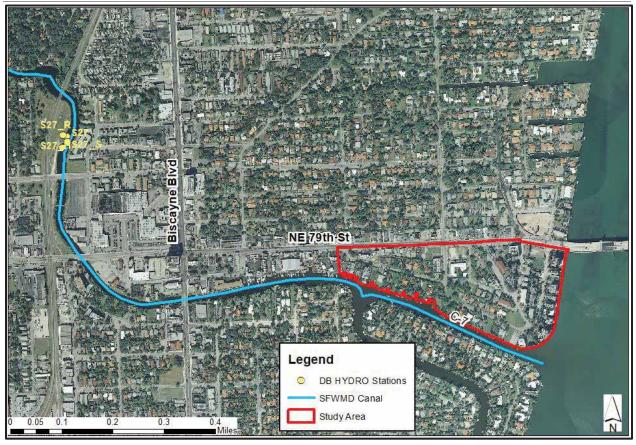


Figure 3.1.4 – Map of Active DBHYDRO Stations near Shore Crest Study Area

The SFWMD also maintains a GIS data repository for all GIS data for the SFWMD - see **Figure 3.1.5**. This GIS data catalog contains a shapefile with the location of all the DBHYDRO stations where observations, samplings, or monitoring are collected. This shapefile is available via the web, at the following locations:

- GIS Data distribution site:
  - o http://my.sfwmd.gov/gisapps/sfwmdxwebdc/
- DBHYDRO monitoring station shapefile:
  - <u>http://my.sfwmd.gov/gisapps/sfwmdxwebdc/dataview.asp?query=unq\_id=</u> <u>1588</u>

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| Title   |                                    |               |                                   |                   |
| 3-4-5 Statewide Mosaic<br>UTM JPG   |                                    |               |                                   |                   |
| Access Gates<br>All Florida Water   |                                    |               |                                   |                   |
| Management District<br>Boundaries   |                                    |               |                                   |                   |
| Alternative Water<br>Supply Projects  |                                    |               |                                   |                   |
| Broward Co. Current<br>(2000) and Future<br>(2025) Public Water<br>Supply Areas |                                    |               |                                   |                   |
| Central Florida<br>Coordination Area<br>(CFCA) Boundary                         |                                    |               |                                   | -                 |
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| Lione   |                                    |               |                                   | 1                 |

Figure 3.1.5 – SFWMD GIS Data Distribution Site

Existing stormwater and environmental permitting information is also available via the SFWMD ePermitting website. This website contains supporting documentation for Environmental Resources Permits (ERP) and applications submitted to and approved by the SFWMD. These websites are as follows:

• Main SFWMD permitting portal:

o http://www.sfwmd.gov/portal/page/portal/levelthree/permits

SFWMD ePermitting portal:
 http://my.sfwmd.gov/ePermitting/MainPage.do

However, after a search of the ePermitting Web App, there appear to be no existing or historical ERPs within the study area. **Figure 3.1.6** is a screen shot from the Web App showing no permits within the study area.

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Figure 3.1.6 – SFWMD ePermitting Web App

In conjunction with the SFWMD permitting website, a GIS shapefile containing the location and extent of the SFWMD ERP permit can be found at the SFWMD GIS data repository mentioned previously.

Additionally, the SFWMD data repository is a valuable source for additional data that is often directly available from other sources such as land use, soils, aerial imagery, etc. Although this data may not be maintained regularly, this data may be used if alternate sources are not accessible.

### *3.1.2.2* Florida Department of Transportation (FDOT)

Data requests were also extended to the FDOT. As-built plans of improvements along NE 79<sup>th</sup> Street from 2015, Bridge Repair/Rehabilitation As-Builts for the NE 79<sup>th</sup> Street Bridge from 2000, and the Outfall Assessment TWO #14 Report were obtained from FDOT. GIS mapping of the existing FDOT drainage structures around the project area were obtained utilizing the FDOT District 6 GIS Viewer. As shown in **Figure 3.1.7**, based on the GIS Viewer, all FDOT drainage structures are located along NE 79<sup>th</sup> Street, which is the only FDOT road found bordering the Shore Crest study area.

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Figure 3.1.7 – FDOT Drainage Structures & Major Roads

### *3.1.2.3* National Oceanic and Atmospheric Administration (NOAA)

Tide data is available from the NOAA. NOAA monitors, assess, and distributes tide, current water level, and other coastal oceanographic data via their Center for Operational Oceanographic Products and Services (CO-OPS). NOAA's data is accessible via the web, at the following location:

- Main NOAA CO-OPS portal:
  - o http://tidesandcurrents.noaa.gov/
- NOAA's Observational Data Interactive Navigation (ODIN) site for station data:
   http://tidesandcurrents.noaa.gov/gmap3/

GIS data is also available from NOAA. GIS data for the NOAA stations can be obtained from the following location:

- NOAA GIS portal:
  - o http://www.nws.noaa.gov/gis/

For this drainage feasibility study, the main information we will gather from the NOAA tide stations is the historical King tide elevations over the last five years. Virginia Key, Station ID 8723214, is the closest tidal station to the study area. **Figure 3.1.8** shows the location of the Virginia Key station in reference to the Shore Crest study area while, **Figure 3.1.9** shows a screen capture of NOAA's Virginia Key station data information. Unless

otherwise stated, all elevations for the Virginia Key Station are in reference to mean lower low water (MLLW). The information gathered will be converted to the North American Vertical Datum of 1988 (NAVD): 0.0 ft MLLW = 2.01 ft NAVD.

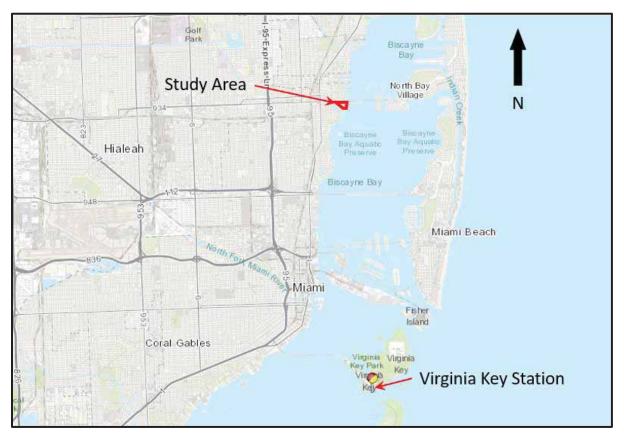


Figure 3.1.8 – NOAA CO-OPS ODIN Station Location

| Station Info Today's Tides P                  | thotos Sensor Information Observations Direc   | tions and Map Available Produ                   | icts |         |
|---|--|---|------|---------|
| Established                                   | Jan 26, 1994   |   |      |         |
| Time Meridian: 75° W                          |  | Today's Tides (LST)                             |      |         |
| Present Installation:                         | Jan 17, 1994   | 2:38 PM   |      |         |
| te Removed: N/A                               |  |   |      |         |
| Vater Level Max (ref MHHW):                   | 3.58 ft. Sep 10, 2017  |   |      |         |
| Vater Level Min (ref MLLW):                   | -1.29 ft. Mar 29, 1994   | 2:11 AM   | low  | 0.1 ft. |
| lean Range:                                   | 2.03 ft.   | 8:27 AM   | high | 2.9 ft. |
| Jurnal Range:                                 | 2.22 ft.   | 2:38 PM   | low  | 0.3 ft. |
| atitude                                       | 25° 43.9' N  | 8:37 PM   | high | 2.7 ft. |
| ongitude                                      | 80° 9.7' W   |   |      |         |
| NOAA Chart#:                                  | 11465  |   |      |         |
| Station Info - Tides/Water Levels - Meteoroli | - The second |   |      |         |
|   | NUMAN  | DS/CO-OPS<br>114, Virginia Key, Biscayne Bay FL |      |         |

#### Figure 3.1.9 – NOAA CO-OPS ODIN Station Data Page

#### *3.1.2.4* Florida Department of Environmental Protection (FDEP)

Existing Class V Injection Well information is available from the FDEP Geodatabase. Class V wells are part of the FDEP Underground Injection Control (UIC) department. Class V wells include a wide range of uses. **Figure 3.1.10** shows the study area with all the FDEP Permitted Class V Wells, five of which are stormwater injection wells but are all privately owned and operated. The City does not own or operate any stormwater injection wells within the study area. FDEP UIC's data is accessible via the web, at the following location:

- Main FDEP Geospatial Open Data portal:
  - o http://geodata.dep.state.fl.us/

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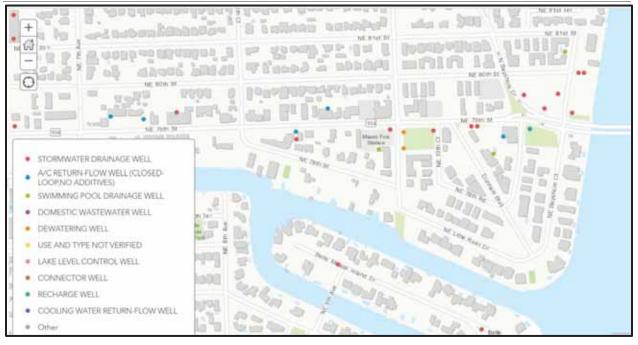


Figure 3.1.10 – FDEP Class V Underground Injection Wells

### 3.1.2.5 Southeast Florida Regional Climate Change Compact

A number of sea level rise studies are available through the internet with often diverging opinions as to the existence, cause, and extent of the expected rise in average sea level in addition to impacts associated with storm surges from hurricanes combined with sea level rise. In July 2014, Miami-Dade County published the findings of a Sea Level Task Force initiated by the County to review available sea level studies and to provide recommendations with regards to addressing sea level rise at the County Level. This document titled *Miami-Dade Sea Level Rise Task Force Report and Recommendations* is available through the County's Sea Level Rise Task Force webpage:

http://www.miamidade.gov/planning/boards-sea-level-rise.asp

In October 2015, the Southeast Florida Regional Climate Change Compact published the *Unified Sea Level Rise Projection* Study for Southeast Florida (**Figure 3.1.11**). It outlines the SLR projections from various agencies for the year 2030, 2060, and 2100.

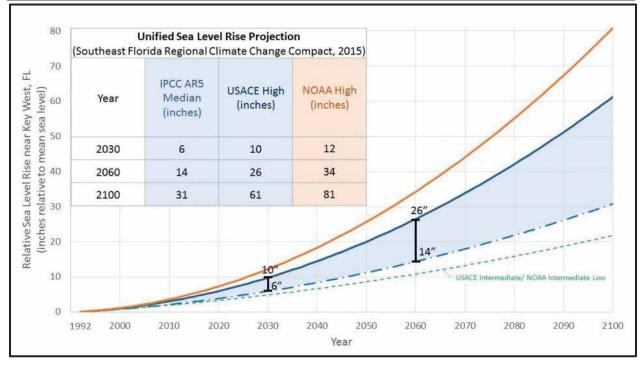


Figure 3.1.11 - Southeast Florida Regional Climate Change Compact's Sea Level Rise Projections

The study is available through the Compact's webpage:

<u>http://www.southeastfloridaclimatecompact.org/</u>

Additionally, Florida Atlantic University, with funding from FDOT, has also done research on sea level rise and climate change as it relates to South Florida. Their research is available through their Climate Change in South Florida webpage:

• <u>http://www.ces.fau.edu/climate\_change/</u>

### *3.1.2.6 Miami-Dade Water and Sewer Department*

The isohyetal maps from SFWMD historically used in determining rainfall depths for storm events were developed in 1990. In May 2015, CH2M developed updated rainfall criteria for the Miami-Dade Water and Sewer Department (WASD) utilizing nine climate stations throughout Miami-Dade County in the report *Final Rainfall Intensity, Duration, and Frequency Projections Based on Climate Change for Miami-Dade County*. The current rainfall depths shown in the report show an increase of 25 to 30 percent over the existing isohyetal maps.

### 3.2 Data Evaluation

The data collected from the City of Miami, Miami-Dade County and other sources were evaluated to define the completeness and viability of the data as well as to identify the pertinent items that would be applicable to the Drainage Feasibility Study and the shortterm, mid-range, and long-range goals. The following subsections detail the pertinent components of the data collected and their potential role in the development of the feasibility study.

### 3.2.1 City of Miami Data

With regards to the City of Miami Data, the as-built plans, basin delineations, and the data provided by ALERT5 are the most valuable items for the development of a representative existing conditions hydrologic/hydraulic models and the potential solution analyses.

The ALERT5 data provided a 3-dimensional survey of the existing surface, including buildings and vegetation along with the existing drainage infrastructure. This information was used to establish the existing conditions 1D/2D hydraulic/hydrologic model, which was used in the development of Technical Memorandum #2 (**Section 4.0**). In addition, this data was also be used in the evaluation of short-term and mid-range solutions documented in Technical Memorandum #3 (**Section 5.0**).

The ALERT5 survey of the top of the existing seawall elevations had to be established based on ground elevation averaging, for areas with heavy vegetation over the seawall. For future drone surveying efforts, drone side flights should be included to obtain actual elevations below the canopy along the areas with seawalls.

The City of Miami GIS information was very limited. While it provided the overall layout and relative structure location, no additional information such as pipe size, pipe material, inlet type, pipe inverts, etcetera was available.

Information regarding the King tide and the flooding response with the temporary plugs in place, installed as part of the Tidal Flood Prevention Action Plan, will help to pinpoint the areas of greatest risk from tidal flooding.

### 3.2.2 Data from other Sources

The data collection effort associated with this task was primarily focused on collecting the necessary data from agencies other than the City of Miami to ensure the accuracy of the feasibility study and the viability of potential solutions. The most important data was collected from various agencies with the key items being:

- Defined sea level rise criteria (Southeast Florida Regional Climate Change Compact)
- Revised rainfall depths for the design storm events (WASD)
- Established recent King tide elevations (NOAA)

Though DBHYDRO information is available from SFWMD, no active monitoring stations are available within the study limits. The only active stations nearby are upstream in the C-7 Canal at the S27 Control Structure; however, rainfall depth will be utilized from this station for help in establishing the current level of service of the drainage system.

The outfall assessment report provided by FDOT picked up the public outfalls along the project boundaries. The private outfalls were not included in the study. The outfall

information will be used in conjunction with the as-builts in defining the existing conditions for the ICPR4 Model. But the information was also used to assess the viability of the existing outfalls for use in future solutions.

### 3.3 Conclusion & Recommendations

Based on the available data provided by the City and obtained from various other agencies, there was sufficient data to complete the Phase 1 – Shore Crest Drainage Feasibility Study and develop the existing conditions hydrologic/hydraulic model.

The City should continue to monitor all flooding that occurs within the study area whether driven by rain or tidal events, documenting findings with photos and flood delineation maps. While the plugs installed by the City are a temporary solution to the King tide flooding, they should continue to be used until such time that a more permanent solution is implemented based on available funding.

# 4.0 EXISTING CONDITIONS ASSESSMENT

# 4.1 Summary of Available Data used in Developing the Existing Conditions Hydrologic/Hydraulic Model

### 4.1.1 Topography

ALERT5 Mapping provided a digital elevation model (DEM) based on the North America Vertical Datum (NAVD) of 1988, Release Version 1 obtained from drone LiDAR. This is a DEM of bare earth that covers the entire study area at a resolution of 1.4 centimeters. The DEM data for the study area is displayed in **Figure 4.1.1**.

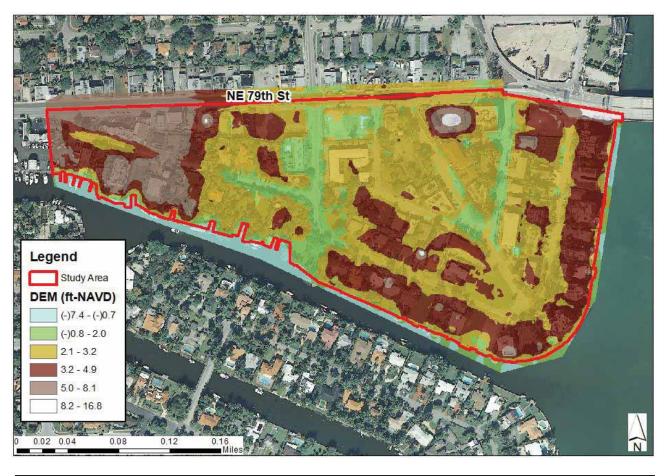


Figure 4.1.1 – Topographic Map of the Shore Crest Study Area

### 4.1.2 Land Use

A land use coverage was obtained from the City of Miami Zoning Department. The land use classifications are shown in **Figure 4.1.2**.



Figure 4.1.2 – City of Miami Land Use Map – Shore Crest Study Area

### 4.1.3 Soils

Soil zones were defined according to the soil depth to seasonal high groundwater elevation versus water storage capacity relationship specified in the SFWMD Environmental Resource Permit (ERP) Applicant's Handbook Volume II for coastal compacted soils, based on Soil Conservation Service estimates. Three soil zones (**Figure 4.1.3**) were defined for the study area based on the average pervious area elevations:

- 1. Elevations below 2 ft-NAVD
- 2. Elevations equal to or between 2 and 5 ft-NAVD
- 3. Elevations above 5 ft-NAVD.

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Figure 4.1.3 – Soil Zone Map for the Shore Crest Study Area

### 4.1.4 Stormwater Drainage System

Data for the stormwater drainage system was obtained from the City's stormwater infrastructure GIS database. The SFWMD permits database was also reviewed to obtain information, but unfortunately no SFWMD permits, current or historical, exist within the limits of the study area. FDOT does not have any infrastructure within the study area however, NE 79<sup>th</sup> Street abuts the north limits of the project. As-built plans along with the FDOT GIS database were used to obtain available information regarding stormwater infrastructure.

### *4.1.4.1* Inlets and Storm Drains

Inlets, manholes, and storm drains from both the City's GIS database and the FDOT database were included in the model to simulate the field conditions as accurately as possible. **Figure 4.1.4** shows the stormwater infrastructure used in the 1D/2D model.

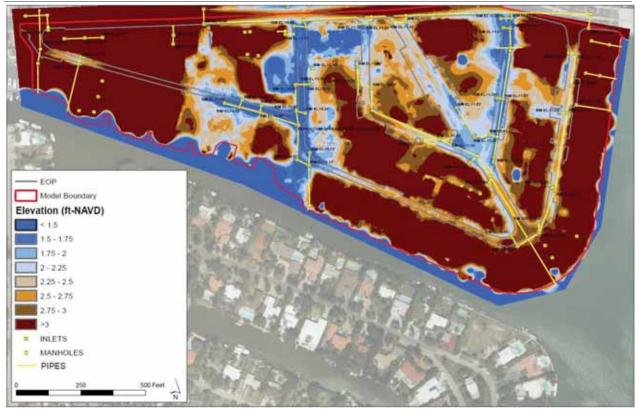


Figure 4.1.4 – Ground Survey with Stormwater Infrastructure from GIS Databases Rainfall

Gauge rainfall data is available at the SFWMD DBHYDRO Station S27\_R along Canal C-7 located to the northwest of the study area, however this rainfall is not associated with specific return frequencies. In order to analyze the design storm events, the rainfall depths were specified according to SFWMD design rainfall contours (isohyetal maps) for each of the storm frequencies. The rainfall depths are outlined in **Section 4.3.2.5**.

Two design storm events were simulated to establish the existing conditions LOS in the Shore Crest study area:

- 1. 5-year, 24-hour
- 2. 100-year, 72-hour

The SCSII-24 and SFWMD72 non-dimensional rainfall distributions were used for the 24-hour and 72-hour design storms, respectively.

### 4.1.5 Current Tide Stages

Measured tidal stages related to the King tides over the last 5 years, starting with 2014, were obtained from the closest NOAA station to the study area which is located at Virginia Key, Florida. **Table 4.1.1** shows the low and high tides associated with the King Tides at Virginia Key for the 5-year period. The King tide in 2017 was the highest on record

Table 4.1.1 – Virginia Key Tide Station King Tide Elevation (NOAA)

Phase I – Shore Crest Drainage Feasibility Study Report

| Year | Designation | Date       | Elevation<br>(FT-NAVD) |
|------|-------------|------------|------------------------|
| 2018 | High        | 10/8/2018  | 1.59                   |
|      | Low         | 10/8/2018  | -1.28                  |
| 2017 | High        | 10/5/2017  | 2.28                   |
|      | Low         | 10/5/2017  | -0.41                  |
| 2016 | High        | 10/14/2016 | 2.04                   |
|      | Low         | 10/14/2016 | -0.70                  |
| 2015 | High        | 9/27/2015  | 2.05                   |
|      | Low         | 9/27/2015  | -1.06                  |
| 2014 | High        | 10/7/2014  | 1.53                   |
|      | Low         | 10/7/2014  | -1.40                  |

### 4.2 Assessment of Existing Seawall Elevations

### 4.2.1 Existing Seawall Topography

The elevations of the existing seawall along the C-7 Canal and Biscayne Bay were provided as part of the LiDAR obtained by ALERT5 within the study area. However, the top of wall elevations were skewed in some locations due to heavy canopy cover. These elevations were isolated and removed from the file. The top of seawall was then averaged in these locations to create a continuous wall that best represents the actual field conditions. For future drone LiDAR, it is recommended that flights are done and elevations shot at an angle to mitigate the canopy interference present in this study.

The existing top of seawall ranges in elevation from 0.11 ft-NAVD to 5.38 ft-NAVD. The seawall profile in comparison to the location can be seen in **Appendix 4A** along with the plotted DHW, the October 2017 King tide stage, and the maximum sea level observed during Hurricane Irma. The lowest portions of the seawall lie along the C-7 Canal with the vast majority being privately owned. Only the seawall along Little River Pocket Park at the end of NE 10<sup>th</sup> Court (approximately Station 1550 to 1620) is owned by the City.

While less than 10 LF of seawall lie below the DHW of 0.47 ft-NAVD, approximately fourteen percent or 525 LF lie below the October 2017 King tide event with a peak high tide of 2.28 ft-NAVD. This leaves the study area very susceptible to tidal flooding regardless of how efficient the stormwater collection system may be. This also shows that the blocking of outfalls or installation of backflow preventers are not viable long-term solutions.

### 4.3 Existing Conditions Hydrologic/Hydraulic Model Setup

### 4.3.1 Overview of the ICPR 4 Expert Model

The ICPR computer model is a hydrodynamic model developed by Streamline Technologies, Inc. that simulates hydrologic and hydraulic conditions by generating runoff hydrographs and dynamically routing these hydrographs through dendritic, diverging, looped, and/or bifurcated stormwater management systems.

ICPR 4 Expert Model (ICPR4) includes 2-dimensional (2D) overland flow and groundwater components that are used instead as either a substitute or a complement to the traditional basin runoff method. These components generate a flexible triangular mesh based on a specified resolution and several types of landscape features. Honeycombs (or control volumes) are formed around the vertices of the triangles and produce different hydrological responses based on specified parameters the mapping of various landscape characteristics. Mass balance is accounted in each control volume to determine excess rainfall. The Manning's equation is used to calculate runoff velocities using the slopes from the interpolated topography along the sides of the mesh triangles. Analogous to the 1D node-link computational schematic, the vertices of the triangles are treated as nodes and the sides of triangles are the overland flow links.

The layers that can be used to define the parameters which generate the overland flow hydrological unit response in each honeycomb are:

- 1. Ground elevations
- 2. Soil parameters
- 3. Land cover (% imperviousness)
- 4. Manning's roughness coefficients
- 5. Rainfall zones
- 6. Evapotranspiration parameters

### 4.3.2 Hydrologic Model Setup

For the models developed for this study, only the 2D overland flow component, as opposed to the traditional manual basin approach was used to generate runoff. The rainfall-runoff parameters specified in the models are described below.

The soil zone, land cover zone, and rainfall zone parameters are intersected to characterize the infiltration capabilities and precipitation amount for each 2D honeycomb basin. **Figure 4.3.1** illustrates the honeycomb basins (green), land use coverage (blue outline), and soil zone coverage (orange outline in a portion of the validation model. A mass balance for each honeycomb basin is performed which calculates the total precipitation minus the total infiltration for each honeycomb basin based on the soil zone, land cover zone, and rainfall zone.

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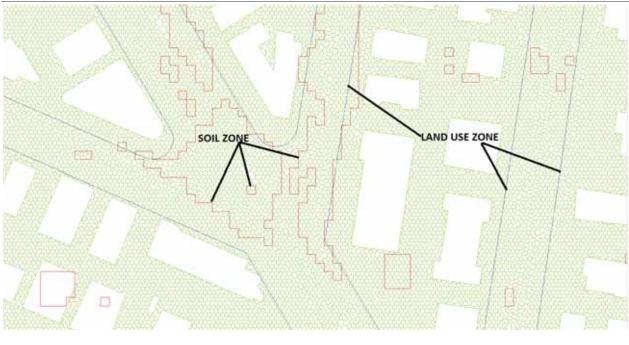


Figure 4.3.1 – 2D Honeycomb Basin Characterization

### 4.3.2.2 Model Domains

Due to hydraulic and hydrologic connectivity of the site, the entire limits of the study area were combined into a single model domain.

### 4.3.2.3 Average Wet Season/Design High Water (DHW)

In order to set the initial condition parameters for the 2D mesh and 1D nodes, a DHW assumption was made. Since the entire site is located in the coastal area, it was assumed that the DHW was tidally influenced. More specifically, the DHW was calculated using the average of the King tides over the last five years. **Equation 4-1** describes the calculation of the Coastal DHW assumption value.

| Equation 4-1 – Coastal DHW Assumption |
|---------------------------------------|
|---------------------------------------|

DHW =

 $=\frac{(Avg. of King tides for past 5 years) + (Avg. of low tides corresponding to King tides)}{2}$ 

The five highest tidal events associated with King tides from the past five years (2014-2018) at the NOAA Tidal Gage at Virginia Key were examined. The mean elevation of the five King tides was averaged with the mean elevation of the corresponding low tide for those five tidal events. The resulting DHW assumption value was 0.47 ft-NAVD. For the validation model and establishing the current level of service, no sea level rise (SLR) was considered.

### 4.3.2.4 Curve Number

Curve number was calculated for each soil zone / land use combination. **Table 4.3.1** shows each calculated number.

|                             |   | •         |                 |
|-----------------------------|---|-----------|-----------------|
| Land<br>Cover<br>Zone Abbr. | Land Cover Zone                                   | Soil Zone | Curve<br>Number |
| Т                           | Transportation, Communication, and Utilities      | 1         | 98              |
| CII                         | Commercial and Service, Industrial, Institutional | 1         | 98              |
| U                           | Parks and Recreational Open Space, Undeveloped    | 1         | 97              |
| R                           | Residential                                       | 1         | 98              |
| W                           | Coastal Water Bays and Ocean Inland Water         | 1         | 98              |
| Т                           | Transportation, Communication, and Utilities      | 2         | 94              |
| CII                         | Commercial and Service, Industrial, Institutional | 2         | 93              |
| U                           | Parks and Recreational Open Space, Undeveloped    | 2         | 76              |
| R                           | Residential                                       | 2         | 92              |
| W                           | Coastal Water Bays and Ocean Inland Water         | 2         | 98              |
| Т                           | Transportation, Communication, and Utilities      | 3         | 91              |
| CII                         | Commercial and Service, Industrial, Institutional | 3         | 88              |
| U                           | Parks and Recreational Open Space, Undeveloped    | 3         | 56              |
| R                           | Residential                                       | 3         | 85              |
| W                           | Coastal Water Bays and Ocean Inland Water         | 3         | 98              |

As described in **Section 4.1.3**, soil zone was based on the soil depth to water table versus water storage capacity relationship specified in the SFWMD Environmental Resource Permit Applicant's Handbook Volume II for compacted soils, based on Soil Conservation Service estimates. Land use was determined from the Proposed Land Use GIS coverage provided by the City of Miami (**Section 4.1.2**). ICPR4 uses the spatial coverages of the land cover zones and the soil zones during the 2D overland flow runoff calculations.

### 4.3.2.5 Design Rainfall Depths

Rainfall depths for the Design Storms were estimated by the SFWMD isohyetal design rainfall contours and are as described in **Table 4.3.2**. Due to the small size of the study area, rainfall depths did not vary across the model limits.

| Table 4.3.2 – Model Domain Rainfall Depths |  |
|--|--|
|--|--|

| Model Domain      | 5Y-1D  | 100Y-3D |
|-------------------|--------|---------|
| Entire Study Area | 6.4 in | 16.0 in |

### 4.3.3 1D Hydraulic Model Setup

In ICPR, a stormwater management system is modeled into a network of nodes or junctions and links. A node is a discrete location in the drainage system where runoff

enters the system and conservation of mass or continuity is maintained. The nodes model the hydrologic conditions within the drainage system. Links represent connections between nodes and are used to transfer or convey stormwater runoff through the system. The links are used to model the hydraulic response of the management system for a defined hydrologic condition. A node-link schematic was developed to show the relationship between the nodes and links in the model setup that represent the existing and proposed designs. Node/link schematics for the 1D model setup for the existing conditions model are in **Appendix 4E**.

The stormwater pipe, manhole, and inlet spatial datasets obtained from the City of Miami Atlas and the ALERT5 survey were used to define the 1D features of the hydraulic model. The inlet and manhole locations along with the pipe lengths and locations were taken from the ALERT5 survey while the pipe dimensions were pulled from the City Atlas. This information was then used to define the 1D nodes and 1D links in the model to define the 1D interface features. The 1D node interface features tie the 1D and 2D models together such that surface water flow will discharge into the 1D hydraulic network where it will be conveyed to the stormwater pipes and discharged out of the basins.

The type of node used for the manholes in the basin is referred to as the Stage/Area node. Nodes at the basin's outfalls are referred to as time/stage nodes set to an oscillating tidal schedule.

Details about other 1D hydraulic model setup parameters such as link and node parameters, curve number lookup tables, impervious and roughness lookup tables, and boundary stage tables for design storm and validation events are included in **Appendix 4F**.

### 4.3.4 2D Hydrologic Mesh Development

The entire study area was modeled as a single Overland Flow Region in the 2D component of ICPR4. Overland Flow Regions are characterized by their land use classifications, soil zone classifications, elevation raster values, and rainfall zone values.

The 2D triangular mesh defines the computational resolution of the model, i.e., how accurately the model can read and use the information from the input DEM and the other model layers. Several 2D features can be used to define the mesh. For example, breaklines and breakpoints were the most common 2D features used in the models developed. Breaklines were incorporated into the 2D model to represent the roadways and ensure that the triangular mesh edges run along the correct paths to simulate flow. Extrusion areas were incorporated into the 2D model to represent the buildings and ensure that overland flow did not fictitiously run through buildings. Extrusion areas allow rainfall within the building area but the runoff is routed through 2D links on the edges of the buildings.

A road centerline shapefile provided by the City was imported into ICPR4 to delineate the breaklines. This shapefile was edited to include the edge of pavement from the available aerial maps, and the edge of pavement as also included as breaklines. Breakpoints were placed evenly throughout the model domains 5 feet apart, which guarantees that there

will be triangle vertices (2D nodes) every 5 feet. **Figure 4.3.2** shows an example of how the triangular mesh (blue) was set-up along one of the breaklines (green) and extrusions (orange).

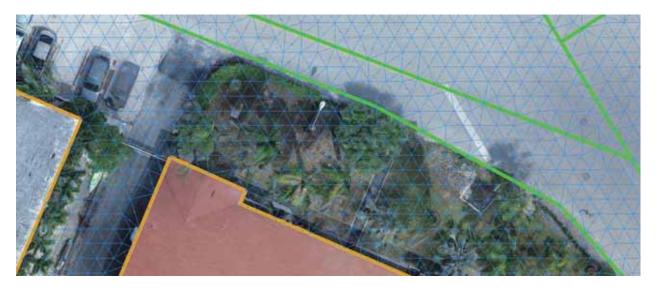


Figure 4.3.2 – Triangular Mesh Formulation with Breaklines

Once the geometry of the mesh was defined, the links of the triangular mesh and the cells of the diamond and honeycomb meshes were given characteristics based on the DEM, soil zone map, land zone map, and roughness zone map. The soil zone, land cover zone, and roughness zone map layers each have a corresponding lookup table to further describe the hydrologic characteristics of the features in the map layers. **Figure 4.3.3** shows the triangular (blue), diamond (pink), and honeycomb (green) meshes that characterize the 2D hydraulic model.

A single boundary stage line along the edge of the model domain that borders the C-7 Canal or Biscayne Bay was used. The overland flow links coincide with the boundary stage lines are disabled, and the stage elevations along the boundary stage lines are forced as the tidal boundary stage elevation. This permits overland flow runoff into the Intracoastal Waterway eliminates the "wall" effect of the basin boundary edges that causes water buildup in some basin boundary locations and also allows for seawall overflows in the cases where tidal events are higher than waterfront lot elevations.



Figure 4.3.3 – Diamond and Honeycomb Characteristic Meshes

The curve number rainfall excess method was used to model soil water storage and the corresponding runoff volume. The curve number for each of the honeycomb catchment areas is defined by the soils map layer and land cover map layer as described in **Section 4.3.2.4** and **Table 4.3.1**. Roughness zones characterize the diamond mesh and define the manning's n values for the overland flow links within the diamond-shaped cells. Roughness zones are spatially defined by the roughness zones map layer which, in the case of this model, is identical to the land cover map layer. Roughness values for each land use type are described for each model in **Appendix 4F**.

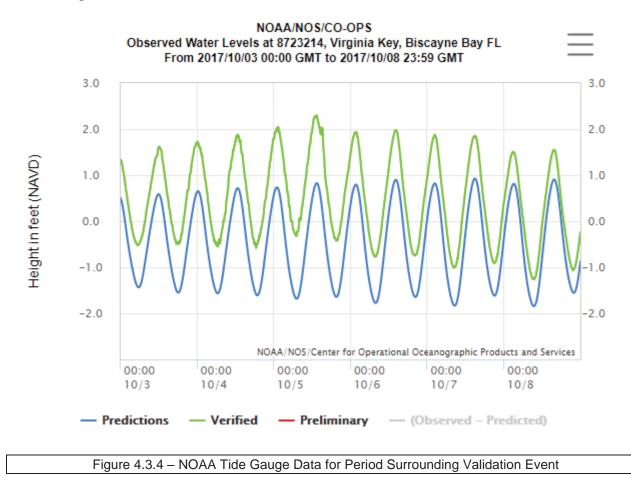
### 4.3.5 Boundary Conditions

For the Validation Model, the high and low stages measured at the NOAA tidal gage at Virginia Key for the 2017 King tide event were specified as the downstream boundary elevations. The tailwater stages at the S27 structure were not considered as it did not appear to register the Kind Tide events.

For the design storm event boundary conditions, conservative high tidal conditions were used. The same King tide condition from the validation was used to simulate the effects of the max King tide conditions in conjunction with the design storm events. The corresponding low tide for the 2017 King tide was also used. A 6-hour, oscillating tide cycle was assumed for the 1-day and 3-day design events. The tidal elevations used were 2.28 ft-NAVD and (–)0.41ft-NAVD for high and low tides, respectively. **Appendix 4F** shows this boundary stage set for each design storm event. The north (along NE 79<sup>th</sup> Street) and west boundaries of the study area were treated as true hydrologic boundaries; no water entered or left the study area through this boundary. Existing Conditions Hydrologic/Hydraulic Model Validation

### 4.3.6 Validation Storm Event Identification and Selection

A model validation period was selected based on a single event where widespread flooding occurred and was well documented in the study area. Communications with City staff indicated that flooding typically occurred yearly during King tide events but the October 2017 event was the most extreme. Thus, this event was chosen for the validation model. **Figure 4.3.4** shows the recorded tides for the for the time period surrounding the 2017 King tide event on October 5, 2017.



### 4.3.7 Hydrologic and 2-D Model Setup for Validation Storm Event

The validation simulation period was set to run for 24 hours cycling through the low and high tides associated with the King tide event on October 5, 2017. The assumptions made to specify the initial and boundary conditions are described in **Sections 4.3.2.3** and **4.3.5**, respectively. The validation model does not account for any rainfall, as was the condition when the King tide and associated flooding occurred.

### 4.3.8 Validation Storm Event Results and Inundation Flood Maps

ICPR4 has the capability of exporting raster files of 2D model results at any time during the simulation period. Maximum elevation and ground elevation raster files were exported from ICPR4. The ground elevation raster was then subtracted from the maximum

elevation raster to create a depth of flooding raster. The depth of flooding raster for the study area is included in **Appendix 4B**.

Validation flood maps were delivered to the City via email on December 10, 2018 for the City to compare the flood depths and extent of flooding predicted by the model to the observed flooding and know flooding complains. Based on the City's review and comparison, the validation model's inundation flood maps for the October 2017 King tide event generates flooding very consistent with the drone aerial footage, flooding complaints, and observed flooding on the ground. No discrepancies of note were observed between the flooding predicted by the model with known areas of flooding.

There is consensus that the model represents very well the observed flooding during the 2017 King tide event. Therefore, it is assumed that this model is a valid representation and was carried forward to assess the flood protection level of service for the Shore Crest study area and to evaluate the required stormwater management improvements needed to address flooding and to address future predicted sea level and ground water rise.

### 4.4 Existing Conditions Design Storm Event Simulations and Results

### 4.4.1 Summary of Design Storm Event Results

The validated ICPR4 model documented in **Section 0** was then used to simulate the level of flooding for the Shore Crest study area during the 5-year, 24-hour and 100-year, 72-hour rainfall events and boundary conditions documented in **Section 4.3**. **Table 4.4.1** summarizes the design storm events' results with the range of flooding depth for each street within the study area where the worst flooding occurs. **Appendix 4C** has inundation maps for each of the design storm events.

| Maximum Depth | of Flooding (FT) |                                   |
|---------------|------------------|-----------------------------------|
| 5Y-1D         | 100Y-3D          | Locations of Significant Flooding |
| 1.5           | 1.7              | NE 78 <sup>th</sup> Street        |
| 1.5           | 1.6              | NE 10 <sup>th</sup> Avenue        |
| 0.7           | 0.8              | NE North Little River Drive       |
| 1.2           | 1.4              | NE Bayshore Court                 |
| 1.4           | 1.6              | N Bayshore Drive                  |
| 0.8           | 1.0              | Dunham Boulevard at NE 78th Road  |
| 1.2           | 1.4              | Little River Pocket Park          |

### 4.4.2 Flood Protection Level of Service

### *4.4.2.6* Flood Problem Area Ranking Procedure

The ranking of flooding problem areas within the study area will be related to the defined stormwater infrastructure flood protection level of service (FPLOS) as follows:

1. Building finished floor elevations shall be at or above the 100-year, 3-day design storm peak flood elevations (SFWMD ERP Applicant's Handbook, Volume II).

Both tidal flooding and the 100-year, 3-day storm event shall be considered in determining the peak elevations.

2. City owned residential roads shall be at or above the 5-year, 1-day design storm peak flood elevations (SFWMD ERP Applicant's Handbook, Volume II). Both tidal flooding and the 5-year, 1-day storm event shall be considered in determining the peak elevations.

The severity of flooding within each problem area will be determined through the calculation of a flooding problem severity score (FPSS), which is a function of two "severity indicators" that are directly related to the FPLOS criteria described previously. These severity indicators are defined and summarized below. Each of these indicators also has an assigned "weighting factor" (WF), which is related to the relative importance of the flooding severity indicator.

- NS: Number of structures anticipated to flood by a 100-year, 3-day design storm event, which can include commercial, residential, and public buildings. All structures and/or buildings are considered equivalent, regardless of their size or value. (WF = 4)
- MCLRS: Miles of residential streets anticipated to be impassable during 5-year, 1day design storm event. All collector and local residential streets are considered impassable if the depth of flooding exceeds the crown of the road during the 5year, 1-day design storm event. (WF = 2)

The severity indicators are rated by an exceedance (E) value pursuant to the following severity score listed in the table below.

| Depth of Flooding Above the FPLOS                         | E |
|---|---|
| Less than or equal to 6 inches                            | 1 |
| Greater than 6 inches and less than or equal to 12 inches | 2 |
| Greater than 12 inches                                    | 3 |

Given the definitions for the flooding severity indicators (NS and MCLRS), WF, and E, the FPSS for each problem area is calculated using the following formula, where  $E_{(i)}$  relates to the degree of exceedance for each of the five severity indicators.

### $FPSS = \sum 4E_i * NS + \sum 2E_i * MCLRS$

### 4.4.2.7 Flood Problem Area LOS Determination

Numerous GIS files were collected from the City of Miami and data provided by ALERT5 to represent the roads, properties, and topography within the study limits. The various flood severity indicators of the FPSS equation outlined in **Section 4.4.2.6** were quantified using standard GIS tools to facilitate the analysis of the resulting model data versus the DEM provided by ALERT5.

As presented in **Section 4.3.8**, the modeled flood depths for the design storms were calculated by subtracting the modeled maximum elevation raster output, from ICPR4,

from the modeled ground surface elevation raster output used by ICPR4. The resulting flood depth raster has cell dimensions of 5-ft by 5-ft.

A 5-ft by 5-ft raster file was also created from the road centerlines. All road centerline cells were given a value of 1 and all other cells were given a value of 0. This road centerline raster was multiplied by the 5-year, 1-day flood depth raster to produce a grid along the road centerline with 5-year, 1-day flood depth values. The road centerline raster was also multiplied by the 100-year, 3-day storm maximum elevation raster to produce a coverage along the road centerline with 100-year, 3-day flood elevation values to be used in the analysis of flooded structures.

The 5-ft by 5-ft rasterized road centerline flood depth raster was reclassified using ArcMap tools. The reclassify tool was used to change any raster cell with a value less than 0.25 to zero, any raster cell with a value between 0.25 and 0.5 to a reclassified value of 1, any raster cell with a value between 0.5 and 1 to a reclassified value of 2, and any raster cell with a value above 1 to a reclassified value of 3. This created an Exceedance value for each 5-ft section of City roadway. **Appendix 4D** includes the MCLRS flooded and the exceedance values for the road raster in existing conditions. The number of cells with each exceedance value was summed to give a count of 5-ft roadway sections for each flooding exceedance value. **Appendix 4D** shows the MCLRS count for the study area.

Next, the number of structures flooded, or NS, was calculated using the CAD survey files provided by ALERT5 and then further verified with aerial coverage.

Per the data collected in TM1 – *Data Collection and Evaluation* (**Section 3.0**), the finished floor elevations were obtained from the ALERT5 survey along with as-builts from the City's Building Department. The structures were delineated with a point shapefile in GIS, and finished floor elevations were assigned for each structure. Then the 5-ft by 5-ft road centerline 100-year, 3-day maximum elevation raster was further processed by converting it into a point shapefile. A spatial join was performed with the target raster set as the structures point shapefile and the join raster set as the road max flood elevation point shapefile. The structure location point shapefile attribute table was then populated with the closest road flood elevation.

Attribute table calculations were then performed for the depth of flooding of the structures. The finished floor elevation for each structure was subtracted from the maximum flood elevation for the nearest road. Negative values from this calculation were converted to 0 because this indicated that the road flood elevation was lower than the finished floor elevation. The flood depths were then assigned an exceedance value. As described earlier, any structure flooded less than 0.5-ft was assigned an exceedance value of 1. Any structure flooded between 0.5-ft and 1-ft was assigned an exceedance value of 2. Any structure flooded above 1-ft was assigned an exceedance value of 3. **Appendix 4D** shows the structure flooding and exceedance values for each problem area.

The number of flooded structures with each exceedance value was summed to give a count of structures for each flooding exceedance value for the study area. **Appendix 4D** shows the number of structures flooded (NS) count for each problem area.

### 4.4.2.8 Existing LOS

The values quantified by the two "severity indicators" outlined above determined the severity of flooding and were used to establish the FPSS value for the study area in the existing condition. The FPSS for the existing conditions is 17.10.

**Appendix 4D** contains the Flood Protection Level of Service map for the entire study area.

- 5-year, 24-hour event:
  - 0.4 miles of road flooded
- 100-year, 72-hour event:
  - 4 buildings inundated

In the conceptual stormwater improvement project analysis (**Section 5.0**), the FPSS will be established for the SLR conditions, and then again with the implementation of short-term and mid-range solutions as a means to compare effectiveness.

### 4.5 Conclusion

Utilizing the information obtained in the Data Collection and Evaluation task described in **Section 3.0**, a 1D/2D ICPR4 model was created to analyze the current flood conditions. To ensure the accuracy of the model, a validation run was created to simulate the flooding experienced during the October 2017 King tide event. Concurrence was obtained from the City verifying the model accuracy. This model was then used the simulate the effects of the 5-year, 1-day, and 100-year, 3-day events occurring in conjunction with the King tide events. The results showed significant roadway flooding with both design storm events and the flooding of four properties with the 100-year, 3-day event. The FPSS score for the study area in the existing condition is 17.10. This value provides a basis for comparison with existing conditions for future Sea Level Rise (SLR) conditions and also for the implementation of Short-Term and Mid-Range capital improvement projects (**Section 5.0**).

### 5.0 SHORT TERM AND MID-RANGE CONCEPTUAL STORMWATER IMPROVEMENT PROJECTS

### 5.1 Mid-Range (2050) Planning Horizon Model Setup

### 5.1.1 General

Model parameters requiring adjustment for the sea level planning horizon modeling task include the tidal boundary conditions, soil storage values, rainfall depths, and groundwater initial conditions. For the 2050 planning horizon tidal boundary conditions were raised, soil storage was decreased, rainfall depths increased, and groundwater initial conditions increased.

### 5.1.2 Mid-Range (2050) Planning Horizon Tidal and Groundwater Parameters

The Unified Sea Level Rise Projection for Southeast Florida (2015) contains three global curves adapted for regional application as shown in **Figure 5.1.1**. The NOAA High curve from this study was applied per the City's request and because its intended use is for medium-term projections. The value of sea level rise applied in this study for the 2050 projections is 18 inches. Adding 18 inches to the high and low tide conditions used in the Existing Conditions Model of *Technical Memorandum No. 2 – Existing Conditions Assessment* (TM2) (**Section 4.0**) brings the high and low tides for the Mid-Range Planning Horizon to 3.78 feet relative to the National Geodetic Vertical Datum of 1988 (ft-NAVD) and 1.09 ft-NAVD, respectively. **Figure 5.1.2** graphically displays the current and 2050 projected tidal conditions.

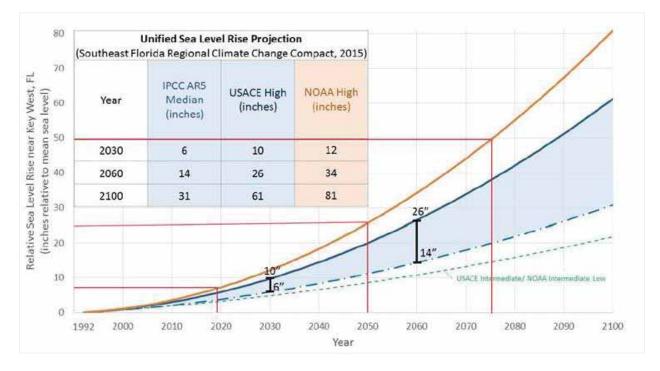


Figure 5.1.1 – Unified Sea Level Rise Projections for Southeast Florida (2015)

According to the 2016 study performed by Miami-Dade Water and Sewer, in conjunction with the USGS (*Hydrologic Conditions in Urban Miami-Dade County, Florida, and the Effect of Groundwater Pumpage and Increased Sea Level on Canal Leakage and Regional Groundwater Flow*) for every unit of sea level rise, groundwater conditions rise by one unit as well for locations near the coastline. Therefore, it was assumed that groundwater conditions were the average of the high and low tide elevation for the 2050 sea level rise scenario due to the tide levels being greatly unknown.

The initial groundwater elevation in the existing condition (TM No. 2, **Section 4.0**) is the average of the past five years of recorded King Tide high and low tide elevations. The initial stage elevation was raised from 0.47 ft-NAVD in the Existing Conditions model to 2.44 ft-NAVD in the Mid-Range 2050 Planning Horizon model. **Table 5.1.1** and **Figure 5.1.2** summarize the current-2019, 2050- and 2075 projected high tide, low tide design high water (DHW or groundwater) conditions.

|         | Tab  | ole 5.1.1 – F | Projected Tid | le and Groundwater Elevation         | ons with SLR                                       |
|---------|------|---------------|---------------|--------------------------------------|--|
|         |      |               |               |                                      |  |
|         | High | Low           | DHW           | NOAA Estimated<br>SLR from 1992 (in) | Net SLR from<br>Measured Current<br>King Tide (in) |
| Current |      |               |               |                                      |  |
| (2019)  | 2.28 | -0.41         | 0.47          | 8                                    | 0  |
| 2050    | 3.78 | 1.09          | 2.44          | 26                                   | 18   |
| 2075    | 5.78 | 3.09          | 4.44          | 50                                   | 42   |

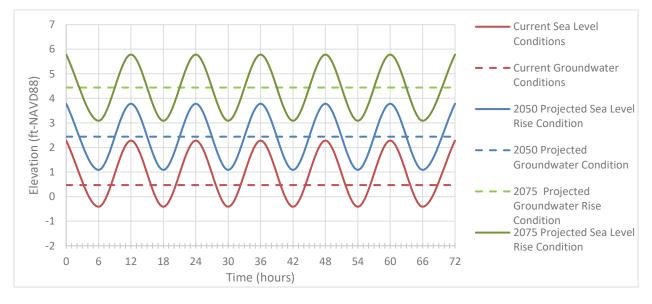


Figure 5.1.2 – Projected Sea Level and Groundwater Conditions for Current, 2050 and 2075

### 5.1.3 Mid-Range (2050) Rainfall Parameters

In May 2015, a report was produced for the Miami-Dade Water and Sewer Department titled *Final Rainfall Intensity, Duration, and Frequency Projections Based on Climate Change for Miami-Dade County* that outlines the increased rainfall depths experienced in recent years when compared to the South Florida Water Management District (SFWMD) isohyetal maps based on observations at nine daily stations throughout Miami-Dade County. For this analysis, the rainfall depths for the 2050 design storms were incrementally increased by 25 percent each to account for this rising trend in rainfall depth. **Table 5.1.2** describes rainfall depths for each design storm event for the existing conditions model, as well as for the Mid-Range 2050 Planning Horizon model and Long-range 2075 Planning Horizon.

|                     | 5-Year 1-Day Storm Depth | 100-Year 3-Day Storm |
|---------------------|--------------------------|----------------------|
|                     | (inches)                 | Depth (inches)       |
| Existing Conditions | 6.4                      | 16                   |
| Mid-Range (2050)    | 8                        | 20                   |
| Long-Range (2075)   | 10                       | 25                   |

Table 5.1.2 – Existing and Projected Rainfall Depths for 2050 and 2075

### 5.1.4 Mid-Range (2050) Soil Storage Parameters

Due to increased DHW (groundwater levels), the soil storage is lower in the sea level rise scenarios. As in TM2 (**Section 4.0**), soil zones were defined according to the depth to seasonal high groundwater elevation from existing ground versus water storage capacity relationship specified in the South Florida Water Management District (SFWMD) Environmental Resource Permit (ERP) Applicant's Handbook Volume II for coastal compacted soils, based on Soil Conservation Service estimates. Three soil zones (**Figure 5.1.3**) were defined for the study area based on the average pervious area elevations:

- 4. Elevations below 3.44 ft-NAVD (less than 1 ft to water table)
- 5. Elevations equal to or between 3.44 and 6.44 ft-NAVD (between 1 ft and 4 ft to water table)
- 6. Elevations above 6.44 ft-NAVD (greater than 4 ft to water table).

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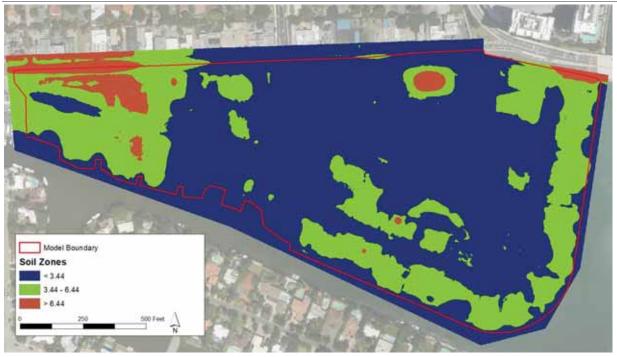


Figure 5.1.3 – Soil Zones for Raised 2050 Groundwater Conditions

Curve numbers were re-calculated for each soil zone/land use combination. **Table 5.1.3** shows each re-calculated curve number for the Mid-Range 2050 sea level rise planning horizon.

| Land Cover | Lond Cover Zono                                   | 5  | Soil Zon | е  |
|------------|---|----|----------|----|
| Zone Abbr. | Land Cover Zone                                   | 1  | 2        | 3  |
| Т          | Transportation, Communication, and Utilities      | 98 | 94       | 91 |
| CII        | Commercial and Service, Industrial, Institutional | 98 | 93       | 88 |
| U          | Parks and Recreational Open Space, Undeveloped    | 97 | 76       | 56 |
| R          | Residential                                       | 98 | 92       | 85 |
| W          | Coastal Water Bays and Ocean Inland Water         | 98 | 98       | 98 |

### 5.2 Stormwater Management Systems

### 5.2.1 General

In June 2016, the City of Miami Department of Public Works released Bulletin No. 51 titled "Additional Design Requirements for Right-of-Way and Drainage Improvements in Low Lying Areas." It outlines the minimum design parameters for right-of-way and drainage improvements as follows:

- 1. Roadways shall be raised so that the lowest inlet elevation is 5.00 feet relative to the National Geodetic Vertical Datum of 1929 (ft-NGVD) or 3.50 ft-NAVD, or higher
- 2. Where existing conditions do not permit the rising of the existing roadway to elevation 5.00 ft-NGVD (3.50 ft-NAVD) or higher, the engineer of record must make a reasonable effort to raise the existing road to the highest possible elevation.
- 3. Where applicable, drainage systems for roads that are to remain below elevation 4.5 ft-NGVD (3.0 ft-NAVD) shall be constructed to be watertight.
- 4. Drainage systems within existing roadways that are below elevation 4.00 ft-NGVD shall include a backflow valve to prevent tidal and groundwater intrusion.

Where possible, the proposed capital improvement projects for the Shore Crest Study area will comply with the Bulletin No. 51 criteria. In addition, to better address the level of flooding within the Shore Crest Study Area, the capital improvement projects shall also be comprised of one or more of the following flood protection best management practices:

- 1. Raising existing sea walls or implementing new seawalls to a minimum top elevation of 3.78 ft-NAVD (2050 High Tide).
- 2. Constructing a new stormwater pump station with emergency generator
- 3. Implementing a pollution control device upstream of the pump station prior to discharging to Biscayne Bay
- 4. Adding backflow preventers to positive outfalls to remain (predominantly private outfalls). All drainage systems that connect to the pump station, the existing gravity outfalls associated with these systems must be plugged to prevent recirculation of seawater if backflow preventor leak.
- 5. Raising the crown of road elevation to elevation 3.5 ft-NAVD where feasible, and 3 ft-NAVD in others.
- 6. Expanding, interconnecting and upsizing the stormwater infrastructure.

The majority of the seawalls within the study area are privately owned. These seawalls will need to be raised by the property owners either via incentives or adoption of ordinances to require raising of the privately-owned walls. The only seawall owned by the City is at Little River Pocket Mini Park. For the Mid-Range analysis, it was be assumed that the all the seawalls within the study area will be raised to a minimum 3.78 ft-NAVD. The City may want to consider raising the seawall an additional six to 12 inches to allow for freeboard above the high tide since Biscayne Bay is subject to wave action.

For privately owned outfalls, the City will also need to adopt ordinances to ensure that backflow prevention devices and pipe replacement or lining, if required, are implemented in the privately-owned systems.

### 5.2.2 Stormwater Pump Stations

Pump stations are used for expediting flows to a receiving water body or retention area or for when the required head is not possible to provide gravity outfalls. Although stormwater pump stations are expensive to install, operate, and maintain, their use is often required in areas where space is limited and no other practical gravity alternative is available. **Appendix 5A** shows typical details of a stormwater pump station and associated components. The main components of the stormwater pump station unit are:

- Off-line pollution control structure
- Trash rack
- Pump station and wet well
- Valve box
- Energy dissipator
- Electrical control panel
- Generator and Fuel Tank

By separating each of the components out, rather than placing them all within a centralized box, it allows for easier maintenance on a structure-specific basis. Numerous factors play a role in determining the size of the pump station and associated components. This includes limits on rate/volume of receiving water body, conveyance capacity of contributing systems, and size constraints for the pump station wet well. A pump station discharging to Biscayne Bay is recommended for the City to mitigate the projected impacts of the anticipated Mid-Range 2050 sea level and groundwater rise.

Although the primary elements of the stormwater pump station will be located underground, the electrical panel, generator, and fuel tank will need to be located above ground, with a minimum elevation of 6.5 ft-NAVD. This can create aesthetic challenges that will need to be addressed during the detailed design of these systems. Typically, landscaping is a viable option to partially shield the above ground components.

### 5.2.3 Backflow Preventer

Backflow preventers, also known as check valves, are devices that prevent the flow of water from one point backwards (negative) into a conveyance system, while still allowing for flow to continue in the positive direction. These devices are typically applied in conjunction with outfalls that discharge to water bodies and canal systems with high surface water profiles and/or high tide conditions. During positive flow discharge, these devices do increase the amount of head loss due to the pressure required to open the valve and reduced pipe diameter.

The recommended check valves are in-line backflow preventers. They minimize head losses and the possibility of being blocked or maintained opened by debris and marine growth. Several companies such as Red Valve, Inc.; WAPRO, Inc.; and others that manufacture these type of backflow preventers. **Figure 5.2.1** and **Figure 5.2.2** show typical in-line backflow preventer devices and how they operate.



Figure 5.2.1 – Typical in-line back-flow preventer installation

Typical in-line back-flow preventer installation



Figure 5.2.2 – Typical in-line back-flow preventer installation

### 5.2.4 Pollution Control Structures

Pollution control structures, such as CDS or Vortech units, are used to treat stormwater runoff in urban areas with limited right-of-way and/or poor soil infiltration rates. The units remove floatables, oil/grease, and reduce the total suspended solids (TSS) of the runoff prior to discharging to a waterbody or stormwater pump station wet well. The units do not reduce the total volume of water discharged to the outfall. Pollution control structures can

be designed as in-line or offline structures. Offline control structures allow for the bypass of the system during large flow events while still providing the required treatment volume. Units are designed to handle peak flow events. The pollution control structures suggested for this project are comprised of an inlet, diversion weir, offline pollution control structure, baffle, and outlet. The purpose of this pollution control structure is to remove floatable pollution and reduce Total Suspended Solids (TSS) before dispersing the water to the pump station before exiting into a nearby water body or, in this case, Biscayne Bay. This reduces the required maintenance needs of the pump station and improves the quality of stormwater discharges into the receiving waterbody.

Further analysis of these structures will be made during the design phase. **Figure 5.2.3** shows a schematic of the components of a vortex structure.

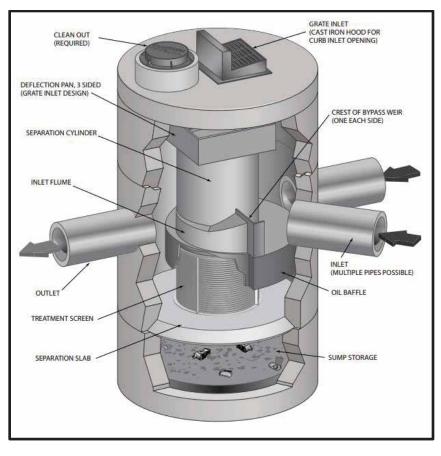


Figure 5.2.3 – Vortex Pollution Control Structure Schematic

### 5.2.5 Raised Crown of Road

The current roadway system in the Shore Crest area has sections where the crown of road is well below current high tide conditions, and in some cases well below the projected 2050 DHW elevation. These low elevations cause areas to experience extreme flooding during high tide events without any rainfall, otherwise known as "sunny day flooding." To reduce large amounts of flooding it is important to route the water from areas at high

elevations to areas of low elevations where inlet drainage structures can be found. By increasing the road crown and placing inlets on either side of the road, flooding can be routed from the road to newly created low-lying inlets to a main trunk line where it will eventually be pumped out into Biscayne Bay through the proposed stormwater pump station explained above.

Standard City grates and inlets will be located on both sides of the road to divert the water into an 18" pipe that is connected to a central trunk line of various dimensions depending on the current level of flooding or contributing runoff in the area. A manhole connecting the structures allows for easier maintenance access. Further detailed pipe analyses will need to be done during the design phase. Roads will be raised through a process of milling the asphalt and filling to the desired elevation with black base (FDOT B-12.5) to protect against the high groundwater table and overlaying with one inch of FDOT Type S-III asphalt. In areas that require a rise of more than nine inches, a combination of limerock, black base, and asphalt will be used to reach the desired elevation. **Figure 5.2.4** shows a profile of a typical raised crown of road and the added drainage. **Appendix 5B** also shows this detail.

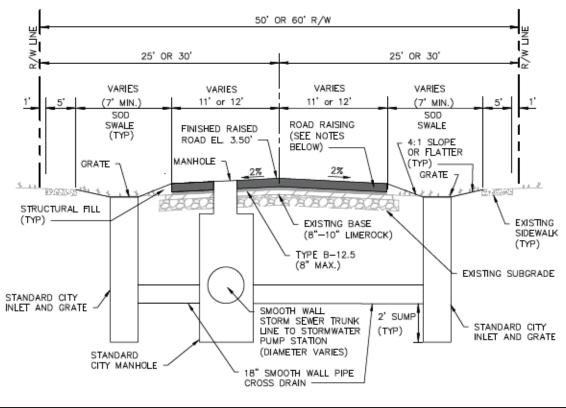


Figure 5.2.4 – Raised Crown of Road and Added Drainage Profile

### 5.3 Capital Improvement Projects

### 5.3.1 General

Prior to analyzing additional/proposed stormwater infrastructure and other capital improvements, the region's topography was examined. Since the DHW elevation

estimation for 2050 is above the road elevation in many areas, an analysis of raising the roads to elevation 3.5 ft-NAVD was conducted. It was determined that it is not unrealistic for many areas to have roads raised to elevation 3.5 ft-NAVD, however more detailed analysis will need to be carried-out during the design phase, especially to look at harmonization possibilities. **Figure 5.3.1** shows the existing topographic elevations within the project area. **Appendix 5B** contains maps outlining the areas within the roadways that will need to be raised.

Next, the best location for the installation of the pump station was determined to be Little River Pocket Mini Park due to City-ownership, proximity to the water, and low-elevation of the surrounding stormwater system and roads. **Figure 5.3.1** also shows the existing elevations and location of the Little River Pocket Mini Park.

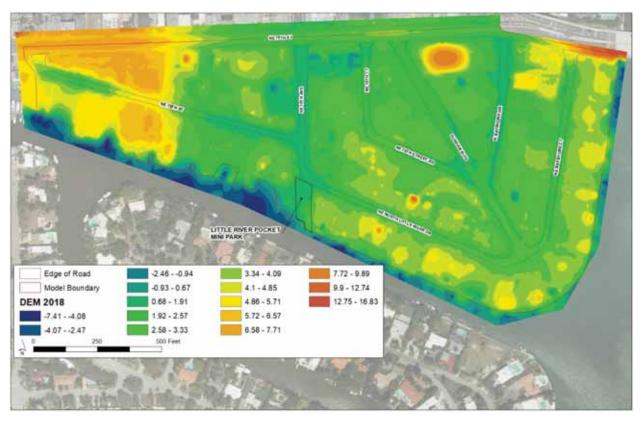


Figure 5.3.1 – Existing Condition DEM

### 5.3.2 Mid-Range (2050) Planning Horizon Capital Improvements

Capital improvements for the Mid-Range (2050) Planning Horizon include increased stormwater pipe sizes, expanded stormwater pipe infrastructure reach, a stormwater pump station with pollution control structure, raised road elevations, grouting of select existing outfalls, raised seawall, and backflow preventers on existing private gravity outfalls.

Roads were raised in the model by burning a new elevation of 3.5 ft-NAVD onto the existing condition digital elevation model (DEM). Seawalls were also "burned" into the

existing condition DEM so that stages from the Biscayne Bay boundary stage line in the model do not overtop into the Shore Crest Study region. **Figure 5.3.2** shows the altered DEM for the Mid-Range Planning Horizon modeling efforts.

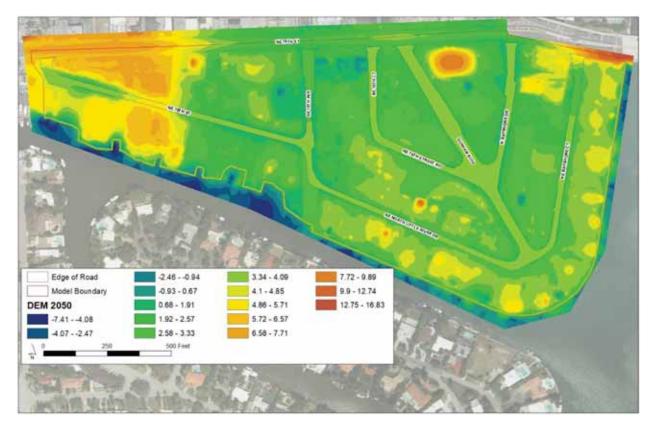


Figure 5.3.2 – Edited DEM with Raised Roads and Seawalls for Mid-Range 2050 Scenario Model

Iterations of the capital improvements within the ICPR4 model were performed by increasing pump capacity, increasing pipe sizes, and expanding and interconnecting the pipe network, in order to accommodate the projected 2050 sea level and groundwater rise. These iterations of increasing the stormwater infrastructure capacity were performed until the roads were no longer flooded for the 5-year, 1-day storm event, and structural flooding was eliminated (as much as feasible) for the 100-year, 3-day storm event. The ICPR4 final infrastructure node-link schematic is depicted in **Appendix 5C**.

The finished floor elevation for several structures is lower than the predicted 2050 DHW elevation (2.44 ft-NAVD). Since pumping groundwater due to sea level rise is not possible, several homes will still show as flooded and the *Level of Service Flood Protection Severity Score* (LOS FPSS) will not be able to be reduced to zero.

### *5.3.2.1* Mid-Range (2050) Planning Horizon Stormwater Management Elements and Conceptual Design

The conceptual design drains all of the roads within the model boundary to a proposed 80,000 gallons per minute (GPM) pump station. This pump station will be located within the Little River Pocket Mini Park parcel that is owned by the City. A conceptual schematic

of the pump station within the park is depicted in **Appendix 5D**. Inlets on each side of the road and raised road elevations work to mitigate street flooding. Two existing City outfalls will be blocked to maintain discharge through the pump station forcemain and prevent recirculation of water. Backflow preventers were added to each of the private and FDOT outfalls to prevent ocean water from flowing onto the roads during high tide events. A raised seawall with an elevation equivalent to the 2050 high tide elevation of 3.78 ft-NAVD protects the study area from seawall overtopping.

Pump station operating criteria was determined from the Design High Water (DHW) elevation, as well as the lowest invert of the system. The pump-on elevation was set slightly higher the 2050 DHW elevation at 2.45 ft-NAVD. The pump-off elevation was set 1-ft below the lowest pipe invert of the system at -6 ft-NAVD in order to dry-out the system before turning-off. In addition, the pump station will be designed to incorporate a rain sensor so that when the first sign of a rainfall event is detected, the pumps will turn on to empty the drainage system of any water in the system. The pump station design and headlosses throughout the system and on/off elevations should will be more closely examined during the detailed design phase. **Appendix 5E** shows the node and link maximum conditions for the ICPR4 model with the Mid-Range solutions in place.

A pump station discharging to injection wells was examined and determined to provide no net benefit up stream of the pump station, while incurring a higher construction cost. The FDEP limits the amount of allowable head on injection wells at elevation 6.5 ft-NAVD. This severely limits the capacity of wells. To compound this matter, when pumping freshwater into a well east of the salinity line, the pressure needs to overcome the freshwater/saltwater barrier caused by the density difference. This accounts for a 1.5 ft headloss, thus further reducing the achievable head on the wells. The elevation at which water starts to flow into the wells is 3.94 ft-NAVD versus the DHW of 2.44 ft-NAVD. Figure 5.3.3 below shows the elements of the proposed capital improvements for the<br/>planningMid-Range(2050)planninghorizon.

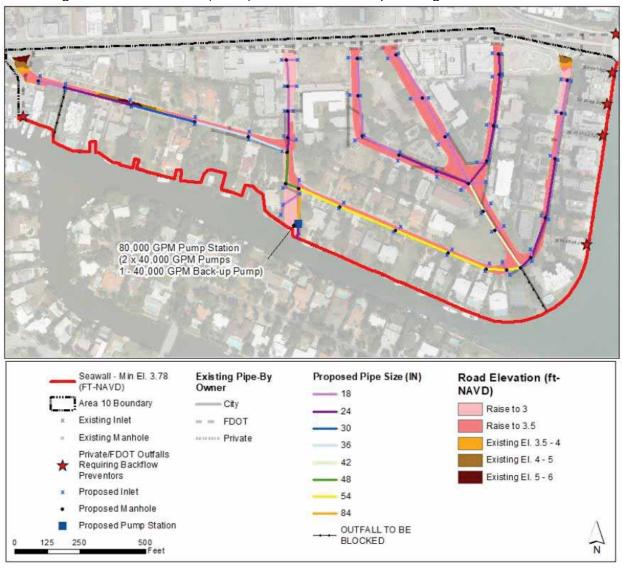


Figure 5.3.3 – Mid-Range Planning Horizon (2050) Capital Improvements

### 5.3.2.2 Flood Reduction Benefits

Both the 5-year, 1-day and the 100-year, 3-day design storm events were modeled with the mid-range planning horizon capital improvements. The inundation maps in **Figure 5.3.4** show the results of the modeling of both scenarios.

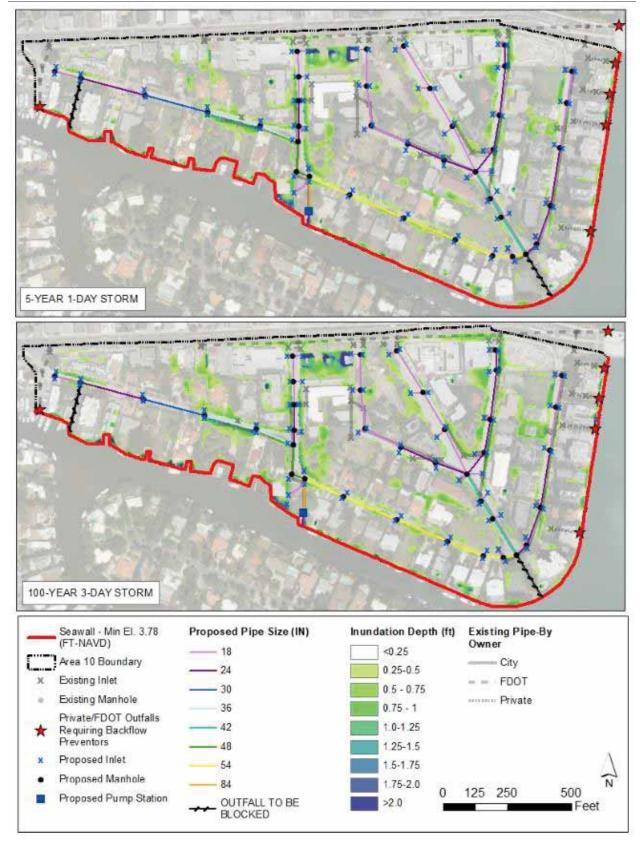


Figure 5.3.4 – Inundation Maps for Mid-Range Capital Improvements Modeling

For the Mid-Range planning horizon, the infrastructure improvements within the study area are not predicted to lower the Flood Protection Severity Score (FPSS). As outlined in TM 2 (**Section 4.0**), the FPSS for the existing conditions is 17.1 due to 0.4 miles of roadway and four buildings being flooded; for the Mid-Range planning horizon, the FPSS is increased to 28.0. This increase is primarily due to six structures having estimated finished floor elevations lower than the 2050 DHW elevation of 2.44 ft-NAVD. Due to the extent of flooding within the properties, the FPSS increases even though the roadway flooding has been eliminated. Since pumping groundwater is not possible, these low-lying structures will have to be abandoned or have their finished floor elevation raised in the future. **Appendix 5F** shows the detailed calculation of the Mid-Range planning horizon FPSS.

As shown in the FPSS calculations, the street flooding was essentially eliminated by the proposed stormwater improvement projects except a very small segment of N. Bayshore Drive at its intersection with NE 79<sup>th</sup> Street shows a negligible amount of flooding. **Figure 5.3.5** shows the buildings that are flooded, along with the flooding exceedance during the 100-year, 3-day storm event with predicted 2050 conditions.



Figure 5.3.5 – Predicted 2050 Level of Service with Proposed Capital Improvements

**Appendix 5G** contains inundation maps for the 5-year, 1-day and 100-year, 3-day design storms for the study area showing the 2050 tide and rainfall conditions with the mid-range planning horizon infrastructure in place.

### 5.3.3 Short-Term (Existing Conditions) Planning Horizon Capital Improvements

For the short-term solutions, elements of the mid-range conceptual project that could be separated out were examined. Viability was based on future available funding and the ability to be constructed within the next two fiscal years with available funding.

Figure 5.3.6 shows the altered DEM for the Mid-Range Planning Horizon modeling efforts.

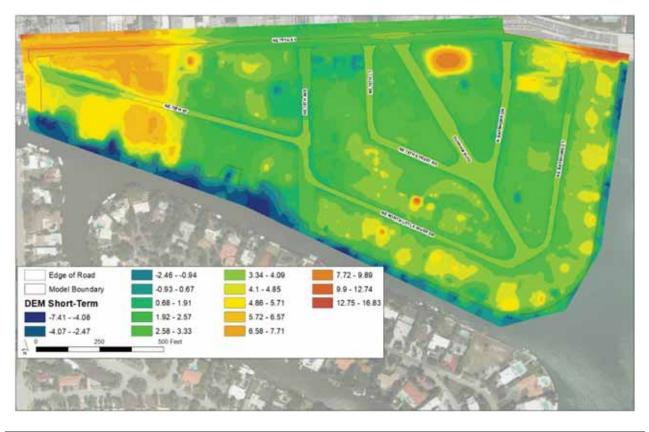


Figure 5.3.6 – Edited DEM with Raised Roads for Short-Term Scenario Model

### *5.3.3.3* Short-Term (Existing Conditions) Planning Horizon Stormwater Management Elements and Conceptual Design

Several of the Mid-Range (2050) planning horizon capital improvements are able to be implemented in the short-term. They are as follows:

- Raising of the roads
- Expanded, interconnecting and upsized pipe network
- Backflow preventers on City, private, and FDOT outfalls

The improvements were then implemented into an ICPR4 model with the existing boundary conditions and existing DHW elevation in order to illustrate how constructing the short-term improvements will improve the flood protection LOS. The pump station and raising of the seawall were not included for this scenario. The ICPR4 node-link schematic for the Short-term scenario is depicted in **Appendix 5C** and the Node and Link maximum conditions are shown outlined in **Appendix 5H**. **Figure 5.3.7** below shows the details of the proposed capital improvements for the short-term planning horizon. The upsized outfall that will lead to the pump station in the Mid-range conditions will need to be optimized to a smaller diameter during the detailed design phase.

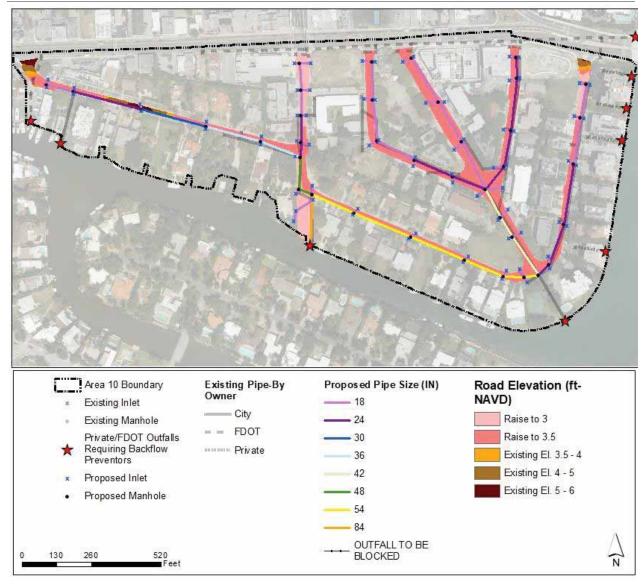
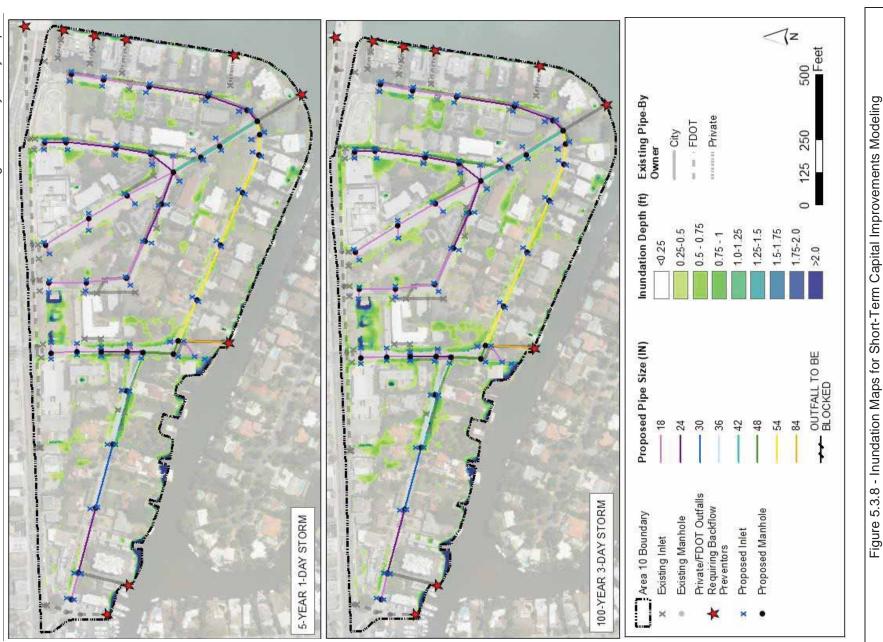


Figure 5.3.7 – Short-Term Planning Horizon Capital Improvements

### *5.3.3.4* Flood Reduction Benefits

**Appendix 5I** contains inundation maps for the 5-year, 1-day and 100-year, 3-day design storms for the study area showing current tide and rainfall conditions with the short-term planning horizon infrastructure in place. **Figure 5.3.8** shows the results of modeling both storm scenarios.



5-18

with current tide and rainfall conditions. projects but four buildings within the study area will still experience some level of flooding. The street flooding was eliminated by the proposed short-term stormwater improvement Figure 5.3.9 shows the buildings that are flooded during the 100-year, 3-day storm event



Figure 5.3.9 - Predicted Short-Term Level of Service with Proposed Capital Improvements

will be 0, and the FPSS will remain 0 until the DHW reaches 2.44 ft-NAVD. with the current DHW of 0.47 ft-NAVD, the FPSS or the short-term improvement project Modeling had an FPSS of 17.1. However, if we compare the existing finish floor elevation Improvements Modeling was calculated to be 16.0, while the Existing Conditions be eliminated even with the use of a pump station. The FPSS for the Short-Term Capital The houses flooded during the 100-year event sit below 2.44 ft-NAVD and flooding cannot

Appendix 5F shows the detailed calculation of the FPSS

# 5.4 Opinion of Probable Construction Costs

flooding of homes and buildings. assessed for its ability to mitigate the projected flooding associated with the estimated stormwater infrastructure components described in Section 5.2. Each project was model flooding within the roadways, while the 100-year, 3-day storm was used to model 2050 tide and groundwater rise conditions. The 5-year, 1-day storm event was used to As outlined in Section 5.3, the proposed projects consist of typically implemented

constructed within the City and ADA's own construction cost databases. The estimated cost for raising the crown of road is based on FDOT cost data assuming an average width Department of Transportation (FDOT) cost databases, costs from recent projects Planning-level cost estimates were developed for each project based on the Florida

of road of 23 feet. This cost considers the use of black base due to the high groundwater table as well as depth of Superpave SP-12.5 asphalt.

the Cost including the costs for maintenance of traffic, mobilization, clearing, permitting, and the preliminary contingency. **Appendix 5J** contains the detailed cost breakdown for both expenditures used in determining the price shown in the Opinion of Probable Construction Improvement Projects are provided in Table 5.4.1. Table 5.4.2 outlines the incidental The preliminary cost estimates for both the Short-Term and Mid-Range Short-Term and Mid-Range Cost Estimates Capital

|  | Short-Term Capital Improvement Projects | Mid-Range Capital Improvement Projects | Capital Improvement Projects Opinion o        | Table 5.4.1 – Opinion of Probable Construction Cost |
|--|---|--|---|---|
|  | \$4,421,658.06                          | \$12,788,425.56                        | <b>Opinion of Probable Construction Cost*</b> | action Cost   |

| 30%         | 5%  | 2%   | 7%              | 5%                        |
|-------------|---|--|-----------------|---------------------------|
| Contingency | Permitting  | Clearing                                       | Mobilization    | Maintenance<br>of Traffic |
| t           | Capital Cost Factors as Percentage of Total Material Cost | actors as Percentage                           | Capital Cost Fa |                           |
|             |   |  |                 |                           |
|             | ent Cost Factors  | Table 5.4.2 – Capital Improvement Cost Factors | Table 5.4       |                           |

and reduction of on-road storage. eliminate the chance of flooding the adjacent properties due to the higher road elevations the road creates low points on either side of the road; new inlets need to be installed to collection system, the road would need to be demolished and reconstructed. Raising of not practical to install one without the other. In order to install the modified stormwater the roads, while the other half is to upsize and interconnect the stormwater system. It is While the short-term improvements are expensive, almost half the capital cost is to raise

process the final design and permitting phases of the capital improvement plan implementation the Short-Term and Mid-Range solutions. These costs should be further refined during handling the effect of sea level rise by showing a cost to benefit ratio associated with both It should be noted that the planning-level cost estimate developed for this Shore Crest Drainage Feasibility Study is intended for use as a planning tool to help guide the City in

## 5.5 Conclusions and Recommendations

year, 1-day, and 100-year, 3-day events occurring in conjunction with the existing King tide and 2050 King tide events. The rainfall depths for the 2050 design storms were increased by 25 percent over existing condition to account for potential rising trend of improvement projects were analyzed for viability and cost effectiveness for both the 5-Utilizing the existing conditions 1D/2D model created, Short-Term and Mid-Range capital rainfall depth.

increased stormwater pipe sizes, expanded stormwater pipe infrastructure reach, added Required capital improvements for the Mid-Range (2050) Planning Horizon include

മ the FPSS is increased to 28.0, even with the implementation of the capital improvement adding backflow preventers within the private properties. For the 2050 planning horizon, owned, the City will need to pass ordinances that require the raising of the seawall and estimated cost of \$12,788,425.56. Since the vast majority of the seawall is privately raised the seawall to a minimum 3.78 ft-NAVD (the predicted King tide of 2050) at an the FPSS can be reduced to 0.0. properties will have to be abandoned or raised by 2050 as they will not be able to be projects due to several properties lying below the 2050 DHW of 2.44 ft-NAVD. These backflow preventers for select existing outfalls, grouted select existing outfalls protected from the groundwater rise. If the subject properties are abandoned or raised stormwater pump station, raised road elevations to a minimum 3.5 ft-NAVD, added and a

stormwater improvement project will be greatly reduced and will aid in addressing the survey has already being complete. Therefore, the design lead time for the short-term utility locates will need to be done prior to finalizing any design, but with the topographic solution to the flooding within the Shore Crest study area and provides the City time to private and FDOT outfalls, at an estimate cost of \$4,421,658.06. With the implementation of the short-term capital improvements, the FPSS with the DHW of 2.44 ft-NAVD is lowered to 16.0. At less than about a third of the cost of the Mid-Range Capital current flooding conditions implement the Mid-Range Capital Improvement Projects. Geotechnical investigations and interconnecting the stormwater pipe network; implemented in the short-term including raising of the roads; expanding, upsizing, and Several of the Mid-Range (2050) planning horizon capital improvements are able to be Improvement Project, the Short-Term Improvement Projects provide an immediate and installing backflow preventers on



### DATA COLLECTED FROM CITY OF MIAMI **APPENDIX 3A**



|   |                 | D                     | Data Acquisition Log | g             |               |   |
|---|-----------------|-----------------------|----------------------|---------------|---------------|---|
| Title   | Date            | Data Type             | Collected By         | Source        | Author        | Comments  |
| Current and Future Flood Protection Project Conceptual or     |                 |                       |                      |               |               |   |
| Design Plans within Shorecrest Area                           | 10/22/2018 pdf  | pdf                   | City of Miami        | City of Miami | City of Miami |   |
| Percolation Tests of nearby Geotechnical Investigations       | 10/22/2018 pdf  | pdf                   | City of Miami        | City of Miami | City of Miami | Information for 3 nearby borings were provided        |
| Photos/Aerials and video of Flooding During King Tide on      |                 | pdf, mp4, point       |                      |               |               |   |
| October 5, 2017   | 10/5/2017 cloud | cloud                 | City of Miami        | ALERT5        | ALERT5        |   |
| Flood Delineation during King Tide                            | 10/5/2017 pdf   | pdf                   | City of Miami        | City of Miami | City of Miami |   |
| Tidal Flood Prevention Action Plan Reports                    | unknown pdf     | pdf                   | City of Miami        | City of Miami | City of Miami |   |
| Repetative Loss Property Data                                 | unknown pdf     | pdf                   | City of Miami        | City of Miami | City of Miami | Received preliminary map but still awainging GIS Data |
|   |                 |                       |                      |               |               | Received preliminary flood map but are still awaiting |
| Drainage Complaints   | unknown pdf     | pdf                   | City of Miami        | City of Miami | City of Miami | actual flooding complaints                            |
| As-Builts of Drainage in Study Area                           | July 1958 pdf   | pdf                   | City of Miami        | City of Miami | City of Miami |   |
| City of Miami Storm Atlas Map                                 | 2/3/1988 pdf    | pdf                   | City of Miami        | City of Miami | City of Miami |   |
| Shore Crest Pilot Area "Stormwater Basin Maps"                | 10/1/2018 pdf   | pdf                   | City of Miami        | City of Miami | CDM Smith     |   |
| GIS - Stormwater Infrastructure                               | 8/13/2014 pdf   | pdf                   | City of Miami        | City of Miami | City of Miami |   |
|   |                 |                       |                      |               |               | Project No. B-30628 Bid Tabulation                    |
|   |                 | Excel                 |                      |               |               | Project No. B-78508 Bid Tabulation                    |
| Construction unit cost data for recently constructed projects | 11/8/2018       | 11/8/2018 Spreadsheet | City of Miami        | City of Miami | City of Miami | Project No. B-30524 Bid Tabulation                    |
| Repetitive Loss GIS Coverage                                  | 11/8/2018 shp   | shp                   | City of Miami        | City of Miami | City of Miami | HistoricClaims.shp                                    |

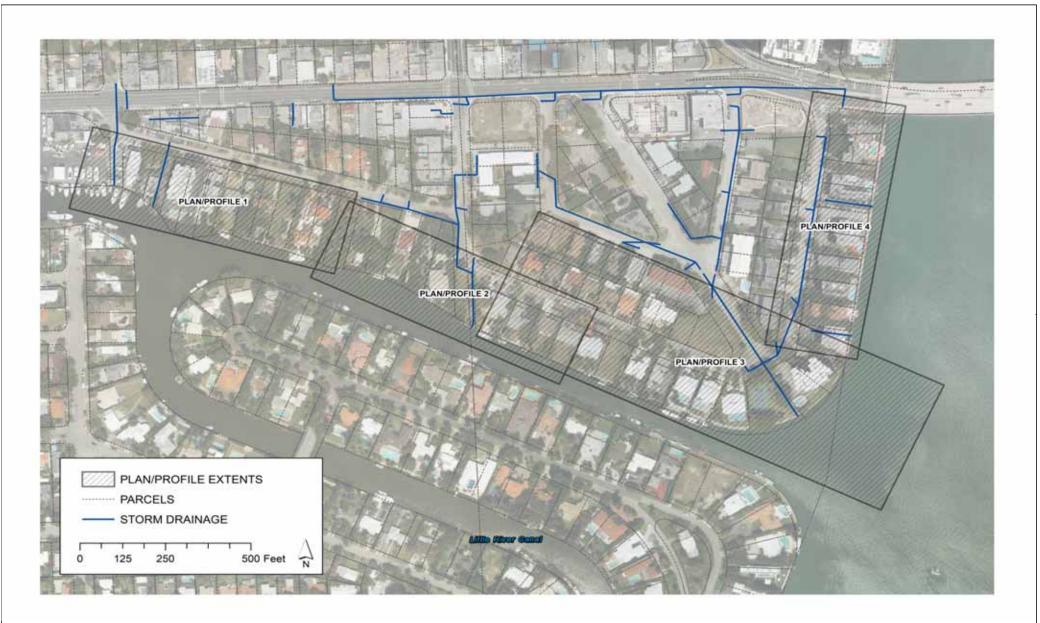
## DATA COLLECTED FROM OTHER AGENCIES **APPENDIX 3B**



|  |                      |           | Son understanding Fog | 201 200 |        |   |
|--|----------------------|-----------|-----------------------|---------|--------|---|
| Title  | Date                 | Data Type | Collected By          | Source  | Author | Comments  |
|  | 1 0 1 0 C / C / F F  | 5         |                       |         |        | http://mu.fumed.gov/dhhud.molool/chour.dhhuu.info.moin.monu |
| Ve built Dlage for Drojoete Adjacont to Study Aroa                 |                      |           |                       |         |        |   |
| היש אמוויר דומווש וסיד דוסן כנוש המומכנוור ניס שנממץ הויכמ         |                      |           |                       |         |        |   |
| 1. Bridge Repair and Rehabilitation for Bridge 870082 & 870554     |                      |           |                       |         |        |   |
| Over Intracoastal Waterway   | 10/5/1999 pdf        | df        | ADA                   | FDOT    | FDOT   |   |
| 2. Bridges 870550 & 870084 Over Biscayne Bay                       | 1/23/2015 pdf        | df        | ADA                   | FDOT    | FDOT   |   |
| 3. NE 79th From East of N. Bayshore Drive to Bay Dr. West          | 1/22/2015 pdf        | df        | ADA                   | FDOT    | FDOT   |   |
| Outfall Assessment TWO #14 Report                                  | Feb. 18 pdf          | df        | ADA                   | FDOT    | APCTE  | Only provides information on public outfalls                |
| Key Biscayne Tide Station Information (Station ID: 8723214)        | 11/7/2018            |           | ADA                   | NOAA    | NOAA   | http://tidesandcurrents.noaa.gov/gmap3/                     |
| UIC Class V Well Data for Wells in Study Area                      | Nov. 2018 GIS Viewer | IS Viewer | ADA                   | FDEP    | FDEP   | http://geodata.dep.state.fl.us/                             |
| Miami-Dad Sea Level Rise Task Force Report and                     |                      |           |                       |         |        |   |
| Recommendations (July 2014)  | July 2014 pdf        | df        | ADA                   | *       | *      | *Southeastern Florida Regional Climate Change Compact       |
| Final Rainfall Intensity, Duration, and Fequency Projections Based |                      | 5         | >                     |         |        |   |

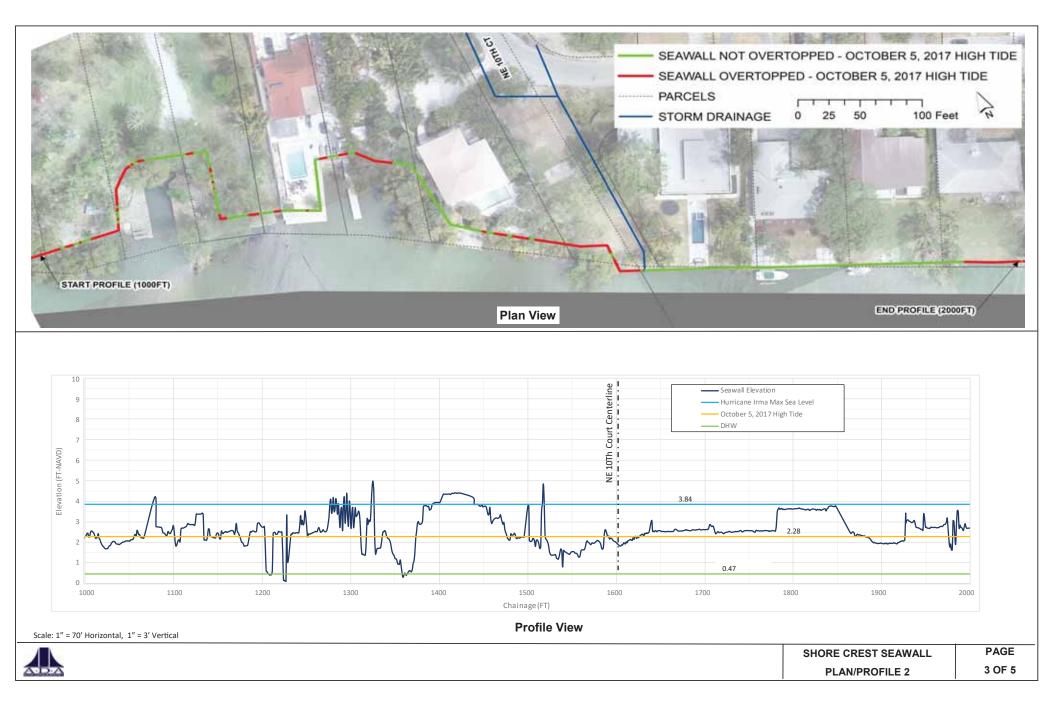
## SHORE CREST SEAWALL PROFILE FIGURES **APPENDIX 4A**

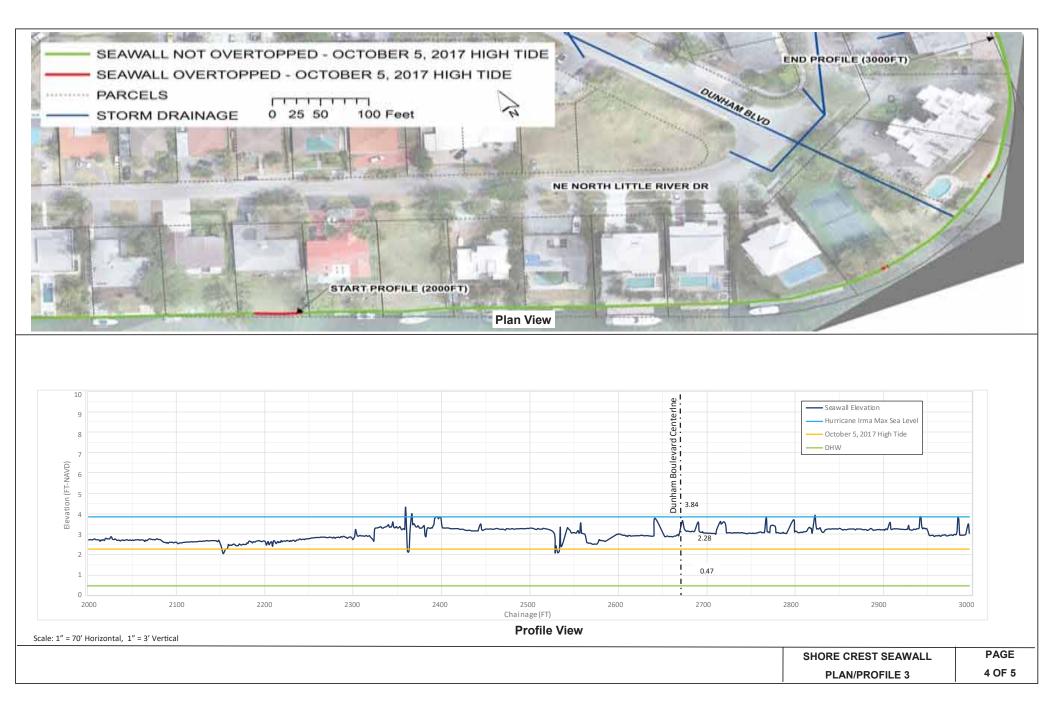


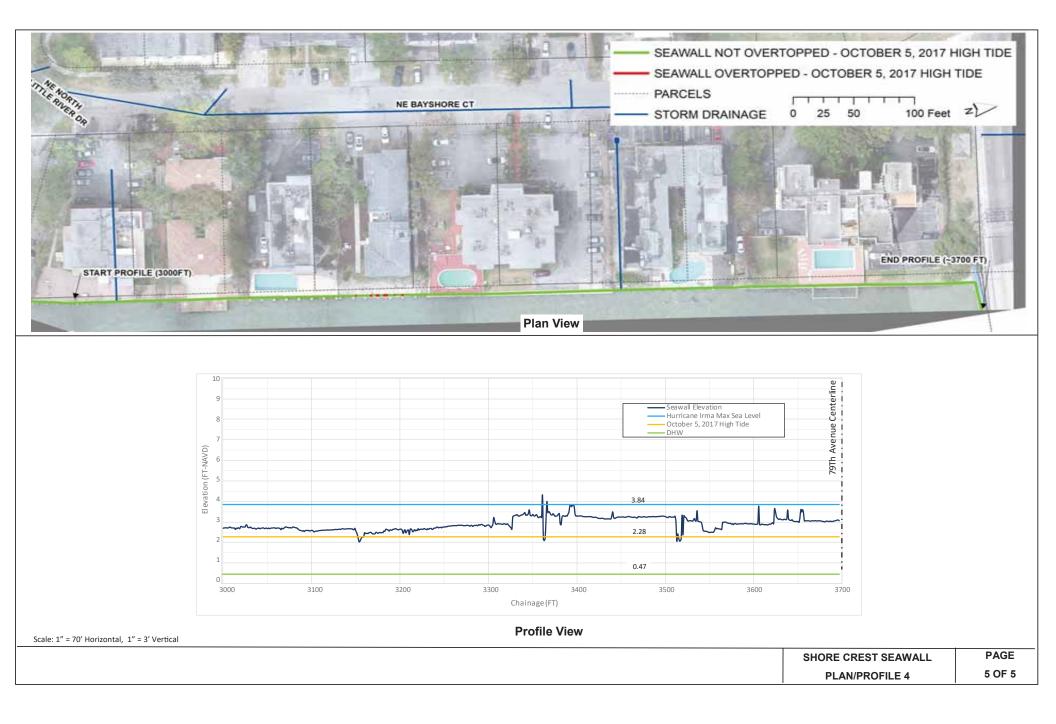


|       | SHORE CREST SEAWALL | PAGE   |
|-------|---------------------|--------|
| A:D:A | KEY SHEET           | 1 OF 5 |









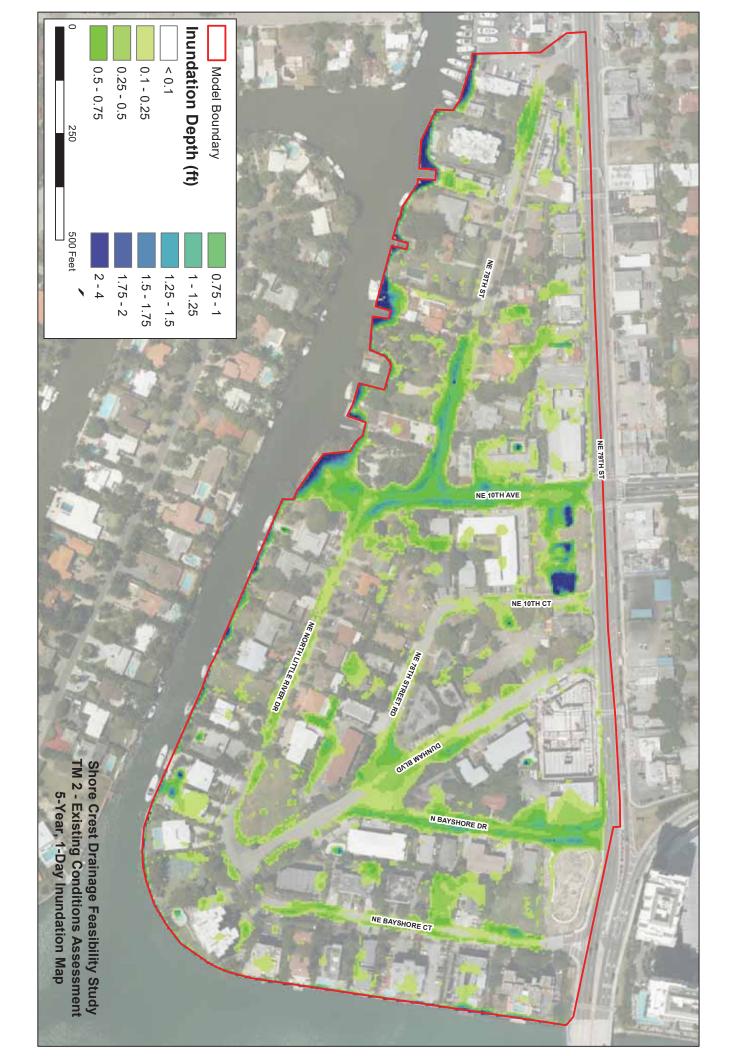
### VALIDATION MODEL INUNDATION MAPS **APPENDIX 4B**

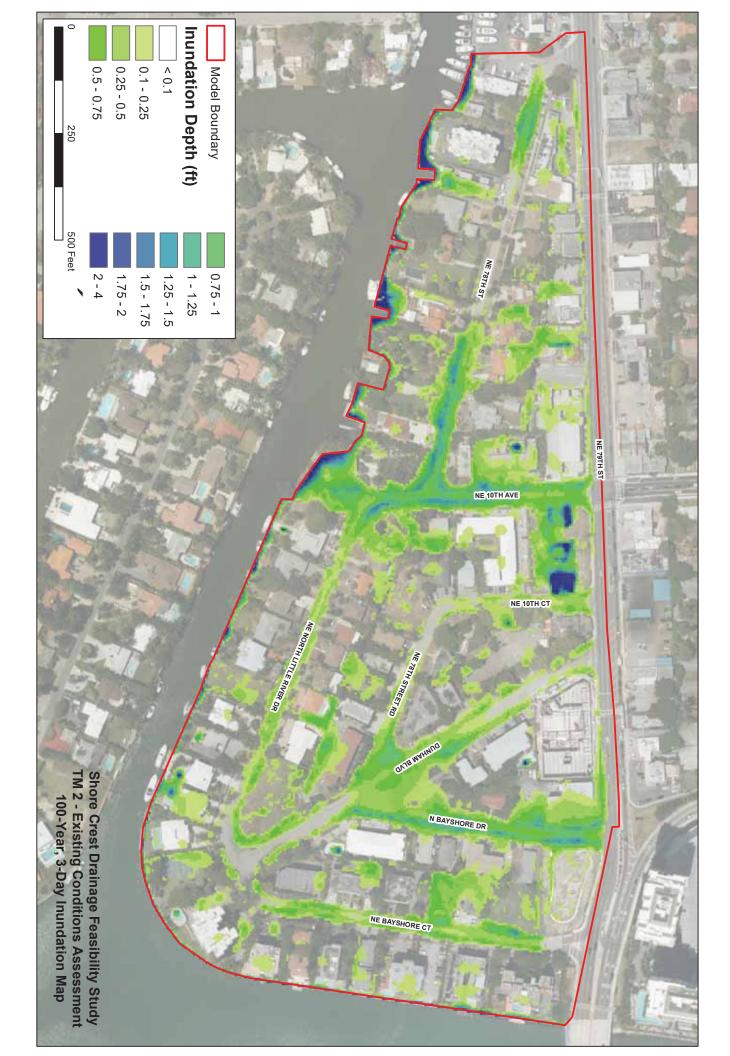




## DESIGN STORM MODEL INUNDATION MAPS **APPENDIX 4C**







# FLOOD PROTECTION LEVEL OF SERVICE MAP AND CALCULATIONS **APPENDIX 4D**





#### Shore Crest Drainage Feasibility Study TM 2 - Existing Conditions Assessment Flood Protection Level of Service Calcuations

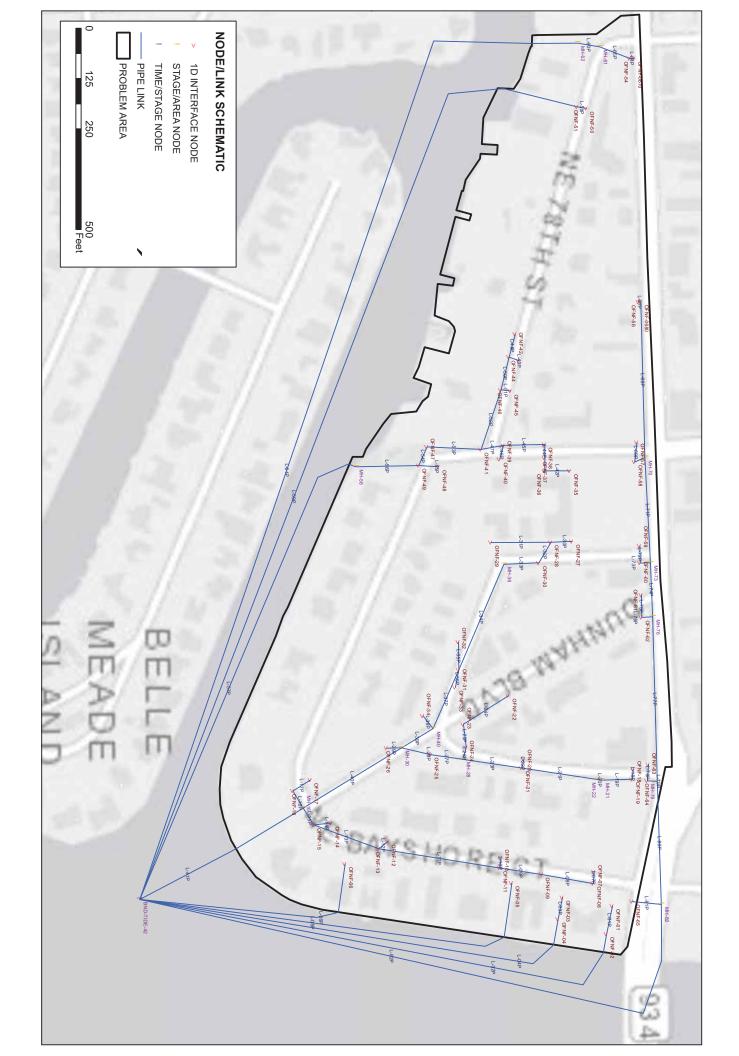
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| Π       | SI                    | SI:               |           |
|---------|-----------------------|-------------------|-----------|
| 37.40   | Study Area<br>(Acres) | Shore Crest       |           |
| 16      | Score                 | 4 Weighing Factor | NS        |
| 1.10    | Score                 | 2 Weighing Factor | MCLRS     |
| 17.10   | FPSS                  | Scores            | Composite |
| 989     | COUNT EXC 0           |                   |           |
| 4       | COUNT EXC 1           |                   |           |
| 0       | COUNT EXC 2           | -                 | ~         |
| 0       | COUNT EXC 3           | N.                | ō         |
| 566     | Total<br>Structures   |                   |           |
| 4       | ΣEi*NS                |                   |           |
| 1.16    | MCLRS 0               |                   |           |
| 1227.00 | COUNT EXC 0           |                   |           |
| 0.24    | MCLRS 1               |                   |           |
| 255.00  | COUNT EXC 1           |                   |           |
| 0.16    | MCLRS 2               | IVI               | 2         |
| 168.00  | COUNT EXC 2           | NICERS            | 71 DC     |
| 0.00    | MCLRS 3               |                   |           |
| 3.00    | COUNT EXC 3           |                   |           |
| 1.57    | Total Miles           |                   |           |
| 0.57    | ∑Ei*MCLRS             |                   |           |
|         |                       |                   |           |

12/18/2018

# **EXISTING CONDITIONS MODEL NODE/LINK SCHEMATIC APPENDIX 4E**





## EXISTING CONDITIONS MODEL INPUT REPORTS **APPENDIX 4F**



| Manning's N: 0.0000  |  |
|--|--|
| Comment: No data, downstream outfall no access. Assumed pipe size. Assumed Invert = Ground El - 3 FT Cover - Pipe Diameter | El - 3 FT Cover - Pipe Diameter  |
|  |  |
| Instraam   | Downetroam   |
| Invort: 0 E0 ft  | Invort: 0 E0 ft  |
| Invert: -0.50 It   | • •  |
| Manning's N: 0.0240  | Manning's N: 0.0240  |
|  |  |
| Geometry: Circular   | Geometry: Circular   |
| Geometry: Circular<br>Max Depth: 1.00 ft   | Geometry: Circular<br>Max Depth: 1.00 ft   |
|  | Geometry: Circular<br>Max Depth: 1.00 ft<br>Bottom Clip  |
|  | Geome<br>Max Depth<br>Default  |
|  | Geome<br>Max Depth<br>Default<br>Op Table  |
|  | Geome<br>Max Depth<br>Default<br>Op Table<br>Ref Node  |
|  | Geome<br>Max Depth<br>Default<br>Op Table<br>Ref Node<br>Ranning's N                           |
| Ť  | Max Depth<br>Default<br>Op Table<br>Ref Node<br>Manning's N                                    |
| T.   | Max Depth<br>Default<br>Op Table<br>Ref Node<br>Manning's N<br>Default                         |
| <b>-</b>   | Max Depth<br>Default<br>Op Table<br>Ref Node<br>Manning's N<br>Default                         |
|  | Max Depth<br>Default<br>Op Table<br>Ref Node<br>Manning's N<br>Default<br>Op Table<br>Ref Node |
| ne l   | id pipe size. Assumed Invert = Ground  |

| Dommont. No data Acc  | him a him a him a him a      | In the Destinated of the Disconting Disconting   | , , , , , , , , , , , , , , , , , , , |
|-----------------------|------------------------------|--|---------------------------------------|
|                       | suttied pipe size. Assuttied | continent: No data: Assumed pipe size: Assumed invert = Ground EF-3 FT Cover - Fipe Diameter                               |                                       |
| 1                     |                              |  | 4                                     |
|                       |                              |  |                                       |
| Pipe Link: L-02P      |                              | Upstream   | Downstream                            |
| Scenario:             | Existing Conditions          | Invert: -0.50 ft   | Invert: -0.50 ft                      |
| From Node:            | OFNF-02                      | Manning's N: 0.0240  | Manning's N: 0.0240                   |
| To Node:              | BND-TIDE-42                  | Geometry: Circular   | Geometry: Circular                    |
| Link Count:           | `                            | Max Depth: 1.00 ft   | Max Depth: 1.00 ft                    |
| Flow Direction:       | Both                         | E  | Bottom Clip                           |
| Damping:              | 0.0000 ft                    | Default: 0.00 ft   | Default: 0.00 ft                      |
| Length:               | 48.00 ft                     | Op Table:  | Op Table:                             |
| FHWA Code:            | 0                            | Ref Node:  | Ref Node:                             |
| Entr Loss Coef:       | 0.50                         | Manning's N: 0.0000  | Manning's N: 0.0000                   |
| Exit Loss Coef:       | 1.00                         |  | Top Clip                              |
| Bend Loss Coef:       | 0.00                         | Default: 0.00 ft   | Default: 0.00 ft                      |
| Bend Location:        | 0.00 ft                      | Op Table:  | Op Table:                             |
| Energy Switch:        | Energy                       | Ref Node:  | Ref Node:                             |
|                       |                              | Manning's N: 0.0000  | Manning's N: 0.0000                   |
| Comment: No data, dov | wnstream outfall no access.  | Comment: No data, downstream outfall no access. Assumed pipe size. Assumed Invert = Ground El - 3 FT Cover - Pipe Diameter | ind El - 3 FT Cover - Pipe Diameter   |

| Comment: No data. Assumed pipe size  | Ţ                   | Energy Switch: Energy | Bend Location: 0.00 ft | Bend Loss Coef: 0.00 | Exit Loss Coef: 0.00 | Entr Loss Coef: 0.50 | FHWA Code: 0 | Length: 70.91 ft | Damping: 0.0000 ft | Flow Direction: Both | Link Count: 1      | To Node: OFNF-02<br>Link Count: 1        |   |   |   |
|--|---------------------|-----------------------|------------------------|----------------------|----------------------|----------------------|--------------|------------------|--------------------|----------------------|--------------------|--|---|---|---|
| Comment: No data. Assumed pipe size. Assumed Invert = Ground El - 3 FT Cover - Pipe Diameter | Manning's N: 0.0000 | Ref Node:             | Op Table:              | Default: 0.00 ft     |                      | Manning's N: 0.0000  | Ref Node:    | Op Table:        | Default: 0.00 ft   | B                    | Max Depth: 1.00 ft | Geometry: Circular<br>Max Depth: 1.00 ft | Manning's N: 0.0240<br>Geometry: Circular<br>Max Depth: 1.00 ft | Man   | Man   |
| ieter  | Manning's N: 0.0000 | Ref Node:             | Op Table:              | Default: 0.00 ft     | Top Clip             | Manning's N: 0.0000  | Ref Node:    | Op Table:        | Default: 0.00 ft   | Bottom Clip          | Max Depth: 1.00 ft | Geometry: Circular<br>Max Depth: 1.00 ft |   | Invert: -0.50 ft<br>Manning's N: 0.0240<br>Geometry: Circular<br>Max Depth: 1.00 ft | Downstream<br>Invert: -0.50 ft<br>Manning's N: 0.0240<br>Geometry: Circular<br>Max Depth: 1.00 ft |

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|             |                        | 0.0000  | Manning's N·  |                               |                      |
|-------------|------------------------|---|---|-------------------------------|----------------------|
|             |                        |   | Ref Node:   | Energy                        | Energy Switch:       |
|             | Op Table:              |   | Op Table:   | 0.00 ft                       | Bend Location:       |
| 0.00 ft     |                        | 0.00 TT   | Default:  | 0.00                          | Bend Loss Coef:      |
| 2           |                        |   |   | 1.00                          | Exit Loss Coef:      |
| 0.0000      | Manning's N:           | 0.0000  | Manning's N:  | 0.50                          | Entr Loss Coef:      |
|             |                        |   | Ref Node:   | 0                             | FHWA Code:           |
|             | Op Table:              |   | Op Table:   | 121.50 ft                     | Length:              |
| 0.00 ft     | Default:               | 0.00 ft   | Default:  | 0.0000 ft                     | Damping:             |
|             |                        | Bottom Clip   |   | Both                          | Flow Direction:      |
| 1.00 ft     |                        | 1.00 ft   | Max Depth:  |                               | Link Count:          |
| /: Circular | <u> </u>               | y: Circular   | Geometry:   | BND-TIDE-42                   | To Node:             |
| 0.0240      |                        | 0.0240  | Manning's N:  | OFNF-06                       | From Node:           |
| -1.00 ft    | Invert: -1.00          | ert: -1.00 ft   | Invert:   | Existing Conditions           | Scenario:            |
| m           | Downstr                | ro<br>Du<br>Du<br>Du<br>Du<br>Du<br>Du<br>Du<br>Du<br>Du<br>Du<br>Du<br>Du<br>Du  | llnst   |                               | link · I_06P         |
|             |                        | o access (Survey)   | Comment: 12" RCP, -1.18 Inv. El. upstream, downstream Inv. El. outrall no access (Survey) | 8 INV. EI. upstream, dov      | nent: 12" RCP, -1.1  |
| 0.0000      | Manning's N: (         | 0.0000  | Manning's N:  |                               |                      |
|             |                        |   | Ref Node:   | Energy                        | Energy Switch:       |
|             | Op Table:              |   | Op Table:   | 0.00 ft                       | Bend Location:       |
| 0.00 ft     | Default:               | 0.00 ft   | Default:  | 0.00                          | Bend Loss Coef:      |
|             |                        | Top Clip  |   | 1.00                          | Exit Loss Coef:      |
| 0.0000      |                        | 0.0000  | Manning's N:  | 0.50                          | Entr Loss Coef:      |
|             | Ref Node:              |   | Ref Node:   | 0                             | FHWA Code:           |
|             |                        |   | Op Table:   | 137.50 ft                     | Length:              |
| 0.00 ft     | Default:               | 0.00 ft   | Default:  | 0.0000 ft                     | Damping:             |
|             |                        | Rottom Clin   |   | -<br>Both                     | Flow Direction:      |
| 1 00 ft     | Max Denth: 7           | (Denth: 1.00 ft   | Max Denth:  | 1<br>1                        | Link Count:          |
|             |                        | r. Circular   | Ivia II III y s IV.   |                               | To Node:             |
|             |                        |   |   |                               | Erom Nodo:           |
|             |                        | Upsiream  | Isdn  |                               | Pipe LINK: L-USP     |
|             |                        |   |   |                               |                      |
|             |                        | כטווווזינדונ, ועס עמזמ, עטעעוזאניפמות טעוזמו דוס מככבאא. אאאווזיבע עועבי אאאטוויבע ווזינדו – סוסעוזע בר - ס דד כטעימי - דוףב שמוויבינפו | ss. Assumed pipe size. Ass  | וואנו במוווי טענומוו דוט מככב | וכוונ. ועס עמומ, עסא |
| 0.0000      | B ET Covor Dipo Diamot | 0.0000  | Manning's N:  | netroam outfall no accou      | oont: No data dow    |
|             |                        |   | Ret Node:   | Energy                        | Energy Switch:       |
|             | Op Table:              |   | Op Table:   | 0.00 ft                       | Bend Location:       |
| 0.00 ft     | Default: (             | 0.00 ft   | Default:  | 0.00                          | Bend Loss Coef:      |
|             |                        | Top Clip  |   | 1.00                          | Exit Loss Coef:      |
| 0.0000      |                        | 0.0000  | Manning's N:  | 0.50                          | Entr Loss Coef:      |
|             | Ref Node:              |   | Ref Node:   | 0                             | FHWA Code:           |
|             |                        |   | Op Table:   | 65.50 ft                      | Length:              |
| 0.00 ft     | Default:               | 0.00 ft   | Default:  | 0.0000 ft                     | Damping:             |
|             |                        | Bottom Clip   |   | Both                          | Flow Direction:      |
| 1.00 ft     | Max Depth:             | 1.00 ft   | Max Depth:  | 1                             | Link Count:          |
| v. Circular | Geometry:              | Geometry: Circular  | Geometri<br>Geometri  | DINI-U4<br>RND-TIDE-42        | To Node:             |
| 0700        |                        | 01000   | Manning's N:  | DENIE DA                      | From Nodo:           |
|             |                        |   |   |                               |                      |

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|                  | Ref Node:         |   | Ref Node:                       |                         |                         |
|------------------|-------------------|---|---------------------------------|-------------------------|-------------------------|
|                  | Op Table:         |   | Op Table:                       | Energy                  | Energy Switch:          |
| 0.00 ft          | Default:          | 0.00 ft   | Default:                        | 0.00 ft                 | Bend Location:          |
|                  |                   | Top Clip  |                                 | 0.00                    | Bend Loss Coef:         |
| 0.0000           | Manning's N:      | 0.0000  | Manning's N:                    | 0.10                    | Exit Loss Coef:         |
|                  | Ref Node:         |   | Ref Node:                       | 0.50                    | Entr Loss Coet:         |
|                  |                   |   |                                 |                         | FHWA Code:              |
| 0.00 ft          | Default:          | 0.00 ft   | Default:                        | 105.87 tt               | Length:                 |
|                  | l                 | Bottom Clip   |                                 | 0.0000 ft               | Damping:                |
| 1.50 ft          | Max Width:        | 1.50 ft   | Max Width:                      | Both                    | Flow Direction:         |
| 0.92 ft          | Max Depth:        | 0.92 ft   | Max Depth:                      | ,<br>:                  | Link Count:             |
| Structural Plate |                   | Structural Plate  | Geometry: Arch Structural Plate | OFNE-11                 | To Node:                |
| 0.0240           |                   | 0.0240  | Manning's N:                    | OFNF-09                 | From Node:              |
| -3.16 ft         | Invert:           | -3.17 ft  | Invert:                         | Existing Conditions     | Scenario:               |
| Downstream       | Downs             | ream  | Upstream                        |                         | Pipe Link: L-09P        |
|                  |                   |   |                                 |                         |                         |
|                  | -5066, July/1958) | Comment: Inv. El. (Survey) & 18"x11" corrugated metal pipe-arches (As-built: Haynsworth Village DR-5066, July/1958) | d metal pipe-arches (As-bu      | ey) & 18"x11" corrugate | Comment: Inv. El. (Surv |
| 0.0000           | Manning's N:      | 0.0000  | Manning's N:                    |                         |                         |
|                  | Ref Node:         |   | Ref Node:                       |                         |                         |
|                  | Op Table:         |   | Op Table:                       | Energy                  | Energy Switch:          |
| 0.00 ft          | Default:          | 0.00 ft   | Default:                        | 0.00 ft                 | Bend Location:          |
|                  | lip               | Top Clip  |                                 | 0.00                    | Bend Loss Coef:         |
| 0.0000           | Manning's N:      | 0.0000  | Manning's N:                    | 0.10                    | Exit Loss Coef:         |
|                  | Ref Node:         |   | Ref Node:                       | 0.50                    | Entr Loss Coef:         |
|                  | Op Table:         |   | Op Table:                       | 0                       | FHWA Code:              |
| 0.00 ft          | Default:          | 0.00 ft   | Default:                        | 128.77 ft               | Length:                 |
|                  | Clip              | Bottom Clip   |                                 | 0.0000 ft               | Damping:                |
| 1.50 ft          | Max Width:        | 1.50 ft   | Max Width:                      | Both                    | Flow Direction:         |
| 0.92 ft          | Max Depth:        | 0.92 ft   | Max Depth:                      | _                       | Link Count:             |
| Structural Plate | Geometry: Arch    | Structural Plate  | Geometry: Arch Structural Plate | OFNF-09                 | To Node:                |
| 0.0240           | Manning's N:      | 0.0240  | Manning's N:                    | OFNF-08                 | From Node:              |
| -3.17 ft         | Invert:           | -2.95 ft  | Invert:                         | Existing Conditions     | Scenario:               |
| Downstream       | Downs             | ream  | Upstream                        |                         | Pipe Link: L-08P        |
|                  |                   |   |                                 |                         | •                       |
|                  |                   |   |                                 |                         |                         |
|                  | -5066, July/1958) | Comment: Inv. El. (Survey) & 18"x11" corrugated metal pipe-arches (As-built: Haynsworth Village DR-5066, July/1958) | d metal pipe-arches (As-bu      | ey) & 18"x11" corrugate | Comment: Inv. El. (Surv |
| 0.0000           | Manning's N:      | 0.0000  | Manning's N:                    |                         |                         |
|                  | Ref Node:         |   | Ref Node:                       |                         |                         |
|                  | Op Table:         |   | Op Table:                       | Energy                  | Energy Switch:          |
| 0.00 ft          | Default:          | 0.00 ft   | Default:                        | 0.00 ft                 | Bend Location:          |
|                  |                   | Top Clip  |                                 | 0.00                    | Bend Loss Coef:         |
| 0.0000           | Manning's N:      | 0.0000  | Manning's N:                    | 1.46                    | Exit Loss Coef:         |
|                  | Ref Node:         |   | Ref Node:                       | 0.50                    | Entr Loss Coef:         |
|                  | Op Table:         |   | Op Table:                       | 0                       | FHWA Code:              |
| 0.00 ft          | Default:          | 0.00 ft   | Default:                        | 28.41 ft                | Length:                 |

Pipe Link: L-07P

From Node:

To Node:

OFNF-08 \_

Scenario:

Existing Conditions OFNF-07

Upstream Invert: -1.72 ft Manning's N: 0.0240 Geometry: Arch Structural Plate

Invert: -3.08 ft Manning's N: 0.0240 Geometry: Arch Structural Plate

Downstream

Flow Direction:

Damping:

Both 0.0000 ft

Max Depth: Max Width:

1.50 ft 0.92 ft

Max Depth: Max Width:

0.92 ft 1.50 ft

Link Count:

| N                                       |
|---|
| 1                                       |
| 8                                       |
| 22                                      |
| 2                                       |
| œ                                       |
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| 19                                      |
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| Damping: 0<br>Length: 3<br>FHWA Code: 0 |               |                 |                                 | From Node: C | enario:             | Pipe Link: L-12P |  | Comment: Inv. El. (Survey) & 22"x13" corrugated metal pipe-arches (As-built: Haynsworth Village DR-5066, July/1958) | T            |           |           |          |          |              |           | FHWA Code: 0 |           |             |            |            |                    |              | enario:             | Pipe Link: L-11P | Comment: Inv. El. (Survey) & 18"x11" corrugated metal pipe-arches (As-built: Haynsworth Village DR-5066, July/1958) |              |           | Energy Switch: E | Bend Location: 0 | Bend Loss Coef: 0 | Exit Loss Coef: 1 |           | FHWA Code: 0 |          |             |            |            | To Node: C                      |  |                    |
|---|---------------|-----------------|---------------------------------|--------------|---------------------|------------------|--|---|--------------|-----------|-----------|----------|----------|--------------|-----------|--------------|-----------|-------------|------------|------------|--------------------|--------------|---------------------|------------------|---|--------------|-----------|------------------|------------------|-------------------|-------------------|-----------|--------------|----------|-------------|------------|------------|---------------------------------|--|--------------------|
| 0.0000 ft<br>30.07 ft<br>0              | BUIT          | 0+ <del>-</del> | OFNF-13                         | OFNF-12      | Existing Conditions |                  |  | ) & 22"x13" corrugated m  |              |           | Energy    | 0.00 ft  | 0.00     | 0.10         | 0.50      |              | 303.38 ft | 0.0000 ft   | Both       | 1          | OFNF-13            | OFNF-11      | Existing Conditions |                  | ) & 18"x11" corrugated m  |              |           | Energy           | 0.00 ft          | 0.00              | 1.46              | 0.50      |              | 25.38 ft | 0.0000 ft   | Both       |            | OFNF-11                         | באוצווווש כסוומונוסווצ<br>הבאוצוווש כסוומונוסווצ | victing Conditions |
| Default:<br>Op Table:                   | IVIAX VVIUTU: |                 | Geometry: Arch Structural Plate | Manning's N: | Invert:             | Upstream         |  | ietal pipe-arches (As-bu  | Manning's N: | Ref Node: |           | Default: |          |              | Ref Node: | Op Table:    | Default:  |             |            | Max Depth: |                    |              | Invert:             | Upstream         | ietal pipe-arches (As-bu  | Manning's N: |           | Op Table:        | Default:         |                   | Manning's N:      | Ref Node: | Op Table:    | Default: |             | Max Width: | Max Depth: | Geometry: Arch Structural Plate |  | Invert: -2.2       |
| 0.00 ft                                 |               | 0.92 ft         | Structural Plate                | 0.0240       | -1.48 ft            | eam              |  | ilt: Haynsworth Village D   | 0.0000       |           |           | 0.00 ft  | Top Clip | 0.0000       |           |              | 0.00 ft   | Bottom Clip | 1.83 ft    | 1.08 ft    | Structural Plate   | 0.0240       | -3.14 ft            | eam              | ilt: Haynsworth Village D   | 0.0000       |           |                  | 0.00 ft          | Top Clip          | 0.0000            |           |              | 0.00 ft  | Bottom Clip | 1.50 ft    | 0.92 ft    | Structural Plate                | -2.20 11   | -2 28 ft           |
| n Clip<br>Default:<br>Op Table:         | IVIAX WIGUT:  | Max Depth:      | Geometry: Arch                  | Manning's N: | Invert:             | Down             |  | R-5066, July/1958)  | Manning's N: | Ref Node: | Op Table: | Default: |          | Manning's N: | Ref Node: | Op Table:    | Default:  |             | Max Width: | Max Depth: | Geometry: Arch     | Manning's N: | Invert:             | Down             | R-5066, July/1958)  | Manning's N: | Ref Node: | Op Table:        | Default:         | Clip              | Manning's N:      | Ref Node: | Op Table:    | Default: |             | Max Width: | Max Depth: | Geometry: Arch                  | IIVert:  | Invert             |
| 0.00 ft                                 |               | 0.92 ft         | ) Structural Plate              | 0.0240       | -1.72 ft            | Downstream       |  |   | 0.0000       |           |           | 0.00 ft  |          | 0.0000       |           |              | 0.00 ft   |             | 1.83 ft    | 1.08 ft    | 1 Structural Plate | 0.0240       | -3.31 ft            | Downstream       |   | 0.0000       |           |                  | 0.00 ft          |                   | 0.0000            |           |              | 0.00 ft  |             | 1.50 ft    | 0.92 ft    | o:oz+o<br>Structural Plate      |  | wert: _2 01 ft     |

 Manning's N:
 0.0000
 Manning's N:
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 Comment: Inv. El. (Survey) & 18"x11" corrugated metal pipe-arches (As-built: Haynsworth Village DR-5066, July/1958)
 Comment: Inv. El. (Survey) & 18"x11" corrugated metal pipe-arches (As-built: Haynsworth Village DR-5066, July/1958)

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| Code:         1.4.6         Manning's N:         0.0001         Top Clip         Manning's N:           with:         Energy         0.011         Op Table:         0.001         Top Clip         Manning's N:           with:         Energy         6.701         Op Table:         Note:         Ref Note:   |                            |  |                                  |   |                           |   |
|---|----------------------------|--|----------------------------------|---|---------------------------|---|
| S N::     S N::   |                            | ige DR-5066, July/1958)                | ulit: Haynsworth Vilia           | d metal pipe-arcnes (As-b                 | rey) & 18"x11" corrugated | Comment: Inv. EI. (Surv                             |
| Solvers Solver  | 0.0000                     | -                                      | 0.0000                           | Manning's N:                              |                           |   |
| ault: s's N::<br>s's N::   |                            | Up Table:<br>Ref Node:                 |                                  | Op Table:<br>Ref Node:                    | energy                    | Energy Switch:                                      |
| S N::<br>S S S N::<br>S S S S S S S S S S S S S S S S S S S   | 0.00 ft                    |  | 0.00 ft                          | Default:                                  | 0.00 ft                   | Bend Location:                                      |
| S N:     S N:   |                            |  |                                  |   | 0.00                      | Bend Loss Coef:                                     |
| ault: s's N:<br>s's   | 0.0000                     | Manning's N:                           | 0.0000                           | Manning's N:                              | 1.46                      | Exit Loss Coef:                                     |
| ault:<br>s's N::<br>s's N  |                            | Op Table:<br>Ref Node:                 |                                  | Op Table:<br>Ref Norle:                   | 0 50                      | FHWA Code:  |
| ault: s's N:<br>s's   | 0.00 ft                    | )                                      |                                  | Default:                                  | 44.34 ft                  | Length:   |
| S N::   |                            |  |                                  |   | 0.0000 ft                 | Damping:  |
| Arch<br>Arch  | 0.92 ft<br>1.50 ft         | Max Uepth:<br>Max Width:               | 0.92 ft<br>1.50 ft               | Max Depth:<br>Max Width:                  | 'l<br>Both                | Link Count:<br>Flow Direction:                      |
| S N::<br>S S N::<br>S S N::<br>S S N::<br>S S S S S S S S S S S S S S S S S S S   | Structural Plate           |  | Structural Plate                 | Geometry: Arch                            | OFNF-15                   | To Node:  |
| ault:<br>s's N:<br>s's  | 0.0240                     | Manning's N:                           | 0.0240                           | Manning's N:                              | OFNF-14                   | From Node:  |
| S N::<br>S S N::<br>S S N::<br>S S S S S S S S S S S S S S S S S S S   | -4.33 ft                   | Invert:                                | -4.04 ft                         | Invert:                                   | Existing Conditions       | Scenario:   |
| S N::<br>s N:: | 0.00 ft                    | R 0                                    | 0.00 ft                          | Default:<br>Op Table:<br>Ref Node:        | 0.00<br>0.00 ft<br>Energy | Bend Loss Coef:<br>Bend Location:<br>Energy Switch: |
| S N::<br>S N::<br>S N::<br>S N:<br>S N:<br>S N:<br>S N:<br>S  | 0.0000                     | Manning's IV:                          | 0.0000                           | Manning's N:                              | 0.40                      | EXIT LOSS COET:                                     |
| ault:<br>ault:<br>'s N:<br>'s N:<br>'s N:<br>'s N:<br>'s N:<br>'s N:<br>'s N:   |                            | Op Table:<br>Ref Node:                 |                                  | Op Table:<br>Ref Node:                    | 0.50                      | FHWA Code:<br>Entr Loss Coef:                       |
| S'S N::<br>able:<br>oode:<br>'s N:<br>S'S N:<br>'s N:<br>'s N:<br>'s N:<br>'s N:<br>'s N:   | 000 #                      |  |                                  |   | 0.0000 ft                 | Damping:  |
| ault:<br>able:<br>ode:<br>'s N:<br>'s N:<br>'s N:<br>'s N:  | 1.33 ft<br>2.08 ft         |  | 1.33 ft<br>2.08 ft               | Max Depth:<br>Max Width:                  | 1<br>Both                 | Link Count:<br>Flow Direction:                      |
| ault:<br>able:<br>ode:<br>'s N:<br>'s N:<br>'vert:  | 0.0240<br>Structural Plate | _                                      | 0.0240<br>Structural Plate       | Manning's N:<br>Geometry: Arch            | OFNF-13<br>OFNF-15        | From Node:<br>To Node:                              |
| ault:   | -4.33 ft                   | Invert:                                | -3.32 ft                         | Invert:                                   | Existing Conditions       | Scenario:   |
| ault:<br>able:<br>ode:<br>'s N:   | Iream                      | Downs                                  | ream                             | Upst                                      |                           | Pipe Link: L-13P                                    |
| 1.46Manning's N:0.000Manning's N:0.000.00Top Clip0.00 ftDefault:0.00 ftDefault:0.00 ftOp Table:Op Table:Op Table:EnergyRef Node:Ref Node:Ref Node:  | 0.0000                     | manning's N:<br>ae DR-5066. July/1958) | 0.0000<br>uilt: Havnsworth Villa | Manning's N:<br>d metal pipe-arches (As-b | /ev) & 18"x11" corrugated | ment: Inv. El. (Surv                                |
| 1.46         Manning's N:         0.0000         Top Clip           0.00 ft         Default:         0.00 ft         Default:   |                            | Op Table:<br>Ref Node:                 |                                  | Op Lable:<br>Ref Node:                    | Energy                    | Energy Switch:                                      |
| 1.46 Manning's N: 0.0000 Ten Clin Manning's N:  | 0.00 ft                    | Default:                               |                                  | Default:                                  | 0.00 ft                   | Bend Location:                                      |
|   | 0.0000                     | Manning's N:                           | 0.0000                           | Manning's N:                              | 1.46                      | Pond Loop Coof                                      |

| Pipe Link: L-17P |                     | Upstream                        | eam              |             | Downst           | nstream            |
|------------------|---------------------|---------------------------------|------------------|-------------|------------------|--------------------|
| Scenario:        | Existing Conditions | Invert: -3.74 ft                | -3.74 ft         |             | Invert:          | -3.63 ft           |
| From Node:       | OFNF-17             | Manning's N: 0.0240             | 0.0240           | Μ           | Manning's N:     | 0.0240             |
| To Node:         | OFNF-18             | Geometry: Arch Structural Plate | Structural Plate | Geo         | Geometry: Arch : | h Structural Plate |
| Link Count:      |                     | Max Depth: 0.92 ft              | 0.92 ft          |             | Max Depth:       | 0.92 ft            |
| Flow Direction:  | Both                | Max Width: 1.50 ft              | 1.50 ft          |             |                  | 1.50 ft            |
| Damping:         | 0.0000 ft           |                                 |                  | Bottom Clip |                  |                    |
| Length:          | 51.84 ft            | Default:                        | 0.00 ft          |             | Default:         | 0.00 ft            |
| FHWA Code:       | 0                   | Op Table:                       |                  |             | Op Table:        |                    |
| Entr Loss Coef:  | 0.50                | Ref Node:                       |                  |             | Ref Node:        |                    |
| Exit Loss Coef:  | 1.46                | Manning's N: 0.0000             | 0.0000           | M           | Manning's N:     | 0.0000             |
| Bend Loss Coef:  | 0.00                |                                 |                  | Top Clip    |                  |                    |
| Bend Location:   | 0.00 ft             | Default: 0.00 ft                | 0.00 ft          |             | Default:         | 0.00 ft            |
| Energy Switch:   | Energy              | Op Table:                       |                  |             | Op Table:        |                    |
|                  |                     | Ref Node:                       |                  |             | Ref Node:        |                    |
|                  |                     | Manning's N: 0.0000             | 0.0000           | Μ           | Manning's N:     | 0.0000             |

| Pipe Link: L-16P |                     | Upstream                        | am             | Down           | nstream                         |
|------------------|---------------------|---------------------------------|----------------|----------------|---------------------------------|
| Scenario:        | Existing Conditions | Invert: -3.55 ft                | 3.55 ft        | Invert:        | -3.99 ft                        |
| From Node:       | OFNF-16             | Manning's N: 0.0240             | .0240          | Manning's N:   | 0.0240                          |
| To Node:         | MH-16               | Geometry: Arch Structural Plate | ructural Plate | Geometry: Arct | Geometry: Arch Structural Plate |
| Link Count:      |                     | Max Depth: 0.92 ft              | .92 ft         | Max Depth:     | 0.92 ft                         |
| Flow Direction:  | Both                | Max Width: 1.50 ft              | .50 ft         | Max Width:     | 1.50 ft                         |
| Damping:         | 0.0000 ft           |                                 | B              | Bottom Clip    |                                 |
| Length:          | 49.71 ft            | Default: 0.00 ft                | .00 ft         | Default:       | 0.00 ft                         |
| FHWA Code:       | 0                   | Op Table:                       |                | Op Table:      |                                 |
| Entr Loss Coef:  | 0.50                | Ref Node:                       |                | Ref Node:      |                                 |
| Exit Loss Coef:  | 1.46                | Manning's N: 0.0000             | .0000          | Manning's N:   | 0.0000                          |
| Bend Loss Coef:  | 0.00                |                                 |                | Top Clip       |                                 |
| Bend Location:   | 0.00 ft             | Default: 0                      | 0.00 ft        | Default:       | 0.00 ft                         |
| Energy Switch:   | Energy              | Op Table:                       |                | Op Table:      |                                 |
|                  |                     | Ref Node:                       |                | Ref Node:      |                                 |
|                  |                     | Manning's N: 0.0000             | .0000          | Manning's N:   | 0.0000                          |

| 0.0000             | Manning's N:   | 0.0000                          | Manning's N: 0.0000 |           |                 |
|--------------------|----------------|---------------------------------|---------------------|-----------|-----------------|
|                    | Ref Node:      |                                 | Ref Node:           |           |                 |
|                    | Op Table:      |                                 | Op Table:           | Energy    | Energy Switch:  |
| 0.00 ft            | Default:       | 0.00 ft                         | Default:            | 0.00 ft   | Bend Location:  |
|                    | Top Clip       |                                 |                     | 0.00      | Bend Loss Coef: |
| 0.0000             | Manning's N:   | 0.0000                          | Manning's N: 0.0000 | 1.46      | Exit Loss Coef: |
|                    | Ref Node:      |                                 | Ref Node:           | 0.50      | Entr Loss Coef: |
|                    | Op Table:      |                                 | Op Table:           | 0         | FHWA Code:      |
| 0.00 ft            | Default:       | 0.00 ft                         | Default: 0.00 ft    | 49.56 ft  | Length:         |
|                    | Bottom Clip    | B                               |                     | 0.0000 ft | Damping:        |
| 2.08 ft            | Max Width:     | 2.08 ft                         | Max Width: 2.08 ft  | Both      | Flow Direction: |
| 1.33 ft            | Max Depth:     | 1.33 ft                         | Max Depth: 1.33 ft  | <u> </u>  | Link Count:     |
| n Structural Plate | Geometry: Arch | Geometry: Arch Structural Plate | Geometry: Arch      | NH-IO     | I O NODE:       |

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| Upsiream         Down           Existing Conditions         Invert:         -4.05 ft         Invert:  |                     |                             |                            |  |  |  |
|---|---------------------|-----------------------------|----------------------------|--|--|--|
| Lambel Lambel Lambel Lambel Lambel Lambel Lambel Lambel Lambel Conditions         Impact Lambel | 0.00 ft             | Default:                    | 0.00 ft                    | Default:                                   | 0.00 ft                                      | Bend Location:                             |
| Burket Letspreserve         Upstream         Upstream         Dewistream         Downstream           Scenario:         Existing Conditions         Invert: 4.05 ft         Maaning's W: 0.0240         Maaning's W: 0.0240           To Node:         MH-21         Maxing's W: 0.024         Maaning's W: 0.0240         Maaning's W: 0.0240           Damping:         0.000 ft         Sementry: Arch Structural Plate         Geometry: Arch Structural Plate         Geometry: Arch Structural Plate         Max Wdth: 1.50 ft           Damping:         0.000 ft         Default:         0.00 ft         Default:         0.00 ft           Eart Less Coef:         0.40         Max Mdth:         1.50 ft         Max Wdth:         1.50 ft           Bend Location:         0.00 ft         Default:         0.00 ft         Default:         0.00 ft           Bend Location:         0.00 ft         Default:         0.00 ft         Default:         0.00 ft           Bend Location:         0.00 ft         Default:         0.00 ft         Default:         0.00 ft           Bend Location:         0.00 ft         Default:         0.00 ft         Default:         0.00 ft           Bend Location:         Entry:         Entry:         Setter Mode:         Re Node:         Re Node:         Re Node:  |                     |                             | То                         |  | 0.00   | Bend Loss Coef:                            |
| Burket L-19P         Upstream         Devicem         Devisition           Scenario         Existing Conditions         Invert:         4.05 ft         Manning's W:         0.0240         Manning's W:         0.0240           To Node:         MH-21         Manning's W:         0.0240         Manning's W:         0.0240           Link Count:         1         Max Depth:         0.92 ft         Max Depth:         0.92 ft           Damping:         0.000 ft         Default:         0.00 ft         Default:         0.00 ft           Enrit Loss Coef:         0.00         0.00 ft         Default:         0.00 ft         Op Table:           Enrit Loss Coef:         0.00 ft         Default:         0.00 ft         Op Table:         Op Table:           Enrit Loss Coef:         0.00 ft         Default:         0.00 ft         Op Table:         Op Table:           Enrit Loss Coef:         0.00 ft         Default:         0.00 ft         Op Table:         Op Table:         Op Table:           Enrit Loss Coef:         0.00 ft         Default:         0.00 ft         Manning's N:         0.000 ft           Enrit Loss Coef:         0.00 ft         Manning's N:         0.000 ft         Manning's N:         0.000 ft           Enr  | 0.0000              | l                           | 0.0000                     | Manning's N:                               | 0.10   | Exit Loss Coef:                            |
| Burk L-19P         Upstream         Downstream         Downstream           From Node:         OFNE-19         Manning's N:         0.0240         Manning's N:         0.0240           To Node:         MH-1         Manning's N:         0.0240         Manning's N:         0.0240           Invect:         4.05 ft         Invect:         4.05 ft         Invect:         4.05 ft           To Node:         MH-1         Max Depth:         0.92 ft         Max Midh:         1.50 ft         Max Midh:         1.50 ft         Max Widh:         1.50 ft         Max Midh:   |                     | Ref Node:                   |                            | Ref Node:                                  | 0.50   | Entr Loss Coef:                            |
| Image: Index of the second loss of the second los the second loss of the second loss of the second loss of the    |                     | Op Table:                   |                            | Op Table:                                  | 0  | FHWA Code:                                 |
| Beturk: L-19P         Upstream         Downstream           Senario:         Existing Conditions         Invert:         4.06 ft         Invert:         4.06 ft           From Node:         OFNF-19         Manning's N:         0.0240         Manning's N:         0.0240           To Node:         MH-21         Max Depth:         0.92 ft         Max Depth:         0.92 ft           Link Count:         1         Max Depth:         0.92 ft         Max Depth:         0.92 ft           Damping:         0.0000 ft         Default:         0.00 ft         Default:         0.00 ft         Op Table:           Entr Loss Coef:         0.50         Manning's N:         0.0000         Manning's N:         0.0000         Max Width:         1.50 ft         Op Table:         Op Table:         Neret's All Note:         Neret's All Note's All Note's All Note's All Note's All Note's All Note's   | 0.00 ft             |                             | 0.00 ft                    | Default:                                   | 10.90 ft                                     | Length:                                    |
| luk t-19P         Upstream         Downstream           Scenario:         Existing Conditions         Invert: $4.05$ ft         Manning's kt $0.0240$ Manning's kt $0.0240$ To Node:         MH-1         Max Depth: $0.27$ ft         Max Muth: $1.50$ ft         Manning's kt $0.0000$  |                     |                             |                            |  | 0.0000 ft                                    | Damping:                                   |
| Image: Inverte service provide the same as downstream         Downstream         Downstream         Downstream         Downstream         Invert: -4.05 ft         Invert: -4.05 ft <td>1.50 ft</td> <td>Ł.</td> <td>1.50 ft</td> <td>Max Width:</td> <td>Both</td> <td>Flow Direction:</td>   | 1.50 ft             | Ł.                          | 1.50 ft                    | Max Width:                                 | Both   | Flow Direction:                            |
| e Link: L-19P         Upstream         Departem         Downstream           Scenario:         Existing Conditions         Invert:         4.05 ft         Invert:         4.05 ft           From Node:         OFNF-19         Mannings N:         0.0240         Mannings N:         0.0240           To Node:         MH-21         Geometry Arch Structural Plate   | 0.92 ft             |                             | 0.92 ft                    | Max Depth:                                 |  | Link Count:                                |
| e Link: L-19P         Upstream         Upstream         Downstream           Scenario:         Existing Conditions         Invert:         4.05 ft         Invert:         4.05 ft           From Node:         OFNF-19         Manning's N:         0.00240         Manning's N:         0.0240           To Node:         MH-21         Geometry: Arch Structural Plate         Geometry:   | Structural Plate    |                             | Structural Plate           | Geometry: Arch                             | MH-22  | To Node:                                   |
| etnk:         From Node:         Existing Conditions         Invert:         -4.05 ft  | 0.0240              |                             | 0.0240                     | Manning's N:                               | MH-21  | From Node:                                 |
| e Link: L-19P         Upstream         Upstream         Downstream           Scenario:         Existing Conditions         Invert:         -4.05 ft         Invert:         -4.05 ft           From Node:         OFNF-19         Manning's N:         0.0240         Manning's N:         0.0240           To Node:         MH-21         Manning's N:         0.0240         Manning's N:         0.0240           Invert:         A.05 ft         Manning's N:         0.0240         Manning's N:         0.0240           To Node:         MH-21         Max Depth:         0.92 ft         Max Depth:         0.92 ft           Length:         74.99 ft         Default:         0.00 ft         Max Width:         1.50 ft         Max Width:         1.50 ft           FHWA Code:         0         000         Ref Node:         Ref Node:         Ref Node:         Ref Node:         Ref Node:         Ref Node:         Not oft         0.000 ft         0.000 ft         0.000 ft         0.000 ft         Op Table:         0.000 ft         0.000 ft         0.000 ft         0.000 ft         0.0000         0.000 ft         0.0000         0.000 ft         0.000 ft         0.000 ft         0.000 ft         0.000 ft         0.000 ft         0.0000         0.000 ft         0.00  | -3.63 ft            |                             | -3.84 ft                   | Invert:                                    | Existing Conditions                          | Scenario:                                  |
| e Lhr: L-19P         Upstream         Devisiting         Downstream           Scenario:         Existing Conditions         Invert:         -4.05 ft         Invert:         -4.05 ft           From Node:         OFNF-19         Manning's N:         0.0240         Manning's N:         0.0240           To Node:         MH-21         Geometry: Arch Structural Plate         Geometry: Arch Structural Plate         Geometry: Arch Structural Plate         Deranning's N:         0.0240           Damping:         0.0000 ft         Max Depth:         1.50 ft         Max Depth:         0.92 ft           Damping:         0.0000 ft         Max Depth:         1.50 ft         Max Width:         1.50 ft           Entr Loss Coef:         0.00         Default:         0.00 ft         Op Table:         Op Table:           Energy Switch:         Energy         Op Table:         Noton         Manning's N:         0.000           Bend Loss Coef:         0.00 ft         Default:         0.00 ft         Default:         0.000 ft           Bend Loss Coef:         0.00 ft         Default:         0.00 ft         Default:         0.000 ft           Energy Switch:         Energy         Manning's N:         0.0000         Manning's N:         0.0000  | ream                | Inst                        | ream                       | Upsti                                      |  | e Link: L-20P                              |
| Invert     Lystream     Downstream       Scenario:     Existing Conditions     Invert:     -4.05 ft     Invert:     -4.05 ft       From Node:     OFNF-19     Manning's N:     0.0240     Manning's N:     0.0240       To Node:     MH-21     Manning's N:     0.0240     Manning's N:     0.0240       Invert:     1     Manning's N:     0.0240     Manning's N:     0.0240       Damping:     0.000 ft     Max Depth:     0.92 ft     Max Depth:     0.92 ft       Damping:     0.000 ft     Max Depth:     1.50 ft     Max Depth:     0.92 ft       Length:     74.99 ft     Default:     0.00 ft     Default:     1.50 ft     Max Width:     1.50 ft       FHWA Code:     0     0     Ref Node:     Cop Table:     Op Table:     Op Table:     Ref Node:     Ref Node:     Ref Node:     Ref Node:     Cop Table:     Op Table:     Op Table:     Op Table:     Default:     0.00 ft     Op Table:     Default:     0.00 ft     Op Table:     Default:     0.00 ft     Op Table:     Cop Table:  |                     |                             |                            |  |  |  |
| Invertional         Upstream         Down           Invertional         Invertional         Invertional         Invertional           Node:         OFNF-19         Manning's N:         0.0240         Manning's N:           Node:         OFNF-19         Manning's N:         0.0240         Manning's N:           Node:         MH-21         Geometry: Arch         Structural Plate         Geometry: Arch           Count:         1         Max Depth:         0.92 ft         Max Depth:           Count:         1         Max Depth:         0.92 ft         Max Depth:           Count:         1         Max Depth:         0.92 ft         Max Depth:           Count:         74.99 ft         Default:         0.00 ft         Max Width:         1.50 ft         Max Width:           Coef:         0.40         Manning's N:         0.00 ft         Op Table:         Op Table:         Op Table:         Ref Node:         Ref Node:         Ref Node:         Ref Node:         Op Table:         Op Table:         Op Table:         Op Table:         Nanning's N:         Manning's N:         Manning's N:         Manning's N:         Manning's N:         Manning's N:  | pe-arches (As-built | 8"x11" corrugated metal pip | ownstream (Survey) & 1     | <ol> <li>assumed the same as do</li> </ol> | Inv. El. Upstream Inv. E<br>5066, July/1958) | mment: Downstream<br>ynsworth Village DR-5 |
| UpstreamDowanario:Existing ConditionsInvert:-4.05 ftInvert:Invert:Node:OFNF-19Manning's N:0.0240Manning's N:Node:MH-21Geometry: ArchStructural PlateGeometry: ArchCount:1Manning's N:0.0240Manning's N:Count:1Manning's N:0.0240Manning's N:Count:1Manning's N:0.0240Manning's N:Count:1Manning's N:0.0240Manning's N:Count:1Manning's N:0.92 ftManning's N:Count:0.0000 ftMax Depth:0.92 ftMax Depth:Code:0Op Table:Cop Table:Cop Table:Coef:0.40Manning's N:0.000 ftDefault:Coef:0.00Manning's N:0.000 ftManning's N:Coef:0.00Manning's N:Op Table:Cop Table:Coef:0.00Default:0.00 ftDefault:Coef:0.00 ftDefault:Op Table:Op Table:Coef:0.00 ftDefault:Op Table:Cop Table:Coef:0.00 ftDefault:Op Table:Cop Table:Coef:0.00 ftCop Table:Cop Table:Cop Table:Coef:0.00 ftCop Table:Cop Table:Cop Table:Coef:0.00 ftCop Table:Cop Table:Cop Table:Coef:0.00 ftCop Table:Cop Table:   | 0.0000              | Manning's N:                | 0.0000                     | Manning's N:                               |  |  |
| UpstreamDowanario:Existing ConditionsInvert: $-4.05$ ftInvert:Node:OFNF-19Manning's N: $0.0240$ Manning's N:Node:MH-21Geometry: ArchStructural PlateGeometry: ArchCount:1Max Depth: $0.92$ ftManning's N:Count:1Max Depth: $0.92$ ftMax Depth:Count:1Max Depth: $0.92$ ftMax Depth:Count:1Max Depth: $0.92$ ftMax Depth:Count:0.0000 ftDefault: $0.00$ ftMax Depth:Code:00Default: $0.00$ ftDefault:Coef:0.40Manning's N: $0.0000$ ftDefault:Op Table:Coef:0.00 ftDefault: $0.00$ ftDefault:Nanning's N:Coef:0.00 ftDefault: $0.00$ ftDefault:Op Table:Scoef:0.00 ftDefault: $0.00$ ftDefault:Op Table:StructStructDefault: $0.00$ ftDefault:Op Table:StructStructOp Table:StructStructural Structural Struc  |                     |                             |                            | Ref Node:                                  |  |  |
| Invertige         Upstream         Down           anario:         Existing Conditions         Invert:         -4.05 ft         Invert:           Node:         OFNF-19         Manning's N:         0.0240         Manning's N:           Node:         OFNF-19         Manning's N:         0.0240         Manning's N:           Node:         MH-21         Geometry: Arch Structural Plate         Geometry: Arch Structural Plate         Geometry: Arch Structural Plate           Count:         1         Max Depth:         0.92 ft         Max Depth:           oution:         Both         Max Depth:         1.50 ft         Max Width:           mping:         0.0000 ft         Default:         0.00 ft         Max Width:           code:         0         Namining's N:         0.00 ft         Default:           code:         0.40         Manning's N:         0.0000         Manning's N:           ocoef:         0.00         Manning's N:         Op Table:         Code:           ocoef:         0.00         Manning's N:         Op Code:         Manning's N:           ocoef:         0.00         Manning's N:         Op Code:         Top Clip   |                     | Op Table:                   |                            | Op Table:                                  | Energy                                       | Energy Switch:                             |
| Upstream     Dow       anario:     Existing Conditions     Invert:     -4.05 ft     Invert:     Invert:       Node:     OFNF-19     Manning's N:     0.0240     Manning's N:     0.0240       Node:     MH-21     Geometry: Arch     Structural Plate     Geometry: Arch       Count:     1     Max Depth:     0.92 ft     Max Depth:       count:     1     Max Depth:     0.92 ft     Max Depth:       oligo:     0.0000 ft     Max Width:     1.50 ft     Max Width:       mping:     0.0000 ft     Default:     0.00 ft     Default:       Code:     0     Solo     Ref Node:     Cop Table:     Cop Table:       Coef:     0.40     Manning's N:     0.0000     Manning's N:     Top Clip  | 0.00 ft             |                             | 0.00 ft                    | Default:                                   | 0.00 ft                                      | Bend Location:                             |
| Upstream     Down       anario:     Existing Conditions     Invert:     -4.05 ft     Invert:     Invert:       Node:     OFNF-19     Manning's N:     0.0240     Manning's N:       Node:     MH-21     Geometry: Arch     Structural Plate     Geometry: Arch       Count:     1     Max Depth:     0.92 ft     Max Depth:       action:     Both     Max Width:     1.50 ft     Max Width:       mping:     0.0000 ft     Default:     0.00 ft     Default:       code:     0     Cop Table:     Op Table:     Op Table:       coef:     0.40     Manning's N:     0.0000     Manning's N:  |                     |                             | То                         |  | 0.00   | Bend Loss Coef:                            |
| Upstream     Down       anario:     Existing Conditions     Invert:     -4.05 ft     Invert:     Invert:       Node:     OFNF-19     Manning's N:     0.0240     Manning's N:     0.0240       Node:     MH-21     Geometry: Arch     Structural Plate     Geometry: Arch       Count:     1     Max Depth:     0.92 ft     Max Depth:       action:     Both     Max Width:     1.50 ft     Max Width:       mping:     0.0000 ft     Max Width:     1.50 ft     Max Width:       code:     0     Op Table:     Op Table:     Op Table:       coef:     0.50     Ref Node:     Ref Node:     Ref Node:   | 0.0000              |                             | 0.0000                     | Manning's N:                               | 0.40   | Exit Loss Coef:                            |
| UpstreamDown<br>parario:snario:Existing ConditionsInvert:-4.05 ftInvert:Node:OFNF-19Manning's N:0.0240Manning's N:Node:MH-21Geometry: Arch Structural PlateGeometry: ArchCount:1Max Depth:0.92 ftMax Depth:Sction:BothMax Width:1.50 ftMax Width:mping:0.0000 ftDefault:0.00 ftDefault:Code:0Op Table:Op Table:Op Table:  |                     | Ref Node:                   |                            | Ref Node:                                  | 0.50   | Entr Loss Coef:                            |
| UpstreamDowanario:Existing ConditionsInvert:-4.05 ftInvert:Node:OFNF-19Manning's N:0.0240Manning's N:Node:MH-21Geometry: Arch Structural PlateGeometry: ArchCount:1Max Depth:0.92 ftMax Depth:Sction:BothMax Width:1.50 ftMax Width:nping:0.0000 ftDefault:DoftDefault:Default:Default:D.00 ftDefault:  |                     | Op Table:                   |                            | Op Table:                                  | 0  | FHWA Code:                                 |
| Invertigian     Down       anario:     Existing Conditions     Invert:     -4.05 ft     Invert:       Node:     OFNF-19     Manning's N:     0.0240     Manning's N:       Node:     MH-21     Geometry: Arch Structural Plate     Geometry: Arch Structural Plate       Count:     1     Max Depth:     0.92 ft     Max Depth:       action:     Both     Max Width:     1.50 ft     Max Width:       Monor of t     Max Width:     1.50 ft     Max Width:   | 0.00 ft             |                             | 0.00 ft                    | Default:                                   | 74.99 ft                                     | Length:                                    |
| UpstreamDownanario:Existing ConditionsInvert: -4.05 ftInvert:Node:OFNF-19Manning's N:0.0240Manning's N:Node:MH-21Geometry: Arch Structural PlateGeometry: ArchCount:1Max Depth:0.92 ftMax Depth:action:BothMax Width:1.50 ftMax Width:  |                     | om Clip                     | Bott                       |  | 0.0000 ft                                    | Damping:                                   |
| Upstream     Down       anario:     Existing Conditions     Invert: -4.05 ft     Invert:       Node:     OFNF-19     Manning's N:     0.0240     Manning's N:       Node:     MH-21     Geometry: Arch Structural Plate     Geometry: Arch Structural Plate       Count:     1     Max Depth:     0.92 ft     Max Depth:  | 1.50 ft             |                             | 1.50 ft                    | Max Width:                                 | Both   | Flow Direction:                            |
| Upstream     Down       anario:     Existing Conditions     Invert: -4.05 ft     Invert:       Node:     OFNF-19     Manning's N:     0.0240       Node:     MH-21     Geometry: Arch Structural Plate     Geometry: Arch   | 0.92 ft             |                             | 0.92 ft                    | Max Depth:                                 | 1  | Link Count:                                |
| Upstream     Downs       anario:     Existing Conditions     Invert: -4.05 ft     Invert:       Node:     OFNF-19     Manning's N:     0.0240     Manning's N:  | Structural Plate    |                             | Structural Plate           | Geometry: Arch                             | MH-21  | To Node:                                   |
| Upstream Downs:<br>Phario: Existing Conditions Invert: -4.05 ft Invert:   | 0.0240              |                             | 0.0240                     | Manning's N:                               | OFNF-19                                      | From Node:                                 |
| Upstream Dow  | -4.05 ft            |                             | -4.05 ft                   | Invert:                                    | Existing Conditions                          | Scenario:                                  |
|   | ream                | Downst                      | ream                       | Upsti                                      |  | e Link: L-19P                              |
|   |                     |                             |                            |  |  |  |
|   | Sewer Improvem      | :: Haynsworth Village Storm | h Pipe, Inv. El. (As-built | node MH-21. 18"x11" Arc                    | ned the same Inv. El. as                     | mment: Inv. El. assun<br>-5066, July/1958) |
| Comment: Inv. El. assumed the same Inv. El. as node MH-21. 18"x11" Arch Pipe, Inv. El. (As-built: Haynsworth Village Storm Sewer Improveme<br>DR-5066, July/1958)   | 0.0000              | Manning's N:                | 0.0000                     | Manning's N:                               |  |  |
| Manning's N: 0.0000<br>ssumed the same Inv. El. as node MH-21. 18"x11" Arch Pipe, Inv. El. (As-built: Haynswort   |                     | Ref Node:                   |                            | Ref Node:                                  |  |  |
| Ref Node: Ref Node: Ref Node: Stanning's N: 0.0000 Manning's N: 0.0000<br>mment: Inv. El. assumed the same Inv. El. as node MH-21. 18"x11" Arch Pipe, Inv. El. (As-built: Haynsworth Village Storm Sewer Improveme<br>-5066, July/1958)   |                     | Op Table:                   |                            | Op Table:                                  | Energy                                       | Energy Switch:                             |
| Energy Switch: Energy Qp Table: Op Table: Op Table: Ref Node: Ref Node: Ref Node: Ref Node: Nanning's N: 0.0000 Manning's N: 0.0000 Manning's N: 0.0000 Manning's N: 0.0000 -5066, July/1958)   | 0.00 ft             | Default:                    | 0.00 ft                    | Default:                                   | 0.00 ft                                      | Bend Location:                             |
| Bend Location:       0.00 ft       Default:       Default:       0.00 ft       Default:       0.00 ft         Energy Switch:       Energy       Op Table:       Op Table:       Op Table:       Op Table:       Op Table:       Op Table:       Ref Node:       Ref Node:       Ref Node:       Ref Node:       Ref Node:       Nanning's N:       0.0000       Manning's N:       0.0000         mment:       Inv. El. assumed the same Inv. El. as node MH-21.       18"x11" Arch Pipe, Inv. El. (As-built: Haynsworth Village Storm Sewer Improveme-5066, July/1958)       -5066/till       -5066/till       -5066/till       -5066/till       -506/till       -506/till       -506/till       -506/till       -50/till  |                     |                             | То                         |  | 0.00   | Bend Loss Coef:                            |
| Bend Loss Coef:       0.00       Default:       0.00 ft       Op Table:       Op Table:       Op Table:       Ser Node:       Ref Node:       Ser Nod  | 0.0000              |                             | 0.0000                     | Manning's N:                               | 1.46   | Exit Loss Coef:                            |
| Exit Loss Coef:       1.46       Manning's N:       0.0000       Top Clip       Manning's N:       0.0000         Bend Loss Coef:       0.00 ft       Default:       0.00 ft       Op Table:       Energy Switch:       Energy Switc  |                     | Ref Node:                   |                            | Ref Node:                                  | 0.50   | Entr Loss Coef:                            |
| Entr Loss Coef:       0.50       Ref Node:       Ref Node:       Ref Node:       Ref Node:         Exit Loss Coef:       1.46       Manning's N:       0.0000       Manning's N:       0.0000         Bend Loss Coef:       0.00       ft       Default:       0.00 ft       Default:       0.00 ft         Bend Location:       0.00 ft       Default:       0.00 ft       Default:       0.00 ft       Default:       0.00 ft         Energy Switch:       0.0000       Manning's N:       0.0000       Manning's N:       0.0000         Manning's N:       0.0000       Manning's N:       0.0000       Manning's N:       0.0000         mment:       Inv. El. assumed the same Inv. El. as node MH-21.       18"x11" Arch Pipe, Inv. El. (As-built: Haynsworth Village Storm Sewer Improveme         -5066, July/1958)       -       -       -       -       -       -   |                     | Op Table:                   |                            | Op Table:                                  | 0  | FHWA Code:                                 |
| FHWA Code:       Op Table:       Op Table:       Op Table:         Entr Loss Coef:       0.50       Ref Node:       Ref Node:       Ref Node:         Exit Loss Coef:       1.46       Manning's N:       0.000       Manning's N:       0.000         Bend Loss Coef:       0.00 ft       Default:       0.00 ft       Default:       0.00 ft       0.00 ft         Bend Location:       0.00 ft       Default:       0.00 ft       Op Table:       Ref Node:       0.00 ft       Op Table:       Ref Node:       Netro Namning's N:       0.00 ft       Op Table:       Netro Namning's N:       0.00 ft       Op Table:       Ref Node:       Netro Namning's N:       0.00 ft       Op Table:       Ref Node:       Netro Namning's N:       Netro Namning's N:       0.0000       Namning's N:       0.000   | U.UU II             | Default:                    |                            | Default:                                   | 26.U9 II                                     | Lengin:                                    |

EXISTING CONDITIONS MODEL - LINKS

Pipe Link: L-18P

From Node:

Scenario:

Existing Conditions OFNF-18

Upstream Invert: -4.05 ft Manning's N: 0.0240 Geometry: Arch Structural Plate

Invert: -4.05 ft Manning's N: 0.0240 Geometry: Arch Structural Plate

Downstream

Flow Direction:

Damping: Length:

Both 0.0000 ft 26.09 ft

Default: 0.00 ft

To Node: Link Count:

OFNF-19 1

Max Depth: Max Width:

0.92 ft 1.50 ft

Max Depth: Max Width:

0.92 ft 1.50 ft

Default: 0.00 ft

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| Damping: 0.0000 f | Flow Direction: E  | Link Count: 1      | To Node: N                      | From Node: 0        | Scenario: E         | Pipe Link: L-23P |
|-------------------|--------------------|--------------------|---------------------------------|---------------------|---------------------|------------------|
| 0.0000 ft         | Both               |                    | MH-28                           | OFNF-21             | Existing Conditions |                  |
| Bottom Clip       | Max Width: 1.83 ft | Max Depth: 1.08 ft | Geometry: Arch Structural Plate | Manning's N: 0.0240 | Invert: -3.96 ft    | Upstream         |
| q                 | Max Width: 1.83 ft | Max Depth: 1.08 ft | Geometry: Arch Structural Plate | Manning's N: 0.0240 | Invert: -4.37 ft    | Downstream       |

| Pipe Link: L-22P |                     | Upstream                        | eam              |             | Downstream     | tream              |
|------------------|---------------------|---------------------------------|------------------|-------------|----------------|--------------------|
| Scenario:        | Existing Conditions | Invert: -2.41 ft                | -2.41 ft         |             | Invert:        | -2.87 ft           |
| From Node:       | OFNF-20             | Manning's N: 0.0240             | 0.0240           | Ma          | Manning's N:   | 0.0240             |
| To Node:         | OFNF-21             | Geometry: Arch Structural Plate | Structural Plate | Geor        | Geometry: Arch | h Structural Plate |
| Link Count:      |                     | Max Depth: 0.92 ft              | 0.92 ft          | N           | Max Depth:     | 0.92 ft            |
| Flow Direction:  | Both                | Max Width: 1.50 ft              | 1.50 ft          | Z           | Max Width:     | 1.50 ft            |
| Damping:         | 0.0000 ft           |                                 |                  | Bottom Clip |                |                    |
| Length:          | 23.13 ft            | Default: 0.00 ft                | 0.00 ft          |             | Default:       | 0.00 ft            |
| FHWA Code:       | 0                   | Op Table:                       |                  |             | Op Table:      |                    |
| Entr Loss Coef:  | 0.50                | Ref Node:                       |                  |             | Ref Node:      |                    |
| Exit Loss Coef:  | 1.46                | Manning's N: 0.0000             | 0.0000           | Ma          | Manning's N:   | 0.0000             |
| Bend Loss Coef:  | 0.00                |                                 |                  | Top Clip    |                |                    |
| Bend Location:   | 0.00 ft             | Default:                        | 0.00 ft          |             | Default:       | 0.00 ft            |
| Energy Switch:   | Energy              | Op Table:                       |                  |             | Op Table:      |                    |
|                  |                     | Ref Node:                       |                  |             | Ref Node:      |                    |
|                  |                     | Manning's N: 0.0000             | 0.0000           | Ma          | Manning's N:   | 0.0000             |

| Comment: Inv. El. (Sur                              | vey) & 18"x11" corrugated | iviaiTimity s iv. نام المنابية المنابية المنابية المنابية المنابية المنابية المنابية المنابية المنابية المنابية<br>Comment: Inv. El. (Survey) & 18"x11" corrugated metal pipe-arches (As-built: Haynsworth Village DR-5066, July/1958) | age DR-5066, July/1958)         |
|---|---------------------------|--|---------------------------------|
|   |                           |  |                                 |
| Pipe Link: L-21P                                    |                           | Upstream   | Downstream                      |
| Scenario:   | Existing Conditions       | Invert: -3.62 ft   | Invert: -3.92 ft                |
| From Node:  | MH-22                     | Manning's N: 0.0240  | Manning's N: 0.0240             |
| To Node:  | OFNF-21                   | Geometry: Arch Structural Plate  | Geometry: Arch Structural Plate |
| Link Count:   | _                         | Max Depth: 0.92 ft   | Max Depth: 0.92 ft              |
| Flow Direction:                                     | Both                      | Max Width: 1.50 ft   | Max Width: 1.50 ft              |
| Damping:  | 0.0000 ft                 | Bi   | Bottom Clip                     |
| Length:   | 189.98 ft                 | Default: 0.00 ft   | Default: 0.00 ft                |
| FHWA Code:  | 0                         | Op Table:  | Op Table:                       |
| Entr Loss Coef:                                     | 0.50                      | Ref Node:  | Ref Node:                       |
| Exit Loss Coef:                                     | 0.10                      | Manning's N: 0.0000  | Manning's N: 0.0000             |
|   | 0.00                      |  | Top Clip                        |
| Bend Loss Coef:                                     | 0.00 ft                   | Default: 0.00 ft   | Default: 0.00 ft                |
| Bend Loss Coet:<br>Bend Location:                   | Energy                    | Op Table:  | Op Table:                       |
| Bend Loss Coef:<br>Bend Location:<br>Energy Switch: |                           | Ref Node:  | Ref Node:                       |
| Bend Loss Coef:<br>Bend Location:<br>Energy Switch: |                           | Manning's N: 0.0000  | Manning's N: 0.0000             |

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|---------------|--|---------------------------------|-------------------------|--|-------------------------|
|               | Ref Node:                              |                                 | Ref Node:               |  |                         |
| le:           | Op Table:                              |                                 | Op Table:               | Energy   | Energy Switch:          |
| ult: 0.00 ft  | Default:                               | 0.00 ft                         | Default:                | 0.00 ft  | Bend Location:          |
|               | Top Clip                               |                                 |                         | 0.00   | Bend Loss Coef:         |
| N: 0.0000     | Manning's N:                           | 0.0000                          | Manning's N: 0.0000     | 0.40   | Exit Loss Coef:         |
| de:           | Ref Node:                              |                                 | Ref Node:               | 0.50   |                         |
| le:           | Op Table:                              |                                 | Op Table:               | 0  | FHWA Code:              |
| ult: 0.00 ft  | Default:                               | 0.00 ft                         | Default: 0.00 ft        | 59.47 ft   | Length:                 |
|               | Bottom Clip                            |                                 |                         | 0.0000 ft  | Damping:                |
| th: 1.50 ft   | Max Width:                             | 1.50 ft                         | Max Width: 1.50 ft      | Both   | Flow Direction:         |
| th: 0.92 ft   | Max Depth:                             | 0.92 ft                         | Max Depth: 0.92 ft      | _  | Link Count:             |
| Arch Struct   | Geometry: Arch Structural Plate        | Geometry: Arch Structural Plate | Geometry: Arch          | OFNF-24  | To Node:                |
| N: 0.024      | Manning's N: 0.0240                    | 0.0240                          | Manning's N: 0.0240     | OFNF-23  | From Node:              |
| ert: -2.59 ft | Invert:                                | Invert: -2.47 ft                | Invert:                 | Existing Conditions  | Scenario:               |
| Downstream    | Do                                     | Upstream                        | Upst                    |  | Pipe Link: L-25P        |

| Pipe Link: L-24P |                     | Upstream                        | Downstream                      |
|------------------|---------------------|---------------------------------|---------------------------------|
| Scenario:        | Existing Conditions | Invert: -2.22 ft                | Invert: -2.53 ft                |
| From Node:       | OFNF-22             | Manning's N: 0.0240             | Manning's N: 0.0240             |
| To Node:         | OFNF-23             | Geometry: Arch Structural Plate | Geometry: Arch Structural Plate |
| Link Count:      |                     | Max Depth: 0.92 ft              | Max Depth: 0.92 ft              |
| Flow Direction:  | Both                | Max Width: 1.50 ft              | Max Width: 1.50 ft              |
| Damping:         | 0.0000 ft           |                                 | Bottom Clip                     |
| Length:          | 133.06 ft           | Default: 0.00 ft                | Default: 0.00 ft                |
| FHWA Code:       | 0                   | Op Table:                       | Op Table:                       |
| Entr Loss Coef:  | 0.50                | Ref Node:                       | Ref Node:                       |
| Exit Loss Coef:  | 1.46                | Manning's N: 0.0000             | Manning's N: 0.0000             |
| Bend Loss Coef:  | 0.00                |                                 | Top Clip                        |
| Bend Location:   | 0.00 ft             | Default: 0.00 ft                | Default: 0.00 ft                |
| Energy Switch:   | Energy              | Op Table:                       | Op Table:                       |
|                  |                     | Ref Node:                       | Ref Node:                       |
|                  |                     | Manning's N: 0.0000             | Manning's N: 0.0000             |

| 0.0000  | 000 Manning's N: | Manning's N: 0.0000 |           |                 |
|---------|------------------|---------------------|-----------|-----------------|
|         | Ref Node:        | Ref Node:           |           |                 |
|         | Op Table:        | Op Table:           | Energy    | Energy Switch:  |
| 0.00 ft | 0 ft Default:    | Default: 0.00 ft    | 0.00 ft   | Bend Location:  |
|         | Top Clip         |                     | 0.00      | Bend Loss Coef: |
| 0.0000  | 000 Manning's N: | Manning's N: 0.0000 | 0.10      | Exit Loss Coef: |
|         | Ref Node:        | Ref Node:           | 0.50      | Entr Loss Coef: |
|         | Op Table:        | Op Table:           | 0         | FHWA Code: 0    |
| 0.00 ft | Default:         | Default: 0.00 ft    | 748.09 ft | Length:         |

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|                     | Energy Switch: Energy  | Bend Location:   | Bend Loss Coef: | Exit Loss Coef:     | Entr Loss Coef: | FHWA Code: | Length:          | Damping:    | Flow Direction:    | Link Count:        | To Node:                        | From Node:          | Scenario:           | Pipe Link: L-28P |
|---------------------|------------------------|------------------|-----------------|---------------------|-----------------|------------|------------------|-------------|--------------------|--------------------|---------------------------------|---------------------|---------------------|------------------|
|                     | Energy                 | 0.00 ft          | 0.00            | 0.40                | 0.50            | 0          | 74.45 ft         | 0.0000 ft   | Both               | <b>_</b>           | MH-30                           | OFNF-25             | Existing Conditions |                  |
| Manning's N: 0.0000 | Op Table:<br>Ref Node: | Default: 0.00 ft |                 | Manning's N: 0.0000 | Ref Node:       | Op Table:  | Default: 0.00 ft |             | Max Width: 2.08 ft | Max Depth: 1.33 ft | Geometry: Arch Structural Plate | Manning's N: 0.0240 | Invert: -4.39 ft    | Upstream         |
| 1000                |                        | 10 ft            | Top Clip        | 000                 |                 |            | 10 ft            | Bottom Clip | 18 ft              | 3 ft               | ctural Plate                    | 1240                | 39 ft               |                  |
|                     | Op Table:<br>Ref Node: | Default:         |                 | Manning's N:        | Ref Node:       | Op Table:  | Default:         |             | Max Width:         | Max Depth:         | Geometry: Arch ?                | Manning's N:        | Invert:             | Downst           |
| 0.0000              |                        | 0.00 ft          |                 | 0.0000              |                 |            | 0.00 ft          |             | 2.08 ft            | 1.33 ft            | Structural Plate                | 0.0240              | -4.48 ft            | stream           |

| Pipe Link: L-27P |                     | Upstream                        | Downstr        | nstream            |
|------------------|---------------------|---------------------------------|----------------|--------------------|
| Scenario:        | Existing Conditions | Invert: -4.44 ft                | Invert: -      | -4.40 ft           |
| From Node:       | MH-28               | Manning's N: 0.0130             | Manning's N: ( | 0.0130             |
| To Node:         | OFNF-25             | Geometry: Arch Structural Plate | Geometry: Arcl | h Structural Plate |
| Link Count:      | _                   | Max Depth: 1.33 ft              | Max Depth:     | 1.33 ft            |
| Flow Direction:  | Both                | Max Width: 2.08 ft              | Max Width: 2   | 2.08 ft            |
| Damping:         | 0.0000 ft           |                                 | Bottom Clip    |                    |
| Length:          | 80.50 ft            | Default: 0.00 ft                | Default: (     | 0.00 ft            |
| FHWA Code:       | 0                   | Op Table:                       | Op Table:      |                    |
| Entr Loss Coef:  | 0.50                | Ref Node:                       | Ref Node:      |                    |
|                  | 0.40                | Manning's N: 0.0000             | Manning's N: ( | 0.0000             |
| Bend Loss Coef:  | 0.00                |                                 | Top Clip       |                    |
| Bend Location:   | 0.00 ft             | Default: 0.00 ft                | Default: (     | 0.00 ft            |
| Energy Switch:   | Energy              | Op Table:                       | Op Table:      |                    |
|                  |                     | Ref Node:                       | Ref Node:      |                    |
|                  |                     | Manning's N: 0 0000             | Manning's N·   |                    |

| Manning's N: 0.0000             | 1: 0.0000                       | Manning's N: 0.0000 |                     |                 |
|---------------------------------|---------------------------------|---------------------|---------------------|-----------------|
| Ref Node:                       |                                 | Ref Node:           |                     |                 |
| Op Table:                       |                                 | Op Table:           | Energy              | Energy Switch:  |
| Default: 0.00 fi                | t: 0.00 ft                      | Default:            | 0.00 ft             | Bend Location:  |
| lip                             | Top Clip                        |                     | 0.00                | Bend Loss Coef: |
| Manning's N: 0.0000             | 1: 0.0000                       | Manning's N: 0.0000 | 1.46                | Exit Loss Coef: |
| Ref Node:                       |                                 | Ref Node:           | 0.50                | Entr Loss Coef: |
| Op Table:                       |                                 | Op Table:           | 0                   | FHWA Code:      |
| Default: 0.00 ft                | t: 0.00 ft                      | Default:            | 30.84 ft            | Length:         |
| Clip                            | Bottom Clip                     |                     | 0.0000 ft           | Damping:        |
| Max Width: 1.50 ft              | 1: 1.50 ft                      | Max Width: 1.50 ft  | Both                | Flow Direction: |
| Max Depth: 0.92 ft              | 1: 0.92 ft                      | Max Depth: 0.92 ft  | <b>_</b>            | Link Count:     |
| Geometry: Arch Structural Plate | Geometry: Arch Structural Plate | Geometry: Ar        | MH-28               | To Node:        |
| Manning's N: 0.0240             | 1: 0.0240                       | Manning's N: 0.0240 | OFNF-24             | From Node:      |
| Invert: -3.08 fr                | Invert: -2.69 ft                |                     | Existing Conditions | Scenario:       |

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| Exit Loss Coef: 1.46<br>Bend Loss Coef: 0.00 Default: | Entr Loss Coef: 0.50 Manning's N: | FHWA Code: 0 Ref Node: | Length: 145.12 ft Op Table: | Damping: 0.0000 ft Default: | Flow Direction: Both | Link Count: 1 Max Depth: | To Node: OFNF-28 Geometry: Circular | From Node: OFNF-29 Manning's N: | Scenario: Existing Conditions Invert: | Pipe Link: L-31P Upstream | Comment: 12" RCP, Inv. El. (Survey) | Manning's N:        | Energy Switch: Energy Ref Node: | Bend Location: 0.00 ft Op Table: | Bend Loss Coef: 0.00 Default: | 0.40     | 0.50 Manning's N:   | FHWA Code: 0 Ref Node: |           | Damping: 0.0000 ft Default: | Flow Direction: Both | Link Count: 1 Max Depth: | To Node: OFNF-28 Geometry: Circular | From Node: OFNF-27 Manning's N: 0.0110 | Scenario: Existing Conditions Invert: | Pipe Link: L-30P Upstream |
|---|-----------------------------------|------------------------|-----------------------------|-----------------------------|----------------------|--------------------------|-------------------------------------|---------------------------------|---------------------------------------|---------------------------|-------------------------------------|---------------------|---------------------------------|----------------------------------|-------------------------------|----------|---------------------|------------------------|-----------|-----------------------------|----------------------|--------------------------|-------------------------------------|--|---------------------------------------|---------------------------|
| 0.00 ft   | 0.0000                            |                        |                             | 0.00 ft                     | Bottom Clip          | 1.00 ft                  | Circular                            | 0.0110                          | -0.05 ft                              | eam                       |                                     | 0.0000              |                                 |                                  | 0.00 ft                       | Top Clip | 0.0000              |                        |           | 0.00 ft                     | Bottom Clip          | 1.00 ft                  | Circular                            | 0.0110                                 | 0.21 ft                               | eam                       |
| Default: 0.00 ft                                      | Manning's N: 0.0000               | Ref Node:              | Op Table:                   | Default: 0.00 ft            |                      | Max Depth: 1.00 ft       | Geometry: Circular                  | Manning's N: 0.0110             | Invert: -0.05 ft                      | Downstream                |                                     | Manning's N: 0.0000 | Ref Node:                       | Op Table:                        | Default: 0.00 ft              |          | Manning's N: 0.0000 | Ref Node:              | Op Table: | Default: 0.00 ft            |                      | Max Depth: 1.00 ft       | Geometry: Circular                  | Manning's N: 0.0110                    | Invert: -0.25 ft                      | Downstream                |

| Pipe Link: L-29P |                     | Upstream            |             | Downstream          |
|------------------|---------------------|---------------------|-------------|---------------------|
| Scenario:        | Existing Conditions | Invert: -3.36 ft    | ft          | Invert: -4.72 ft    |
| From Node:       | OFNF-26             | Manning's N: 0.0240 |             | Manning's N: 0.0240 |
| To Node:         | MH-30               | Geometry: Circular  | llar        | Geometry: Circular  |
| Link Count:      |                     | Max Depth: 1.00 ft  |             | Max Depth: 1.00 ft  |
| Flow Direction:  | Both                |                     | Bottom Clip |                     |
| Damping:         | 0.0000 ft           | Default: 0.00 ft    | ft          | Default: 0.00 ft    |
| Length:          | 36.72 ft            | Op Table:           |             | Op Table:           |
| FHWA Code:       | 0                   | Ref Node:           | _           | Ref Node:           |
| Entr Loss Coef:  | 0.50                | Manning's N: 0.0000 |             | Manning's N: 0.0000 |
| Exit Loss Coef:  | 1.46                |                     | Top Clip    |                     |
| Bend Loss Coef:  | 0.00                | Default: 0.00 ft    | ft          | Default: 0.00 ft    |
| Bend Location:   | 0.00 ft             | Op Table:           |             | Op Table:           |
| Energy Switch:   | Energy              | Ref Node:           | _           | Ref Node:           |
|                  |                     | Manning's N: 0.0000 |             | Manning's N: 0.0000 |

Comment: Inv. El. (Survey) & 25"x16" corrugated metal pipe-arches (As-built: Haynsworth Village DR-5066, July/1958)

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Link Count:

Max Depth: 0.92 ft

Max Depth:

0.92 ft

| 0.92 ft            | Max Depth:                      | Max Depth: 0.92 ft   | Link Count: 1  |            |
|--------------------|---------------------------------|--|--|------------|
| Structural Plate   | Geometry: Arch Structural Plate | Geometry: Arch Structural Plate  | To Node: OFNF-31   |            |
| 0.0240             | Manning's N:                    | Manning's N: 0.0240  | From Node: MH-36   |            |
| -3.85 II           |                                 |  |  |            |
| stream             | S                               |  |  | Pipe Lin   |
|                    |                                 |  |  |            |
|                    |                                 |  |  | Ī          |
|                    |                                 | aynsworth Village DR-5066, July/1958)  | 18"x11" corrugated metal pipe-arches (As-built: Haynsworth Village DR-5066, July/1958) | 18"x11"    |
| d over (Survey) &  | nstream appears to be pave      | Comment: Upstream Inv. El., Downstream Inv. El. assumed the same as upstream, structure downstream appears to be paved over (Survey) | ent: Upstream Inv. El., Downstream Inv. El   | Comme      |
| 0.0000             |                                 | Manning's N: 0.0000  |  |            |
|                    | Ref Node:                       | Ref Node:  |  |            |
|                    | Op Table:                       | Op Table:  |  |            |
| 0.00 ft            | Default:                        | Default: 0.00 ft   | Bend Location: 0.00 ft   |            |
|                    | Top Clip                        | То   | Bend Loss Coef: 0.00   | В          |
| 0.0000             | Manning's N:                    | Manning's N: 0.0000  | Exit Loss Coef: 1.46   |            |
|                    | Ref Node:                       |  | Entr Loss Coef: 0.50   |            |
|                    | Op Table:                       | Op Table:  |  |            |
| 0.00 ft            |                                 | Default: 0.00 ft   |  |            |
|                    |                                 |  |  |            |
| 1.50 TT            | Max Width:                      | Max Width: 1.50 ft   |  |            |
| 0.92 II            |                                 |  |  |            |
| ר Structural Plate |                                 |  |  |            |
| 0.0240             |                                 | Manning's N: 0.0240  |  |            |
| -3.16 tt           |                                 |  |  |            |
| stream             | 1SL                             |  |  | Pipe Lin   |
|                    | Manning's N:                    | Manning's N: 0.0000 Manning's N: 0.0000 Manning's N: 0.0000  | nt. Desmatroom lass El libetroom lass El   |            |
|                    | Ref Node:                       | Ref Node:  |  |            |
|                    | Op Table:                       | Op Table:  | Energy Switch: Energy  |            |
| 0.00 ft            | Default:                        | Default: 0.00 ft   | Bend Location: 0.00 ft   |            |
|                    | Fop Clip                        | То   | Bend Loss Coef: 0.00   | В          |
| 0.0000             |                                 | Manning's N: 0.0000  |  |            |
|                    | Ref Node:                       | Ref Node:  |  | _          |
|                    |                                 |  |  |            |
| 0.00 ft            | Default:                        | Default: 0.00 ft   | Length: 59.49 ft   |            |
|                    |                                 |  |  |            |
| 1 50 ft            |                                 | Max Width: 1 EO ft   |  |            |
|                    |                                 | May Donth: 0.02 ft   |  |            |
| Structural Plate   | Geometry: Arch                  | -  |  |            |
| -3.17 11           |                                 | Manning's N: 0.0200  | From Node: OENE-28   |            |
| 2 17 ft            |                                 |  | Conario.   | Pipe Link: |
|                    |                                 | Hastroom   |  | Dipolip    |
|                    |                                 |  |  | Ī          |
|                    |                                 | Comment: 12" RCP, downstream Inv. El., upstream assumed the same as downstream (Survey)  | ent: 12" RCP, downstream Inv. El., upstrea   | Comme      |
| 0.0000             |                                 | Manning's N: 0.0000  |  |            |
|                    | Ref Node:                       | Ref Node:  |  |            |
|                    | Op Table:                       | Op Table:  | Bend Location: 0.00 ft   |            |
|                    |                                 |  |  |            |

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| Pipe Link: L-35P  |   | Upstream  | eam   | Dowr  | nstream            |
|---|---|---|---|---|--------------------|
| Scenario:   | Existing Conditions   | Invert:   | -2.82 ft  | Invert:   | -3.66 ft           |
| From Node:  | OFNF-32   | Manning's N:  | 0.0240  | Manning's N:  |                    |
| To Node:  | OFNF-31   | Geometry: Arch Structural Plate   | Structural Plate  | Geometry: Arc   | h Structural Plate |
| Link Count:   |   | Max Depth:  | 0.92 ft   | Max Depth:  |                    |
| Flow Direction:   | Both  | Max Width:  | 1.50 ft   | Max Width:  |                    |
| Damping:  | 0.0000 ft   |   | Bot   | Bottom Clip   |                    |
| Length:   | 67.14 ft  | Default:  | 0.00 ft   | Default:  | 0.00 ft            |
| FHWA Code:  | 0   | Op Table:   |   | Op Table:   |                    |
| Entr Loss Coef:   | 0.50  | Ref Node:   |   | Ref Node:   |                    |
| Exit Loss Coef:   | 0.40  | Manning's N:  | 0.0000  | Manning's N:  | 0.0000             |
| Bend Loss Coef:   | 0.00  |   |   | Top Clip  |                    |
| Bend Location:  | 0.00 ft   | Default:  | 0.00 ft   | Default:  | 0.00 ft            |
| Energy Switch:  | Energy  | Op Table:   |   | Op Table:   |                    |
|   |   | Ref Node:   |   | Ref Node:   |                    |
|   |   | Manning's N:  | 0.0000  | Manning's N:  | 0.0000             |
| nment: Inv. El. (Sun  | Comment: Inv. El. (Survey) & 18"x11" corrugated metal pipe-arches (As-built: Haynsworth Village DR-5066, July/1958)                 | motal nino-archos (As-h   | uilt: Haynsworth Village  | 9 DR-5066, July/1958)   |                    |
| Pipe Link: L-36P  |   | חובנמן לולהב-מימימי איז לגיי א  |   |   |                    |
| Scenario:   |   | Upst  | Upstream  | Dow   | Downstream         |
|   | Existing Conditions   | Inicial pipe-arcies (As-v<br>Upst   | eam<br>-2.41 ft   | Down  | -3.85 ft           |
| From Node:  | Existing Conditions<br>OFNF-33  | Upst<br>Manning's N:  | eam<br>-2.41 ft<br>0.0240   | Dowr<br>Invert:<br>Manning's N:   | Inst               |
| From Node:<br>To Node:  | Existing Conditions<br>OFNF-33<br>OFNF-31   | Manning's N:<br>Geometry: Arch  | ream<br>-2.41 ft<br>0.0240<br>Structural Plate  | Down<br>Invert:<br>Manning's N:<br>Geometry: Arc  |                    |
| From Node:<br>To Node:<br>Link Count:   | Existing Conditions<br>OFNF-33<br>OFNF-31   | Manning's N:<br>Geometry: Arch  | eam<br>-2.41 ft<br>0.0240<br>Structural Plate<br>0.92 ft  | Down<br>Invert:<br>Manning's N:<br>Geometry: Arc<br>Max Depth:  | h s                |
| From Node:<br>To Node:<br>Link Count:<br>Flow Direction:  | Existing Conditions<br>OFNF-33<br>OFNF-31<br>1<br>Both  | Manning's N:<br>Geometry: Arch<br>Max Depth:<br>Max Width:  | eam<br>-2.41 ft<br>0.0240<br>Structural Plate<br>0.92 ft<br>1.50 ft                                     | Dowr<br>Invert:<br>Manning's N:<br>Geometry: Arc<br>Max Depth:<br>Max Width:  |                    |
| From Node:<br>To Node:<br>Link Count:<br>Flow Direction:<br>Damping:  | Existing Conditions<br>OFNF-33<br>OFNF-31<br>1<br>Both<br>0.0000 ft   | Manning's N:<br>Geometry: Arch<br>Max Depth:<br>Max Width:  | eam<br>-2.41 ft<br>0.0240<br>Structural Plate<br>0.92 ft<br>1.50 ft                                     | Dowi<br>Invert:<br>Manning's N:<br>Geometry: Arc<br>Max Depth:<br>Max Width:  |                    |
| From Node:<br>To Node:<br>Link Count:<br>Flow Direction:<br>Damping:<br>Length:   | Existing Conditions<br>OFNF-33<br>OFNF-31<br>1<br>Both<br>0.0000 ft<br>45.83 ft   | Manning's N:<br>Geometry: Arch<br>Max Wepth:<br>Max Width:<br>Default:  | eam<br>-2.41 ft<br>0.0240<br>Structural Plate<br>0.92 ft<br>1.50 ft<br>Bot                              | Dowr<br>Invert:<br>Manning's N:<br>Geometry: Arc<br>Max Depth:<br>Max Width:<br>Max Width:  |                    |
| From Node:<br>To Node:<br>Link Count:<br>Flow Direction:<br>Damping:<br>Length:<br>FHWA Code:   | Existing Conditions<br>OFNF-33<br>OFNF-31<br>1<br>Both<br>0.0000 ft<br>45.83 ft   | Manning's N:<br>Geometry: Arch<br>Max Wepth:<br>Max Width:<br>Default:<br>Op Table:   | eam<br>-2.41 ft<br>0.0240<br>Structural Plate<br>0.92 ft<br>1.50 ft<br>Bot                              | Down<br>Invert:<br>Manning's N:<br>Geometry: Arc<br>Max Depth:<br>Max Width:<br>Om Clip<br>Op Table:  |                    |
| From Node:<br>To Node:<br>Link Count:<br>Flow Direction:<br>Damping:<br>Length:<br>FHWA Code:<br>Entr Loss Coef:  | Existing Conditions<br>OFNF-33<br>OFNF-31<br>1<br>Both<br>0.0000 ft<br>45.83 ft<br>0  | Upst<br>Upst<br>Manning's N:<br>Geometry: Arch<br>Max Depth:<br>Max Width:<br>Default:<br>Op Table:<br>Ref Node:  | eam<br>-2.41 ft<br>0.0240<br>Structural Plate<br>0.92 ft<br>1.50 ft<br>Bot                              | Dowr<br>Invert:<br>Manning's N:<br>Geometry : Arc<br>Max Depth:<br>Max Width:<br>Max Width:<br>Default:<br>Op Table:<br>Ref Node:   |                    |
| From Node:<br>To Node:<br>Link Count:<br>Flow Direction:<br>Damping:<br>Length:<br>FHWA Code:<br>Entr Loss Coef:<br>Exit Loss Coef:                                     | Existing Conditions<br>OFNF-33<br>OFNF-31<br>1<br>Both<br>0.0000 ft<br>45.83 ft<br>0<br>0.50<br>1.46                                | Upsti<br>Upsti<br>Manning's N:<br>Geometry: Arch<br>Max Depth:<br>Max Width:<br>Default:<br>Op Table:<br>Ref Node:<br>Manning's N:                        | eam<br>-2.41 ft<br>0.0240<br>Structural Plate<br>0.92 ft<br>1.50 ft<br>0.00 ft<br>0.00 ft               | Dowr<br>Invert:<br>Manning's N:<br>Geometry: Arc<br>Max Width:<br>Max Width:<br>Default:<br>Op Table:<br>Ref Node:<br>Manning's N:  |                    |
| From Node:<br>To Node:<br>Link Count:<br>Flow Direction:<br>Damping:<br>Length:<br>FHWA Code:<br>Entr Loss Coef:<br>Exit Loss Coef:                                     | Existing Conditions<br>OFNF-33<br>OFNF-31<br>1<br>Both<br>0.0000 ft<br>45.83 ft<br>0<br>0.50<br>1.46<br>0.00                        | Upsti<br>Upsti<br>Manning's N:<br>Geometry: Arch<br>Max Depth:<br>Max Width:<br>Default:<br>Op Table:<br>Ref Node:<br>Manning's N:                        | eam<br>-2.41 ft<br>0.0240<br>Structural Plate<br>0.92 ft<br>1.50 ft<br>0.00 ft<br>0.00 ft<br>1.50 ft    | Down<br>Invert:<br>Manning's N:<br>Geometry: Arc<br>Max Depth:<br>Max Width:<br>Op Table:<br>Ref Node:<br>Ref Node:<br>Nanning's N:   |                    |
| From Node:<br>To Node:<br>Link Count:<br>Flow Direction:<br>Damping:<br>Length:<br>FHWA Code:<br>Entr Loss Coef:<br>Exit Loss Coef:<br>Bend Location:                   | Existing Conditions<br>OFNF-33<br>OFNF-31<br>1<br>Both<br>0.0000 ft<br>45.83 ft<br>0.50<br>1.46<br>0.00                             | Manning's N:<br>Geometry: Arch<br>Max Depth:<br>Max Width:<br>Default:<br>Ref Node:<br>Manning's N:   | eam<br>-2.41 ft<br>0.0240<br>Structural Plate<br>0.92 ft<br>1.50 ft<br>0.00 ft<br>0.000 ft              | Dowr<br>Invert:<br>Manning's N:<br>Geometry: Arc<br>Max Depth:<br>Max Width:<br>Op Table:<br>Ref Node:<br>Ref Node:<br>Manning's N:   |                    |
| From Node:<br>To Node:<br>Link Count:<br>Flow Direction:<br>Damping:<br>Length:<br>FHWA Code:<br>Entr Loss Coef:<br>Exit Loss Coef:<br>Bend Location:<br>Energy Switch: | Existing Conditions<br>OFNF-33<br>OFNF-31<br>1<br>Both<br>0.0000 ft<br>45.83 ft<br>0.50<br>1.46<br>0.00<br>1.46<br>0.00<br>thenergy | Manning's N:<br>Geometry: Arch<br>Max Depth:<br>Max Width:<br>Default:<br>Op Table:<br>Ref Node:<br>Manning's N:<br>Default:                              | eam<br>-2.41 ft<br>0.0240<br>Structural Plate<br>0.92 ft<br>1.50 ft<br>0.00 ft<br>0.0000<br>T           | Down<br>Invert:<br>Manning's N:<br>Geometry: Arc<br>Max Depth:<br>Max Width:<br>Op Table:<br>Ref Node:<br>Ref Node:<br>Nanning's N:<br>Op Table:                            |                    |
| From Node:<br>To Node:<br>Link Count:<br>Flow Direction:<br>Damping:<br>Length:<br>FHWA Code:<br>Entr Loss Coef:<br>Exit Loss Coef:<br>Bend Location:<br>Energy Switch: | Existing Conditions<br>OFNF-33<br>OFNF-31<br>1<br>Both<br>0.0000 ft<br>45.83 ft<br>0<br>0.50<br>1.46<br>0.00<br>0.00 ft<br>Energy   | upsti<br>Upsti<br>Manning's N:<br>Geometry: Arch<br>Max Depth:<br>Max Width:<br>Op Table:<br>Ref Node:<br>Default:<br>Op Table:<br>Ref Node:<br>Ref Node: | eam<br>-2.41 ft<br>0.0240<br>Structural Plate<br>0.92 ft<br>1.50 ft<br>0.00 ft<br>0.0000<br>T           | Dowr<br>Invert:<br>Manning's N:<br>Geometry: Arc<br>Max Depth:<br>Max Width:<br>Max Width:<br>Op Table:<br>Ref Node:<br>Default:<br>Op Table:<br>Ref Node:<br>Ref Node:     |                    |
| From Node:<br>To Node:<br>Link Count:<br>Flow Direction:<br>Damping:<br>Length:<br>FHWA Code:<br>Entr Loss Coef:<br>Exit Loss Coef:<br>Bend Location:<br>Energy Switch: | Existing Conditions<br>OFNF-33<br>OFNF-31<br>1<br>Both<br>0.0000 ft<br>45.83 ft<br>0<br>0.50<br>1.46<br>0.00<br>0.00 ft<br>Energy   | Manning's N:<br>Geometry: Arch<br>Max Depth:<br>Max Width:<br>Default:<br>Ref Node:<br>Ref Node:<br>Ref Node:<br>Ref Node:<br>Ref Node:<br>Nanning's N:   | eam<br>-2.41 ft<br>0.0240<br>Structural Plate<br>0.92 ft<br>1.50 ft<br>0.00 ft<br>0.0000<br>T<br>0.0000 | Dowr<br>Invert:<br>Manning's N:<br>Geometry: Arc<br>Max Depth:<br>Max Width:<br>Max Width:<br>Op Table:<br>Ref Node:<br>Op Table:<br>Ref Node:<br>Op Table:<br>Nanning's N: |                    |

EXISTING CONDITIONS MODEL - LINKS Flow Direction: Damping: Length: 0.0000 ft 283.40 ft Both Max Width: Default: 0.00 ft 1.50 ft Bottom Clip Max Width: Default:

Bend Loss Coef:

Entr Loss Coef:

FHWA Code:

0

Exit Loss Coef:

Manning's N:

0.0000

Manning's N:

0.0000

Ref Node:

Op Table:

0.00 ft

1.50 ft

Op Table: Ref Node:

Energy Switch:

0.50 0.10 0.00 0.00 ft Energy

Bend Location:

Comment: Upstream Inv. El. assumed the same as previous link pipe, upstream structure appears to be paved over. Downstream Inv. El. assumed the lowest Inv. El at node CB-37 (Survey) & 18"x11" corrugated metal pipe-arches (As-built: Haynsworth Village DR-5066, July/1958)

Ref Node: Manning's N:

0.0000

Ref Node: Manning's N:

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Op Table:

Default:

0.00 ft

Op Table:

Default:

0.00 ft

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| Energy Switch: Energy | Bend Location:   | Bend Loss Coef: | Exit Loss Coef:     | Entr Loss Coef: | FHWA Code: | Length: 91.66 ft | Damping:    | Flow Direction:    | Link Count:        | To Node:                        | From Node:          | Scenario:           | Pipe Link: L-39P |
|-----------------------|------------------|-----------------|---------------------|-----------------|------------|------------------|-------------|--------------------|--------------------|---------------------------------|---------------------|---------------------|------------------|
| Energy                | 0.00 ft          | 0.00            | 0.10                | 0.50            | 0          | 91.66 ft         | 0.0000 ft   | Both               | <u> </u>           | MH-30                           | MH-40               | Existing Conditions |                  |
| Op Table:             | Default: 0.00 ft |                 | Manning's N: 0.0000 | Ref Node:       | Op Table:  | Default: 0.00 ft |             | Max Width: 1.83 ft | Max Depth: 1.08 ft | Geometry: Arch Structural Plate | Manning's N: 0.0240 | Invert: -4.10 ft    | Upstream         |
| Op Table:             | Default: 0.00 ft | Top Clip        | Manning's N: 0.0000 | Ref Node:       | Op Table:  | Default: 0.00 ft | Bottom Clip | Max Width: 1.83 ft | Max Depth: 1.08 ft | Geometry: Arch Structural Plate | Manning's N: 0.0240 | Invert: -4.48 ft    | Downstream       |

| Comment: Inv. El. (Survey) & 18"x11" corrugated metal pipe-arches (As-built: Havnsworth Village DR-5066. July/1958) |
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| Bottom Clip   |
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| Havnsworth Village DR-5066, July/1958) | Comment: Upstream Inv   |                     |           | Energy Switch: | Bend Location: | Bend Loss Coef: | Exit Loss Coef:     | Entr Loss Coef: | FHWA Code: | Length:          | Damping:    | Flow Direction:    | Link Count:        | To Node:                        | From Node:          | Scenario:           | Pipe Link: L-37P |
|--|---|---------------------|-----------|----------------|----------------|-----------------|---------------------|-----------------|------------|------------------|-------------|--------------------|--------------------|---------------------------------|---------------------|---------------------|------------------|
| 5066, Julv/1958)                       | Comment: Upstream Inv. El. assumed to be the lowest Inv. El. at node CB-37 (Survey) & 22"x13" corrugated metal pipe-arches (As-built: |                     |           | Energy         | 0.00 ft        | 0.00            | 0.40                | 0.50            | 0          | 160.52 ft        | 0.0000 ft   | Both               | <b></b>            | MH-40                           | OFNF-31             | Existing Conditions |                  |
|  | vest Inv. El. at node CB-3  | Manning's N: 0.0000 | Ref Node: | Op Table:      | Default: (     |                 | Manning's N: 0.0000 | Ref Node:       | Op Table:  | Default: 0.00 ft |             | Max Width: 1.83 ft | Max Depth: 1.08 ft | Geometry: Arch Structural Plate | Manning's N: 0.0240 | Invert: -3.85 ft    | Upstream         |
|  | 7 (Survey) & 22"x13" cor  | 0.0000              |           |                | 0.00 ft        | Top Clip        | 0.0000              |                 |            | 0.00 ft          | Bottom Clip | 1.83 ft            | 1.08 ft            | tructural Plate                 | 0.0240              | 3.85 ft             | am               |
|  | rugated metal pipe-arch   | Manning's N:        | Ref Node: | Op Table:      | Default:       | dil             | Manning's N:        | Ref Node:       | Op Table:  | Default:         | Clip        | Max Width:         | Max Depth:         | Geometry: Arch :                | Manning's N:        | Invert:             | Downst           |
|  | es (As-built:   | 0.0000              |           |                | 0.00 ft        |                 | 0.0000              |                 |            | 0.00 ft          |             | 1.83 ft            | 1.08 ft            | n Structural Plate              | 0.0240              | -4.16 ft            | stream           |

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| Pipe Link: L-42P<br>Scenario: Existing Conditions<br>From Node: OFNF-35<br>To Node: OFNF-36<br>Link Count: 1<br>Flow Direction: Both<br>Damping: 0.0000 ft | Pipe Life: L-400         Upstream         Invert:         5.0.11         Invert:         6.0.001         Max Width:         3.0.011         Max Width:         Max Width:         3.0.011         Max Width:         Max Width: <th< th=""><th>Manning's N: 0.0000 Manning<br/>Comment: Inv. El. (Survey) &amp; 22"x13" corrugated metal pipe-arches (As-built: Haynsworth Village DR-5066, July/1958)</th></th<> | Manning's N: 0.0000 Manning<br>Comment: Inv. El. (Survey) & 22"x13" corrugated metal pipe-arches (As-built: Haynsworth Village DR-5066, July/1958) |
|--|---|--|
| Conditions   | Conditions<br>Man<br>Geome<br>Ma<br>Ma<br>Man<br>(22" corrugated metal pipe-arc<br>R<br>(22" corrugated metal pipe-arc<br>R<br>Man<br>E-42<br>Man<br>R<br>Man<br>R<br>Man<br>Nan<br>R<br>R<br>Man<br>R<br>R<br>Man<br>R<br>R<br>Man<br>R<br>R<br>Man<br>R<br>R<br>Man<br>R<br>R<br>Man<br>R<br>R<br>R<br>R<br>R<br>R<br>R<br>R<br>R<br>R<br>R<br>R<br>R<br>R<br>R<br>R<br>R<br>R<br>R   | Manı<br><13" corrugated metal pipe-arc   |
| Upstream<br>Invert: -0.01 ft<br>Manning's N: 0.0110<br>Geometry: Circular<br>Max Depth: 1.00 ft<br>Default: 0.00 ft  | UpstreamInvert:-5.04 ftManning's N:0.0240Geometry:Arch Structural PlateMax Width:3.00 ftOp Table:Ref Node:Ref Node:0.0000Default:0.00 ftOp Table:Ref Node:Manning's N:0.0000Default:0.0000Default:0.0000Default:0.0000Default:0.0000Default:0.0000Default:0.0000pe-arches (As-built: HaynsworthManning's N:0.0240Geometry:Arch Structural PlateMax Depth:1.83 ftMax Width:3.00 ftOp Table:0.0000Ref Node:0.0000Manning's N:0.0000Manning's N:0.0000Survey) & 36"x22" corrugated m   | Manning's N: 0.0000<br>e-arches (As-built: Haynsv  |
| Dowi<br>Invert:<br>Manning's N:<br>Geomet<br>Max Depth:<br>Bottom Clip<br>Default:   | Pipe Link: L-D0         Upstream         Doversion           Scenario:         Existing Conditions         Invert: -5.04 ft         Invert: -5.04 ft           From Node:         MH-30         Manning's N:         0.0240         Manning's N:         0.0240           From Node:         MH-30         Manning's N:         0.0240         Manning's N:         0.0240           From Node:         MH-30         Manning's N:         0.0240         Manning's N:         0.0240           Longin:         285.96 ft         Default:         0.000 ft         Max Neight:         3.00 ft         Max Neight:         3.00 ft           Find Uses Coef:         0.10         Max Midth:         3.00 ft         Max Neight:         3.00 ft         Max Neight:         3.00 ft           Bend Uses Coef:         0.00         Default:         0.000         Top Clip         Default:         0.000         Default:         0.000         Manning's N:         0.000         Manning's  | Manning's N<br>vorth Village DR-5066, July/1958)   |
| Downstream<br>nvert: -0.25 ft<br>y's N: 0.0110<br>ometry: Circular<br>epth: 1.00 ft<br>fault: 0.00 ft  | Downstream         nvert:       -5.14 ft         y's N:       0.0240         Arch Structural Plate         epth:       1.83 ft         Jidth:       3.00 ft         fault:       0.00 ft         'able:   | 0.0000   |

Ref Node:

Ref Node:

| Length         6.27.8 ft         Op Table:<br>Birl Loss Coli:         Op Table:<br>Loss Coli:         Op Table:<br>Coli:         Coli:   | tream<br>-2.84 ft<br>0.0240 | Downstream<br>Invert: -2.84   |                   |                           | l                   | Pipe Link: L-45P                  |
|---|-----------------------------|-------------------------------|-------------------|---------------------------|---------------------|-----------------------------------|
| Op Table:<br>Ref Node:<br>Default:<br>Op Table:<br>Ref Node:<br>Invert:<br>Invert:<br>Geometry: Arch<br>Max Default:<br>Op Table:<br>Ref Node:<br>Aanning's N:<br>Default:<br>Op Table:<br>Ref Node:<br>Max Depth:<br>Default:<br>Op Table:<br>Ref Node:<br>Aanning's N:<br>Default:<br>Op Table:<br>Ref Node:<br>Aanning's N:  |                             | 1 VIllage DK-Subo, July/1958) | built: Haynswortr | ad metal pipe-arcnes (As- |                     | Comment: Inv. EI. (Surv           |
| Op Table:<br>Ref Node:<br>Default:<br>Op Table:<br>Ref Node:<br>Aanning's N:<br>Geometry:<br>Max Depth:<br>Default:<br>Op Table:<br>Ref Node:<br>Aanning's N:<br>cometry: Arch<br>Max Width:<br>Default:<br>Op Table:<br>Ref Node:<br>Aanning's N:<br>Cometry: Arch<br>Max Width:<br>Default:<br>Op Table:<br>Ref Node:<br>Aanning's N:<br>Cometry: Arch<br>Max Width:<br>Default:<br>Op Table:<br>Ref Node:<br>Aanning's N:<br>Cometry: N:<br>Cometry: Arch<br>Max Width:<br>Default:<br>Op Table:<br>Ref Node:<br>Cop Table:<br>Cop Table:   | 0.0000                      | Manning's N:                  | 0.0000            | Manning's N:              |                     | Commont: Int FI (Curt             |
| Op Table:<br>Ref Node:<br>Default:<br>Op Table:<br>Ref Node:<br>Aanning's N:<br>Dop Table:<br>Cop Table:<br>Nanning's N:<br>Default:<br>Op Table:<br>Ref Node:<br>Aanning's N:<br>Default:<br>Op Table:<br>Ref Node:<br>Aanning's N:<br>Default:<br>Op Table:<br>Ref Node:<br>Aanning's N:<br>Default:<br>Op Table:<br>Ref Node:<br>Aanning's N:<br>Default:<br>Op Table:<br>Nan Default:<br>Op Table:<br>Nan Default:<br>Op Table:<br>Nan Default:<br>Op Table:<br>Nan Default:<br>Op Table:<br>Default:<br>Op Table:<br>Nan Default:<br>Op Table:<br>Default:<br>Op Table:<br>Nan Default:<br>Op Table:<br>Nan Default:<br>Op Table:<br>Nan Nig's N:  |                             | Ref Node:                     |                   | Ref Node:                 | yy                  |                                   |
| Op Table:<br>Ref Node:<br>Default:<br>Op Table:<br>Ref Node:<br>Aanning's N:<br>Geometry:<br>Max Depth:<br>Default:<br>Op Table:<br>Ref Node:<br>Aanning's N:<br>cometry: Arch<br>Max Width:<br>Default:<br>Op Table:<br>Ref Node:<br>Aanning's N:<br>cometry: Arch<br>Max Width:<br>Default:<br>Op Table:<br>Ref Node:<br>Aanning's N:   | 0.00 TT                     |                               |                   | Default:<br>Op Table:     | 0.00 tt<br>Enerav   | Bend Location:<br>Energy Switch:  |
| Op Table:<br>Ref Node:<br>Default:<br>Op Table:<br>Ref Node:<br>Invert:<br>Geometry: N:<br>Op Table:<br>Ref Node:<br>Ref Node:<br>Ref Node:<br>Aanning's N:<br>Op Table:<br>Ref Node:<br>Max Default:<br>Op Table:<br>Ref Node:<br>Aanning's N:<br>Op Table:<br>Ref Node:<br>Max Default:<br>Op Table:<br>Ref Node:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note  | 2000<br>#                   |                               |                   |                           | 0.00                | Bend Loss Coef:                   |
| Op Table:<br>Ref Node:<br>Default:<br>Op Table:<br>Ref Node:<br>Ref Node:<br>Nanning's N:<br>Geometry<br>Max Depth:<br>Op Table:<br>Ref Node:<br>Aanning's N:<br>Default:<br>Op Table:<br>Ref Node:<br>Max Depth:<br>Max Depth:<br>Max Depth:<br>Max Depth:<br>Op Table:<br>Ref Node:<br>Max Depth:<br>Max Width:<br>Default:<br>Op Table:<br>Ref Node:<br>Max Width:   | 0.0000                      | Manning's N:                  |                   | Manning's N:              | 1.46                | Exit Loss Coef:                   |
| Op Table:<br>Ref Node:<br>Default:<br>Op Table:<br>Ref Node:<br>Invert:<br>Invert:<br>Manning's N:<br>Geometry<br>Max Depth:<br>Default:<br>Op Table:<br>Ref Node:<br>Ref Node:<br>Ref Node:<br>Nanning's N:<br>Default:<br>Op Table:<br>Ref Node:<br>Aanning's N:<br>Default:<br>Op Table:<br>Aanning's N:<br>Default:<br>Op Table:<br>Ref Node:<br>Aanning's N:<br>Default:<br>Op Table:<br>Aanning's N:<br>Default:<br>Op Table:<br>Aanning's N:<br>Default:<br>Op Table:<br>Aanning's N:<br>Default:<br>Op Table:<br>Aanning's N:<br>Aanning's N:<br>Aanning's N:<br>Default:<br>Op Table:<br>Aanning's N:<br>Aanning's N:<br>Aanning N:<br>Aan   |                             | Ref Node:                     |                   | Ref Node:                 | 0.50                | Entr Loss Coef:                   |
| Op Table:<br>Ref Node:<br>Default:<br>Op Table:<br>Ref Node:<br>Invert:<br>Manning's N:<br>Geometry<br>Max Depth:<br>Default:<br>Op Table:<br>Ref Node:<br>Ref Node:<br>Ref Node:<br>Ref Node:<br>Nanning's N:<br>Default:<br>Op Table:<br>Ref Node:<br>Nanning's N:<br>Default:<br>Op Table:<br>Ref Node:<br>Aanning's N:<br>Aanning's N:<br>Aanning   | U.UU IT                     |                               |                   | Op Table:                 | 34.69 II<br>0       | FHWA Code:                        |
| Op Table:<br>Ref Node:<br>Default:<br>Op Table:<br>Ref Node:<br>Invert:<br>Geometry<br>Max Depth:<br>Op Table:<br>Ref Node:<br>Ref Node:<br>Ref Node:<br>Ref Node:<br>Ref Node:<br>Nanning's N:<br>Default:<br>Op Table:<br>Ref Node:<br>Ref Node:<br>Ref Node:<br>Aanning's N:<br>Downs<br>Invert:<br>Aanning's N:   |                             | -                             |                   |                           | 0.0000 ft           | Damping:                          |
| Op Table:<br>Ref Node:<br>Default:<br>Op Table:<br>Ref Node:<br>Ref Node:<br>Invert:<br>Manning's N:<br>Geometry<br>Max Depth:<br>Default:<br>Op Table:<br>Ref Node:<br>Ref Node:<br>Ref Node:<br>Ref Node:<br>Nanning's N:<br>Default:<br>Op Table:<br>Ref Node:<br>Nanning's N:   | 1.50 ft                     |                               |                   | Max Width:                | Both                | Flow Direction:                   |
| Op Table:<br>Ref Node:<br>Default:<br>Op Table:<br>Ref Node:<br>Invert:<br>Invert:<br>Geometry<br>Max Depth:<br>Default:<br>Op Table:<br>Ref Node:<br>Ref Node:<br>Ref Node:<br>Nanning's N:<br>Default:<br>Op Table:<br>Ref Node:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note       | 0.92 ft                     | Max Depth:                    | 0.92 ft           | Max Depth:                | 1<br>1              | Link Count:                       |
| Op Table:<br>Ref Node:<br>Default:<br>Op Table:<br>Ref Node:<br>Aanning's N:<br>Geometr<br>Max Depth:<br>Default:<br>Op Table:<br>Ref Node:<br>Ref Node:<br>Ref Node:<br>Node:<br>Nanning's N:<br>Default:<br>Op Table:<br>Ref Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>Node:<br>No       | 0.0240<br>Structural Diate  | Manning's N:                  | 0.0240            | Manning's N:              | OFNE-38             | From Node:                        |
| Op Table:<br>Ref Node:<br>Default:<br>Op Table:<br>Ref Node:<br>Aanning's N:<br>Geometr<br>Max Depth:<br>Default:<br>Op Table:<br>Ref Node:<br>Ref Node:<br>Ref Node:<br>Node:<br>Nanning's N:  | -3.23 ft                    | Invert:                       | -2.72 ft          | Invert:                   | Existing Conditions | Scenario:                         |
| Op Table:<br>Ref Node:<br>Default:<br>Op Table:<br>Ref Node:<br>Ref Node:<br>Manning's N:<br>Geometr<br>Max Depth:<br>Default:<br>Op Table:<br>Ref Node:<br>Ref Node:<br>Ref Node:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note:<br>Note | tream                       | Downs                         | - Te              | dn                        |                     | Pipe Link: L-44P                  |
| ength       62.76 ft       Op Table:       Op Table:       Op Table:       Op Table:       Op Table:       Ref Node:  | 0.0000                      | Ref Node:<br>Manning's N:     |                   | Ref Node:<br>Manning's N: | Energy              |                                   |
| ength       62.76 ft       Op Table:       Op Table:       Op Table:       Op Table:       Op Table:       Ref Node:       Ref Nod:       Ref No:   |                             | Ref Node:                     |                   | Ref Node:                 | Enerav              |                                   |
| ength:       62.76 ft       Op Table:       Op Table:       Op Table:       Op Table:       Op Table:       Ref Node:       Nanning's N:       ODO00       Manning's N:       ODO00       Manning's N:       Op Table:       Nanning's N:       Op Table:       Op Table:       Nanning's N:       Op Table:       Nanning's N:       Op Table:       Nanning's N:       Na   |                             |                               |                   | Op Table:                 | 0.00 ft             | Bend Location:                    |
| ength:       62.76 ft       Op Table:       Op Table:       Op Table:       Op Table:       Per Node:       Ref Node:       Nanning's N:       ODO ft       Default:       Op Table:       Default:       Op Table:       Nanning's N:       Op Table:       Nanning's N:       Manning's N:       Manning   | 0 00 #                      |                               |                   |                           | 0.10                | Exit Loss Coef:                   |
| ength:       62.76 ft       Op Table:<br>Ref Node:  | 0.0000                      | L                             |                   | Manning's N:              | 0.50                | Entr Loss Coef:                   |
| ength:       62.76 ft       Op Table:<br>Ref Node:       Node:       Node:       Nanning's N:       0.000 ft       Manning's N:   |                             | Ref Node:                     |                   | Ref Node:                 | 0                   | FHWA Code:                        |
| ength: $62.76 \text{ ft}$ Op Table:<br>Ref Node:       Op Table:<br>Node:       Manning's N:       Default:       Op Table:       Op Table:       Op Table:       Op Table:       Op Table:       Op Table:       Nather Node:       Nather Node: </td <td></td> <td>Op Table:</td> <td></td> <td>Op Table:</td> <td>30.66 ft</td> <td>Length:</td>   |                             | Op Table:                     |                   | Op Table:                 | 30.66 ft            | Length:                           |
| ength:62.76 ftOp Table:<br>Ref Node:<br>Nanning's N:Op Table:<br>Ref Node:<br>Node:Op Table:<br>Ref Node:<br>Node:Op Table:<br>Ref Node:<br>Node:Op Table:<br>Node:Op Table:<br>Node:Op Table:<br>Node:Node:<br>Node:Op Table:<br>Node:Node:<br>Node:Op Table:<br>Node:Op Table:<br>Nanning's N:Op Table:<br>Nanning's N:Op Table:<br>Nanning's N:Op Table:<br>Node:Op Table:<br>Nanning's N:Op Table:<br>Ning's N:   | 0.00 ft                     | I                             | 0.00 ft           | Default:                  | Both<br>0.0000 ft   | Flow Direction:<br>Damping:       |
| ength:62.76 ftOp Table:<br>Ref Node:<br>Nanning's N:Op Table:<br>Ref Node:<br>Nanning's N:Op Table:<br>Ref Node:<br>Node:Op Table:<br>Ref Node:<br>Node:Op Table:<br>Node:<br>Node:Op Table:<br>Node:Op Table:<br>Node:Op Table:<br>Nanning's N:Op Table:<br>Node:<br>Node:Op Table:<br>Node:Op Table:<br>Node:<  | 1.00 ft                     | L                             | 1.00 ft           | Max Depth:                |                     | Link Count:                       |
| ength:     62.76 ft     Op Table:     Op Table:     Op Table:     Op Table:       Code:     0     Ref Node:     Ref Node:     Ref Node:     Ref Node:       S Coef:     1.46     Default:     0.00 ft     Top Clip       S Coef:     0.00     Default:     0.00 ft     Default:       S Coef:     0.00 ft     Op Table:     Op Table:       S Coef:     0.00 ft     Default:     Op Table:       S Coef:     0.00 ft     Default:     Op Table:       S Coef:     0.00 ft     Default:     Op Table:       S Coef:     0.00 ft     Manning's N:     0.0000       Witch:     Energy     Manning's N:     0.0000     Manning's N:       Witch:     Energy     Manning's N:     0.0000     Manning's N:       CP, Inv. El. (Survey)     Vestrean     Manning's N:     Downs       Sting Conditions     Invert:     -0.31 ft     Invert:       Node:     OFNF-36     Manning's N:     0.0110     Manning's N:   | : Circular                  |                               | ry: Circular      | Geomet                    | OFNF-37             | To Node:                          |
| ength:     62.76 ft     Op Table:     Op Table:     Op Table:       Code:     0     Ref Node:     Ref Node:     Ref Node:       S Coef:     0.50     Manning's N:     0.0000     Top Clip       S Coef:     1.46     Default:     0.00 ft     Default:       S Coef:     0.00 ft     Op Table:     Op Table:       S Coef:     0.00 ft     Op Table:     Op Table:       S Coef:     0.00 ft     Ref Node:     Naming's N:       S Coef:     0.00 ft     Op Table:     Op Table:       S Coef:     0.00 ft     Naming's N:     0.0000     Manning's N:       S Coef:     1.vert:     Naming's N:     0.0000     Manning's N:  | 0.0110                      | Manning's N:                  |                   | Manning's N:              | OFNF-36             | From Node:                        |
| ength: 62.76 ft Op Table: Op Table: Code: 0 Op Table: Ref Node: Ref Node: Ref Node: Scoef: 0.50 Manning's N: 0.0000 Top Clip Scoef: 0.00 ft Op Table: Op Table: Op Table: Op Table: Ref Node: Cp, Inv. El. (Survey) Manning's N: Op Table: Scoef: Survey Manning's N: Op Table: Scoef: Note: Naming's N: Op Table: Ref Node:  | -2 72 ft                    | Downs:                        |                   | Ups                       | Evisting Conditions | Pipe Link: L-43P                  |
| Op Table:Op Table:Ref Node:Ref Node:Manning's N:0.0000Default:0.00 ftDefault:0.00 ftOp Table:Op Table:Ref Node:Ref Node:Manning's N:0.0000Manning's N:0.0000  |                             |                               |                   |                           |                     |                                   |
| 62.76 ft     Op Table:     Op Table:       0     Ref Node:     Ref Node:       0.50     Manning's N:     0.0000       1.46     Manning's N:     0.00 ft       0.00     Default:     0.00 ft     Default:       0.00 ft     Op Table:     Op Table:       Energy     Manning's N:     0.0000     Manning's N:  |                             | ¢                             |                   |                           | El. (Survey)        | Comment: 12" RCP, Inv.            |
| 62.76 ftOp Table:Op Table:Op Table:0Ref Node:Ref Node:Ref Node:0.50Manning's N:0.0000Manning's N:1.46Default:0.000 ftTop Clip0.00Default:0.00 ftDefault:0.00 ftOp Table:Op Table:EnergyRef Node:Ref Node:   | 0.0000                      | Manning's N:                  |                   | Manning's N:              | ç                   | ç                                 |
| 62.76 ftOp Table:Op Table:Op Table:0Ref Node:Ref Node:0.50Manning's N:0.00001.46Manning's N:Top Clip0.00Default:0.00 ft0.00Default:0.00 ft  |                             | Ref Node:                     |                   | Ref Node:                 | Energy              | Energy Switch:                    |
| 62.76 ftOp Table:Op Table:0Ref Node:Ref Node:0.50Manning's N:0.00001.46Top Clip   | 0.00 ft                     |                               |                   | Detault:<br>On Table      | 0.00<br>0 00 ft     | Bend Loss Coet:<br>Bend Location: |
| 62.76 ft Op Table: Op Table:<br>0 Ref Node: Ref Node: Ref Node:<br>0.50 Manning's N: 0.0000 Manning's N:  |                             |                               |                   |                           | 1.46                | Exit Loss Coef:                   |
| 62.76 ft Op Table:<br>0 Ref Node:   | 0.0000                      | Manning's N:                  |                   | Manning's N:              | 0.50                | Entr Loss Coef:                   |
| 62.76 ft Op Table:  |                             | Ref Node:                     |                   | Ref Node:                 | 0                   |                                   |
|   |                             | Op Table:                     |                   | Op Table:                 | 62.76 ft            |                                   |

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| Existing Conditions     Invert:     -2       OFNF-39     Manning's N:     0       OFNF-41     Max Depth:     0       1     Max Depth:     0       Both     Max Width:     1       0.0000 ft     Default:     0       55.08 ft     OF Table:     0       0     Ref Node:     0       0.10     Manning's N:     0       0.000 ft     Default:     0       0.00     Default:     0       0.00     Ref Node:     0       0.00     Ref Node:     0       0.10     Manning's N:     0       0.10     Manning's N:     0 | Existing ConditionsInvert:-2.76 ftOFNF-39Manning's N:0.0240OFNF-41Max Depth:0.92 ft1Max Depth:0.92 ftBothMax Width:1.50 ft0.0000 ftDefault:0.00 ft55.08 ftDefault:0.00 ft0Ref Node:0.00000.10Manning's N:0.00000.00 ftDefault:0.00000.00 ftRef Node:Top Cli0.00 ftDefault:0.00 ft0.00 ftManning's N:0.00000.00 ftManning's N:0.0000 | g Conditions            | Comment: Upstream Inv   |           | Energy Switch: Energy | Bend Location: | Bend Loss Coef: | Exit Loss Coef: | Entr Loss Coef: | FHWA Code: | Length:  | Damping:  | Flow Direction: | Link Count:   | To Node:          | From Node:      | Scenario:           |           |
|---|---|-------------------------|---|-----------|-----------------------|----------------|-----------------|-----------------|-----------------|------------|----------|-----------|-----------------|---------------|-------------------|-----------------|---------------------|-----------|
| Invert: -2<br>Manning's N: 0<br>Geometry: Arch Str<br>Max Depth: 0<br>Default: 0<br>Op Table:<br>Ref Node:<br>Default: 0<br>Op Table:<br>Ref Node:<br>Ref Node:<br>Ref Node:  | Invert: -2.76 ft<br>Manning's N: 0.0240<br>Geometry: Arch Structural Plate<br>Max Depth: 0.92 ft<br>Max Width: 1.50 ft<br>Default: 0.00 ft<br>Op Table:<br>Ref Node:<br>Manning's N: 0.000 Top Cli<br>Default: 0.00 ft<br>Op Table:<br>Ref Node:<br>Ref Node:<br>Ref Node:<br>Manning's N: 0.0000                                   | Bottom Clip<br>Top Clip | Manning's N:         0.0000         Manning's N:         0.0000           Comment: Upstream Inv. El., downstream Inv. El assumed the same as upstream, downstream structure appears to be paved over (Survey) & |           | Energy                | 0.00 ft        | 0.00            | 0.10            | 0.50            | 0          | 55.08 ft | 0.0000 ft | Both            | <u> </u>      | OFNF-41           | OFNF-39         | Existing Conditions |           |
|   | 2.76 ft<br>0240<br>uctural Plate<br>92 ft<br>50 ft<br>60 ft<br>0000<br>Top Cli<br>00 ft<br>0000   | Bottom Clip<br>Top Clip | Manning's N: 0.   | Ref Node: | Op Table:             | Default: 0.    |                 | Manning's N: 0. | Ref Node:       | Op Table:  |          |           |                 | Max Depth: 0. | Geometry: Arch St | Manning's N: 0. | Invert: -2          | no litedo |

| Pipe Link: L-46P |                     | Upstream                        | Downsti       | nstream            |
|------------------|---------------------|---------------------------------|---------------|--------------------|
| Scenario:        | Existing Conditions | Invert: -2.80 ft                | Invert:       | -3.05 ft           |
| From Node:       | OFNF-40             | Manning's N: 0.0240             | Manning's N:  | 0.0240             |
| To Node:         | OFNF-39             | Geometry: Arch Structural Plate | Geometry: Arc | h Structural Plate |
| Link Count:      | _                   | Max Depth: 0.92 ft              | Max Depth:    | 0.92 ft            |
| Flow Direction:  | Both                | Max Width: 1.50 ft              |               | 1.50 ft            |
| Damping:         | 0.0000 ft           |                                 | Bottom Clip   |                    |
| Length:          | 34.61 ft            | Default: 0.00 ft                | Default:      | 0.00 ft            |
| FHWA Code:       | 0                   | Op Table:                       | Op Table:     |                    |
| Entr Loss Coef:  | 0.50                | Ref Node:                       | Ref Node:     |                    |
| Exit Loss Coef:  | 1.46                | Manning's N: 0.0000             | Manning's N:  | 0.0000             |
| Bend Loss Coef:  | 0.00                |                                 | Top Clip      |                    |
| Bend Location:   | 0.00 ft             | Default: 0.00 ft                | Default: (    | 0.00 ft            |
| Energy Switch:   | Energy              | Op Table:                       | Op Table:     |                    |
|                  |                     | Ref Node:                       | Ref Node:     |                    |
|                  |                     | Manning's N: 0.0000             | Manning's N:  | 0.0000             |

| Link Count: 1      | To Node: OFNF-39                | EXISTING CONDITIONS MODEL - LINKS |
|--------------------|---------------------------------|-----------------------------------|
| Max Depth: 0.92 ft | Geometry: Arch Structural Plate |                                   |

|                              |           | Energy Switch: Energy | Bend Location: 0.00 ft | Bend Loss Coef: 0.00 | Exit Loss Coef: 0.10 | Entr Loss Coef: 0.50 | FHWA Code: 0 | Length: 103.84 ft | Damping: 0.0000 ft | Flow Direction: Both | Link Count: 1      | To Node: OFNF-39                |
|------------------------------|-----------|-----------------------|------------------------|----------------------|----------------------|----------------------|--------------|-------------------|--------------------|----------------------|--------------------|---------------------------------|
| Manning's N: 0.0000 Manning' | Ref Node: | Op Table:             | Default: 0.00 ft       |                      | Manning's N: 0.0000  | Ref Node:            | Op Table:    | Default: 0.00 ft  | Bo                 | Max Width: 1.50 ft   | Max Depth: 0.92 ft | Geometry: Arch Structural Plate |
| Manning's N: 0.0000          | Ref Node: | Op Table:             | Default: 0.00 ft       | Top Clip             | Manning's N: 0.0000  | Ref Node:            | Op Table:    | Default: 0.00 ft  | Bottom Clip        | Max Width: 1.50 ft   | Max Depth: 0.92 ft | Geometry: Arch Structural Plate |

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|                        |          | Bend Loss Coef: 0.00 | Exit Loss Coef: 0.10 | Entr Loss Coef: 0.50 | FHWA Code: 0 |          |   |         |            |            |                                 |              | nario:              | Pipe Link: L-50P |  | iviaritiitigs is outputs investion investigated metal nine-arches (As-built: Havnsworth Villane DR-5066 Tully/1958). Comment: Inv El (Survey) & 18"x11" corrugated metal nine-arches (As-built: Havnsworth Villane DR-5066 Tully/1958). |             | Energy Switch: Energy  |   |              |           |           |          | Damping: 0.0 | Flow Direction: Both | Link Count: 1 | To Node: OF                     |              | enario:             | Pipe Link: L-49P | Comment: Inv. El. (Survey) & 18"x11" corrugated metal pipe-arches (As-built: Haynsworth Village DR-5066, July/1958) | Commont. Int El (Cumou) |              |           |           |          |          | Exit Loss Coef: 0.10 | Entr Loss Coef: 0.50 | FHWA Code: 0 |          |             | Flow Direction: Both | Link Count: 1 | To Node: OF                     | From Node: OF |                     |
|------------------------|----------|----------------------|----------------------|----------------------|--------------|----------|---|---------|------------|------------|---------------------------------|--------------|---------------------|------------------|--|---|-------------|------------------------|---|--------------|-----------|-----------|----------|--------------|----------------------|---------------|---------------------------------|--------------|---------------------|------------------|---|-------------------------|--------------|-----------|-----------|----------|----------|----------------------|----------------------|--------------|----------|-------------|----------------------|---------------|---------------------------------|---------------|---------------------|
| Energy                 | 0.00 ft  | ō                    | 0                    | õ                    |              | 82.83 TT |   |         | 5          |            | OENE-46                         | OFNF-44      | Existing Conditions |                  |  | & 18"x11" corrugated m  |             | Energy                 |   | 6            | Č         |           | 27.84 ft | 0.0000 ft    | Б                    |               | OFNF-44                         | OFNF-43      | Existing Conditions |                  | & 18"x11" corrugated m  | 0 10"×11" operiod m     |              | u,        | Enerav    | 0.00 ft  | ō        | 0                    | Ō                    |              | 59.22 ft | 0.0000 ft   | 5                    |               | OFNF-44                         | OFNF-42       | Existing Conditions |
| Op Table:<br>Ref Node: | Default: |                      | Manning's N:         | Ref Node:            | Op Table:    | Default: | - |         | Max Width: | Max Denth  | Geometry: Arch Structural Plate | Manning's N: | Invert:             | Upstream         | and the second | etal nine-arches (As-hi   | Manajade N: | Ref Node:              |   | Manning's N: | Ref Node: | Op Table: | Default: |              | Max Width:           | Max Depth:    | Geometry: Arch Structural Plate |              | Invert:             | Upstream         | etal pipe-arches (As-bu   | otal pipo arabas (As b  | Manning's N: | Ref Node: | Op Table: | Default: |          | Manning's N:         | Ref Node:            | Op Table:    | Default: |             | Max Width:           | Max Depth:    | Geometry: Arch Structural Plate | Manning's N:  | Invert:             |
|                        | 0.00 ft  | Tc                   | 0.0000               |                      |              | 0.00 TT  |   |         | 1 EO ft    | 0 0 0 ft   | Structural Plat≏                | 0.0240       | -2.25 ft            | eam              |  | ilt: Havnsworth Village   |             |                        | l | 0.0000       |           |           | 0.00 ft  | Bott         | 1.50 ft              | 0.92 ft       | Structural Plate                | 0.0240       | -2.73 ft            | eam              | uit: Haynsworth Village   | ilt. Unwewerth Villogo  | 0.0000       |           |           | 0.00 ft  |          | 0.0000               |                      |              | 0.00 ft  | Bott        | 1.50 ft              | 0.92 ft       | Structural Plate                | 0.0240        | -2.20 11            |
| Op Table:              | Default: | Top Clip             | Manning's N:         | Ref Node:            | Op Table:    | Default: |   |         |            | May Denth: | Geometry: Arct                  | Manning's N: | Invert:             | Down             |  | DR-5066 Iulv/1958)  |             | Op Table:<br>Ref Node: |   | Manning's N: | Ret Node: | Op Table: | Default: | Bottom Clip  | Max Width:           | Max Depth:    | Geometry: Arch                  | Manning's N: | Invert:             | Down             | · DR-5066, July/1958)   | DD E044 1.4./10E0       | Manning's N: | Ref Node: | Op Table: | Default: | Top Clip | Manning's N:         | Ref Node:            | Op Table:    | Default: | Bottom Clip | Max Width:           | Max Depth:    | Geometry: Arch                  | Manning's N:  |                     |
|                        | 0.00 ft  |                      | 0.0000               |                      |              | U.UU IT  |   | 1.00 11 |            |            | -                               |              | -2.73 ft            | stream           |  |   |             |                        |   | 0.0000       |           |           | 0.00 ft  |              | 1.50 ft              | 0.92 ft       | h Structural Plate              | 0.0240       | -2.40 ft            | Downstream       |   |                         | 0.0000       |           |           | 0.00 ft  |          | 0.0000               |                      |              | 0.00 ft  |             | 1.50 ft              |               | h Structural Plate              | 0.0240        |                     |

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| adule:         vode::         y's N:       0.0000         fault:       0.00 ft         'able:       'ode:         vode:       0.0000         y's N:       0.0000         y's N:       0.0000         y's N:       0.0000         )       0.0240         y's N:       0.0240         y's N:       0.0240         y's N:       0.0240         'Arch Structural Plate         epth:       0.92 ft         /idth:       1.50 ft         'able:       'ode:         vode:       0.0000         y's N:       0.0000         y's N:       0.0000         y's N:       0.0000 | vert:<br>'s N:<br>'s N: | Print Loss Coef:     0.00     Ref Note:     0.000     Ref Note:     0.000       Bend Loss Coef:     1.46     Manning's N:     0.0001     Default:     0.0001     Manning's N:     0.0001       Bend Loss Coef:     1.46     Manning's N:     0.0001     Default:     0.001     Ref Note:       Bend Loss Coef:     1.46     Manning's N:     0.0001     Default:     0.001     Ref Note:       Comment:     Inv. EI, (Survey) & TeXT1" corrugated metal pipe-arches (As-bult: Hayrsworth Vilage DR:5066, July/1958)     Manning's N:     0.0240     Manning's N:       Comment:     Inv. EI, (Survey) & TeXT1" corrugated metal pipe-arches (As-bult: Hayrsworth Vilage DR:5066, July/1958)     Invest:     3.62 ft     Invest:     1.63 ft       From Node:     OFNE-41     Manning's N:     0.0240     Manning's N:     0.0240       Link Count:     1     Max Depth:     0.92 ft     Max Depth:     0.92 ft       Flow Direction:     Borl Loss Coef:     0.000 ft     Default:     0.000 ft     Def       Langth:     Is6.65 ft     Default:     0.000 ft     Def     Def       Flow Direction:     Borl Loss Coef:     0.000     Max W     Def     Def       Langth:     Is6.65 ft     Default:     0.000 ft     Def     Def       Entr L | Fritry Custor       0       Op Table:         Exit Loss Coef:       1.46       Manning's N:       0.000         Bend Location:       0.00 ft       Default:       Op Table:         Energy Switch:       Energy       Ref Node:       Manning's N:       0.000         Bend Location:       0.00 ft       Op Table:       Ref Node:       Op Table:       Ref Node:         Comment:       Inv. El. (Survey) & 18"x11" corrugated metal pipe-arches (As-built: Haynswor       Manning's N:       0.000         Comment:       Inv. El. (Survey) & 18"x11" corrugated metal pipe-arches (As-built: Haynswor       Node:       Node:         Scenario:       Existing Conditions       Invert:       -3.62 ft       Manning's N:       0.0000         To Node:       OFNF-46       Manning's N:       0.0240       Structural Pla       Invert:       -3.62 ft         From Node:       OFNF-41       Max Width:       1.50 ft       Default:       0.00 ft       Op Table:       Ref Node:         Entr Loss Coef:       1.46       Manning's N:       0.0001       Default:       0.0001       Default:       0.0001         Bend Location:       0.00 ft       Default:       Op Table:       Ref Node:       0.0000       Ref Node:       0.0000       0.0000 | 0.50<br>1.46<br>0.00<br>0.00 ft<br>Energy<br>Existing Conditions<br>OFNF-46<br>OFNF-41<br>1<br>1<br>1<br>1<br>1<br>156.65 ft<br>0<br>0.000 ft<br>1.46<br>0.000<br>1.46<br>0.000<br>1.46<br>0.000<br>Energy<br>Energy<br>Energy<br>Existing Conditions | Comment: Loss Coef:<br>Bend Loss Coef:<br>Bend Loss Coef:<br>Bend Location:<br>Energy Switch:<br>From Node:<br>To Node:<br>Link Count:<br>Flow Direction:<br>Damping:<br>Length:<br>Entr Loss Coef:<br>Exit Loss Coef:<br>Bend Location:<br>Entr Loss Coef:<br>Bend Loss Coef:<br>Exit Loss Coef:<br>Exit Loss Coef:<br>Bend Location:<br>Energy Switch:<br>Energy Switch:<br>Na"x11" corrugated met |
|---|---|--|---|---|--|
| nstream<br>: -2.97 ft<br>: 0.0240<br>ch Structural Plate<br>: 0.92 ft<br>: 1.50 ft<br>: 0.00 ft   |   | ream<br>-2.64 ft<br>0.0240<br>1 Structural Plate<br>0.92 ft<br>1.50 ft<br>0.00 ft  | Upsi<br>Invert:<br>Manning's N:<br>Geometry: Arch<br>Max Depth:<br>Max Width:<br>Default:   | Existing Conditions<br>OFNF-45<br>OFNF-46<br>1<br>Both<br>0.0000 ft<br>27.16 ft   | Pipe Link: L-51P<br>Scenario:<br>From Node:<br>To Node:<br>Link Count:<br>Flow Direction:<br>Damping:<br>Length:   |

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|----------------|---------------------------------|---|---------------------------------|---------------------------|-------------------------|
| 0.0000         | -<br>                           | Comment: Inv. El. (Survey) & 18"x11" corrugated metal pipe-arches (As-built: Haynsworth Village DR-5066, July/1958) | metal pipe-arches (As-built     | /ey) & 18"x11" corrugated | òomment: Inv. El. (Surv |
|                | Ref Node:                       | 0000  | Ref Node:                       |                           |                         |
|                | Op Table:                       |   | Op Table:                       | Energy                    | Energy Switch:          |
| 0.00 ft        | Default:                        | 0.00 ft   | Default: 0.                     | 0.00 ft                   | Bend Location:          |
|                |                                 | Top Clip  |                                 | 0.00                      | Bend Loss Coef:         |
| 0.0000         | Manning's N:                    | 0000  | Manning's N: 0.0000             | 0.10                      | Exit Loss Coef:         |
|                | Ref Node:                       |   | Ref Node:                       | 0.50                      | Entr Loss Coef:         |
|                | Op Table:                       |   | Op Table:                       | 0                         | FHWA Code:              |
| 0.00 ft        | Default:                        | 0.00 ft   | Default: 0.                     | 49.84 ft                  | Length:                 |
|                |                                 | Bottom Clip   |                                 | 0.0000 ft                 | Damping:                |
| 1.50 ft        | Max Width:                      | 50 ft   | Max Width: 1.50 ft              | Both                      | Flow Direction:         |
| : 0.92 ft      | Max Depth:                      | 92 ft   | Max Depth: 0.92 ft              | <u> </u>                  | Link Count:             |
| Structural Pla | Geometry: Arch Structural Plate | ructural Plate  | Geometry: Arch Structural Plate | OFNF-49                   | To Node:                |
| 0.0240         | Manning's N:                    | 0240  | Manning's N: 0.0240             | OFNF-48                   | From Node:              |
| t: -2.43 ft    | Invert:                         | <sup>1</sup> .68 ft   | Invert: -1.68 ft                | Existing Conditions       | Scenario:               |
| instream       | Downst                          | Ξ   | Upstream                        |                           | Pipe Link: L-55P        |

| Pipe Link: L-54P |                     | Upstream                        | eam              | Dow                 | Downstream                      |
|------------------|---------------------|---------------------------------|------------------|---------------------|---------------------------------|
| Scenario:        | Existing Conditions | Invert: -3.61 ft                | -3.61 ft         | Invert              | Invert: -3.21 ft                |
| From Node:       | OFNF-47             | Manning's N: 0.0240             | 0.0240           | Manning's N: 0.0240 | : 0.0240                        |
| To Node:         | OFNF-49             | Geometry: Arch Structural Plate | Structural Plate | Geometry: Ard       | Geometry: Arch Structural Plate |
| Link Count:      |                     | Max Depth: 0.92 ft              | 0.92 ft          | Max Depth: 0.92 ft  | : 0.92 ft                       |
| Flow Direction:  | Both                | Max Width: 1.50 ft              | 1.50 ft          | Max Width:          | : 1.50 ft                       |
| Damping:         | 0.0000 ft           |                                 | Bot              | Bottom Clip         |                                 |
| Length:          | 50.50 ft            | Default:                        | 0.00 ft          | Default:            | : 0.00 ft                       |
| FHWA Code:       | 0                   | Op Table:                       |                  | Op Table:           |                                 |
| Entr Loss Coef:  | 0.50                | Ref Node:                       |                  | Ref Node:           |                                 |
| Exit Loss Coef:  | 1.46                | Manning's N: 0.0000             | 0.0000           | Manning's N:        | : 0.0000                        |
| Bend Loss Coef:  | 0.00                |                                 | 1                | Top Clip            |                                 |
| Bend Location:   | 0.00 ft             | Default:                        | 0.00 ft          | Default:            | : 0.00 ft                       |
| Energy Switch:   | Energy              | Op Table:                       |                  | Op Table:           |                                 |
|                  |                     | Ref Node:                       |                  | Ref Node:           |                                 |
|                  |                     | Manning's N: 0.0000             | 0.0000           | Manning's N         | : 0.0000                        |

EXISTING CONDITIONS MODEL - LINKS Exit Loss Coef: Entr Loss Coef: FHWA Code: 1.46 0.50 0 Op Table: Ref Node: Manning's N: 0.0000 Op Table: Ref Node: Manning's N: 0.0000

Bend Loss Coef:

0.00

Bend Location:

Energy Switch:

0.00 ft Energy

Comment: Downstream Inv. EL, upstream Inv. El assumed the same as downstream, upstream structure appears to be paved over (Survey) & 18"x11" corrugated metal pipe-arches (As-built: Haynsworth Village DR-5066, July/1958)

Manning's N: 0.0000

Default: Op Table: Ref Node: Manning's N:

0.0000

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Op Table: Ref Node:

Default:

0.00 ft

Top Clip

0.00 ft

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| Comment: 12" RCP, Inv. El. (Survey) |                     | Energy Switch: Energy | Bend Location: | Bend Loss Coef:  | Exit Loss Coef: | Entr Loss Coef:     | FHWA Code: | Length:   | Damping:  | Flow Direction: | Link Count:        | To Node:           | From Node:          | Scenario:           | Pipe Link: L-58P |
|-------------------------------------|---------------------|-----------------------|----------------|------------------|-----------------|---------------------|------------|-----------|-----------|-----------------|--------------------|--------------------|---------------------|---------------------|------------------|
| . El. (Survey)                      |                     | Energy                | 0.00 ft        | 0.00             | 0.10            | 0.50                | 0          | 25.36 ft  | 0.0000 ft | Both            |                    | OFNF-51            | OFNF-50             | Existing Conditions |                  |
|                                     | Manning's N: 0.0000 | Ref Node:             | Op Table:      | Default: 0.00 ft |                 | Manning's N: 0.0000 | Ref Node:  | Op Table: | Default:  |                 | Max Depth: 1.00 ft | Geometry: Circular | Manning's N: 0.0110 | Invert: -1.20 ft    | Upstream         |
|                                     | 0.0000              |                       |                | 0.00 ft          | Тор             | 0.0000              |            |           | 0.00 ft   | Bottor          | 1.00 ft            | Circular           | 0.0110              | -1.20 ft            | eam              |
|                                     | Manning's N:        | Ref Node:             | Op Table:      | Default:         | Top Clip        | Manning's N:        | Ref Node:  | Op Table: | Default:  | Bottom Clip     | Max Depth:         | Geometr            | Manning's N:        | Invert:             | Down             |
|                                     | 0.0000              |                       |                | 0.00 ft          |                 | 0.0000              |            |           | 0.00 ft   |                 | 1.00 ft            | Geometry: Circular | 0.0110              | -1.15 ft            | stream           |

| 0.0000             |                | IN. 0.0000                      | c 6i ili i ibiai |                     |                  |
|--------------------|----------------|---------------------------------|------------------|---------------------|------------------|
| 0.0000             | Manning's N:   | Manning's N: 0.0000             | Manning's        |                     |                  |
|                    | Ref Node:      | de:                             | Ref Node:        |                     |                  |
|                    | Op Table:      | le:                             | Op Table:        | Energy              | Energy Switch:   |
| 0.00 ft            | Default:       | Default: 0.00 ft                | Defau            | 0.00 ft             | Bend Location:   |
|                    | Top Clip       | Т                               |                  | 0.00                | Bend Loss Coef:  |
| 0.0000             | Manning's N:   | Manning's N: 0.0000             | Manning's        | 1.00                | Exit Loss Coef:  |
|                    | Ref Node:      | de:                             | Ref Node:        | 0.50                | Entr Loss Coef:  |
|                    | Op Table:      | le:                             | Op Table:        | 0                   | FHWA Code:       |
| 0.00 ft            | Default:       | ult: 0.00 ft                    | Default:         | 18.50 ft            | Length:          |
|                    | Bottom Clip    | Bot                             |                  | 0.0000 ft           | Damping:         |
| 2.08 ft            | Max Width:     | Max Width: 2.08 ft              | Max Wid          | Both                | Flow Direction:  |
| 1.33 ft            | Max Depth:     | Max Depth: 1.33 ft              | Max Dep          | _                   | Link Count:      |
| n Structural Plate | Geometry: Arch | Geometry: Arch Structural Plate | Geometry: A      | BND-TIDE-42         | To Node:         |
| 0.0240             | Manning's N:   | Manning's N: 0.0240             | Manning's        | MH-58               | From Node:       |
| -5.93 ft           | Invert:        | Invert: -4.43 ft                | Inve             | Existing Conditions | Scenario:        |
| nstream            | Downs          | Upstream                        |                  |                     | Pipe Link: L-57P |

|                     |           | Energy Switch: Energy | Bend Location: | Bend Loss Coef: | Exit Loss Coef:     | Entr Loss Coef: | FHWA Code: | Length:   | Damping:    | Flow Direction:    | Link Count:        | To Node:                        | From Node:          | Scenario:           |
|---------------------|-----------|-----------------------|----------------|-----------------|---------------------|-----------------|------------|-----------|-------------|--------------------|--------------------|---------------------------------|---------------------|---------------------|
|                     |           | Energy                | 0.00 ft        | 0.00            | 0.40                | 0.50            | 0          | 156.31 ft | 0.0000 ft   | Both               | <u> </u>           | MH-58                           | OFNF-49             | Existing Conditions |
| Manning's N: 0.0000 | Ref Node: | Op Table:             | Default:       |                 | Manning's N: 0.0000 | Ref Node:       | Op Table:  | Default:  |             | Max Width: 2.08 ft | Max Depth: 1.33 ft | Geometry: Arch Structural Plate | Manning's N: 0.0240 | Invert: -3.65 ft    |
| 0.0000              |           |                       | 0.00 ft        | Top Clip        | 0.0000              |                 |            | 0.00 ft   | Bottom Clip | 2.08 ft            | 1.33 ft            | structural Plate                | 0.0240              | -3.65 ft            |
| Manning's N:        | Ref Node: | Op Table:             | Default:       | Clip            | Manning's N:        | Ref Node:       | Op Table:  | Default:  | n Clip      | Max Width:         | Max Depth:         | Geometry: Arch                  | Manning's N:        | Invert:             |
| 0.0000              |           |                       | 0.00 ft        |                 | 0.0000              |                 |            | 0.00 ft   |             | 2.08 ft            | 1.33 ft            | Structural Plate                | 0.0240              | -3.87 ft            |

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| Pipe Link: L-61P      |                     | Upstream            | Downstream          |
|-----------------------|---------------------|---------------------|---------------------|
| Scenario:             | Existing Conditions | Invert: -4.70 ft    | Invert: -5.69 ft    |
| From Node:            | MH-62               | Manning's N: 0.0110 | Manning's N: 0.0110 |
| To Node:              | BND-TIDE-42         | Geometry: Circular  | Geometry: Circular  |
| Link Count:           |                     | Max Depth: 3.00 ft  | Max Depth: 3.00 ft  |
| Flow Direction:       | Both                |                     | Bottom Clip         |
| Damping:              | 0.0000 ft           | Default: 0.00 ft    | Default: 0.00 ft    |
| Length:               | 115.60 ft           | Op Table:           | Op Table:           |
| FHWA Code:            | 0                   | Ref Node:           | Ref Node:           |
| Entr Loss Coef:       | 0.50                | Manning's N: 0.0000 | Manning's N: 0.0000 |
| Exit Loss Coef:       | 1.00                |                     | Top Clip            |
| Bend Loss Coef:       | 0.00                | Default: 0.00 ft    | Default: 0.00 ft    |
| Bend Location:        | 0.00 ft             | Op Table:           | Op Table:           |
| Energy Switch: Energy | Energy              | Ref Node:           | Ref Node:           |
|                       |                     | Manning's N: 0.0000 | Manning's N: 0.0000 |

| Pipe Link: L-60P |                     | Upstream            | Downstream          | stream             |
|------------------|---------------------|---------------------|---------------------|--------------------|
| Scenario:        | Existing Conditions | Invert: -4.56 ft    | Invert:             | Invert: -4.82 ft   |
| From Node:       | MH-61               | Manning's N: 0.0110 | Manning's N: 0.0110 | 0.0110             |
| To Node:         | MH-62               | Geometry: Circular  | Geometry            | Geometry: Circular |
| Link Count:      | _                   | Max Depth: 3.00 ft  | Max Depth:          | 3.00 ft            |
| ••               | Both                |                     | Bottom Clip         |                    |
| Damping:         | 0.0000 ft           | Default: 0.00 ft    | Default:            | 0.00 ft            |
| Length:          | 55.72 ft            | Op Table:           | Op Table:           |                    |
| FHWA Code:       | 0                   | Ref Node:           | Ref Node:           |                    |
| Entr Loss Coef:  | 0.50                | Manning's N: 0.0000 | Manning's N:        | 0.0000             |
| Exit Loss Coef:  | 0.40                |                     | Top Clip            |                    |
| Bend Loss Coef:  | 0.00                | Default: 0.00 ft    | Default:            | 0.00 ft            |
| Bend Location:   | 0.00 ft             | Op Table:           | Op Table:           |                    |
| Energy Switch:   | Energy              | Ref Node:           | Ref Node:           |                    |
|                  |                     |                     |                     |                    |

|              |              | ss (Survev)      | Comment: 15" RCP, upstream Inv. FL, downstream Inv. FL outfall no access (Survey) | stream Inv. Fl., downstre | Comment: 15" RCP Line |
|--------------|--------------|------------------|---|---------------------------|-----------------------|
| 0.0000       | Manning's N: | 0.0000           | Manning's N: 0.0000   |                           |                       |
|              | Ref Node:    |                  | Ref Node:   | Energy                    | Energy Switch: Energy |
|              | Op Table:    |                  | Op Table:   | 0.00 ft                   | Bend Location:        |
| 0.00 ft      | Default:     | 0.00 ft          | Default:  | 0.00                      | Bend Loss Coef:       |
|              | Top Clip     |                  |   | 1.00                      | Exit Loss Coef:       |
| 0.0000       | Manning's N: | 0.0000           | Manning's N: 0.0000   | 0.50                      | Entr Loss Coef:       |
|              | Ref Node:    |                  | Ref Node:   | 0                         | FHWA Code:            |
|              | Op Table:    |                  | Op Table:   | 190.00 ft                 | Length:               |
| 0.00 ft      | Default:     | 0.00 ft          | Default:  | 0.0000 ft                 | Damping:              |
|              | Bottom Clip  |                  |   | Both                      | Flow Direction:       |
| 1.25 ft      | Max Depth:   | 1.25 ft          | Max Depth: 1.25 ft  | <u> </u>                  | Link Count:           |
| ry: Circular | Geometr      | /: Circular      | Geometry: Circular  | BND-TIDE-42               | To Node:              |
| 0.0110       | Manning's N: | 0.0110           | Manning's N: 0.0110   | OFNF-51                   | From Node:            |
| -1.18 ft     | Invert:      | Invert: -1.18 ft | Invert:   | Existing Conditions       | Scenario:             |
| Downstream   | Down         | Upstream         | Upst  |                           | Pipe Link: L-59P      |
|              |              |                  |   |                           |                       |

| 0.0000            |                |             |             | ر<br>د                   |   |                    |
|-------------------|----------------|-------------|-------------|--------------------------|---|--------------------|
|                   |                |             | 0.0000      | Manning's N:             |   |                    |
|                   | Ref Node:      |             |             | Ref Node:                | Energy  | Energy Switch:     |
|                   | Op Table:      |             |             | Op Table:                | 0.00 ft   | Bend Location:     |
| 0.00 ft           | Default: (     |             | 0.00 ft     | Default:                 | 0.00  | Bend Loss Coef:    |
|                   |                | Top Clip    |             |                          | 1.46  | Exit Loss Coef:    |
| 0.0000            | Manning's N:   |             | 0.0000      | Manning's N:             | 0.50  | Entr Loss Coef:    |
|                   | Ref Node:      |             |             | Ref Node:                | 0   | FHWA Code:         |
|                   | Op Table:      |             |             | Op Table:                | 5.67 ft   | Length:            |
| 0.00 ft           | Default: (     |             | 0.00 ft     | Default:                 | 0.0000 ft   | Damping:           |
|                   | 4              | Bottom Clip |             |                          | Both  | Flow Direction:    |
| 1.50 ft           | Max Depth:     |             | 1.50 ft     | Max Depth:               |   | Link Count:        |
| y: Circular       | Geometry:      |             | r: Circular | Geometry: Circular       | OFNF-0680   | To Node:           |
| 0.0120            | Manning's N:   |             | 0.0120      | Manning's N:             | OFNF-56   | From Node:         |
| -0.36 ft          | Invert:        |             | -0.70 ft    | Invert:                  | Existing Conditions   | Scenario:          |
| .eam              | Downstream     |             | Upstream    | Upsti                    | l   | Pipe Link: L-67P   |
|                   |                |             |             | outiali (bis_ss)         | עטווווושוונ. אאטווושם עועש אנצ א גטווופגנוטוו נט סס טענומו (סוכ_סט)                 | nent. Assumed pipe |
| 0.0000            |                |             | 0.0000      | Nitfall (DIC 22)         | cizo & connection to 24"  | oont: Accumed him  |
|                   |                |             |             | Manning's N:             | Energy  | Energy switch:     |
|                   | Op Table:      |             |             | Op Lable:                | 0.00 H  | Bend Location:     |
| 0.00 ft           |                |             | 0.00 ft     | Default:                 | 0.00  | Bend Loss Coet:    |
|                   |                |             |             | 1                        | 0.40  | EXIT LOSS COEF:    |
| 0.0000            | Manning's N:   | H           | 0.0000      | Manning's N:             | 0.50  | Entr Loss Coet:    |
|                   |                |             |             | Ref Node:                |   | FHWA Code:         |
|                   | Op Table:      |             |             | Op Table:                | 79.25 ft  | Length:            |
| 0.00 ft           |                |             | 0.00 ft     | Default:                 | 0.0000 ft   | Damping:           |
|                   |                | Bottom Clip |             |                          | Both  | Flow Direction:    |
| 3.00 ft           | Max Depth:     | 2           | 3.00 ft     | Max Depth:               |   | Link Count:        |
| /: Circular       | $\sim$         |             | r: Circular | Geometry: Circular       | MH-61   | To Node:           |
| 0.0110            | Manning's N: ( |             | 0.0110      | Manning's N:             | OFNF-54   | From Node:         |
| -4.59 ft          |                |             | -4.59 ft    | Invert:                  | Existing Conditions   | Scenario:          |
| eam               | Downstream     |             | Upstream    | Upsti                    |   | Pipe Link: L-65P   |
|                   |                |             |             |                          |   |                    |
|                   |                | ter         | Pipe Diame  | Ground El - 3 FT Cover - | Comment: Assumed pipe size. Assumed Invert = Ground EI - 3 FT Cover - Pipe Diameter | nent: Assumed pipe |
| 0.0000            |                |             | 0.0000      | Manning's N:             |   |                    |
|                   | Ref Node:      |             |             | Ref Node:                | Energy  | Energy Switch:     |
|                   |                |             | 0.0016      | On Table:                | 0.00 ft   | Rend Location:     |
| 0 00 ft           | Default:       | 4110 401    | 0 00 ft     | Default:                 | 0.00  | Rend Loss Coef     |
|                   |                | Top Clip    | 0.0000      |                          | 0.00  | Entri Loss Coef:   |
|                   |                |             |             | Manning's N:             | 0 00  | Entrinse Coof      |
|                   | Pef Node:      |             |             | Op Laule:<br>Ref Node:   |   |                    |
|                   |                |             |             |                          |   | Damping:           |
| 2 00 <del>4</del> |                | Bottom Clip | 0 00 4      |                          | Both  | Flow Direction:    |
| 2.00 ft           | Max Depth:     | )<br>:<br>: | 2.00 ft     | Max Depth:               |   | Link Count:        |
| /: Circular       | $\sim$         |             | r: Circular | Geometry: Circular       | OFNF-54   | To Node:           |
| 0.0120            | Manning's N:   |             | 0.0120      | Manning's N:             | OFNF-0670   | From Node:         |
| 1.00 10           |                |             |             |                          |   |                    |

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|---|--------------------------|---------------------|-------------|---------------------|--------------|
| Exit Loss Coef:   | 0.00                     |                     | Top Clip    |                     |              |
| Bend Loss Coef:   | 0.00                     | Default: 0.00 ft    | ft          | Default: 0          | 0.00 ft      |
| Bend Location:  | 0.00 ft                  | Op Table:           |             | Op Table:           |              |
| Energy Switch: Energy   | Energy                   | Ref Node:           |             | Ref Node:           |              |
|   |                          | Manning's N: 0.0000 | 00          | Manning's N: 0      | 0.0000       |
| Comment:  |                          |                     |             |                     |              |
|   |                          |                     |             |                     |              |
|   |                          |                     |             |                     |              |
| Pipe Link: L-70P  |                          | Upstream            |             | Downstream          | am           |
| Scenario:   | Existing Conditions      | Invert: -2.99 ft    | ) ft        | Invert: -2          | -2.99 ft     |
| From Node:  | OFNF-58                  | Manning's N: 0.0120 | 20          | Manning's N: 0      | 0.0120       |
| To Node:  | MH-70                    | Geometry: Circular  | ular        | Geometry: (         | ry: Circular |
| Link Count:   |                          | Max Depth: 2.00 ft  | ft          | Max Depth: 2        | 2.00 ft      |
| Flow Direction:   | Both                     |                     | Bottom Clip |                     |              |
| Damping:  | 0.0000 ft                | Default: 0.00 ft    | ft          | Default: 0          | 0.00 ft      |
| Length:   | 26.80 ft                 | Op Table:           |             | Op Table:           |              |
| FHWA Code:  | 0                        | Ref Node:           |             | Ref Node:           |              |
| Entr Loss Coef:   | 0.00                     | Manning's N: 0.0000 | 00          | Manning's N: 0      | 0.0000       |
| Exit Loss Coef:   | 0.00                     |                     | Top Clip    |                     |              |
| Bend Loss Coef:   | 0.00                     | Default: 0.00 ft    | ft          | Default: 0          | 0.00 ft      |
| Bend Location:  | 0.00 ft                  | Op Table:           |             | Op Table:           |              |
| Energy Switch:  | Energy                   | Ref Node:           |             | Ref Node:           |              |
|   |                          | Manning's N: 0.0000 | 00          | Manning's N: 0      | 0.0000       |
| Comment: Assumed pipe size. Assumed invert from surrounding pipes | poole Accument involting |                     |             |                     |              |

| Energy Switch: Energy | Energy              | Ref Node:           |             | Ref Node:           |  |
|-----------------------|---------------------|---------------------|-------------|---------------------|--|
|                       |                     | Manning's N: 0.0000 | 0.0000      | Manning's N: 0.0000 |  |
| Comment:              |                     |                     |             |                     |  |
| 1                     |                     |                     |             |                     |  |
|                       |                     |                     |             |                     |  |
| Pipe Link: L-69P      |                     | Upstream            | eam         | Downstream          |  |
| Scenario:             | Existing Conditions | Invert: -2.99 ft    | -2.99 ft    | Invert: -2.99 ft    |  |
| From Node:            | OFNF-57             | Manning's N: 0.0120 | 0.0120      | Manning's N: 0.0120 |  |
| To Node:              | OFNF-58             | Geometry: Circular  | : Circular  | Geometry: Circular  |  |
| Link Count:           | <br>                | Max Depth: 2.00 ft  | 2.00 ft     | Max Depth: 2.00 ft  |  |
| Flow Direction:       | Both                |                     | Bottom Clip |                     |  |
| Damping:              | 0.0000 ft           | Default: 0.00 ft    | 0.00 ft     | Default: 0.00 ft    |  |
| Length:               | 47.49 ft            | Op Table:           |             | Op Table:           |  |
| FHWA Code:            | 0                   | Ref Node:           |             | Ref Node:           |  |
| Entr Loss Coef:       | 0.00                | Manning's N: 0.0000 | 0.0000      | Manning's N: 0.0000 |  |
| Exit Loss Coef:       | 0.00                |                     | Top Clip    |                     |  |
| Bend Loss Coef:       | 0.00                | Default: 0.00 ft    | 0.00 ft     | Default: 0.00 ft    |  |
| Bend Location:        | 0.00 ft             | Op Table:           |             | Op Table:           |  |
| Energy Switch:        | Energy              | Ref Node:           |             | Ref Node:           |  |
|                       |                     | Manajarie NI O OOOO |             | Manning's N: 0 0000 |  |

| Comment: |                     | Energy Switch: Energy | Bend Location: | Bend Loss Coef: | Exit Loss Coef: | Entr Loss Coef:     | FHWA Code: | Length:   | Damping:  | Flow Direction: | Link Count:        | To Node:           | From Node:          | Scenario:           | Pipe Link: L-68P |
|----------|---------------------|-----------------------|----------------|-----------------|-----------------|---------------------|------------|-----------|-----------|-----------------|--------------------|--------------------|---------------------|---------------------|------------------|
|          |                     | Energy                | 0.00 ft        | 0.00            | 0.00            | 0.00                | 0          | 386.28 ft | 0.0000 ft | Both            | <br>I              | MH-70              | OFNF-0680           | Existing Conditions |                  |
|          | Manning's N: 0.0000 | Ref Node:             | Op Table:      | Default:        |                 | Manning's N: 0.0000 | Ref Node:  | Op Table: | Default:  |                 | Max Depth: 2.00 ft | Geometry: Circular | Manning's N: 0.0120 | Invert: -1.59 ft    | Upstream         |
|          | 0.0000              |                       |                | 0.00 ft         | Тор             | 0.0000              |            |           | 0.00 ft   | Bottoi          | 2.00 ft            | : Circular         | 0.0120              | -1.59 ft            | eam              |
|          | Manning's N:        | Ref Node:             | Op Table:      | Default:        | Top Clip        | Manning's N:        | Ref Node:  | Op Table: | Default:  | Bottom Clip     | Max Depth:         | Geometry           | Manning's N:        | Invert:             | Down             |
|          | 0.0000              |                       |                | 0.00 ft         |                 | 0.0000              |            |           | 0.00 ft   |                 | 2.00 ft            | Geometry: Circular | 1: 0.0120           | -1.59 ft            | Downstream       |

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| Pipe Link: L-73P      |                     | Upstream            | eam        |              | Downstream          |
|-----------------------|---------------------|---------------------|------------|--------------|---------------------|
| Scenario:             | Existing Conditions | Invert: -2.31 ft    | -2.31 ft   | n            | Invert: -2.31 ft    |
| From Node:            | OFNF-60             | Manning's N: 0.0120 | 0.0120     | Manning      | Manning's N: 0.0120 |
| To Node:              | MH-73               | Geometry: Circular  | : Circular | Ger          | Geometry: Circular  |
| Link Count:           |                     | Max Depth: 1.25 ft  | 1.25 ft    | Max Depth:   | epth: 1.25 ft       |
| Flow Direction:       | Both                |                     |            | Bottom Clip  |                     |
| Damping:              | 0.0000 ft           | Default:            | 0.00 ft    | Det          | Default: 0.00 ft    |
| Length:               | 25.91 ft            | Op Table:           |            | Op Table:    | able:               |
| FHWA Code:            | 0                   | Ref Node:           |            | Ref Node:    | lode:               |
| Entr Loss Coef:       | 0.00                | Manning's N: 0.0000 | 0.0000     | Manning's N: | y's N: 0.0000       |
| Exit Loss Coef:       | 0.00                |                     |            | Top Clip     |                     |
| Bend Loss Coef:       | 0.00                | Default: 0.00 ft    | 0.00 ft    | Det          | Default: 0.00 ft    |
| Bend Location:        | 0.00 ft             | Op Table:           |            | Op Table:    | able:               |
| Energy Switch: Energy | Energy              | Ref Node:           |            | Ref Node:    | lode:               |
|                       |                     | Manning's N: 0.0000 | 0.0000     | Manning's N  | 1'S N: 0.0000       |

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| Manning's N: 0.0000 | Manning's N: 0.0000 |                     |                       |
|---------------------|---------------------|---------------------|-----------------------|
| Ref Node:           | Ref Node:           | Energy              | Energy Switch: Energy |
| Op Table:           | Op Table:           | 0.00 ft             | Bend Location:        |
| Default: 0.00 ft    | Default: 0.00 ft    | 0.00                | Bend Loss Coef:       |
| Top Clip            | T                   | 0.00                | Exit Loss Coef:       |
| Manning's N: 0.0000 | Manning's N: 0.0000 | 0.00                | Entr Loss Coef:       |
| Ref Node:           | Ref Node:           | 0                   | FHWA Code:            |
| Op Table:           | Op Table:           | 43.03 ft            | Length:               |
| Default: 0.00 ft    | Default: 0.00 ft    | 0.0000 ft           | Damping:              |
| Bottom Clip         | Bo                  | Both                | Flow Direction:       |
| Max Depth: 1.25 ft  | Max Depth: 1.25 ft  | <br>I               | Link Count:           |
| Geometry: Circular  | Geometry: Circular  | OFNF-60             | To Node:              |
| Manning's N: 0.0120 | Manning's N: 0.0120 | OFNF-59             | From Node:            |
| Invert: -2.27 ft    | Invert: -2.27 ft    | Existing Conditions | Scenario:             |
| Downstream          | Upstream            |                     | Pipe Link: L-72P      |

|              | Energy Switch: E                        | Bend Location: 0  | Bend Loss Coef: 0   | Exit Loss Coef: 0  | Entr Loss Coef: 0   | FHWA Code: 0   | Length: 2   | Damping: 0   | Flow Direction: B  | Link Count: 1   | To Node: N   | From Node: N   | Scenario: E   | Pipe Link: L-71P   |
|--------------|---|---|---|--|---|--|---|--|--|---|--|--|---|--|
|              | nergy                                   | .00 ft  | .00   | .00  | .00   |  | 61.68 ft  | .0000 ft   | oth  |   | 1H-73  | 1H-70  | xisting Conditions  |  |
| Manning's N: | Ref Node:                               | Op Table:   | Default:  |  | Manning's N:  | Ref Node:  | Op Table:   | Default:   |  | Max Depth:  | Geometry:  | Manning's N:   | Invert:   | Upstream   |
| 0.0000       |   |   | 0.00 ft   | L  | 0.0000  |  |   | 0.00 ft  | Bot  | 2.00 ft   | Circular   | 0.0120   | -2.99 ft  | am   |
| Manning      | Ref N                                   | Op Ta   | Defi  | op Clip  | Manning   | Ref N  | Op Ta   | Defi   | ttom Clip  | Max De  | Geo  | Manning  | Inv   |  |
| 's N: 0.0000 | ode:                                    | able:   | ault: 0.00 ft   |  | 's N: 0.0000  | ode:   | able:   | ault: 0.00 ft  |  | pth: 2.00 ft  | metry: Circular  |  | vert: -2.99 ft  | Downstream   |
|              | Manning's N: 0.0000 Manning's N: 0.0000 | Energy Ref Node: Ref Node: Ref Node: Manning's N: 0.0000 Manning's N: | 0.00 ft Op Table: Op Table:<br>Energy Ref Node: Ref Node:<br>Manning's N: 0.0000 Manning's N: | 0.00     Default:     0.00 ft     Default:       0.00 ft     Op Table:     Op Table:     Op Table:       Energy     Ref Node:     Ref Node:       Manning's N:     0.0000     Manning's N: | 0.00     Top Clip       0.00     Default:     0.00 ft     Default:       0.00 ft     Op Table:     Op Table:     Op Table:       Energy     Ref Node:     Ref Node:     Ref Node: | 0.00         Manning's N:         0.000         Top Clip           0.00         Default:         0.00 ft         Default:           0.00         Default:         0.00 ft         Default:           0.00 ft         Op Table:         Op Table:         Op Table:           Energy         Ref Node:         Ref Node:         Manning's N: | 0         Ref Node:         Ref Node:         Ref Node:           0.00         Manning's N:         0.0000         Manning's N:           0.00         Default:         0.00 ft         Top Clip           0.00         Default:         0.00 ft         Default:           0.00 ft         Op Table:         Op Table:         Op Table:           Energy         Manning's N:         0.0000         Manning's N: | 261.68 ft         Op Table:         Op Table:         Op Table:         Op Table:           0         Ref Node:         Ref Node:         Ref Node:         Ref Node:           0.00         Manning's N:         0.0000         Manning's N:         0.0000         Manning's N:           0.00         Default:         0.00 ft         Top Clip         Default:         0.00 ft         Default:         0.00 Table:           0.00 ft         Op Table:         Op Table:         Op Table:         Ref Node:         Ref Node:         Ref Node:         Manning's N:         Manning's N: | 0.0000 ft       Default:       0.00 ft       Default:         261.68 ft       Op Table:       Op Table:       Op Table:         0       Ref Node:       Ref Node:       Ref Node:         0.00       Manning's N:       0.0000       Manning's N:         0.00       Default:       0.0000       Manning's N:         0.00       Default:       0.00 ft       Default:         0.00 ft       Op Table:       Op Table:       Op Table:         0.00 ft       Ref Node:       Op Table:       Op Table:         Energy       Manning's N:       0.0000       Manning's N: | Both         Default:         0.00 ft         Default:           0.0000 ft         Default:         0.00 ft         Default:           261.68 ft         Op Table:         Op Table:         Op Table:           0         Ref Node:         Ref Node:         Ref Node:           0.00         Manning's N:         0.0000         Manning's N:           0.00         Default:         0.000 ft         Default:           0.00         Default:         0.00 ft         Default:           0.00 ft         Op Table:         Op Table:         Op Table:           0.00 ft         Default:         0.00 ft         Default:         Op Table:           0.00 ft         Op Table:         Op Table:         Op Table:         Op Table:           Energy         Ref Node:         Ref Node:         Manning's N:         0.0000         Manning's N: | 1         Max Depth:         2.00 ft         Max Depth:           Both         Default:         0.00 ft         Default:           261.68 ft         Op Table:         Op Table:         Op Table:           0         Ref Node:         Ref Node:         Ref Node:           0.00         Manning's N:         0.000 ft         Default:           0.00         Default:         0.000 ft         Default:           0.00         Default:         0.000 ft         Default:           0.00         Default:         0.00 ft         Default:           0.00         Default:         0.00 ft         Default:           0.00 ft         Op Table:         Op Table:         Op Table:           0.00 ft         Ref Node:         Op Table:         Op Table:           Energy         Manning's N:         0.0000         Manning's N: | MH-73Geometry: CircularGeometry1Max Depth:2.00 ftMax Depth:BothMax Depth:2.00 ftMax Depth:0.0000 ftDefault:0.00 ftDefault:261.68 ftOp Table:Op Table:Op Table:0Ref Node:Ref Node:Ref Node:0.00Manning's N:0.0000Top Clip0.00Default:0.00 ftDefault:0.00Default:0.00 ftDefault:0.00Ref Node:Op Table:Op Table:0.00Ref Node:Op Table:Op Table:EnergyManning's N:0.0000Manning's N: | MH-70         Manning's N:         0.0120         Manning's N:         0.0120         Manning's N:         0.0120         Manning's N:         Geometry:         Circular         Geometry:         Georetry:         Geometry: | Existing ConditionsInvert:-2.99 ftInvert:Invert:MH-70Manning's N:0.0120Manning's N:MH-73Geometry: CircularGeometry:1Max Depth:2.00 ftMax Depth:1Max Depth:2.00 ftMax Depth:BothDefault:0.00 ftDefault:0.0000 ftDefault:0.00 ftDefault:261.68 ftOp Table:Op Table:Op Table:0Ref Node:Top ClipNanning's N:0.00Default:0.00 ftDefault:0.00Default:0.00 ftDefault:0.00Ref Node:Op Table:Op Table:0.00 ftRef Node:Cop Table:Op Table:0.00 ftRef Node:Ref Node:Ref Node:0.00 ftStanning's N:0.0000Manning's N: |

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| Pipe Link: L-75P   |   | Upst   | Upstream  |                         | Downs  | nstream   |
|--|---|--|---|-------------------------|--|---|
| Scenario:  | Existing Conditions   | Invert:  | -2.25 ft  |                         | Invert:                                      | -2.25 ft  |
| From Node:   | OFNF-61   | Manning's N:   | 0.0120  |                         | Manning's N:                                 | 0.0120  |
| To Node:   | OFNF-62   | Geometry   | Geometry: Circular  |                         |  | ry: Circular  |
| Link Count:  |   | Max Depth:   | 1.25 ft   |                         | Max Depth:                                   | 1.25 ft   |
| Flow Direction:  | Both  |  |   | Bottom Clip             |  |   |
| Damping:   | 0.0000 ft   | Default:   | 0.00 ft   |                         | Default:                                     | 0.00 ft   |
| Length:  | 55.39 ft  | Op Table:  |   |                         | Op Table:                                    |   |
| FHWA Code:   | 0   | Ref Node:  |   |                         | Ref Node:                                    |   |
| Entr Loss Coef:  | 0.00  | Manning's N:   | 0.0000  |                         | Manning's N:                                 | 0.0000  |
| Exit Loss Coef:  | 0.00  |  |   | Top Clip                |  |   |
| Bend Loss Coef:  | 0.00  | Default:   | 0.00 ft   |                         | Default:                                     | 0.00 ft   |
| Bend Location:   | 0.00 ft   | Op Table:  |   |                         | Op Table:                                    |   |
| Energy Switch:   | Energy  | Ref Node:  |   |                         | Ref Node:                                    |   |
|  |   | Manning's N:   | 0.0000  |                         | Manning's N:                                 | 0.0000  |
|  | comment: Assumed pipe size. Assumed invert =  | Ground El  | - Pipe Diameter   |                         |  |   |
| e Link: L-76P  | Assumed Invert =  | Ground El - 3 FT Cover   | - Pipe Diameter   |                         | Downs  | tream   |
| e Link: L-76P<br>Scenario:   | ng Conditions   | Ground El - 3 FT Cover<br>Upst   | vver - Pipe Diameter<br>Upstream<br>ert: -2.25 ft   |                         | Downstream                                   | tream<br>-2.25 ft   |
| e Link: L-76P<br>Scenario:<br>From Node:   | -62   | Ground El - 3 FT Cover<br>Upst<br>Invert:<br>Manning's N:  | - Pipe Diameter<br>ream<br>-2.25 ft<br>0.0120   |                         | Downs<br>Invert:<br>Manning's N:             | tream<br>-2.25 ft<br>0.0120   |
| e Link: L-76P<br>Scenario:<br>From Node:<br>To Node:   | Assumed invert =  | Ground El - 3 FT Cover - Pipe Dia<br>Upstream<br>Invert: -2.25 ft<br>Manning's N: 0.0120<br>Geometry: Circular   | - Pipe Diameter<br>ream<br>-2.25 ft<br>0.0120<br>/: Circular  |                         | Downs<br>Invert:<br>Manning's N:<br>Geometry | nstream<br>-2.25 ft<br>0.0120<br>ry: Circular   |
| e Link: L-76P<br>Scenario:<br>From Node:<br>To Node:<br>Link Count:  | -62   | Ground El - 3 FT Cover<br>Upst<br>Invert:<br>Manning's N:<br>Geometry<br>Max Depth:  | - Pipe Diameter<br>ream<br>-2.25 ft<br>0.0120<br>/: Circular<br>1.25 ft                                   |                         |  | tream<br>-2.25 ft<br>0.0120<br>: Circular<br>1.25 ft                                    |
| e Link: L-76P<br>Scenario:<br>From Node:<br>To Node:<br>Link Count:<br>Flow Direction:   | Assumed Invert =  | Ground El - 3 FT Cover<br>Upst<br>Invert:<br>Manning's N:<br>Geometr<br>Max Depth:   | - Pipe Diameter<br>ream<br>-2.25 ft<br>0.0120<br>/: Circular<br>1.25 ft                                   | Bottom Clip             |  | tream<br>-2.25 ft<br>0.0120<br>: Circular<br>1.25 ft                                    |
| e Link: L-76P<br>Scenario:<br>From Node:<br>To Node:<br>Link Count:<br>Flow Direction:<br>Damping:   | Assumed Invert =  | Ground El - 3 FT Cover<br>Upst<br>Invert:<br>Manning's N:<br>Geometr<br>Max Depth:<br>Default:   | - Pipe Diameter<br>ream<br>-2.25 ft<br>0.0120<br>:: Circular<br>1.25 ft<br>0.00 ft                        | Bottom Clip             |  | tream<br>-2.25 ft<br>0.0120<br>: Circular<br>1.25 ft<br>0.00 ft                         |
| e Link: L-76P<br>Scenario:<br>From Node:<br>To Node:<br>Link Count:<br>Flow Direction:<br>Damping:<br>Length:  | Assumed invert =<br>ng Conditions<br>-62<br>6<br>6<br>6<br>7<br>6                                       | Ground El - 3 FT Cover<br>Upst<br>Invert:<br>Manning's N:<br>Geometr<br>Max Depth:<br>Default:<br>Op Table:  | - Pipe Diameter<br>ream<br>-2.25 ft<br>0.0120<br>1.25 ft<br>1.25 ft<br>0.00 ft                            | Bottom Clip             |  | tream<br>-2.25 ft<br>0.0120<br>: Circular<br>1.25 ft<br>0.00 ft                         |
| Pipe Link: L-76P<br>Scenario:<br>From Node:<br>To Node:<br>Link Count:<br>Flow Direction:<br>Damping:<br>Length:<br>FHWA Code:   | -62<br>6<br>6<br>7<br>6<br>6<br>7<br>6  | Ground El - 3 FT Cover<br>Upst<br>Invert:<br>Manning's N:<br>Geometr<br>Max Depth:<br>Default:<br>Op Table:<br>Ref Node:   | - Pipe Diameter<br>-2.25 ft<br>0.0120<br>/: Circular<br>1.25 ft<br>0.00 ft                                | Bottom Clip             |  | tream<br>-2.25 ft<br>0.0120<br>1.25 ft<br>1.25 ft                                       |
| e Link: L-76P<br>Scenario:<br>From Node:<br>To Node:<br>Link Count:<br>Flow Direction:<br>Damping:<br>Length:<br>FHWA Code:<br>Entr Loss Coef:   | -62<br>-62<br>-67<br>-67<br>-67<br>-67<br>-67<br>-67<br>-67<br>-67<br>-67                               | Ground El - 3 FT Cover<br>Upst<br>Invert:<br>Manning's N:<br>Geometry<br>Max Depth:<br>Default:<br>Op Table:<br>Ref Node:<br>Nanning's N:                            | - Pipe Diameter<br>ream<br>-2.25 ft<br>0.0120<br>7: Circular<br>1.25 ft<br>0.00 ft<br>0.000               | Bottom Clip             |  | 1.25 ft<br>0.0120<br>1.25 ft<br>0.00 ft<br>0.000 ft                                     |
| e Link: L-76P<br>Scenario:<br>From Node:<br>To Node:<br>Link Count:<br>Flow Direction:<br>Damping:<br>Length:<br>FHWA Code:<br>Entr Loss Coef:   | Assumed Invert =  | Ground El - 3 FT Cover<br>Upst<br>Invert:<br>Manning's N:<br>Geometry<br>Max Depth:<br>Default:<br>Op Table:<br>Ref Node:<br>Ref Node:<br>Nanning's N:               | - Pipe Diameter<br>ream<br>-2.25 ft<br>0.0120<br>1.25 ft<br>0.00 ft<br>0.0000                             | Bottom Clip             |  | tream<br>-2.25 ft<br>0.0120<br>: Circular<br>1.25 ft<br>0.00 ft<br>0.0000               |
| e Link: L-76P<br>Scenario:<br>From Node:<br>To Node:<br>Link Count:<br>Flow Direction:<br>Damping:<br>Length:<br>FHWA Code:<br>Entr Loss Coef:<br>Exit Loss Coef:  | Assumed Invert =  | Ground El - 3 FT Cover<br>Upst<br>Invert:<br>Manning's N:<br>Geometry<br>Max Depth:<br>Default:<br>Op Table:<br>Ref Node:<br>Manning's N:                            | - Pipe Diameter<br>ream<br>-2.25 ft<br>0.0120<br>:: Circular<br>1.25 ft<br>0.00 ft<br>0.0000              | Bottom Clip<br>Top Clip |  | tream<br>-2.25 ft<br>0.0120<br>: Circular<br>1.25 ft<br>0.00 ft<br>0.0000               |
| e Link: L-76P<br>Scenario:<br>From Node:<br>To Node:<br>Link Count:<br>Flow Direction:<br>Damping:<br>Length:<br>FHWA Code:<br>Entr Loss Coef:<br>Exit Loss Coef:<br>Bend Location:  | Assumed Invert =<br>ng Conditions<br>-62<br>-62<br>-62<br>-62<br>-62<br>-62<br>-62<br>-62<br>-62<br>-62 | Ground El - 3 FT Cover<br>Upst<br>Invert:<br>Manning's N:<br>Geometry<br>Max Depth:<br>Op Table:<br>Ref Node:<br>Manning's N:<br>Op Table:                           | - Pipe Diameter<br>-2.25 ft<br>0.0120<br>7: Circular<br>1.25 ft<br>0.00 ft<br>0.0000                      | Bottom Clip<br>Top Clip |  | tream<br>-2.25 ft<br>0.0120<br>Circular<br>1.25 ft<br>0.00 ft<br>0.000ft                |
| e Link: L-76P<br>Scenario:<br>From Node:<br>To Node:<br>Link Count:<br>Flow Direction:<br>Damping:<br>Length:<br>FHWA Code:<br>Entr Loss Coef:<br>Exit Loss Coef:<br>Bend Location:<br>Energy Switch:                      | ng Conditions<br>-62<br>-62<br>-62<br>-62<br>-62<br>-62<br>-62<br>-62<br>-62<br>-62                     | Ground El - 3 FT Cover<br>Upst<br>Invert:<br>Manning's N:<br>Geometry<br>Max Depth:<br>Default:<br>Op Table:<br>Ref Node:<br>Ref Node:<br>Ref Node:                  | - Pipe Diameter<br>-2.25 ft<br>0.0120<br>:: Circular<br>1.25 ft<br>0.00 ft<br>0.0000                      | Bottom Clip<br>Top Clip |  | tream<br>-2.25 ft<br>0.0120<br>: Circular<br>1.25 ft<br>0.00 ft<br>0.000ft              |
| e Link: L-76P<br>Scenario:<br>From Node:<br>To Node:<br>Link Count:<br>Flow Direction:<br>Damping:<br>Length:<br>FHWA Code:<br>Entr Loss Coef:<br>Exit Loss Coef:<br>Bend Loss Coef:<br>Bend Loss Coef:<br>Bend Loss Coef: | Assumed invert =<br>-62<br>-62<br>0 ft<br>ft<br>ft<br>ft<br>ft  | Ground El - 3 FT Cover<br>Upst<br>Invert:<br>Manning's N:<br>Geometr<br>Max Default:<br>Op Table:<br>Ref Node:<br>Default:<br>Op Table:<br>Ref Node:<br>Nanning's N: | - Pipe Diameter<br>-ream<br>-2.25 ft<br>0.0120<br>7: Circular<br>1.25 ft<br>0.00 ft<br>0.0000<br>0.000 ft | Bottom Clip<br>Top Clip |  | tream<br>-2.25 ft<br>0.0120<br>: Circular<br>1.25 ft<br>0.00 ft<br>0.000 ft<br>0.000 ft |

Pipe Link: L-74P

Manning's N: 0.0000 Comment: Assumed pipe size. Assumed Invert = Ground EI - 3 FT Cover - Pipe Diameter

Bend Loss Coef:

0.00 0.00

0.00 ft

Bend Location: Energy Switch:

Energy

Op Table: Ref Node:

Manning's N:

0.0000

Ref Node:

Op Table:

Default:

0.00 ft

Default:

0.00 ft

Top Clip

Manning's N:

0.0000

Ref Node:

Default: Op Table:

0.00 ft

Entr Loss Coef: Exit Loss Coef:

Manning's N:

0.0000

Ref Node:

Default: Op Table:

0.00 ft

Bottom Clip

FHWA Code:

0

Length:

0.0000 ft 134.11 ft

Flow Direction:

Both

Damping:

Link Count:

-

To Node:

MH-73 MH-76

Scenario: From Node:

**Existing Conditions** 

Manning's N: 0.0120

Manning's N:

-2.00 ft 0.0120

Downstream Invert: -2.00

Max Depth:

2.00 ft

Geometry: Circular

Invert:

-2.00 ft

Geometry: Circular

Max Depth:

2.00 ft

| 26 |  |
|----|--|

| 12        |
|-----------|
| 18        |
| 20        |
| <u></u>   |
| <u>6:</u> |
| 9         |

| Yy: Circular         Geometry<br>(max Depth:<br>Outpoint)         Default:<br>(op Table:<br>Ref Node:<br>Ref Node:<br>Outpoint)         Default:<br>(op Table:<br>Ref Node:<br>Ref Node:<br>Outpoint)           0.00 ft         Top Clip         Default:<br>(op Table:<br>Ref Node:<br>Ref Node:<br>Outpoint)         Default:<br>(op Table:<br>Ref Node:<br>Ref Node:<br>Outpoint)           0.00 ft         Bottom Clip         Default:<br>(op Table:<br>Ref Node:<br>Ref Node:<br>Outpoint)         Default:<br>(op Table:<br>Ref Node:<br>Ref Node:<br>Outpoint)           0.00 ft         Bottom Clip         Default:<br>(op Table:<br>Ref Node:<br>Ref Node:<br>Outpoint)         Default:<br>(op Table:<br>Ref Node:<br>Ref Node:<br>Ref Node:<br>Outpoint)           0.00 ft         Bottom Clip         Default:<br>(op Table:<br>Ref Node:<br>Ref Node:<br>Ref Node:<br>Outpoint)           0.00 ft         Bottom Clip         Default:<br>(op Table:<br>Ref Node:<br>Nanning's N:           0.00 ft         Bottom Clip         Default:<br>(op Table:<br>Ref Node:<br>Nanning's N:           0.00 ft         Top Clip         Default:<br>(op Table:<br>Ref Node:<br>Ref Node:<br>Nanning's N:           0.00 ft         Top Clip         Default:<br>(op Table:<br>Ref Node:<br>Ref Node:<br>Ref Node:<br>Ref Node:<br>Nanning's N:  | From Node:   | MH-70               |              | 0.0120      |             | IVIALITIITIQ S IV: | 0.0120     |
|---|--|---------------------|--------------|-------------|-------------|--------------------|------------|
| entor: Berl<br>entor: Berl<br>regin: Berl<br>code: 0.000 ft Defaul: 0.00 ft Defaul: 0.00 ft<br>Ref Node: 0.000 ft Op Table: Ref Node: | link Count:  | MH-/9               | May Depth:   | 2 nn ft     |             | May Denth:         | 2 ON ft    |
| Inpung<br>Code<br>Code<br>Code<br>Code<br>Code<br>Code<br>Code<br>Code  | Flow Direction:  | -<br>Both           |              | 2.001       | Bottom Clip |                    |            |
| Englit.         4.08.44 ft         Op Table:         Per fore   | Damping:   | 0.0000 ft           | Default:     | 0.00 ft     |             | Default:           | 0.00 ft    |
| Code:       0       Ref. Node:       Top Cip       Mammings N:       0.00001       Top Cip       Mammings N:       0.0001       Mammings N:       0.0001       Mammings N:       0.0001       Mammings N:       0.0001       Mammings N:       0.0000  | Length:  | 408.44 ft           | Op Table:    |             |             | Op Table:          |            |
| Cooff         0.00         Manning's N:         0.000         Inp Orlp         Manning's N:         0.000         Manning's N:         0.0000         Manning's N:         0.0000         Manning's N:         0.0000         Manning's N:         0.0120         Manning's N:         0.0000         Manning's N:   | FHWA Code:   | 0                   | Ref Node:    |             |             | Ref Node:          |            |
| Cooff         0.0         Default         0.00 ft         Top Clip           ation         0.00         Op Table:         0         0           ation:         0.00 ft         Op Table:         0         0           witch:         Energy         Ref Node:         Ref Node:         Ref Node:         Ref Node:           witch:         Energy         Manning's N:         0.0000 ft         Manning's N:         0.0000 ft           Node:         OFNF-43         Manning's N:         0.0120         Man           Node:         OFNF-43         Geometry: Circular         Manning's N:         0.010 ft           Count:         1         Max Depth:         1.25 ft         Man           Count:         1         Max Depth:         1.25 ft         Man           Count:         0.00 ft         Op Table:         Op Clip         Op           Count:         1         Manning's N:         0.0000 ft         Op         Man           Count:         0.00 ft         Op Table:         No         No         No         No           Count:         0.00 ft         Op Table:         No         No         No         No           Count:         0.00 ft   | Entr Loss Coef:  | 0.00                | Manning's N: | 0.0000      |             | Manning's N:       | 0.0000     |
| Locef.         0.0         Default:         0.00 ft         Op Table:         No           with:         Energy         Ref Node:         .   | Exit Loss Coef:  | 0.00                |              | l           | Top Clip    |                    |            |
| ration: 0.00 ft Ref Node: 2.40 ft Node: 0.00 ft Naming's N: 0.000 Manning's N: 0.000 Manning's N: 0.0120 Manning's N: 0.000 ft Default: 0.00 ft Default: 0.00 ft Ref Node: Ref Node: Ref Node: 2.46 ft Manning's N: 0.0000 manning's N: 0.0120 Manning's N: 0.0000 manning        | Bend Loss Coef:  | 0.00                | Default:     | 0.00 ft     |             | Default:           | 0.00 ft    |
| witch:         Energy         Ref Node:         Manning's N:         0.0000         Manning's N:         0.0000         Manning's N:         0.0000         Manning's N:         0.0010         Manning's N:         0.0120         Manning's N:         0.0120         Manning's N:         0.0120         Manning's N:         0.0000 ft         Manning's N:         0.0120         Manning's N:         0.0000 ft         Manning's N:         0.0000         Manning's N:         0.0000 <t< td=""><td>Bend Location:</td><td>0.00 ft</td><td>Op Table:</td><td></td><td></td><td>Op Table:</td><td></td></t<>   | Bend Location:   | 0.00 ft             | Op Table:    |             |             | Op Table:          |            |
| Interpretation     Manning's N:     0.000     Manning's N:     0.000       Interpretation     Existing Conditions     Invert:     -2.40 ft     Manning's N:     0.000       Invert:     -2.40 ft     Manning's N:     0.0120     Manning's N:     0.000       Nucle:     OFNF-64     Geometry: Gruitar     Manning's N:     0.001     Manning's N:     0.000       Sound:     1     Max Depth:     1.25 ft     Manning's N:     0.000     Manning's N:     0.000       Sound:     1.25 ft     Bottom Clip     Manning's N:     0.000     Manning's N:     0.000       Sound:     1.25 ft     Manning's N:     0.000     Manning's N:     0.000     Manning's N:     0.000       Codef:     0.00     Default:     0.000     Manning's N:     0.000     Manning's N:     0.000       Codef:     0.00     Default:     0.000     Manning's N:     0.0000     Manning's N:     0.0000       Codef:     0.00     Invert:     -2.46 ft     Manning's N:     0.0000     Manning's N:     0.0000       Codef:     0.00 ft     Default:     0.0001     Manning's N:     0.0000     Manning's N:     0.0000       Node:     Fer Node:     Na     Default:     0.0001     Manning's  | Energy Switch:   | Energy              | Ref Node:    |             |             | Ref Node:          |            |
| Instance         Upstream           Invert: -2.40 ft         Manning's N: 0.0120         Manning's N: 0.001         Manning's N: 0.001         Manning's N: 0.001         Manning's N: 0.000 ft         Manning's N: 0.0000         Manning's N: 0.000         Manning's N: 0.000         Manning's N: 0.000         Manning's N: 0.000         Manning's N: 0.000 ft         Manning's N: 0.000         Manning's N: 0.0000   | Ę  | Ę                   | Manning's N: | 0.0000      |             | Manning's N:       | 0.0000     |
| Image: Figure Stating Conditions     Upstream<br>Invert:     2.40 ft<br>Semetry:     Manning's N:     0.0120     Manning's N:     0.000 ft     Manning's N:     0.0000     Manning's N:   | Comment: Assumed pipe  | e size              |              |             |             |                    |            |
| Instance         Existing Conditions         Invert:         2.40 ft         Man.           Node:         OFKF-63         Manning's N:         0.0120         Man.           Count:         1         Max Depth:         1.25 ft         Man.           Setion:         Both         Default:         0.000 ft         Man.           Code:         0         Naming's N:         0.000 ft         Man.           Code:         0         Manning's N:         0.000 ft         Man.           Code:         0         Manning's N:         0.000 ft         Man.           Code:         0         Default:         0.000 ft         Man.           Code:         0.00 ft         Op Table:         Man.         Man.           Code:         0.00 ft         Manning's N:         0.0000         Man.           Code:         0.00 ft         Manning's N:         0.0000         Man.           Victo:         Existing Conditions         Manning's N:         0.0000         Man.           Node:         OFKF-64         Manning's N:         0.0000         Man.           Node:         OFKF-64         Manning's N:         0.0000 ft         Man.           Code:         0   |  |                     |              |             |             |                    |            |
| Invertion         Invertion         2.40 ft         Manning's N:         0.0120         Manning's N:         0.000 ft         Manning'  | Pipe Link: L-78P   |                     | Upst         | ream        |             | Downs              | tream      |
| Nude:         OFNF-63         Manning's N:         0.01207         Man           Nude:         OFNF-64         Geometry: Circular         Max           Suint:         1         Max Depth:         1.25 ft         Max           Suint:         1         Node:         O         O         Ft           Suint:         1         Ref Node:         O         O         Max           Code:         0.00         Default:         0.000 ft         O         Manning's N:         0.0000         Manning's N:         0.0000         Man         O           Code:         0.00 ft         Ref Node:         Ref Node:         Naming's N:         0.0000         Man         Man         Man         O         Man         Man         O         Man         Man         Man         Man         O         O         Man         Man         O         O         Man         Man         O         O         Man         O         O <td< td=""><td>Scenario:</td><td>Fxisting Conditions</td><td>Invert.</td><td>-2 40 ft</td><td></td><td>Invert.</td><td>-2 30 ft</td></td<>   | Scenario:  | Fxisting Conditions | Invert.      | -2 40 ft    |             | Invert.            | -2 30 ft   |
| Nucce         OFIF-64         Geometry: Circular         Max Depth:         1.25 ft         Max           Sount:         1         Max Depth:         1.25 ft         Max         Max           Sount:         1         Max Depth:         1.25 ft         Max         Max           Sount:         1         Max Depth:         1.25 ft         Max         Max           Sount:         1         Default:         0.00 ft         Op         Table:         Q           Coef:         0.00         Default:         0.000 ft         Q         Manning's N:         0.0000 ft         Q           Coef:         0.00         Default:         0.00 ft         Q         Manning's N:         0.0000 ft         Q           Coef:         0.00 ft         Ref Node:         Ref Node:         Ref Node:         Nanning's N:         0.0000         Manning's N:         0.0001         M  | From Node:   | OFNE-63             | Manning's N: | 0 0120      |             | Manning's N:       | 0 0120     |
| Sount:         1         Max Depth:         1.25 ft         Max           pring:         0.0000 ft         Default:         0.00 ft         Bottom Clip           angth:         42.16 ft         Op Table:         Ref Node:         Ref         Op           Code:         0         Manning's N:         0.000 ft         Op Table:         Ref         Op           Code:         0.00         Default:         0.00 ft         Op Table:         Ref         Nanning's N:         0.000 ft         Manning's N:         0.000 ft         Manning's N:         0.0000         Manning's N:         0.0001         Manning's N:         0.0001         Manning's N:         0.0001         Manning's N:         0.0001         Manning's N:         0.0000         Manning's N:         0.0001 <t< td=""><td>To Node:</td><td>OFNF-64</td><td>Geometry</td><td>/: Circular</td><td></td><td>Geometry</td><td>: Circular</td></t<>  | To Node:   | OFNF-64             | Geometry     | /: Circular |             | Geometry           | : Circular |
| ection:         Both         Default:         0.000 ft         Default:         0.00 ft         Default:         Op Table:         Cop Table:         Ref Node:   | Link Count:  | _                   | Max Depth:   | 1.25 ft     |             | Max Depth:         | 1.25 ft    |
| nping:         0.0000 ft         Default:         0.00 ft         Default:         0.00 ft         Default:           Code:         0         Ref Node:         R   | Flow Direction:  | Both                |              | l           | Bottom Clip |                    | l          |
| angth:         42.16 ft         Op Table:         Op Table:         Op Table:         Op Table:         Ref Node:         Ref Node: <thref< td=""><td>Damping:</td><td>0.0000 ft</td><td>Default:</td><td>0.00 ft</td><td></td><td>Default:</td><td>0.00 ft</td></thref<>   | Damping:   | 0.0000 ft           | Default:     | 0.00 ft     |             | Default:           | 0.00 ft    |
| Code:         0         Ref Node:         Manning's N:         0.0000         Manning's N:         0.0000         Manning's N:         Op Clip         Default:         Op Table:         Op Table:         Op Table:         Op Table:         Ref Node:         Node:         Node:         Node:         Ref Node:         Node:         Nanning's N:         Node:         Nod  | Length:  | 42.16 ft            | Op Table:    |             |             | Op Table:          |            |
| Coeff     0.00     Manning's N:     0.0000     Top Clip       Coeff     0.00     Default:     0.00 ft     Op Table:     Op Table:       atten:     0.00 ft     Op Table:     Node:     Ref Node:     Ref Node:       witch:     Energy     Manning's N:     0.0000     Manning's N:     0.0000       narrio:     Existing Conditions     Invert:     -2.46 ft     Invert:       Node:     OF Table:     Notice     Manning's N:     0.0120       Node:     OF Table:     Notice     Manning's N:     0.0120       Node:     OF Table:     Notice     Nanning's N:     0.0120       Node:     OF Table:     Notice     Manning's N:     0.0000       Node:     OF Table:     Notice     Manning's N:     Op Table:       Node:     OF Table:     Notice     Manning's N:     Op Table:       Node:     OF Table:     Op Table:     Manning's N:     Op Table:       Node:     0.000 ft     Op Table:     Op Table:     Op Table:       Coeff     0.00     Default:     0.00 ft     Op Table:       Coeff     0.00     Manning's N:     Op Table:     Op Table:       Coeff     0.00     Default:     0.00 ft     Op Table:   | FHWA Code:   | 0                   | Ref Node:    |             |             | Ref Node:          |            |
| Coeff.       0.00       Default:       0.00 ft       Default:       0.00 ft       Op Table:         Coeff.       0.00 ft       Op Table:       Op Table:       Op Table:       Op Table:       Ref Node:       Ref Node:       Ref Node:       Ref Node:       Ref Node:       Ref Node:       Manning's N:       0.0000       Manning's N:       Node:       Manning's N:   | Entr Loss Coef:  | 0.00                | Manning's N: | 0.0000      |             | Manning's N:       | 0.0000     |
| Coeff     0.00     Default:     0.00 ft     Default:     0.00 ft     Op Table:       Sation:     0.00 ft     Op Table:     Node:     Ref Node:     Ref Node:     Ref Node:       Witch:     Energy     Manning's N:     0.0000     Manning's N:     0.0000     Manning's N:       Invert:     Vorter     Vorter     2.46 ft     Invert:     Invert:     Node:       Node:     OFNF-64     Manning's N:     0.0120     Manning's N:     Invert:       Sount:     1     Manning's N:     0.001ft     Manning's N:       Sount:     1     Manning's N:     0.001ft     Manning's N:       Sount:     1     Manning's N:     0.000 ft     Geometry:       Sount:     1     Default:     0.00 ft     Manning's N:       Sount:     1     Default:     0.00 ft     Default:       Sount:     0.00     Nanning's N:     0.000 ft     Op Table:       Code:     0.00     Manning's N:     0.000 ft     Op Table:       Code:     0.00     Manning's N:     0.000 ft     Op Table:       Code:     0.00     Manning's N:     0.000 ft     Op Table:       Sation:     0.00 ft     Op Table:     Op Table:     Op Table:       S  | Exit Loss Coef:  | 0.00                |              | l           | Top Clip    |                    |            |
| cation:     0.00 ft     Op Table:<br>Ref Node:     Op Table:<br>Ref Node:     Op Table:<br>Ref Node:       witch:     Energy     Manning's N:     0.0000     Manning's N:       upstream     Upstream     Down       narrio:     Existing Conditions     Invert:     2.46 ft     Invert:       Node:     MH-79     Geometry: Circular     Manning's N:     Down       Node:     MH-79     Geometry: Circular     Manning's N:     Default:     0.00 ft       Doug     MH-79     Geometry: Circular     Geometry: Circular     Geometry: Circular       code:     0     Manning's N:     0.000 ft     Default:     Op Table:       code:     0     Ref Node:     Ref Node:     Ref Node:       code:     0.00     Top Clip     Cop Table:       code:     0.00 ft     Op Table:     Op Table:       code:     Energy     Ref Node:     Ref Node:   | Bend Loss Coef:  | 0.00                | Default:     | 0.00 ft     |             | Default:           | 0.00 ft    |
| witch:       Energy       Ref Node:       Manning's N:       0.0000       Manning's N:         upstream       upstream       Down         narrio:       Existing Conditions       Invert:       -2.46 ft       Invert:         Node:       CFNF-64       Manning's N:       0.0120       Manning's N:         Node:       OFNF-64       Manning's N:       0.0120       Manning's N:         Sount:       1       Manning's N:       0.0120       Manning's N:         Sount:       1       Max Depth:       1.25 ft       Manning's N:         Sount:       1       Default:       0.00 ft       Default:       Op Table:         Code:       0       Ref Node:       Ref Node:       Ref Node:       Ref Node:         Code:       0.00 ft       Default:       0.00 ft       Default:       Op Table:         Code:       0.00 ft       Op Table:       Manning's N:       Op Table:       Manning's N:         Attern       Sef Node:       Ref Node:       Ref Node:       Ref Node:       Ref Node:         Witch:       Energy       Manning's N:       0.0000       Manning's N:       Op Table:  | Bend Location:   | 0.00 ft             | Op Table:    |             |             | Op Table:          |            |
| Imaming site         Upstream         Down           Invert:         -2.46 ft         Invert:         -2.46 ft           Node:         MH-79         Geometry:         Circular         Geometry:           Sundi:         1         Max         Default:         0.00 ft         Geometry:           Opt         Both         Default:         0.000 ft         Default:         Op Table:           Coef:         0.00         Manning's N:         0.0000 ft         Default:         Op Table:           Coef:         0.00         Default:         0.000 ft         Default:         Op Table:           Coef:         0.00         Default:         0.00 ft         Default:         Op Table:  | Energy Switch:   | Energy              | Ref Node:    | 0 0000      |             | Ref Node:          |            |
| Upstream     Down       Invert:     2.46 ft     Invert:       Node:     Manning's N:     0.0120     Manning's N:     Down       Invert:     2.46 ft     Invert:       Node:     Manning's N:     On Ft     Manning's N:     On Ft     Count:     1     Manning's N:     O.0120     Manning's N:     On Ft     Manning's N:     On Ft     Manning's N:     Down       On Ft     Manning's N:     Down       On Ft     Default:     On Ft     Default:       On Ft     Default:     On Ft     Default:       On Ft     Default:     Op Table:       Code:     On Ft     Default:     Op Table:       Code:     On Ft     Default:       Op Table:     Op Table:       Code:     On Top Clip       Default:     Op Table:  |  |                     |              | 0.0000      |             |                    | 0.0000     |
| Upstream     Down       Invert:     -2.46     ft     Invert:     Invert:     -2.46     ft     Invert:     Invert:       Node:     0FNF-64     Manning's N:     0.0120     Manning's N:     0.0120     Manning's N:       Node:     0FNF-64     Manning's N:     0.0120     Manning's N:     0.0120     Manning's N:       Node:     0FNF-64     Manning's N:     0.0120     Manning's N:     0.0120     Manning's N:       Sount:     1     Max Depth:     1.25 ft     Manning's N:     0.000 ft     Max Depth:       Sount:     1     Max Depth:     1.25 ft     Bottom Clip     Max Depth:       Sount:     1     Default:     0.00 ft     Default:     Op Table:       Sound:     0.00     Manning's N:     0.0000     Manning's N:     Op Table:       Coef:     0.00     Manning's N:     0.0000     Top Clip     Default:       Coef:     0.00     Energy     Manning's N:     0.0000     Top Clip     Default:       Adamning's N:     0.0000     Top Clip     Default:     Op Table:     Op Table:       Adamning's N:     0.0000     Manning's N:     0.0000     Manning's N:  |  |                     |              |             |             |                    |            |
| InvertionationInvertionationInvertionationInvertionationNode:OFNF-64Manning's N:0.0120Manning's N:Node:OFNF-64Manning's N:0.0120Manning's N:Node:MH-79Geometry: CircularGeometry: CircularGeometry: CircularCount:1Max Depth:1.25 ftMax Depth:Sction:BothDefault:0.00 ftDefault:nping:0.0000 ftDefault:0.00 ftDefault:code:0Nanning's N:0.0000Top ClipCoef:0.00Default:0.00 ftDefault:coef:0.00Default:0.00 ftDefault:coef:0.00Default:0.00 ftDefault:coef:0.00Default:0.00 ftDefault:coef:0.00Ref Node:Top Clipcoef:0.00Ref Node:Op Table:coef:0.00 ftDefault:Op Table:coef:0.00 ftDefault:   |  |                     |              |             |             |                    |            |
| OFNF-64         Manning's N:         0.0120         Manning's N:         0.0120         Manning's N:         0.0120           MH-79         Geometry: Circular         Geometry: Circular         Geometry: Circular         Geometry: Circular           1         Max Depth:         1.25 ft         Bottom Clip         Max Depth:           0.0000 ft         Default:         0.00 ft         Default:         0.00 ft           22.22 ft         Op Table:         Op Table:         Op Table:         Op Table:           0.00         Manning's N:         0.0000         Manning's N:         0.0000           0.00         Default:         0.0000         Top Clip         Default:           0.00         Default:         0.00 ft         Default:         Op Table:           0.00         Default:         0.00 ft         Default:         Op Table:           0.00 ft         Default:         0.00 ft         Default:         Op Table:           0.00 ft         Energy         Ref Node:         Op Table:         Op Table:           Energy         Manning's N:         0.0000         Manning's N:         Manning's N:  | Ipe LINK: L-79P<br>Scenario:   | Existing Conditions | upsu         | -2 46 ft    |             | Invert.            | -2 46 ft   |
| MH-79     Geometry: Circular     Geometry: Circular     Geometry: Circular       1     Max Depth:     1.25 ft     Max Depth:       Both     Default:     0.00 ft     Max Depth:       0.0000 ft     Default:     0.00 ft     Default:       22.22 ft     Op Table:     Op Table:     Op Table:       0.000     Manning's N:     0.0000     Manning's N:       0.000     Default:     0.000 ft     Default:       0.000     Default:     0.000 ft     Op Table:       0.000     Default:     0.0000     Manning's N:       0.001 ft     Default:     Op Table:     Op Table:       0.002     Top Clip     Default:     Op Table:       0.003 ft     Op Table:     Op Table:     Op Table:       0.004 ft     Default:     0.000 ft     Default:       0.007     Manning's N:     0.0000     Manning's N:   | From Node  | OFNE-64             | Manning's N  | 0 01 20     |             | Manning's N:       | 0 0120     |
| 1         Max Depth:         1.25 ft         Max Depth:           Both         Default:         0.00 ft         Bottom Clip           0.0000 ft         Default:         0.00 ft         Default:           22.22 ft         Op Table:         Op Table:         Op Table:           0         Ref Node:         Ref Node:         Ref Node:           0.00         Manning's N:         0.0000         Top Clip           0.00         Default:         0.00 ft         Default:           0.00         Default:         0.00 ft         Default:           0.00         Default:         0.00 ft         Default:           0.00         Ref Node:         Cop Table:         Op Table:           0.00         Ref Node:         Ref Node:         Mannind's N:   | To Node:   | MH-79               | Geometry     | /: Circular |             |                    | : Circular |
| Both         Default:         0.00 ft         Default:           0.0000 ft         Default:         0.00 ft         Default:           22.22 ft         Op Table:         Op Table:         Op Table:           0         Ref Node:         Ref Node:         Ref Node:           0.00         Manning's N:         0.000 ft         Manning's N:           0.00         Default:         0.00 ft         Default:           0.00         Default:         0.00 ft         Default:           0.00 ft         Op Table:         Op Table:         Op Table:           0.00 ft         Ref Node:         Op Table:         Op Table:           0.00 ft         Ref Node:         Manning's N:         0.0000   | Link Count:  | _                   | Max Depth:   | 1.25 ft     |             |                    | 1.25 ft    |
| 0.0000 ftDefault:0.00 ftDefault:22.22 ftOp Table:Op Table:Op Table:0Ref Node:Ref Node:Ref Node:0.00Manning's N:0.0000Manning's N:0.00 ftDefault:0.00 ftDefault:0.00 ftOp Table:Op Table:0.00 ftRef Node:Op Table:0.00 ftRef Node:Ref Node:0.00 ftManning's N:0.00000.00 ftManning's N:Manning's N:  | Flow Direction:  | Both                |              |             | Bottom Clip |                    |            |
| 22.22 ft       Op Table:       Op Table:       Op Table:         0       Ref Node:       Ref Node:       Ref Node:         0.00       Manning's N:       0.0000       Manning's N:         0.00       Default:       0.00 ft       Default:         0.00       Default:       0.00 ft       Default:         0.00 ft       Op Table:       Op Table:       Op Table:         0.00 ft       Ref Node:       Ref Node:       Ref Node:         Manning's N:       0.0000       Manning's N:       0.0000  | Damping:   | 0.0000 ft           | Default:     | 0.00 ft     |             | Default:           | 0.00 ft    |
| 0         Ref Node:         Ref Node:         Ref Node:           0.00         Manning's N:         0.0000         Manning's N:         0.0000         Manning's N:         0.0000         Manning's N:         0.000 ft         Default:         0.00 f  | Length:  | 22.22 ft            | Op Table:    |             |             | Op Table:          |            |
| 0.00Manning's N:0.000Manning's N:0.00Default:0.00 ftTop Clip0.00Default:0.00 ftDefault:0.00 ftOp Table:Op Table:Op Table:EnergyRef Node:Ref Node:Ref Node:  | FHWA Code:   | 0                   | Ref Node:    |             |             | Ref Node:          |            |
| 0.00Top Clip0.00Default:0.00 ftDefault:0.00 ftOp Table:Op Table:Op Table:EnergyRef Node:Ref Node:Ref Node:  | Entr Loss Coef:  | 0.00                | Manning's N: | 0.0000      |             | Manning's N:       | 0.0000     |
| 0.00Default:0.00 ftDefault:0.00 ftOp Table:Op Table:Op Table:EnergyRef Node:Ref Node:Ref Node:Manning's N:0.0000Manning's N:  |  | 0.00                |              |             | Top Clip    | ¢                  |            |
| 0.00 ft Op Table: Op Table:<br>Energy Ref Node: Ref Node: Ref Node:<br>Manning's N: 0.0000 Manning's N:   | Exit Loss Coef:  | 0.00                | Default:     | 0.00 ft     |             | Default:           | 0.00 ft    |
| Energy Ref Node: Ref Node: Ref Node: Manning's N: 0.0000  | Exit Loss Coef:<br>Bend Loss Coef:                                     | 0.00 ft             | Op Table:    |             |             | Op Table:          |            |
| Manning's N: 0.0000 Manning's N:  | Exit Loss Coef:<br>Bend Loss Coef:<br>Bend Location:                   | Enerav              | Ref Node:    |             |             | Ref Node:          |            |
|   | Exit Loss Coef:<br>Bend Loss Coef:<br>Bend Location:<br>Energy Switch: | <i>31</i>           | Manning's N: | 0000        |             | Manning's N:       | 0.0000     |

Pipe Link: L-77P

Scenario: From Node:

Existing Conditions MH-76

Upstream Invert: -2.50 ft Manning's N: 0.0120

Downstream Invert: -2.50 ft Manning's N: 0.0120

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| Pipe Link: L-82P |                     | Upstream            |                | Downstream          |
|------------------|---------------------|---------------------|----------------|---------------------|
| Scenario:        | Existing Conditions | Invert: -3.66 ft    |                | Invert: -3.66 ft    |
| From Node:       | MH-82               | Manning's N: 0.0120 |                | Manning's N: 0.0120 |
| To Node:         | BND-TIDE-42         | Geometry: Circular  | IL             | Geometry: Circular  |
| Link Count:      |                     | Max Depth: 3.00 ft  | Ma             | pth: 3.00 ft        |
| Flow Direction:  | Both                |                     | Bottom Clip    |                     |
| Damping:         | 0.0000 ft           | Default: 0.00 ft    | Default        | ault: 0.00 ft       |
| Length:          | 140.00 ft           | Op Table:           | Op Table:      | able:               |
| FHWA Code:       | 0                   | Ref Node:           | Ref Node:      | ode:                |
| Entr Loss Coef:  | 0.00                | Manning's N: 0.0000 | ) Manning's N: | 's N: 0.0000        |
| Exit Loss Coef:  | 0.00                |                     | Top Clip       |                     |
| Bend Loss Coef:  | 0.00                | Default: 0.00 ft    | Default        | ault: 0.00 ft       |
| Bend Location:   | 0.00 ft             | Op Table:           | Op Table:      | able:               |
| Energy Switch:   | Energy              | Ref Node:           | Ref Node:      | ode:                |
|                  |                     | Manning's N: 0.0000 | ) Manning's N  | 's N: 0.0000        |

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| Pipe Link: L-81P      |                     | Upstream            | am       |             | Downstream          |
|-----------------------|---------------------|---------------------|----------|-------------|---------------------|
| Scenario:             | Existing Conditions | Invert: 3.50 ft     | 3.50 ft  |             | Invert: 3.50 ft     |
| From Node:            | OFNF-65             | Manning's N: 0.0120 | 0.0120   | Manr        | Manning's N: 0.0120 |
| To Node:              | MH-82               | Geometry: Circular  | Circular |             | Geometry: Circular  |
| Link Count:           | <u> </u>            | Max Depth: 2.00 ft  | 2.00 ft  | Max         | Max Depth: 2.00 ft  |
| Flow Direction:       | Both                |                     | Br       | Bottom Clip |                     |
| Damping:              | 0.0000 ft           | Default: 0.00 ft    | 0.00 ft  |             | Default: 0.00 ft    |
| Length:               | 57.07 ft            | Op Table:           |          | 0           | Op Table:           |
| FHWA Code:            | 0                   | Ref Node:           |          | R           | Ref Node:           |
| Entr Loss Coef:       | 0.00                | Manning's N: 0.0000 | 0.0000   | Manr        | Manning's N: 0.0000 |
| Exit Loss Coef:       | 0.00                |                     |          | Top Clip    |                     |
| Bend Loss Coef:       | 0.00                | Default: 0.00 ft    | 0.00 ft  |             | Default: 0.00 ft    |
| Bend Location:        | 0.00 ft             | Op Table:           |          | 0           | Op Table:           |
| Energy Switch: Energy | Energy              | Ref Node:           |          | R           | Ref Node:           |
|                       |                     | Manning's N: 0.0000 | 0.0000   | Manr        | Manning's N: 0.0000 |

| Comment: Assumed pipe si  |                     | Energy Switch: Er | Bend Location: 0. | Bend Loss Coef: 0.00 | Exit Loss Coef: 0. | Entr Loss Coef: 0.00 | FHWA Code: 0 | Length: 30 | Damping: 0. | Flow Direction: Both | Link Count: 1      | To Node: M         | From Node: M        | Scenario: Ex        | Pipe Link: L-80P |
|---|---------------------|-------------------|-------------------|----------------------|--------------------|----------------------|--------------|------------|-------------|----------------------|--------------------|--------------------|---------------------|---------------------|------------------|
| Comment: Assumed pipe size. Assumed Invert = Ground EI - 3 FT Cover - Pipe Diameter |                     | Energy            | 0.00 ft           | 00                   | 0.00               | 00                   |              | 307.40 ft  | 0.0000 ft   | oth                  |                    | MH-82              | MH-79               | Existing Conditions |                  |
| nd El - 3 FT Cover - Pi   | Manning's N: 0.0000 | Ref Node:         | Op Table:         | Default: 0.00 ft     |                    | Manning's N: 0.0000  | Ref Node:    | Op Table:  | Default: 0  |                      | Max Depth: 3.00 ft | Geometry: Circular | Manning's N: 0.0120 | Invert: -3.00 ft    | upsu ean         |
| pe Diameter   | .0000               |                   |                   | .00 ft               | Тор                | .0000                |              |            | 0.00 ft     | Bottor               | .00 ft             | Circular           | .0120               | 3.00 ft             |                  |
|   | Manning's N:        | Ref Node:         | Op Table:         | Default:             | Top Clip           | Manning's N:         | Ref Node:    | Op Table:  | Default:    | Bottom Clip          | Max Depth:         | Geometr            | Manning's N:        | Invert:             | DOWI             |
|   | 0.0000              |                   |                   | 0.00 ft              |                    | 0.0000               |              |            | 0.00 ft     |                      | 3.00 ft            | Geometry: Circular | l: 0.0120           | -3.00 ft            | Downstream       |

| EXISTING CONDITIONS MODEL - NODES         Node: BND-TIDE-42       Scenario: Existing Cor<br>Type: Time/Stage<br>Base Flow: 0.00 cfs<br>Initial Stage: 0.47 ft<br>Warning Stage: 0.47 ft<br>Boundary Stage: 1C         Comment:       Scenario: Existing Cor<br>Type: Stage/Area<br>Base Flow: 0.00 cfs<br>Initial Stage: 0.47 ft<br>Warning Stage=Rim Elev. from Survey         Comment:       Warning Stage=Rim Elev. from Survey         Node: MH-21       Scenario: Existing Cor<br>Type: Stage/Area | Existing Conditions     1       Time:Stage     0.00 cfs       0.47 rt     1       0.00 rt     1       IC     1   Existing Conditions Stage/Area Out of s Out |
|---|---|
| Community wanning Stage - Anni Liev, n  |   |
| Scenario:<br>Type:<br>Base Flow:<br>Initial Stage:<br>Warning Stage:  | nditions  |
| Comment: Warning Stage=Rim Elev. from Survey  |   |
| Node: MH-22<br>Scenario:<br>Type:<br>Base Flow:<br>Initial Stage:<br>Warning Stage:   | Existing Conditions<br>Stage/Area<br>0.00 cfs<br>0.47 ft<br>1.45 ft   |
| Comment: Warning Stage=Rim Elev. from Survey  |   |
| Node: MH-28<br>Scenario:<br>Type:<br>Base Flow:<br>Initial Stage:   | Existing Conditions<br>Stage/Area<br>0.00 cfs<br>0.47 ft  |

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| Base to:       6.00 cfs         Vote: MH-C2       Senate:         Senate:       Leating Conditions         Type:       Senate:         Senate:       Form Survey         Comment:       Warning Stage:         Warning Stage:       Form Survey         Comment:       Warning Stage:         Warning Stage:       Form Survey         Comment:       Warning Stage:         Warning Stage:       Form Survey         Vote:       Form Survey         Comment:       Warning Stage:         Warning Stag |
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| : from Survey                 | Comment: Warning Stage=Rim Elev. from Survey |
|-------------------------------|--|
|                               |  |
| 2.31 ft                       | Warning Stage: 2.31 ft                       |
| 0.47 ft                       | Initial Stage: 0.47 ft                       |
| 0.00 cfs                      | Base Flow: 0.00 cfs                          |
| Type: Stage/Area              | Туре:  |
| Scenario: Existing Conditions | Scenario:                                    |
|                               | Node: MH-79                                  |
|                               |  |
|                               |  |
| : from Survey                 | Comment: Warning Stage=Rim Elev. from Survey |

| Warning Stage: 8.96 ft | Initial Stage: 0.47 ft | Base Flow: 0.00 cfs | Type: S    | Scenario: E                   | Node: MH-82 |
|------------------------|------------------------|---------------------|------------|-------------------------------|-------------|
| 3.96 ft                | ).47 ft                | 1.00 cfs            | Stage/Area | Scenario: Existing Conditions |             |

Comment: Warning Stage=Rim Elev. from Outfall Assessment TWO#14 Report (Appendix A - Outfall No. BIS-34)

### Curve Number: Existing [Set]

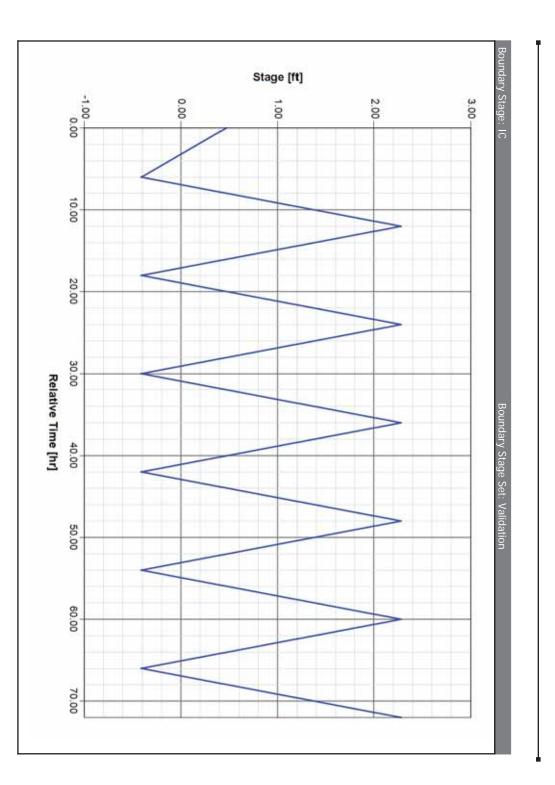
| Land Cover Zone | Soil Zone | Curve Number [dec] |
|-----------------|-----------|--------------------|
| CII             | _1        | 98.0               |
| CII             | 2         |                    |
| CII             | ω         | 0.88               |
| R               | 1         |                    |
| R               | 2         |                    |
| R               | З         |                    |
| Т               | -1        |                    |
| Т               | 2         |                    |
| Т               | 3         |                    |
| υ               | 1         | 97.0               |
| υ               | 2         |                    |
| υ               | 3         | 56.0               |
| M               | 1         | 98.0               |
| M               | 2         | 98.0               |
| M               | 3         | 98.0               |

### Impervious: Existing [Set]

| Land Cover Zone | % Impervious | % DCIA | % Direct | la Impervious [in] | la Pervious [in] |
|-----------------|--------------|--------|----------|--------------------|------------------|
| CII             | 0.00         | 0.00   | 0.00     | 0.000              | 0.000            |
| R               | 0.00         | 0.00   | 0.00     | 0.000              | 0.000            |
| Т               | 0.00         | 0.00   | 0.00     | 0.000              | 0.000            |
| U               | 0.00         | 0.00   | 0.00     | 0.000              | 0.000            |
| W               | 0.00         | 0.00   | 0.00     | 0.000              | 0.000            |

#### Roughness: Existing [Set]

|                | .0070          |                   | 0.0137            | VV        |
|----------------|----------------|-------------------|-------------------|-----------|
|                |                | 0                 |                   | ///       |
| 3.00 0.0000    | 0.4000         | 0                 | 0.4500            | U         |
| 3.00 0.0000    | 0.0070         | 0                 | 0.0137            | Т         |
| 3.00 0.0000    | 0.0070         | 0                 | 0.0137            | R         |
| 3.00 0.0000    | 0.0070         | 0                 | 0.0137            | CII       |
| Threshold [ft] | ec] Range [ft] | Manning's N [dec] | Manning's N [dec] | Zone      |
| Damping        | Depth          | Deep              | Shallow           | Roughness |



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|--------------|-------|--------------|---------------|--------------|---------------|-----|---------------|-----|-----|-----|--------------|-------------|----------------------|--------------------------------|----------------|--------------------|
| 72.0000 2.28 | -0.41 | 60.0000 2.28 | 54.0000 -0.41 | 48.0000 2.28 | 42.0000 -0.41 |     | 30.0000 -0.41 |     |     |     | 6.0000 -0.41 | 0.0000 0.47 | Hour [hr] Stage [ft] |                                |                |                    |

Comment:

| Roughness Set: | Impervious Set: | Vertical Layers Set: | Green-Ampt Set: | Curve Number Set: | Extern Hydrograph Set: | Boundary Stage Set: | Lookup Tables |
|----------------|-----------------|----------------------|-----------------|-------------------|------------------------|---------------------|---------------|
| Existing       | Existing        |                      |                 | Existing          |                        | Validation          | Tables        |

Unit Hydrograph Folder: Reference ET Folder: Rainfall Folder: Resources

#### Resources & Lookup Tables

| Save     |  |
|----------|--|
| Restart: |  |
| False    |  |
|          |  |

| 0        | Year                 |  |
|----------|----------------------|--|
| 0        | Month                |  |
| 0        | Day                  |  |
|          |                      |  |
| 0.0000   | Hour [hr]            |  |
| 360.0000 | Time Increment [min] |  |

Groundwater

| 15.0000              | 24.0000   | 0   | 0     | 0    |
|----------------------|-----------|-----|-------|------|
| 15.0000              | 16.0000   | 0   | 0     | 0    |
| 5.0000               | 14.0000   | 0   | 0     | 0    |
| 1.0000               | 10.0000   | 0   | 0     | 0    |
| 5.0000               | 8.0000    | 0   | 0     | 0    |
| 15.0000              | 0.0000    | 0   | 0     | 0    |
| Time Increment [min] | Hour [hr] | Day | Month | Year |

|                      |           |     | Surface Hydraulics | Surfa |
|----------------------|-----------|-----|--------------------|-------|
| 15.0000              | 24.0000   | 0   | 0                  | 0     |
| 15.0000              | 16.0000   | 0   | 0                  | 0     |
| 5.0000               | 14.0000   | 0   | 0                  | 0     |
| 1.0000               | 10.0000   | 0   | 0                  | 0     |
| 5.0000               | 8.0000    | 0   | 0                  | 0     |
| 15.0000              | 0.0000    | 0   | 0                  | 0     |
| Time Increment [min] | Hour [hr] | Day | Month              | Year  |
|                      |           | •   |                    |       |

| 15.0000              | 24.0000   | 0   | 0     | 0    |
|----------------------|-----------|-----|-------|------|
| 15.0000              | 16.0000   | 0   | 0     | 0    |
| 5.0000               | 14.0000   | 0   | 0     | )    |
| 1.0000               | 10.0000   | 0   | 0     | )    |
| 5.0000               | 8.0000    | 0   | 0     | )    |
| 15.0000              | 0.0000    | 0   | 0     | )    |
| Time Increment [min] | Hour [hr] | Day | Month | /ear |
|                      |           |     |       |      |

|                    | Hydrology |                            | Max Calculation Time: | Min Calculation Time: |
|--------------------|-----------|----------------------------|-----------------------|-----------------------|
| Month              | logy      |                            |                       | 60.0000               |
| Day                |           | <br>Output Time Increments | 5.0000                | 0.0500                |
| Hour [hr]          | ~         |                            |                       | 900.0000              |
| Time Increment [mi |           |                            |                       | I                     |

| End Time: | Start Time: |       | Run Mode: Normal |         |  |
|-----------|-------------|-------|------------------|---------|--|
|           |             |       | Normal           |         |  |
| 0         | 0           | Year  |                  |         |  |
|           |             |       |                  |         |  |
| 0         | 0           | Month |                  | General |  |
|           |             |       |                  |         |  |
| 0         | 0           | Day   |                  |         |  |

Hydrology [sec] 60.0000

Surface Hydraulics [sec] 0.0500

Groundwater [sec] 900.0000

24.0000

Hour [hr] 0.0000

Program Version: Run Date/Time:

ICPR4 4.04.00

Simulation: Validation

Scenario:

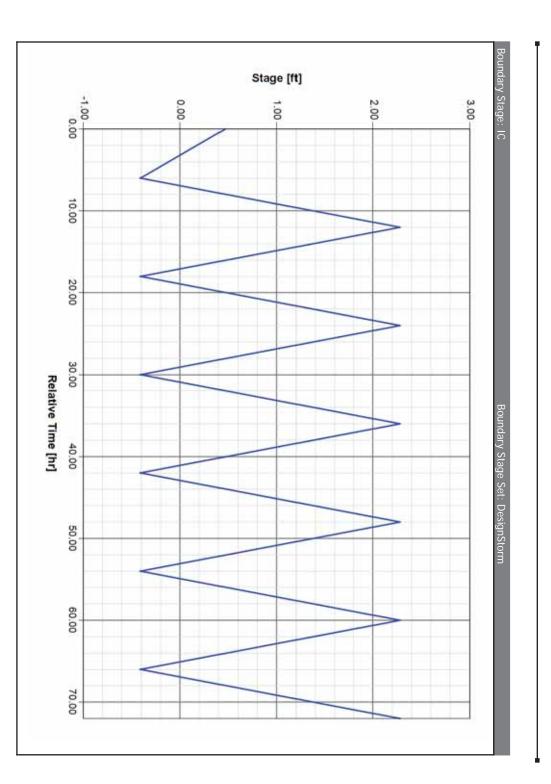
Existing Conditions 12/7/2018 3:35:12 PM

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| 100 ft2<br>Energy | Min Node Srf Area (1D):<br>Energy Switch (1D):              | 100 ft2<br>Momentum | Min Node Srf Area (2D): 100 ft2<br>Energy Switch (2D): Momentum |
|-------------------|---|---------------------|---|
| 0.0050 ft         | Dflt Damping (1D):  | 0.0050 ft           | Dflt Damping (2D):  |
|                   |   | Automatic           | Edge Length Option: Automatic                                   |
|                   | -   | 0.0000 ft           | Link Optimizer Tol: 0.0000 ft                                   |
| No Rainfall       |   | 1.0000 ft           | Max dZ:   |
| No Rainfall       | Manual Basin Rain Opt:                                      | 0.0005 ft           | dZ Tolerance:   |
| False             | ET for Manual Basins:                                       |                     |   |
| 24.0000 hr        | IA Recovery Time: 24.0000 hr                                | FIREBALL            | Time Marching: FIREBALL   |
|                   | Tolerances & Options  |                     |   |
|                   | Fillable Porosity Set:<br>Conductivity Set:<br>Leakage Set: |                     |   |
|                   | Crop Coef Set:  |                     |   |

Comment:

EXISTING CONDITIONS MODEL - SIMULATIONS - VALIDATION EVENT



EXISTING CONDITIONS MODEL - BOUNDARY STAGES - DESIGN STORMS

Boundary Stage: IC

| Boundary Sta | Boundary Stage Set: DesignStorm |     |           |            |
|--------------|---------------------------------|-----|-----------|------------|
| Year         | Month                           | Day | Hour [hr] | Stage [ft] |
| 0            | 0                               | 0   | 0.0000    |            |
| 0            | 0                               | 0   | 6.0000    | -0.41      |
| 0            | 0                               | 0   | 12.0000   |            |
| 0            | 0                               | 0   | 18.0000   | -0.41      |
| 0            | 0                               | 0   | 24.0000   |            |
| 0            | 0                               | 0   | 30.0000   |            |
| 0            | 0                               | 0   | 36.0000   |            |
| 0            | 0                               | 0   | 42.0000   |            |
| 0            | 0                               | 0   | 48.0000   | 2.28       |
| 0            | 0                               | 0   | 54.0000   |            |
| 0            | 0                               | 0   | 60.0000   | 2.28       |
| 0            | 0                               | 0   | 66.0000   | -0.41      |
| 0            | 0                               | 0   | 72.0000   | 2.28       |
|              |                                 |     |           |            |
| Comment:     |                                 |     |           |            |
|              |                                 |     |           |            |

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| Resources<br>Rainfall Folder: 100<br>Reference ET Folder:<br>Unit Hydrograph Folder:   | Restart File<br>Save Restart: False | Year V<br>0 0                    | Groundwater | 0       | 0 0     |         |        | Year                 | Surface Hydraulics | 0       |         |         |         | Year N               | Hydrology              | Min Calculation Time: | 1                        | End Time: | Start Time: |           | Run Mode: N |         | Scenario: E<br>Run Date/Time: 1.<br>Program Version: 10       | EXISTING CONDITIONS MODEL - SIMULATIONS - DESIGN STORMS |
|--|-------------------------------------|----------------------------------|-------------|---------|---------|---------|--------|----------------------|--------------------|---------|---------|---------|---------|----------------------|------------------------|-----------------------|--------------------------|-----------|-------------|-----------|-------------|---------|---|---|
| rces<br>100yr  | t File<br>False                     | Month<br>0                       | ater        |         |         |         |        | Month                | Iraulics           |         |         |         |         | Month<br>0           | Ϋ́                     | 60.0000               | Hydrology [sec]          | 0         | 0           | Year      | Normal      |         | Existing Conditions<br>12/12/2018 2:17:23 PM<br>ICPR4 4.04.00 | EL - SIMULATIONS - DESIG                                |
| Resources & Lookup Tables  |                                     | Day<br>0                         |             | 0       | 0 0     | 0       | 0      | Day                  |                    | 0       | 0       | 0       | 0       | Day                  | Output Time Increments | 5.0000                | Surface Hydraulics [sec] | 0         | 0           | Month     | QELIELAL    | Conoral |   | IN STORMS   |
| Boundary Stag<br>Extern Hydrograg<br>Curve Numb<br>Green-Am<br>Vertical Laye<br>Imperviou<br>Roughne:<br>Crop Co<br>Fillable Porosi                              |                                     | Hour [hr]<br>0.0000              |             | 72.0000 | 64.0000 | 48.0000 | 0.0000 | Hour [hr]            |                    | 72.0000 | 64.0000 | 56.0000 | 48.0000 | Hour [hr]            |                        | 900.0000              | Groundwater [sec]        | 0         | 0           | Dav       |             |         |   |   |
| Lookup Tables<br>Je Set: DesignStorm<br>oh Set:<br>er Set: Existing<br>ot Set:<br>rs Set: Existing<br>ss Set: Existing<br>ss Set: Existing<br>ef Set:<br>ef Set: |                                     | Time Increment [min]<br>360.0000 |             | 5.0000  | 5.0000  | 5.0000  |        | Time Increment [min] |                    | 5.0000  | 5.0000  | 1.0000  | 5.0000  | Time Increment [min] |                        |                       | -                        | 72.0000   | 0.0000      | Hour [hr] |             |         |   | _   |

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| Hour [hr]       Time Increment [min]         0.0000       15.0000         8.0000       5.0000         10.0000       1.0000         14.0000       15.0000         24.0000       15.0000         24.0000       15.0000         Hour [hr]       Time Increment [min]         0.0000       15.0000         15.0000       15.0000         15.0000       15.0000         15.0000       15.0000         15.0000       15.0000         15.0000       15.0000         15.0000       15.0000         10.0000       15.0000 |                                       | Month<br>0<br>0  | 0 0 0                              |
|--|---------------------------------------|--|------------------------------------|
| Time Increment [min       0.0000       8.0000       10.0000       14.0000       14.0000       24.0000       Z4.0000       0.0000       8.0000  |                                       | Month<br>0<br>0  | 0                                  |
| Time Increment [mii       0.0000       8.0000       10.0000       14.0000       16.0000       24.0000       Time Increment [mii       0.0000   | 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | Month<br>0   | 0                                  |
| Time Increment [mi       0.0000       8.0000       10.0000       14.0000       14.0000       24.0000       Time Increment [mi  | Day                                   | Month  |                                    |
| Time Increment [mi       0.0000       8.0000       10.0000       14.0000       14.0000       16.0000       24.0000   |                                       |  | Year                               |
| Time Increment [mi]       0.0000       8.0000       10.0000       14.0000       14.0000       16.0000       24.0000  |                                       | ydraulics  | Surface Hydraulics                 |
| Time Increment [mi       0.0000       8.0000       10.0000       14.0000       16.0000   |                                       | 0  | 0                                  |
| Time Increment [mii       0.0000       8.0000       10.0000       14.0000  |                                       | 0  | 0                                  |
| Time Increment [min           0.0000           8.0000           10.0000  | 0000                                  | 0  | 0                                  |
| Time Increment [mi<br>0.0000<br>8.0000   |                                       | 0  | 0                                  |
| 0.0000 Time Increment [mi  | C                                     | 0  | 0                                  |
| Time Increment   | >                                     | 0  | 0                                  |
|  | Day                                   | Month  | Year                               |
|  | 5.0000                                |  | Max Calculation Time:              |
| Groundwater [sec]<br>900.0000  | Surface Hydraulics [sec]<br>0.0500    | Hydrology [sec]<br>60.0000                                     | Min Calculation Time:              |
| 0 0.0000<br>24.0000  | 0 0                                   | 00   | End Time:                          |
|  | Month                                 | Year   | C+0++ Tiso                         |
|  |                                       | Normal   | Run Mode:                          |
|  | General                               |  |                                    |
|  |                                       | Existing Conditions<br>12/12/2018 10:07:55 AM<br>ICPR4 4.04.00 | Run Date/Time:<br>Program Version: |

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Conductivity Set: Leakage Set:

| ••••••    |  |                                    |                             | ••                           |                      |
|-----------|--|------------------------------------|-----------------------------|------------------------------|----------------------|
| Automatic | 1.0000 ft                                | 0.0005 ft                          |                             | FIREBALL                     |                      |
|           | OF Region R                              | Manual Basin Rain Opt: No Rainfall | ET for Manual Basins: False | IA Recove                    | Tolerances & Options |
|           | ain Opt:                                 | ain Opt:                           | Basins:                     | y Time:                      |                      |
|           | OF Region Rain Opt: Region Specification | No Rainfall                        | False                       | IA Recovery Time: 24.0000 hr |                      |

Comment:

Dfit Damping (2D): 0.0050 ft Min Node Srf Area (2D): 100 ft2 Energy Switch (2D): Momentum

Dfit Damping (1D): Min Node Srf Area (1D): Energy Switch (1D):

Energy 0.0050 ft 100 ft2

ė.

Edge Length Option:

dZ Tolerance: Max dZ: Link Optimizer Tol:

Time Marching:

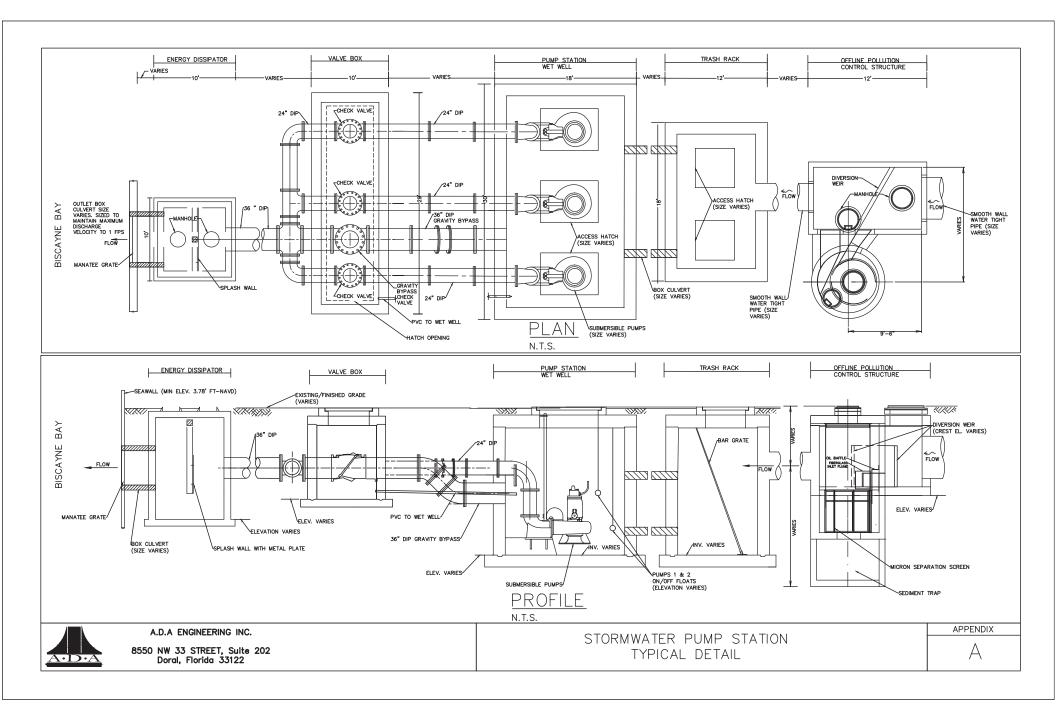
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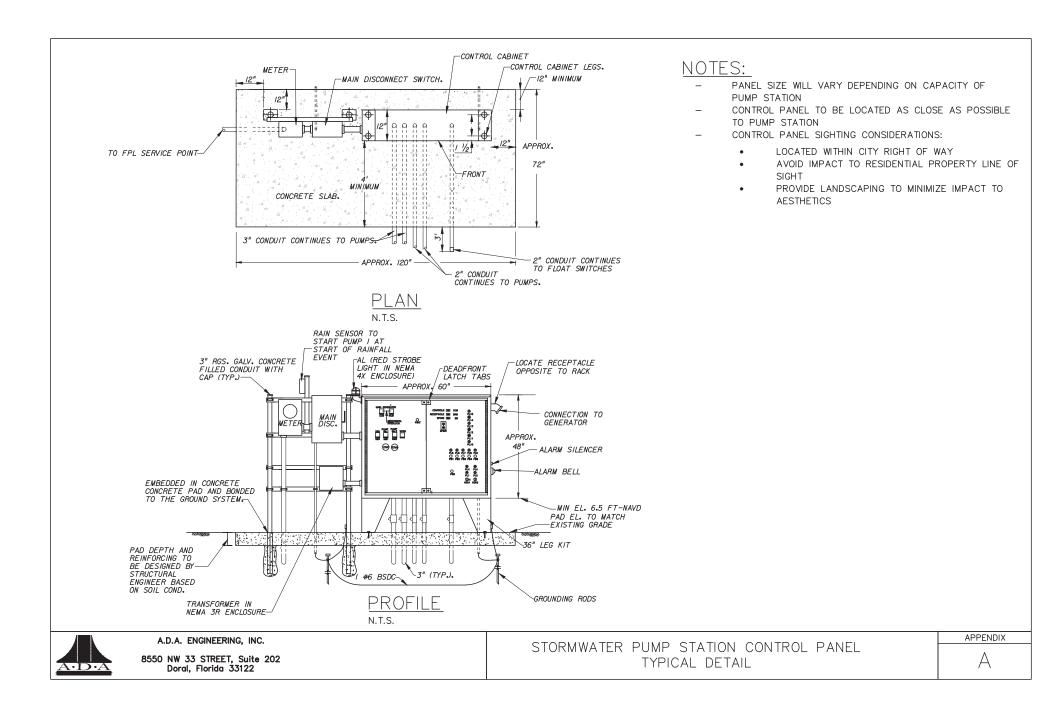
| Year   | Month                               | Day                       | Hour [hr]  | Time Increment [min]                |
|--|-------------------------------------|---------------------------|--|-------------------------------------|
| 0  | 0                                   | 0                         | 14.0000  | 5.0000                              |
| 0  | 0                                   | 0                         | 16.0000  | 15.0000                             |
| 0  | 0                                   | 0                         | 24.0000  | 15.0000                             |
| Ground   | Groundwater                         |                           |  |                                     |
| Year<br>0  | Month<br>0                          | Day<br>0                  | Hour [hr]<br>0.0000  | Time Increment [min]<br>360.0000    |
| Resta  | Restart File                        |                           |  |                                     |
| Save Restart:  | False                               | _                         |  |                                     |
|  |                                     | Resources & Lookup Tables |  |                                     |
| Resources  | urces                               |                           | Lookup   | Lookup Tables                       |
| Rainfall Folder:<br>Reference ET Folder:                             | 5yr                                 |                           | Boundary Stage Set:<br>Extern Hydrograph Set:                        | DesignStorm                         |
| טוווג הצעוסט קטו רסועםי.   |                                     |                           | Curve Number Set.<br>Green-Ampt Set:<br>Vertical Layers Set:         | Existing                            |
|  |                                     |                           |  | Existing                            |
|  |                                     | Tolerances & Options      |  |                                     |
| Time Marching:   | FIREBALL                            |                           | IA Recovery Time:<br>ET for Manual Basins:                           | 24.0000 hr<br>False                 |
| dZ Tolerance:<br>Max dZ:<br>Link Optimizer Tol:                      | 0.0005 ft<br>1.0000 ft<br>0.0000 ft |                           | Manual Basin Rain Opt:<br>OF Region Rain Opt:                        | No Rainfall<br>Region Specification |
| Edge Length Option:  | Automatic                           |                           |  |                                     |
| Dflt Damping (2D):<br>Min Node Srf Area (2D):<br>Energy Switch (2D): | 0.0050 ft<br>100 ft2<br>Momentum    |                           | Dflt Damping (1D):<br>Min Node Srf Area (1D):<br>Energy Switch (1D): | 0.0050 ft<br>100 ft2<br>Energy      |
| Comment:   |                                     |                           |  |                                     |
|  |                                     |                           |  |                                     |

EXISTING CONDITIONS MODEL - SIMULATIONS - DESIGN STORMS

## MID-RANGE SOLUTION PUMP STATION SCHEMATIC **APPENDIX 5A**

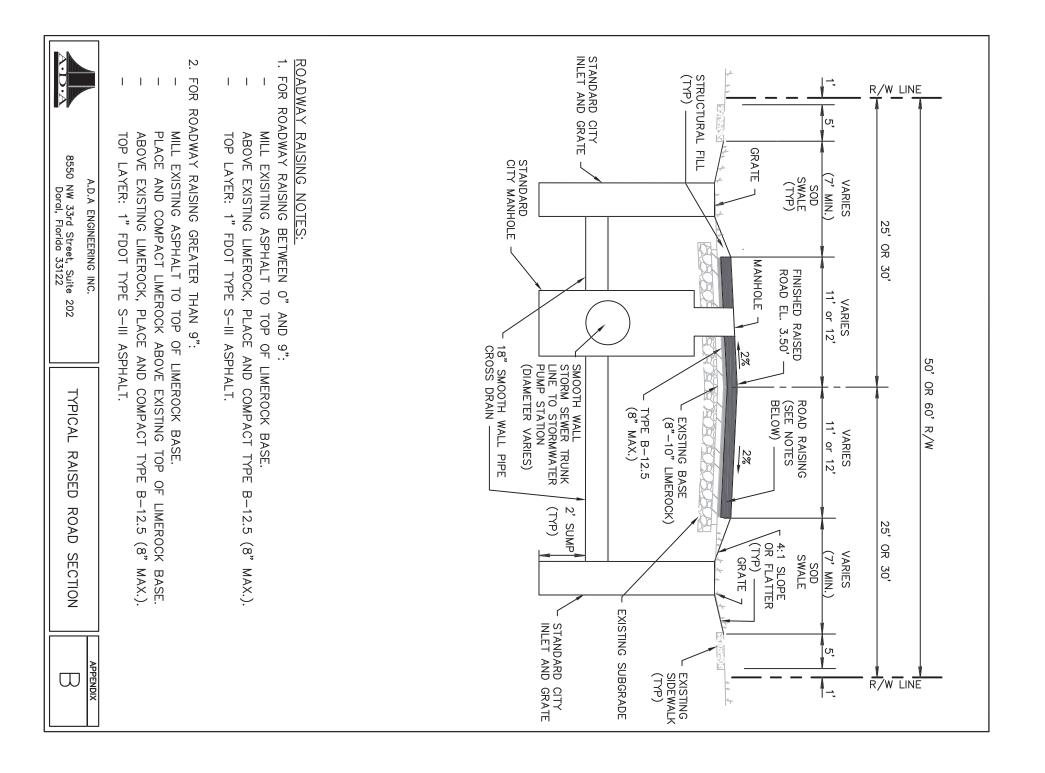




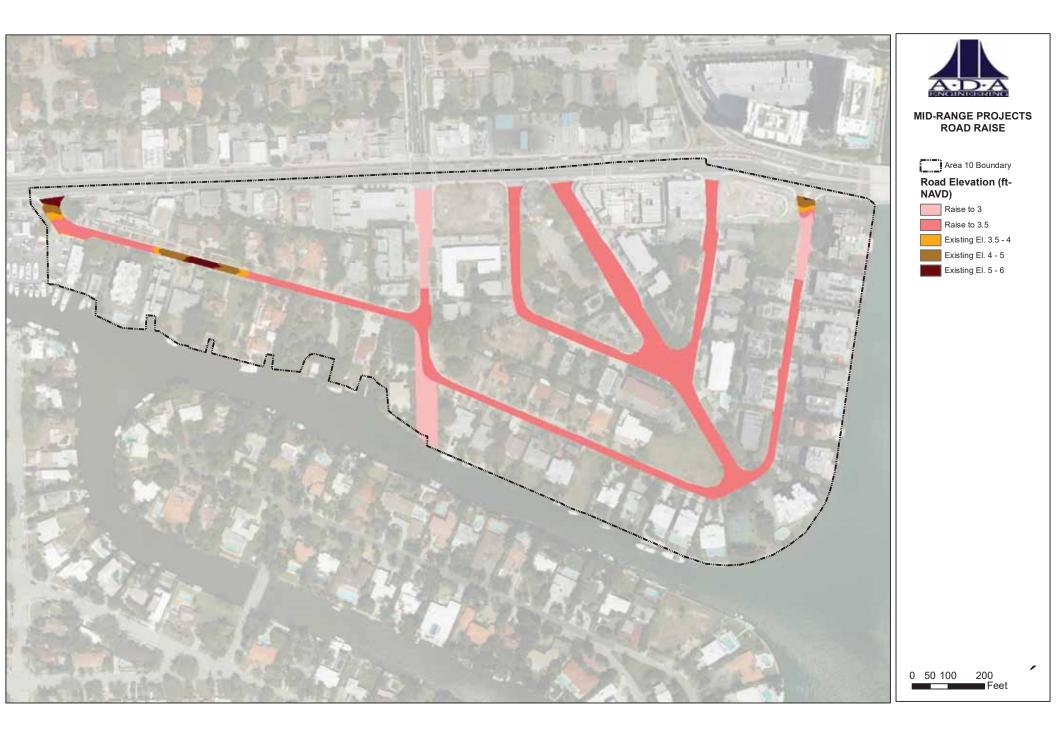


## ROADWAY RAISING TYPICAL SECTION AND MAPS **APPENDIX 5B**





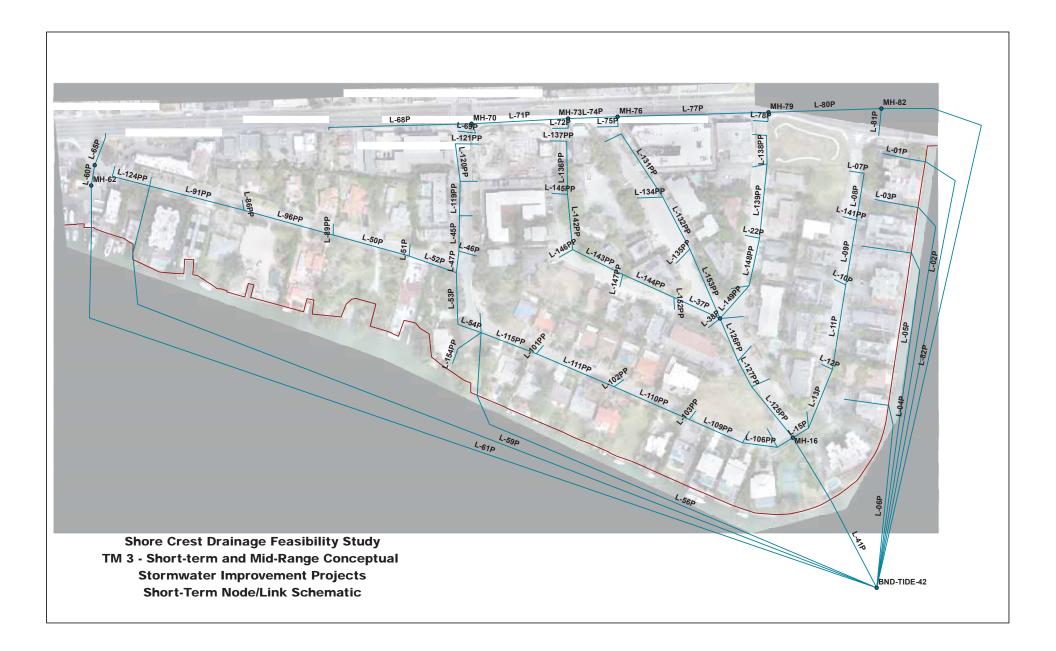




# **APPENDIX 5C**



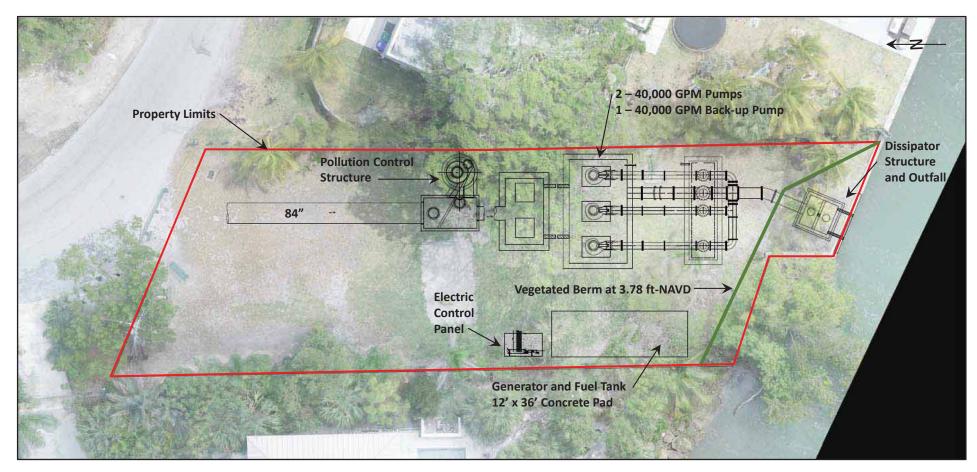






## CONCEPTUAL LAYOUT AT LITTLE RIVER POCKET MINI PARK **APPENDIX 5D**





Little River Pocket Mini Park (City of Miami) Pump Station Conceptual Layout



## MID-RANGE ICPR NODE AND LINK MAX **APPENDIX 5E**



| MH-16   |  | Node Max                              | B-PS-U  | CB-PS-U<br>S | Node<br>Name                                 | Node Max                     | CB-PS-D<br>S | CB-PS-D<br>S |                          | Node<br>Name       |
|---------|--|---------------------------------------|---------|--------------|--|------------------------------|--------------|--------------|--------------------------|--------------------|
| 5y1D    | Sim<br>Name                                  | S S S S S S S S S S S S S S S S S S S | 5y1D    | 100y3D       | Sim<br>Name                                  | Node Max Conditions w/ Times | 5y1D         | 100y3D       |                          | Sim<br>Name        |
| 2.70    |  | s w/ Times                            | 0.00    | 0.00         | Warning<br>Stage<br>[ft]                     | s w/ Times                   | 0.00         | 0.00         | [ft]                     | Warning<br>Stage   |
| 2.33    | Max<br>Stage<br>[ft]                         |                                       | 2.40    | 2.45         | Max<br>Stage<br>[ft]                         |                              | 3.78         | 116.23       | [ft]                     | Max<br>Stage       |
| 0.4330  |  |                                       | 0.3921  | 0.6919       | Min/Max<br>Delta<br>Stage<br>[ft]            |                              | 0.3325       | 0.3372       | Stage<br>[ft]            | Min/Max<br>Delta   |
| 77.29   | Max<br>Total<br>Inflow<br>[cfs]              |                                       | 267.40  | 308.41       | Max<br>Total<br>Inflow<br>[cfs]              |                              | 41.90        | 178.25       | Inflow<br>[cfs]          | Max<br>Total       |
| 80.77   | Max<br>Total<br>Outflow<br>[cfs]             |                                       | 336.97  | 314.93       | Max<br>Total<br>Outflow<br>[cfs]             |                              | 0.01         | 176.87       | Outflow<br>[cfs]         | Max<br>Total       |
| 430     | Max<br>Surface<br>Area<br>[ft2]              |                                       | 667     | 667          | Max<br>Surface<br>Area<br>[ft2]              |                              | 100          | 100          | Area<br>[ft2]            | Max<br>Surface     |
| 12.0675 | Time to<br>Max<br>Stage<br>[hr]              |                                       | 12.1786 | 59.9013      | Time to<br>Max<br>Stage<br>[hr]              |                              | 24.0009      | 60.0396      | Stage<br>[hr]            | Time to<br>Max     |
| 10.5840 | Time to<br>Min/Max<br>Delta<br>Stage<br>[hr] |                                       | 10.6773 | 24.4800      | Time to<br>Min/Max<br>Delta<br>Stage<br>[hr] |                              | 0.0009       | 60.8711      | Delta<br>Stage<br>[hr]   | Time to<br>Min/Max |
| 10.8756 | Time to<br>Max<br>Total<br>Inflow<br>[hr]    |                                       | 10.8987 | 20.3511      | Time to<br>Max<br>Total<br>Inflow<br>[hr]    |                              | 0.0020       | 59.6798      | Total<br>Inflow<br>[hr]  | Time to<br>Max     |
| 10.5840 | Time to<br>Max<br>Total<br>Outflow<br>[hr]   |                                       | 10.7982 | 24.4800      | Time to<br>Max<br>Total<br>Outflow<br>[hr]   |                              | 2.0320       | 60.0396      | Total<br>Outflow<br>[hr] | Time to<br>Max     |

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| Mid-Range (2050)  |
|-------------------|
| ) Node Max Report |

| Node Max      | Node Max Conditions w/ Times | w/ Times |       |                           |        |         |         |                         |                 |         |         |
|---------------|------------------------------|----------|-------|---------------------------|--------|---------|---------|-------------------------|-----------------|---------|---------|
| Node          | Sim                          | Warning  | Max   | Min/Max                   | Max    | Max     | Max     | Time to                 | Time to Time to | Time to | Time to |
| Name          | Name                         | Stage    | Stage | Delta                     | Total  | Total   | Surface | Max                     | Min/Max Max     |         | Max     |
|               |                              | [ft]     | [ft]  | Stage                     | Inflow | Outflow | Area    | Stage                   | Delta           | Total   | Total   |
|               |                              |          |       | [ft]                      | [cfs]  | [cfs]   | [ft2]   | [hr]                    | Stage           | Inflow  | Outflow |
|               |                              |          |       |                           |        |         |         |                         | [hr]            | [hr]    | [hr]    |
| _             | 100y3D                       | 0.00     | 3.78  | <b>3.78</b> 0.0004 181.17 | 181.17 | 41.90   | 0       | 0 0.0000 8.4231 59.8169 | 8.4231          | 59.8169 | 0.0020  |
| DE-42         |                              |          |       |                           |        |         |         |                         |                 |         |         |
| <b>BND-TI</b> | 5y1D                         | 0.00     |       | 3.78 0.0004               | 5.06   | 41.90   | 0       | 0 0.0000 0.2542 16.5136 | 0.2542          | 16.5136 | 0.0020  |
| DE-42         |                              |          |       |                           |        |         |         |                         |                 |         |         |
|               |                              |          |       |                           |        |         |         |                         |                 |         |         |

Node Max Conditions w/ TimesNodeSimWarningMax

Mid-Range (2050) Node Max Report

| Node Max | Node Max Conditions w/ Times | ; w/ Times  |       |                          |        |         |         |         |                 |                                     |         |
|----------|------------------------------|-------------|-------|--------------------------|--------|---------|---------|---------|-----------------|-------------------------------------|---------|
| Node     | Sim                          | Warning Max |       | Min/Max Max              |        | Max     | Max     | Time to | Time to Time to | Time to                             | Time to |
| Name     | Name                         | Stage       | Stage | Delta                    | Total  | Total   | Surface | Max     | Min/Max         | Max                                 | Max     |
|          |                              | [ft]        | [ft]  | Stage                    | Inflow | Outflow | Area    | Stage   | Delta           | Total                               | Total   |
|          |                              |             |       | [ft]                     | [cfs]  | [cfs]   | [ft2]   |         | Stage           | Inflow                              | Outflow |
|          |                              |             |       |                          |        |         |         |         | [hr]            | [hr]                                | [hr]    |
| MH-40    | 100y3D                       | 1.94        | 2.52  | 2.52 0.1849 66.67        | 66.67  | 65.23   |         | 60.1608 | 27.5467         | 695 60.1608 27.5467 27.5467 17.1076 | 17.1076 |
| MH-40    | 5y1D                         | 1.94        | 2.47  | <b>2.47</b> 0.0808 49.91 | 49.91  | 43.63   |         | 12.1316 | 11.6782         | 695 12.1316 11.6782 10.6587 10.6000 | 10.6000 |
|          |                              |             |       |                          |        |         |         |         |                 |                                     |         |

Node Max Conditions w/ Times

| 13.232  | 12.4587   | 202 12.1858 12.4587 12.4587 13.2320 | 12.1858             |         | 18.25   | 17.37  | 3.71 0.0270 | 3.71  | 3.23    | 5y1D   | MH-61 |
|---------|-----------|-------------------------------------|---------------------|---------|---------|--------|-------------|-------|---------|--------|-------|
| 60.5591 | 4 60.5885 | 60.9804                             | 202 60.0018 60.9804 | 202     | 19.81   | 22.83  | 3.79 0.0296 |       | 3.23    | 100y3D | MH-61 |
| [hr]    | [hr]      | [hr]                                |                     |         |         |        |             |       |         |        |       |
| Outflov | Inflow    | Stage                               | [hr]                | [ft2]   | [cfs]   | [cfs]  | [ft]        |       |         |        |       |
| Total   | Total     | Delta                               | Stage               | Area    | Outflow | Inflow | Stage       | [ft]  | [ft]    |        |       |
| Max     | Max       | Min/Max                             | Max                 | Surface | Total   | Total  | Delta       | Stage | Stage   | Name   | Name  |
| Time to | Time to   | Time to                             | Time to             | Max     | Max     | Max    | Min/Max     | Max   | Warning | Sim    | Node  |

Node Max Conditions w/ Times

|         | 12.4658 | 12.5911                             | 12.1858 | 143     | 7.87 11.31 143 12.1858 12.5911 12.4658 12.5911 | 7.87   | 3.70 0.0128 | 3.70  | 4.94        | 5y1D   | MH-62 |
|---------|---------|-------------------------------------|---------|---------|--|--------|-------------|-------|-------------|--------|-------|
| 60.9805 | 60.7849 | 150 60.0019 60.5493 60.7849 60.9805 | 60.0019 |         | 9.81 12.15                                     |        | 3.79 0.0129 |       | 4.94        | 100y3D | MH-62 |
| [hr]    | [hr]    | [hr]                                |         |         |  |        |             |       |             |        |       |
| Outflow | Inflow  | Stage                               | [hr]    | [ft2]   | [cfs]  | [cfs]  | [ft]        |       |             |        |       |
| Total   | Total   | Delta                               | Stage   | Area    | Outflow  | Inflow | Stage       | [ft]  | [ft]        |        |       |
| Max     | Max     | Min/Max                             | Max     | Surface | Total  | Total  | Delta       | Stage | Stage       | Name   | Name  |
| Time to | Time to | Time to                             | Time to | Max     | Max  |        | Min/Max Max | Max   | Warning Max | Sim    | Node  |

| ŀ                                  | ſ |         | l       |            |        |             |       |             | •      |       |
|------------------------------------|---|---------|---------|------------|--------|-------------|-------|-------------|--------|-------|
| 143 12.1858 12.5911 12.4658 12.591 | _ | 12.1858 |         | 7.87 11.31 |        | 3.70 0.0128 | 3.70  | 4.94        | 5y1D   | MH-62 |
| 150 60.0019 60.5493 60.7849 60.980 |   | 60.0019 |         | 9.81 12.15 |        | 3.79 0.0129 | 3.79  | 4.94        | 100y3D | MH-62 |
| [hr]                               |   |         |         |            |        |             |       |             |        |       |
| Stage                              |   | [hr]    | [ft2]   | [cfs]      | [cfs]  | [ft]        |       |             |        |       |
| Delta                              |   | Stage   | Area    | Outflow    | Inflow | Stage       | [ft]  | [ft]        |        |       |
| Min/Max                            |   | Max     | Surface | Total      | Total  | Delta       | Stage | Stage       | Name   | Name  |
| Time to Time to                    | 0 | Time to | Max     | Max        |        | Min/Max Max | Max   | Warning Max | Sim    | Node  |

| 12.5911   | 12.4658  | 12.5911     | 143 12.1858 12.5911 12.4658 12.5911 |         | 7.87 11.31 | 7.87   | 0.0128      | 4.94 3.70 0.0128 | 4.94        | 5y1D   |       |
|-----------|----------|-------------|-------------------------------------|---------|------------|--------|-------------|------------------|-------------|--------|-------|
| 60.9805   | 60.7849  | 60.5493     | 150 60.0019 60.5493 60.7849 60.9805 | 150     | 9.81 12.15 | 9.81   |             | 3.79 0.0129      | 4.94        | 100y3D | MH-62 |
| [hr]      | [hr]     | [hr]        |                                     |         |            |        |             |                  |             |        |       |
| Outflow   | Inflow   | Stage       | [hr]                                | [ft2]   | [cfs]      | [cfs]  | [ft]        |                  |             |        |       |
| Total     | Total    | Delta       | Stage                               | Area    | Outflow    | Inflow | Stage       | [ft]             | [ft]        |        |       |
| Мах       |          | Min/Max Max | Max                                 | Surface | Total      | Total  | Delta       | Stage            | Stage       | Name   | Name  |
| I lime to | l ime to | I Ime to    | ilme to ilme to ilme to ilme to     | Max     | Max        |        | Min/Max Max |                  | warning wax | SIM    | Node  |

|              |                              |            |   |        |      |                        |     |         |         |                                     | 2       |
|--------------|------------------------------|------------|---|--------|------|------------------------|-----|---------|---------|-------------------------------------|---------|
| MH-62 100y3D | 100y3D                       | 4.94       | 3.79  | 0.0129 | 9.81 | 3.79 0.0129 9.81 12.15 |     | 60.0019 | 60.5493 | 150 60.0019 60.5493 60.7849 60.9805 | 60.9805 |
| MH-62 5y1D   | 5y1D                         | 4.94       | 4.94 3.70 0.0128 7.87 11.31 143 12.1858 12.5911 12.4658 12.5911 | 0.0128 | 7.87 | 11.31                  | 143 | 12.1858 | 12.5911 | 12.4658                             | 12.5911 |
|              |                              |            |   |        |      |                        |     |         |         |                                     |         |
| Node Max     | < Conditions                 | s w/ Times |   |        |      |                        |     |         |         |                                     |         |
| Node Max     | Node Max Conditions w/ Times | s w/ Times |   |        |      |                        |     |         |         |                                     |         |

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MH-70

5y1D

Node Max Conditions w/ Times

Sim Name

Warning Stage

[ft]

[ft]

Inflow

Outflow

Max Surface Area

Time to Max Stage

Time to Min/Max Delta

Total

Total

Min/Max Delta Stage

MH-70

100y3D

2.18 2.18

2.32 N 52

0.0365 0.0387

19.63 20.12

18.35 17.01

485

60.0506

59.4160 [hr]

58.8880 [hr]

63.9733 [hr]

556 12.9102 14.2551 13.8018 13.4942

Sim Name

Warning Stage

Max Stage [ft]

Min/Max Delta Stage

Total Inflow [cfs]

Outflow

Max Surface Area [ft2]

Max Stage [hr]

Time to Min/Max Delta Stage

Total Inflow

Time to

Mid-Range (2050) Node Max Report

| MH-73 5y1D                          | MH-73 100y3D                        |      |         |         | Name Name | Node Sim    |
|-------------------------------------|-------------------------------------|------|---------|---------|-----------|-------------|
| _                                   | 3D 2.83                             |      |         | [ft]    | e Stage   | Warning Max |
| 2.83 2.31 0.0105                    |                                     |      |         | [ft]    | Stage     | Max         |
| 0.0105                              | 2.51 0.0124                         |      | [ft]    | Stage   | Delta     | Min/Max Max |
| 7.04                                | 6.98                                |      | [cfs]   | Inflow  | Total     |             |
| 6.92                                | 7.80                                |      | [cfs]   | Outflow | Total     | Max         |
| 444                                 | 402                                 |      | [ft2]   | Area    | Surface   | Max         |
| 12.8836                             | 60.0499                             |      | [hr]    | Stage   | Max       | Time to     |
| 21.5120                             | 52.4044                             | [hr] | Stage   | Delta   | Min/Max   | Time to     |
| 444 12.8836 21.5120 14.4311 14.4311 | 402 60.0499 52.4044 63.9280 63.9280 | [hr] | Inflow  | Total   | Max       | Time to     |
| 14.4311                             | 63.9280                             | [hr] | Outflow | Total   | Max       | Time to     |

Node Max Conditions w/ Times

|       |        | 0 007 111100 |       |             |        |         |         |                                     |         |         |         |
|-------|--------|--------------|-------|-------------|--------|---------|---------|-------------------------------------|---------|---------|---------|
| Node  | Sim    | Warning Max  | Max   | Min/Max Max |        | Max     | Max     | Time to                             | Time to | Time to | Time to |
| Name  | Name   | Stage        | Stage | Delta       | Total  | Total   | Surface | Max                                 | Min/Max | Max     | Max     |
|       |        | [ft]         | [ft]  | Stage       | Inflow | Outflow | Area    | Stage                               | Delta   | Total   | Total   |
|       |        |              |       | [ft]        | [cfs]  | [cfs]   | [ft2]   | [hr]                                | Stage   | Inflow  | Outflow |
|       |        |              |       |             |        |         |         |                                     | [hr]    | [hr]    | [hr]    |
| MH-76 | 100y3D | 2.87         | 2.52  | 2.52 0.0100 | 5.07   | 5.24    | 544     | 544 60.0498 42.5911 40.8124 59.323  | 42.5911 | 40.8124 | 59.3236 |
| MH-76 | 5y1D   | 2.87         | 2.32  | 2.32 0.0093 | 4.19   | 5.31    |         | 547 12.8836 16.1564 17.4800 14.4311 | 16.1564 | 17.4800 | 14.4311 |

Node Max Conditions w/ Times

| NODE MAR | Node Max Conditions W/ Times | s w/ Times  |       |                  |        |         |         |   |         |         |         |
|----------|------------------------------|-------------|-------|------------------|--------|---------|---------|---|---------|---------|---------|
| Node     | Sim                          | Warning Max | Мах   | Min/Max          | Max    | Мах     | Max     | Time to                                       | Time to | Time to | Time to |
| Name     | Name                         | Stage       | Stage | Delta            | Total  | Total   | Surface | Max   | Min/Max | Max     | Max     |
|          |                              | [ft]        | [ft]  | Stage            | Inflow | Outflow | Area    | Stage   | Delta   | Total   | Total   |
|          |                              |             |       | [ft]             | [cfs]  | [cfs]   | [ft2]   | [hr]  | Stage   | Inflow  | Outflow |
|          |                              |             |       |                  |        |         |         |   | [hr]    | [hr]    | [hr]    |
| MH-79    | 100y3D                       | 2.31        |       | 2.52 0.0075      | 7.56   | 7.78    |         | 881 60.0427 42.7387 42.7387 42.7387           | 42.7387 | 42.7387 | 42.7387 |
| MH-79    | 5v1D                         | 2.31        | 2.33  | 2.31 2.33 0.0060 | 6.35   | 7.06    | 881     | 6.35 7.06 881 12.8829 12.9083 13.1510 17.7080 | 12.9083 | 13.1510 | 17.7080 |

| MH-82 5y1D 8.96                     | MH-82 100y3D 8.96           |      |         | [11]    | Name Name Stage | Node Sim Warning | Node Max Conditions w/ Times |
|-------------------------------------|-----------------------------|------|---------|---------|-----------------|------------------|------------------------------|
|                                     |                             |      |         | [ft]    | Stage           | g Max            | Š                            |
| 2.33 0.0070                         | 2.52 0.0095                 |      | [ft]    | Stage   | Delta           | Min/Max          |                              |
| 5.90                                |                             |      | [cfs]   | Inflow  | Total           | Max              |                              |
| 10.19                               | 6.15 12.63                  |      | [cfs]   | Outflow | Total           | Max              |                              |
|                                     |                             |      | [ft2]   | Area    | Surface         | Max              |                              |
| 12.8831                             | 60.0428                     |      | [hr]    | Stage   | Max             | Time to          |                              |
| 17.7079                             | 42.7387                     | [hr] | Stage   | Delta   | Min/Max         | Time to          |                              |
| 512 12.8831 17.7079 17.7080 16.5136 | 541 60.0428 42.7387 52.3058 | [hr] | Inflow  | Total   | Max             | Time to          |                              |
| 16.5136                             | 42.7387                     | [hr] | Outflow | Total   | Max             | Time to          |                              |

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Mid-Range (2050) Link Max Report

| LINK MIN/ | viax Conditi   | Link Min/Max Conditions with Times | Imes  |                |              |              |                    |                    |                             |   |              |
|-----------|----------------|------------------------------------|-------|----------------|--------------|--------------|--------------------|--------------------|-----------------------------|---|--------------|
| Link      | Sim            | Max                                | Min   | Min/Max        | Max Us       | Max Ds       | Time to            | Time to            | Time to                     | Min/Max Max Us Max Ds Time to Time to Time to Time to Time to | Time to      |
| Name      | Name           | Flow                               | Flow  | Delta          | Velocity     | Velocity     | Мах                | Min                | Min/Max                     | Max Us  | Max Ds       |
|           |                | [cfs]                              | [cfs] | Flow           | [fps]        | [fps]        | Flow               | Flow               | Delta                       | Velocity  | Velocity     |
|           |                |                                    |       | [cfs]          |              |              | [hrs]              | [hrs]              | Flow                        | [hrs]   | [hrs]        |
|           |                |                                    |       |                |              |              |                    |                    | [hrs]                       |   |              |
| L-01P     | 100y3D         | 0.63                               |       | -0.30 -0.17    | 0.80         | 0.80         | 59.5806            | 60.0098            | 60.0044                     | 0.80 0.80 59.5806 60.0098 60.0044 59.5806 59.5806             | 59.5806      |
| L-01P     | 5y1D           | 0.39                               |       | -0.17          | 0.49         | 0.49         | 11.8745            | 23.2827            | 12.0290                     | 0.00 -0.17 0.49 0.49 11.8745 23.2827 12.0290 11.8745 11.8745  | 11.8745      |
|           | 100y3D<br>5y1D | 0.63<br>0.39                       |       | -0.17<br>-0.17 | 0.80<br>0.49 | 0.80<br>0.49 | 59.5806<br>11.8745 | 60.0098<br>23.2827 | [hrs]<br>60.0044<br>12.0290 | 59.5806<br>11.8745  | 59.5<br>11.8 |

Link Min/Max Conditions with Times

| _   |                                |       |       |          | 7        |         |
|---|--------------------------------|-------|-------|----------|----------|---------|
| L-02P                                       | L-02P                          |       |       |          | Name     | Link    |
| 5y1D  | 100y3D                         |       |       |          | Name     | Sim     |
| 0.98  | 1.12                           |       |       | [cfs]    | Flow     | Max     |
| 0.00  | 0.00                           |       |       | [cfs]    | Flow     | Min     |
| 0.05  | 0.04                           |       | [cfs] | Flow     | Delta    | Min/Max |
| 1.24  | 1.43                           |       |       | [fps]    | Velocity | Max Us  |
|   |                                |       |       | [fps]    | Velocity | Max Ds  |
| 12.4763                                     | 1.43 60.5704                   |       | [hrs] | Flow     | Max      | Time to |
| 0.0000                                      | 0.0000                         |       | [hrs] | Flow     | Min      | Time to |
| 12.4567                                     | 60.5588                        | [hrs] | Flow  | Delta    | Min/Max  | Time to |
| 1.24 12.4763 0.0000 12.4567 12.4763 12.4763 | 0.0000 60.5588 60.5704 60.5704 |       | [hrs] | Velocity | Max Us   | Time to |
| 12.4763                                     | 60.5704                        |       | [hrs] | Velocity | Max Ds   | Time to |

Link Min/Max Conditions with Times

| Link  | Sim    | Max   | Min   | Min/Max     | Max Us   | Max Ds   | Time to | Time to | Time to   | Time to  | Time to  |
|-------|--------|-------|-------|-------------|----------|----------|---------|---------|---|----------|----------|
| Name  | Name   | Flow  | Flow  | Delta       | Velocity | Velocity | Max     | Min     | Min/Max   | Max Us   | Max Ds   |
|       |        | [cfs] | [cfs] | Flow        | [fps]    | [fps]    | Flow    | Flow    | Delta   | Velocity | Velocity |
|       |        |       |       | [cfs]       |          |          | [hrs]   | [hrs]   | Flow  | [hrs]    | [hrs]    |
|       |        |       |       |             |          |          |         |         | [hrs]   |          |          |
| L-03P | 100y3D | 0.21  |       | -0.45 -0.01 |          | -0.57    | 60.4099 | 60.0047 | -0.57 -0.57 60.4099 60.0047 60.1884 60.0047 60.0047       | 60.0047  | 60.004   |
| L-03P | 5y1D   | 0.17  | -0.39 | -0.01       | -0.50    | -0.50    | 12.3388 | 12.0050 | -0.01 -0.50 -0.50 12.3388 12.0050 12.1485 12.0050 12.0050 | 12.0050  | 12.0050  |

|                                       |   | _     | _     | _        | _        | _                                      |
|---------------------------------------|---|-------|-------|----------|----------|--|
| L-03P                                 | L-03P   |       |       |          | Name     | Link                                   |
| 5y1D                                  | 100y3D  |       |       |          | Name     | Sim                                    |
| 0.17                                  | 0.21  |       |       | [cfs]    | Flow     | Max                                    |
| -0.39                                 | -0.45   |       |       | [cfs]    | Flow     | Min                                    |
| -0.01                                 | -0.01   |       | [cfs] | Flow     | Delta    | Min/Max                                |
| -0.50                                 | -0.57   |       |       | [fps]    | Velocity | Max Us                                 |
| -0.50                                 | -0.57   |       |       | [fps]    | Velocity | Max Ds                                 |
| 12.3388                               | 60.4099                                       |       | [hrs] | Flow     | Мах      | Time to                                |
| 12.0050                               | 60.0047                                       |       | [hrs] | Flow     | Min      | Time to                                |
| -0.50 12.3388 12.0050 12.1485 12.0050 | -0.57 60.4099 60.0047 60.1884 60.0047 60.0047 | [hrs] | Flow  | Delta    | Min/Max  | Max Ds Time to Time to Time to Time to |
| 12.0050                               | 60.0047                                       |       | [hrs] | Velocity | Max Us   | Time to                                |
| 12.0050                               | 60.0047                                       |       | [hrs] | Velocity | Max Ds   | Time to                                |

| 12.0050  | 12.0050               | 12.1485 | 0.17 -0.39 -0.01 -0.50 -0.50 12.3388 12.0050 12.1485 12.0050 12.0050 | 12.3388 | -0.50    | -0.50    | -0.01        | -0.39 | 0.17  | 5y1D   | L-03P |
|----------|-----------------------|---------|--|---------|----------|----------|--------------|-------|-------|--------|-------|
| 60.0047  | 60.0047               | 60.1884 | -0.45 -0.01 -0.57 -0.57 60.4099 60.0047 60.1884 60.0047 60.0047      | 60.4099 | -0.57    | -0.57    | -0.01        |       | 0.21  | 100y3D | L-03P |
|          |                       | [hrs]   |  |         |          |          |              |       |       |        |       |
| [hrs]    | [hrs]                 | Flow    | [hrs]  | [hrs]   |          |          | [cfs]        |       |       |        |       |
| Velocity | Velocity              | Delta   | Flow   | Flow    | [fps]    | [fps]    | Flow         | [cfs] | [cfs] |        |       |
| Max Ds   | Min/Max Max Us Max Ds | Min/Max | Min  | Max     | Velocity | Velocity | Delta        | Flow  | Flow  | Name   | Name  |
|          |                       |         |  | บายาก   | IVIAX DS |          | IVIIII/IVIAX |       | INIAX |        | LINK  |

| Link Min/ | 1in/Max Conditions with Times | ions with T | imes  |         |          |          |         |                         |         |          |          |
|-----------|-------------------------------|-------------|-------|---------|----------|----------|---------|-------------------------|---------|----------|----------|
| Link      | Sim                           | Max         | Min   | Min/Max | Max Us   | Max Ds   | Time to | Time to Time to Time to | Time to | Time to  | Time to  |
| Name      | Name                          | Flow        | Flow  | Delta   | Velocity | Velocity | Max     | Min                     | Min/Max | Max Us   | Max Ds   |
|           |                               | [cfs]       | [cfs] | Flow    | [fps]    | [fps]    | Flow    | Flow                    | Delta   | Velocity | Velocity |
|           |                               |             |       |         |          |          |         |                         |         |          |          |

L-04P L-04P

5y1D 100y3D

0.55 0.23

0.00 0.00

0.00

0.69 0.30

0.69 59.6365 0.30 12.3336

0.0000

59.6365

59.6365

[hrs] 60.1859

0.0000 18.0000 12.3336

12.3336

Link Min/Max Conditions with Times

Sim Name

Max Flow [cfs]

Min Flow [cfs]

Min/Max Delta

Max Ds Velocity

Velocity [fps]

Time to Max Flow [hrs]

Time to Min/Max Delta Flow

Velocity

Time to Max Us

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| L-05P                                       | L-05P                                       |       |       |          | Name     | Link           |
|---|---|-------|-------|----------|----------|----------------|
| 5y1D  | 100y3D                                      |       |       |          | Name     | Sim            |
| 0.02  | 0.06  |       |       | [cfs]    | Flow     | Max            |
| 0.00  | 0.00  |       |       | [cfs]    | Flow     | Min            |
| 0.00  | 0.00  |       | [cfs] | Flow     | Delta    | Min/Max Max Us |
| 0.02  | 0.08  |       |       | [fps]    | Velocity |                |
| 0.02  | 0.08  |       |       | [fps]    | Velocity | Max Ds         |
| 13.7066                                     | 61.7015                                     |       | [hrs] | Flow     | Max      | Time to        |
| 0.0000                                      | 0.0000                                      |       | [hrs] | Flow     | Min      | Time to        |
| 18.0000                                     | 61.7052                                     | [hrs] | Flow  | Delta    | Min/Max  | Time to        |
| 0.02 13.7066 0.0000 18.0000 13.7066 13.7066 | 0.08 61.7015 0.0000 61.7052 61.7015 61.7015 |       | [hrs] | Velocity | Max Us   | Time to        |
| 13.7066                                     | 61.7015                                     |       | [hrs] | Velocity | Max Ds   | Time to        |

Link Min/Max Conditions with Times

| 14.2888  | 14.2888  | 13.9588 | 0.81 0.81 14.2888 0.0000 13.9588 14.2888 14.2888 | 14.2888 | 0.81     | 0.81     | 0.12    | 0.00  | 0.63  | 5y1D   | L-06P |
|----------|----------|---------|--|---------|----------|----------|---------|-------|-------|--------|-------|
| 61.9822  | 61.9822  | 26.2684 | 0.95 61.9822 0.0000 26.2684 61.9822 61.9822      | 61.9822 | I 1      | 0.95     | 0.24    | 0.00  | 0.74  | 100y3D | L-06P |
|          |          | [hrs]   |  |         |          |          |         |       |       |        |       |
| [hrs]    | [hrs]    | Flow    | [hrs]  | [hrs]   |          |          | [cfs]   |       |       |        |       |
| Velocity | Velocity | Delta   | Flow   | Flow    | [fps]    | [fps]    | Flow    | [cfs] | [cfs] |        |       |
| Max Ds   | Max Us   | Min/Max | Min  | Мах     | Velocity | Velocity | Delta   | Flow  | Flow  | Name   | Name  |
| Time to  | Time to  | Time to | Time to  | Time to | Max Ds   | Max Us   | Min/Max | Min   | Max   | Sim    | Link  |

| Link Min/ | Link Min/Max Conditions with Times | ons with T | imes  |         |                |          |         |  |         |          |          |
|-----------|------------------------------------|------------|-------|---------|----------------|----------|---------|--|---------|----------|----------|
| Link      | Sim                                | Max        | Min   | Min/Max | Min/Max Max Us | Max Ds   | Time to | Time to Time to Time to Time to  | Time to | Time to  | Time to  |
| Name      | Name                               | Flow       | Flow  | Delta   | Velocity       | Velocity | Мах     | Min  | Min/Max | Max Us   | Max Ds   |
|           |                                    | [cfs]      | [cfs] | Flow    | [fps]          | [fps]    | Flow    | Flow   | Delta   | Velocity | Velocity |
|           |                                    |            |       | [cfs]   |                |          | [hrs]   | [hrs]  | Flow    | [hrs]    | [hrs]    |
|           |                                    |            |       |         |                |          |         |  | [hrs]   |          |          |
| L-07P     | 100y3D                             | 3.12       | -5.87 | -5.85   | -3.32          | -3.32    | 60.1691 | -5.85 -3.32 -3.32 60.1691 60.3742 60.3742 60.3742 60.3742 60.3742          | 60.3742 | 60.3742  | 60.3742  |
| 1_07P     | 5v1D                               | 2 1 C      | -4 NN | -3 00   | -2 26          | - 2 2k   | 10 1513 | 8751 C1 8751 C1 8751 C1 8751 C1 5131 C1 30 C2 30 C2 00 C2 00 C2 00 L2 31 C | 12 1278 | 12 1278  | 12 1278  |

| 12.1378  | 2.16 -4.00 -3.99 -2.26 -2.26 12.1513 12.1378 12.1378 12.1378 12.1378 | 12.1378                 | 12.1378 | 12.1513 | -2.26    | -2.26    | -3.99   | -4.00 | 2.16  | 5y1D   | L-07P |
|----------|--|-------------------------|---------|---------|----------|----------|---------|-------|-------|--------|-------|
| 60.3742  | -3.32 60.1691 60.3742 60.3742 60.3742 60.3742                        | 60.3742                 | 60.3742 | 60.1691 | -3.32    | -3.32    | -5.85   | -5.87 | 3.12  | 100y3D | L-07P |
|          |  | [hrs]                   |         |         |          |          |         |       |       |        |       |
| [hrs]    | [hrs]  | Flow                    | [hrs]   | [hrs]   |          |          | [cfs]   |       |       |        |       |
| Velocity | Velocity   | Delta                   | Flow    | Flow    | [fps]    | [fps]    | Flow    | [cfs] | [cfs] |        |       |
| Max Ds   | Max Us   | Min/Max                 | Min     | Max     | Velocity | Velocity | Delta   | Flow  | Flow  | Name   | Name  |
| Time to  | Time to  | Time to Time to Time to | Time to |         | Max Ds   | Max Us   | Min/Max | Min   | Max   | Sim    | Link  |

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| Link Min/ | Link Min/Max Conditions with Times | ons with T | imes  |         |          |          |         |         |                 |          |          |
|-----------|------------------------------------|------------|-------|---------|----------|----------|---------|---------|-----------------|----------|----------|
| Link      | Sim                                | Max        | Min   | Min/Max | Max Us   | Max Ds   | Time to | Time to | Time to Time to |          | Time to  |
| Name      | Name                               | Flow       | Flow  | Delta   | Velocity | Velocity | Max     | Min     | Min/Max Max Us  | Max Us   | Max Ds   |
|           |                                    | [cfs]      | [cfs] | Flow    | [fps]    | [fps]    | Flow    | Flow    | Delta           | Velocity | Velocity |
|           |                                    |            |       | [cfs]   |          |          | [hrs]   | [hrs]   | Flow            | [hrs]    | [hrs]    |
|           |                                    |            |       |         |          |          |         |         |                 |          |          |

L-08P

100y3D 5y1D

1.95 1.38

-1.00 -0.85

-0.82 -0.86

1.10 0.78

1.1060.04240.7811.8503

61.6365 12.7184

61.6364 12.6258

60.0424 11.8503

60.0424 11.8503

[hrs]

Link Min/Max Conditions with Times

Sim Name

Max Flow [cfs]

Min Flow [cfs]

Min/Max Delta Flow [cfs]

Max Us Velocity

Max Ds Velocity [fps]

Time to Max Flow [hrs]

Time to Min Flow [hrs]

Time to Min/Max Delta Flow

Time to Max Us Velocity

Time to Max Ds Velocity

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| -1.59 -1.23 2.27 2.27 60.9594 59.6278 60.3742 60.9594 60.9594 |
|---|
|   |
| [hrs]   |
| [fps] [fps] Flow  |
| Velocity Velocity Max   |
| Min/Max Max Us Max Ds Time to                                 |

Link Min/Max Conditions with Times

| 10.8844  | 10.7396  | 9.21 -10.61 -10.61 -6.01 6.16 10.8844 10.7396 10.7396 10.7396 10.7844 | 10.7396 | 10.8844 | 6.16     | -6.01    | -10.61        | -10.61 | 9.21  | 5y1D           | L-101PP 5y1D |
|----------|----------|---|---------|---------|----------|----------|---------------|--------|-------|----------------|--------------|
| 27.6240  | 27.6240  | -6.96 27.6533 27.6240 27.6240 27.6240 27.6240                         | 27.6240 | 27.6533 |          | -6.96    | -12.30 -12.30 | -12.30 | 12.08 | L-101PP 100y3D | L-101PP      |
|          |          | [hrs]   |         |         |          |          |               |        |       |                |              |
| [hrs]    | [hrs]    | Flow  | [hrs]   | [hrs]   |          |          | [cfs]         |        |       |                |              |
| Velocity | Velocity | Delta   | Flow    | Flow    | [fps]    | [fps]    | Flow          | [cfs]  | [cfs] |                |              |
| Max Ds   | Max Us   | Min/Max   | Min     | Max     | Velocity | Velocity | Delta         | Flow   | Flow  | Name           | Name         |
| Time to  |          | Time to Time to   | Time to | Time to | Max Ds   | Max Us   | Min/Max       | Min    | Max   | Sim            | Link         |

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| Link Min/I   | Link Min/Max Conditions with Times | ons with Ti | mes    |  |                |          |         |         |         |  |          |
|--------------|------------------------------------|-------------|--------|--|----------------|----------|---------|---------|---------|--|----------|
| Link         | Sim                                | Max         | Min    | Min/Max  | Min/Max Max Us | Max Ds   | Time to | Time to | Time to | Time to  | Time to  |
| Name         | Name                               | Flow        | Flow   | Delta  | Velocity       | Velocity | Мах     | Min     | Min/Max | Max Us   | Max Ds   |
|              |                                    | [cfs]       | [cfs]  | Flow   | [fps]          | [fps]    | Flow    | Flow    | Delta   | Velocity   | Velocity |
|              |                                    |             |        | [cfs]  |                |          | [hrs]   | [hrs]   | Flow    | [hrs]  | [hrs]    |
|              |                                    |             |        |  |                |          |         |         | [hrs]   |  |          |
| L-102PP      | L-102PP 100y3D                     |             | -10.95 | 10.16 -10.95 -10.95 -6.19 6.27 26.4471 23.3991 23.3991 23.3991 25.3822 | -6.19          | 6.27     | 26.4471 | 23.3991 | 23.3991 | 23.3991  | 25.3822  |
| 1-102PP 5v1D | 5v1D                               | 7 80        | -11 48 | -11 48   | -6 50          | -6 50    | 11 7325 | 10 7751 | 10 7751 | 7 80 -11 48 -11 48 -6 50 -6 50 11 7325 10 7751 10 7751 10 7751 10 7751 10 7751 | 10 7751  |

| 10.7751  | 10.7751  | 7.80 -11.48 -11.48 -6.50 -6.50 11.7325 10.7751 10.7751 10.7751 10.7751 | 10.7751         | 11.7325 | -6.50    | -6.50    | -11.48  | -11.48 | 7.80  | 5y1D           | L-102PP 5y1D |
|----------|----------|--|-----------------|---------|----------|----------|---------|--------|-------|----------------|--------------|
| 25.3822  | 23.3991  | 6.27 26.4471 23.3991 23.3991 23.3991 25.3822                           | 23.3991         | 26.4471 | 6.27     | -6.19    | -10.95  | -10.95 | 10.16 | L-102PP 100y3D | L-102PP      |
|          |          | [hrs]  |                 |         |          |          |         |        |       |                |              |
| [hrs]    | [hrs]    | Flow   | [hrs]           | [hrs]   |          |          | [cfs]   |        |       |                |              |
| Velocity | Velocity | Delta  | Flow            | Flow    | [fps]    | [fps]    | Flow    | [cfs]  | [cfs] |                |              |
| Max Ds   | Max Us   | Min/Max  | Min             | Max     | Velocity | Velocity | Delta   | Flow   | Flow  | Name           | Name         |
| Time to  | Time to  | Time to Time to  | Time to Time to |         | Max Ds   | Max Us   | Min/Max | Min    | Max   | Sim            | Link         |

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| ( |       |          | _                   |                         |
|---|-------|----------|---------------------|-------------------------|
|   |       |          | Name                | LINK                    |
|   |       |          | Name                | sim                     |
|   |       | [cfs]    | Flow                | Iviax                   |
|   |       | [cfs]    | Flow                | NIN                     |
|   | [cfs] | Flow     | Delta               | MIN/Max                 |
|   |       | [fps]    | Velocity            | Max US Max US           |
|   |       | [fps]    | Velocity            | IVIAX US                |
|   | [hrs] | Flow     | Max                 | Time to Time to         |
|   | [hrs] | Flow     | Min                 | l ime to                |
|   | Flow  | Delta    | Min/Max             | I Ime to                |
|   | [hrs] | Velocity | n/Max Max Us Max Ds | Time to Time to Time to |
|   | [hrs] | Velocity | Max Ds              | I Ime to                |
|   |       |          |                     |                         |

Link Min/Max Conditions with Times

L-103PP L-103PP

100y3D 5y1D

11.35 10.82

-12.44 -11.08

-12.44 -11.08

-7.04 -6.27

-7.04 -6.27

27.3662 12.7689

31.9449 13.5111

31.9449 13.5111

31.9449 13.5111

31.9449 13.5111

[hrs]

Link Min/Max Conditions with Times

Sim Name

Max Flow [cfs]

Min Flow [cfs]

Min/Max Delta Flow [cfs]

Max Us Velocity

Max Ds Velocity [fps]

Time to Max Flow [hrs]

Time to Min Flow [hrs]

Time to Min/Max Delta Flow

Time to Max Us Velocity

Time to Max Ds Velocity

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|   | 21 -5 78 -5 78 13.0409 10.720 | -5.78      | 21 -5.78 -5.78 | 21 -5.78 | 21 | -10.           | -10.22       | 9.65  | 5y1D           | L-105PP 5y1D |
|---|-------------------------------|------------|----------------|----------|----|----------------|--------------|-------|----------------|--------------|
| 6.68 6.68 30.7147 77.8773 30.7147 30.7147 30.7147 | 6.68                          | 6.68       | 6.68           |          |    | 11.79          | 11.80 -11.68 | 11.80 | L-105PP 100y3D | L-105PP      |
| [hrs]   |                               |            |                |          |    |                |              |       |                |              |
| [hrs] [hrs] Flow                                  |                               | [hrs]      |                |          |    | [cfs]          |              |       |                |              |
| [fps] [fps] Flow Flow Delta                       | [fps] Flow                    | [fps]      | [fps]          | fps]     | -  | Flow           | [cfs]        | [cfs] |                |              |
| Velocity Velocity Max Min Min/Max                 | y Velocity Max                | y Velocity | y Velocity     | 'elocity | <  | Delta          | Flow         | Flow  | Name           | Name         |
| Max Us Max Ds Time to Time to Time to             | Max Ds Time to                | Max Ds     | Max Ds         | Aax Us   | ~  | Min/Max Max Us | Min          | Max   | Sim            | Link         |

Link Min/Max Conditions with Times

| 10.7209  | 10.7209  | -7.39 -7.44 10.7636 10.7209 10.7209 10.7209 10.7209 | 10.7209 | 10.7636 | -7.44    |          | -117.48 | 109.77 -117.48 -117.48 | 109.77                | 5y1D           | L-106PP 5y1D |
|----------|----------|---|---------|---------|----------|----------|---------|------------------------|-----------------------|----------------|--------------|
| 28.7307  | 28.7307  | 8.45 8.45 28.7307 29.5556 28.7307 28.7307 28.7307   | 29.5556 | 28.7307 | 8.45     | 8.45     | 134.38  | -117.53                | 134.38 -117.53 134.38 | L-106PP 100y3D | L-106PP      |
|          |          | [hrs]   |         |         |          |          |         |                        |                       |                |              |
| [hrs]    | [hrs]    | Flow  | [hrs]   | [hrs]   |          |          | [cfs]   |                        |                       |                |              |
| Velocity | Velocity | Delta   | Flow    | Flow    | [fps]    | [fps]    | Flow    | [cfs]                  | [cfs]                 |                |              |
| Max Ds   | Max Us   | Min/Max   | Min     | Мах     | Velocity | Velocity | Delta   | Flow                   | Flow                  | Name           | Name         |
| Time to  | Time to  | Time to   | Time to | Time to | Max Ds   | Max Us   | Min/Max | Min                    | Max                   | Sim            | Link         |

| Link Min/    | Link Min/Max Conditions with Times  | ons with Ti | mes     |  |                |          |         |                         |         |          |          |
|--------------|---|-------------|---------|--|----------------|----------|---------|-------------------------|---------|----------|----------|
| Link         | Sim   | Max         | Min     | Min/Max  | Min/Max Max Us | Max Ds   | Time to | Time to Time to Time to | Time to | Time to  | Time to  |
| Name         | Name  | Flow        | Flow    | Delta  | Velocity       | Velocity | Max     | Min                     | Min/Max | Max Us   | Max Ds   |
|              |   | [cfs]       | [cfs]   | Flow   | [fps]          | [fps]    | Flow    | Flow                    | Delta   | Velocity | Velocity |
|              |   |             |         | [cfs]  |                |          | [hrs]   | [hrs]                   | Flow    | [hrs]    | [hrs]    |
|              |   |             |         |  |                |          |         |                         | [hrs]   |          |          |
| L-109PP      | L-109PP   100y3D   125.06   -134.69   -134.69   -8.47   -8.47   27.2756   31.9449   31.9449   31.9449   31.9449   31.9449 | 125.06      | -134.69 | -134.69  | -8.47          | -8.47    | 27.2756 | 31.9449                 | 31.9449 | 31.9449  | 31.9449  |
| 1-109PP 5v1D |   | 113 30      | -111 63 | 113 30 - 111 63 113 30 7 12 7 19 10 7009 13 5111 10 7209 10 7209 10 7209 | 712            | 7 19     | 10 7209 | 13 5111                 | 10 7209 | 10 7209  | 10 7209  |

| Min/MaxMax UsMax DsTime toTime toTime toTime toTime toDeltaVelocityVelocityMaxMinMin/MaxMax UsMax DsFlow[fps][fps]FlowFlowDeltaVelocityVelocity[cfs][fs][hrs][hrs]FlowDeltaVelocityIhrs] |
|--|
| Max DsTime toTime toTime toTime toTime toVelocityMaxMinMin/MaxMax UsMax Dsfps]FlowFlowDeltaVelocityVelocity[hrs][hrs]FlowFlow[hrs][hrs]-8.4727.275631.944931.944931.944931.9449          |

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| Link Min/ | Link Min/Max Conditions with Times | ions with T | imes  |         |          |                |         |         |                        |          |          |
|-----------|------------------------------------|-------------|-------|---------|----------|----------------|---------|---------|------------------------|----------|----------|
| Link      | Sim                                | Max         | Min   | Min/Max | Max Us   | Max Ds Time to | Time to | Time to | Time to Time to Time t | Time to  | Time to  |
| Name      | Name                               | Flow        | Flow  | Delta   | Velocity | Velocity       | Max     | Min     | Min/Max                | Max Us   | Max Ds   |
|           |                                    | [cfs]       | [cfs] | Flow    | [fps]    | [fps]          | Flow    | Flow    | Delta                  | Velocity | Velocity |
|           |                                    |             |       | [cfs]   |          |                | [hrs]   | [hrs]   | Flow                   | [hrs]    | [hrs]    |
|           |                                    |             |       |         |          |                |         |         |                        |          |          |

L-10P L-10P

100y3D 5y1D

3.61 2.19

-4.00 -3.04

-3.71 -2.87

-2.26 -1.72

-2.26 -1.72

60.9590 12.5510

60.4439 12.2262

[hrs] 60.5422 12.5511

60.4439 12.2262

60.4439 12.2262

Link Min/Max Conditions with Times

Sim Name

Max Flow [cfs]

Min Flow [cfs]

Min/Max Delta Flow [cfs]

Max Us Velocity

Max Ds Velocity [fps]

Time to Max Flow [hrs]

Min Flow [hrs]

Time to Min/Max Delta Flow

Time to Max Us Velocity

Time to Max Ds Velocity

|                |      | 8.75 8.75 31.94   |  |
|----------------|------|-------------------|--|
|                | 8.75 |                   | L-110PP   100y3D   139.21   -124.43   139.21   8.75   8.75   31.9449   22.7573   31.9449   31.9449   31.9449   31.9449 |
|                |      |                   |  |
|                |      | [hrs]             | [hrs] [hrs]  |
| [fps]          |      | .] [fps] Flow     | [fps]  |
| Velocit        | <    | city Velocity Max | y Velocity   |
| Min/Max Max Us |      | Max Ds            |  |

Link Min/Max Conditions with Times

| 10.8845  | 10.8845        | 10.8845         | 10.7396                                      | 10.8845         | 7.13     | 6.94     | 110.45 -91.83 110.45 6.94 7.13 10.8845 10.7396 10.8845 10.8845 10.8845 | -91.83  | 110.45                | L-111PP 5y1D   | L-111PP |
|----------|----------------|-----------------|--|-----------------|----------|----------|--|---------|-----------------------|----------------|---------|
| 25.1547  | 27.3662        | 27.3662         | 7.89 27.3662 27.6240 27.3662 27.3662 25.1547 | 27.3662         |          | 7.77     | 123.59   | -120.37 | 123.59 -120.37 123.59 | L-111PP 100y3D | L-111PP |
|          |                | [hrs]           |  |                 |          |          |  |         |                       |                |         |
| [hrs]    | [hrs]          | Flow            | [hrs]  | [hrs]           |          |          | [cfs]  |         |                       |                |         |
| Velocity | Velocity       | Delta           | Flow   | Flow            | [fps]    | [fps]    | Flow   | [cfs]   | [cfs]                 |                |         |
| Max Ds   | Min/Max Max Us | Min/Max         | Min  | Мах             | Velocity | Velocity | Delta  | Flow    | Flow                  | Name           | Name    |
| Time to  |                | Time to Time to |  | Time to Time to | Max Ds   | Max Us   | Min/Max  | Min     | Max                   | Sim            | Link    |

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| Link Min/ | Link Min/Max Conditions with Times | ons with Ti | mes     |                        |          |          |         |   |           |          |          |
|-----------|------------------------------------|-------------|---------|------------------------|----------|----------|---------|---|-----------|----------|----------|
| Link      | Sim                                | Max         | Min     | Min/Max Max Us         | Max Us   | Max Ds   | Time to | Time to   | Time to   | Time to  | Time to  |
| Name      | Name                               | Flow        | Flow    | Delta                  | Velocity | Velocity | Max     | Min   | Min/Max N | /lax Us  | Max Ds   |
|           |                                    | [cfs]       | [cfs]   | Flow                   | [fps]    | [fps]    | Flow    | Flow  | Delta     | Velocity | Velocity |
|           |                                    |             |         | [cfs]                  |          |          | [hrs]   | [hrs]   | Flow      | [hrs]    | [hrs]    |
|           |                                    |             |         |                        |          |          |         |   | [hrs]     |          |          |
| L-115PP   | L-115PP 100y3D                     | 144.99      | -168.22 | 144.99 -168.22 -168.22 | -10.58   | -10.58   | 27.6240 | -10.58 -10.58 27.6240 30.2596 30.2596 30.2596 30.2596 | 30.2596   | 30.2596  | 30.2596  |
| L-115PP   | 5v1D                               | 111.71      | -136.62 | 111.71 -136.62 -136.61 | -8.59    | -8.81    | 10.6142 | -8.81 10.6142 10.8845 10.8845 10.8845 10.8845 10.8845 | 10.8845   | 10.8845  | 10.8845  |

| $\leq$ | Max Conditions with Times | ons with Ti | mes   |         |          |          |         |                         |         |          |          |
|--------|---------------------------|-------------|-------|---------|----------|----------|---------|-------------------------|---------|----------|----------|
|        | Sim                       | Max         | Min   | Min/Max | Max Us   | Max Ds   | Time to | Time to Time to Time to | Time to | Time to  | Time to  |
|        | Name                      | Flow        | Flow  | Delta   | Velocity | Velocity | Max     | Min                     | Min/Max | Max Us   | Max Ds   |
|        |                           | [cfs]       | [cfs] | Flow    | [fps]    | [fps]    | Flow    | Flow                    | Delta   | Velocity | Velocity |
|        |                           |             |       | [cfs]   |          |          | [hrs]   | [hrs]                   | Flow    | [hrs]    | [hrs]    |
|        |                           |             |       |         |          |          |         |                         | [hrs]   |          |          |

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Name

Name

Max Flow

Flow

Delta

Velocity

Max Ds Velocity

Time to Max

Min

Time to Time to Min/Max Max Us

Max Ds

Time to

| ľ |               |  |  |
|---|---------------|--|--|
|   | Link          |  |  |
|   | Min           |  |  |
|   | /Max (        |  |  |
|   | Con           |  |  |
|   | ditions       |  |  |
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L-116RC Ρ

5y1D

0.00

0.00

0.00

0.00

0.00

0.0000

0.0000

0.0000

0.0000

0.0000

L-116RC

100y3D

178.24

0.00

178.24

0.00

0.00

59.6798

0.0000

59.6798 [hrs]

0.0000

0.0000

Link Min/Max Conditions with Times

Sim Name

Max Flow [cfs]

Min Flow [cfs]

Min/Max Delta Flow

Max Us Velocity

Max Ds Velocity [fps]

Time to Max Flow [hrs]

Min Flow [hrs]

Time to Min/Max Delta

Time to Max Us Velocity

Time to Max Ds Velocity

[hrs]

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| L-118PP 5y1D  | L-118PP 100y3D                                    |       |       |          | Name     | Link    |
|---|---|-------|-------|----------|----------|---------|
| 5y1D  | 100y3D  |       |       |          | Name     | Sim     |
| 7.93  | 15.87   |       |       | [cfs]    | Flow     | Max     |
| -7.96   | -12.13  |       |       | [cfs]    | Flow     | Min     |
| -7.96   | -12.13 11.43                                      |       | [cfs] | Flow     | Delta    | Min/Max |
| -4.51   |   |       |       | [fps]    | Velocity | Max Us  |
| 4.90  | 9.18  |       |       | [fps]    | Velocity | Max Ds  |
| 10.5724   | 60.9100   |       | [hrs] | Flow     | Max      | Time to |
| 10.8987   | 30.2596   |       | [hrs] | Flow     | Min      | Time to |
| 10.8987   | 27.1813   | [hrs] | Flow  | Delta    | Min/Max  | Time to |
| -7.96 -7.96 -4.51 4.90 10.5724 10.8987 10.8987 10.8987 0.0009 | 8.98 9.18 60.9100 30.2596 27.1813 60.9100 60.9107 |       | [hrs] | Velocity | Max Us   | Time to |
| 0.0009  | 60.9107   |       | [hrs] | Velocity | Max Ds   | Time to |

Link Min/Max Conditions with Times

| 11.7943  | 11.7943  | 11.1440 | 11.7943                                       | 20.4453 | -2.73          | -2.73    | -4.83 -3.14 -2.73 -2.73 20.4453 11.7943 11.1440 11.7943 11.7943 |       | 1.78  | 5y1D           | L-119PP 5y1D |
|----------|----------|---------|---|---------|----------------|----------|---|-------|-------|----------------|--------------|
| 24.2285  | 24.2285  | 24.2285 | -3.85 66.2857 24.2285 24.2285 24.2285 24.2285 | 66.2857 |                | -3.85    | -6.81   | -6.81 | 2.97  | L-119PP 100y3D | L-119PP      |
|          |          | [hrs]   |   |         |                |          |   |       |       |                |              |
| [hrs]    | [hrs]    | Flow    | [hrs]   | [hrs]   |                |          | [cfs]   |       |       |                |              |
| Velocity | Velocity | Delta   | Flow  | Flow    | [fps]          | [fps]    | Flow  | [cfs] | [cfs] |                |              |
| Max Ds   | Max Us   | Min/Max | Min   | Max     | Velocity       | Velocity | Delta   | Flow  | Flow  | Name           | Name         |
| Time to  | Time to  | Time to | Time to                                       | Time to | Max Ds Time to | Max Us   | Min/Max   | Min   | Max   | Sim            | Link         |

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| Link Min/ | Link Min/Max Conditions with Times | ions with T | mes        |         |           |          |         |  |         |          |          |
|-----------|------------------------------------|-------------|------------|---------|-----------|----------|---------|--|---------|----------|----------|
| Link      | Sim                                | Max         | Min        | Min/Max | Max Us    | Max Ds   | Time to | Time to Time to Time to Time to              | Time to | Time to  | Time to  |
| Name      | Name                               | Flow        | Flow       | Delta   | Velocity  | Velocity | Max     | Min  | Min/Max | Max Us   | Max Ds   |
|           |                                    | [cfs]       | [cfs]      | Flow    | [fps]     | [fps]    | Flow    | Flow   | Delta   | Velocity | Velocity |
|           |                                    |             |            | [cfs]   |           |          | [hrs]   | [hrs]  | Flow    | [hrs]    | [hrs]    |
|           |                                    |             |            |         |           |          |         |  | [hrs]   |          |          |
| L-11P     | 100y3D                             | 8.87        | 8.87 -1.67 | 1.74    | 1.74 2.82 | 2.82     | 60.9577 | 2.82 60.9577 28.2605 18.1849 60.9577 60.9577 | 18.1849 | 60.9577  | 60.9577  |
| 1_11D     | 5v1D                               | 217         | -1 40      | _1 40   | 1 01      | 1 01     | 10 6258 |  | 10 8240 | 10 6058  | 10 4058  |

| 12.6258  | 1.01 12.6258 10.8569 10.8569 12.6258 12.6258 | 10.8569 | 10.8569   | 12.6258 | 1.01     | 1.01     | -1.40 -1.40 | -1.40 | 3.17  | 5y1D   | L-11P |
|----------|--|---------|---|---------|----------|----------|-------------|-------|-------|--------|-------|
| 60.9577  | 2.82 60.9577 28.2605 18.1849 60.9577 60.957  | 18.1849 | 28.2605   | 60.9577 |          | 2.82     | 1.74        | -1.67 | 8.87  | 100y3D | L-11P |
|          |  | [hrs]   |   |         |          |          |             |       |       |        |       |
| [hrs]    | [hrs]  | Flow    | [hrs]   | [hrs]   |          |          | [cfs]       |       |       |        |       |
| Velocity | Velocity                                     | Delta   | Flow  | Flow    | [fps]    | [fps]    | Flow        | [cfs] | [cfs] |        |       |
| Max Ds   | Min/Max Max Us                               | Min/Max | Min   | Max     | Velocity | Velocity | Delta       | Flow  | Flow  | Name   | Name  |
| Time to  | Time to                                      | Time to | Min/Max Max Us Max Ds Time to Time to Time to Time to | Time to | Max Ds   | Max Us   | Min/Max     | Min   | Max   | Sim    | Link  |

| <br>Link Min/N<br>Link | Max Conditi<br>Sim<br>Name | nith Ti | imes<br>Min<br>Flow  | Min/Max<br>Delta         |                             | Max Ds<br>Velocity          | Time to<br>Max         | Time to<br>Min         |                             | Time to<br>Max Us             | Time to<br>Max Ds             |
|------------------------|----------------------------|---------|----------------------|--------------------------|-----------------------------|-----------------------------|------------------------|------------------------|-----------------------------|-------------------------------|-------------------------------|
|                        |                            |         | Min<br>Flow<br>[cfs] | Min/Max<br>Delta<br>Flow | Max Us<br>Velocity<br>[fps] | Max Ds<br>Velocity<br>[fps] | Time to<br>Max<br>Flow | Time to<br>Min<br>Flow | Time to<br>Min/Max<br>Delta | Time to<br>Max Us<br>Velocity | Time to<br>Max Ds<br>Velocity |
|                        |                            |         |                      | [cfs]                    |                             |                             | [hrs]                  | [hrs]                  | Flow                        | [hrs]                         | [hrs]                         |

L-120PP L-120PP

100y3D 5y1D

4.26 2.32

-2.55 -2.97

2.82 2.32

2.41 -1.68

 [hrs]
 [hrs]

 2.41
 60.5364
 29.4977
 28.8116
 60.5364
 60.5364

 -1.68
 18.2536
 11.7545
 18.2536
 11.7545
 11.7545

| Link Min/I | Min/Max Conditions with | ons with T | th Times |         |          |          |         |         |         |          |          |
|------------|-------------------------|------------|----------|---------|----------|----------|---------|---------|---------|----------|----------|
| Link       | Sim                     | Max        | Min      | Min/Max | Max Us   | Max Ds   | Time to | Time to | Time to | Time to  | Time to  |
| Name       | Name                    | Flow       | Flow     | Delta   | Velocity | Velocity | Max     | Min     | Min/Max | Max Us   | Max Ds   |
|            |                         | [cfs]      | [cfs]    | Flow    | [fps]    | [fps]    | Flow    | Flow    | Delta   | Velocity | Velocity |
|            |                         |            |          | [cfs]   |          |          | [hrs]   | [hrs]   | Flow    | [hrs]    | [hrs]    |

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| L-121PP 5y1D  | L-121PP 100y3D                               |       |       |          | Name Name | Link Sim       |
|---|--|-------|-------|----------|-----------|----------------|
| ⊢   |  |       |       | [cfs]    | Flow      | Max            |
| 1.09 -3.69 -0.80 -2.09 -2.09 13.9646 12.0875 23.5003 12.0875 12.087 | 3.16 -1.63 -1.33                             |       |       | [cfs]    | Flow      | Min            |
| -0.80   | -1.33  |       | [cfs] | Flow     | Delta     | Min/Max        |
| -2.09   | 1.79   |       |       | [fps]    | Velocity  | Min/Max Max Us |
| -2.09   |  |       |       | [fps]    | Velocity  | Max Ds         |
| 13.9646   | 61.0673                                      |       | [hrs] | Flow     | Max       | Time to        |
| 12.0875   | 27.4453                                      |       | [hrs] | Flow     | Min       | Time to        |
| 23.5003   | 26.6356                                      | [hrs] | Flow  | Delta    | Min/Max   | Time to        |
| 12.0875   | 1.79 61.0673 27.4453 26.6356 61.0673 61.0673 |       | [hrs] | Velocity | Max Us    | Time to        |
| 12.0875   | 61.0673                                      |       | [hrs] | Velocity | Max Ds    | Time to        |

Link Min/Max Conditions with Times

| 18.3705  | 18.3705        | 18.3705 | -1.75 11.5058 18.3705 18.3705 18.3705 18.3705 | 11.5058 |          | -3.08 -1.75 |         | -3.08 | 2.78  | 5y1D           | L-122PP 5y1D |
|----------|----------------|---------|---|---------|----------|-------------|---------|-------|-------|----------------|--------------|
| 29.4843  | 29.4843        | 29.4843 | 2.29 29.4843 46.0602 29.4843 29.4843 29.4843  | 29.4843 | 2.29     | 2.29        | 4.04    | -3.55 | 4.04  | L-122PP 100y3D | L-122PP      |
|          |                | [hrs]   |   |         |          |             |         |       |       |                |              |
| [hrs]    | [hrs]          | Flow    | [hrs]   | [hrs]   |          |             | [cfs]   |       |       |                |              |
| Velocity | Velocity       | Delta   | Flow  | Flow    | [fps]    | [fps]       | Flow    | [cfs] | [cfs] |                |              |
| Max Ds   | Min/Max Max Us | Min/Max | Min   | Max     | Velocity | Velocity    | Delta   | Flow  | Flow  | Name           | Name         |
| Time to  | Time to        | Time to | Time to                                       | Time to | Max Ds   | Max Us      | Min/Max | Min   | Max   | Sim            | Link         |

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| Link Min/I | Link Min/Max Conditions with Times | ons with T | imes  |                      |                |   |         |  |                |          |          |
|------------|------------------------------------|------------|-------|----------------------|----------------|---|---------|--|----------------|----------|----------|
| Link       | Sim                                | Max        | Min   | Min/Max              | Min/Max Max Us | Max Ds                                  | Time to | Max Ds Time to Time to Time to Time to       | Time to        | Time to  | Time to  |
| Name       | Name                               | Flow       | Flow  | Delta                | Velocity       | Velocity                                | Max     | Min  | Min/Max Max Us |          | Max Ds   |
|            |                                    | [cfs]      | [cfs] | Flow                 | [fps]          | [fps]                                   | Flow    | Flow   | Delta          | Velocity | Velocity |
|            |                                    |            |       | [cfs]                |                |   | [hrs]   | [hrs]  | Flow           | [hrs]    | [hrs]    |
|            |                                    |            |       |                      |                |   |         |  | [hrs]          |          |          |
| L-123PP    | L-123PP 100y3D                     | 5.27       | -1.47 | 5.27 -1.47 1.49 2.98 | 2.98           | 2.98                                    | 59.6248 | 2.98 59.6248 29.3645 20.2596 59.6248 59.6248 | 20.2596        | 59.6248  | 59.6248  |
|            | 5,,10                              | оо л       | 70 U  | CL L                 | 2 2 2 2        | 2 | 11 0000 |  | 77 UL          | 11 0000  | 11 0000  |

| 11.8982  | 1.12 3.33 3.33 11.8982 10.8498 10.7467 11.8982 11.8983 | 10.7467 | 10.8498 | 11.8982 | 3.33     | 3.33     | 1.12    | -0.86 | 5.88  | 5y1D   | L-123PP 5y1D |
|----------|--|---------|---------|---------|----------|----------|---------|-------|-------|--------|--------------|
| 59.6248  | 2.98 59.6248 29.3645 20.2596 59.6248 59.6244           | 20.2596 | 29.3645 | 59.6248 | 2.98     | 2.98     | 1.49    | -1.47 | 5.27  | 100y3D | L-123PP      |
|          |  | [hrs]   |         |         |          |          |         |       |       |        |              |
| [hrs]    | [hrs]  | Flow    | [hrs]   | [hrs]   |          |          | [cfs]   |       |       |        |              |
| Velocity | Velocity   | Delta   | Flow    | Flow    | [fps]    | [fps]    | Flow    | [cfs] | [cfs] |        |              |
| Max Ds   | Max Us   | Min/Max | Min     | Max     | Velocity | Velocity | Delta   | Flow  | Flow  | Name   | Name         |
| Time to  | Time to  | Time to | Time to | Time to | Max Ds   | Max Us   | Min/Max | Min   | Max   | Sim    | Link         |

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| Link Min/ | Link Min/Max Conditions with Times | ons with T | mes   |         |          |          |         |         |                 |          |          |
|-----------|------------------------------------|------------|-------|---------|----------|----------|---------|---------|-----------------|----------|----------|
| Link      | Sim                                | Max        | Min   | Min/Max | Max Us   | Max Ds   | Time to | Time to | Time to Time to | Time to  | Time to  |
| Name      | Name                               | Flow       | Flow  | Delta   | Velocity | Velocity | Max     | Min     | Min/Max         | Max Us   | Max Ds   |
|           |                                    | [cfs]      | [cfs] | Flow    | [fps]    | [fps]    | Flow    | Flow    | Delta           | Velocity | Velocity |
|           |                                    |            |       | [cfs]   |          |          | [hrs]   | [hrs]   | Flow            | [hrs]    | [hrs]    |
|           |                                    |            |       |         |          |          |         |         |                 |          |          |

L-124PP L-124PP

100y3D 5y1D

5.45 6.16

-1.20 -1.00

1.48 -0.97

3.09 3.49

3.09 59.6262 3.49 11.9002

30.6133 21.1580

26.3058 10.7467

59.6262 11.9002

59.6262 11.9002

[hrs]

Link Min/Max Conditions with Times

Sim Name

Max Flow [cfs]

Min Flow [cfs]

Min/Max Delta Flow [cfs]

Max Us Velocity

Max Ds Velocity [fps]

Time to Max Flow [hrs]

Time to Min Flow [hrs]

Time to Min/Max Delta Flow

Time to Max Us Velocity

Time to Max Ds Velocity

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| L-125PP 5y1D  | L-125PP 100y3D                                    |       |       |          | Name     | Link           |
|---|---|-------|-------|----------|----------|----------------|
| 5y1D  | 100y3D  |       |       |          | Name     | Sim            |
| 24.19   | 44.50   |       |       | [cfs]    | Flow     | Max            |
| -27.87  | -33.85  |       |       | [cfs]    | Flow     | Min            |
| -27.87  | 44.40   |       | [cfs] | Flow     | Delta    | Min/Max        |
| -2.90   | 4.63  |       |       | [fps]    | Velocity | Min/Max Max Us |
| -2.94   | 4.63  |       |       | [fps]    | Velocity | Max Ds         |
| 10.7085   | 26.8578   |       | [hrs] | Flow     | Max      | Time to        |
| 10.5840   | 17.8693   |       | [hrs] | Flow     | Min      | Time to        |
| 10.5840   | 26.8578   | [hrs] | Flow  | Delta    | Min/Max  | Time to        |
| 24.19 -27.87 -27.87 -2.90 -2.94 10.7085 10.5840 10.5840 10.5840 10.5840 10.5840 | 4.63 4.63 26.8578 17.8693 26.8578 26.8578 26.8578 |       | [hrs] | Velocity | Max Us   | Time to        |
| 10.5840   | 26.8578   |       | [hrs] | Velocity | Max Ds   | Time to        |

Link Min/Max Conditions with Times

| 10.6587  | 10.6587  | 10.6587                                      | 10.6587 | 10.6000 | -3.41    | -3.40    | 28.26 -32.71 -32.71 -3.40 -3.41 10.6000 10.6587 10.6587 10.6587 10.6587 | -32.71 | 28.26 | 5y1D           | L-126PP 5y1D |
|----------|----------|--|---------|---------|----------|----------|---|--------|-------|----------------|--------------|
| 17.1076  | 27.5467  | 4.06 17.1076 27.5467 27.5467 27.5467 17.1076 | 27.5467 | 17.1076 | 4.06     | -4.05    | -38.95  | -38.95 | 38.25 | L-126PP 100y3D | L-126PP      |
|          |          | [hrs]  |         |         |          |          |   |        |       |                |              |
| [hrs]    | [hrs]    | Flow   | [hrs]   | [hrs]   |          |          | [cfs]   |        |       |                |              |
| Velocity | Velocity | Delta  | Flow    | Flow    | [fps]    | [fps]    | Flow  | [cfs]  | [cfs] |                |              |
| Max Ds   | Max Us   | Min/Max                                      | Min     | Max     | Velocity | Velocity | Delta   | Flow   | Flow  | Name           | Name         |
| Time to  | Time to  | Time to                                      | Time to | Time to | Max Ds   | Max Us   | Min/Max   | Min    | Max   | Sim            | Link         |

| Link    | Sim          | Max   | Min                | Min/Max Max Us | Max Us   | Max Ds   | Time to | Time to Time to Time to | Time to | Time to  | Time to  |
|---------|--------------|-------|--------------------|----------------|----------|----------|---------|-------------------------|---------|--|----------|
| Name    | Name         | Flow  | Flow               | Delta          | Velocity | Velocity | Мах     | Min                     | Min/Max | Max Us   | Max Ds   |
|         |              | [cfs] | [cfs]              | Flow           | [fps]    | [fps]    | Flow    | Flow                    | Delta   | Velocity   | Velocity |
|         |              |       |                    | [cfs]          |          |          | [hrs]   | [hrs]                   | Flow    | [hrs]  | [hrs]    |
|         |              |       |                    |                |          |          |         |                         | [hrs]   |  |          |
| L-127PP | 100y3D       |       | 43.41 -39.46 43.40 | 43.40          | 4.51     |          | 19.9369 | 23.6987                 | 19.9369 | 4.53 19.9369 23.6987 19.9369 19.9369 19.9369                         | 19.9369  |
| L-127PP | L-127PP 5y1D | 38.02 | -34.39             | 38.02          | 3.95     | 3.97     | 10.6587 | 10.6000                 | 10.6587 | 38.02 -34.39 38.02 3.95 3.97 10.6587 10.6000 10.6587 10.6587 10.6587 | 10.6587  |

| ame   | Sim<br>Name | Max<br>Flow<br>[cfs] | Min<br>Flow<br>[cfs] | Min/Max<br>Delta<br>Flow | Max Us<br>Velocity<br>[fps] | Min/Max Max Us Max Us Iime to<br>Delta Velocity Velocity Max<br>Flow [fps] [fps] Flow | lime to<br>Max<br>Flow | lime to<br>Min<br>Flow                            | Ime to         Ime to         Ime to           Min/Max         Max Us         Max Ds           Delta         Velocity         Velocity | lime to lime to<br>Min/Max Max Us<br>Delta Velocity | Time to<br>Max Ds<br>Velocity |
|-------|-------------|----------------------|----------------------|--------------------------|-----------------------------|---|------------------------|---|--|---|-------------------------------|
|       |             |                      |                      | [cfs]                    |                             |   | [hrs]                  | [hrs]   | Flow   | [hrs]   | _                             |
|       |             |                      |                      |                          |                             |   |                        |   | [hrs]  |   |                               |
| 127PP | 100y3D      | 43.41                | -39.46               | 43.40                    | 4.51                        |   | 19.9369                | 4.53 19.9369 23.6987 19.9369 19.9369 19.9369      | 19.9369  | 19.9369   | 1                             |
| 127PP | 127PP 5y1D  | 38.02                | -34.39               | 38.02                    |                             | 3.97  | 10.6587                | 3.95 3.97 10.6587 10.6000 10.6587 10.6587 10.6587 | 10.6587  | 10.6587   | _                             |

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| ime<br>ax<br>eloc                                 |
|---|
| Time toTime toMin/MaxMax UsDeltaVelocityFlow[hrs] |

L-128PP L-128PP

100y3D 5y1D

5.90 4.08

-5.20 -4.72

5.23 -4.72

3.34 -2.67

3.34 -2.67

60.9024 10.6000

19.9369 10.6587

26.9929 10.6587 [hrs]

60.9024 10.6587

60.9024 10.6587

Link Min/Max Conditions with Times

Sim Name

Max Flow [cfs]

Min Flow [cfs]

Min/Max Delta Flow [cfs]

Max Us Velocity

Max Ds Velocity [fps]

Time to Max Flow [hrs]

Time to Min Flow [hrs]

Time to Min/Max Delta Flow

Time to Max Us Velocity

Time to Max Ds Velocity

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| L-129PP 5y1D                                 | L-129PP 100y3D                               |       |       |          | Name Name | Link Sim       |
|--|--|-------|-------|----------|-----------|----------------|
|  | 3D 6.35                                      |       |       | [cfs]    | e Flow    | Max            |
| 3.92 -3.18 3.84 2.22                         |  |       |       | [cfs]    | Flow      | Min            |
| 3.84   | -5.61 6.34 3.60                              |       | [cfs] | Flow     | Delta     | Min/Max Max Us |
| 2.22   | 3.60   |       |       | [fps]    | Velocity  |                |
| 2.22   | 3.60   |       |       | [fps]    | Velocity  | Max Ds         |
| 10.7484                                      | 28.4604                                      |       | [hrs] | Flow     | Max       | Time to        |
| 10.7565                                      | 22.9618                                      |       | [hrs] | Flow     | Min       | Time to        |
| 10.7484                                      | 28.4604                                      | [hrs] | Flow  | Delta    | Min/Max   | Time to        |
| 2.22 10.7484 10.7565 10.7484 10.7484 10.7484 | 3.60 28.4604 22.9618 28.4604 28.4604 28.4604 |       | [hrs] | Velocity | Max Us    | Time to        |
| 10.7484                                      | 28.4604                                      |       | [hrs] | Velocity | Max Ds    | Time to        |

Link Min/Max Conditions with Times

| 12.2603  | 12.2603  | 12.2016 | 1.61 1.61 12.2603 10.6756 12.2016 12.2603 12.2603 | 12.2603 | 1.61     |          | 2.08    | -0.98 | 2.85  | 5y1D   | L-12P |
|----------|----------|---------|---|---------|----------|----------|---------|-------|-------|--------|-------|
| 60.5241  | 60.5241  | 60.6391 | 1.87 60.5241 18.7440 60.6391 60.5241 60.5241      | 60.5241 |          | 1.87     | 2.19    | -1.18 | 3.31  | 100y3D | L-12P |
|          |          | [hrs]   |   |         |          |          |         |       |       |        |       |
| [hrs]    | [hrs]    | Flow    | [hrs]   | [hrs]   |          |          | [cfs]   |       |       |        |       |
| Velocity | Velocity | Delta   | Flow  | Flow    | [fps]    | [fps]    | Flow    | [cfs] | [cfs] |        |       |
| Max Ds   | Max Us   | Min/Max | Min   | Max     | Velocity | Velocity | Delta   | Flow  | Flow  | Name   | Name  |
| Time to  | Time to  | Time to | Time to   | Time to | Max Ds   | Max Us   | Min/Max | Min   | Max   | Sim    | Link  |

|              | LINK MIN/Max Conditions with Times | ons with I   | Imes  |                  |          |          |         |   |                |          |          |
|--------------|------------------------------------|--|-------|------------------|----------|----------|---------|---|----------------|----------|----------|
| Link         | Sim                                | Мах  | Min   | Min/Max          | Max Us   | Max Ds   | Time to | Min/Max Max Us Max Ds Time to Time to Time to Time to Time to | Time to        | Time to  | Time to  |
| Name         | Name                               | Flow   | Flow  | Delta            | Velocity | Velocity | Max     | Min   | Min/Max Max Us |          | Max Ds   |
|              |                                    | [cfs]  | [cfs] | Flow             | [fps]    | [fps]    | Flow    | Flow  | Delta          | Velocity | Velocity |
|              |                                    |  |       | [cfs]            |          |          | [hrs]   | [hrs]   | Flow           | [hrs]    | [hrs]    |
|              |                                    |  |       |                  |          |          |         |   | [hrs]          |          |          |
| L-131PP      | L-131PP 100y3D                     | 1.79   | -1.97 | 1.79 -1.97 -1.68 |          | -1.11    | 60.0212 | -1.11 -1.11 60.0212 60.2006 60.3883 60.2006 60.2006           | 60.3883        | 60.2006  | 60.2006  |
| 1_13100 5v10 | 5v1D                               | 0048 C1 0048 C1 8048 C1 0048 C1 0448 C1 0448 C1 0448 C1 04 C2 04 C | -1 03 | -1 48            | -1 00    | -1 00    | 11 4854 | 10 8604   | 17 28/8        | 10 8604  | 17 8604  |

| 12.8604  | 12.8604  | 12.3848        | 1.68 -1.93 -1.48 -1.09 -1.09 11.6856 12.8604 12.3848 12.8604 12.860 | 11.6856 | -1.09    | -1.09          | -1.48   | -1.93      | 1.68  | L-131PP 5y1D   | L-131PP |
|----------|----------|----------------|---|---------|----------|----------------|---------|------------|-------|----------------|---------|
| 60.2006  | 60.2006  | 60.3883        | -1.11 60.0212 60.2006 60.3883 60.2006 60.2006                       | 60.0212 |          | -1.11          | -1.68   | 1.79 -1.97 | 1.79  | L-131PP 100y3D | L-131PP |
|          |          | [hrs]          |   |         |          |                |         |            |       |                |         |
| [hrs]    | [hrs]    | Flow           | [hrs]   | [hrs]   |          |                | [cfs]   |            |       |                |         |
| Velocity | Velocity | Delta          | Flow  | Flow    | [fps]    | [fps]          | Flow    | [cfs]      | [cfs] |                |         |
| Max Ds   |          | Min/Max Max Us | Min   | Max     | Velocity | Velocity       | Delta   | Flow       | Flow  | Name           | Name    |
| Time to  | Time to  | Time to        | Max Ds Time to Time to Time to Time to                              | Time to | Max Ds   | Min/Max Max Us | Min/Max | Min        | Мах   | Sim            | Link    |

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|       |          | Name Na  | Link Sir |
|-------|----------|----------|----------|
|       | _        | Name F   | Sim N    |
|       | [cfs]    | Flow     | Max      |
|       | [cfs]    | Flow     | Min      |
| [cfs] | Flow     | Delta    | Min/Max  |
|       | [fps]    | Velocity | Max Us   |
|       | [fps]    | Velocity | Max Ds   |
| [hrs] | Flow     | Max      | Time to  |
| [hrs] | Flow     | Min      | Time to  |
| Flow  | Delta    | Min/Max  | Time to  |
| [hrs] | Velocity | Max Us   | Time to  |
| [hrs] | Velocity | Max Ds   | Time to  |

L-132PP L-132PP

100y3D 5y1D

2.54 3.28

-5.85 -5.79

-4.76 -4.45

-3.31 -3.27

-3.31 -3.27

60.9581 11.6797

61.3120 12.7145

56.6140 13.7929

61.3120 12.7145

61.3120 12.7145

[hrs]

Link Min/Max Conditions with Times

Link Min/Max Conditions with Times

Sim Name

Max Flow [cfs]

Min Flow [cfs]

Min/Max Delta Flow [cfs]

Max Us Velocity

Max Ds Velocity [fps]

Time to Max Flow [hrs]

Time to Min Flow [hrs]

Time to Min/Max Delta Flow

Time to Max Us Velocity

Time to Max Ds Velocity

| L-133PP 5y1D  | L-133PP 100y3D                               |       |       |          | Name     | Link            |
|---|--|-------|-------|----------|----------|-----------------|
| 5y1D  | 100y3D                                       |       |       |          | Name     | Sim             |
| 3.16  | 3.32   |       |       | [cfs]    | Flow     | Max             |
| -2.39   | -3.21  |       |       | [cfs]    | Flow     | Min             |
| 3.16  | 2.93   |       | [cfs] | Flow     | Delta    | Min/Max         |
| 1.79  | 3.32 -3.21 2.93 1.88                         |       |       | [fps]    | Velocity | Min/Max Max Us  |
| 1.79  | 1.88   |       |       | [fps]    | Velocity | Max Ds          |
| 13.0106   | 60.7138                                      |       | [hrs] | Flow     | Max      | Time to Time to |
| 12.0039   | 60.0212                                      |       | [hrs] | Flow     | Min      |                 |
| 13.0106   | 60.3754                                      | [hrs] | Flow  | Delta    | Min/Max  | Time to         |
| 3.16 -2.39 3.16 1.79 1.79 13.0106 12.0039 13.0106 13.0106 13.0106 | 1.88 60.7138 60.0212 60.3754 60.7138 60.7138 |       | [hrs] | Velocity | Max Us   | Time to         |
| 13.0106   | 60.7138                                      |       | [hrs] | Velocity | Max Ds   | Time to         |

Link Min/Max Conditions with Times

| 13.1351  | 13.1351        | 1.71 13.1351 14.0658 13.3262 13.1351 13.1351 | 14.0658 | 13.1351 |          | 1.71     | 2.41    | -1.88 | 3.03  | 5y1D           | L-134PP 5y1D |
|----------|----------------|--|---------|---------|----------|----------|---------|-------|-------|----------------|--------------|
| 60.6498  | 60.6498        | 1.99 60.6498 59.6796 62.8871 60.6498 60.6498 | 59.6796 | 60.6498 |          | 1.99     | 2.35    | -2.17 | 3.51  | L-134PP 100y3D | L-134PP      |
|          |                | [hrs]  |         |         |          |          |         |       |       |                |              |
| [hrs]    | [hrs]          | Flow   | [hrs]   | [hrs]   |          |          | [cfs]   |       |       |                |              |
| Velocity | Velocity       | Delta  | Flow    | Flow    | [fps]    | [fps]    | Flow    | [cfs] | [cfs] |                |              |
| Max Ds   | Min/Max Max Us | Min/Max                                      | Min     | Max     | Velocity | Velocity | Delta   | Flow  | Flow  | Name           | Name         |
| Time to  | Time to        | Time to                                      | Time to | Time to | Max Ds   | Max Us   | Min/Max | Min   | Max   | Sim            | Link         |

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| Link Min/I   | Link Min/Max Conditions with Times | ions with I | imes  |         |                |          |         |  |         |          |          |
|--------------|------------------------------------|-------------|-------|---------|----------------|----------|---------|--|---------|----------|----------|
| Link         | Sim                                | Max         | Min   | Min/Max | Min/Max Max Us | Max Ds   | Time to | Time to Time to Time to  | Time to | Time to  | Time to  |
| Name         | Name                               | Flow        | Flow  | Delta   | Velocity       | Velocity | Max     | Min  | Min/Max | Max Us   | Max Ds   |
|              |                                    | [cfs]       | [cfs] | Flow    | [fps]          | [fps]    | Flow    | Flow   | Delta   | Velocity | Velocity |
|              |                                    |             |       | [cfs]   |                |          | [hrs]   | [hrs]  | Flow    | [hrs]    | [hrs]    |
|              |                                    |             |       |         |                |          |         |  | [hrs]   |          |          |
| L-135PP      | L-135PP 100y3D                     |             | -8.91 | -7.34   | -5.04          | -5.04    | 60.0218 | 2.76 -8.91 -7.34 -5.04 -5.04 60.0218 61.3120 56.6140 61.3120 61.3120 | 56.6140 | 61.3120  | 61.3120  |
| 1-135PP 5v1D |                                    | 2 T C       | -8 84 | 25 A-   | -5 01          | -5 01    | 15 3716 | 2 73 28 6 - 6 33 - 5 01 - 5 01 15 3716 12 7145 12 8600 12 7145       | 12 8600 | 10 7145  | 12 7145  |

| 12.7145  | 2.73 -8.86 -6.33 -5.01 -5.01 15.3716 12.7145 12.8600 12.7145 12.7145 | 12.8600 | 12.7145 | 15.3716 | -5.01    | -5.01          | -6.33   | -8.86            | 2.73  | 5y1D           | L-135PP 5y1D |
|----------|--|---------|---------|---------|----------|----------------|---------|------------------|-------|----------------|--------------|
| 61.3120  | -5.04 -5.04 60.0218 61.3120 56.6140 61.3120 61.3120                  | 56.6140 | 61.3120 | 60.0218 | -5.04    | -5.04          | -7.34   | 2.76 -8.91 -7.34 | 2.76  | L-135PP 100y3D | L-135PP      |
|          |  | [hrs]   |         |         |          |                |         |                  |       |                |              |
| [hrs]    | [hrs]  | Flow    | [hrs]   | [hrs]   |          |                | [cfs]   |                  |       |                |              |
| Velocity | Velocity   | Delta   | Flow    | Flow    | [fps]    | [fps]          | Flow    | [cfs]            | [cfs] |                |              |
| Max Ds   | Max Us   | Min/Max | Min     | Max     | Velocity | Velocity       | Delta   | Flow             | Flow  | Name           | Name         |
| Time to  | Max Ds Time to Time to Time to                                       | Time to | Time to | Time to | Max Ds   | Min/Max Max Us | Min/Max | Min              | Max   | Sim            | Link         |

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| Link Min/ | Link Min/Max Conditions with Times | ons with T | imes  |         |          |          |         |         |                 |                |          |
|-----------|------------------------------------|------------|-------|---------|----------|----------|---------|---------|-----------------|----------------|----------|
| Link      | Sim                                | Max        | Min   | Min/Max | Max Us   | Max Ds   | Time to | Time to | Time to Time to | Time to        | Time to  |
| Name      | Name                               | Flow       | Flow  | Delta   | Velocity | Velocity | Max     | Min     | Min/Max         | Min/Max Max Us | Max Ds   |
|           |                                    | [cfs]      | [cfs] | Flow    | [fps]    | [fps]    | Flow    | Flow    | Delta           | Velocity       | Velocity |
|           |                                    |            |       | [cfs]   |          |          | [hrs]   | [hrs]   | Flow            | [hrs]          | [hrs]    |
|           |                                    |            |       |         |          |          |         |         |                 |                |          |

L-136PP L-136PP

100y3D 5y1D

3.04 1.11

-2.85 -4.51

2.26 1.18

1.72 -2.55

1.72 -2.55

60.9084 17.0532

59.7499 11.8898

61.3666 14.9008

60.9084 11.8898

60.9084 11.8898

[hrs]

Link Min/Max Conditions with Times

Sim Name

Max Flow [cfs]

Min Flow [cfs]

Min/Max Delta Flow [cfs]

Max Us Velocity

Max Ds Velocity [fps]

Time to Max Flow [hrs]

Time to Min Flow [hrs]

Time to Min/Max Delta Flow

Time to Max Us Velocity

Time to Max Ds Velocity

| L-137PP 5y1D   | L-137PP 100y3D  |       |       |          | Name Name | Link Sim       |
|--|---|-------|-------|----------|-----------|----------------|
|  |   |       | _     | [cfs]    | e Flow    | Max            |
| .81  | 9.26 -10.80   |       | _     | [cfs]    | Flow      | Min            |
| -9.46  | -10.80  |       |       |          |           | ה              |
| -9.18  | -9.40   |       | [cfs] | Flow     | Delta     | Min/Max Max Us |
| -5.35  | -6.11   |       |       | [fps]    | Velocity  |                |
| -5.35  | -6.11   |       |       | [fps]    | Velocity  | Max Ds         |
| 17.0531  | 16.1849   |       | [hrs] | Flow     | Max       | Time to        |
| 19.3382  | 61.8938   |       | [hrs] | Flow     | Min       | Time to        |
| 21.1582  | 53.1723   | [hrs] | Flow  | Delta    | Min/Max   | Time to        |
| 8.81 -9.46 -9.18 -5.35 -5.35 17.0531 19.3382 21.1582 19.3382 19.3382 | -9.40 -6.11 -6.11 16.1849 61.8938 53.1723 61.8938 61.8938 |       | [hrs] | Velocity | Max Us    | Time to        |
| 19.3382  | 61.8938   |       | [hrs] | Velocity | Max Ds    | Time to        |

Link Min/Max Conditions with Times

| 18.3724  | 18.3724        | -3.15 -3.15 19.2337 18.3724 18.7493 18.3724 18.3724 | 18.3724 | 19.2337 | -3.15    | -3.15    | 7.55    | 9.16 -9.89   | 9.16  | 5y1D           | L-138PP 5y1D |
|----------|----------------|---|---------|---------|----------|----------|---------|--------------|-------|----------------|--------------|
| 34.9519  | 34.9519        | -3.87 31.9092 34.9519 31.3520 34.9519 34.9519       | 34.9519 | 31.9092 | -3.87    | -3.87    | -10.27  | 10.49 -12.17 | 10.49 | L-138PP 100y3D | L-138PP      |
|          |                | [hrs]   |         |         |          |          |         |              |       |                |              |
| [hrs]    | [hrs]          | Flow  | [hrs]   | [hrs]   |          |          | [cfs]   |              |       |                |              |
| Velocity | Velocity       | Delta   | Flow    | Flow    | [fps]    | [fps]    | Flow    | [cfs]        | [cfs] |                |              |
| Max Ds   | Min/Max Max Us | Min/Max   | Min     | Max     | Velocity | Velocity | Delta   | Flow         | Flow  | Name           | Name         |
| Time to  | Time to        | Time to   | Time to | Time to | Max Ds   | Max Us   | Min/Max | Min          | Max   | Sim            | Link         |

| Link Min/I   | Link Min/Max Conditions with Times | ons with T | imes   |         |                |          |         |  |                |          |          |
|--------------|------------------------------------|------------|--------|---------|----------------|----------|---------|--|----------------|----------|----------|
| Link         | Sim                                | Max        | Min    | Min/Max | Min/Max Max Us | Max Ds   | Time to | Max Ds Time to Time to Time to Time to                             | Time to        | Time to  | Time to  |
| Name         | Name                               | Flow       | Flow   | Delta   | Velocity       | Velocity | Мах     | Min  | Min/Max Max Us | Max Us   | Max Ds   |
|              |                                    | [cfs]      | [cfs]  | Flow    | [fps]          | [fps]    | Flow    | Flow   | Delta          | Velocity | Velocity |
|              |                                    |            |        | [cfs]   |                |          | [hrs]   | [hrs]  | Flow           | [hrs]    | [hrs]    |
|              |                                    |            |        |         |                |          |         |  | [hrs]          |          |          |
| L-139PP      | L-139PP 100y3D                     | 9.02       | -6.46  | -8.09   | 2.87           | 2.87     | 34.9519 | 9.02 -6.46 -8.09 2.87 2.87 34.9519 32.5538 47.2524 34.9519 34.9519 | 47.2524        | 34.9519  | 34.9519  |
| I_120DD 5v1D |                                    | V 8 L      | 20 1-2 | ד אר    | 01 C           | 01 C     | 10 2721 |  | 17 2250        | 10 2721  | 10 2721  |

| 18.3724  | 5.75 2.49 2.49 18.3724 11.9612 17.8859 18.3724 18.3724 | 17.8859 | 11.9612 | 18.3724 | 2.49     | 2.49     |         | -4.83 | 7.84  | L-139PP 5y1D   | L-139PP |
|----------|--|---------|---------|---------|----------|----------|---------|-------|-------|----------------|---------|
| 34.9519  | 2.87 34.9519 32.5538 47.2524 34.9519 34.951            | 47.2524 | 32.5538 | 34.9519 | 2.87     | 2.87     | -8.09   | -6.46 | 9.02  | L-139PP 100y3D | L-139PP |
|          |  | [hrs]   |         |         |          |          |         |       |       |                |         |
| [hrs]    | [hrs]  | Flow    | [hrs]   | [hrs]   |          |          | [cfs]   |       |       |                |         |
| Velocity | Velocity   | Delta   | Flow    | Flow    | [fps]    | [fps]    | Flow    | [cfs] | [cfs] |                |         |
| Max Ds   | Max Us   | Min/Max | Min     | Max     | Velocity | Velocity | Delta   | Flow  | Flow  | Name           | Name    |
| Time to  | Time to  | Time to | Time to | Time to | Max Ds   | Max Us   | Min/Max | Min   | Max   | Sim            | Link    |

| L-139PP 5y1D  | L-139PP 100y3D                               |       |       |          | Name           |       |
|---|--|-------|-------|----------|----------------|-------|
| 5y1D  | 100y3D                                       |       |       |          | Name           |       |
| 7.84  | 9.02   |       |       | [cfs]    | Flow           | IVIUN |
| -4.83   | -6.46  |       |       | [cfs]    | Flow           |       |
| 7.84 -4.83 5.75 2.49 2.49 18.3724 11.9612 17.8859 18.3724 18.3724 | -8.09  |       | [cfs] | Flow     | Delta          |       |
| 2.49  | 2.87   |       |       | [fps]    | Velocity       |       |
| 2.49  | 2.87   |       |       | [fps]    | Velocity       |       |
| 18.3724   | 2.87 34.9519 32.5538 47.2524 34.9519 34.9519 |       | [hrs] | Flow     | Max            |       |
| 11.9612   | 32.5538                                      |       | [hrs] | Flow     | Min            |       |
| 17.8859   | 47.2524                                      | [hrs] | Flow  | Delta    | Min/Max Max Us |       |
| 18.3724   | 34.9519                                      |       | [hrs] | Velocity | Max Us         |       |
| 18.3724   | 34.9519                                      |       | [hrs] | Velocity | Max Ds         |       |
|   |  |       |       |          |                |       |

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| -                     | _       |                               |
|-----------------------|---------|-------------------------------|
| Nomo                  | Link    | Link Min/N                    |
|                       | Sim     | Max Conditi                   |
|                       | Max     | 1in/Max Conditions with Times |
|                       | Min     | imes                          |
|                       | Min/Max |                               |
| Volooity Volooity Moy | Max Us  |                               |
| Volooitu              | Max Ds  |                               |
|                       | Time to |                               |
| Min                   | Time to |                               |
|                       |         |                               |

[cfs]

Flow [cfs]

[fps]

Flow [hrs]

Flow [hrs]

Delta Flow

Velocity [hrs]

Velocity

[hrs]

L-13P L-13P

100y3D 5y1D

12.09 5.49

-3.92 -2.45

-3.91 -2.45

3.85 1.75

3.85 60.5229 1.75 12.2605

22.7636 10.8178

22.7636 10.8178

60.5229 12.2605

60.5229 12.2605

[hrs]

Link Min/Max Conditions with Times

Sim Name

Max Flow [cfs]

Min Flow [cfs]

Min/Max Delta Flow

Max Us Velocity

Max Ds Velocity

[fps]

Time to Max Flow [hrs]

Time to Min Flow [hrs]

Time to Min/Max Delta

Time to Max Us Velocity

Time to Max Ds Velocity

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| L-140PP 5y1D  | L-140PP 100y3D   |       |       |          | Name     | Link            |
|---|--|-------|-------|----------|----------|-----------------|
| 5y1D  | 100y3D   |       |       |          | Name     | Sim             |
| 5.59  | 6.69   |       |       | [cfs]    | Flow     | Max             |
| -5.54   | -6.26  |       |       | [cfs]    | Flow     | Min             |
| 4.96  | -6.25  |       | [cfs] | Flow     | Delta    | Min/Max         |
| 3.16  | 3.79   |       |       | [fps]    | Velocity | Min/Max Max Us  |
| 3.16  | 3.79   |       |       | [fps]    | Velocity | Max Ds          |
| 13.3838   | 33.0070  |       | [hrs] | Flow     | Max      | Time to Time to |
| 19.3839   | 43.6079  |       | [hrs] | Flow     | Min      | Time to         |
| 18.3724   | 31.3520  | [hrs] | Flow  | Delta    | Min/Max  | Time to         |
| 5.59 -5.54 4.96 3.16 3.16 13.3838 19.3839 18.3724 13.3838 13.3838 | 6.69 -6.26 -6.25 3.79 3.79 33.0070 43.6079 31.3520 33.0070 33.0070 |       | [hrs] | Velocity | Max Us   | Time to         |
| 13.3838   | 33.0070  |       | [hrs] | Velocity | Max Ds   | Time to         |

Link Min/Max Conditions with Times

| 11.9304  | 11.9304  | 12.3129         | -2.91 -2.76 -2.76 12.7796 11.9304 12.3129 11.9304 11.930 | 12.7796 | -2.76    | -2.76    |         | -4.87 | 1.85  | 5y1D           | L-141PP 5y1D |
|----------|----------|-----------------|--|---------|----------|----------|---------|-------|-------|----------------|--------------|
| 59.6901  | 59.6901  | 60.6771         | -2.38 60.9605 59.6901 60.6771 59.6901 59.6901            | 60.9605 |          | -2.38    | -3.07   | -4.20 | 2.21  | L-141PP 100y3D | L-141PP      |
|          |          | [hrs]           |  |         |          |          |         |       |       |                |              |
| [hrs]    | [hrs]    | Flow            | [hrs]  | [hrs]   |          |          | [cfs]   |       |       |                |              |
| Velocity | Velocity | Delta           | Flow   | Flow    | [fps]    | [fps]    | Flow    | [cfs] | [cfs] |                |              |
| Max Ds   | Max Us   | Min/Max         | Min  | Max     | Velocity | Velocity | Delta   | Flow  | Flow  | Name           | Name         |
| Time to  |          | Time to Time to | Time to  | Time to | Max Ds   | Max Us   | Min/Max | Min   | Max   | Sim            | Link         |

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| Link Min/I   | Max Conditi    | Link Min/Max Conditions with Times | imes  |  |          |          |         |  |                |          |          |
|--------------|----------------|------------------------------------|-------|--|----------|----------|---------|--|----------------|----------|----------|
| Link         | Sim            | Max                                | Min   | Min/Max  | Max Us   | Max Ds   | Time to | Min/Max Max Us Max Ds Time to Time to Time to Time to Time to        | Time to        | Time to  | Time to  |
| Name         | Name           | Flow                               | Flow  | Delta  | Velocity | Velocity | Max     | Min  | Min/Max Max Us |          | Max Ds   |
|              |                | [cfs]                              | [cfs] | Flow   | [fps]    | [fps]    | Flow    | Flow   | Delta          | Velocity | Velocity |
|              |                |                                    |       | [cfs]  |          |          | [hrs]   | [hrs]  | Flow           | [hrs]    | [hrs]    |
|              |                |                                    |       |  |          |          |         |  | [hrs]          |          |          |
| L-142PP      | L-142PP 100y3D |                                    | -3.35 | -0.88  | -1.90    | -1.90    | 60.9677 | 1.86 -3.35 -0.88 -1.90 -1.90 60.9677 59.7038 60.4932 59.7038 59.7038 | 60.4932        | 59.7038  | 59.7038  |
| 1_14300 5v10 | 5v1D           | л 0 л                              | CV 2- | 1220 11 1220 11 1220 11 1220 11 1220 11 120 12 12 120 12 120 120 | -1 03    | -1 03    | 17 0534 | 11 0881  | 12 0227        | 11 0881  | 11 0881  |

| 11.9881  | 11.9881  | 12.0237 | 11.9881 | 0.05 -3.42 -0.16 -1.93 -1.93 17.0534 11.9881 12.0237 11.9881 11.988 | -1.93    | -1.93          | -0.16   | -3.42 | 0.05  | 5y1D           | L-142PP 5y1D |
|----------|----------|---------|---------|---|----------|----------------|---------|-------|-------|----------------|--------------|
| 59.7038  | 59.7038  | 60.4932 | 59.7038 | -1.90 60.9677 59.7038 60.4932 59.7038 59.7038                       |          | -1.90          | -0.88   | -3.35 | 1.86  | L-142PP 100y3D | L-142PP      |
|          |          | [hrs]   |         |   |          |                |         |       |       |                |              |
| [hrs]    | [hrs]    | Flow    | [hrs]   | [hrs]   |          |                | [cfs]   |       |       |                |              |
| Velocity | Velocity | Delta   | Flow    | Flow  | [fps]    | [fps]          | Flow    | [cfs] | [cfs] |                |              |
| Max Ds   | Max Us   | Min/Max | Min     | Max   | Velocity | Velocity       | Delta   | Flow  | Flow  | Name           | Name         |
| Time to  | Time to  | Time to | Time to | Max Ds Time to Time to Time to                                      | Max Ds   | Min/Max Max Us | Min/Max | Min   | Max   | Sim            | Link         |

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| _     |          |                |                           |
|-------|----------|----------------|---------------------------|
|       |          | Name           | Link                      |
|       |          | Name           | Sim                       |
|       | [cfs]    | Flow           | Max                       |
|       | [cfs]    | Flow           | Min                       |
| [cfs] | Flow     | Delta          | Min/Max                   |
|       | [fps]    | Velocity       | Max Us                    |
|       | [fps]    | Velocity       | Max Ds                    |
| [hrs] | Flow     | Max            | Time to                   |
| [hrs] | Flow     | Min            | Time to Time to Time to 1 |
| Flow  | Delta    | Min/Max        | Time to                   |
| [hrs] | Velocity | Min/Max Max Us | Time to                   |
| [hrs] | Velocity | Max Ds         | Time to                   |
|       |          |                | _                         |

Link Min/Max Conditions with Times

L-143PP L-143PP

100y3D 5y1D

2.59 0.73

-2.38 -2.14

0.87 0.88

1.47 -1.21

1.47 -1.21

60.9619 11.9885

22.7190 10.8533

59.8031 12.0977 [hrs]

60.9619 10.8533

60.9619 10.8533

Link Min/Max Conditions with Times

Sim Name

Max Flow [cfs]

Min Flow [cfs]

Min/Max Delta Flow [cfs]

Max Us Velocity

Max Ds Velocity [fps]

Time to Max Flow [hrs]

Time to Min Flow [hrs]

Time to Min/Max Delta Flow

Time to Max Us Velocity

Time to Max Ds Velocity

| L-144PP 5y1D  | L-144PP 100y3D                               |       |       |          | Name N   | Link S         |
|---|--|-------|-------|----------|----------|----------------|
| y1D   | 00y3D  |       |       |          | Name     | Sim            |
| 5.70  | 6.10   |       |       | [cfs]    | Flow     | Max            |
| -3.42   | -3.89  |       |       | [cfs]    | Flow     | Min            |
| 3.78  | 3.89   |       | [cfs] | Flow     | Delta    | Min/Max        |
| 1.82  | 6.10 -3.89 3.89 1.94                         |       |       | [fps]    | Velocity | Min/Max Max Us |
| 1.82  | 1.94   |       |       | [fps]    | Velocity | Max Ds         |
| 12.0986   | 60.0941                                      |       | [hrs] | Flow     | Max      | Time to        |
| 14.3396   | 63.7039                                      |       | [hrs] | Flow     | Min      | Time to        |
| 12.2086   | 63.7040                                      | [hrs] | Flow  | Delta    | Min/Max  | Time to        |
| 5.70 -3.42 3.78 1.82 1.82 12.0986 14.3396 12.2086 12.0986 12.0986 | 1.94 60.0941 63.7039 63.7040 60.0941 60.0941 |       | [hrs] | Velocity | Max Us   | Time to        |
| 12.0986   | 60.0941                                      |       | [hrs] | Velocity | Max Ds   | Time to        |

Link Min/Max Conditions with Times

| 11.9373  | -0.98 0.90 0.90 11.9373 16.2121 16.2121 11.9373 11.9373 | 16.2121         | 16.2121 | 11.9373 | 0.90     | 0.90     |         | -0.98 | 1.59  | 5y1D   | L-145PP 5y1D   |
|----------|---|-----------------|---------|---------|----------|----------|---------|-------|-------|--------|----------------|
| 60.1971  | -1.28 59.9005 60.1971 60.5447 60.1971 60.1971           | 60.5447         | 60.1971 | 59.9005 | -1.28    | -1.28    | -1.44   | -2.25 | 1.54  | 100y3D | L-145PP 100y3D |
|          |   | [hrs]           |         |         |          |          |         |       |       |        |                |
| [hrs]    | [hrs]   | Flow            | [hrs]   | [hrs]   |          |          | [cfs]   |       |       |        |                |
| Velocity | Velocity  | Delta           | Flow    | Flow    | [fps]    | [fps]    | Flow    | [cfs] | [cfs] |        |                |
| Max Ds   | Max Us  | Min/Max         | Min     | Max     | Velocity | Velocity | Delta   | Flow  | Flow  | Name   | Name           |
| Time to  |   | Time to Time to | Time to | Time to | Max Ds   | Max Us   | Min/Max | Min   | Max   | Sim    | Link           |

| Link Min/I | Link Min/Max Conditions with Times | ions with T | imes  |         |                |          |         |         |  |          |          |
|------------|------------------------------------|-------------|-------|---------|----------------|----------|---------|---------|--|----------|----------|
| Link       | Sim                                | Max         | Min   | Min/Max | Min/Max Max Us | Max Ds   | Time to | Time to | Max Ds Time to Time to Time to                                     |          | Time to  |
| Name       | Name                               | Flow        | Flow  | Delta   | Velocity       | Velocity | Мах     | Min     | Min/Max Max Us   |          | Max Ds   |
|            |                                    | [cfs]       | [cfs] | Flow    | [fps]          | [fps]    | Flow    | Flow    | Delta  | Velocity | Velocity |
|            |                                    |             |       | [cfs]   |                |          | [hrs]   | [hrs]   | Flow   | [hrs]    | [hrs]    |
|            |                                    |             |       |         |                |          |         |         | [hrs]  |          |          |
| L-146PP    | L-146PP 100y3D                     |             | -0.50 | -1.27   | 1.34           | 1.34     | 60.0425 | 31.6532 | 2.36 -0.50 -1.27 1.34 1.34 60.0425 31.6532 59.9226 60.0425 60.0425 | 60.0425  | 60.0425  |
|            | האזס                               | ر د<br>د 1  | LC U  | 1 2 1   | 1 20           | 1 20     | 11 0050 | 1720 00 | 77 00 71   |          | 11 0053  |

| 11.9852  | 11.9852 11.985; | 12.0977 | 22.2764 | 1.20 11.9852 22.2764 12.0977         | 1.20     | 1.20           | -1.34   | -0.37 | 2.12  | L-146PP 5y1D   | L-146PP |
|----------|-----------------|---------|---------|--------------------------------------|----------|----------------|---------|-------|-------|----------------|---------|
| 60.0425  | 60.0425         | 59.9226 | 31.6532 | 1.34 60.0425 31.6532 59.9226 60.0425 |          | 1.34           | -1.27   | -0.50 | 2.36  | L-146PP 100y3D | L-146PP |
|          |                 | [hrs]   |         |                                      |          |                |         |       |       |                |         |
| [hrs]    | [hrs]           | Flow    | [hrs]   | [hrs]                                |          |                | [cfs]   |       |       |                |         |
| Velocity | Velocity        | Delta   | Flow    | Flow                                 | [fps]    | [fps]          | Flow    | [cfs] | [cfs] |                |         |
| Max Ds   | Max Us          | Min/Max | Min     | Max                                  | Velocity | Velocity       | Delta   | Flow  | Flow  | Name           | Name    |
| Time to  | Time to         | Time to | Time to | Time to                              | Max Ds   | Min/Max Max Us | Min/Max | Min   | Max   | Sim            | Link    |

| Link | Sim  | Max   | Min   | Min/Max | Max Us   | Max Ds                | Time to | Min/Max Max Us Max Ds Time to Time to Time to Time to Time to | Time to               | Time to           | Time to  |
|------|------|-------|-------|---------|----------|-----------------------|---------|---|-----------------------|-------------------|----------|
| Name | Name | Flow  | Flow  | Delta   | Velocity | Velocity Velocity Max |         | Min   | Min/Max Max Us Max Ds | Max Us            | Max Ds   |
|      |      | [cfs] | [cfs] | Flow    | [fps]    | [fps]                 | Flow    | Flow  | Delta                 | Velocity Velocity | Velocity |

L-147PP L-147PP

100y3D 5y1D

4.47 3.93

-1.73 -1.04

2.01 1.61

2.53 2.22

2.5360.066417.00532.2211.950222.0344

[hrs] 58.8658 15.2489

60.066460.066411.950211.9502

[hrs]

[hrs]

|       |          | Name           | Link            | Link M                        |
|-------|----------|----------------|-----------------|-------------------------------|
|       |          | ne             |                 | Min/I                         |
|       |          | Name           | Sim             | 1in/Max Conditions with Times |
|       | [cfs]    | Flow           | Мах             | ons with T                    |
|       | [cfs]    | Flow           | Min             | imes                          |
| [cfs] | Flow     | Delta          | Min/Max         |                               |
|       | [fps]    | Velocity       | Max Us          |                               |
|       | [fps]    | Velocity       | Max Ds          |                               |
| [hrs] | Flow     | Max            | Time to Time to |                               |
| [hrs] | Flow     | Min            |                 |                               |
| Flow  | Delta    | Min/Max Max Us | Time to Time to |                               |
| [hrs] | Velocity |                | Time to         |                               |
| [hrs] | Velocity | Max Ds         | Time to         |                               |

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| L-148PP 5y1D  | L-148PP 100y3D   |       |       |          | Name Name | Link Sim       |
|---|--|-------|-------|----------|-----------|----------------|
|   | D 8.69   |       |       | [cfs]    | Flow      | Max            |
| 7.43 -6.43 6.87 2.37 2.37 20.6612 12.0333 15.4709 20.6612 20.6612 | -5.72  |       |       | [cfs]    | Flow      | Min            |
| 6.87  | 8.27   |       | [cfs] | Flow     | Delta     | Min/Max        |
| 2.37  | 2.77   |       |       | [fps]    | Velocity  | Min/Max Max Us |
| 2.37  | 2.77   |       |       | [fps]    | Velocity  | Max Ds         |
| 20.6612   | 51.6369  |       | [hrs] | Flow     | Max       | Time to        |
| 12.0333   | 70.1813  |       | [hrs] | Flow     | Min       | Time to        |
| 15.4709   | 41.9927  | [hrs] | Flow  | Delta    | Min/Max   | Time to        |
| 20.6612   | -5.72 8.27 2.77 2.77 51.6369 70.1813 41.9927 51.6369 51.6369 |       | [hrs] | Velocity | Max Us    | Time to        |
| 20.6612   | 51.6369  |       | [hrs] | Velocity | Max Ds    | Time to        |

Link Min/Max Conditions with Times

| 20.6612  | -6.47 -2.23 -2.23 16.2247 20.6612 15.4709 20.6612 20.6612 | 15.4709 | 20.6612 | 16.2247 | -2.23    | -2.23    | -6.47   | -7.01 | 6.14  | 5y1D           | L-149PP 5y1D |
|----------|---|---------|---------|---------|----------|----------|---------|-------|-------|----------------|--------------|
| 60.9545  | 3.63 60.9545 51.6369 27.5467 60.9545 60.9545              | 27.5467 | 51.6369 | 60.9545 | 3.63     | 3.63     | 7.94    | -8.44 | 11.42 | L-149PP 100y3D | L-149PP      |
|          |   | [hrs]   |         |         |          |          |         |       |       |                |              |
| [hrs]    | [hrs]   | Flow    | [hrs]   | [hrs]   |          |          | [cfs]   |       |       |                |              |
| Velocity | Velocity  | Delta   | Flow    | Flow    | [fps]    | [fps]    | Flow    | [cfs] | [cfs] |                |              |
| Max Ds   | Min/Max Max Us  | Min/Max | Min     | Мах     | Velocity | Velocity | Delta   | Flow  | Flow  | Name           | Name         |
| Time to  | Time to   | Time to | Time to | Time to | Max Ds   | Max Us   | Min/Max | Min   | Max   | Sim            | Link         |

| Link  | Sim    | Мах   | Min   | Min/Max Max Us |          | Max Ds   | Time to | Time to | Time to Time to Time to   | Time to  | Time to  |
|-------|--------|-------|-------|----------------|----------|----------|---------|---------|---|----------|----------|
| Name  | Name   | Flow  | Flow  | Delta          | Velocity | Velocity | Max     | Min     | Min/Max   | Max Us   | Max Ds   |
|       |        | [cfs] | [cfs] | Flow           | [fps]    | [fps]    | Flow    | Flow    | Delta   | Velocity | Velocity |
|       |        |       |       | [cfs]          |          |          | [hrs]   | [hrs]   | Flow  | [hrs]    | [hrs]    |
|       |        |       |       |                |          |          |         |         | [hrs]   |          |          |
| L-14P | 100y3D |       | -2.31 | 2.51           | 2.49     | 2.49     | 60.2639 | 60.9640 | 4.40 -2.31 2.51 2.49 2.49 60.2639 60.9640 60.7245 60.2639 60.2639 | 60.2639  | 60.2639  |
| L-14P | 5y1D   | 3.79  | -1.17 | 1.99           | 2.15     | 2.15     | 12.1067 | 10.8178 | 3.79 -1.17 1.99 2.15 2.15 12.1067 10.8178 12.5600 12.1067 12.1067 | 12.1067  | 12.1067  |

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| _     |                   |                       |   |
|-------|-------------------|-----------------------|---|
|       |                   | Name Name             | LINK  |
|       |                   | Name                  | SIM   |
|       | [cfs]             | Flow                  | Max   |
|       | [cfs]             | Flow                  | NIN   |
| [cfs] | Flow              | Delta                 | MIN/Max   |
|       | [fps]             | Velocity              | Max Us  |
|       | [fps]             | Velocity Max          | Max Us  |
| [hrs] | Flow              |                       | l ime to  |
| [hrs] | Flow              | Min                   | l ime to  |
| Flow  | Delta             | Min/Max               | I Ime to  |
| [hrs] | Velocity Velocity | Min/Max Max Us Max Ds | l ime to  |
| [hrs] | Velocity          | Max Ds                | Min/Max Max US Max US lime to lime to lime to lime to lime to |
|       |                   |                       |   |

Link Min/Max Conditions with Times

L-150PP L-150PP

100y3D 5y1D

5.21 4.30

-3.28 -3.29

5.21 4.30

2.95 2.43

2.95 2.43

38.0925 15.5813

49.1876 12.9961

38.0925 15.5813 [hrs]

38.0925 15.5813

38.0925 15.5813

Link Min/Max Conditions with Times

Sim Name

Max Flow [cfs]

Min Flow [cfs]

Min/Max Delta Flow [cfs]

Max Us Velocity

Max Ds Velocity [fps]

Time to Max Flow [hrs]

Min Flow [hrs]

Time to Min/Max Delta Flow

Time to Max Us Velocity

Time to Max Ds Velocity

| L-151PP 5y1D   | L-151PP 100y3D  |       |       |          | Name Name | Link Sim |
|--|---|-------|-------|----------|-----------|----------|
| D  | )y3D  |       |       | _        |           |          |
| 2.84   | 4.70  |       |       | [cfs]    | Flow      | Max      |
| -6.76  | -7.43   |       |       | [cfs]    | Flow      | Min      |
| -5.84  | -7.43   |       | [cfs] | Flow     | Delta     | Min/Max  |
| -3.83  | 4.70 -7.43 -7.43 -4.20                                |       |       | [fps]    | Velocity  | Max Us   |
| -3.83  | -4.20   |       |       | [fps]    | Velocity  | Max Ds   |
| 10.7547  | 17.1076   |       | [hrs] | Flow     | Max       | Time to  |
| 23.2328  | 47.8373   |       | [hrs] | Flow     | Min       | Time to  |
| 16.0584  | 47.8373   | [hrs] | Flow  | Delta    | Min/Max   | Time to  |
| 2.84 -6.76 -5.84 -3.83 -3.83 10.7547 23.2328 16.0584 23.2328 23.2328 | -4.20 17.1076 47.8373 47.8373 47.8373 47.8373 47.8373 |       | [hrs] | Velocity | Max Us    | Time to  |
| 23.2328  | 47.8373   |       | [hrs] | Velocity | Max Ds    | Time to  |

Link Min/Max Conditions with Times

| 12.0305  | 12.0305        | 12.0306                                       | 12.0831 | 12.0305 | 1.95     | 1.95       | 3.45 -3.35 -3.45 1.95 1.95 12.0305 12.0831 12.0306 12.0305 12.0305 | -3.35 | 3.45  | 5y1D           | L-152PP 5y1D |
|----------|----------------|---|---------|---------|----------|------------|--|-------|-------|----------------|--------------|
| 60.2931  | 60.2931        | -2.20 60.0941 60.2931 60.0942 60.2931 60.2931 | 60.2931 | 60.0941 | -2.20    | -2.20      | -3.88 -3.27 -2.20  | -3.88 | 3.46  | L-152PP 100y3D | L-152PP      |
|          |                | [hrs]   |         |         |          |            |  |       |       |                |              |
| [hrs]    | [hrs]          | Flow  | [hrs]   | [hrs]   |          |            | [cfs]  |       |       |                |              |
| Velocity | Velocity       | Delta   | Flow    | Flow    | [fps]    | [fps]      | Flow   | [cfs] | [cfs] |                |              |
| Max Ds   | Min/Max Max Us | Min/Max                                       | Min     | Мах     | Velocity | Velocity   | Delta  | Flow  | Flow  | Name           | Name         |
| Time to  | Time to        | Time to                                       | Time to | Time to | Max Ds   | x Max Us N | Min/Max  | Min   | Max   | Sim            | Link         |

| Link    | Sim            | Max   | Min   | Min/Max | Min/Max Max Us | Max Ds   | Time to | Max Ds Time to Time to Time to | Time to | Time to   | Time to  |
|---------|----------------|-------|-------|---------|----------------|----------|---------|--------------------------------|---------|---|----------|
| Name    | Name           | Flow  | Flow  | Delta   | Velocity       | Velocity | Мах     | Min                            | Min/Max | Max Us  | Max Ds   |
|         |                | [cfs] | [cfs] | Flow    | [fps]          | [fps]    | Flow    | Flow                           | Delta   | Velocity  | Velocity |
|         |                |       |       | [cfs]   |                |          | [hrs]   | [hrs]                          | Flow    | [hrs]   | [hrs]    |
|         |                |       |       |         |                |          |         |                                | [hrs]   |   |          |
| L-153PP | L-153PP 100y3D | 5.98  | -3.01 | 3.57    | 3.38           | 3.38     | 61.3120 | 17.1076                        | 46.0418 | -3.01 3.57 3.38 3.38 61.3120 17.1076 46.0418 61.3120 61.3120      | 61.3120  |
| L-153PP | L-153PP 5y1D   | 5.97  | -1.51 | 2.47    | 3.38           | 3.38     | 12.7145 | 10.6000                        | 22.2640 | 5.97 -1.51 2.47 3.38 3.38 12.7145 10.6000 22.2640 12.7145 12.7145 | 12.7145  |

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| Link Min/ | Link Min/Max Conditions with Times | ons with T | imes  |         |          |          |         |         | 1       | 1               |          |
|-----------|------------------------------------|------------|-------|---------|----------|----------|---------|---------|---------|-----------------|----------|
| Link      | Sim                                | Max        | Min   | Min/Max | Max Us   | Max Ds   | Time to | Time to | Time to | Time to         | Time to  |
| Name      | Name                               | Flow       | Flow  | Delta   | Velocity | Velocity | Max     | Min     | Min/Max | /lin/Max Max Us | Max Ds   |
|           |                                    | [cfs]      | [cfs] | Flow    | [fps]    | [fps]    | Flow    | Flow    | Delta   | Velocity        | Velocity |
|           |                                    |            |       | [cfs]   |          |          | [hrs]   | [hrs]   | Flow    | [hrs]           | [hrs]    |
|           |                                    |            |       |         |          |          |         |         |         |                 |          |

L-154PP L-154PP

100y3D 5y1D

7.00 7.00

-12.81 -3.26

-3.97 4.15

-7.25 4.07

-7.25 5.44

0.0009

60.9161 10.7484

31.3565 10.8898 [hrs]

60.9161 0.0009

60.9161 0.0009

Link Min/Max Conditions with Times

Sim Name

Max Flow [cfs]

Min Flow [cfs]

Min/Max Delta Flow [cfs]

Max Us Velocity

Max Ds Velocity [fps]

Time to Max Flow [hrs]

Min Flow [hrs]

Time to Min/Max Delta Flow

Time to Max Us Velocity

Time to Max Ds Velocity

| L-15P  | L-15P  |       |       |          | Name     | Link           |
|--|--|-------|-------|----------|----------|----------------|
| 5y1D   | 100y3D                                       |       |       |          | Name     | Sim            |
| 8.19   | 15.99  |       |       | [cfs]    | Flow     | Max            |
| -5.77  | -7.51  |       |       | [cfs]    | Flow     | Min            |
| -5.77  | -7.51 10.59                                  |       | [cfs] | Flow     | Delta    | Min/Max        |
| 2.61   | 5.09   |       |       | [fps]    | Velocity | Min/Max Max Us |
| 2.61   | 5.09   |       |       | [fps]    | Velocity | Max Ds         |
| 12.0711  | 60.2642                                      |       | [hrs] | Flow     | Max      | Time to        |
| 10.5840  | 24.0764                                      |       | [hrs] | Flow     | Min      | Time to        |
| 10.5840  | 26.8578                                      | [hrs] | Flow  | Delta    | Min/Max  | Time to        |
| 8.19 -5.77 -5.77 2.61 2.61 12.0711 10.5840 10.5840 12.0711 12.0711 | 5.09 60.2642 24.0764 26.8578 60.2642 60.2642 |       | [hrs] | Velocity | Max Us   | Time to        |
| 12.0711  | 60.2642                                      |       | [hrs] | Velocity | Max Ds   | Time to        |

Link Min/Max Conditions with Times

| 10.7751  | 10.7751  | 10.7751                                      | 10.7751 | 10.7085 | -3.35    | -3.29    | 48.77 -52.28 -52.28 -3.29 -3.35 10.7085 10.7751 10.7751 10.7751 10.7751 | -52.28 | 48.77 | 5y1D   | L-16P |
|----------|----------|--|---------|---------|----------|----------|---|--------|-------|--------|-------|
| 23.2640  | 23.2640  | 4.13 23.2640 23.7325 23.2640 23.2640 23.2640 | 23.7325 | 23.2640 |          | 4.13     | -59.43 65.42  | -59.43 | 65.76 | 100y3D | L-16P |
|          |          | [hrs]  |         |         |          |          |   |        |       |        |       |
| [hrs]    | [hrs]    | Flow   | [hrs]   | [hrs]   |          |          | [cfs]   |        |       |        |       |
| Velocity | Velocity | Delta  | Flow    | Flow    | [fps]    | [fps]    | Flow  | [cfs]  | [cfs] |        |       |
| Max Ds   | Max Us   | Min/Max                                      | Min     | Мах     | Velocity | Velocity | Delta   | Flow   | Flow  | Name   | Name  |
| Time to  | Time to  | Time to                                      | Time to | Time to | Max Ds   | Max Us   | Min/Max   | Min    | Max   | Sim    | Link  |

| Link Min, | Link Min/Max Conditions with Times | ions with T | imes  |   |                |          |                |            |  |          |          |
|-----------|------------------------------------|-------------|-------|---|----------------|----------|----------------|------------|--|----------|----------|
| Link      | Sim                                | Max         | Min   | Min/Max   | Min/Max Max Us | Max Ds   | Max Ds Time to | Time to    | Time to                                      | Time to  | Time to  |
| Name      | Name                               | Flow        | Flow  | Delta   | Velocity       | Velocity | Max            | Min        | Min/Max                                      | Max Us   | Max Ds   |
|           |                                    | [cfs]       | [cfs] | Flow  | [fps]          | [fps]    | Flow           | Flow       | Delta  | Velocity | Velocity |
|           |                                    |             |       | [cfs]   |                |          | [hrs]          | [hrs]      | Flow   | [hrs]    | [hrs]    |
|           |                                    |             |       |   |                |          |                |            | [hrs]  |          |          |
| L-17P     | 100y3D                             | 8.96        | -6.21 | -6.21 -6.21 5.07 5.07 60.9033 23.2640 23.2640 60.9033 60.9033 | 5.07           | 5.07     | 60.9033        | 23.2640    | 23.2640                                      | 60.9033  | 60.9033  |
| 1 170     | 5.17                               | C 7 V       | 01 1  | 67 V 01 V   | c7 c           |          | 10 7751        | 10 767F 0F | 0 00 10 77E1 10 7626 10 77E1 10 77E1 10 77E1 | 10 7751  | 10 7751  |

| 10.7751  | 10.7751  | 10.7751 | 4.63 -4.49 4.63 2.62 2.89 10.7751 10.7636 10.7751 10.7751 10.7751 | 10.7751 | 2.89     | 2.62     | 4.63    | -4.49 | 4.63  | 5y1D   | L-17P |
|----------|----------|---------|---|---------|----------|----------|---------|-------|-------|--------|-------|
| 60.9033  | 60.9033  | 23.2640 | 5.07 60.9033 23.2640 23.2640 60.9033 60.9033                      | 60.9033 |          | 5.07     | -6.21   | -6.21 | 8.96  | 100y3D | L-17P |
|          |          | [hrs]   |   |         |          |          |         |       |       |        |       |
| [hrs]    | [hrs]    | Flow    | [hrs]   | [hrs]   |          |          | [cfs]   |       |       |        |       |
| Velocity | Velocity | Delta   | Flow  | Flow    | [fps]    | [fps]    | Flow    | [cfs] | [cfs] |        |       |
| Max Ds   | Max Us   | Min/Max | Min   | Max     | Velocity | Velocity | Delta   | Flow  | Flow  | Name   | Name  |
| Time to  | Time to  | Time to | Time to   | Time to | Max Ds   | Max Us   | Min/Max | Min   | Max   | Sim    | Link  |

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| Link Min/ | Link Min/Max Conditions with Times | ons with T | imes  |         |          |          |         |         |                 |          |          |
|-----------|------------------------------------|------------|-------|---------|----------|----------|---------|---------|-----------------|----------|----------|
| Link      | Sim                                | Мах        | Min   | Min/Max | Max Us   | Max Ds   | Time to | Time to | Time to Time to | Time to  | Time to  |
| Name      | Name                               | Flow       | Flow  | Delta   | Velocity | Velocity | Max     | Min     | Min/Max Max Us  | Max Us   | Max Ds   |
|           |                                    | [cfs]      | [cfs] | Flow    | [fps]    | [fps]    | Flow    | Flow    | Delta           | Velocity | Velocity |
|           |                                    |            |       | [cfs]   |          |          | [hrs]   | [hrs]   | Flow            | [hrs]    | [hrs]    |
|           |                                    |            |       |         |          |          |         |         |                 |          |          |

L-18P L-18P

100y3D 5y1D

4.38 4.03

-2.51 -2.75

2.52 1.94

2.48 2.28

2.48 2.28

60.2001 12.9876

48.0767 22.4535

[hrs] 60.1827 12.7713

60.2001 12.9876

60.2001 12.9876

Link Min/Max Conditions with Times

Sim Name

Max Flow [cfs]

Min Flow [cfs]

Min/Max Delta Flow [cfs]

Max Us Velocity

Max Ds Velocity [fps]

Time to Max Flow [hrs]

Min Flow [hrs]

Time to Min/Max Delta Flow

Time to Max Us Velocity

Time to Max Ds Velocity

| L-22P  | L-22P  |       |       |          | Name     | Link           |
|--|--|-------|-------|----------|----------|----------------|
| 5y1D   | 100y3D                                       |       |       |          | Name     | Sim            |
| 3.34   | 3.51   |       |       | [cfs]    | Flow     | Max            |
| 3.34 -2.78 3.34 1.89                                   | -3.27  |       |       | [cfs]    | Flow     | Min            |
| 3.34   | -3.27  |       | [cfs] | Flow     | Delta    | Min/Max        |
| 1.89   | 1.98   |       |       | [fps]    | Velocity | Min/Max Max Us |
|  | 1.98   |       |       | [fps]    | Velocity | Max Ds         |
| 14.7945  | 36.8391                                      |       | [hrs] | Flow     | Max      | Time to        |
| 12.7199  | 61.6337                                      |       | [hrs] | Flow     | Min      | Time to        |
| 14.7945  | 61.6337                                      | [hrs] | Flow  | Delta    | Min/Max  | Time to        |
| 1.89   14.7945   12.7199   14.7945   14.7945   14.7945 | 1.98 36.8391 61.6337 61.6337 36.8391 36.8391 |       | [hrs] | Velocity | Max Us   | Time to        |
| 14.7945  | 36.8391                                      |       | [hrs] | Velocity | Max Ds   | Time to        |

Link Min/Max Conditions with Times

| Link  | Sim    | Max   | Min        | Min/Max | Max Us    | Max Ds   | Time to | Time to | Time to | Time to                                      | Time to  |
|-------|--------|-------|------------|---------|-----------|----------|---------|---------|---------|--|----------|
| Name  | Name   | Flow  | Flow       | Delta   | Velocity  | Velocity | Max     | Min     | Min/Max | Max Us                                       | Max Ds   |
|       |        | [cfs] | [cfs]      | Flow    | [fps]     | [fps]    | Flow    | Flow    | Delta   | Velocity                                     | Velocity |
|       |        |       |            | [cfs]   |           |          | [hrs]   | [hrs]   | Flow    | [hrs]  | [hrs]    |
|       |        |       |            |         |           |          |         |         | [hrs]   |  |          |
| L-37P | 100y3D | 10.00 | -6.61      | 6.47    | 6.47 3.18 | 3.18     | 60.2567 | 17.1076 | 27.5467 | 3.18 60.2567 17.1076 27.5467 60.2567 60.2567 | 60.2567  |
| L-37P | 5y1D   | 5.76  | 5.76 -3.98 | -3.98   | 1.83      |          | 11.9631 | 10.7547 | 10.7547 | 1.83 11.9631 10.7547 10.7547 11.9631 11.9631 | 11.9631  |

| Link Min/ | Link Min/Max Conditions with Times | ons with T | imes  |                      |                |          |         |  |                |          |          |
|-----------|------------------------------------|------------|-------|----------------------|----------------|----------|---------|--|----------------|----------|----------|
| Link      | Sim                                | Max        | Min   | Min/Max              | Min/Max Max Us | Max Ds   | Time to | Max Ds Time to Time to Time to Time to       | Time to        | Time to  | Time to  |
| Name      | Name                               | Flow       | Flow  | Delta                | Velocity       | Velocity | Max     | Min  | Min/Max Max Us |          | Max Ds   |
|           |                                    | [cfs]      | [cfs] | Flow                 | [fps]          | [fps]    | Flow    | Flow   | Delta          | Velocity | Velocity |
|           |                                    |            |       | [cfs]                |                |          | [hrs]   | [hrs]  | Flow           | [hrs]    | [hrs]    |
|           |                                    |            |       |                      |                |          |         |  | [hrs]          |          |          |
| L-38P     | 100y3D                             |            | -3.49 | 5.39 -3.49 3.96 3.05 | 3.05           | 3.05     | 60.9562 | 3.05 60.9562 17.1076 34.2418 60.9562 60.9562 | 34.2418        | 60.9562  | 60.9562  |
| 1_20D     | 5010                               | UE E       | U2 C_ | 2 00                 | 1 27           | 1 27     | 10 0157 |  | 1/ 1572        | 10 2157  | 10 0157  |

| 12.8157  | 1.87 12.8157 14.5998 14.1573 12.8157 12.8157 | 14.1573         | 14.5998 | 12.8157 |          | 1.87     | 3.30 -2.30 3.00 | -2.30 | 3.30  | 5y1D   | L-38P |
|----------|--|-----------------|---------|---------|----------|----------|-----------------|-------|-------|--------|-------|
| 60.9562  | 3.05 60.9562 17.1076 34.2418 60.9562 60.9562 | 34.2418         | 17.1076 | 60.9562 |          | 3.05     | 3.96            | -3.49 | 5.39  | 100y3D | L-38P |
|          |  | [hrs]           |         |         |          |          |                 |       |       |        |       |
| [hrs]    | [hrs]  | Flow            | [hrs]   | [hrs]   |          |          | [cfs]           |       |       |        |       |
| Velocity | Velocity                                     | Delta           | Flow    | Flow    | [fps]    | [fps]    | Flow            | [cfs] | [cfs] |        |       |
| Max Ds   | Max Us                                       | Min/Max         | Min     | Max     | Velocity | Velocity | Delta           | Flow  | Flow  | Name   | Name  |
| Time to  | Time to                                      | Time to Time to | Time to | Time to | Max Ds   | Max Us   | Min/Max         | Min   | Max   | Sim    | Link  |

L-41P L-41P

100y3D 5y1D

0.00

0.00

0.00

0.00

0.00 0.00

0.0000 0.0000

0.0000

0.0000 [hrs]

0.0000

0.0000

Link Min/Max Conditions with Times

Sim Name

Max Flow [cfs]

Min Flow [cfs]

Min/Max Delta Flow [cfs]

Max Us Velocity

Max Ds Velocity [fps]

Time to Max Flow [hrs]

Time to Min Flow [hrs]

Time to Min/Max Delta Flow

Time to Max Us Velocity

Time to Max Ds Velocity

| Link Min/ | Link Min/Max Conditions with Times | ons with T | imes  |         |          |          |         |         |                 |          |          |
|-----------|------------------------------------|------------|-------|---------|----------|----------|---------|---------|-----------------|----------|----------|
| Link      | Sim                                | Max        | Min   | Min/Max | Max Us   | Max Ds   | Time to | Time to | Time to Time to | Time to  | Time to  |
| Name      | Name                               | Flow       | Flow  | Delta   | Velocity | Velocity | Max     | Min     | Min/Max         | Max Us   | Max Ds   |
|           |                                    | [cfs]      | [cfs] | Flow    | [fps]    | [fps]    | Flow    | Flow    | Delta           | Velocity | Velocity |
|           |                                    |            |       | [cfs]   |          |          | [hrs]   | [hrs]   | Flow            | [hrs]    | [hrs]    |
|           |                                    |            |       |         |          |          |         |         |                 |          |          |

| L-44P  | L-44P   |       |       |          | Name     | Link                    |
|--|---|-------|-------|----------|----------|-------------------------|
| 5y1D   | 100y3D  |       |       |          | Name     | Sim                     |
| 1.84   | 1.93  |       |       | [cfs]    | Flow     | Max                     |
| -3.91  | -6.07   |       |       | [cfs]    | Flow     | Min                     |
| -3.13  | -6.07   |       | [cfs] | Flow     | Delta    | Min/Max                 |
| -2.21  | -3.44   |       |       | [fps]    | Velocity | Min/Max Max Us          |
| -2.21  | -3.44   |       |       | [fps]    | Velocity | Max Ds                  |
| 13.9538  | 62.9800   |       | [hrs] | Flow     | Max      | Time to                 |
| 11.7943  | 24.2285   |       | [hrs] | Flow     | Min      | Time to                 |
| 11.0018  | 24.2285   | [hrs] | Flow  | Delta    | Min/Max  | Time to                 |
| 1.84 -3.91 -3.13 -2.21 -2.21 13.9538 11.7943 11.0018 11.7943 11.7943 | -6.07 -6.07 -3.44 -3.44 62.9800 24.2285 24.2285 24.2285 24.2285 |       | [hrs] | Velocity | Max Us   | Time to Time to Time to |
| 11.7943  | 24.2285   |       | [hrs] | Velocity | Max Ds   | Time to                 |

Link Min/Max Conditions with Times

| 21.5464  | 21.5464  | 6.50 2.50 2.50 21.5464 12.0362 11.0018 21.5464 21.5464 | 12.0362 | 21.5464 | 2.50     | 2.50     |             | -6.35 | 7.87  | 5y1D   | L-45P |
|----------|----------|--|---------|---------|----------|----------|-------------|-------|-------|--------|-------|
| 24.2284  | 24.2284  | 4.05 24.2284 59.6476 24.2284 24.2284 24.2284           | 59.6476 | 24.2284 |          | 4.05     | -5.54 12.73 | -5.54 | 12.73 | 100y3D | L-45P |
|          |          | [hrs]  |         |         |          |          |             |       |       |        |       |
| [hrs]    | [hrs]    | Flow   | [hrs]   | [hrs]   |          |          | [cfs]       |       |       |        |       |
| Velocity | Velocity | Delta  | Flow    | Flow    | [fps]    | [fps]    | Flow        | [cfs] | [cfs] |        |       |
| Max Ds   | Max Us   | Min/Max  | Min     | Max     | Velocity | Velocity | Delta       | Flow  | Flow  | Name   | Name  |
| Time to  | Time to  | Time to  | Time to | Time to | Max Ds   | Max Us   | Min/Max     | Min   | Max   | Sim    | Link  |

| Link Min/ | Link Min/Max Conditions with Times | ions with T | imes    |                  |                |          |         |  |                |          |          |
|-----------|------------------------------------|-------------|---------|------------------|----------------|----------|---------|--|----------------|----------|----------|
| Link      | Sim                                | Max         | Min     | Min/Max          | Min/Max Max Us | Max Ds   | Time to | Max Ds Time to Time to Time to               | Time to        |          | Time to  |
| Name      | Name                               | Flow        | Flow    | Delta            | Velocity       | Velocity | Max     | Min  | Min/Max Max Us |          | Max Ds   |
|           |                                    | [cfs]       | [cfs]   | Flow             | [fps]          | [fps]    | Flow    | Flow   | Delta          | Velocity | Velocity |
|           |                                    |             |         | [cfs]            |                |          | [hrs]   | [hrs]  | Flow           | [hrs]    | [hrs]    |
|           |                                    |             |         |                  |                |          |         |  | [hrs]          |          |          |
| L-46P     | 100y3D                             |             | -2.76   | 2.91 -2.76 -2.06 | 1.65           | 1.65     | 60.9534 | 1.65 60.9534 60.3467 19.3147 60.9534 60.9534 | 19.3147        | 60.9534  | 60.9534  |
|           | העיוח                              | 1 0 0       | _ 2 F Z | 1 20             | -1 /R          | _1 /R    | 17 2070 |  | 22 2300        | 12 0261  | 12 0261  |

| Link  | Sim    | Max   | Min   | Min/Max | Max Us   | Max Ds   | Time to | Max Ds Time to Time to Time to                | Time to |          | Time to  |
|-------|--------|-------|-------|---------|----------|----------|---------|---|---------|----------|----------|
| Name  | Name   | Flow  | Flow  | Delta   | Velocity | Velocity | Max     | Min   | Min/Max | Max Us   | Max Ds   |
|       |        | [cfs] | [cfs] | Flow    | [fps]    | [fps]    | Flow    | Flow  | Delta   | Velocity | Velocity |
|       |        |       |       | [cfs]   |          |          | [hrs]   | [hrs]   | Flow    | [hrs]    | [hrs]    |
|       |        |       |       |         |          |          |         |   | [hrs]   |          |          |
| L-46P | 100y3D | 2.91  | -2.76 | -2.06   | 1.65     |          | 60.9534 | 1.65 60.9534 60.3467 19.3147 60.9534 60.9534  | 19.3147 | 60.9534  | 60.9534  |
| L-46P | 5v1D   | 1.82  | -2.57 | 1.89    | -1.45    |          | 17.3979 | -1.45   17.3979   12.0361   22.5300   12.0361 | 22.5300 | 12.0361  | 12.0361  |

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| Link Min/ | Link Min/Max Conditions with Times | ions with T | imes  |         |          |          |         |                 |         | 1              |          |
|-----------|------------------------------------|-------------|-------|---------|----------|----------|---------|-----------------|---------|----------------|----------|
| Link      | Sim                                | Max         | Min   | Min/Max | Max Us   | Max Ds   | Time to | Time to Time to | Time to | Time to        | Time to  |
| Name      | Name                               | Flow        | Flow  | Delta   | Velocity | Velocity | Max     | Min             | Min/Max | Min/Max Max Us | Max Ds   |
|           |                                    | [cfs]       | [cfs] | Flow    | [fps]    | [fps]    | Flow    | Flow            | Delta   | Velocity       | Velocity |
|           |                                    |             |       | [cfs]   |          |          | [hrs]   | [hrs]           | Flow    | [hrs]          | [hrs]    |
|           |                                    |             |       |         |          |          |         |                 |         |                |          |

L-47P L-47P

100y3D 5y1D

15.77 7.51

-11.28 -11.56

11.89 7.51

5.02 -3.68

5.02 -3.68

60.9559 10.5360

59.8995 12.0840

23.4649 10.5360

60.9559 12.0840

60.9559 12.0840

[hrs]

Link Min/Max Conditions with Times

Sim Name

Max Flow [cfs]

Min Flow [cfs]

Min/Max Delta Flow [cfs]

Max Us Velocity

Max Ds Velocity [fps]

Time to Max Flow [hrs]

Time to Min Flow [hrs]

Time to Min/Max Delta Flow

Time to Max Us Velocity

Time to Max Ds Velocity

| L-50P   | L-50P  |       |       |          | Name     | Link           |
|---|--|-------|-------|----------|----------|----------------|
| 5y1D  | 100y3D   |       |       |          | Name     | Sim            |
| 18.94   | 26.57  |       |       | [cfs]    | Flow     | Max            |
| -17.31  | -22.58   |       |       | [cfs]    | Flow     | Min            |
| -17.31  | 24.17  |       | [cfs] | Flow     | Delta    | Min/Max        |
| 2.68  | 3.76   |       |       | [fps]    | Velocity | Min/Max Max Us |
| 2.68  | 3.76   |       |       | [fps]    | Velocity | Max Ds         |
| 18.9277   | 60.9407  |       | [hrs] | Flow     | Max      | Time to        |
| 10.8676   | 28.4951  |       | [hrs] | Flow     | Min      | Time to        |
| 10.8676   | 66.3204  | [hrs] | Flow  | Delta    | Min/Max  | Time to        |
| 18.94 -17.31 -17.31 2.68 2.68 18.9277 10.8676 10.8676 18.9277 18.9277 | 26.57 -22.58 24.17 3.76 3.76 60.9407 28.4951 66.3204 60.9407 60.9407 |       | [hrs] | Velocity | Max Us   | Time to        |
| 18.9277   | 60.9407  |       | [hrs] | Velocity | Max Ds   | Time to        |

Link Min/Max Conditions with Times

| 12.1665  | 12.1665  | -3.03 -2.11 -2.11 10.6773 12.1665 17.7592 12.1665 12.1665 | 12.1665 | 10.6773 | -2.11    | -2.11    | -3.03   | -3.73 | 1.87  | 5y1D   | L-51P |
|----------|----------|---|---------|---------|----------|----------|---------|-------|-------|--------|-------|
| 71.3539  | 71.3539  | -2.19 20.6942 71.3539 31.0231 71.3539 71.3539             | 71.3539 | 20.6942 |          | -2.19    | -3.79   | -3.87 | 2.59  | 100y3D | L-51P |
|          |          | [hrs]   |         |         |          |          |         |       |       |        |       |
| [hrs]    | [hrs]    | Flow  | [hrs]   | [hrs]   |          |          | [cfs]   |       |       |        |       |
| Velocity | Velocity | Delta   | Flow    | Flow    | [fps]    | [fps]    | Flow    | [cfs] | [cfs] |        |       |
| Max Ds   | Max Us   | Min/Max   | Min     | Мах     | Velocity | Velocity | Delta   | Flow  | Flow  | Name   | Name  |
| Time to  |          | Time to Time to   | Time to | Time to | Max Ds   | ( Max Us | Min/Max | Min   | Max   | Sim    | Link  |

| Link Min/ | Link Min/Max Conditions with Times | ions with T | imes   |                    |                |          |         |   |         |          |          |
|-----------|------------------------------------|-------------|--------|--------------------|----------------|----------|---------|---|---------|----------|----------|
| Link      | Sim                                | Max         | Min    | Min/Max            | Min/Max Max Us | Max Ds   | Time to | Time to Time to Time to                           | Time to | _        | Time to  |
| Name      | Name                               | Flow        | Flow   | Delta              | Velocity       | Velocity | Max     | Min   | Min/Max | Max Us   | Max Ds   |
|           |                                    | [cfs]       | [cfs]  | Flow               | [fps]          | [fps]    | Flow    | Flow  | Delta   | Velocity | Velocity |
|           |                                    |             |        | [cfs]              |                |          | [hrs]   | [hrs]   | Flow    | [hrs]    | [hrs]    |
|           |                                    |             |        |                    |                |          |         |   | [hrs]   |          |          |
| L-52P     | 100y3D                             | 29.39       | -13.10 | 29.39 -13.10 16.89 |                | 4.16     | 59.9657 | 4.16 4.16 59.9657 18.0569 22.9644 59.9657 59.9657 | 22.9644 | 59.9657  | 59.9657  |
| ם כא- ו   | 5v1D                               | 11 22       | 211 12 |                    | -1 63          | 1 8/     | 10 8474 | 10 8808   | 10 8808 | 10 8808  | 6 01 20  |

| _   |  | _     | _     | _        | _              |         |
|---|--|-------|-------|----------|----------------|---------|
| l -22b                                      | L-52P  |       |       |          | Name           | Link    |
| 5v1D  | 100y3D                                       |       |       |          | Name           | Sim     |
| 11.32                                       | 29.39  |       |       | [cfs]    | Flow           | Max     |
| -11.43                                      | -13.10                                       |       |       | [cfs]    | Flow           | Min     |
| -11.43                                      | 16.89  |       | [cfs] | Flow     | Delta          | Min/Max |
| -11.43 -11.43 -1.62                         | 4.16   |       |       | [fps]    | Velocity       | Max Us  |
|   | 4.16   |       |       | [fps]    | Velocity       | Max Ds  |
| 10.8676                                     | 59.9657                                      |       | [hrs] | Flow     | Max            | Time to |
| 10.8898                                     | 18.0569                                      |       | [hrs] | Flow     | Min            | Time to |
| 10.8898                                     | 22.9644                                      | [hrs] | Flow  | Delta    | Min/Max        | Time to |
| 1.84 10.8676 10.8898 10.8898 10.8898 6.9120 | 4.16 59.9657 18.0569 22.9644 59.9657 59.9657 |       | [hrs] | Velocity | 1 n/Max Max Us | Time to |
| 6.9120                                      | 59.9657                                      |       | [hrs] | Velocity | Max Ds         | Time to |
|   |  |       |       |          |                |         |

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| Link Min/ | Link Min/Max Conditions with Times | ions with T | imes  |         |          |          |         |         |                 |          |          |
|-----------|------------------------------------|-------------|-------|---------|----------|----------|---------|---------|-----------------|----------|----------|
| Link      | Sim                                | Max         | Min   | Min/Max | Max Us   | Max Ds   | Time to | Time to | Time to Time to |          | Time to  |
| Name      | Name                               | Flow        | Flow  | Delta   | Velocity | Velocity | Max     | Min     | Min/Max Max Us  | Max Us   | Max Ds   |
|           |                                    | [cfs]       | [cfs] | Flow    | [fps]    | [fps]    | Flow    | Flow    | Delta           | Velocity | Velocity |
|           |                                    |             |       | [cfs]   |          |          | [hrs]   | [hrs]   | Flow            | [hrs]    | [hrs]    |
|           |                                    |             |       |         |          |          |         |         |                 |          |          |

L-53P L-53P

100y3D 5y1D

53.09 27.37

-35.12 -29.77

35.78 -29.77

4.22 -2.37

4.22 -2.37

60.2033 10.7431

21.5885 10.8356

20.8453 10.8356

60.2033 10.8356

60.2033 10.8356

[hrs]

Link Min/Max Conditions with Times

Sim Name

Max Flow [cfs]

Min Flow [cfs]

Min/Max Delta Flow [cfs]

Max Us Velocity

Max Ds Velocity [fps]

Time to Max Flow [hrs]

Time to Min Flow [hrs]

Time to Min/Max Delta Flow

Time to Max Us Velocity

Time to Max Ds Velocity

L

| L-54P   | L-54P  |       |       |          | Name     | Link    |
|---|--|-------|-------|----------|----------|---------|
| 5y1D  | 100y3D                                       |       |       |          | Name     | Sim     |
| 52.11   | 66.40  |       |       | [cfs]    | Flow     | Max     |
| -53.81  | 66.40 -75.19 -75.19 -5.98                    |       |       | [cfs]    | Flow     | Min     |
| -53.81  | -75.19                                       |       | [cfs] | Flow     | Delta    | Min/Max |
| -4.28   | -5.98  |       |       | [fps]    | Velocity | Max Us  |
| -4.28   |  |       |       | [fps]    | Velocity | Max Ds  |
| 10.8356   | 27.1813                                      |       | [hrs] | Flow     | Max      | Time to |
| 10.8987   | 30.2596                                      |       | [hrs] | Flow     | Min      | Time to |
| 10.8987   | 30.2596                                      | [hrs] | Flow  | Delta    | Min/Max  | Time to |
| 52.11 -53.81 -53.81 -4.28 -4.28 10.8356 10.8987 10.8987 10.8987 10.8987 10.8987 | 7.38 27.1813 30.2596 30.2596 30.2596 60.2294 |       | [hrs] | Velocity | Max Us   | Time to |
| 10.8987   | 60.2294                                      |       | [hrs] | Velocity | Max Ds   | Time to |

Link Min/Max Conditions with Times

| 23.8747  | 5.25 23.8747 10.8987 10.8987 23.8747 23.8747 | 10.8987 | 10.8987 | 23.8747 |          | 5.25     | -8.70 -8.70 5.25 | -8.70  | 9.28  | 5y1D   | L-55P |
|----------|--|---------|---------|---------|----------|----------|------------------|--------|-------|--------|-------|
| 60.8796  | 8.17 60.8779 30.2596 31.1298 60.8779 60.8796 | 31.1298 | 30.2596 | 60.8779 |          | 7.87     | -13.43 13.55     | -13.43 | 13.91 | 100y3D | L-55P |
|          |  | [hrs]   |         |         |          |          |                  |        |       |        |       |
| [hrs]    | [hrs]  | Flow    | [hrs]   | [hrs]   |          |          | [cfs]            |        |       |        |       |
| Velocity | Velocity                                     | Delta   | Flow    | Flow    | [fps]    | [fps]    | Flow             | [cfs]  | [cfs] |        |       |
| Max Ds   | Max Us                                       | Min/Max | Min     | Мах     | Velocity | Velocity | Delta            | Flow   | Flow  | Name   | Name  |
| Time to  | Time to                                      | Time to | Time to | Time to | Max Ds   | Max Us   | Min/Max          | Min    | Max   | Sim    | Link  |

|       |        | LITIK MILLI MILLA COLIGICIOLIS WILL TITICS | 1103                   |         |          |          |         |         |         |   |          |
|-------|--------|--|------------------------|---------|----------|----------|---------|---------|---------|---|----------|
| Link  | Sim    | Мах  | Min                    | Min/Max | Max Us   | Max Ds   | Time to | Time to | Time to | Time to   | Time to  |
| Name  | Name   | Flow                                       | Flow                   | Delta   | Velocity | Velocity | Мах     | Min     | Min/Max | Max Us  | Max Ds   |
|       |        | [cfs]                                      | [cfs]                  | Flow    | [fps]    | [fps]    | Flow    | Flow    | Delta   | Velocity  | Velocity |
|       |        |  |                        | [cfs]   |          |          | [hrs]   | [hrs]   | Flow    | [hrs]   | [hrs]    |
|       |        |  |                        |         |          |          |         |         | [hrs]   |   |          |
| L-56P | 100y3D |  | 315.56 -320.40 -320.40 | -320.40 | -8.33    |          | 30.2596 | 24.4800 | 24.4800 | 9.07 30.2596 24.4800 24.4800 24.4800 59.7890                            | 59.7890  |
| L-56P | 5y1D   | 255.22                                     | -220.62                | 255.22  | 6.63     | 6.65     | 10.8987 | 10.5653 | 10.8987 | 255.22 -220.62 255.22 6.63 6.65 10.8987 10.5653 10.8987 10.8987 10.8987 | 10.8987  |

| Link Min/I | Max Conditions with | ons with T | th Times |         |          |          |         |         |         |          |          |  |
|------------|---------------------|------------|----------|---------|----------|----------|---------|---------|---------|----------|----------|--|
| Link       | Sim                 | Max        | Min      | Min/Max | Max Us   | Max Ds   | Time to | Time to | Time to | Time to  | Time to  |  |
| Name       | Name                | Flow       | Flow     | Delta   | Velocity | Velocity | Max     | Min     | Min/Max | Max Us   | Max Ds   |  |
|            |                     | [cfs]      | [cfs]    | Flow    | [fps]    | [fps]    | Flow    | Flow    | Delta   | Velocity | Velocity |  |
|            |                     |            |          | [cfs]   |          |          | [hrs]   | [hrs]   | Flow    | [hrs]    | [hrs]    |  |

L-57P L-57P

100y3D 5y1D

176.87 0.01

-41.90 -41.90

4.98 0.19

56.30 -13.34

56.30 -13.56

60.0396 2.3556

0.0020 0.0020

60.8710 0.0020 [hrs]

60.0396 0.0020

60.0396 0.0009

Link Min/Max Conditions with Times

Sim Name

Max Flow [cfs]

Min Flow [cfs]

Min/Max Delta Flow [cfs]

Max Us Velocity

Max Ds Velocity [fps]

Time to

Time to Max Flow [hrs]

Min Flow [hrs]

Time to Min/Max Delta Flow

Time to Max Us Velocity

Time to Max Ds Velocity

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| L-58P  | L-58P  |       |       |          | Name     | Link            |
|--|--|-------|-------|----------|----------|-----------------|
| 5y1D   | 100y3D                                       |       |       |          | Name     | Sim             |
| 3.34   | 6.96   |       |       | [cfs]    | Flow     | Max             |
| -1.51  | -2.52  |       |       | [cfs]    | Flow     | Min             |
| -1.51  | -2.41 3.94                                   |       | [cfs] | Flow     | Delta    | Min/Max Max Us  |
| 1.89   | 3.94   |       |       | [fps]    | Velocity | Max Us          |
| 1.89   | 3.94   |       |       | [fps]    | Velocity | Max Ds          |
| 12.0295  | 60.0292                                      |       | [hrs] | Flow     | Max      | Time to Time to |
| 12.4836  | 60.8533                                      |       | [hrs] | Flow     | Min      | Time to         |
| 12.1127  | 60.2233                                      | [hrs] | Flow  | Delta    | Min/Max  | Time to         |
| 3.34 -1.51 -1.51 1.89 1.89 12.0295 12.4836 12.1127 12.0295 12.0295 | 3.94 60.0292 60.8533 60.2233 60.0292 60.0292 |       | [hrs] | Velocity | Max Us   | Time to         |
| 12.0295  | 60.0292                                      |       | [hrs] | Velocity | Max Ds   | Time to         |

Link Min/Max Conditions with Times

| 0.0000   | 0.0000   | 0.0000  | 0.00 0.0000 0.0000 0.0000 0.0000 | 0.0000      |          | 0.00     | 0.00    | 0.00  | 0.00  | 5y1D   | L-59P |
|----------|----------|---------|----------------------------------|-------------|----------|----------|---------|-------|-------|--------|-------|
| 0.0000   | 0.0000   | 0.0000  | 0.0000                           | 0.00 0.0000 | 0.00     | 0.00     | 0.00    | 0.00  | 0.00  | 100y3D | L-59P |
|          |          | [hrs]   |                                  |             |          |          |         |       |       |        |       |
| [hrs]    | [hrs]    | Flow    | [hrs]                            | [hrs]       |          |          | [cfs]   |       |       |        |       |
| Velocity | Velocity | Delta   | Flow                             | Flow        | [fps]    | [fps]    | Flow    | [cfs] | [cfs] |        |       |
| Max Ds   | Max Us   | Min/Max | Min                              | Мах         | Velocity | Velocity | Delta   | Flow  | Flow  | Name   | Name  |
| Time to  | Time to  | Time to | Time to                          | Time to     | Max Ds   | Max Us   | Min/Max | Min   | Max   | Sim    | Link  |

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| Link Min/ | Link Min/Max Conditions with Times | ions with T | imes              |   |                |          |         |   |         |          |          |
|-----------|------------------------------------|-------------|-------------------|---|----------------|----------|---------|---|---------|----------|----------|
| Link      | Sim                                | Max         | Min               | Min/Max   | Min/Max Max Us | Max Ds   | Time to | Time to Time to Time to   | Time to | Time to  | Time to  |
| Name      | Name                               | Flow        | Flow              | Delta   | Velocity       | Velocity | Max     | Min   | Min/Max | Max Us   | Max Ds   |
|           |                                    | [cfs]       | [cfs]             | Flow  | [fps]          | [fps]    | Flow    | Flow  | Delta   | Velocity | Velocity |
|           |                                    |             |                   | [cfs]   |                |          | [hrs]   | [hrs]   | Flow    | [hrs]    | [hrs]    |
|           |                                    |             |                   |   |                |          |         |   | [hrs]   |          |          |
| L-60P     | 100y3D                             | 9.03        | -9.15             | -9.15   | -1.29          | -1.29    | 60.6373 | -9.15 -9.15 -1.29 -1.29 60.6373 60.9805 60.9805 60.9805 60.9805 | 60.9805 | 60.9805  | 60.9805  |
| 1-70b     | 5v1D                               | 60 8        | 69 8 <sup>-</sup> | 8 00 -8 60 -8 60 -1 23 -1 23 13 230 12 4587 12 4587 12 4587 12 4587 12 4587 | -1 23          | -1 23    | 13 2320 | 12 4587   | 12 4587 | 12 4587  | 12 4587  |

| 12.4587  | 12.4587  | 12.4587 | 12.4587 | -8.69 -8.69 -1.23 -1.23 13.2320 12.4587 12.4587 12.4587 12.4587 | -1.23    | -1.23    | -8.69   | -8.69 | 8.09  | 5y1D   | L-60P |
|----------|----------|---------|---------|---|----------|----------|---------|-------|-------|--------|-------|
| 60.9805  | 60.9805  | 60.9805 | 60.9805 | -1.29 60.6373 60.9805 60.9805 60.9805                           |          | -1.29    | -9.15   | -9.15 | 9.03  | 100y3D | L-60P |
|          |          | [hrs]   |         |   |          |          |         |       |       |        |       |
| [hrs]    | [hrs]    | Flow    | [hrs]   | [hrs]   |          |          | [cfs]   |       |       |        |       |
| Velocity | Velocity | Delta   | Flow    | Flow  | [fps]    | [fps]    | Flow    | [cfs] | [cfs] |        |       |
| Max Ds   | Max Us   | Min/Max | Min     | Max   | Velocity | Velocity | Delta   | Flow  | Flow  | Name   | Name  |
| Time to  | Time to  | Time to | Time to | Time to   | Max Ds   | Max Us   | Min/Max | Min   | Max   | Sim    | Link  |

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L-61P L-61P

100y3D 5y1D

4.00 3.27

0.00

3.60 -3.27

0.57 0.46

0.57 60.6372 0.46 12.5911

0.0000

60.7849 12.5911

60.6372 12.5911

60.6372 12.5911

[hrs]

Link Min/Max Conditions with Times

Sim Name

Max Flow [cfs]

Min Flow [cfs]

Min/Max Delta Flow

Max Us Velocity

Max Ds Velocity [fps]

Time to Max Flow [hrs]

Min Flow [hrs]

Time to Min/Max Delta

Time to Max Us Velocity

Time to Max Ds Velocity

[hrs]

Link Min/Max Conditions with Times

Name Sim

Flow [cfs] Max

Min Flow [cfs]

Min/Max Delta Flow

Velocity [fps]

Velocity

Max Ds

Time to Max Flow

[cfs]

[hrs]

[hrs]

[hrs]

[hrs] Max Ds Velocity

Min/Max Delta Flow

Time to Max Us Velocity

| L-64P  | L-64P   |       |       |          | Name     | Link           |
|--|---|-------|-------|----------|----------|----------------|
| 5y1D   | 100y3D  |       |       |          | Name     | Sim            |
| 18.75  |   |       |       | [cfs]    | Flow     | Max            |
| -13.43   | 18.75 -20.46 -20.45                           |       |       | [cfs]    | Flow     | Min            |
| 18.75  | -20.45  |       | [cfs] | Flow     | Delta    | Min/Max Max Us |
| 5.97   | -6.51   |       |       | [fps]    | Velocity |                |
| 5.97   | -6.51   |       |       | [fps]    | Velocity | Max Ds         |
| 13.2320  | 60.7618                                       |       | [hrs] | Flow     | Max      | Time to        |
| 12.4836  | 60.5885                                       |       | [hrs] | Flow     | Min      | Time to        |
| 13.2320  | 60.5885                                       | [hrs] | Flow  | Delta    | Min/Max  | Time to        |
| 18.75 -13.43 18.75 5.97 5.97 13.2320 12.4836 13.2320 13.2320 13.2320 | -6.51 60.7618 60.5885 60.5885 60.5885 60.5885 |       | [hrs] | Velocity | Max Us   | Time to        |
| 13.2320  | 60.5885                                       |       | [hrs] | Velocity | Max Ds   | Time to        |

Link Min/Max Conditions with Times

| 13.2320  | 13.2320  | 13.2320         | -1.50 -1.50 12.4587 13.2320 13.2320 13.2320 13.2320 | 12.4587 | -1.50    | -1.50    | 9.92 -10.61 -10.61 | -10.61 | 9.92  | 5y1D   | L-65P |
|----------|----------|-----------------|---|---------|----------|----------|--------------------|--------|-------|--------|-------|
| 60.5885  | 60.5885  | 60.5885         | 2.14 60.5885 60.6045 60.5885 60.5885 60.5885        | 60.5885 |          | 2.14     | -9.54 15.11        | -9.54  | 15.11 | 100y3D | L-65P |
|          |          | [hrs]           |   |         |          |          |                    |        |       |        |       |
| [hrs]    | [hrs]    | Flow            | [hrs]   | [hrs]   |          |          | [cfs]              |        |       |        |       |
| Velocity | Velocity | Delta           | Flow  | Flow    | [fps]    | [fps]    | Flow               | [cfs]  | [cfs] |        |       |
| Max Ds   | Max Us   | Min/Max         | Min   | Max     | Velocity | Velocity | Delta              | Flow   | Flow  | Name   | Name  |
| Time to  |          | Time to Time to | Time to   | Time to | Max Ds   | Max Us   | Min/Max            | Min    | Max   | Sim    | Link  |

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| Link Min/ | Link Min/Max Conditions with Times | ons with T | mes        |                      |          |          |         |  |         |          |          |
|-----------|------------------------------------|------------|------------|----------------------|----------|----------|---------|--|---------|----------|----------|
| Link      | Sim                                | Мах        | Min        | Min/Max Max Us       |          | Max Ds   | Time to | Time to  | Time to | Time to  | Time to  |
| Name      | Name                               | Flow       | Flow       | Delta                | Velocity | Velocity | Max     | Min  | Min/Max | Max Us   | Max Ds   |
|           |                                    | [cfs]      | [cfs]      | Flow                 | [fps]    | [fps]    | Flow    | Flow   | Delta   | Velocity | Velocity |
|           |                                    |            |            | [cfs]                |          |          | [hrs]   | [hrs]  | Flow    | [hrs]    | [hrs]    |
|           |                                    |            |            |                      |          |          |         |  | [hrs]   |          |          |
| L-67P     | 100y3D                             |            | 4.38 -0.93 |                      | 2.48     | 2.48     | 59.9297 | 1.11 2.48 2.48 59.9297 45.2587 45.0667 59.9297 59.9297 | 45.0667 | 59.9297  | 59.9297  |
| 1-67P     | 5v1D                               | 3.68       | -1.04      | 3.68 -1.04 1.07 2.08 | 2.08     |          | 12.0151 | 4.29   12.0151   14.1778   14.6827   12.0151   12.0151 | 14.6827 | 12.0151  | 12.0151  |

| 12.0151  | 12.0151  | 14.6827                 | 4.29 12.0151 14.1778 14.6827 12.0151 12.0151 | 12.0151         | 4.29     | 2.08     | 1.07    | -1.04 | 3.68  | 5y1D   | L-67P |
|----------|----------|-------------------------|--|-----------------|----------|----------|---------|-------|-------|--------|-------|
| 59.9297  | 59.9297  | 45.0667 59.9297 59.9297 | 2.48 59.9297 45.2587                         | 59.9297         | 2.48     | 2.48     | 1.11    | -0.93 | 4.38  | 100y3D | L-67P |
|          |          | [hrs]                   |  |                 |          |          |         |       |       |        |       |
| [hrs]    | [hrs]    | Flow                    | [hrs]  | [hrs]           |          |          | [cfs]   |       |       |        |       |
| Velocity | Velocity | Delta                   | Flow   | Flow            | [fps]    | [fps]    | Flow    | [cfs] | [cfs] |        |       |
| Max Ds   | Max Us   | Min/Max                 | Min  | Max             | Velocity | Velocity | Delta   | Flow  | Flow  | Name   | Name  |
| Time to  |          | Time to Time to         | Time to                                      | Time to Time to | Max Ds   | Max Us   | Min/Max | Min   | Max   | Sim    | Link  |

|       |          | Name           | Link                  |
|-------|----------|----------------|-----------------------|
|       |          | Name           | Sim                   |
|       | [cfs]    | Flow           | Max                   |
|       | [cfs]    | Flow           | Min                   |
| [cfs] | Flow     | Delta          | Min/Max               |
|       | [fps]    | Velocity       | Max Us Max Ds Time to |
|       | [fps]    | Velocity       | Max Ds                |
| [hrs] | Flow     | Max            | Time to               |
| [hrs] | Flow     | Min            | Time to               |
| Flow  | Delta    | Min/Max        | Time to               |
| [hrs] | Velocity | Min/Max Max Us | Time to               |
| [hrs] | Velocity | Max Ds         | Time to               |
|       |          |                |                       |

Link Min/Max Conditions with Times

L-68P

100y3D 5y1D

4.40 3.38

-2.68 -2.35

-2.68 -2.35

1.40 1.79

1.4059.93003.7811.9936

58.7565 14.3565

58.7565 14.3565

59.9300 11.9668

59.9300 11.9360

[hrs]

Link Min/Max Conditions with Times

Sim Name

Max Flow [cfs]

Min Flow [cfs]

Min/Max Delta Flow [cfs]

Max Us Velocity

Max Ds Velocity [fps]

Time to Max Flow [hrs]

Time to Min Flow [hrs]

Time to Min/Max Delta Flow

Time to Max Us Velocity

Time to Max Ds Velocity

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| L-69P  | L-69P   |       |       |          | Name     | Link           |
|--|---|-------|-------|----------|----------|----------------|
| 5y1D   | 100y3D  |       |       |          | Name     | Sim            |
| 7.73   |   |       |       | [cfs]    | Flow     | Max            |
| -10.61   | -11.46  |       |       | [cfs]    | Flow     | Min            |
| -10.61   | 7.80 -11.46 -11.46  |       | [cfs] | Flow     | Delta    | Min/Max Max Us |
| -3.38  | -3.65   |       |       | [fps]    | Velocity | Max Us         |
| -3.38  | -3.65   |       |       | [fps]    | Velocity | Max Ds         |
| 21.5565  | 46.6285   |       | [hrs] | Flow     | Max      | Time to        |
| 13.5911  | 58.8880   |       | [hrs] | Flow     | Min      | Time to        |
| 13.5911  | 58.8880   | [hrs] | Flow  | Delta    | Min/Max  | Time to        |
| 7.73 -10.61 -10.61 -3.38 -3.38 21.5565 13.5911 13.5911 13.5911 13.5911 13.5911 | -3.65 -3.65 46.6285 58.8880 58.8880 58.8880 58.8880 58.8880 |       | [hrs] | Velocity | Max Us   | Time to        |
| 13.5911  | 58.8880   |       | [hrs] | Velocity | Max Ds   | Time to        |

Link Min/Max Conditions with Times

| 13.8018  | 13.8018  | 13.8018 | 4.67 13.8018 21.5565 13.8018 13.8018 13.8018 | 13.8018 | 4.67     | 4.67     | 14.68 -10.72 14.67 | -10.72 | 14.68 | 5y1D   | L-70P |
|----------|----------|---------|--|---------|----------|----------|--------------------|--------|-------|--------|-------|
| 58.8880  | 58.8880  | 58.8880 | 5.21 58.8880 62.3556 58.8880 58.8880 58.8880 | 58.8880 | I 1      | 5.21     | 16.37 -11.39 16.37 | -11.39 |       | 100y3D | L-70P |
|          |          | [hrs]   |  |         |          |          |                    |        |       |        |       |
| [hrs]    | [hrs]    | Flow    | [hrs]  | [hrs]   |          |          | [cfs]              |        |       |        |       |
| Velocity | Velocity | Delta   | Flow   | Flow    | [fps]    | [fps]    | Flow               | [cfs]  | [cfs] |        |       |
| Max Ds   | Max Us   | Min/Max | Min  | Мах     | Velocity | Velocity | Delta              | Flow   | Flow  | Name   | Name  |
| Time to  | Time to  | Time to | Time to                                      | Time to | Max Ds   | Max Us   | Min/Max            | Min    | Max   | Sim    | Link  |

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| Link Min/ | Link Min/Max Conditions with Times | ions with T | imes       |         |          |          |         |   |         |  |          |
|-----------|------------------------------------|-------------|------------|---------|----------|----------|---------|---|---------|--|----------|
| Link      | Sim                                | Max         | Min        | Min/Max | Max Us   | Max Ds   | Time to | Min/Max Max Us Max Ds Time to Time to Time to Time to | Time to |  | Time to  |
| Name      | Name                               | Flow        | Flow       | Delta   | Velocity | Velocity | Max     | Min   | Min/Max | Max Us   | Max Ds   |
|           |                                    | [cfs]       | [cfs]      | Flow    | [fps]    | [fps]    | Flow    | Flow  | Delta   | Velocity   | Velocity |
|           |                                    |             |            | [cfs]   |          |          | [hrs]   | [hrs]   | Flow    | [hrs]  | [hrs]    |
|           |                                    |             |            |         |          |          |         |   | [hrs]   |  |          |
| L-71P     | 100y3D                             |             | 3.23 -2.80 | 3.08    | 1.03     | 1.03     | 63.9218 | 1.03 63.9218 58.8569 59.4160 63.9218 63.9218          | 59.4160 | 63.9218  | 63.9218  |
| 1_71P     | 5v1D                               | 2 A 2       | 58 C-      | O       | 7 1 J    | 1 1 T    | 11 0680 | 13 2012   | 15 A605 | 2 63 1 0240 1 2 70 1 71 1 71 1 71 1 71 2 72 2 73 2 73 2 73 | 11 0680  |

| _  |  |       |       |          |                | _ |
|--|--|-------|-------|----------|----------------|---|
| L-71P  | L-71P  |       |       |          | Name           |   |
| 5y1D   | 100y3D                                       |       |       |          | Name           |   |
| 3.63   | 3.23   |       |       | [cfs]    | Flow           |   |
| -2.83  | -2.80  |       |       | [cfs]    | Flow           |   |
| 3.63 -2.83 -2.79                             | 3.08   |       | [cfs] | Flow     | Delta          |   |
| 1.15   | 1.03   |       |       | [fps]    | Velocity       |   |
|  | 1.03   |       |       | [fps]    | Velocity       |   |
| 11.9689                                      | 63.9218                                      |       | [hrs] | Flow     | Max            |   |
| 13.8018                                      | 58.8569                                      |       | [hrs] | Flow     | Min            |   |
| 15.4605                                      | 59.4160                                      | [hrs] | Flow  | Delta    | Min/Max Max Us |   |
| 1.15 11.9689 13.8018 15.4605 11.9689 11.9689 | 1.03 63.9218 58.8569 59.4160 63.9218 63.9218 |       | [hrs] | Velocity |                |   |
| 11.968                                       | 63.921                                       |       | [hrs] | Velocity | Max Ds         |   |

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| Link Min/ | Link Min/Max Conditions with Times | ons with T | imes  |         |          |          |         |         | r       |          |          |
|-----------|------------------------------------|------------|-------|---------|----------|----------|---------|---------|---------|----------|----------|
| Link      | Sim                                | Max        | Min   | Min/Max | Max Us   | Max Ds   | Time to | Time to | Time to | Time to  | Time to  |
| Name      | Name                               | Flow       | Flow  | Delta   | Velocity | Velocity | Max     | Min     | Min/Max | Max Us   | Max Ds   |
|           |                                    | [cfs]      | [cfs] | Flow    | [fps]    | [fps]    | Flow    | Flow    | Delta   | Velocity | Velocity |
|           |                                    |            |       | [cfs]   |          |          | [hrs]   | [hrs]   | Flow    | [hrs]    | [hrs]    |
|           |                                    |            |       |         |          |          |         |         |         |          |          |

L-72P L-72P

100y3D 5y1D

1.09 1.02

-1.08

1.08 1.02

0.89 0.83

0.89 0.83

41.6596 12.5627

63.6498 14.2125

41.6596 12.5627 [hrs]

41.6596 12.5627

41.6596 12.5627

Link Min/Max Conditions with Times

Sim Name

Max Flow [cfs]

Min Flow [cfs]

Min/Max Delta Flow

Max Us Velocity

Max Ds Velocity [fps]

Time to Max Flow [hrs]

Time to Min Flow [hrs]

Time to Min/Max Delta Flow

Time to Max Us Velocity

Time to Max Ds Velocity

| L-73P   | L-73P   |       |       |          | Name     | Link            |
|---|---|-------|-------|----------|----------|-----------------|
| 5y1D  | 100y3D  |       |       |          | Name     | Sim             |
| 1.77  | 1.73  |       |       | [cfs]    | Flow     | Max             |
| -1.54   |   |       |       | [cfs]    | Flow     | Min             |
| 1.76  | -1.94 -1.94   |       | [cfs] | Flow     | Delta    | Min/Max         |
| 1.44  | -1.58   |       |       | [fps]    | Velocity | Min/Max Max Us  |
| 1.44  | -1.58   |       |       | [fps]    | Velocity | Max Ds          |
| 14.2125   | 42.4285   |       | [hrs] | Flow     | Max      | Time to Time to |
| 14.3013   | 52.4045   |       | [hrs] | Flow     | Min      |                 |
| 14.2125   | 52.4045   | [hrs] | Flow  | Delta    | Min/Max  | Time to         |
| 1.77 -1.54 1.76 1.44 1.44 14.2125 14.3013 14.2125 14.2125 14.2125 | -1.58 -1.58 42.4285 52.4045 52.4045 52.4045 52.4045 52.4045 |       | [hrs] | Velocity | Max Us   | Time to         |
| 14.2125   | 52.4045   |       | [hrs] | Velocity | Max Ds   | Time to         |

Link Min/Max Conditions with Times

| 11.8268  | 11.9305  | 14.4311 | 2.00 3.02 11.9623 14.4311 14.4311 11.9305 11.8266 | 11.9623 | 3.02     | 2.00     | 3.23 -3.06 -3.06 | -3.06 | 3.23  | 5y1D   | L-74P |
|----------|----------|---------|---|---------|----------|----------|------------------|-------|-------|--------|-------|
| 21.1604  | 63.2747  | 63.2747 | 1.11 41.6596 63.2747 63.2747 63.2747 21.1604      | 41.6596 |          | -0.98    | -3.09            | -3.09 | 2.96  | 100y3D | L-74P |
|          |          | [hrs]   |   |         |          |          |                  |       |       |        |       |
| [hrs]    | [hrs]    | Flow    | [hrs]   | [hrs]   |          |          | [cfs]            |       |       |        |       |
| Velocity | Velocity | Delta   | Flow  | Flow    | [fps]    | [fps]    | Flow             | [cfs] | [cfs] |        |       |
| Max Ds   | Max Us   | Min/Max | Min   | Max     | Velocity | Velocity | Delta            | Flow  | Flow  | Name   | Name  |
| Time to  | Time to  | Time to | Time to   | Time to | Max Ds   | Max Us   | Min/Max          | Min   | Max   | Sim    | Link  |

| Link Min/ | Link Min/Max Conditions with Times | ions with T | imes  |  |                |          |         |   |         |          |          |
|-----------|------------------------------------|-------------|-------|--|----------------|----------|---------|---|---------|----------|----------|
| Link      | Sim                                | Max         | Min   | Min/Max  | Min/Max Max Us | Max Ds   | Time to | Time to Time to Time to                           | Time to | Time to  | Time to  |
| Name      | Name                               | Flow        | Flow  | Delta  | Velocity       | Velocity | Max     | Min   | Min/Max | Max Us   | Max Ds   |
|           |                                    | [cfs]       | [cfs] | Flow   | [fps]          | [fps]    | Flow    | Flow  | Delta   | Velocity | Velocity |
|           |                                    |             |       | [cfs]  |                |          | [hrs]   | [hrs]   | Flow    | [hrs]    | [hrs]    |
|           |                                    |             |       |  |                |          |         |   | [hrs]   |          |          |
| L-75P     | 100y3D                             | 0.69        |       | -0.64 0.63   | 0.56           | 0.56     | 53.4364 | 0.56 0.56 53.4364 54.3813 59.4898 53.4364 53.4364 | 59.4898 | 53.4364  | 53.4364  |
| 1-75P     | 5v1D                               | 84 U        | -0 64 | 0 68 _0 64 _0 63 0 56 0 56 17 9547 23 7867 23 7867 17 9547 17 9547 | 0 56           | 0 56     | 17 9547 | 73 7867   | 73 7867 | 17 9547  | 17 9547  |

| 17.9547  | 0.56 17.9547 23.7867 23.7867 17.9547 17.954  | 23.7867         | 23.7867         | 17.9547 |          | 0.56     | -0.64 -0.63 |       | 0.68  | 5y1D   | L-75P |
|----------|--|-----------------|-----------------|---------|----------|----------|-------------|-------|-------|--------|-------|
| 53.4364  | 0.56 53.4364 54.3813 59.4898 53.4364 53.4364 | 59.4898         | 54.3813         | 53.4364 |          | 0.56     | 0.63        | -0.64 | 0.69  | 100y3D | L-75P |
|          |  | [hrs]           |                 |         |          |          |             |       |       |        |       |
| [hrs]    | [hrs]  | Flow            | [hrs]           | [hrs]   |          |          | [cfs]       |       |       |        |       |
| Velocity | Velocity                                     | Delta           | Flow            | Flow    | [fps]    | [fps]    | Flow        | [cfs] | [cfs] |        |       |
| Max Ds   | Max Us                                       | Min/Max         | Min             | Max     | Velocity | Velocity | Delta       | Flow  | Flow  | Name   | Name  |
| Time to  | Time to                                      | Time to Time to | Time to Time to | Time to | Max Ds   | Max Us   | Min/Max     | Min   | Max   | Sim    | Link  |

| Link Min/ | Link Min/Max Conditions with Times | ons with T | imes  |         |          |          |         |         | 1       |          |          |
|-----------|------------------------------------|------------|-------|---------|----------|----------|---------|---------|---------|----------|----------|
| Link      | Sim                                | Max        | Min   | Min/Max | Max Us   | Max Ds   | Time to | Time to | Time to | Time to  | Time to  |
| Name      | Name                               | Flow       | Flow  | Delta   | Velocity | Velocity | Max     | Min     | Min/Max | Max Us   | Max Ds   |
|           |                                    | [cfs]      | [cfs] | Flow    | [fps]    | [fps]    | Flow    | Flow    | Delta   | Velocity | Velocity |
|           |                                    |            |       | [cfs]   |          |          | [hrs]   | [hrs]   | Flow    | [hrs]    | [hrs]    |
|           |                                    |            |       |         |          |          |         |         |         |          |          |

L-76P L-76P

100y3D 5y1D

1.37 1.28

-1.24 -1.19

1.37 1.28

1.12 1.04

1.12 1.04

40.6587 16.1565

63.1280 16.1422

[hrs] 40.6587 16.1565

40.6587 16.1565

40.6587 16.1565

Link Min/Max Conditions with Times

Sim Name

Max Flow [cfs]

Min Flow [cfs]

Min/Max Delta Flow [cfs]

Max Us Velocity

Max Ds Velocity [fps]

Time to Max Flow [hrs]

Time to Min Flow [hrs]

Time to Min/Max Delta Flow

Time to Max Us Velocity

Time to Max Ds Velocity

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| L-77P  | L-77P  |       |       |          | Name     | Link            |
|--|--|-------|-------|----------|----------|-----------------|
| 5y1D   | 100y3D                                       |       |       |          | Name     | Sim             |
| 2.03   |  |       |       | [cfs]    | Flow     | Max             |
| -2.01  | 1.67 -1.68                                   |       |       | [cfs]    | Flow     | Min             |
| -1.19  | 1.29   |       | [cfs] | Flow     | Delta    | Min/Max Max Us  |
| 0.86   | -0.54  |       |       | [fps]    | Velocity | Max Us          |
| 1.77   |  |       |       | [fps]    | Velocity | Max Ds          |
| 11.9614  | 59.9191                                      |       | [hrs] | Flow     | Max      | Time to Time to |
| 12.3121  | 60.4353                                      |       | [hrs] | Flow     | Min      | Time to         |
| 13.8951  | 53.4365                                      | [hrs] | Flow  | Delta    | Min/Max  | Time to         |
| 2.03 -2.01 -1.19 0.86 1.77 11.9614 12.3121 13.8951 11.9375 10.8477 | 1.03 59.9191 60.4353 53.4365 60.4353 16.3921 |       | [hrs] | Velocity | Max Us   | Time to         |
| 10.8477  | 16.3921                                      |       | [hrs] | Velocity | Max Ds   | Time to         |

Link Min/Max Conditions with Times

| 12.7671  | 12.7671        | 12.9403 | 1.73 1.73 12.7671 12.7668 12.9403 12.7671 12.767 | 12.7671 | 1.73     |          | 1.72    | -0.57 | 2.13  | 5y1D   | L-78P |
|----------|----------------|---------|--|---------|----------|----------|---------|-------|-------|--------|-------|
| 59.9870  | 59.9870        | 60.4133 | 2.37 59.9870 59.9193 60.4133 59.9870 59.9870     | 59.9870 | 2.37     | 2.37     | 2.20    | -1.26 | 2.91  | 100y3D | L-78P |
|          |                | [hrs]   |  |         |          |          |         |       |       |        |       |
| [hrs]    | [hrs]          | Flow    | [hrs]  | [hrs]   |          |          | [cfs]   |       |       |        |       |
| Velocity | Velocity       | Delta   | Flow   | Flow    | [fps]    | [fps]    | Flow    | [cfs] | [cfs] |        |       |
| Max Ds   | Min/Max Max Us | Min/Max | Min  | Max     | Velocity | Velocity | Delta   | Flow  | Flow  | Name   | Name  |
| Time to  | Time to        | Time to | Time to  | Time to | Max Ds   | Max Us   | Min/Max | Min   | Max   | Sim    | Link  |

| Link Min/  | Link Min/Max Conditions with Times | ions with I | Imes   |   |                |               |         |  |         |          |          |
|------------|------------------------------------|-------------|--------|---|----------------|---------------|---------|--|---------|----------|----------|
| Link       | Sim                                | Max         | Min    | Min/Max   | Min/Max Max Us | Max Ds        | Time to | Time to Time to Time to Time to                                      | Time to | Time to  | Time to  |
| Name       | Name                               | Flow        | Flow   | Delta   | Velocity       | Velocity      | Max     | Min  | Min/Max | Max Us   | Max Ds   |
|            |                                    | [cfs]       | [cfs]  | Flow  | [fps]          | [fps]         | Flow    | Flow   | Delta   | Velocity | Velocity |
|            |                                    |             |        | [cfs]   |                |               | [hrs]   | [hrs]  | Flow    | [hrs]    | [hrs]    |
|            |                                    |             |        |   |                |               |         |  | [hrs]   |          |          |
| L-79P      | 100y3D                             | 2.09        | -3.84  | -3.77   | -3.13          | -3.13         | 60.3836 | 2.09 -3.84 -3.77 -3.13 -3.13 60.3836 59.9185 59.9870 59.9185 59.9185 | 59.9870 | 59.9185  | 59.9185  |
| 1-70P 5v1D | 5v1D                               | 2 1 7       | - 2 בז | 2 17 2 52 2 52 2 52 2 52 2 52 2 52 2 51 51 51 51 51 51 51 51 51 51 52 52 52 52 52 52 52 52 52 52 52 52 52 | 70 C-          | 70 <i>C</i> - | 12 3117 | 13 0403  | 12 7671 | 13 0403  | 13 0403  |

| 13.9493  | 2.17 -2.53 -2.52 -2.07 -2.07 12.3117 13.9493 12.7671 13.9493 13.9493 | 12.7671         | 13.9493 | 12.3117 | -2.07    | -2.07    | -2.52       | -2.53 | 2.17  | 5y1D   | L-79P |
|----------|--|-----------------|---------|---------|----------|----------|-------------|-------|-------|--------|-------|
| 59.9185  | -3.13 60.3836 59.9185 59.9870 59.9185 59.9185                        | 59.9870         | 59.9185 | 60.3836 | -3.13    | -3.13    | -3.84 -3.77 | I 1   | 2.09  | 100y3D | L-79P |
|          |  | [hrs]           |         |         |          |          |             |       |       |        |       |
| [hrs]    | [hrs]  | Flow            | [hrs]   | [hrs]   |          |          | [cfs]       |       |       |        |       |
| Velocity | Velocity   | Delta           | Flow    | Flow    | [fps]    | [fps]    | Flow        | [cfs] | [cfs] |        |       |
| Max Ds   | Max Us   | Min/Max         | Min     | Max     | Velocity | Velocity | Delta       | Flow  | Flow  | Name   | Name  |
| Time to  |  | Time to Time to | Time to | Time to | Max Ds   | Max Us   | Min/Max     | Min   | Max   | Sim    | Link  |

| 1.73 1.73 12.7071 12.7008 12.94U3 12.7071 1 |
|---|
|   |

| 0   | 5y1D                          | 2.17        | -2.53 | -2.52 | -2.07 | -2.07 | 12.3117 | -2.52 -2.07 -2.07 12.3117 13.9493 12.7671 13.9493 13.9493 | 12.7671 | 13.9493 | 13.9493 |
|-----|-------------------------------|-------------|-------|-------|-------|-------|---------|---|---------|---------|---------|
|     |                               |             |       |       |       |       |         |   |         |         | I       |
| Min | Min/Max Conditions with Times | ons with Ti | mes   |       |       |       |         |   |         |         |         |
| Min | /Max Conditi                  | ons with Ti | mes   |       |       |       |         |   |         |         |         |

L-80P

5y1D

4.34

-2.75

4.34

0.61

1.43 19.2693 13.6222

19.2693 19.2693 10.0980

Link Min/Max Conditions with Times

Name Sim

Max Flow [cfs]

Min Flow [cfs]

Min/Max Delta Flow

Max Ds Velocity [fps]

Time to Max Flow

Max Us Velocity [fps]

[cfs]

[hrs]

[hrs]

[hrs]

Min/Max Delta Flow

Time to Max Us Velocity

Max Ds Velocity [hrs]

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| L-81P                                      | L-81P                                      |       |       |          | Name     | Link                    |
|--|--|-------|-------|----------|----------|-------------------------|
| 5y1D                                       | 100y3D                                     |       |       |          | Name     | Sim                     |
| 0.05                                       | 0.06                                       |       |       | [cfs]    | Flow     | Max                     |
| 0.00                                       | 0.00                                       |       |       | [cfs]    | Flow     | Min                     |
| 0.00                                       | 0.00                                       |       | [cfs] | Flow     | Delta    | Min/Max                 |
| 0.53                                       | 0.55                                       |       |       | [fps]    | Velocity | Min/Max Max Us          |
|  |  |       |       | [fps]    | Velocity | Max Ds                  |
| 12.0010                                    | 59.9197                                    |       | [hrs] | Flow     | Max      | Time to                 |
| 0.0000                                     | 0.0000                                     |       | [hrs] | Flow     | Min      | Time to                 |
| 10.3768                                    | 53.1667                                    | [hrs] | Flow  | Delta    | Min/Max  | Time to                 |
| 0.00 12.0010 0.0000 10.3768 12.0010 0.0000 | 0.00 59.9197 0.0000 53.1667 59.9197 0.0000 |       | [hrs] | Velocity | Max Us   | Time to Time to Time to |
| 0.0000                                     | 0.0000                                     |       | [hrs] | Velocity | Max Ds   | Time to                 |

Link Min/Max Conditions with Times

| Link  | Sim    | Max   | Min   | Min/Max | Max Us   | Max Ds   | Time to | Time to  | Time to Time to |                | Time to  |
|-------|--------|-------|-------|---------|----------|----------|---------|--|-----------------|----------------|----------|
| Name  | Name   | Flow  | Flow  | Delta   | Velocity | Velocity | Max     | Min  | Min/Max         | Min/Max Max Us | Max Ds   |
|       |        | [cfs] | [cfs] | Flow    | [fps]    | [fps]    | Flow    | Flow   | Delta           | Velocity       | Velocity |
|       |        |       |       | [cfs]   |          |          | [hrs]   | [hrs]  | Flow            | [hrs]          | [hrs]    |
|       |        |       |       |         |          |          |         |  | [hrs]           |                |          |
| L-82P | 100y3D | 5.30  | 0.00  | -4.75   | 0.75     |          | 63.8192 | 0.75 63.8192 0.0000 63.7191 63.8192 63.8192                      | 63.7191         | 63.8192        | 63.8192  |
| L-82P | 5y1D   | 4.76  | 0.00  | -4.76   | 0.67     | 0.67     | 16.5135 | 4.76 0.00 -4.76 0.67 0.67 16.5135 0.0000 16.5136 16.5135 16.5135 | 16.5136         | 16.5135        | 16.5135  |

| Link Min/ | Link Min/Max Conditions with Times | ons with Ti | mes   |   |                |          |         |  |                |          |          |
|-----------|------------------------------------|-------------|-------|---|----------------|----------|---------|--|----------------|----------|----------|
| Link      | Sim                                | Max         | Min   | Min/Max   | Min/Max Max Us | Max Ds   | Time to | Max Ds Time to Time to Time to Time to | Time to        | Time to  | Time to  |
| Name      | Name                               | Flow        | Flow  | Delta   | Velocity       | Velocity | Max     | Min                                    | Min/Max Max Us | Max Us   | Max Ds   |
|           |                                    | [cfs]       | [cfs] | Flow  | [fps]          | [fps]    | Flow    | Flow                                   | Delta          | Velocity | Velocity |
|           |                                    |             |       | [cfs]   |                |          | [hrs]   | [hrs]                                  | Flow           | [hrs]    | [hrs]    |
|           |                                    |             |       |   |                |          |         |  | [hrs]          |          |          |
| L-86PP    | 100y3D                             | 4.04        | -3.74 | 4.04 -3.74 4.04 2.29 2.30 18.7787 29.1653 18.7787 18.7787 18.7787 | 2.29           | 2.30     | 18.7787 | 29.1653                                | 18.7787        | 18.7787  | 18.7787  |
| 1_94DD    | 5,010                              | ר כ         | -2 11 |   | 7 1 76         | _1 7A    | 10 4754 | 21 1570                                | 10 6756        | 21 1570  | 21 1570  |

| 21.1579  | 21.1579  | 10.6756 | 21.1579 | -1.76 -1.76 10.6756 21.1579 10.6756 21.1579 21.1579 | -1.76    | -1.76    | 2.55    | -3.11 | 2.55  | 5y1D   | L-86PP |
|----------|----------|---------|---------|---|----------|----------|---------|-------|-------|--------|--------|
| 18.7787  | 18.7787  | 18.7787 | 29.1653 | 2.29 2.30 18.7787 29.1653 18.7787 18.7787 18.7787   | 2.30     | 2.29     | 4.04    | -3.74 | 4.04  | 100y3D | L-86PP |
|          |          | [hrs]   |         |   |          |          |         |       |       |        |        |
| [hrs]    | [hrs]    | Flow    | [hrs]   | [hrs]   |          |          | [cfs]   |       |       |        |        |
| Velocity | Velocity | Delta   | Flow    | Flow  | [fps]    | [fps]    | Flow    | [cfs] | [cfs] |        |        |
| Max Ds   | Max Us   | Min/Max | Min     | Max   | Velocity | Velocity | Delta   | Flow  | Flow  | Name   | Name   |
| Time to  | Time to  | Time to | Time to | Time to   | Max Ds   | Max Us   | Min/Max | Min   | Max   | Sim    | Link   |

|   | _ |   |   |       |        |
|---|---|---|---|-------|--------|
| ' |   | L-86PP  | L-86PP  |       |        |
|   |   | L-86PP 5y1D   | L-86PP 100y3D   |       |        |
|   |   | 2.55  | 4.04 -3.74 4.04 2.29 2.30 18.7787 29.1653 18.7787 18.7787 18.7787 |       |        |
|   |   | -3.11   | -3.74   |       |        |
|   |   | 2.55  | 4.04  |       | [ตร]   |
|   |   | -1.76   | 2.29  |       |        |
|   |   | -1.76   | 2.30  |       |        |
|   |   | 10.6756   | 18.7787   |       |        |
|   |   | 21.1579   | 29.1653   |       | [LILS] |
|   |   | 10.6756   | 18.7787   | [hrs] | FIOW   |
|   |   | 2.55 -3.11 2.55 -1.76 -1.76 10.6756 21.1579 10.6756 21.1579 21.1579 | 18.7787   |       |        |
|   |   | 21.1579   | 18.7787   |       |        |
| 1 |   |   |   |       |        |

| 18.9277  | -5.12 -3.13 -3.13 10.7485 18.9277 21.1578 18.9277 18.9277 | 21.1578 | 18.9277 | 10.7485 | -3.13    | -3.13       | -5.12   | -5.53 | 3.89        | 5y1D                               | L-89PP    |
|----------|---|---------|---------|---------|----------|-------------|---------|-------|-------------|------------------------------------|-----------|
| 47.0622  | -4.27 60.5223 47.0622 47.0622 47.0622 47.0622             | 47.0622 | 47.0622 | 60.5223 | -4.27    | -7.55 -4.27 | -7.55   | -7.55 | 6.58        | 100y3D                             | L-89PP    |
|          |   | [hrs]   |         |         |          |             |         |       |             |                                    |           |
| [hrs]    | [hrs]   | Flow    | [hrs]   | [hrs]   |          |             | [cfs]   |       |             |                                    |           |
| Velocity | Velocity  | Delta   | Flow    | Flow    | [fps]    | [fps]       | Flow    | [cfs] | [cfs]       |                                    |           |
| Max Ds   | Max Us  | Min/Max | Min     | Max     | Velocity | Velocity    | Delta   | Flow  | Flow        | Name                               | Name      |
| Time to  | Time to   | Time to | Time to | Time to | Max Ds   | Max Us      | Min/Max | Min   | Max         | Sim                                | Link      |
|          |   |         |         |         |          |             |         | mes   | ons with Ti | Link Min/Max Conditions with Times | Link Min/ |

| Link Min/ | Link Min/Max Conditions with | ons with Times | imes  |         |          |          |         |         |         |          |          |
|-----------|------------------------------|----------------|-------|---------|----------|----------|---------|---------|---------|----------|----------|
| Link      | Sim                          | Max            | Min   | Min/Max | Max Us   | Max Ds   | Time to | Time to | Time to | Time to  | Time to  |
| Name      | Name                         | Flow           | Flow  | Delta   | Velocity | Velocity | Max     | Min     | Min/Max | Max Us   | Max Ds   |
|           |                              | [cfs]          | [cfs] | Flow    | [fps]    | [fps]    | Flow    | Flow    | Delta   | Velocity | Velocity |
|           |                              |                |       | [cfs]   |          |          | [hrs]   | [hrs]   | Flow    | [hrs]    | [hrs]    |

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| 12.0519  | 12.0519  | 12.45 -4.03 3.74 3.96 3.96 12.0519 21.1579 10.6756 12.0519 12.0510 | 21.1579 | 12.0519         | 3.96     | 3.96           | 3.74    | -4.03 | 12.45 | L-91PP 5y1D | L-91PP |
|----------|----------|--|---------|-----------------|----------|----------------|---------|-------|-------|-------------|--------|
| 59.9482  | 59.9482  | 5.66 5.49 5.49 59.9482 29.1653 18.7787 59.9482 59.9482             | 29.1653 | 59.9482         | 5.49     | 5.49           | 5.66    | -5.22 | 17.26 | 100y3D      | L-91PP |
|          |          | [hrs]  |         |                 |          |                |         |       |       |             |        |
| [hrs]    | [hrs]    | Flow   | [hrs]   | [hrs]           |          |                | [cfs]   |       |       |             |        |
| Velocity | Velocity | Delta  | Flow    | Flow            | [fps]    | [fps]          | Flow    | [cfs] | [cfs] |             |        |
| Max Ds   | Max Us   | Min/Max  | Min     | Max             | Velocity | Velocity       | Delta   | Flow  | Flow  | Name        | Name   |
| Time to  | Time to  | Time to Time to Time to  | Time to | Time to Time to | Max Ds   | Min/Max Max Us | Min/Max | Min   | Max   | Sim         | Link   |

Link Min/Max Conditions with Times

| 1-96PP                               | L-96PP                       |       |       |          | Name     | Link      |
|--------------------------------------|------------------------------|-------|-------|----------|----------|-----------|
| 5v1D                                 | 100y3D                       |       |       |          | Name     | Sim       |
| 12.75                                | 16.97                        |       |       | [cfs]    | Flow     | Max       |
| -12.37                               | -16.86                       |       |       | [cfs]    | Flow     | Min       |
| -11.21                               | -16.85                       |       | [cfs] | Flow     | Delta    | Min/Max   |
| 2.60                                 | 3.46                         |       |       | [fps]    | Velocity | Max Us    |
| 2.60                                 | 3.46                         |       |       | [fps]    | Velocity | Max Ds    |
| 12.0221                              | 59.9532                      |       | [hrs] | Flow     | Max      | Time to   |
| 2.60 12.0221 21.1578 14.6416 12.0221 | 3.46 59.9532 47.0622 47.0622 |       | [hrs] | Flow     | Min      | o Time to |
| 14.6416                              | 47.0622                      | [hrs] | Flow  | Delta    | Min/Max  | Time to   |
| 12.0221                              | 59.9532                      |       | [hrs] | Velocity | Max Us   | Time to   |
| 12.0221                              | 2 59.9532                    |       | [hrs] | Velocity | Max Ds   | Time to   |

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## FLOOD PROTECTION SEVERITY SCORE CALCULATIONS **APPENDIX 5F**



Appendix F - Flood Protection Severity Score

|   | nber of Structur<br>ing the 100 Yea | •                            | •                            |                     |                                     | Miles of C                | ollector and Lo<br>During th | cal Residential<br>ne 5-Year – 3 Da |           | ed (MCLRS)                             | Flood                        |
|---|-------------------------------------|------------------------------|------------------------------|---------------------|-------------------------------------|---------------------------|------------------------------|-------------------------------------|-----------|--|------------------------------|
|   | NS Count<br>Exceedance=<br>1        | NS Count<br>Exceedance=<br>2 | NS Count<br>Exceedance=<br>3 | ∑E <sub>i</sub> *NS | NS Score<br>(4 Weighting<br>Factor) | MCLRS<br>Exceedance=<br>1 | MCLRS<br>Exceedance=<br>2    | MCLRS<br>Exceedance=<br>3           | ∑Ei*MCLRS | MCLRS Score<br>(2 Weighting<br>Factor) | Protection<br>Severity Score |
| Short-Term Improvements,<br>Current Tidal and Rainfall Conditions       | 4                                   | 0                            | 0                            | 4                   | 16                                  | 0.0                       | 0.0                          | 0.0                                 | 0.0       | 0.0                                    | 16.00                        |
| Mid-Range Improvements,<br>Predicted 2050 Tidal and Rainfall Conditions | 5                                   | 1                            | 0                            | 7                   | 28                                  | 0.0                       | 0.0                          | 0.0                                 | 0.0       | 0.0                                    | 28.00                        |

## Flood Protection Severity Score Calculations



## APPENDIX 5G MID-RANGE INNUDATION MAPS







## **APPENDIX 5H**





Short-Term Node Max Report

| Node Max | Node Max Conditions w/ Times | w/ Times    |       |                    |        |         |         |           |                           |         |         |
|----------|------------------------------|-------------|-------|--------------------|--------|---------|---------|-----------|---------------------------|---------|---------|
| Node     | Sim                          | Warning Max | Max   | Min/Max            | Мах    | Max     | Max     | Time to   | Time to Time to           | Time to | Time to |
| Name     | Name                         | Stage       | Stage | Delta              | Total  | Total   | Surface | Max       | Min/Max                   | Max     | Max     |
|          |                              | [ft]        | [ft]  | Stage              | Inflow | Outflow | Area    | Stage     | Delta                     | Total   | Total   |
|          |                              |             |       | [ft]               | [cfs]  | [cfs]   | [ft2]   | [hr]      | Stage                     | Inflow  | Outflow |
|          |                              |             |       |                    |        |         |         |           | [hr]                      | [hr]    | [hr]    |
| BND-TI   | 100y3D                       | 0.00        | 2.28  | 2.28 0.0004 150.47 | 150.47 | 0.00    | 0       | 72.0001   | 0 72.0001 67.1058 62.7973 | 62.7973 | 0.0000  |
| DE-42    |                              |             |       |                    |        |         |         |           |                           |         |         |
| BND-TI   | 5y1D                         | 0.00        |       | 2.28 0.0004        | 153.80 | 0.00    |         | 0 12.0000 | 8.0329 14.8365            | 14.8365 | 0.0000  |
| DE-42    |                              |             |       |                    |        |         |         |           |                           |         |         |
|          |                              |             |       |                    |        |         |         |           |                           |         |         |

Node Max Conditions w/ Times

| 10.6978 | 0.0009         | 477 12.0133 0.0009 0.0009 10.6978 | 12.0133     |         | 96.17   | 2.78 2.39 0.7698 96.23 | 0.7698      | 2.39  | 2.78    | 5y1D   | MH-16 |
|---------|----------------|-----------------------------------|-------------|---------|---------|------------------------|-------------|-------|---------|--------|-------|
| 47.7938 | 0.0009 47.7938 | 0.0009                            | 477 60.0285 |         | 94.95   | 96.23                  | 2.48 0.7698 |       | 2.78    | 100y3D | MH-16 |
| [hr]    | [hr]           | [hr]                              |             |         |         |                        |             |       |         |        |       |
| Outflow | Inflow         | Stage                             | [hr]        | [ft2]   | [cfs]   | [cfs]                  | [ft]        |       |         |        |       |
| Total   | Total          | Delta                             | Stage       | Area    | Outflow | Inflow                 | Stage       | [ft]  | [ft]    |        |       |
| Max     | Max            | Min/Max                           | Max         | Surface | Total   | Total                  | Delta       | Stage | Stage   | Name   | Name  |
| Time to | Time to        | Time to                           | Time to     | Max     | Max     | Max                    | Min/Max     | Max   | Warning | Sim    | Node  |

| Node Max | Node Max Conditions w/ Times | w/ Times    |                              |         |        |         |         |         |                 |                                    |         |
|----------|------------------------------|-------------|------------------------------|---------|--------|---------|---------|---------|-----------------|------------------------------------|---------|
| Node     | Sim                          | Warning Max | Max                          | Min/Max | Max    | Max     | Max     | Time to | Time to Time to | Time to                            | Time to |
| Name     | Name                         | Stage       | Stage                        | Delta   | Total  | Total   | Surface | Max     | Min/Max         | Max                                | Max     |
|          |                              | [ft]        | [ft]                         | Stage   | Inflow | Outflow | Area    | Stage   | Delta           | Total                              | Total   |
|          |                              |             |                              | [ft]    | [cfs]  | [cfs]   | [ft2]   | [hr]    | Stage           | Inflow                             | Outflow |
|          |                              |             |                              |         |        |         |         |         | [hr]            | [hr]                               | [hr]    |
| MH-40    | 100v3D                       | 1.94        | 1.94 2.48 0.5064 65.86 56.50 | 0.5064  | 65.86  | 56.50   |         | 60.0230 | 0.0009          | 715 60.0230 0.0009 69.3973 70.8418 | 70.8418 |

|       | NOUE MAX CUITUITIONS W/ TITTES | W/ IIIIes |       |                  |        |         |         |                                    |                 |         |         |
|-------|--------------------------------|-----------|-------|------------------|--------|---------|---------|------------------------------------|-----------------|---------|---------|
| Node  | Sim                            | Warning   | Max   | Min/Max          | Max    | Max     | Max     | Time to                            | Time to Time to |         | Time to |
| Name  | Name                           | Stage     | Stage | Delta            | Total  | Total   | Surface | Max                                | Min/Max         | Max     | Max     |
|       |                                | [ft]      | [ft]  | Stage            | Inflow | Outflow | Area    | Stage                              | Delta           | Total   | Total   |
|       |                                |           |       | [ft]             | [cfs]  | [cfs]   | [ft2]   | [hr]                               | Stage           | Inflow  | Outflow |
|       |                                |           |       |                  |        |         |         |                                    | [hr]            | [hr]    | [hr]    |
| MH-40 | 100y3D                         | 1.94      | 2.48  | 1.94 2.48 0.5064 | 65.86  | 56.50   | 715     | 715 60.0230 0.0009 69.3973 70.8418 | 0.0009          | 69.3973 | 70.8418 |
|       | ר <u>ג</u>                     | 2         |       |                  | 2000   |         |         |                                    | 2000            |         | 22222   |

| Node   | Node Ma                      |   | MH-40  |
|--|------------------------------|---|--|
| Sim  | x Conditior                  |   | MH-40 5y1D   |
| Node Sim Warning Max Min/Max Max Max Max Time to Time to Time to Time to | Node Max Conditions w/ Times |   | 1.94 2.36 0.5064 63.30 55.04 715 12.0897 0.0009 0.0009 23.0996 |
| Лах  |                              |   | 2.36   |
| Min/Max  |                              |   | 0.5064   |
| Max  |                              |   | 63.30  |
| Max  |                              |   | 55.04  |
| Max  |                              |   | 715  |
| Time to  |                              |   | 12.0897  |
| Time to  |                              |   | 0.0009   |
| Time to  |                              |   | 0.0009   |
| Time to  |                              |   | 23.0996  |
|  |                              | • |  |

Name

Stage [ft]

Stage [ft]

Delta Stage [ft]

Total Inflow [cfs]

Total Outflow [cfs]

Surface Area [ft2]

Max Stage [hr]

Min/Max Delta Stage

Total Inflow [hr]

Max Total Outflow

[hr]

[hr]

| MH-61 5y1D                       | MH-61 100y3D   |
|----------------------------------|----------------|
| 3.23                             | 3D 3.23        |
| 2.23 0.5795                      | 2.29           |
| 0.5795                           | 2.29 0.5795    |
| 72.44                            | 72.44          |
| 72.44 15.90                      | 72.44 28.25    |
| 202                              | 202            |
| 202 12.1162                      | 202 60.0006    |
| 0.0009                           | 0.0009         |
| 202 12.1162 0.0009 0.0009 0.0030 | 0.0009 32.0804 |
| 0.0030                           | 32.0804        |

Min/Max Max

Max Time to Time to Time to

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 Node Max Conditions w/ Times

 Node
 Sim
 Warning
 Max
 Max

Short-Term Node Max Report

| MH-62 5                            |                                    |      |         |         | Name N  | Node S      |
|------------------------------------|------------------------------------|------|---------|---------|---------|-------------|
| 5y1D                               | 100y3D                             |      |         |         | Name    | Sim         |
| 4.94                               | 4.94                               |      |         | [ft]    | Stage   | Warning Max |
| 2.23                               | 2.28                               |      |         | [ft]    | Stage   | Max         |
| 4.94 2.23 0.0146 15.90 11.83       | 2.28 0.0570 15.90 14.11            |      | [ft]    | Stage   | Delta   | Min/Max Max |
| 15.90                              | 15.90                              |      | [cfs]   | Inflow  | Total   |             |
| 11.83                              | 14.11                              |      | [cfs]   | Outflow | Total   | Max         |
|                                    |                                    |      | [ft2]   | Area    | Surface | Max         |
| 12.1145                            | 59.9991                            |      | [hr]    | Stage   | Max     | Time to     |
| 19.6711                            | 32.0449                            | [hr] | Stage   | Delta   | Min/Max | Time to     |
| 180 12.1145 19.6711 0.0030 12.4489 | 180 59.9991 32.0449 0.0030 32.0818 | [hr] | Inflow  | Total   | Max     | Time to     |
| 12.4489                            | 32.0818                            | [hr] | Outflow | Total   | Max     | Time to     |

Node Max Conditions w/ Times

| INCHE IVIA | INDUE IVIAN CUTICITIONS W/ TITLES |         |       |             |        |         |         |         |                                   |        |         |
|------------|-----------------------------------|---------|-------|-------------|--------|---------|---------|---------|-----------------------------------|--------|---------|
| Node       | Sim                               | Warning | Max   | Min/Max     | Max    | Max     | Max     | Time to | Time to Time to                   |        | Time to |
| Name       | Name                              | Stage   | Stage | Delta       | Total  | Total   | Surface | Max     | Min/Max                           | Max    | Max     |
|            |                                   | [ft]    | [ft]  | Stage       | Inflow | Outflow | Area    | Stage   | Delta                             | Total  | Total   |
|            |                                   |         |       | [ft]        | [cfs]  | [cfs]   | [ft2]   | [hr]    | Stage                             | Inflow | Outflow |
|            |                                   |         |       |             |        |         |         |         | [hr]                              | [hr]   | [hr]    |
| MH-70      | 100y3D                            | 2.18    | 2.35  | 2.35 0.5205 | 65.07  | 14.04   | 627     | 60.0222 | 627 60.0222 0.0009 0.0009 62.3414 | 0.0009 | 62.3414 |
| MH-70 5v1D | 5v1D                              | 2.18    |       | 2.10 0.5205 | 65.07  | 13.88   |         | 12.4089 | 627 12.4089 0.0009 0.0009 14.1014 | 0.0009 | 14.1014 |

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| Node Ma: | Node Max Conditions w/ Times | s w/ Times |       |                   |        |                        |         |                                   |                 |        |                |
|----------|------------------------------|------------|-------|-------------------|--------|------------------------|---------|-----------------------------------|-----------------|--------|----------------|
| Node     | Sim                          | Warning    | Max   | Min/Max           | Max    | Max                    | Max     | Time to                           | Time to Time to |        | Time to        |
| Name     | Name                         | Stage      | Stage | Delta             | Total  | Total                  | Surface | Max                               | Min/Max         | Max    | Max            |
|          |                              | [ft]       | [ft]  | Stage             | Inflow | Outflow                | Area    | Stage                             | Delta           | Total  | Total          |
|          |                              |            |       | [ft]              | [cfs]  | [cfs]                  | [ft2]   | [hr]                              | Stage           | Inflow | Outflow        |
|          |                              |            |       |                   |        |                        |         |                                   | [hr]            | [hr]   | [hr]           |
| MH-73    | 100y3D                       | 2.83       | 2.33  | 2.33 0.1376 19.01 | 19.01  | 7.25                   | 364     | 364 60.0174 0.0009 0.0024 64.0702 | 0.0009          | 0.0024 | 64.0702        |
| MH-73    | MH-73 5v1D                   | 283        | 2 10  | 0 1376            | 19 01  | 2 10 0 1376 19 01 7 20 |         | 364 12 3985                       | 6000 U          | 0 0024 | 0 0024 14 2463 |

| 14.2463 | 364 12.3985 0.0009 0.0024 14.246 | 0.0009  | 12.3985     |         | 7.20    | 19.01  | 2.10 0.1376 19.01 |       | 2.83    | 5y1D   | MH-73 |
|---------|----------------------------------|---------|-------------|---------|---------|--------|-------------------|-------|---------|--------|-------|
| 64.0702 | 0.0024                           | 0.0009  | 364 60.0174 | 364     | 7.25    | 19.01  | 2.33 0.1376 19.01 | 2.33  | 2.83    | 100y3D | MH-73 |
| [hr]    | [hr]                             | [hr]    |             |         |         |        |                   |       |         |        |       |
| Outflow | Inflow                           | Stage   | [hr]        | [ft2]   | [cfs]   | [cfs]  | [ft]              |       |         |        |       |
| Total   | Total                            | Delta   | Stage       | Area    | Outflow | Inflow | Stage             | [ft]  | [ft]    |        |       |
| Max     | Max                              | Min/Max | Max         | Surface | Total   | Total  | Delta             | Stage | Stage   | Name   | Name  |
| Time to | Time to                          | Time to | Time to     | Max     | Max     | Мах    | Min/Max           | Max   | Warning | Sim    | Node  |

|             | -                       |                         |
|-------------|-------------------------|-------------------------|
| Name        | Node                    | Node Max                |
| Name        | Sim                     | /ax Conditions w/ Times |
| Stane Stane | Warning                 | s w/ Times              |
| Stane       | Max                     |                         |
| Delta Total | Min/Max                 |                         |
|             | Мах                     |                         |
| Total       | Max                     |                         |
| Surface Max | Max                     |                         |
|             | Time to                 |                         |
| Min/Max Max | Time to                 |                         |
|             | Time to Time to Time to |                         |
| Max         | Time to                 |                         |
|             |                         |                         |

MH-76 MH-76

100y3D 5y1D

2.87 2.87

2.32 2.10

0.1351 0.1351

16.88 16.88

6.45 5.51

596 596

60.0038 12.3987

[hr] 0.0009 0.0009

0.0009 0.0009 [hr]

63.4222 17.3778

Node Max Conditions w/ Times

Sim Name

Warning Stage [ft]

Max Stage [ft]

Min/Max Delta Stage [ft]

Total Inflow [cfs]

Max Total Outflow [cfs]

Max Surface Area [ft2]

Time to Max Stage [hr]

Time to Min/Max Delta Stage

Total Inflow

Total Outflow [hr]

Time to Max

Total Outflow

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Short-Term Node Max Report

| 17.2356 | 0.0009         | 1128 12.3932 0.0009 0.0009 17.235 | 12.3932      |         | 13.33   | 2.31 2.11 0.1541 19.26 13.33 | 0.1541      | 2.11  | 2.31    | MH-79 5y1D | MH-79 |
|---------|----------------|-----------------------------------|--------------|---------|---------|------------------------------|-------------|-------|---------|------------|-------|
| 65.4640 | 0.0009 65.4640 | 0.0009                            | 1128 60.0001 |         | 14.76   | 19.26 14.76                  | 2.30 0.1541 |       | 2.31    | 100y3D     | MH-79 |
| [hr]    | [hr]           | [hr]                              |              |         |         |                              |             |       |         |            |       |
| Outflow | Inflow         | Stage                             | [hr]         | [ft2]   | [cfs]   | [cfs]                        | [ft]        |       |         |            |       |
| Total   | Total          | Delta                             | Stage        | Area    | Outflow | Inflow                       | Stage       | [ft]  | [ft]    |            |       |
| Max     | Max            | Min/Max                           | Max          | Surface | Total   | Total                        | Delta       | Stage | Stage   | Name       | Name  |
| Time to | Time to        | Time to                           | Time to      | Max     | Max     | Max                          | Min/Max Max | Max   | Warning | Sim        | Node  |

Node Max Conditions w/ Times

| MH-82 5y1D                  | MH-82 100y3D |      |         |         | Name Name |                |
|-----------------------------|--------------|------|---------|---------|-----------|----------------|
| 8.96                        | 3D 8.96      |      |         | [ft]    | e Stage   | Printip AA     |
| 2.11                        | 2.29         |      |         | [ft]    | Stage     | IVIDA          |
| 0.0409                      | 0.0473       |      | [ft]    | Stage   | Delta     | IVIII II IVIAA |
| 10.30                       | 11.16        |      | [cfs]   | Inflow  | Total     | IVIDX          |
| 18.04                       | 18.17        |      | [cfs]   | Outflow | Total     | IVIdX          |
| 674                         | 674          |      | [ft2]   | Area    | Surface   | IVIDX          |
| 674 12.3917 17.2356 17.2356 | 674 60.0001  |      | [hr]    | Stage   | Max       |                |
| 17.2356                     | 65.4640      | [hr] | Stage   | Delta   | Min/Max   |                |
|                             | 65.4640      | [hr] | Inflow  | Total   | Max       |                |
| 16.4702                     | 52.5822      | [hr] | Outflow | Total   | Max       |                |

Short-Term Link Max Report

| Link Min/ | Link Min/Max Conditions with Times | ons with T | mes   |         |          |          |         |         |  |          |          |
|-----------|------------------------------------|------------|-------|---------|----------|----------|---------|---------|--|----------|----------|
| Link      | Sim                                | Мах        | Min   | Min/Max | Max Us   | Max Ds   | Time to | Time to | Time to Time to                              |          | Time to  |
| Name      | Name                               | Flow       | Flow  | Delta   | Velocity | Velocity | Max     | Min     | Min/Max                                      | Max Us   | Max Ds   |
|           |                                    | [cfs]      | [cfs] | Flow    | [fps]    | [fps]    | Flow    | Flow    | Delta  | Velocity | Velocity |
|           |                                    |            |       | [cfs]   |          |          | [hrs]   | [hrs]   | Flow   | [hrs]    | [hrs]    |
|           |                                    |            |       |         |          |          |         |         | [hrs]  |          |          |
| L-01P     | 100y3D                             | 0.87       | 0.00  | 0.01    | 1.11     | 1.11     | 59.9433 | 35.0421 | 1.11 59.9433 35.0421 61.5260 59.9433 59.9433 | 59.9433  | 59.9433  |
| L-01P     | 5y1D                               | 0.77       | 0.00  | 0.01    | 0.98     | 0.98     | 12.0162 | 20.5448 | 0.98 12.0162 20.5448 12.5447 12.0162 12.0162 | 12.0162  | 12.0162  |
|           |                                    |            |       |         |          |          |         |         |  |          |          |

Link Min/Max Conditions with Times

|                             | 11.5103 | 2.11 12.0130 0.0000 11.5103 12.0130 12.0130 | 12.0130 |          | 2.11     | 0.00    | 0.00  | 1.66  | 5y1D   | L-02P |
|-----------------------------|---------|---|---------|----------|----------|---------|-------|-------|--------|-------|
| 2.50 60.0099 0.0000 62.6321 | Ø       | 0.000                                       | 60.0099 | 2.50     | 2.50     | 0.00    | 0.00  | 1.97  | 100y3D | L-02P |
| [hrs]                       |         |   |         |          |          |         |       |       |        |       |
| Flow                        |         | [hrs]                                       | [hrs]   |          |          | [cfs]   |       |       |        |       |
| Delta                       |         | Flow  | Flow    | [fps]    | [fps]    | Flow    | [cfs] | [cfs] |        |       |
| Min/Max                     |         | Min   | Max     | Velocity | Velocity | Delta   | Flow  | Flow  | Name   | Name  |
| to Time to                  | to      | Time to                                     | Time to | Max Ds   | Max Us   | Min/Max | Min   | Max   | Sim    | Link  |

Link Min/Max Conditions with Times

| Link  | Sim    | Max   | Min   | Min/Max | Max Us   | Max Ds   | Time to | Time to  | Time to | Time to  | Time to  |
|-------|--------|-------|-------|---------|----------|----------|---------|--|---------|----------|----------|
| Name  | Name   | Flow  | Flow  | Delta   | Velocity | Velocity | Max     | Min  | Min/Max | Max Us   | Max Ds   |
|       |        | [cfs] | [cfs] | Flow    | [fps]    | [fps]    | Flow    | Flow   | Delta   | Velocity | Velocity |
|       |        |       |       | [cfs]   |          |          | [hrs]   | [hrs]  | Flow    | [hrs]    | [hrs]    |
|       |        |       |       |         |          |          |         |  | [hrs]   |          |          |
| L-03P | 100y3D | 0.34  | 0.00  | 0.00    | 0.43     | 0.43     | 60.0138 | 0.43 0.43 60.0138 55.1280 16.1200 60.0138 60.0138                | 16.1200 | 60.0138  | 60.0138  |
| L-03P | 5y1D   | 0.31  | 0.00  | 0.00    | 0.40     | 0.40     | 12.0136 | 0.31 0.00 0.00 0.40 0.40 12.0136 11.7724 11.8120 12.0136 12.0136 | 11.8120 | 12.0136  | 12.0136  |

| _   | -  |       |       |          | Z        |                         |
|---|--|-------|-------|----------|----------|-------------------------|
| L-03P   | L-03P  |       |       |          | Name     | Link                    |
| 5y1D  | 100y3D                                       |       |       |          | Name     | Sim                     |
| 0.31  | 0.34   |       |       | [cfs]    | Flow     | Max                     |
| 0.31 0.00   | 0.00   |       |       | [cfs]    | Flow     | Min                     |
| 0.00  | 0.00   |       | [cfs] | Flow     | Delta    | Min/Max                 |
| 0.40  | 0.43   |       |       | [fps]    | Velocity | Max Us                  |
| 0.40  | 0.43   |       |       | [fps]    | Velocity | Max Ds                  |
| 12.0136   | 60.0138                                      |       | [hrs] | Flow     | Max      | Time to                 |
| 11.7724   | 55.1280                                      |       | [hrs] | Flow     | Min      | Time to                 |
| 11.8120   | 16.1200                                      | [hrs] | Flow  | Delta    | Min/Max  | Time to                 |
| 0.00 0.40 0.40 12.0136 11.7724 11.8120 12.0136 12.013 | 0.43 60.0138 55.1280 16.1200 60.0138 60.0138 |       | [hrs] | Velocity | Max Us   | Time to Time to Time to |
| 12.0136   | 60.0138                                      |       | [hrs] | Velocity | Max Ds   | Time to                 |

Name Max Flow [cfs] Min Flow [cfs] Min/Max Delta

Max Ds Velocity

Time to Max

Time to Max Us

Velocity

[fps]

L-04P L-04P

5y1D 100y3D

0.70 0.61

0.00 0.00

0.00

0.89 0.77

0.89 60.0106 0.77 12.0110

0.0000

16.1218 [hrs]

60.0106

60.0106

0.0000 11.8113 12.0110 12.0110

Link Min/Max Conditions with Times

Sim Name

Max Flow

Min Flow [cfs]

Min/Max Delta

Max Us Velocity [fps]

Max Ds Velocity

Time to Max Flow

Time to Min/Max Delta

Time to Max Us Velocity

Velocity

[cfs]

Flow

[fps]

Flow

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Link Min/Max Conditions with Times

| L-05P  | L-05P  |       |       |          | Name     | Link            |
|--|--|-------|-------|----------|----------|-----------------|
| 5y1D   | 100y3D   |       |       |          | Name     | Sim             |
| 0.26   | 0.28   |       |       | [cfs]    | Flow     | Мах             |
| 0.00   | 0.00   |       |       | [cfs]    | Flow     | Min             |
| 0.01   | 0.01   |       | [cfs] | Flow     | Delta    | Min/Max Max Us  |
| 0.34   |  |       |       | [fps]    | Velocity | Max Us          |
| 0.34   | 0.36   |       |       | [fps]    | Velocity | Max Ds          |
| 12.0049  | 60.0049  |       | [hrs] | Flow     | Max      | Time to         |
| 0.0000   | 0.0000   |       | [hrs] | Flow     | Min      | Time to         |
| 11.9394  | 59.6140  | [hrs] | Flow  | Delta    | Min/Max  | Time to Time to |
| 0.26 0.00 0.01 0.34 0.34 12.0049 0.000 11.9394 12.0049 12.0049 | 0.36 0.36 60.0049 0.0000 59.6140 60.0049 60.0049 |       | [hrs] | Velocity | Max Us   | Time to         |
| 12.0049  | 60.0049  |       | [hrs] | Velocity | Max Ds   | Time to         |

Link Min/Max Conditions with Times

| 12.0418  | 12.0418  | 12.0414 | 1.48 1.48 12.0418 0.0000 12.0414 12.0418 12.0418 | 12.0418 | 1.48     | 1.48      | 0.00 0.02 |       | 1.16  | 5y1D   | L-06P |
|----------|----------|---------|--|---------|----------|-----------|-----------|-------|-------|--------|-------|
| 60.1028  | 60.1028  | 59.9124 | 1.77 60.1028 0.0000 59.9124 60.1028 60.1028      | 60.1028 |          | 0.03 1.77 |           | 0.00  | 1.39  | 100y3D | L-06P |
|          |          | [hrs]   |  |         |          |           |           |       |       |        |       |
| [hrs]    | [hrs]    | Flow    | [hrs]  | [hrs]   |          |           | [cfs]     |       |       |        |       |
| Velocity | Velocity | Delta   | Flow   | Flow    | [fps]    | [fps]     | Flow      | [cfs] | [cfs] |        |       |
| Max Ds   | Max Us   | Min/Max | Min  | Мах     | Velocity | Velocity  | Delta     | Flow  | Flow  | Name   | Name  |
| Time to  | Time to  | Time to | Time to  | Time to | Max Ds   | Max Us    | Min/Max   | Min   | Max   | Sim    | Link  |

| Link Min/ | Link Min/Max Conditions with Times | ons with T | imes  |         |                |          |         |   |         |          |          |
|-----------|------------------------------------|------------|-------|---------|----------------|----------|---------|---|---------|----------|----------|
| Link      | Sim                                | Мах        | Min   | Min/Max | Min/Max Max Us | Max Ds   | Time to | Time to Time to Time to Time to   | Time to | Time to  | Time to  |
| Name      | Name                               | Flow       | Flow  | Delta   | Velocity       | Velocity | Max     | Min   | Min/Max | Max Us   | Max Ds   |
|           |                                    | [cfs]      | [cfs] | Flow    | [fps]          | [fps]    | Flow    | Flow  | Delta   | Velocity | Velocity |
|           |                                    |            |       | [cfs]   |                |          | [hrs]   | [hrs]   | Flow    | [hrs]    | [hrs]    |
|           |                                    |            |       |         |                |          |         |   | [hrs]   |          |          |
| L-07P     | 100y3D                             |            | -3.80 | -3.80   | -2.15          | -2.15    | 60.2381 | 2.58 -3.80 -3.80 -2.15 -2.15 60.2381 60.2293 60.2293 60.2293 60.2293        | 60.2293 | 60.2293  | 60.2293  |
| 1_07P     | 5v1D                               | 1 87       | -3 16 | -2 02   | _1 70          | _1 70    | 10 1158 | 1 87 _ 2 16 _ 2 00 _ 1 70 _ 1 70 1 11 58 1 2 1511 1 2 220 1 2 1511 1 2 1511 | 12 2220 | 10 1511  | 10 1511  |

| 12.1511  | 1.87         -3.16         -2.92         -1.79         -1.79         12.1158         12.1511         12.2320         12.1511         12.151 | 12.2320         | 12.1511         | 12.1158 | -1.79    | -1.79    | -2.92   | -3.16 | 1.87  | 5y1D   | L-07P |
|----------|---|-----------------|-----------------|---------|----------|----------|---------|-------|-------|--------|-------|
| 60.2293  | -2.15 60.2381 60.2293 60.2293 60.2293 60.2293   | 60.2293         | 60.2293         | 60.2381 | -2.15    | -2.15    | -3.80   | -3.80 | 2.58  | 100y3D | L-07P |
|          |   | [hrs]           |                 |         |          |          |         |       |       |        |       |
| [hrs]    | [hrs]   | Flow            | [hrs]           | [hrs]   |          |          | [cfs]   |       |       |        |       |
| Velocity | Velocity  | Delta           | Flow            | Flow    | [fps]    | [fps]    | Flow    | [cfs] | [cfs] |        |       |
| Max Ds   | Min/Max Max Us  | Min/Max         | Min             | Max     | Velocity | Velocity | Delta   | Flow  | Flow  | Name   | Name  |
| Time to  | Time to   | Time to Time to | Time to Time to | Time to | Max Ds   | Max Us   | Min/Max | Min   | Max   | Sim    | Link  |

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L-08P

100y3D 5y1D

1.70 1.41

-0.71 -0.86

1.22 0.71

0.96 0.80

0.96 61.3764 0.80 11.9086

61.0116 12.1513

60.2089 23.3520

61.3764 11.9086

61.3764 11.9086

[hrs]

Link Min/Max Conditions with Times

Name Sim

Flow [cfs] Max

Min Flow [cfs]

Min/Max Delta Flow

Velocity [fps]

Velocity

Time to Max Flow

Min/Max Delta Flow

Max Us Velocity

Max Ds Velocity [hrs]

Max Ds

[cfs]

[hrs]

[hrs]

[hrs]

Link Min/Max Conditions with Times

Sim Name

Max Flow [cfs]

Min Flow [cfs]

Min/Max Delta Flow [cfs]

Max Us Velocity

Max Ds Velocity [fps]

Time to Max Flow [hrs]

Min Flow [hrs]

Time to Min/Max Delta

Time to Max Us Velocity

Time to Max Ds Velocity

[hrs]

| _       |  |
|---------|--|
| Time to |  |
| Time to |  |
| Time to |  |
| Time ti |  |

N

| L-09P 5y1D                                  | L-09P 100y3D                                 |       |       | _        | Name Name F | Link Sim N     |
|---|--|-------|-------|----------|-------------|----------------|
| 2.49  | 3.20   |       |       | [cfs]    | Flow        | Max            |
| -2.16                                       | -1.98  |       |       | [cfs]    | Flow        | Min            |
| 2.49 -2.16 -0.94 1.41                       | 3.20 -1.98 -1.09                             |       | [cfs] | Flow     | Delta       | Min/Max        |
| 1.41  | 1.81   |       |       | [fps]    | Velocity    | Min/Max Max Us |
| 1.41  | 1.81   |       |       | [fps]    | Velocity    | Max Ds         |
| 12.5724                                     | 61.1486                                      |       | [hrs] | Flow     | Max         | Time to        |
| 11.9921                                     | 59.7252                                      |       | [hrs] | Flow     | Min         | Time to        |
| 23.3520                                     | 60.2310                                      | [hrs] | Flow  | Delta    | Min/Max     | Time to        |
| 1.41 12.5724 11.9921 23.3520 12.5724 12.572 | 1.81 61.1486 59.7252 60.2310 61.1486 61.1486 |       | [hrs] | Velocity | Max Us      | Time to        |
| 12.5724                                     | 61.1486                                      |       | [hrs] | Velocity | Max Ds      | Time to        |

Link Min/Max Conditions with Times

| 22.1929  | 14.6756        | -10.72 -10.72 -6.07 6.13 22.1929 14.6756 14.6756 14.6756 22.1929 | 14.6756 | 22.1929         | 6.13     | -6.07    | -10.72             | -10.72 | 10.56 | L-101PP 5y1D   | L-101PP |
|----------|----------------|--|---------|-----------------|----------|----------|--------------------|--------|-------|----------------|---------|
| 15.3547  | 70.0756        | 5.94 -6.17 70.0756 62.9751 70.0756 70.0756 15.354                | 62.9751 | 70.0756         | -6.17    |          | 10.49 -10.36 10.49 | -10.36 | 10.49 | L-101PP 100y3D | L-101PP |
|          |                | [hrs]  |         |                 |          |          |                    |        |       |                |         |
| [hrs]    | [hrs]          | Flow   | [hrs]   | [hrs]           |          |          | [cfs]              |        |       |                |         |
| Velocity | Velocity       | Delta  | Flow    | Flow            | [fps]    | [fps]    | Flow               | [cfs]  | [cfs] |                |         |
| Max Ds   | Min/Max Max Us | Min/Max  | Min     | Мах             | Velocity | Velocity | Delta              | Flow   | Flow  | Name           | Name    |
| Time to  |                | Time to Time to  |         | Time to Time to | Max Ds   | Max Us   | Min/Max            | Min    | Max   | Sim            | Link    |

t

| Link Min/I   | Link Min/Max Conditions with Times | ons with T | imes   |         |                |          |         |  |         |          |          |
|--------------|------------------------------------|------------|--------|---------|----------------|----------|---------|--|---------|----------|----------|
| Link         | Sim                                | Max        | Min    | Min/Max | Min/Max Max Us | Max Ds   | Time to | Time to Time to Time to Time to  | Time to | Time to  | Time to  |
| Name         | Name                               | Flow       | Flow   | Delta   | Velocity       | Velocity | Мах     | Min  | Min/Max | Max Us   | Max Ds   |
|              |                                    | [cfs]      | [cfs]  | Flow    | [fps]          | [fps]    | Flow    | Flow   | Delta   | Velocity | Velocity |
|              |                                    |            |        | [cfs]   |                |          | [hrs]   | [hrs]  | Flow    | [hrs]    | [hrs]    |
|              |                                    |            |        |         |                |          |         |  | [hrs]   |          |          |
| L-102PP      | 100y3D                             | 11.01      | -11.20 | -11.20  | -6.34          | -6.34    | 35.6951 | L-102PP 100y3D 11.01 -11.20 -11.20 -6.34 -6.34 35.6951 70.2836 70.2836 70.2836 70.2836 70.2836 | 70.2836 | 70.2836  | 70.2836  |
| 1-10300 5v1D |                                    | 10 48      | -11 35 | -11 35  | -6 42          | CD 4-    | 10 8033 |  | 10 8107 | 10 8107  | 10 8107  |

| 10.8107  | 10.8107  | 10.8107               | 10.48 -11.35 -11.35 -6.42 -6.42 10.8933 10.8107 10.8107 10.8107 10.8107                        | 10.8933 | -6.42    | -6.42    | -11.35 | -11.35 | 10.48 | L-102PP 5y1D | L-102PP |
|----------|----------|-----------------------|--|---------|----------|----------|--------|--------|-------|--------------|---------|
| 70.2836  | 70.2836  | 70.2836               | L-102PP 100y3D 11.01 -11.20 -11.20 -6.34 -6.34 35.6951 70.2836 70.2836 70.2836 70.2836 70.2836 | 35.6951 | -6.34    | -6.34    | -11.20 | -11.20 | 11.01 | 100y3D       | L-102PP |
|          |          | [hrs]                 |  |         |          |          |        |        |       |              |         |
| [hrs]    | [hrs]    | Flow                  | [hrs]  | [hrs]   |          |          | [cfs]  |        |       |              |         |
| Velocity | Velocity | Delta                 | Flow   | Flow    | [fps]    | [fps]    | Flow   | [cfs]  | [cfs] |              |         |
| Max Ds   | Max Us   | Min/Max Max Us Max Ds | Min  | Max     | Velocity | Velocity | Delta  | Flow   | Flow  | Name         | Name    |
|          |          |                       |  |         |          |          |        |        | IVIDA |              |         |

|   | ink Min/N | onditi | ons with Ti | mes   |         |                | ,        |         |         |  |          |          | - |
|---|-----------|--------|-------------|-------|---------|----------------|----------|---------|---------|--|----------|----------|---|
|   | Link      | Sim    | Max         | Min   | Min/Max | Min/Max Max Us | Max Ds   | Time to | Time to | Max Ds Time to Time to Time to Time to | Time to  | Time to  |   |
| z | Name      | Name   | Flow        | Flow  | Delta   | Velocity       | Velocity | Max     | Min     | Min/Max                                | Max Us   | Max Ds   |   |
|   |           |        | [cfs]       | [cfs] | Flow    | [fps]          | [fps]    | Flow    | Flow    | Delta                                  | Velocity | Velocity |   |
|   |           |        |             |       | [cfs]   |                |          | [hrs]   | [hrs]   | Flow                                   | [hrs]    | [hrs]    |   |

L-103PP L-103PP

100y3D 5y1D

11.23 10.87

-11.77 -10.30

-11.77 10.87

-6.66 6.15

 -6.66
 36.2871
 47.8649
 47.8649
 47.8649

 6.18
 23.3138
 14.3520
 23.3138
 23.3138

47.8649 10.9289

Link Min/Max Conditions with Times

Name

Max Flow [cfs]

Min Flow [cfs]

Min/Max Delta Flow

Max Ds Velocity [fps]

Time to Max Flow

Time to Max Us Velocity

Max Ds Velocity [hrs]

Max Us Velocity [fps]

Sim

Min/Max Delta Flow [hrs]

[cfs]

[hrs]

[hrs]

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| 22.7431  | 11.17 -10.65 11.17 6.32 6.36 22.7431 10.6978 22.7431 22.7431 22.7431 | 22.7431 | 10.6978         | 22.7431 | 6.36     | 6.32           | 11.17   | -10.65 | 11.17 | L-105PP 5y1D   | L-105PP |
|----------|--|---------|-----------------|---------|----------|----------------|---------|--------|-------|----------------|---------|
| 46.467   | 6.29 6.79 46.4676 46.7227 46.4676 46.4676 46.4676                    | 46.4676 | 46.7227         | 46.4676 | 6.79     | 6.29           | 11.10   | -10.80 | 11.12 | L-105PP 100y3D | L-105PP |
|          |  | [hrs]   |                 |         |          |                |         |        |       |                |         |
| [hrs]    | [hrs]  | Flow    | [hrs]           | [hrs]   |          |                | [cfs]   |        |       |                |         |
| Velocity | Velocity   | Delta   | Flow            | Flow    | [fps]    | [fps]          | Flow    | [cfs]  | [cfs] |                |         |
| Max Ds   | Max Us   | Min/Max | Min             | Max     | Velocity | Velocity       | Delta   | Flow   | Flow  | Name           | Name    |
| Time to  | Time to  | Time to | Time to Time to | Time to | Max Ds   | Min/Max Max Us | Min/Max | Min    | Max   | Sim            | Link    |

Link Min/Max Conditions with Times

|      |     | 001000       |        | 1100                                  |                              |          |          |         |   |                 |          |          |
|------|-----|--------------|--------|---------------------------------------|------------------------------|----------|----------|---------|---|-----------------|----------|----------|
| Link |     | Sim          | Max    | Min                                   | Min/Max                      | Max Us   | Max Ds   | Time to | Time to   | Time to Time to |          | Time to  |
| Name | le  | Name         | Flow   | Flow                                  | Delta                        | Velocity | Velocity | Max     | Min   | Min/Max Max Us  |          | Max Ds   |
|      |     |              | [cfs]  | [cfs]                                 | Flow                         | [fps]    | [fps]    | Flow    | Flow  | Delta           | Velocity | Velocity |
|      |     |              |        |                                       | [cfs]                        |          |          | [hrs]   | [hrs]   | Flow            | [hrs]    | [hrs]    |
|      |     |              |        |                                       |                              |          |          |         |   | [hrs]           |          |          |
| L-10 | 6PP | 100y3D       | 119.32 | L-106PP 100y3D 119.32 -121.28 -121.28 | -121.28                      | -7.63    | -7.63    | 24.8898 | -7.63 24.8898 46.8027 46.8027 46.8027 46.8027           | 46.8027         | 46.8027  | 46.8027  |
| 1-10 | 6PP | 1-106PP 5v1D | 115.48 | -119.52                               | 115 48 -119 52 -119 51 -7 51 | -7.51    | -7.66    | 22.0249 | -7 66   22 0249   14 8471   14 8471   14 8471   14 8471 | 14.8471         | 14.8471  | 14.8471  |

| Link Min/I   | Link Min/Max Conditions with Times   | ons with Ti | mes     |         |                |          |         |   |         |          |          |
|--------------|--|-------------|---------|---------|----------------|----------|---------|---|---------|----------|----------|
| Link         | Sim  | Max         | Min     | Min/Max | Min/Max Max Us | Max Ds   | Time to | Time to Time to Time to Time to   | Time to | Time to  | Time to  |
| Name         | Name   | Flow        | Flow    | Delta   | Velocity       | Velocity | Max     | Min   | Min/Max | Max Us   | Max Ds   |
|              |  | [cfs]       | [cfs]   | Flow    | [fps]          | [fps]    | Flow    | Flow  | Delta   | Velocity | Velocity |
|              |  |             |         | [cfs]   |                |          | [hrs]   | [hrs]   | Flow    | [hrs]    | [hrs]    |
|              |  |             |         |         |                |          |         |   | [hrs]   |          |          |
| L-109PP      | L-109PP 100y3D 126.82 -123.49 126.82 7.97 7.97 47.3867 48.3271 47.3867 47.3867 47.3867 47.3867 47.3867 | 126.82      | -123.49 | 126.82  | 7.97           | 7.97     | 47.3867 | 48.3271   | 47.3867 | 47.3867  | 47.3867  |
| 1-100PP 5v1D |  | 110 20      | -113 30 | 110 20  | 7 50           | 7 50     | 10 6978 | 1 1 1 2 2 3 1 1 2 2 3 1 1 2 2 3 1 2 5 1 1 2 5 1 1 2 5 1 1 2 5 1 1 2 5 1 1 2 5 1 1 2 5 1 1 2 5 1 1 2 5 1 1 2 5 1 | 10 6978 | 10 6978  | 10 6978  |

| 10.6978  | 10.6978  | 7.50 7.50 10.6978 11.4773 10.6978 10.6978 10.697              | 11.4773 | 10.6978 | 7.50     |          | 119.29  | -113.30 | 119.29 -113.30 119.29 | L-109PP 5y1D   | L-109PP |
|----------|----------|---|---------|---------|----------|----------|---------|---------|-----------------------|----------------|---------|
| 47.3867  | 47.3867  | 7.97 47.3867 48.3271 47.3867 47.3867 47.3867                  | 48.3271 | 47.3867 | 7.97     | 7.97     | 126.82  | -123.49 | 126.82 -123.49 126.82 | L-109PP 100y3D | L-109PP |
|          |          | [hrs]   |         |         |          |          |         |         |                       |                |         |
| [hrs]    | [hrs]    | Flow  | [hrs]   | [hrs]   |          |          | [cfs]   |         |                       |                |         |
| Velocity | Velocity | Delta   | Flow    | Flow    | [fps]    | [fps]    | Flow    | [cfs]   | [cfs]                 |                |         |
| Max Ds   | Max Us   | Min/Max   | Min     | Max     | Velocity | Velocity | Delta   | Flow    | Flow                  | Name           | Name    |
| Time to  | Time to  | Min/Max Max Us Max Ds Time to Time to Time to Time to Time to | Time to | Time to | Max Ds   | Max Us   | Min/Max | Min     | Max                   | Sim            | Link    |

| Link Min/                          | L-109PP  | L-109PP  |
|------------------------------------|--|--|
| Link Min/Max Conditions with Times | L-109PP 5y1D 119.29 -113.30 119.29 7.50 7.50 10.6978 11.4773 10.6978 10.6978 10.6978 10.6978 | L-109PP 100y3D 126.82 -123.49 126.82 7.97 7.97 47.3867 48.3271 47.3867 47.3867 47.3867 47.3867 |
| ons with Ti                        | 119.29   | 126.82   |
| mes                                | -113.30  | -123.49  |
|                                    | 119.29   | 126.82   |
|                                    | 7.50   | 7.97   |
|                                    | 7.50   | 7.97   |
|                                    | 10.6978  | 47.3867  |
|                                    | 11.4773  | 48.3271  |
|                                    | 10.6978  | 47.3867  |
|                                    | 10.6978  | 47.3867  |
|                                    | 10.6978  | 47.3867  |

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| Link Min/ | Link Min/Max Conditions with Times | ons with T | imes  |         |          |          |         |         | 1               | 1        |          |
|-----------|------------------------------------|------------|-------|---------|----------|----------|---------|---------|-----------------|----------|----------|
| Link      | Sim                                | Мах        | Min   | Min/Max | Max Us   | Max Ds   | Time to | Time to | Time to Time to | Time to  | Time to  |
| Name      | Name                               | Flow       | Flow  | Delta   | Velocity | Velocity | Max     | Min     | Min/Max Max Us  | Max Us   | Max Ds   |
|           |                                    | [cfs]      | [cfs] | Flow    | [fps]    | [fps]    | Flow    | Flow    | Delta           | Velocity | Velocity |
|           |                                    |            |       | [cfs]   |          |          | [hrs]   | [hrs]   | Flow            | [hrs]    | [hrs]    |
|           |                                    |            |       |         |          |          |         |         |                 |          |          |

L-10P L-10P

100y3D 5y1D

2.51 1.50

-2.65 -2.91

-2.65 -2.88

-1.50 -1.65

-1.50 1.78

60.1865 12.0596

60.4151 11.9839

60.4151 12.1804

60.4151 11.9839

60.4151 18.0791

[hrs]

Sim Name

Max Flow [cfs]

Min Flow [cfs]

Min/Max Delta Flow [cfs]

Max Us Velocity

Max Ds Velocity [fps]

Time to Max Flow [hrs]

Time to Min Flow [hrs]

Time to Min/Max Delta Flow

Time to Max Us Velocity

Time to Max Ds Velocity

| 22      | 22.7591 | 117.36 -114.17 117.35 7.38 7.38 22.7591 10.8107 22.7591 22.7591 22.7591 | 22.7591 | 7.38     | 7.38           | 117.35  | -114.17 | 117.36                               | L-110PP 5y1D | L-110PP |
|---------|---------|---|---------|----------|----------------|---------|---------|--------------------------------------|--------------|---------|
| 2747    | 70.2    | 7.95 7.95 70.2747 33.8756 70.2747 70.2747 70.2747                       | 70.2747 | 7.95     | 7.95           | 126.43  | -118.36 | L-110PP 100y3D 126.43 -118.36 126.43 | 100y3D       | L-110PP |
|         | [hrs]   |   |         |          |                |         |         |                                      |              |         |
|         | Flow    | [hrs]   | [hrs]   |          |                | [cfs]   |         |                                      |              |         |
| ta      | Delta   | Flow  | Flow    | [fps]    | [fps]          | Flow    | [cfs]   | [cfs]                                |              |         |
| Min/Max | Min     | Min   | Max     | Velocity | Velocity       | Delta   | Flow    | Flow                                 | Name         | Name    |
| Time to | Tim     | Time to   | Time to | Max Ds   | Min/Max Max Us | Min/Max | Min     | Max                                  | Sim          | Link    |

Link Min/Max Conditions with Times

| 14.7093  | 10.8107  | 10.8107                 | 7.31 7.63 10.8107 10.8933 10.8107 10.8107 14.7093 | 10.8107 | 7.63     |          | 116.19 -111.66 116.19 | -111.66 | 116.19                | 5y1D           | L-111PP 5y1D |
|----------|----------|-------------------------|---|---------|----------|----------|-----------------------|---------|-----------------------|----------------|--------------|
| 14.9387  | 46.5005  | 46.5005 46.5005 14.9387 | 7.10 46.5005 12.9991                              | 46.5005 | 7.10     | 7.09     | 112.69                | -110.69 | 112.69 -110.69 112.69 | L-111PP 100y3D | L-111PP      |
|          |          | [hrs]                   |   |         |          |          |                       |         |                       |                |              |
| [hrs]    | [hrs]    | Flow                    | [hrs]   | [hrs]   |          |          | [cfs]                 |         |                       |                |              |
| Velocity | Velocity | Delta                   | Flow  | Flow    | [fps]    | [fps]    | Flow                  | [cfs]   | [cfs]                 |                |              |
| Max Ds   | Max Us   | Min/Max                 | Min   | Max     | Velocity | Velocity | Delta                 | Flow    | Flow                  | Name           | Name         |
| Time to  | Time to  | Time to Time to         | Time to   | Time to | Max Ds   | < Max Us | Min/Max               | Min     | Max                   | Sim            | Link         |

| Link Min/I | Link Min/Max Conditions with Times   | ons with Ti | mes     |         |                |          |         |  |         |  |          |
|------------|--|-------------|---------|---------|----------------|----------|---------|--|---------|--|----------|
| Link       | Sim  | Max         | Min     | Min/Max | Min/Max Max Us | Max Ds   | Time to | Max Ds Time to Time to Time to Time to | Time to | Time to  | Time to  |
| Name       | Name   | Flow        | Flow    | Delta   | Velocity       | Velocity | Мах     | Min                                    | Min/Max | Max Us   | Max Ds   |
|            |  | [cfs]       | [cfs]   | Flow    | [fps]          | [fps]    | Flow    | Flow                                   | Delta   | Velocity   | Velocity |
|            |  |             |         | [cfs]   |                |          | [hrs]   | [hrs]                                  | Flow    | [hrs]  | [hrs]    |
|            |  |             |         |         |                |          |         |  | [hrs]   |  |          |
| L-115PP    | L-115PP   100y3D   137.01   -110.49   137.01   8.61   9.11   69.9645   70.0756   69.9645   69.9645   69.9645   69.9645 | 137.01      | -110.49 | 137.01  | 8.61           | 9.11     | 69.9645 | 70.0756                                | 69.9645 | 69.9645  | 69.9645  |
| 1-115PP    | 1-115PP 5v1D   | 130 46      | -100 16 | 130 46  | NC 8           | 9 24     | 14 6008 | 22 1020                                | 14 6008 | 130 46 - 100 16 130 46 8 20 9 24 14 6008 27 1020 14 6008 14 6008 14 6008 | 14 6008  |

| 14.6098  | 14.6098               | 14.6098  | 130.46 -109.16 130.46 8.20 9.24 14.6098 22.1929 14.6098 14.6098 14.6098 | 14.6098  | 9.24     | 8.20     | 130.46  | -109.16 | 130.46                | L-115PP 5y1D   | L-115PP |
|----------|-----------------------|----------|---|----------|----------|----------|---------|---------|-----------------------|----------------|---------|
| 69.9645  | 69.9645               | 69.9645  | 8.61 9.11 69.9645 70.0756 69.9645 69.9645 69.9645                       | 69.9645  | 9.11     |          | 137.01  | -110.49 | 137.01 -110.49 137.01 | L-115PP 100y3D | L-115PP |
|          |                       | [hrs]    |   |          |          |          |         |         |                       |                |         |
| [hrs]    | [hrs]                 | Flow     | [hrs]   | [hrs]    |          |          | [cfs]   |         |                       |                |         |
| Velocity | Velocity              | Delta    | Flow  | Flow     | [fps]    | [fps]    | Flow    | [cfs]   | [cfs]                 |                |         |
| Max Ds   | Min/Max Max Us Max Ds | Min/Max  | Min   | Max      | Velocity | Velocity | Delta   | Flow    | Flow                  | Name           | Name    |
| lime to  | l ime to              | l ime to | Min/Max Max Us Max Us lime to lime to lime to lime to lime to           | l ime to | Max Us   | Max Us   | Min/Max | MIN     | Max                   | SIM            | Link    |

|  |   | _   |       |       |          |   |
|--|---|---|-------|-------|----------|---|
|  | L-115PP 5y1D  | L-115PP   |       |       |          |   |
|  | 5y1D  | L-115PP 100y3D                                    |       |       |          |   |
|  | 130.46  | 137.01 -110.49 137.01                             |       |       | [cfs]    |   |
|  | -109.16   | -110.49   |       |       | [cfs]    |   |
|  | 130.46  | 137.01  |       | [cfs] | Flow     |   |
|  | 8.20  |   |       |       | [fps]    | Ļ |
|  | 9.24  | 9.11  |       |       | [fps]    | ļ |
|  | 14.6098   | 69.9645   |       | [hrs] | Flow     |   |
|  | 22.1929   | 70.0756   |       | [hrs] | Flow     |   |
|  | 14.6098   | 69.9645   | [hrs] | Flow  | Delta    |   |
|  | 130.46 -109.16 130.46 8.20 9.24 14.6098 22.1929 14.6098 14.6098 14.6098 | 8.61 9.11 69.9645 70.0756 69.9645 69.9645 69.9645 |       | [hrs] | Velocity |   |
|  | 14.6098   | 69.9645   |       | [hrs] | Velocity |   |
|  |   |   |       |       |          |   |

| 11 702         | 14 KN8N                                     | 14.7938  | 5.92  | 5.92   | 10.46                          | 10.46 -5.44 10.46 5.92 5.92 14.7938 14.6080 14.7938 14.7938 14.7938 | 10.46           | 5y1D   | L-118PP  |
|----------------|---|--|---|--|--------------------------------|---|-----------------|--|--|
| 69.964         | 69.7280                                     | 69.9645  |   | 5.58   | 9.86                           | -5.37   | 9.86            | L-118PP 100y3D   | L-118PP  |
| [hrs]          |   |  |   |  |                                |   |                 |  |  |
| Flow           | [hrs]                                       | [hrs]  |   |  | [cfs]                          |   |                 |  |  |
| Delta          | Flow  | Flow   | [fps]   | [fps]  | Flow                           | [cfs]   | [cfs]           |  |  |
| Min/Max Max Us | Min   | Max  | Velocity  | Velocity   | Delta                          | Flow  | Flow            | Name   | Name   |
| Time to        | Time to                                     | Time to  | Max Ds  | Max Us   | Min/Max                        | Min   | Max             | Sim  | Link   |
|                |   |  |   |  |                                | mes   | ons with Ti     | Max Conditi  | Link Min/  |
|                | Time tc<br>Min/Ma<br>Delta<br>Flow<br>[hrs] | Time to Time to<br>Min Min/Ma<br>Flow Delta<br>[hrs] [hrs]<br>69.7280 69.964 | Time toTime toTime toMaxMinMin/MaFlowFlowDelta[hrs][hrs]Flow[hrs][hrs][hrs] | Iax DsTime toIax DsTime toVelocityMaxMinFlowFlowFlowIhrs][hrs]5.5869.964569.7280 | ax Us M<br>elocity V<br>ps] [f | Max Max Us M<br>Velocity V<br>[fps] [f                              | -5.37 9.86 5.58 | Min/Max     Max Us     M       w     Delta     Velocity     V       i]     Flow     [fps]     [f       [cfs]     [f5]     [f | ions with Times       Max     Min     Min/Max     Max Us     M       Flow     Flow     Delta     Velocity     V       [cfs]     [cfs]     Flow     [fps]     [f       9.86     -5.37     9.86     5.58 |

Link Min/Max Conditions with Times

|       |          | Name     | Link    |
|-------|----------|----------|---------|
|       |          | Name     | Sim     |
|       | [cfs]    | Flow     | Max     |
|       | [cfs]    | Flow     | Min     |
| [cfs] | Flow     | Delta    | Min/Max |
|       | [fps]    | Velocity | Max Us  |
|       | [fps]    | Velocity | Max Ds  |
| [hrs] | Flow     | Max      | Time to |
| [hrs] | Flow     | Min      | Time to |
| Flow  | Delta    | Min/Max  | Time to |
| [hrs] | Velocity | Max Us   | Time to |
| [hrs] | Velocity | Max Ds   | Time to |

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| L-119PP 5y1D   | L-119PP 100y3D                                      |       |       |          | Name N   | Link Sim       |
|--|---|-------|-------|----------|----------|----------------|
| y1D  | 00y3D   |       |       |          | Name     | im             |
| 3.68   | 4.57  |       |       | [cfs]    | Flow     | Max            |
| -6.05  |   |       |       | [cfs]    | Flow     | Min            |
| -6.05  | -6.59 -5.62   |       | [cfs] | Flow     | Delta    | Min/Max        |
| -3.43  | -3.73   |       |       | [fps]    | Velocity | Min/Max Max Us |
| -3.43  | -3.73   |       |       | [fps]    | Velocity | Max Ds         |
| 14.4849  | 62.8140   |       | [hrs] | Flow     | Max      | Time to        |
| 22.6053  | 71.1111   |       | [hrs] | Flow     | Min      | Time to        |
| 22.6053  | 46.3467   | [hrs] | Flow  | Delta    | Min/Max  | Time to        |
| 3.68 -6.05 -6.05 -3.43 -3.43 14.4849 22.6053 22.6053 22.6053 22.6053 | -3.73 -3.73 62.8140 71.1111 46.3467 71.1111 71.1111 |       | [hrs] | Velocity | Max Us   | Time to        |
| 22.6053  | 71.1111   |       | [hrs] | Velocity | Max Ds   | Time to        |

Link Min/Max Conditions with Times

| 12.4969  | 12.4969  | 1.15 12.4969 22.8827 23.2782 12.4969 12.4969 | 22.8827 | 12.4969 |          | 1.15     | 1.59    | -1.47 | 3.63  | 5y1D   | L-11P |
|----------|----------|--|---------|---------|----------|----------|---------|-------|-------|--------|-------|
| 60.9819  | 60.9819  | 1.61 60.9819 14.9387 14.9387 60.9819 60.9819 | 14.9387 | 60.9819 |          | 1.61     | -1.76   | -1.76 | 5.05  | 100y3D | L-11P |
|          |          | [hrs]  |         |         |          |          |         |       |       |        |       |
| [hrs]    | [hrs]    | Flow   | [hrs]   | [hrs]   |          |          | [cfs]   |       |       |        |       |
| Velocity | Velocity | Delta  | Flow    | Flow    | [fps]    | [fps]    | Flow    | [cfs] | [cfs] |        |       |
| Max Ds   | Max Us   | Min/Max                                      | Min     | Max     | Velocity | Velocity | Delta   | Flow  | Flow  | Name   | Name  |
| Time to  |          | Time to Time to                              | Time to | Time to | Max Ds   | Max Us   | Min/Max | Min   | Max   | Sim    | Link  |

| Link    | Sim            | Мах   | Min   | Min/Max | Min/Max Max Us | Max Ds   | Time to | Max Ds Time to Time to Time to Time to                            | Time to | Time to  | Time to  |
|---------|----------------|-------|-------|---------|----------------|----------|---------|---|---------|----------|----------|
| Name    | Name           | Flow  | Flow  | Delta   | Velocity       | Velocity | Max     | Min   | Min/Max | Max Us   | Max Ds   |
|         |                | [cfs] | [cfs] | Flow    | [fps]          | [fps]    | Flow    | Flow  | Delta   | Velocity | Velocity |
|         |                |       |       | [cfs]   |                |          | [hrs]   | [hrs]   | Flow    | [hrs]    | [hrs]    |
|         |                |       |       |         |                |          |         |   | [hrs]   |          |          |
| L-120PP | L-120PP 100y3D | 4.22  | -3.27 | 2.88    | 2.39           | 2.39     | 62.7787 | 2.39 2.39 62.7787 59.1187 35.6205 62.7787 62.7787                 | 35.6205 | 62.7787  | 62.7787  |
| L-120PP | L-120PP 5y1D   | 3.24  | -2.77 | 2.88    | 1.83           | 1.83     | 14.5193 | 3.24 -2.77 2.88 1.83 1.83 14.5193 23.9048 23.7582 14.5193 14.5193 | 23.7582 | 14.5193  | 14.5193  |

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| Link N | Min/Ma | ax Conditi | Link Min/Max Conditions with Times | imes  |         |          |          |         |         |                 | 1        |          |
|--------|--------|------------|------------------------------------|-------|---------|----------|----------|---------|---------|-----------------|----------|----------|
| Link   |        | Sim        | Max                                | Min   | Min/Max | Max Us   | Max Ds   | Time to | Time to | Time to Time to |          | Time to  |
| Name   |        | Name       | Flow                               | Flow  | Delta   | Velocity | Velocity | Max     | Min     | Min/Max         | Max Us   | Max Ds   |
|        |        |            | [cfs]                              | [cfs] | Flow    | [fps]    | [fps]    | Flow    | Flow    | Delta           | Velocity | Velocity |
|        |        |            |                                    |       | [cfs]   |          |          | [hrs]   | [hrs]   | Flow            | [hrs]    | [hrs]    |
|        |        |            |                                    |       |         |          |          |         |         |                 |          |          |

L-121PP L-121PP

100y3D 5y1D

3.76 2.96

-2.28 -3.28

-1.56 1.34

2.13 -1.86

2.13 -1.86

62.9359 14.5374

59.7975 12.1435

48.1271 11.0080

62.9359 12.1435

62.9359 12.1435

[hrs]

Link Min/Max Conditions with Times

Sim Name

Max Flow [cfs]

Min Flow [cfs]

Min/Max Delta Flow [cfs]

Max Us Velocity

Max Ds Velocity [fps]

Time to Max Flow [hrs]

Time to Min Flow [hrs]

Time to Min/Max Delta Flow

Time to Max Us Velocity

Time to Max Ds Velocity

| L-122PP 5y1D  | L-122PP 100y3D                               |       |       |          | Name     | Link            |
|---|--|-------|-------|----------|----------|-----------------|
| 5y1D  | 100y3D                                       |       |       |          | Name     | Sim             |
| 4.13  | 4.13   |       |       | [cfs]    | Flow     | Max             |
| -3.33   | -3.44  |       |       | [cfs]    | Flow     | Min             |
| 4.13  | 4.13   |       | [cfs] | Flow     | Delta    | Min/Max Max Us  |
| 2.34  | 2.34   |       |       | [fps]    | Velocity | Max Us          |
| 2.34  | 2.34   |       |       | [fps]    | Velocity | Max Ds          |
| 23.7582   | 35.6205                                      |       | [hrs] | Flow     | Max      | Time to Time to |
| 23.9048   | 24.8933                                      |       | [hrs] | Flow     | Min      | Time to         |
| 23.7582   | 35.6205                                      | [hrs] | Flow  | Delta    | Min/Max  | Time to Time to |
| 4.13 -3.33 4.13 2.34 2.34 23.7582 23.9048 23.7582 23.7582 23.7582 23.7582 | 2.34 35.6205 24.8933 35.6205 35.6205 35.6205 |       | [hrs] | Velocity | Max Us   | Time to         |
| 23.7582   | 35.6205                                      |       | [hrs] | Velocity | Max Ds   | Time to         |

Link Min/Max Conditions with Times

| 12.0098  | 12.0098  | 1.48 3.36 3.36 12.0098 11.3191 22.8196 12.0098 12.0098 | 11.3191 | 12.0098 | 3.36     | 3.36      |         | -1.06 | 5.94  | 5y1D           | L-123PP 5y1D |
|----------|----------|--|---------|---------|----------|-----------|---------|-------|-------|----------------|--------------|
| 59.7331  | 59.7331  | 3.45 59.7331 34.6321 45.9947 59.7331 59.7331           | 34.6321 | 59.7331 |          | 1.46 3.45 | 1.46    | -1.36 | 6.10  | L-123PP 100y3D | L-123PP      |
|          |          | [hrs]  |         |         |          |           |         |       |       |                |              |
| [hrs]    | [hrs]    | Flow   | [hrs]   | [hrs]   |          |           | [cfs]   |       |       |                |              |
| Velocity | Velocity | Delta  | Flow    | Flow    | [fps]    | [fps]     | Flow    | [cfs] | [cfs] |                |              |
| Max Ds   | Max Us   | Min/Max  | Min     | Max     | Velocity | Velocity  | Delta   | Flow  | Flow  | Name           | Name         |
| Time to  |          | Time to Time to  | Time to | Time to | Max Ds   | Max Us    | Min/Max | Min   | Max   | Sim            | Link         |

| Link Min/ | Link Min/Max Conditions with Times | ons with Ti | mes        |                       |          |          |                |             |  |  |          |
|-----------|------------------------------------|-------------|------------|-----------------------|----------|----------|----------------|-------------|--|--|----------|
| Link      | Sim                                | Max         | Min        | Min/Max               | Max Us   | Max Ds   | Max Ds Time to | Time to     | Time to                                      | Time to                                      | Time to  |
| Name      | Name                               | Flow        | Flow       | Delta                 | Velocity | Velocity | Max            | Min         | Min/Max                                      | Max Us                                       | Max Ds   |
|           |                                    | [cfs]       | [cfs]      | Flow                  | [fps]    | [fps]    | Flow           | Flow        | Delta  | Velocity                                     | Velocity |
|           |                                    |             |            | [cfs]                 |          |          | [hrs]          | [hrs]       | Flow   | [hrs]  | [hrs]    |
|           |                                    |             |            |                       |          |          |                |             | [hrs]  |  |          |
| L-124PP   | L-124PP 100y3D                     | 6.46        | 6.46 -1.12 | 1.20                  | 3.65     |          | 59.7244        | 25.1218     | 3.65 59.7244 25.1218 35.0329 59.7244 59.7244 | 59.7244                                      | 59.7244  |
|           | האיזס                              | 00 7        | 60 U       | 4 30 0 00 1 1 72 2 54 | 2 2 2    | 2 2 4    | 2110 01        | 01 12 21 10 | 1/ 200E                                      | 2 66 12 0112 22 2440 14 2006 17 0112 12 0112 | 210 0112 |

| 12.0113  | 6.29 -0.92 1.23 3.56 3.56 12.0113 23.3449 14.3005 12.0113 12.0113 | 14.3005 | 23.3449 | 12.0113 | 3.56     | 3.56     | 1.23    | -0.92 | 6.29  | L-124PP 5y1D   | L-124PP |
|----------|---|---------|---------|---------|----------|----------|---------|-------|-------|----------------|---------|
| 59.7244  | 3.65 59.7244 25.1218 35.0329 59.7244 59.7244                      | 35.0329 | 25.1218 | 59.7244 | 3.65     | 3.65     | 1.20    | -1.12 | 6.46  | L-124PP 100y3D | L-124PP |
|          |   | [hrs]   |         |         |          |          |         |       |       |                |         |
| [hrs]    | [hrs]   | Flow    | [hrs]   | [hrs]   |          |          | [cfs]   |       |       |                |         |
| Velocity | Velocity  | Delta   | Flow    | Flow    | [fps]    | [fps]    | Flow    | [cfs] | [cfs] |                |         |
| Max Ds   | Max Us  | Min/Max | Min     | Max     | Velocity | Velocity | Delta   | Flow  | Flow  | Name           | Name    |
| Time to  | Time to   | Time to | Time to | Time to | Max Ds   | Max Us   | Min/Max | Min   | Max   | Sim            | Link    |

| L-124PP         100y3D         6.46         -1.12         1.20         3.65         3.65         59.7244         25.1218         35.0329         59.7244         59.7244           L-124PP         5y1D         6.29         -0.92         1.23         3.56         3.56         12.0113         23.3449         14.3005         12.0113         12.0113   |
|---|
|   |
|   |
| [cfs]       [hrs]       [hrs]       [hrs]       [hrs]       [hrs]       [hrs]         -1.12       1.20       3.65       3.65       59.7244       25.1218       25.1218         -0.92       1.23       3.56       3.56       12.0113       23.3449   |
| [cfs]         [hrs]         [hrs] <th< td=""></th<> |
| 3.65     3.65     59.7244     25.1218       3.56     3.56     12.0113     23.3449   |
| [hrs]         [hrs]         [hrs]         [hrs]           3.65         59.7244         25.1218         ]           3.56         12.0113         23.3449         ]   |
| [hrs]     [hrs]     [hrs]       59.7244     25.1218       12.0113     23.3449   |
| [hrs]  <br>25.1218<br>23.3449   |
|   |
| Flow<br>[hrs]<br>35.0329<br>14.3005   |
| [hrs]<br>59.7244<br>12.0113   |
| [hrs]<br>59.7244<br>12.0113   |

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L-125PP L-125PP

5y1D 100y3D

39.58 39.58

-36.19 -35.63

-36.19 -35.63

4.61 4.61

7.15 7.15

0.0009

14.7645 10.6978

14.7645 10.6978

0.0009

0.0009

[hrs]

Link Min/Max Conditions with Times

Sim Name

Max Flow [cfs]

Min Flow [cfs]

Min/Max Delta Flow [cfs]

Max Us Velocity

Max Ds Velocity [fps]

Time to Max Flow [hrs]

Min Flow [hrs]

Time to Min/Max Delta

Time to Max Us Velocity

Time to Max Ds Velocity

[hrs]

Link Min/Max Conditions with Times

Name Sim

Flow [cfs] Max

Min Flow [cfs]

Min/Max Delta Flow

Velocity [fps]

Velocity

Max Ds

Time to Max Flow

[cfs]

[hrs]

[hrs]

[hrs]

[hrs]

Min/Max Delta Flow

Max Us Velocity

Max Ds Velocity

 $\overline{\phantom{a}}$ 

| L-126PP 5y1D   | L-126PP 100y3D                             |       |       |          | Name Name | Link Sim       |
|--|--|-------|-------|----------|-----------|----------------|
|  |  |       |       | [cfs]    | ne Flow   | n Max          |
| 32.43  | 33.49                                      |       |       |          |           |                |
| -41.57   | -41.57                                     |       |       | [cfs]    | Flow      | Min            |
| -32.95   | -41.57 -38.21                              |       | [cfs] | Flow     | Delta     | Min/Max Max Us |
| -4.87  | -4.87                                      |       |       | [fps]    | Velocity  | Max Us         |
| -7.28  | -7.28                                      |       |       | [fps]    | Velocity  | Max Ds         |
| 10.9618  | 70.8418                                    |       | [hrs] | Flow     | Max       | Time to        |
| 0.0009   | 0.0009                                     |       | [hrs] | Flow     | Min       | Time to        |
| 10.6978  | 69.3973                                    | [hrs] | Flow  | Delta    | Min/Max   | Time to        |
| 32.43 -41.57 -32.95 -4.87 -7.28 10.9618 0.0009 10.6978 0.0009 0.0009 | -7.28 70.8418 0.0009 69.3973 0.0009 0.0009 |       | [hrs] | Velocity | Max Us    | Time to        |
| 0.0009   | 0.0009                                     |       | [hrs] | Velocity | Max Ds    | Time to        |

Link Min/Max Conditions with Times

| 21.2125  | 4.26 21.2125 23.3538 21.2125 21.2125 21.2125 | 21.2125         | 23.3538         | 21.2125 | 4.26     | 4.19     | 40.34 -38.58 40.33 | -38.58 | 40.34 | 5y1D           | L-127PP 5y1D |
|----------|--|-----------------|-----------------|---------|----------|----------|--------------------|--------|-------|----------------|--------------|
| 14.7645  | 4.46 14.7645 47.7938 14.7645 14.7645 14.7645 | 14.7645         | 47.7938         | 14.7645 | I I      | 4.39     | 42.21              | -41.06 | 42.21 | L-127PP 100y3D | L-127PP      |
|          |  | [hrs]           |                 |         |          |          |                    |        |       |                |              |
| [hrs]    | [hrs]  | Flow            | [hrs]           | [hrs]   |          |          | [cfs]              |        |       |                |              |
| Velocity | Velocity                                     | Delta           | Flow            | Flow    | [fps]    | [fps]    | Flow               | [cfs]  | [cfs] |                |              |
| Max Ds   | Max Us                                       | Min/Max         | Min             | Max     | Velocity | Velocity | Delta              | Flow   | Flow  | Name           | Name         |
| Time to  | Time to                                      | Time to Time to | Time to Time to | Time to | Max Ds   | < Max Us | Min/Max            | Min    | Max   | Sim            | Link         |

| LINK MIN/    | LINK MIN/MAX CONDITIONS WITH TIMES | ons with I | Imes  |         |          |          |          |         |          |   |          |
|--------------|------------------------------------|------------|-------|---------|----------|----------|----------|---------|----------|---|----------|
| Link         | Sim                                | Мах        | Min   | Min/Max | Max Us   | Max Ds   | Time to  | Time to | Time to  | Min/Max Max Us Max Ds Time to Time to Time to Time to Time to | Time to  |
| Name         | Name                               | Flow       | Flow  | Delta   | Velocity | Velocity | Max      | Min     | Min/Max  | Max Us  | Max Ds   |
|              |                                    | [cfs]      | [cfs] | Flow    | [fps]    | [fps]    | Flow     | Flow    | Delta    | Velocity  | Velocity |
|              |                                    |            |       | [cfs]   |          |          | [hrs]    | [hrs]   | Flow     | [hrs]   | [hrs]    |
|              |                                    |            |       |         |          |          |          |         | [hrs]    |   |          |
| L-128PP      | L-128PP 100y3D                     | 4.84       | -5.15 | -5.15   | -2.91    | 3.76     | 12.7742  | 35.7413 | 35.7413  | -5.15 -5.15 -2.91 3.76 12.7742 35.7413 35.7413 35.7413 0.0021 | 0.0021   |
| 1_17800 5v10 |                                    | C0 V       | -7 DA | 0 V     | - 2 8 F  | 7 L E    | 01/UD CC | 10 6078 | 22 ON/AN |   | 0 0021   |

| 0.0021   | 10.6978  | 22.9040 | -2.85 3.76 22.9040 10.6978 22.9040 10.6978 | 22.9040 | 3.76     |                | 4.92    | -5.04 | 4.92  | 5y1D   | L-128PP 5y1D |
|----------|----------|---------|--|---------|----------|----------------|---------|-------|-------|--------|--------------|
| 0.0021   |          | 35.7413 | 3.76 12.7742 35.7413 35.7413 35.7413       | 12.7742 |          | -2.91          | -5.15   | -5.15 | 4.84  | 100y3D | L-128PP      |
|          |          | [hrs]   |  |         |          |                |         |       |       |        |              |
| [hrs]    | [hrs]    | Flow    | [hrs]                                      | [hrs]   |          |                | [cfs]   |       |       |        |              |
| Velocity | Velocity | Delta   | Flow                                       | Flow    | [fps]    | [fps]          | Flow    | [cfs] | [cfs] |        |              |
| Max Ds   | Max Us   | Min/Max | Min  | Max     | Velocity | Velocity       | Delta   | Flow  | Flow  | Name   | Name         |
| Time to  |          | Time to | Time to Time to Time to                    | Time to | Max Ds   | Min/Max Max Us | Min/Max | Min   | Max   | Sim    | Link         |

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Link Min/Max Conditions with Times

L-129PP L-129PP

100y3D 5y1D

5.62 5.11

-5.43 -5.26

5.61 -5.25

3.18 -2.97

3.77 3.77

14.7644 21.2124

47.7938 20.7769

14.7644 20.7769

14.7644 20.7769

0.0021 0.0021

[hrs]

Link Min/Max Conditions with Times

Sim Name

Max Flow [cfs]

Min Flow [cfs]

Min/Max Delta Flow [cfs]

Max Us Velocity

Max Ds Velocity [fps]

Time to Max Flow [hrs]

Min Flow [hrs]

Time to Min/Max Delta

Time to Max Us Velocity

Time to Max Ds Velocity

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| L-12P 5y1D                                   | L-12P 100y3D                                 |       |       |          | Name Name | Link Sim       |
|--|--|-------|-------|----------|-----------|----------------|
| 1.51   |  |       |       | [cfs]    | Flow      | Max            |
| -1.10  | 3.14 -1.21                                   |       |       | [cfs]    | Flow      | Min            |
| -1.10 1.19 0.86                              | 3.01   |       | [cfs] | Flow     | Delta     | Min/Max        |
| 0.86   | 1.78   |       |       | [fps]    | Velocity  | Min/Max Max Us |
| 0.86   | 1.78   |       |       | [fps]    | Velocity  | Max Ds         |
| 12.0889                                      | 60.1067                                      |       | [hrs] | Flow     | Max       | Time to        |
| 23.2391                                      | 13.2018                                      |       | [hrs] | Flow     | Min       | Time to        |
| 12.1227                                      | 60.1100                                      | [hrs] | Flow  | Delta    | Min/Max   | Time to        |
| 0.86 12.0889 23.2391 12.1227 12.0889 12.0889 | 1.78 60.1067 13.2018 60.1100 60.1067 60.1067 |       | [hrs] | Velocity | Max Us    | Time to        |
| 12.0889                                      | 60.1067                                      |       | [hrs] | Velocity | Max Ds    | Time to        |

Link Min/Max Conditions with Times

| 11.9430  | 11.9430  | 11.9429 | -1.22 11.8184 11.9430 11.9429 11.9430 11.9430 | 11.8184 | -1.22    | -1.22    | -1.73   | -2.16 | 1.62  | 5y1D   | L-131PP 5y1D   |
|----------|----------|---------|---|---------|----------|----------|---------|-------|-------|--------|----------------|
| 59.6506  | 59.6506  | 59.6507 | 1.08 59.6506 60.2913 59.6507 59.6506 59.6506  | 59.6506 | 1.08     | 1.08     | -1.92   | -1.83 | 1.91  | 100y3D | L-131PP 100y3D |
|          |          | [hrs]   |   |         |          |          |         |       |       |        |                |
| [hrs]    | [hrs]    | Flow    | [hrs]   | [hrs]   |          |          | [cfs]   |       |       |        |                |
| Velocity | Velocity | Delta   | Flow  | Flow    | [fps]    | [fps]    | Flow    | [cfs] | [cfs] |        |                |
| Max Ds   | Max Us   | Min/Max | Min   | Мах     | Velocity | Velocity | Delta   | Flow  | Flow  | Name   | Name           |
| Time to  | Time to  | Time to | Time to                                       | Time to | Max Ds   | Max Us   | Min/Max | Min   | Max   | Sim    | Link           |

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| Link Min/    | Link Min/Max Conditions with Times | ions with T | imes  |         |                |          |         |   |         |          |          |
|--------------|------------------------------------|-------------|-------|---------|----------------|----------|---------|---|---------|----------|----------|
| Link         | Sim                                | Max         | Min   | Min/Max | Min/Max Max Us | Max Ds   | Time to | Max Ds Time to Time to Time to Time to                          | Time to | Time to  | Time to  |
| Name         | Name                               | Flow        | Flow  | Delta   | Velocity       | Velocity | Max     | Min   | Min/Max | Max Us   | Max Ds   |
|              |                                    | [cfs]       | [cfs] | Flow    | [fps]          | [fps]    | Flow    | Flow  | Delta   | Velocity | Velocity |
|              |                                    |             |       | [cfs]   |                |          | [hrs]   | [hrs]   | Flow    | [hrs]    | [hrs]    |
|              |                                    |             |       |         |                |          |         |   | [hrs]   |          |          |
| L-132PP      | L-132PP 100y3D                     | 3.50        |       | -3.69   | -3.30          | -3.30    | 62.1815 | -5.82 -3.69 -3.30 -3.30 62.1815 60.9005 61.3402 60.9005 60.9005 | 61.3402 | 60.9005  | 60.9005  |
| 1-130PD 5v1D |                                    | 2 00        | -л ло | -3 1/   | -3 16          | -3 16    | 12 8641 |   | 12 8160 | 12 4400  | 12 4400  |

| 12.4400  | -3.16 12.8641 12.4400 12.8160 12.4400 12.4400 | 12.8160 | 12.4400                               | 12.8641 | -3.16    | -3.16    | -3.14   | -5.59 | 2.99  | 5y1D   | L-132PP 5y1D |
|----------|---|---------|---------------------------------------|---------|----------|----------|---------|-------|-------|--------|--------------|
| 60.9005  | 60.9005                                       | 61.3402 | -3.30 62.1815 60.9005 61.3402 60.9005 | 62.1815 |          | -3.30    | -3.69   | -5.82 | 3.50  | 100y3D | L-132PP      |
|          |   | [hrs]   |                                       |         |          |          |         |       |       |        |              |
| [hrs]    | [hrs]   | Flow    | [hrs]                                 | [hrs]   |          |          | [cfs]   |       |       |        |              |
| Velocity | Velocity                                      | Delta   | Flow                                  | Flow    | [fps]    | [fps]    | Flow    | [cfs] | [cfs] |        |              |
| Max Ds   | Max Us  | Min/Max | Min                                   | Max     | Velocity | Velocity | Delta   | Flow  | Flow  | Name   | Name         |
| Time to  | Time to                                       | Time to | Time to                               | Time to | Max Ds   | Max Us   | Min/Max | Min   | Max   | Sim    | Link         |

| Link         | Sim            | Max   | Min   | Min/Max | Max Us   | Max Ds   | Time to | Time to | Time to Time to Time to Time to              | Time to  | Time to  |
|--------------|----------------|-------|-------|---------|----------|----------|---------|---------|--|----------|----------|
| Name         | Name           | Flow  | Flow  | Delta   | Velocity | Velocity | Мах     | Min     | Min/Max                                      | Max Us   | Max Ds   |
|              |                | [cfs] | [cfs] | Flow    | [fps]    | [fps]    | Flow    | Flow    | Delta  | Velocity | Velocity |
|              |                |       |       | [cfs]   |          |          | [hrs]   | [hrs]   | Flow   | [hrs]    | [hrs]    |
|              |                |       |       |         |          |          |         |         | [hrs]  |          |          |
| L-133PP      | L-133PP 100y3D | 3.30  | -2.59 | 3.09    | 1.87     |          | 60.2913 | 59.6506 | 1.87 60.2913 59.6506 61.0264 60.2913 60.2913 | 60.2913  | 60.291;  |
| L-133PP 5y1D | 5y1D           | 2.77  | -2.00 | 2.76    | 1.56     |          | 12.3990 | 12.7689 | 1.56 12.3990 12.7689 12.3990 12.3990 12.3990 | 12.3990  | 12.399(  |

| Link Min/Max Conditions with Times |  |
|------------------------------------|--|
| ax Conditior                       |  |
| is with Tim                        |  |

Sim Name

Max Flow [cfs]

Min Flow [cfs]

Min/Max Max Us Delta Velocity Flow [fps]

Max Ds Velocity [fps]

Time to Max Flow

Time to Min/Max Delta Flow

Time to Max Us Velocity

Time to Max Ds Velocity

Velocity [fps]

[cfs]

[hrs]

[hrs]

[hrs]

[hrs]

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| 1.59 12.1546 12.0210 12.4960 12.1546 12.1546 | 960                | 12.4       | 12.0210 | 12.1546 | 1.59     | 1.59           | 2.82 -1.44 2.73 1.59 | -1.44 | 2.82  | L-134PP 5y1D | L-134PP        |
|--|--------------------|------------|---------|---------|----------|----------------|----------------------|-------|-------|--------------|----------------|
| 1.99 61.3482 59.7742 60.0557 61.3482 61.3482 | 32 59.7742 60.0557 | 32 59.7742 | 32      | 61.348  | 1.99     | 1.99           | 3.52 -1.72 2.09      | -1.72 | 3.52  | 100y3D       | L-134PP 100y3D |
| [hrs]  | [hrs]              |            |         |         |          |                |                      |       |       |              |                |
| [hrs] Flow [hrs]                             |                    |            |         | [hrs]   |          |                | [cfs]                |       |       |              |                |
| Flow Delta Velocity                          | 1                  | Flow       |         | Flow    | [fps]    | [fps]          | Flow                 | [cfs] | [cfs] |              |                |
| Min Min/Max Max Us                           |                    | Min        |         | Max     | Velocity | Velocity       | Delta                | Flow  | Flow  | Name         | Name           |
| to Time to Time to Time to                   | Time to Time to    | Time to    | e to    | Time to | Max Ds   | Min/Max Max Us | Min/Max              | Min   | Мах   | Sim          | Link           |

Link Min/Max Conditions with Times

| 12.4400  | 12.4400  | -4.97   12.4625   12.4400   12.5316   12.4400   12.4400 | 12.4400 | 12.4625 | -4.97    | -4.97    | -5.48   | -8.79 | 1.81  | 5y1D   | L-135PP 5y1D |
|----------|----------|---|---------|---------|----------|----------|---------|-------|-------|--------|--------------|
| 60.9005  | 60.9005  | -5.24 -5.24 59.9419 60.9005 60.8333 60.9005 60.9005     | 60.9005 | 59.9419 | -5.24    |          | -6.34   | -9.27 | 2.38  | 100y3D | L-135PP      |
|          |          | [hrs]   |         |         |          |          |         |       |       |        |              |
| [hrs]    | [hrs]    | Flow  | [hrs]   | [hrs]   |          |          | [cfs]   |       |       |        |              |
| Velocity | Velocity | Delta   | Flow    | Flow    | [fps]    | [fps]    | Flow    | [cfs] | [cfs] |        |              |
| Max Ds   | Max Us   | Min/Max   | Min     | Мах     | Velocity | Velocity | Delta   | Flow  | Flow  | Name   | Name         |
| Time to  | Time to  | Time to   | Time to | Time to | Max Ds   | Max Us   | Min/Max | Min   | Max   | Sim    | Link         |

| Link Min/ | Link Min/Max Conditions with Times | ions with T | mes   |         |                |          |                 |  |                 |          |          |
|-----------|------------------------------------|-------------|-------|---------|----------------|----------|-----------------|--|-----------------|----------|----------|
| Link      | Sim                                | Max         | Min   | Min/Max | Min/Max Max Us | Max Ds   | Time to Time to | Time to  | Time to Time to |          | Time to  |
| Name      | Name                               | Flow        | Flow  | Delta   | Velocity       | Velocity | Max             | Min  | Min/Max         | Max Us   | Max Ds   |
|           |                                    | [cfs]       | [cfs] | Flow    | [fps]          | [fps]    | Flow            | Flow   | Delta           | Velocity | Velocity |
|           |                                    |             |       | [cfs]   |                |          | [hrs]           | [hrs]  | Flow            | [hrs]    | [hrs]    |
|           |                                    |             |       |         |                |          |                 |  | [hrs]           |          |          |
| L-136PP   | L-136PP 100y3D                     | 3.27        | -4.11 |         | -2.32          | -2.32    | 63.9640         | 1.64 -2.32 -2.32 63.9640 59.6659 60.9360 59.6659 59.6659 | 60.9360         | 59.6659  | 59.6659  |
|           | האזס                               | 2 1 2       | 2C V  |         | UV C           | UV C     | 15 1014         | 71 06 27   | 27 27 27        | 11 04 27 | 11 04 27 |

| 11.9637  | 11.9637  | 21.6973 | 11.9637 | 0.91 -2.40 -2.40 15.1016 11.9637 21.6973 11.9637 11.963 | -2.40    | -2.40    | 0.91    | -4.25 | 3.13  | 5y1D   | L-136PP 5y1D   |
|----------|----------|---------|---------|---|----------|----------|---------|-------|-------|--------|----------------|
| 59.6659  | 59.6659  | 60.9360 | 59.6659 | -2.32 63.9640 59.6659 60.9360 59.6659 59.6659           |          | -2.32    | 1.64    | -4.11 | 3.27  | 100y3D | L-136PP 100y3D |
|          |          | [hrs]   |         |   |          |          |         |       |       |        |                |
| [hrs]    | [hrs]    | Flow    | [hrs]   | [hrs]   |          |          | [cfs]   |       |       |        |                |
| Velocity | Velocity | Delta   | Flow    | Flow  | [fps]    | [fps]    | Flow    | [cfs] | [cfs] |        |                |
| Max Ds   | Max Us   | Min/Max | Min     | Max   | Velocity | Velocity | Delta   | Flow  | Flow  | Name   | Name           |
| Time to  | Time to  | Time to | Time to | Time to   | Max Ds   | Max Us   | Min/Max | Min   | Max   | Sim    | Link           |

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| Link Min/ | Link Min/Max Conditions with Times | ions with T | imes  |         |          |          |         |         | 1               | 1        |          |
|-----------|------------------------------------|-------------|-------|---------|----------|----------|---------|---------|-----------------|----------|----------|
| Link      | Sim                                | Max         | Min   | Min/Max | Max Us   | Max Ds   | Time to | Time to | Time to Time to | Time to  | Time to  |
| Name      | Name                               | Flow        | Flow  | Delta   | Velocity | Velocity | Max     | Min     | Min/Max         | Max Us   | Max Ds   |
|           |                                    | [cfs]       | [cfs] | Flow    | [fps]    | [fps]    | Flow    | Flow    | Delta           | Velocity | Velocity |
|           |                                    |             |       | [cfs]   |          |          | [hrs]   | [hrs]   | Flow            | [hrs]    | [hrs]    |
|           |                                    |             |       |         |          |          |         |         |                 |          |          |

L-137PP L-137PP

100y3D 5y1D

7.76 7.82

-9.77 -9.03

-7.72 6.94

-5.53 -5.11

-5.53 -5.11

61.9044 13.2684

60.2550 12.1981

[hrs] 60.6960 14.9407

60.2550 12.1981

60.2550 12.1981

Link Min/Max Conditions with Times

Sim Name

Max Flow [cfs]

Min Flow [cfs]

Min/Max Delta Flow [cfs]

Max Us Velocity

Max Ds Velocity [fps]

Time to Max Flow [hrs]

Time to Min Flow [hrs]

Time to Min/Max Delta Flow

Time to Max Us Velocity

Time to Max Ds Velocity

| L-138PP 5y1D   | L-138PP   |       |       |          | Name     | Link            |
|--|---|-------|-------|----------|----------|-----------------|
| 5y1D   | L-138PP 100y3D  |       |       |          | Name     | Sim             |
| 6.87   | 10.30   |       |       | [cfs]    | Flow     | Max             |
| -7.64  | -9.57   |       |       | [cfs]    | Flow     | Min             |
| -7.64  | 10.30   |       | [cfs] | Flow     | Delta    | Min/Max Max Us  |
| -2.43  | 3.28  |       |       | [fps]    | Velocity | Max Us          |
| -2.43  | 3.28  |       |       | [fps]    | Velocity | Max Ds          |
| 13.2361  | 36.0773   |       | [hrs] | Flow     | Max      | Time to Time to |
| 11.7188  | 25.1128   |       | [hrs] | Flow     | Min      | Time to         |
| 11.7188  | 36.0773   | [hrs] | Flow  | Delta    | Min/Max  | Time to Time to |
| 6.87 -7.64 -7.64 -2.43 -2.43 13.2361 11.7188 11.7188 11.7188 11.7188 | -9.57 10.30 3.28 3.28 36.0773 25.1128 36.0773 36.0773 36.0773 |       | [hrs] | Velocity | Max Us   | Time to         |
| 11.7188  | 36.0773   |       | [hrs] | Velocity | Max Ds   | Time to         |

Link Min/Max Conditions with Times

| 14.2525  | 14.2525        | 22.9778 | 8.17 -5.69 -4.84 2.60 2.60 14.2525 23.5768 22.9778 14.2525 14.2525 | 14.2525 | 2.60     | 2.60     | -4.84       | -5.69 | 8.17  | 5y1D           | L-139PP 5y1D |
|----------|----------------|---------|--|---------|----------|----------|-------------|-------|-------|----------------|--------------|
| 63.3776  | 63.3776        | 48.1404 | 3.09 63.3776 12.7714 48.1404 63.3776 63.3776                       | 63.3776 | 3.09     | 3.09     | -7.23 -7.72 | -7.23 | 9.70  | L-139PP 100y3D | L-139PP      |
|          |                | [hrs]   |  |         |          |          |             |       |       |                |              |
| [hrs]    | [hrs]          | Flow    | [hrs]  | [hrs]   |          |          | [cfs]       |       |       |                |              |
| Velocity | Velocity       | Delta   | Flow   | Flow    | [fps]    | [fps]    | Flow        | [cfs] | [cfs] |                |              |
| Max Ds   | Min/Max Max Us | Min/Max | Min  | Max     | Velocity | Velocity | Delta       | Flow  | Flow  | Name           | Name         |
| Time to  | Time to        | Time to | Time to  | Time to | Max Ds   | Max Us   | Min/Max     | Min   | Max   | Sim            | Link         |

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| Link Min/ | Link Min/Max Conditions with Times | ions with T | imes  |                  |                |          |          |  |                |          |          |
|-----------|------------------------------------|-------------|-------|------------------|----------------|----------|----------|--|----------------|----------|----------|
| Link      | Sim                                | Max         | Min   | Min/Max          | Min/Max Max Us | Max Ds   | Time to  | Max Ds Time to Time to Time to               | Time to        | Time to  | Time to  |
| Name      | Name                               | Flow        | Flow  | Delta            | Velocity       | Velocity | Мах      | Min  | Min/Max Max Us |          | Max Ds   |
|           |                                    | [cfs]       | [cfs] | Flow             | [fps]          | [fps]    | Flow     | Flow   | Delta          | Velocity | Velocity |
|           |                                    |             |       | [cfs]            |                |          | [hrs]    | [hrs]  | Flow           | [hrs]    | [hrs]    |
|           |                                    |             |       |                  |                |          |          |  | [hrs]          |          |          |
| L-13P     | 100y3D                             |             | -2.85 | 6.47 -2.85 -2.85 | 2.06           | 2.06     | 60.3716  | 2.06 60.3716 13.1858 13.1858 60.3716 60.3716 | 13.1858        | 60.3716  | 60.3716  |
| 1_12D     |                                    | с 1 2       | 27 2  | 27 22            | 2 4 1          | 27 L     | 77 27 21 | 10 7545                                      | 10 7545        |          | 77 277   |

| 12.2247  | 1.63 1.63 12.2247 10.7565 10.7565 12.2247 12.2247 | 10.7565 | 10.7565 | 12.2247 | 1.63     | 1.63     | 5.13 -2.78 -2.78 | -2.78 | 5.13  | 5y1D   | L-13P |
|----------|---|---------|---------|---------|----------|----------|------------------|-------|-------|--------|-------|
| 60.3716  | 2.06 60.3716 13.1858 13.1858 60.3716 60.371       | 13.1858 | 13.1858 | 60.3716 |          | 2.06     | -2.85            | -2.85 | 6.47  | 100y3D | L-13P |
|          |   | [hrs]   |         |         |          |          |                  |       |       |        |       |
| [hrs]    | [hrs]   | Flow    | [hrs]   | [hrs]   |          |          | [cfs]            |       |       |        |       |
| Velocity | Velocity  | Delta   | Flow    | Flow    | [fps]    | [fps]    | Flow             | [cfs] | [cfs] |        |       |
| Max Ds   | Max Us  | Min/Max | Min     | Max     | Velocity | Velocity | Delta            | Flow  | Flow  | Name   | Name  |
| Time to  | Time to Time to                                   | Time to | Time to | Time to | Max Ds   | Max Us   | Min/Max          | Min   | Max   | Sim    | Link  |

| LinkSimMaxMinMin/MaxMax UsMax DsTime toTime toTime toTime toTime toNameNameFlowFlowDeltaVelocityVelocityMaxMinMin/MaxMax UsMax Ds[cfs][cfs][cfs]Flow[fps][fps]FlowFlowDeltaVelocity[cfs][cfs][cfs][cfs][fps][fns][hrs]Flow[hrs]Flow  |
|--|
| MaxMinMin/MaxMax UsMax DsTime toTime toTime toFlowFlowDeltaVelocityVelocityMaxMinMin/MaxMax Us[cfs][cfs]Flow[fps][fps]FlowFlowDeltaVelocity[cfs][cfs][cfs][fps][fps]FlowFlowDeltaVelocity[cfs][cfs][cfs][fps][hrs][hrs]Flow[hrs]   |
| MinMin/MaxMax UsMax DsTime toTime toTime toTime toFlowDeltaVelocityVelocityMaxMinMin/MaxMax Us[cfs]Flow[fps][fps]FlowFlowDeltaVelocity[cfs][cfs][fps][fps]FlowFlowDeltaVelocity[cfs][cfs][fps][frs][hrs][hrs]Flow[hrs]   |
| Min/MaxMax UsMax DsTime toTime toTime toTime tovDeltaVelocityVelocityMaxMinMin/MaxMax Us]Flow[fps][fps]FlowFlowDeltaVelocity[cfs][cfs][hrs][hrs][hrs]FlowLow[hrs]  |
| ax     Max Us     Max Ds     Time to     Time to     Time to     Time to       Velocity     Velocity     Max     Min     Min/Max     Max Us       [fps]     [fps]     Flow     Flow     Delta     Velocity       [fps]     [hrs]     [hrs]     Flow     Delta     Velocity |
| o Time to Time to<br>Min/Max Max Us<br>Delta Velocity<br>Flow [hrs]  |
| o Time to Time to<br>Min/Max Max Us<br>Delta Velocity<br>Flow [hrs]  |
| o Time to Time to<br>Min/Max Max Us<br>Delta Velocity<br>Flow [hrs]  |
| o Time to Time to<br>Min/Max Max Us<br>Delta Velocity<br>Flow [hrs]  |
|  |
|  |
| Time to<br>Max Ds<br>Velocity<br>[hrs]   |
|  |

Link Min/Max Conditions with Times

L-140PP L-140PP

100y3D 5y1D

8.25 5.16

-6.64 -4.21

6.64 -4.21

4.67 2.92

4.67 49.1396 2.92 13.2361

48.1403 23.7778

48.1404 23.7778

49.1396 13.2361

49.1396 13.2361

[hrs]

Link Min/Max Conditions with Times

Sim Name

Max Flow [cfs]

Min Flow [cfs]

Min/Max Delta Flow [cfs]

Max Us Velocity

Max Ds Velocity [fps]

Time to Max Flow [hrs]

Time to Min Flow [hrs]

Time to Min/Max Delta Flow

Time to Max Us Velocity

Time to Max Ds Velocity

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| L-141PP 5y1D   | L-141PP 100y3D                                      |       |       |          | Name Na  | Link Sim       |
|--|---|-------|-------|----------|----------|----------------|
| 1D   | 0y3D  |       |       |          | Name     |                |
| 1.55   | 2.14  |       |       | [cfs]    | Flow     | Max            |
| -4.20  | 2.14 -4.67  |       |       | [cfs]    | Flow     | Min            |
| -2.59  | -4.00   |       | [cfs] | Flow     | Delta    | Min/Max Max Us |
| -2.38  | -2.64   |       |       | [fps]    | Velocity |                |
| -2.38  | -2.64   |       |       | [fps]    | Velocity | Max Ds         |
| 12.5596  | 61.0349   |       | [hrs] | Flow     | Max      | Time to        |
| 11.9795  | 60.1458   |       | [hrs] | Flow     | Min      | Time to        |
| 12.1680  | 60.2160   | [hrs] | Flow  | Delta    | Min/Max  | Time to        |
| 1.55 -4.20 -2.59 -2.38 -2.38 12.5596 11.9795 12.1680 11.9795 11.9795 | -2.64 -2.64 61.0349 60.1458 60.2160 60.1458 60.1458 |       | [hrs] | Velocity | Max Us   | Time to        |
| 11.9795  | 60.1458   |       | [hrs] | Velocity | Max Ds   | Time to        |

Link Min/Max Conditions with Times

| 15.1040  | 15.1040        | 22.4870                                      | 12.0118 | 15.1040 | -2.89 0.42 1.67 1.67 15.1040 12.0118 22.4870 15.1040 15.1040 | 1.67     | 0.42       |       | 2.94  | 5y1D           | L-142PP 5y1D |
|----------|----------------|--|---------|---------|--|----------|------------|-------|-------|----------------|--------------|
| 63.9676  | 63.9676        | 1.97 63.9676 59.9490 69.8818 63.9676 63.9676 | 59.9490 | 63.9676 |  | 1.91     | -3.23 0.61 |       | 3.38  | L-142PP 100y3D | L-142PP      |
|          |                | [hrs]  |         |         |  |          |            |       |       |                |              |
| [hrs]    | [hrs]          | Flow   | [hrs]   | [hrs]   |  |          | [cfs]      |       |       |                |              |
| Velocity | Velocity       | Delta  | Flow    | Flow    | [fps]  | [fps]    | Flow       | [cfs] | [cfs] |                |              |
| Max Ds   | Min/Max Max Us | Min/Max                                      | Min     | Max     | Velocity   | Velocity | Delta      | Flow  | Flow  | Name           | Name         |
| Time to  |                | Time to Time to                              | Time to | Time to | Max Ds   | Max Us   | Min/Max I  | Min   | Max   | Sim            | Link         |

ł.

| Link Min/I   | Link Min/Max Conditions with Times | ons with T | imes  |         |                |          |         |  |         |          |          |
|--------------|------------------------------------|------------|-------|---------|----------------|----------|---------|--|---------|----------|----------|
| Link         | Sim                                | Max        | Min   | Min/Max | Min/Max Max Us | Max Ds   | Time to | Time to Time to Time to Time to                                      | Time to | Time to  | Time to  |
| Name         | Name                               | Flow       | Flow  | Delta   | Velocity       | Velocity | Мах     | Min  | Min/Max | Max Us   | Max Ds   |
|              |                                    | [cfs]      | [cfs] | Flow    | [fps]          | [fps]    | Flow    | Flow   | Delta   | Velocity | Velocity |
|              |                                    |            |       | [cfs]   |                |          | [hrs]   | [hrs]  | Flow    | [hrs]    | [hrs]    |
|              |                                    |            |       |         |                |          |         |  | [hrs]   |          |          |
| L-143PP      | L-143PP 100y3D                     | 3.58       | -2.56 | 1.02    | 2.07           | 3.02     | 63.8847 | 3.58 -2.56 1.02 2.07 3.02 63.8847 11.4984 35.6373 63.9724 65.6703    | 35.6373 | 63.9724  | 65.6703  |
| 1-143PP 5v1D |                                    | ٤ ل د      | 57 C- | 0 66    | 172            | C8 C     | 15 1001 | 3 03 24 10 0 66 1 72 2 82 15 1001 1 07636 22 41 96 1 15 1091 17 7736 | 22 196  | 15 1001  | 17 7736  |

| 17.7736  | -2.43 0.66 1.72 2.82 15.1091 10.7636 22.4196 15.1091 17.7736 | 22.4196 | 10.7636         | 15.1091 | 2.82     | 1.72     | 0.66    | -2.43 | 3.03  | 5y1D           | L-143PP 5y1D |
|----------|--|---------|-----------------|---------|----------|----------|---------|-------|-------|----------------|--------------|
| 65.6703  | 3.02 63.8847 11.4984 35.6373 63.9724 65.6703                 | 35.6373 | 11.4984         | 63.8847 |          | 2.07     | 1.02    | -2.56 | 3.58  | L-143PP 100y3D | L-143PP      |
|          |  | [hrs]   |                 |         |          |          |         |       |       |                |              |
| [hrs]    | [hrs]  | Flow    | [hrs]           | [hrs]   |          |          | [cfs]   |       |       |                |              |
| Velocity | Velocity   | Delta   | Flow            | Flow    | [fps]    | [fps]    | Flow    | [cfs] | [cfs] |                |              |
| Max Ds   | Max Us   | Min/Max | Min             | Max     | Velocity | Velocity | Delta   | Flow  | Flow  | Name           | Name         |
| Time to  | Time to  | Time to | Time to Time to | Time to | Max Ds   | Max Us   | Min/Max | Min   | Max   | Sim            | Link         |

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|       |          | Name     | Link                              |
|-------|----------|----------|-----------------------------------|
|       |          | Name     | Sim                               |
|       | [cfs]    | Flow     | Max                               |
|       | [cfs]    | Flow     | Min                               |
| [cfs] | Flow     | Delta    | Min/Max                           |
|       | [fps]    | Velocity | Min/Max Max Us                    |
|       | [fps]    | Velocity | Max Ds                            |
| [hrs] | Flow     | Max      | Time to                           |
| [hrs] | Flow     | Min      | Time to                           |
| Flow  | Delta    | Min/Max  | Time to                           |
| [hrs] | Velocity | Max Us M | Time to Time to Time to Time to 1 |
| [hrs] | Velocity | Max Ds   | Time to                           |
|       |          |          |                                   |

Link Min/Max Conditions with Times

L-144PP L-144PP

100y3D 5y1D

5.33 4.40

-2.89 -3.00

4.45 3.97

1.70 1.40

1.70 1.40

59.7838 12.0054

71.5013 10.6898

60.2060 12.0772

59.7838 12.0054

59.7838 12.0054

[hrs]

Link Min/Max Conditions with Times

Sim Name

Max Flow [cfs]

Min Flow [cfs]

Min/Max Delta Flow [cfs]

Max Us Velocity

Max Ds Velocity [fps]

Time to Max Flow [hrs]

Time to Min Flow [hrs]

Time to Min/Max Delta Flow

Time to Max Us Velocity

Time to Max Ds Velocity

| L-145PP 5y1D   | L-145PP 100y3D                               |       |       |          | Name N   | Link S          |
|--|--|-------|-------|----------|----------|-----------------|
| y1D  | 00y3D  |       |       |          | Name     | Sim             |
| 1.22   | 1.47   |       |       | [cfs]    | Flow     | Max             |
| -1.24  | -1.25  |       |       | [cfs]    | Flow     | Min             |
| -1.24  | -1.25  |       | [cfs] | Flow     | Delta    | Min/Max         |
| -0.70  | 0.83   |       |       | [fps]    | Velocity | Min/Max Max Us  |
| -0.70  | 0.83   |       |       | [fps]    | Velocity | Max Ds          |
| 11.9927  | 60.0904                                      |       | [hrs] | Flow     | Max      | Time to Time to |
| 21.6922  | 45.5776                                      |       | [hrs] | Flow     | Min      | Time to         |
| 21.6922  | 45.5776                                      | [hrs] | Flow  | Delta    | Min/Max  | Time to Time to |
| 1.22 -1.24 -1.24 -0.70 -0.70 11.9927 21.6922 21.6922 21.6922 21.6922 | 0.83 60.0904 45.5776 45.5776 60.0904 60.0904 |       | [hrs] | Velocity | Max Us   | Time to         |
| 21.6922  | 60.0904                                      |       | [hrs] | Velocity | Max Ds   | Time to         |

Link Min/Max Conditions with Times

| 12.0128  | 12.0128        | 21.6925 | 22.8973                                     | 12.0128 | 0.94     | 0.94       | -0.41 -0.24 0.94 0.94 12.0128 22.8973 21.6925 12.0128 12.0128 |       | 1.66  | 5y1D           | L-146PP 5y1D |
|----------|----------------|---------|---|---------|----------|------------|---|-------|-------|----------------|--------------|
| 59.8077  | 59.8077        | 59.9490 | 1.18 59.8077 57.3094 59.9490 59.8077 59.807 | 59.8077 | 1.18     | 1.18       | -1.67   | -0.99 | 2.09  | L-146PP 100y3D | L-146PP      |
|          |                | [hrs]   |   |         |          |            |   |       |       |                |              |
| [hrs]    | [hrs]          | Flow    | [hrs]                                       | [hrs]   |          |            | [cfs]   |       |       |                |              |
| Velocity | Velocity       | Delta   | Flow  | Flow    | [fps]    | [fps]      | Flow  | [cfs] | [cfs] |                |              |
| Max Ds   | Min/Max Max Us | Min/Max | Min   | Мах     | Velocity | Velocity   | Delta   | Flow  | Flow  | Name           | Name         |
| Time to  | Time to        | Time to | Time to                                     | Time to | Max Ds   | x Max Us N | Min/Max   | Min   | Max   | Sim            | Link         |

| Link    | Sim            | Max   | Min   | Min/Max | Max Us   | Max Ds   | Time to | Time to | Time to | Min/Max Max Us Max Ds Time to Time to Time to Time to Time to | Time to  |
|---------|----------------|-------|-------|---------|----------|----------|---------|---------|---------|---|----------|
| Name    | Name           | Flow  | Flow  | Delta   | Velocity | Velocity | Мах     | Min     | Min/Max | Max Us  | Max Ds   |
|         |                | [cfs] | [cfs] | Flow    | [fps]    | [fps]    | Flow    | Flow    | Delta   | Velocity  | Velocity |
|         |                |       |       | [cfs]   |          |          | [hrs]   | [hrs]   | Flow    | [hrs]   | [hrs]    |
|         |                |       |       |         |          |          |         |         | [hrs]   |   |          |
| L-147PP | L-147PP 100y3D | 3.91  |       | -1.83   | 2.21     | 2.21     | 59.9756 | 24.4942 | 24.4942 | -1.84 -1.83 2.21 2.21 59.9756 24.4942 24.4942 59.9756 59.9756 | 59.9756  |
| L-147PP | L-147PP 5y1D   | 3.56  |       | -1.73   | 2.01     | 2.01     | 12.0039 | 21.6382 | 21.6382 | -1.73 -1.73 2.01 2.01 12.0039 21.6382 21.6382 12.0039 12.0039 | 12.0039  |

|      |             |      |       | FIOW        | [sd1] | [sdi] | FIOW    | FIOW   | Deita   | Velocity | velocity |
|------|-------------|------|-------|-------------|-------|-------|---------|--|---------|----------|----------|
|      |             |      |       | [cfs]       |       |       | [hrs]   | [hrs]  | Flow    | [hrs]    | [hrs]    |
|      |             |      |       |             |       |       |         |  | [hrs]   |          |          |
| t7bb | 17PP 100y3D | 3.91 | -1.84 | -1.84 -1.83 |       | 2.21  | 59.9756 | 2.21 2.21 59.9756 24.4942 24.4942 59.9756 59.9756                  | 24.4942 | 59.9756  | 59.9756  |
| 17PP | 17PP 5y1D   | 3.56 | -1.73 | -1.73       | 2.01  | 2.01  | 12.0039 | 3.56 -1.73 -1.73 2.01 2.01 12.0039 21.6382 21.6382 12.0039 12.0039 | 21.6382 | 12.0039  | 12.0039  |
|      |             |      |       |             |       |       |         |  |         |          |          |

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L-148PP L-148PP

100y3D 5y1D

9.68 8.06

-7.01 -6.21

6.19 5.42

3.08 2.57

3.08 2.57

63.5294 14.7330

59.9376 11.9901

59.0504 12.3754

63.5294 14.7330

63.5294 14.7330

[hrs]

Link Min/Max Conditions with Times

Name

Flow [cfs]

Min Flow [cfs]

Min/Max Delta Flow

Velocity [fps]

Velocity

Max Ds

Time to Max Flow

[cfs]

[hrs]

[hrs]

[hrs]

Min/Max Delta Flow

Max Us Velocity

Max Ds Velocity [hrs]

Sim

Max

Link Min/Max Conditions with Times

Sim Name

Max Flow [cfs]

Min Flow [cfs]

Min/Max Delta Flow

Max Us Velocity

Max Ds Velocity [fps]

Time to Max Flow [hrs]

Min Flow [hrs]

Time to Min/Max Delta

Time to Max Us Velocity

Time to Max Ds Velocity

 $\overrightarrow{\boldsymbol{\omega}}$ 

| L-149PP 5y1D   | L-149PP 100y3D                              |       |       |          | Name Name F | LINK SIM N     |
|--|---|-------|-------|----------|-------------|----------------|
| 8.42   | 10.06                                       |       |       | [cfs]    | Flow        | IVIAX          |
| -8.01  | -7.71                                       |       |       | [cfs]    | Flow        | MIN            |
| -7.87  | -7.71                                       |       | [cfs] | Flow     | Delta       | MIN/Max        |
| 2.91   | -7.71 3.20                                  |       |       | [fps]    | Velocity    | Min/Max Max Us |
| 4.86   |   |       |       | [fps]    | Velocity    | IVIAX US       |
| 14.6114  | 63.2974                                     |       | [hrs] | Flow     | Max         | I Ime to       |
| 23.0996  | 47.7938                                     |       | [hrs] | Flow     | Min         | I Ime to       |
| 23.0996  | 47.7938                                     | [hrs] | Flow  | Delta    | Min/Max     | I Ime to       |
| 8.42 -8.01 -7.87 2.91 4.86 14.6114 23.0996 23.0996 0.0009 0.0009 | 4.86 63.2974 47.7938 47.7938 63.2974 0.0009 |       | [hrs] | Velocity | Max Us      | I Ime to       |
| 0.0009   | 0.0009                                      |       | [hrs] | Velocity | Max Ds      | I Ime to       |

Link Min/Max Conditions with Times

| 12.0249  | 12.0249  | 10.7565 | 1.29 1.29 12.0249 10.7565 10.7565 12.0249 12.0249 | 12.0249 | 1.29     | 1.29     | -1.57   | -1.57 | 2.29  | 5y1D   | L-14P |
|----------|----------|---------|---|---------|----------|----------|---------|-------|-------|--------|-------|
| 60.2009  | 60.2009  | 60.0226 | 1.98 60.2009 24.8791 60.0226 60.2009 60.2009      | 60.2009 | 1.98     | 1.98     | 2.36    | -1.58 | 3.51  | 100y3D | L-14P |
|          |          | [hrs]   |   |         |          |          |         |       |       |        |       |
| [hrs]    | [hrs]    | Flow    | [hrs]   | [hrs]   |          |          | [cfs]   |       |       |        |       |
| Velocity | Velocity | Delta   | Flow  | Flow    | [fps]    | [fps]    | Flow    | [cfs] | [cfs] |        |       |
| Max Ds   | Max Us   | Min/Max | Min   | Max     | Velocity | Velocity | Delta   | Flow  | Flow  | Name   | Name  |
| Time to  | Time to  | Time to | Time to   | Time to | Max Ds   | Max Us   | Min/Max | Min   | Max   | Sim    | Link  |

| Link         | Sim            | Max   | Min   | Min/Max | Min/Max Max Us | Max Ds   | Time to | Time to | Time to | Max Ds Time to Time to Time to Time to                       | Time to  |
|--------------|----------------|-------|-------|---------|----------------|----------|---------|---------|---------|--|----------|
| Name         | Name           | Flow  | Flow  | Delta   | Velocity       | Velocity | Max     | Min     | Min/Max | Max Us   | Max Ds   |
|              |                | [cfs] | [cfs] | Flow    | [fps]          | [fps]    | Flow    | Flow    | Delta   | Velocity   | Velocity |
|              |                |       |       | [cfs]   |                |          | [hrs]   | [hrs]   | Flow    | [hrs]  | [hrs]    |
|              |                |       |       |         |                |          |         |         | [hrs]   |  |          |
| L-150PP      | L-150PP 100y3D | 4.55  | -2.82 | 4.55    | 2.57           | 2.57     | 35.7556 | 46.4125 | 35.7556 | 2.57 35.7556 46.4125 35.7556 35.7556 35.7556                 | 35.7556  |
| L-150PP 5y1D | 5y1D           | 3.93  | -2.76 | 3.93    | 2.22           | 2.22     | 12.3118 | 22.4818 | 12.3118 | -2.76 3.93 2.22 2.22 12.3118 22.4818 12.3118 12.3118 12.3118 | 12.3118  |

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|          |          |         |  |         |          |          |         |       | T     |                |         |
|----------|----------|---------|--|---------|----------|----------|---------|-------|-------|----------------|---------|
| 0.0009   | 60.3712  | 59.7840 | -3.06 -3.93 70.8418 60.3712 59.7840 60.3712 0.0009 | 70.8418 | -3.93    | -3.06    | -5.00   | -5.40 | 4.18  | L-151PP 100v3D | L-151PP |
|          |          | [hrs]   |  |         |          |          |         |       |       |                |         |
| [hrs]    | [hrs]    | Flow    | [hrs]  | [hrs]   |          |          | [cfs]   |       |       |                |         |
| Velocity | Velocity | Delta   | Flow   | Flow    | [fps]    | [fps]    | Flow    | [cfs] | [cfs] |                |         |
| Max Ds   | Max Us   | Min/Max | Min  | Max     | Velocity | Velocity | Delta   | Flow  | Flow  | Name           | Name    |
| Time to  | Time to  | Time to | Time to  | Time to | Max Ds   | Max Us   | Min/Max | Min   | Max   | Sim            | Link    |

| Link                    |  |
|-------------------------|--|
| Min/M                   |  |
| ax Cc                   |  |
| Link Min/Max Conditions |  |
| with                    |  |
| Times                   |  |

Link

| Max Ds Time to Time to Time to Time to                  | Time to  | Time to                                |
|---|----------|--|
| Min Min/Max   | Max Us   | Max Ds                                 |
| Flow Delta  | Velocity | Velocity                               |
| [hrs] Flow  | [hrs]    | [hrs]                                  |
| Time to Time to Min Min/Max<br>Flow Delta<br>[hrs] Flow |          | Time to<br>Max Us<br>Velocity<br>[hrs] |

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|                |          |                 | 2.54 -3.11 -3.11 -1.76 -1.76 12.0479 12.0771 12.0771 12.0771 12.0771 12.0771 |  |
|----------------|----------|-----------------|--|--|
| -2.3           | 9 -2.39  | 9 -2.39 59.8311 | 9 -2.39 59.8311 59.9426  | 3.59 -4.23 -3.67 -2.39 -2.39 59.8311 59.9426 59.8213 59.9426 59.9426 |
|                |          |                 |  | [hrs]  |
|                |          | [hrs]           | [hrs]  |  |
| [fps]          | [fps]    | Flow            |  | Flow   |
| Velocity       | Velocity | Max             |  | Max  |
| Min/Max Max Us | Max Ds   | Max Ds Time to  | Max Ds Time to Time to   | Max Ds Time to   |

Link Min/Max Conditions with Times

| 0.0009   | 12.4400  | 3.53 3.64 12.4400 23.0996 23.0996 12.4400 0.0009       | 23.0996 | 12.4400 | 3.64     | 3.53     | -2.98 -2.98 |       | 6.24  | 5y1D   | L-153PP 5y1D   |
|----------|----------|--|---------|---------|----------|----------|-------------|-------|-------|--------|----------------|
| 60.9005  | 60.9005  | 2.87 3.76 3.76 60.9005 70.8418 69.3973 60.9005 60.9005 | 70.8418 | 60.9005 | 3.76     | 3.76     |             | -2.49 | 6.64  | 100y3D | L-153PP 100y3D |
|          |          | [hrs]  |         |         |          |          |             |       |       |        |                |
| [hrs]    | [hrs]    | Flow   | [hrs]   | [hrs]   |          |          | [cfs]       |       |       |        |                |
| Velocity | Velocity | Delta  | Flow    | Flow    | [fps]    | [fps]    | Flow        | [cfs] | [cfs] |        |                |
| Max Ds   | Max Us   | Min/Max  | Min     | Max     | Velocity | Velocity | Delta       | Flow  | Flow  | Name   | Name           |
| Time to  |          | Time to Time to  | Time to | Time to | Max Ds   | Max Us   | Min/Max     | Min   | Max   | Sim    | Link           |

| Link Min/ | Link Min/Max Conditions with Times | ons with Ti | imes  |         |   |               |                |  |                 |                |          |
|-----------|------------------------------------|-------------|-------|---------|---|---------------|----------------|--|-----------------|----------------|----------|
| Link      | Sim                                | Max         | Min   | Min/Max | Max Us                                  | Max Ds        | Max Ds Time to | Time to  | Time to Time to | Time to        | Time to  |
| Name      | Name                               | Flow        | Flow  | Delta   | Velocity                                | Velocity      | Max            | Min  | Min/Max         | Min/Max Max Us | Max Ds   |
|           |                                    | [cfs]       | [cfs] | Flow    | [fps]                                   | [fps]         | Flow           | Flow   | Delta           | Velocity       | Velocity |
|           |                                    |             |       | [cfs]   |   |               | [hrs]          | [hrs]  | Flow            | [hrs]          | [hrs]    |
|           |                                    |             |       |         |   |               |                |  | [hrs]           |                |          |
| L-154PP   | L-154PP 100y3D                     |             | -7.34 | -3.04   | -4.15                                   | -4.15         | 33.4285        | 2.19 -7.34 -3.04 -4.15 -4.15 33.4285 10.9536 63.1271 10.9536 10.9536 | 63.1271         | 10.9536        | 10.9536  |
|           | 5,,10                              | VU C        | л 00  | 2 7 7   | 2 | 2 2 2 2 2 2 2 | 21 7012        | 72 0007  | 1/ 0504         |                | 72 0007  |

| 23.998   | -3.17 -3.33 -3.33 21.7813 23.9987 14.8596 23.9987 23.9987 | 14.8596 | 23.9987 | 21.7813 | -3.33    | -3.33      | -3.17   | -5.89 | 2.04  | 5y1D           | L-154PP 5y1D |
|----------|---|---------|---------|---------|----------|------------|---------|-------|-------|----------------|--------------|
| 10.953   | -4.15 33.4285 10.9536 63.1271 10.9536 10.9536             | 63.1271 | 10.9536 | 33.4285 |          | -4.15      | -3.04   | -7.34 | 2.19  | L-154PP 100y3D | L-154PP      |
|          |   | [hrs]   |         |         |          |            |         |       |       |                |              |
| [hrs]    | [hrs]   | Flow    | [hrs]   | [hrs]   |          |            | [cfs]   |       |       |                |              |
| Velocity | Velocity  | Delta   | Flow    | Flow    | [fps]    | [fps]      | Flow    | [cfs] | [cfs] |                |              |
| Max Ds   | Max Us  | Min/Max | Min     | Max     | Velocity | Velocity   | Delta   | Flow  | Flow  | Name           | Name         |
| Time to  | Time to   | Time to | Time to | Time to | Max Ds   | Max Max Us | Min/Max | Min   | Max   | Sim            | Link         |

|   | 54PP   |
|---|--|
|   | 54PP 5y1D  |
|   | 2.   |
| 1 | 04   |
|   | -5.89  |
|   | -3.17  |
|   | -3.33  |
|   | -3.33  |
|   | 21.7813  |
|   | 23.9987  |
|   | 2.04 -5.89 -3.17 -3.33 -3.33 21.7813 23.9987 14.8596 23.9987 |
|   | 23.9987  |
|   |  |

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| 0.0009   | 10 2070  | 10 4078         | 10 6978                                     | 12 0416 | 4.24     | -2.54          | -7.97   | 7.16 -7.97 -7.97 -2.54 4.24 12.0416 10.6978 10.6978 10.6978 0.0009 | 7.16        | 5v1D                               | L-15P     |
|----------|----------|-----------------|---|---------|----------|----------------|---------|--|-------------|------------------------------------|-----------|
|          | 60.0576  | 47.4222         | 4.24 60.0576 47.4222 47.4222 60.0576 0.0009 | 60.0576 |          | 2.79           | -6.77   | -6.77  | 8.75        | 100y3D                             | L-15P     |
|          |          | [hrs]           |   |         |          |                |         |  |             |                                    |           |
| [hrs]    | [hrs]    | Flow            | [hrs]                                       | [hrs]   |          |                | [cfs]   |  |             |                                    |           |
| Velocity | Velocity | Delta           | Flow  | Flow    | [fps]    | [fps]          | Flow    | [cfs]  | [cfs]       |                                    |           |
| Max Ds   | Max Us   | Min/Max         | Min   | Max     | Velocity | Velocity       | Delta   | Flow   | Flow        | Name                               | Name      |
| Time to  | Time to  | Time to Time to | Time to                                     | Time to | Max Ds   | Min/Max Max Us | Min/Max | Min  | Max         | Sim                                | Link      |
|          | n.       |                 |   |         |          |                |         | mes  | ons with Ti | Link Min/Max Conditions with Times | Link Min/ |

ZE Link Min/Max Conditions with Times

|      |      |       | 1000  |         |          |          |         |         |         |          |          |
|------|------|-------|-------|---------|----------|----------|---------|---------|---------|----------|----------|
| Link | Sim  | Max   | Min   | Min/Max | Max Us   | Max Ds   | Time to | Time to | Time to | Time to  | Time to  |
| Name | Name | Flow  | Flow  | Delta   | Velocity | Velocity | Max     | Min     | Min/Max | Max Us   | Max Ds   |
|      |      | [cfs] | [cfs] | Flow    | [fps]    | [fps]    | Flow    | Flow    | Delta   | Velocity | Velocity |
|      |      |       |       | [cfs]   |          |          | [hrs]   | [hrs]   | Flow    | [hrs]    | [hrs]    |

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| L-16P                                      | L-16P                                      |       |       |          | Name     | Link    |
|--|--|-------|-------|----------|----------|---------|
| 5y1D                                       | 100y3D                                     |       |       |          | Name     | Sim     |
| 54.81                                      | 58.01                                      |       |       | [cfs]    | Flow     | Max     |
| -53.58                                     | -58.51                                     |       |       | [cfs]    | Flow     | Min     |
| 54.81 -53.58 54.81                         | -58.51                                     |       | [cfs] | Flow     | Delta    | Min/Max |
| 3.69                                       | 3.69                                       |       |       | [fps]    | Velocity | Max Us  |
| 7.03                                       | 7.03                                       |       |       | [fps]    | Velocity | Max Ds  |
| 23.2347                                    | 24.8000                                    |       | [hrs] | Flow     | Max      | Time to |
| 23.3138                                    | 70.4302                                    |       | [hrs] | Flow     | Min      | Time to |
| 23.2347                                    | 70.4302                                    | [hrs] | Flow  | Delta    | Min/Max  | Time to |
| 7.03 23.2347 23.3138 23.2347 0.0038 0.0009 | 7.03 24.8000 70.4302 70.4302 0.0038 0.0009 |       | [hrs] | Velocity | Max Us   | Time to |
| 0.0009                                     | 0.0009                                     |       | [hrs] | Velocity | Max Ds   | Time to |

Link Min/Max Conditions with Times

| 23.2347  | 23.2347  | 4.96 -2.94 -2.94 23.3138 23.2347 23.3138 23.2347 23.2347 | 23.2347 | 23.3138 | -2.94    | -2.94      |         | -5.20 | 4.96  | 5y1D   | L-17P |
|----------|----------|--|---------|---------|----------|------------|---------|-------|-------|--------|-------|
| 70.3778  | 70.3778  | 3.16 70.3778 47.8649 47.8649 70.3778 70.3778             | 47.8649 | 70.3778 | 3.16     | -5.53 3.16 | -5.53   | -5.53 | 5.59  | 100y3D | L-17P |
|          |          | [hrs]  |         |         |          |            |         |       |       |        |       |
| [hrs]    | [hrs]    | Flow   | [hrs]   | [hrs]   |          |            | [cfs]   |       |       |        |       |
| Velocity | Velocity | Delta  | Flow    | Flow    | [fps]    | [fps]      | Flow    | [cfs] | [cfs] |        |       |
| Max Ds   | Max Us   | Min/Max  | Min     | Мах     | Velocity | Velocity   | Delta   | Flow  | Flow  | Name   | Name  |
| Time to  | Time to  | Time to  | Time to | Time to | Max Ds   | Max Us     | Min/Max | Min   | Max   | Sim    | Link  |

|       | IVIAX CUTION | LINK WIND WAX CONDUCTOR WITH TIMES | Salli      |         |                |          |         |         |                         |   |          |
|-------|--------------|------------------------------------|------------|---------|----------------|----------|---------|---------|-------------------------|---|----------|
| Link  | Sim          | Max                                | Min        | Min/Max | Min/Max Max Us | Max Ds   | Time to | Time to | Time to Time to Time to | Time to   | Time to  |
| Name  | Name         | Flow                               | Flow       | Delta   | Velocity       | Velocity | Max     | Min     | Min/Max                 | Max Us  | Max Ds   |
|       |              | [cfs]                              | [cfs]      | Flow    | [fps]          | [fps]    | Flow    | Flow    | Delta                   | Velocity  | Velocity |
|       |              |                                    |            | [cfs]   |                |          | [hrs]   | [hrs]   | Flow                    | [hrs]   | [hrs]    |
|       |              |                                    |            |         |                |          |         |         | [hrs]                   |   |          |
| L-18P | 100y3D       | 3.79                               | -2.45      | 2.09    | 2.14           | 2.14     | 60.2956 | 59.5478 | 60.4870                 | 3.79 -2.45 2.09 2.14 2.14 60.2956 59.5478 60.4870 60.2956 60.2956 | 60.2956  |
| L-18P | 5y1D         | 2.45                               | 2.45 -1.59 | 1.71    | 1.39           | 1.39     | 13.0551 | 12.5893 | 12.5177                 | 1.71 1.39 1.39 13.0551 12.5893 12.5177 13.0551 13.0551            | 13.0551  |

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| Link Min/ | Link Min/Max Conditions with Times | ions with T | imes  |         |          |          |         |         |         |          |          |
|-----------|------------------------------------|-------------|-------|---------|----------|----------|---------|---------|---------|----------|----------|
| Link      | Sim                                | Max         | Min   | Min/Max | Max Us   | Max Ds   | Time to | Time to | Time to | Time to  | Time to  |
| Name      | Name                               | Flow        | Flow  | Delta   | Velocity | Velocity | Max     | Min     | Min/Max | Max Us   | Max Ds   |
|           |                                    | [cfs]       | [cfs] | Flow    | [fps]    | [fps]    | Flow    | Flow    | Delta   | Velocity | Velocity |
|           |                                    |             |       | [cfs]   |          |          | [hrs]   | [hrs]   | Flow    | [hrs]    | [hrs]    |
|           |                                    |             |       |         |          |          |         |         |         |          |          |

L-22P L-22P

100y3D 5y1D

3.17 2.97

-2.91 -2.91

2.79 -2.38

1.80 1.68

1.80 1.68

60.0514 12.5090

59.5845 12.1360

60.7391 12.1729

60.0514 12.5090

60.0514 12.5090

[hrs]

Link Min/Max Conditions with Times

Sim Name

Max Flow [cfs]

Min Flow [cfs]

Min/Max Delta Flow [cfs]

Max Us Velocity

Max Ds Velocity [fps]

Time to Max Flow [hrs]

Time to Min Flow [hrs]

Time to Min/Max Delta Flow

Time to Max Us Velocity

Time to Max Ds Velocity

| L-37P   | L-37P                                      |       |       |          | Name     | Link            |
|---|--|-------|-------|----------|----------|-----------------|
| 5y1D  | 100y3D                                     |       |       |          | Name     | Sim             |
| 6.25  | 6.88                                       |       |       | [cfs]    | Flow     | Max             |
|   | -5.56                                      |       |       | [cfs]    | Flow     | Min             |
| -5.75   | 6.40                                       |       | [cfs] | Flow     | Delta    | Min/Max Max Us  |
| 2.37  | 2.37                                       |       |       | [fps]    | Velocity | Max Us          |
| 4.56  |  |       |       | [fps]    | Velocity | Max Ds          |
| 12.0771   | 59.9338                                    |       | [hrs] | Flow     | Max      | Time to         |
| 23.0996   | 70.8418                                    |       | [hrs] | Flow     | Min      | Time to         |
| 23.0996   | 69.3973                                    | [hrs] | Flow  | Delta    | Min/Max  | Time to Time to |
| -6.64 -5.75 2.37 4.56 12.0771 23.0996 23.0996 0.0009 0.0009 | 4.56 59.9338 70.8418 69.3973 0.0009 0.0009 |       | [hrs] | Velocity | Max Us   | Time to         |
| 0.0009  | 0.0009                                     |       | [hrs] | Velocity | Max Ds   | Time to         |

Link Min/Max Conditions with Times

| 0.0009   | 23.0996  | 23.0996         | 3.41 12.0609 23.0996 23.0996 23.0996 0.0009 | 12.0609 |          | -2.02    | -3.57   | -3.57 | 3.51  | 5y1D   | L-38P |
|----------|----------|-----------------|---|---------|----------|----------|---------|-------|-------|--------|-------|
| 0.0009   | 69.3973  | 69.3973         | 3.41 69.3973 69.8996 69.3973 69.3973        | 69.3973 | 3.41     | 2.11     | 3.67    | -3.02 | 3.73  | 100y3D | L-38P |
|          |          | [hrs]           |   |         |          |          |         |       |       |        |       |
| [hrs]    | [hrs]    | Flow            | [hrs]                                       | [hrs]   |          |          | [cfs]   |       |       |        |       |
| Velocity | Velocity | Delta           | Flow  | Flow    | [fps]    | [fps]    | Flow    | [cfs] | [cfs] |        |       |
| Max Ds   | Max Us   | Min/Max         | Min   | Max     | Velocity | Velocity | Delta   | Flow  | Flow  | Name   | Name  |
| Time to  |          | Time to Time to | Time to                                     | Time to | Max Ds   | Max Us   | Min/Max | Min   | Max   | Sim    | Link  |

| Link Min/ | Link Min/Max Conditions with Times | ons with T | imes  |         |                |          |         |  |                |          |          |
|-----------|------------------------------------|------------|-------|---------|----------------|----------|---------|--|----------------|----------|----------|
| Link      | Sim                                | Max        | Min   | Min/Max | Min/Max Max Us | Max Ds   | Time to | Max Ds Time to Time to Time to Time to           | Time to        | Time to  | Time to  |
| Name      | Name                               | Flow       | Flow  | Delta   | Velocity       | Velocity | Max     | Min  | Min/Max Max Us |          | Max Ds   |
|           |                                    | [cfs]      | [cfs] | Flow    | [fps]          | [fps]    | Flow    | Flow   | Delta          | Velocity | Velocity |
|           |                                    |            |       | [cfs]   |                |          | [hrs]   | [hrs]  | Flow           | [hrs]    | [hrs]    |
|           |                                    |            |       |         |                |          |         |  | [hrs]          |          |          |
| L-41P     | 100y3D                             | 5.93       | 0.00  | 4.05    |                | 1.37     | 60.9716 | 1.37 1.37 60.9716 0.0000 69.3307 60.9716 60.9716 | 69.3307        | 60.9716  | 60.9716  |
| 1_41D     | 5v1D                               | 2 T D      | 0 00  | -3 81   | 7 N F          | 1 05     | 13 1015 |  | 14 788N        |          | 13 /015  |

| Link  | Sim    | Max   | Min   | Min/Max | Max Us   | Max Ds   | Time to | Time to                                     | Time to | Time to  | Time to  |
|-------|--------|-------|-------|---------|----------|----------|---------|---|---------|----------|----------|
| Name  | Name   | Flow  | Flow  | Delta   | Velocity | Velocity | Max     | Min   | Min/Max | Max Us   | Max Ds   |
|       |        | [cfs] | [cfs] | Flow    | [fps]    | [fps]    | Flow    | Flow  | Delta   | Velocity | Velocity |
|       |        |       |       | [cfs]   |          |          | [hrs]   | [hrs]                                       | Flow    | [hrs]    | [hrs]    |
|       |        |       |       |         |          |          |         |   | [hrs]   |          |          |
| L-41P | 100y3D | 5.93  | 0.00  | 4.05    | 1.37     | 1.37     | 60.9716 | 1.37 60.9716 0.0000 69.3307 60.9716 60.971  | 69.3307 | 60.9716  | 60.9716  |
| L-41P | 5y1D   | 4.52  | 0.00  | -3.81   | 1.05     |          | 13.4915 | 1.05 13.4915 0.0000 14.2880 13.4915 13.4915 | 14.2880 | 13.4915  | 13.4915  |

| Ч   | SIM    | Max   | MIN             | Min/Max | Max Us   | Min/Max Max Us Max Us Time to | l ime to     | l ime to | lime to lime to | l ime to  | l ime to |
|-----|--------|-------|-----------------|---------|----------|-------------------------------|--------------|----------|-----------------|---|----------|
| ame | Name   | Flow  | Flow            | Delta   | Velocity | Velocity                      | Max          | Min      | Min/Max         | Max Us  | Max Ds   |
|     |        | [cfs] | [cfs]           | Flow    | [fps]    | [fps]                         | Flow         | Flow     | Delta           | Velocity  | Velocity |
|     |        |       |                 | [cfs]   |          |                               | [hrs]        | [hrs]    | Flow            | [hrs]   | [hrs]    |
|     |        |       |                 |         |          |                               |              |          | [hrs]           |   |          |
| 41P | 100y3D | 5.93  | 0.00            | 4.05    | 1.37     | 1.37                          | 1.37 60.9716 | 0.0000   | 69.3307         | 60.9716 60.9716                                       | 60.9716  |
| 41P | 5y1D   | 4.52  | 4.52 0.00 -3.81 | -3.81   | 1.05     |                               | 13.4915      | 0.0000   | 14.2880         | 1.05   13.4915   0.0000   14.2880   13.4915   13.4915 | 13.4915  |

| 13.4915  | 1.05 13.4915 0.0000 14.2880 13.4915 13.4915 | 14.2880 | 0.0000 | 13.4915 |          | 1.05     | -3.81 | 4.52 0.00 -3.81 1.05 | 4.52  | 5y1D   | 41P |
|----------|---|---------|--------|---------|----------|----------|-------|----------------------|-------|--------|-----|
| 60.9716  | 1.37 60.9716 0.0000 69.3307 60.9716 60.9716 | 69.3307 | 0.0000 | 60.9716 |          | 1.37     | 4.05  | 0.00                 | 5.93  | 100y3D | 41P |
|          |   | [hrs]   |        |         |          |          |       |                      |       |        |     |
| [hrs]    | [hrs]                                       | Flow    | [hrs]  | [hrs]   |          |          | [cfs] |                      |       |        |     |
| Velocity | Velocity                                    | Delta   | Flow   | Flow    | [fps]    | [fps]    | Flow  | [cfs]                | [cfs] |        |     |
| Max Ds   | Max Us                                      | Min/Max | Min    | Max     | Velocity | Velocity | Delta | Flow                 | Flow  | Name   | ame |

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L-44P L-44P

100y3D 5y1D

1.97 1.99

-5.66 -5.04

-5.21 -4.38

-3.20 -2.85

-3.20 -2.85

12.3262 22.6057

14.0196 22.6053

71.1111 22.6053

14.0196 22.6053

14.0196 22.6053

[hrs]

Link Min/Max Conditions with Times

Sim Name

Max Flow [cfs]

Min Flow [cfs]

Min/Max Delta Flow [cfs]

Max Us Velocity

Max Ds Velocity [fps]

Time to Max Flow [hrs]

Min Flow [hrs]

Time to Min/Max Delta

Time to Max Us Velocity

Time to Max Ds Velocity

Link Min/Max Conditions with Times

Name Sim

Flow [cfs] Max

Min Flow [cfs]

Min/Max Delta Flow

Velocity [fps]

Velocity

Time to Max Flow

Min/Max Delta

Max Us Velocity

Max Ds Velocity [hrs]

Max Ds

[cfs]

[hrs]

[hrs]

Flow

[hrs]

| L-45P 5y1D   | L-45P 100y3D  |       |       |          | Name Name | Link Sim        |
|--|---|-------|-------|----------|-----------|-----------------|
|  | 3D 12.46  |       |       | [cfs]    | Flow      | Max             |
| -5.76  | -5.43   |       |       | [cfs]    | Flow      | Min             |
| 9.15   | 11.25   |       | [cfs] | Flow     | Delta     | Min/Max         |
| 3.69   | 3.97  |       |       | [fps]    | Velocity  | Min/Max Max Us  |
| 3.69   | 3.97  |       |       | [fps]    | Velocity  | Max Ds          |
| 22.6053  | 14.0196   |       | [hrs] | Flow     | Max       | Time to         |
| 12.0466  | 59.9847   |       | [hrs] | Flow     | Min       | Time to         |
| 22.6053  | 71.1111   | [hrs] | Flow  | Delta    | Min/Max   | Time to Time to |
| 11.60 -5.76 9.15 3.69 3.69 22.6053 12.0466 22.6053 22.6053 22.6053 | -5.43 11.25 3.97 3.97 14.0196 59.9847 71.1111 14.0196 14.0196 |       | [hrs] | Velocity | Max Us    |                 |
| 22.6053  | 14.0196   |       | [hrs] | Velocity | Max Ds    | Time to         |

Link Min/Max Conditions with Times

| 11.9313  | 11.9313  | -1.38 12.9418 11.9313 21.7262 11.9313 11.9313 | 11.9313 | 12.9418 |          | -1.38    | -2.06   | -2.45 | 1.85  | 5y1D   | L-46P |
|----------|----------|---|---------|---------|----------|----------|---------|-------|-------|--------|-------|
| 66.0067  | 59.1636  | 1.45 60.5499 59.1636 24.1038 59.1636 66.0067  | 59.1636 | 60.5499 |          | -1.35    | -2.08   | -2.39 | 2.15  | 100y3D | L-46P |
|          |          | [hrs]   |         |         |          |          |         |       |       |        |       |
| [hrs]    | [hrs]    | Flow  | [hrs]   | [hrs]   |          |          | [cfs]   |       |       |        |       |
| Velocity | Velocity | Delta   | Flow    | Flow    | [fps]    | [fps]    | Flow    | [cfs] | [cfs] |        |       |
| Max Ds   | Max Us   | Min/Max                                       | Min     | Max     | Velocity | Velocity | Delta   | Flow  | Flow  | Name   | Name  |
| Time to  | Time to  | Time to                                       | Time to | Time to | Max Ds   | Max Us   | Min/Max | Min   | Max   | Sim    | Link  |

| Link  | Sim    | Max   | Min  | Min/Max | Min/Max Max Us | Max Ds   | Time to | Time to | Time to | Time to  | Time to  |
|-------|--------|-------|--|---------|----------------|----------|---------|---------|---------|--|----------|
| Name  | Name   | Flow  | Flow   | Delta   | Velocity       | Velocity | Max     | Min     | Min/Max | Max Us   | Max Ds   |
|       |        | [cfs] | [cfs]  | Flow    | [fps]          | [fps]    | Flow    | Flow    | Delta   | Velocity   | Velocity |
|       |        |       |  | [cfs]   |                |          | [hrs]   | [hrs]   | Flow    | [hrs]  | [hrs]    |
|       |        |       |  |         |                |          |         |         | [hrs]   |  |          |
| L-47P | 100y3D |       | 9.10 -9.60   | 8.66    | -3.06          | -3.06    | 62.1181 | 60.0112 | 24.6844 | 8.66 -3.06 -3.06 62.1181 60.0112 24.6844 60.0112 60.0112 | 60.0112  |
| L-47P | 5y1D   | 8.95  | 8.95 -10.56 8.95 -3.36 -3.36 21.4853 12.0221 21.4853 12.0221 12.0221 | 8.95    | -3.36          | -3.36    | 21.4853 | 12.0221 | 21.4853 | 12.0221  | 12.0221  |

| 12.0221  | -3.36 -3.36 21.4853 12.0221 21.4853 12.0221 12.0221 | 21.4853 | 12.0221 | 21.4853 | -3.36    | -3.36    | 8.95           | 8.95 -10.56 | 8.95  | 17P 5y1D | 17P |
|----------|---|---------|---------|---------|----------|----------|----------------|-------------|-------|----------|-----|
| 60.0112  | -3.06 62.1181 60.0112 24.6844 60.0112 60.0112       | 24.6844 | 60.0112 | 62.1181 | -3.06    | -3.06    | 8.66           | -9.60       | 9.10  | 100y3D   | 17P |
|          |   | [hrs]   |         |         |          |          |                |             |       |          |     |
| [hrs]    | [hrs]   | Flow    | [hrs]   | [hrs]   |          |          | [cfs]          |             |       |          |     |
| Velocity | Velocity  | Delta   | Flow    | Flow    | [fps]    | [fps]    | Flow           | [cfs]       | [cfs] |          |     |
| Max Ds   | Max Us  | Min/Max | Min     | Max     | Velocity | Velocity | Delta          | Flow        | Flow  | Name     | me  |
|          |   |         |         |         | IVIDA DS |          | IVIII I/ IVIAX |             | IVIDA |          | 7   |

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| Name     | Link    | Link Min/N    |
|----------|---------|---------------|
| Name     | Sim     | Max Cond      |
| Flow     | Max     | itions with T |
| Flow     | Min     | ith Times     |
| Delta    | Min/Max |               |
| Velocity | Max Us  |               |
| Velocity | Max Ds  |               |
| Max      | Time to |               |
| Min      | Time to |               |
| Min/Max  | Time to |               |
| Max Us   | Time to |               |
| Max Ds   | Time to |               |
|          |         |               |

[cfs]

Flow [cfs]

[fps]

[fps]

Flow [hrs]

Flow [hrs]

Delta Flow

[hrs] Velocity

[hrs]

Velocity

L-50P L-50P

100y3D 5y1D

22.48 20.79

-23.15 -18.54

-23.15 -18.54

-3.28 2.94

-3.28 2.94

70.9182 12.6225

36.4474 23.5111

36.4474 23.5111

36.4474 12.6225

36.4474 12.6225

[hrs]

Link Min/Max Conditions with Times

Sim Name

Max Flow [cfs]

Min Flow [cfs]

Min/Max Delta Flow [cfs]

Max Us Velocity

Max Ds Velocity

[fps]

Time to Max Flow [hrs]

Time to Min Flow [hrs]

Time to Min/Max Delta Flow

Time to Max Us Velocity

Time to Max Ds Velocity

| L-51P 5  | L-51P 10  |       |       |          | Name N   | Link Sim       |
|--|---|-------|-------|----------|----------|----------------|
| 5y1D   | 100y3D  |       |       |          | Name     |                |
| 2.44   | 2.34  |       |       | [cfs]    | Flow     | Max            |
| -3.49  | -3.93   |       |       | [cfs]    | Flow     | Min            |
| -3.49  | -3.93   |       | [cfs] | Flow     | Delta    | Min/Max Max Us |
| -1.98  | -2.22   |       |       | [fps]    | Velocity | Max Us         |
| -1.98  | -2.22   |       |       | [fps]    | Velocity | Max Ds         |
| 14.8596  | 33.9156   |       | [hrs] | Flow     | Max      | Time to        |
| 23.5111  | 36.6080   |       | [hrs] | Flow     | Min      | Time to        |
| 2.44 -3.49 -3.49 -1.98 -1.98 14.8596 23.5111 23.5111 23.5111 23.5111 | -3.93 -2.22 -2.22 33.9156 36.6080 36.6080 36.6080 36.6080 | [hrs] | Flow  | Delta    | Min/Max  | Time to        |
| 23.5111  | 36.6080   |       | [hrs] | Velocity | Max Us   | Time to        |
| 23.5111  | 36.6080   |       | [hrs] | Velocity | Max Ds   | Time to        |

Link Min/Max Conditions with Times

| 21.4853  | 21.4853  | 1.90 1.91 21.4853 14.7040 21.4853 21.4853 21.4853 | 14.7040 | 21.4853 | 1.91     | 1.90     | -10.39 13.10 | -10.39       | 13.41 | 5y1D   | L-52P |
|----------|----------|---|---------|---------|----------|----------|--------------|--------------|-------|--------|-------|
| 13.3226  | 13.3226  | 2.34 13.3226 46.0658 13.3224 13.3226 13.3226      | 46.0658 | 13.3226 | 2.34     | 2.34     | 13.42        | 16.53 -11.01 | 16.53 | 100y3D | L-52P |
|          |          | [hrs]   |         |         |          |          |              |              |       |        |       |
| [hrs]    | [hrs]    | Flow  | [hrs]   | [hrs]   |          |          | [cfs]        |              |       |        |       |
| Velocity | Velocity | Delta   | Flow    | Flow    | [fps]    | [fps]    | Flow         | [cfs]        | [cfs] |        |       |
| Max Ds   | Max Us   | Min/Max   | Min     | Мах     | Velocity | Velocity | Delta        | Flow         | Flow  | Name   | Name  |
| Time to  |          | Time to Time to                                   | Time to | Time to | Max Ds   | Max Us   | Min/Max      | Min          | Max   | Sim    | Link  |

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| Link Min/ | Link Min/Max Conditions with Times | ions with T | mes    |                    |                |          |         |         |                         |   |          |
|-----------|------------------------------------|-------------|--------|--------------------|----------------|----------|---------|---------|-------------------------|---|----------|
| Link      | Sim                                | Max         | Min    | Min/Max            | Min/Max Max Us | Max Ds   | Time to | Time to | Time to Time to Time to | Time to   | Time to  |
| Name      | Name                               | Flow        | Flow   | Delta              | Velocity       | Velocity | Max     | Min     | Min/Max                 | Max Us  | Max Ds   |
|           |                                    | [cfs]       | [cfs]  | Flow               | [fps]          | [fps]    | Flow    | Flow    | Delta                   | Velocity  | Velocity |
|           |                                    |             |        | [cfs]              |                |          | [hrs]   | [hrs]   | Flow                    | [hrs]   | [hrs]    |
|           |                                    |             |        |                    |                |          |         |         | [hrs]                   |   |          |
| L-53P     | 100y3D                             |             | -29.39 | 33.29 -29.39 33.28 |                | 2.69     | 69.0809 | 44.9022 | 69.0809                 | 2.65 2.69 69.0809 44.9022 69.0809 69.0809 69.0809 | 69.0809  |
| 1 730     | הייזח                              | 10 00       | VV OC  |                    | 1 C            | cr c     | 1/ 4051 | 21 1052 | 1/ 4051                 | 1/ 4051   | 1/ 0474  |

| 14.8676  | 14.6951 21.4853 14.6951 14.6951 14.867 | 14.6951 | 21.4853 | 14.6951      | 2.43     | 2.41     | 30.23   | -28.44 | 30.24 | 5y1D   | L-53P |
|----------|--|---------|---------|--------------|----------|----------|---------|--------|-------|--------|-------|
| 69.0809  | 69.0809                                | 69.0809 | 44.9022 | 2.69 69.0809 | 2.69     | 2.65     | 33.28   | -29.39 | 33.29 | 100y3D | L-53P |
|          |  | [hrs]   |         |              |          |          |         |        |       |        |       |
| [hrs]    | [hrs]                                  | Flow    | [hrs]   | [hrs]        |          |          | [cfs]   |        |       |        |       |
| Velocity | Velocity                               | Delta   | Flow    | Flow         | [fps]    | [fps]    | Flow    | [cfs]  | [cfs] |        |       |
| Max Ds   | Max Us                                 | Min/Max | Min     | Max          | Velocity | Velocity | Delta   | Flow   | Flow  | Name   | Name  |
| Time to  | Time to                                | Time to | Time to | Time to      | Max Ds   | Max Us   | Min/Max | Min    | Max   | Sim    | Link  |

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| Link  | Sim    | Max   | Min          | Min/Max | Max Us   | Min/Max Max Us Max Ds | Time to | Time to | Time to Time to                              | Time to  | Time to  |
|-------|--------|-------|--------------|---------|----------|-----------------------|---------|---------|--|----------|----------|
| Name  | Name   | Flow  | Flow         | Delta   | Velocity | Velocity              | Max     | Min     | Min/Max                                      | Max Us   | Max Ds   |
|       |        | [cfs] | [cfs]        | Flow    | [fps]    | [fps]                 | Flow    | Flow    | Delta  | Velocity | Velocity |
|       |        |       |              | [cfs]   |          |                       | [hrs]   | [hrs]   | Flow   | [hrs]    | [hrs]    |
|       |        |       |              |         |          |                       |         |         | [hrs]  |          |          |
| L-54P | 100y3D | 59.55 | 59.55 -37.69 | 59.55   | 4.74     |                       | 69.9645 | 34.3138 | 5.06 69.9645 34.3138 69.9645 69.9645 69.9645 | 69.9645  | 69.964   |
| L-54P | 5y1D   | 57.65 | -42.57       | 57.65   | 4.59     |                       | 14.6098 | 10.8107 | 5.34 14.6098 10.8107 14.6098 14.6098 14.7938 | 14.6098  | 14.7938  |

Link Min/Max Conditions with Times Min Flow [cfs]

Link

Sim Name

Max Flow [cfs]

Min/Max Max Us Delta Velocity Flow [fps]

Max Ds Velocity [fps]

Time to Max Flow

Time to Min/Max Delta

Time to Max Us Velocity

Time to Max Ds Velocity

Velocity [fps]

[cfs]

[hrs]

[hrs]

Flow

[hrs]

[hrs]

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| L-55P 5y1D  | L-55P 100  |       |       |          | Name Name | Link Sim        |
|---|--|-------|-------|----------|-----------|-----------------|
| D   | 100y3D   |       |       | [cfs]    | ne Flow   | Max             |
| 7.74  | 9.53   |       |       |          |           |                 |
| -7.03   | 9.53 -6.21   |       |       | [cfs]    | Flow      | Min             |
| 7.73  | 8.87   |       | [cfs] | Flow     | Delta     | Min/Max Max Us  |
| 4.38  | 5.39   |       |       | [fps]    | Velocity  |                 |
| 5.48  | 5.92   |       |       | [fps]    | Velocity  | Max Ds          |
| 21.8320   | 36.7298  |       | [hrs] | Flow     | Max       | Time to         |
| 10.8107   | 34.1929  |       | [hrs] | Flow     | Min       | Time to         |
| 7.74 -7.03 7.73 4.38 5.48 21.8320 10.8107 21.8320 21.8320 14.6098 | 8.87 5.39 5.92 36.7298 34.1929 46.2747 36.7298 69.9645 | [hrs] | Flow  | Delta    | Min/Max   | Time to Time to |
| 21.8320   | 36.7298  |       | [hrs] | Velocity | Max Us    |                 |
| 14.6098   | 69.9645  |       | [hrs] | Velocity | Max Ds    | Time to         |

Link Min/Max Conditions with Times

| 14.8364  | 14.8364  | 14.8364         | 0.00 149.93 3.90 3.90 14.8364 0.0000 14.8364 14.8364 14.8364 | 14.8364 | 3.90     | 3.90     | 149.93      | 0.00  | 149.93 | 5y1D   | L-56P |
|----------|----------|-----------------|--|---------|----------|----------|-------------|-------|--------|--------|-------|
| 62.7973  | 62.7973  | 62.7973         | 3.78 62.7973 0.0000 62.7973 62.7973 62.7973                  | 62.7973 | 3.78     | 3.78     | 0.00 145.60 | I I   | 145.60 | 100y3D | L-56P |
|          |          | [hrs]           |  |         |          |          |             |       |        |        |       |
| [hrs]    | [hrs]    | Flow            | [hrs]  | [hrs]   |          |          | [cfs]       |       |        |        |       |
| Velocity | Velocity | Delta           | Flow   | Flow    | [fps]    | [fps]    | Flow        | [cfs] | [cfs]  |        |       |
| Max Ds   | Max Us   | Min/Max         | Min  | Max     | Velocity | Velocity | Delta       | Flow  | Flow   | Name   | Name  |
| Time to  |          | Time to Time to | Time to  | Time to | Max Ds   | Max Us   | Min/Max     | Min   | Max    | Sim    | Link  |

| Link Min/ | Link Min/Max Conditions with Times | ons with T | mes    |  |          |          |          |   |         |          |          |
|-----------|------------------------------------|------------|--------|--|----------|----------|----------|---|---------|----------|----------|
| Link      | Sim                                | Max        | Min    | Min/Max  | Max Us   | Max Ds   | Time to  | Min/Max Max Us Max Ds Time to Time to Time to Time to Time to | Time to | Time to  | Time to  |
| Name      | Name                               | Flow       | Flow   | Delta  | Velocity | Velocity | Max      | Min   | Min/Max | Max Us   | Max Ds   |
|           |                                    | [cfs]      | [cfs]  | Flow   | [fps]    | [fps]    | Flow     | Flow  | Delta   | Velocity | Velocity |
|           |                                    |            |        | [cfs]  |          |          | [hrs]    | [hrs]   | Flow    | [hrs]    | [hrs]    |
|           |                                    |            |        |  |          |          |          |   | [hrs]   |          |          |
| L-58P     | 100y3D                             |            | -1.93  | 4.00 -1.93 -1.93 2.27 2.27 60.0148 34.2774 34.2774 60.0148 60.0148 | 2.27     | 2.27     | 60.0148  | 34.2774   | 34.2774 | 60.0148  | 60.0148  |
|           | העוח                               | 1 75       | _1 F.2 |  | 00 0     | 0 00     | 11 05 77 | 70 2077   | 2000 00 | 11 05 37 | 11 05 77 |

| Link  | Sim    | Max   | Min   | Min/Max | Max Us   | Max Ds   | Time to | Time to                                     | Time to | Time to  | Time to  |
|-------|--------|-------|-------|---------|----------|----------|---------|---|---------|----------|----------|
| Name  | Name   | Flow  | Flow  | Delta   | Velocity | Velocity | Max     | Min   | Min/Max | Max Us   | Max Ds   |
|       |        | [cfs] | [cfs] | Flow    | [fps]    | [fps]    | Flow    | Flow  | Delta   | Velocity | Velocity |
|       |        |       |       | [cfs]   |          |          | [hrs]   | [hrs]                                       | Flow    | [hrs]    | [hrs]    |
|       |        |       |       |         |          |          |         |   | [hrs]   |          |          |
| L-58P | 100y3D | 4.00  | -1.93 | -1.93   | 2.27     | 2.27     | 60.0148 | 2.27 60.0148 34.2774 34.2774 60.0148        | 34.2774 | 60.0148  | 60.0148  |
| L-58P | 5y1D   | 1.75  | -1.52 | 1.70    | 0.99     |          | 11.9527 | 0.99 11.9527 23.2427 22.2996 11.9527 11.952 | 22.2996 | 11.9527  | 11.9527  |

| 12.0417  | 12.0417  | 1.64 12.0417 0.0000 11.8920 12.0417 12.041       | 0.0000  | 12.0417 | 1.64     | 1.64           | 0.24    | 0.00  | 2.01  | 5y1D   | L-59P |
|----------|----------|--|---------|---------|----------|----------------|---------|-------|-------|--------|-------|
| 60.0145  | 60.0145  | 2.64 2.64 60.0145 0.0000 13.3787 60.0145 60.0145 | 0.0000  | 60.0145 | 2.64     |                | -0.54   | 0.00  | 3.24  | 100y3D | L-59P |
|          |          | [hrs]  |         |         |          |                |         |       |       |        |       |
| [hrs]    | [hrs]    | Flow   | [hrs]   | [hrs]   |          |                | [cfs]   |       |       |        |       |
| Velocity | Velocity | Delta  | Flow    | Flow    | [fps]    | [fps]          | Flow    | [cfs] | [cfs] |        |       |
| Max Ds   | Max Us   | Min/Max  | Min     | Max     | Velocity | Velocity       | Delta   | Flow  | Flow  | Name   | Name  |
| Time to  | Time to  | Time to Time to                                  | Time to | Time to | Max Ds   | Min/Max Max Us | Min/Max | Min   | Max   | Sim    | Link  |

Link Min/Max Conditions with Times

| _          |  |
|------------|--|
| ink        |  |
| Min        |  |
| Min/Max    |  |
| Conditions |  |
| with       |  |
| Times      |  |
|            |  |

Sim Name

Max Flow [cfs]

Min Flow [cfs]

Min/Max Max Us Delta Velocity Flow [fps]

Max Ds Velocity [fps]

Time to Max Flow

Min Flow [hrs]

Time to Min/Max Delta Flow

Time to Max Us Velocity

Time to Max Ds Velocity

[cfs]

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| L-60P                                     |   |       |       |          | Name     | Link            |
|---|---|-------|-------|----------|----------|-----------------|
| 5y1D                                      | 100y3D                                    |       |       |          | Name     | Sim             |
| 15.90                                     |   |       |       | [cfs]    | Flow     | Max             |
| 15.90 -7.69                               | 15.90 -15.65 -15.65                       |       |       | [cfs]    | Flow     | Min             |
|   | -15.65                                    |       | [cfs] | Flow     | Delta    | Min/Max         |
| 8.04 5.47                                 | 5.47                                      |       |       | [fps]    | Velocity | Max Us          |
| 6.53                                      |   |       |       | [fps]    | Velocity | Max Ds          |
| 0.0030                                    | 0.0030                                    |       | [hrs] | Flow     | Max      | Time to         |
| 19.2729                                   | 32.0818                                   |       | [hrs] | Flow     | Min      | Time to         |
| 19.4889                                   | 32.0818                                   | [hrs] | Flow  | Delta    | Min/Max  | Time to         |
| 6.53 0.0030 19.2729 19.4889 0.0018 0.0018 | 6.53 0.0030 32.0818 32.0818 0.0018 0.0018 |       | [hrs] | Velocity | Max Us   | Time to Time to |
| 0.0018                                    | 0.0018                                    |       | [hrs] | Velocity | Max Ds   | Time to         |

Link Min/Max Conditions with Times

| 12.4488  | 12.4488        | 12.4489 | 0.0000   | 12.4488 | 0.56     | 0.56     | 0.00 -3.96 0.56 0.56 12.4488 0.0000 12.4489 12.4488 12.4488 |       | 3.96  | 5y1D   | L-61P |
|----------|----------------|---------|--|---------|----------|----------|---|-------|-------|--------|-------|
| 59.6769  | 59.6769        | 59.6771 | 0.49 0.49 59.6769 0.0000 59.6771 59.6769 59.6769 | 59.6769 | 0.49     | 0.49     | 3.22  | 0.00  | 3.46  | 100y3D | L-61P |
|          |                | [hrs]   |  |         |          |          |   |       |       |        |       |
| [hrs]    | [hrs]          | Flow    | [hrs]  | [hrs]   |          |          | [cfs]   |       |       |        |       |
| Velocity | Velocity       | Delta   | Flow   | Flow    | [fps]    | [fps]    | Flow  | [cfs] | [cfs] |        |       |
| Max Ds   | Min/Max Max Us | Min/Max | Min  | Мах     | Velocity | Velocity | Delta   | Flow  | Flow  | Name   | Name  |
| Time to  | Time to        | Time to | Time to  | Time to | Max Ds   | Max Us   | Min/Max   | Min   | Max   | Sim    | Link  |

| Link Min/ | Link Min/Max Conditions with Times | ons with T | imes    |                 |                |          |         |  |                |          |          |
|-----------|------------------------------------|------------|---------|-----------------|----------------|----------|---------|--|----------------|----------|----------|
| Link      | Sim                                | Max        | Min     | Min/Max         | Min/Max Max Us | Max Ds   | Time to | Max Ds Time to Time to Time to Time to       | Time to        | Time to  | Time to  |
| Name      | Name                               | Flow       | Flow    | Delta           | Velocity       | Velocity | Max     | Min  | Min/Max Max Us | Max Us   | Max Ds   |
|           |                                    | [cfs]      | [cfs]   | Flow            | [fps]          | [fps]    | Flow    | Flow   | Delta          | Velocity | Velocity |
|           |                                    |            |         | [cfs]           |                |          | [hrs]   | [hrs]  | Flow           | [hrs]    | [hrs]    |
|           |                                    |            |         |                 |                |          |         |  | [hrs]          |          |          |
| L-64P     | 100y3D                             | 5.62       | -5.34   | 5.62 -5.34 5.62 | 3.05           | 3.14     | 60.3547 | 3.14 60.3547 59.6773 60.3547 60.3547 60.3547 | 60.3547        | 60.3547  | 60.3547  |
| 1-6/D     | 5,010                              | 00 %       | - F A 1 | 00 Y            | 2 1 7          | 4C E     | 10 2506 | 0112 2110                                    | 10 2506        |          | 10 2506  |

| 12.2596  | 12.2596  | 12.2596 | 3.26 12.2596 12.3449 12.2596 12.2596 12.259  | 12.2596 | 3.26     | 6.09 3.17 |         | -5.61 | 6.09  | 5y1D   | L-64P |
|----------|----------|---------|--|---------|----------|-----------|---------|-------|-------|--------|-------|
| 60.3547  | 60.3547  | 60.3547 | 3.14 60.3547 59.6773 60.3547 60.3547 60.3547 | 60.3547 | 3.14     | 3.05      | 5.62    | -5.34 | 5.62  | 100y3D | L-64P |
|          |          | [hrs]   |  |         |          |           |         |       |       |        |       |
| [hrs]    | [hrs]    | Flow    | [hrs]  | [hrs]   |          |           | [cfs]   |       |       |        |       |
| Velocity | Velocity | Delta   | Flow   | Flow    | [fps]    | [fps]     | Flow    | [cfs] | [cfs] |        |       |
| Max Ds   | Max Us   | Min/Max | Min  | Max     | Velocity | Velocity  | Delta   | Flow  | Flow  | Name   | Name  |
| Time to  | Time to  | Time to | Time to                                      | Time to | Max Ds   | Max Us    | Min/Max | Min   | Max   | Sim    | Link  |

| Link Min/ | Link Min/Max Conditions with Times | ions with T | imes  |         |          |          |         |                                  |   |          |          |
|-----------|------------------------------------|-------------|-------|---------|----------|----------|---------|----------------------------------|---|----------|----------|
| Link      | Sim                                | Max         | Min   | Min/Max | Max Us   | Max Ds   | Time to | Time to                          | Time to Time to Time to                             | Time to  | Time to  |
| Name      | Name                               | Flow        | Flow  | Delta   | Velocity | Velocity | Max     | Min                              | Min/Max   | Max Us   | Max Ds   |
|           |                                    | [cfs]       | [cfs] | Flow    | [fps]    | [fps]    | Flow    | Flow                             | Delta   | Velocity | Velocity |
|           |                                    |             |       | [cfs]   |          |          | [hrs]   | [hrs]                            | Flow  | [hrs]    | [hrs]    |
|           |                                    |             |       |         |          |          |         |                                  | [hrs]   |          |          |
| L-65P     | 100y3D                             | 62.10       | -9.98 | 19.05   |          | 9.74     | 0.0009  | 8.79 9.74 0.0009 20.2267 32.0818 | 32.0818   | 0.0009   | 0.0009   |
| L-65P     | 5y1D                               | 62.10       |       | -10.34  | 8.79     | 9.74     | 0.0009  | 12.3022                          | -7.49 -10.34 8.79 9.74 0.0009 12.3022 0.0009 0.0009 | 0.0009   | 0.0009   |

|       |          | Name     | Link    | Link Min/                          |  |
|-------|----------|----------|---------|------------------------------------|--|
|       |          | Name     | Sim     | Link Min/Max Conditions with Times |  |
|       | [cfs]    | Flow     | Max     | ions with T                        |  |
|       | [cfs]    | Flow     | Min     | imes                               |  |
| [cfs] | Flow     | Delta    | Min/Max |                                    |  |
|       | [fps]    | Velocity | Max Us  |                                    |  |
|       | [fps]    | Velocity | Max Ds  |                                    |  |
| [hrs] | Flow     | Max      | Time to |                                    |  |
| [hrs] | Flow     | Min      | Time to |                                    |  |
| Flow  | Delta    | Min/Max  | Time to |                                    |  |
| [hrs] | Velocity | Max Us   | Time to |                                    |  |
| [hrs] | Velocity | Max Ds   | Time to |                                    |  |

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| L-67P   | L-67P  |       |       |          | Name     | Link           |
|---|--|-------|-------|----------|----------|----------------|
| 5y1D  | 100y3D   |       |       |          | Name     | Sim            |
| 2.69  | 3.45   |       |       | [cfs]    | Flow     | Мах            |
| -0.76   | -0.74 0.84                                       |       |       | [cfs]    | Flow     | Min            |
| 0.92  | 0.84   |       | [cfs] | Flow     | Delta    | Min/Max        |
| 1.52  | 1.95   |       |       | [fps]    | Velocity | Min/Max Max Us |
| 3.88  | 2.61   |       |       | [fps]    | Velocity | Max Ds         |
| 12.0060   | 59.8818  |       | [hrs] | Flow     | Max      | Time to        |
| 14.6285   | 61.4062  |       | [hrs] | Flow     | Min      | Time to        |
| 14.1742   | 62.4071  | [hrs] | Flow  | Delta    | Min/Max  | Time to        |
| 2.69 -0.76 0.92 1.52 3.88 12.0060 14.6285 14.1742 12.0060 12.0060 | 1.95 2.61 59.8818 61.4062 62.4071 59.8818 0.0085 |       | [hrs] | Velocity | Max Us   | Time to        |
| 12.0060   | 0.0085   |       | [hrs] | Velocity | Max Ds   | Time to        |

Link Min/Max Conditions with Times

| 0.0009   | 0.0009   | 14.2463 | 2.68 5.14 0.0009 14.7076 14.2463 0.0009 0.0009 | 0.0009  | 5.14     | 2.68     | 1.85    | -1.76 | 8.43  | 5y1D   | L-68P |
|----------|----------|---------|--|---------|----------|----------|---------|-------|-------|--------|-------|
| 0.0009   | 0.0009   | 64.2391 | 5.14 0.0009 63.9814 64.2391                    | 0.0009  |          | 2.68     | 2.14    | -1.91 | 8.43  | 100y3D | L-68P |
|          |          | [hrs]   |  |         |          |          |         |       |       |        |       |
| [hrs]    | [hrs]    | Flow    | [hrs]  | [hrs]   |          |          | [cfs]   |       |       |        |       |
| Velocity | Velocity | Delta   | Flow   | Flow    | [fps]    | [fps]    | Flow    | [cfs] | [cfs] |        |       |
| Max Ds   | Max Us   | Min/Max | Min  | Max     | Velocity | Velocity | Delta   | Flow  | Flow  | Name   | Name  |
| Time to  | Time to  | Time to | Time to  | Time to | Max Ds   | Max Us   | Min/Max | Min   | Max   | Sim    | Link  |

| Link Min/ | Link Min/Max Conditions with Times | ions with I | imes              |         |                |          |         |                 |         |  |          |
|-----------|------------------------------------|-------------|-------------------|---------|----------------|----------|---------|-----------------|---------|--|----------|
| Link      | Sim                                | Max         | Min               | Min/Max | Min/Max Max Us | Max Ds   | Time to | Time to Time to | Time to | Time to                                  | Time to  |
| Name      | Name                               | Flow        | Flow              | Delta   | Velocity       | Velocity | Max     | Min             | Min/Max | Max Us                                   | Max Ds   |
|           |                                    | [cfs]       | [cfs]             | Flow    | [fps]          | [fps]    | Flow    | Flow            | Delta   | Velocity                                 | Velocity |
|           |                                    |             |                   | [cfs]   |                |          | [hrs]   | [hrs]           | Flow    | [hrs]                                    | [hrs]    |
|           |                                    |             |                   |         |                |          |         |                 | [hrs]   |  |          |
|           | 100y3D                             | 23.93       | 23.93 -5.87 23.93 | 23.93   | 7.62           |          | 0.0009  | 64.2951         | 0.0009  | 7.62 0.0009 64.2951 0.0009 0.0009 0.0009 | 0.0009   |
| 1-40P     | 5v1D                               | 20 20       | -6 10             | 20 20   | C4 L           | C4 L     |         | 15 2187         | 0000    |  | 0 0000   |

|  | L-69P   | L-69P   |       |       |             |
|--|---|---|-------|-------|-------------|
|  | 5y1D  | 100y3D  |       |       |             |
|  | 23.93   | 23.93   |       |       | [aia]       |
|  | -6.19   | -5.87   |       |       |             |
|  | 23.93   | 23.93   |       | [cfs] |             |
|  | 7.62  | 7.62  |       |       | ריביו ריביו |
|  | 7.62  | 7.62  |       |       |             |
|  | 0.0009  | 0.0009  |       | [hrs] |             |
|  | 15.2187   | 64.2951   |       | [hrs] |             |
|  | 0.0009  | 0.0009  | [hrs] | Flow  |             |
|  | 23.93 -6.19 23.93 7.62 7.62 0.0009 15.2187 0.0009 0.0009 0.0009 | 23.93 -5.87 23.93 7.62 7.62 0.0009 64.2951 0.0009 0.0009 0.0009 |       | [hrs] |             |
|  | 0.0009  | 0.0009  |       | [hrs] |             |
|  |   |   |       |       |             |

| L-70P  | L-70P                                      |       |       |          | Name     | Link    | Link Min/                          |
|--|--|-------|-------|----------|----------|---------|------------------------------------|
| 5y1D   | 100y3D                                     |       |       |          | Name     | Sim     | Max Condit                         |
| 47.79  |  |       |       | [cfs]    | Flow     | Max     | Link Min/Max Conditions with Times |
| -10.76   | -10.64                                     |       |       | [cfs]    | Flow     | Min     | imes                               |
| -10.76   | -10.64                                     |       | [cfs] | Flow     | Delta    | Min/Max |                                    |
| 15.21  | 15.21                                      |       |       | [fps]    | Velocity | Max Us  |                                    |
| 15.59  | 15.59                                      |       |       | [fps]    | Velocity | Max Ds  |                                    |
| 0.0009   | 0.0009                                     |       | [hrs] | Flow     | Max      | Time to |                                    |
| 14.1013  | 62.3413                                    |       | [hrs] | Flow     | Min      | Time to |                                    |
| 14.1013  | 62.3413                                    | [hrs] | Flow  | Delta    | Min/Max  | Time to |                                    |
| 47.79 -10.76 -10.76 15.21 15.59 0.0009 14.1013 14.1013 0.0009 0.0009 | 15.59 0.0009 62.3413 62.3413 0.0009 0.0009 |       | [hrs] | Velocity | Max Us   | Time to |                                    |
| 0.0009   | 0.0009                                     |       | [hrs] | Velocity | Max Ds   | Time to |                                    |

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|   | Link Min/I | in/Max Conditions with Times | ons with T | imes  |         |          |          |         |         |         |          |          |  |
|---|------------|------------------------------|------------|-------|---------|----------|----------|---------|---------|---------|----------|----------|--|
| _ | Link       | Sim                          | Мах        | Min   | Min/Max | Max Us   | Max Ds   | Time to | Time to | Time to | Time to  | Time to  |  |
| _ | Name       | Name                         | Flow       | Flow  | Delta   | Velocity | Velocity | Max     | Min     | Min/Max | Max Us   | Max Ds   |  |
| _ |            |                              | [cfs]      | [cfs] | Flow    | [fps]    | [fps]    | Flow    | Flow    | Delta   | Velocity | Velocity |  |
| _ |            |                              |            |       | [cfs]   |          |          | [hrs]   | [hrs]   | Flow    | [hrs]    | [hrs]    |  |

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| L-71P   | L-71P   |       |       |          | Name     | Link            |
|---|---|-------|-------|----------|----------|-----------------|
| 5y1D  | 100y3D  |       |       |          | Name     | Sim             |
| 7.43  |   |       |       | [cfs]    | Flow     | Max             |
| -2.43   | -2.70   |       |       | [cfs]    | Flow     | Min             |
| -2.43   | -2.70   |       | [cfs] | Flow     | Delta    | Min/Max         |
| 2.72  | 2.72  |       |       | [fps]    | Velocity | Min/Max Max Us  |
| 4.85  | 4.85  |       |       | [fps]    | Velocity | Max Ds          |
| 0.0047  | 0.0047  |       | [hrs] | Flow     | Max      | Time to         |
| 14.2267   | 64.0702   |       | [hrs] | Flow     | Min      | Time to         |
| 14.2267   | 64.0702   | [hrs] | Flow  | Delta    | Min/Max  | Time to Time to |
| 7.43 -2.43 -2.43 2.72 4.85 0.0047 14.2267 14.2267 0.0046 0.0040 | 7.43 -2.70 -2.70 2.72 4.85 0.0047 64.0702 64.0702 0.0046 0.0040 |       | [hrs] | Velocity | Max Us   | Time to         |
| 0.0040  | 0.0040  |       | [hrs] | Velocity | Max Ds   | Time to         |

Link Min/Max Conditions with Times

| 0.0028   | 0.0028   | 5.13 0.0028 17.2925 0.0009 0.0028 | 17.2925             | 0.0028  | 5.13     | 5.13     | 3.96    | -0.88 | 6.29  | 5y1D   | L-72P |
|----------|----------|-----------------------------------|---------------------|---------|----------|----------|---------|-------|-------|--------|-------|
| 0.0028   | 0.0028   | 0.0009                            | 5.13 0.0028 53.3183 | 0.0028  |          | 5.13     | 3.96    | -0.95 | 6.29  | 100y3D | L-72P |
|          |          | [hrs]                             |                     |         |          |          |         |       |       |        |       |
| [hrs]    | [hrs]    | Flow                              | [hrs]               | [hrs]   |          |          | [cfs]   |       |       |        |       |
| Velocity | Velocity | Delta                             | Flow                | Flow    | [fps]    | [fps]    | Flow    | [cfs] | [cfs] |        |       |
| Max Ds   | Max Us   | Min/Max                           | Min                 | Мах     | Velocity | Velocity | Delta   | Flow  | Flow  | Name   | Name  |
| Time to  |          | Time to Time to                   | Time to             | Time to | Max Ds   | Max Us   | Min/Max | Min   | Max   | Sim    | Link  |

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| Link Min/ | Link Min/Max Conditions with Times | ons with Ti | mes   |         |          |          |         |         |  |          |          |
|-----------|------------------------------------|-------------|-------|---------|----------|----------|---------|---------|--|----------|----------|
| Link      | Sim                                | Мах         | Min   | Min/Max | Max Us   | Max Ds   | Time to | Time to | Time to  | Time to  | Time to  |
| Name      | Name                               | Flow        | Flow  | Delta   | Velocity | Velocity | Max     | Min     | Min/Max  | Max Us   | Max Ds   |
|           |                                    | [cfs]       | [cfs] | Flow    | [fps]    | [fps]    | Flow    | Flow    | Delta  | Velocity | Velocity |
|           |                                    |             |       | [cfs]   |          |          | [hrs]   | [hrs]   | Flow   | [hrs]    | [hrs]    |
|           |                                    |             |       |         |          |          |         |         | [hrs]  |          |          |
| L-73P     | 100y3D                             | 16.44       | -1.97 | -1.97   | 13.40    | 13.73    | 0.0009  | 62.1671 | 16.44         -1.97         -1.97         13.40         13.73         0.0009         62.1671         62.1671         0.0009         0.0009 | 0.0009   | 0.0009   |
| I - 73P   | 5v1D                               | 16 44       | -1 94 | -1 94   | 13 40    | 13 73    | 6000 U  | 13 7502 | 13 7502  |          | 6000 U   |

| 0.0009   | 0.0009   | 13.7502 | 13.7502 | -1.94 13.40 13.73 0.0009 13.7502 13.7502 | 13.73    | 13.40    |         | -1.94 | 16.44 | 5y1D   | L-73P |
|----------|----------|---------|---------|--|----------|----------|---------|-------|-------|--------|-------|
| 0.0009   | 0.0009   | 62.1671 | 62.1671 | 13.73 0.0009 62.1671 62.1671             | 13.73    | 13.40    | -1.97   | -1.97 | 16.44 | 100y3D | L-73P |
|          |          | [hrs]   |         |  |          |          |         |       |       |        |       |
| [hrs]    | [hrs]    | Flow    | [hrs]   | [hrs]                                    |          |          | [cfs]   |       |       |        |       |
| Velocity | Velocity | Delta   | Flow    | Flow                                     | [fps]    | [fps]    | Flow    | [cfs] | [cfs] |        |       |
| Max Ds   | Max Us   | Min/Max | Min     | Max                                      | Velocity | Velocity | Delta   | Flow  | Flow  | Name   | Name  |
| Time to  | Time to  | Time to | Time to | Time to                                  | Max Ds   | Max Us   | Min/Max | Min   | Max   | Sim    | Link  |

Sim Max Min Min/Max Max Us Max Ds Time to Time to Time to Time to Time to

Link Min/Max Conditions with Times

L-74P L-74P

5y1D

100y3D

3.02 2.85

-2.94 -2.44

3.02 2.85

1.82 1.82

3.37 3.37

62.0765 17.4276

63.4222 17.3778

62.0765 17.4276

0.0299 0.0299

0.0299 0.0299

[hrs]

Link Min/Max Conditions with Times

Sim Name

Max Flow [cfs]

Min Flow [cfs]

Min/Max Delta Flow

Max Us Velocity

Max Ds Velocity [fps]

Time to Max Flow [hrs]

Min Flow [hrs]

Time to Min/Max Delta Flow

Time to Max Us Velocity

Time to Max Ds Velocity

|       |          | (D       |
|-------|----------|----------|
|       |          | Name     |
|       | [cfs]    | Flow     |
|       | [cfs]    | Flow     |
| [cfs] | Flow     | Delta    |
|       | [fps]    | Velocity |
|       | [fps]    | Velocity |
| [hrs] | Flow     | Max      |
| [hrs] | Flow     | Min      |
| Flow  | Delta    | Min/Max  |
| [hrs] | Velocity | Max Us   |
| [hrs] | Velocity | Max Ds   |

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| L-75P                                    | L-75P                                    |       |       |          | Name     | Link           |
|--|--|-------|-------|----------|----------|----------------|
| 5y1D                                     | 100y3D                                   |       |       |          | Name     | Sim            |
| 5.87                                     | 5.87                                     |       |       | [cfs]    | Flow     | Max            |
| -0.36                                    | -0.50                                    |       |       | [cfs]    | Flow     | Min            |
| 5.87 -0.36 3.46                          | 3.46                                     |       | [cfs] | Flow     | Delta    | Min/Max        |
| 4.78                                     | 4.78                                     |       |       | [fps]    | Velocity | Min/Max Max Us |
| 4.78                                     |  |       |       | [fps]    | Velocity | Max Ds         |
| 0.0031                                   | 0.0031                                   |       | [hrs] | Flow     | Max      | Time to        |
| 17.2143                                  | 62.5529                                  |       | [hrs] | Flow     | Min      | Time to        |
| 0.0009                                   | 0.0009                                   | [hrs] | Flow  | Delta    | Min/Max  | Time to        |
| 4.78 0.0031 17.2143 0.0009 0.0031 0.0031 | 4.78 0.0031 62.5529 0.0009 0.0031 0.0031 |       | [hrs] | Velocity | Max Us   | Time to        |
| 0.0031                                   | 0.0031                                   |       | [hrs] | Velocity | Max Ds   | Time to        |

Link Min/Max Conditions with Times

| 0.0009   | 0.0009   | -1.57 13.14 13.47 0.0009 17.1431 17.1431 0.0009 0.0009 | 17.1431 | 0.0009  | 13.47                                    | 13.14    | -1.57   | -1.57 | 16.13 | 5y1D   | L-76P |
|----------|----------|--|---------|---------|--|----------|---------|-------|-------|--------|-------|
| 0.0009   | 0.0009   | 63.4222  | 63.4222 | 0.0009  | -1.67 13.14 13.47 0.0009 63.4222 63.4222 | 13.14    | -1.67   | -1.67 | 16.13 | 100y3D | L-76P |
|          |          | [hrs]  |         |         |  |          |         |       |       |        |       |
| [hrs]    | [hrs]    | Flow   | [hrs]   | [hrs]   |  |          | [cfs]   |       |       |        |       |
| Velocity | Velocity | Delta  | Flow    | Flow    | [fps]                                    | [fps]    | Flow    | [cfs] | [cfs] |        |       |
| Max Ds   | Max Us   | Min/Max  | Min     | Max     | Velocity                                 | Velocity | Delta   | Flow  | Flow  | Name   | Name  |
| Time to  |          | Time to Time to  | Time to | Time to | Max Ds                                   | Max Us   | Min/Max | Min   | Max   | Sim    | Link  |

| Link Min/ | Link Min/Max Conditions with Times | ons with T | imes  |         |                      |          |         |         |  |          |          |
|-----------|------------------------------------|------------|-------|---------|----------------------|----------|---------|---------|--|----------|----------|
| Link      | Sim                                | Max        | Min   | Min/Max | Min/Max Max Us       | Max Ds   | Time to | Time to | Max Ds Time to Time to Time to             |          | Time to  |
| Name      | Name                               | Flow       | Flow  | Delta   | Velocity             | Velocity | Max     | Min     | Min/Max                                    | Max Us   | Max Ds   |
|           |                                    | [cfs]      | [cfs] | Flow    | [fps]                | [fps]    | Flow    | Flow    | Delta                                      | Velocity | Velocity |
|           |                                    |            |       | [cfs]   |                      |          | [hrs]   | [hrs]   | Flow                                       | [hrs]    | [hrs]    |
|           |                                    |            |       |         |                      |          |         |         | [hrs]                                      |          |          |
| L-77P     | 100y3D                             | 2.54       | -1.59 | 2.16    | 2.54 -1.59 2.16 1.49 |          | 64.1644 | 53.4533 | 3.42 64.1644 53.4533 64.1644 0.0208 0.0208 | 0.0208   | 0.0208   |
| 1_77D     | 5v1D                               | 2 18       | -1 20 | 1 76    | 1 /0                 | 2 A 2    | BUCU U  | 17 2256 | 16 1001                                    |          | RUCU U   |

| Link  | Sim    | Max   | Min   | Min/Max | Max Us    | Max Ds   |         | Time to Time to Time to             | Time to   | Time to  | Time to  |
|-------|--------|-------|-------|---------|-----------|----------|---------|-------------------------------------|---|----------|----------|
| Name  | Name   | Flow  | Flow  | Delta   | Velocity  | Velocity | Max     | Min                                 | Min/Max   | Max Us   | Max Ds   |
|       |        | [cfs] | [cfs] | Flow    | [fps]     | [fps]    | Flow    | Flow                                | Delta   | Velocity | Velocity |
|       |        |       |       | [cfs]   |           |          | [hrs]   | [hrs]                               | Flow  | [hrs]    | [hrs]    |
|       |        |       |       |         |           |          |         |                                     | [hrs]   |          |          |
| L-77P | 100y3D | 2.54  | -1.59 |         | 2.16 1.49 |          | 64.1644 | 3.42 64.1644 53.4533 64.1644 0.0208 | 64.1644   | 0.0208   | 0.0208   |
| L-77P | 5v1D   | 2.18  | -1.39 | 1.76    | 1.49      | 3.42     | 0.0208  | 17.2356                             | 2.18 -1.39 1.76 1.49 3.42 0.0208 17.2356 16.1991 0.0208 | 0.0208   | 0.0208   |

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| Link Min/ | Link Min/Max Conditions with Times | ions with T | imes  |         |          |          |         |         |                 |          |          |
|-----------|------------------------------------|-------------|-------|---------|----------|----------|---------|---------|-----------------|----------|----------|
| Link      | Sim                                | Max         | Min   | Min/Max | Max Us   | Max Ds   | Time to | Time to | Time to Time to | Time to  | Time to  |
| Name      | Name                               | Flow        | Flow  | Delta   | Velocity | Velocity | Max     | Min     | Min/Max Max Us  | Max Us   | Max Ds   |
|           |                                    | [cfs]       | [cfs] | Flow    | [fps]    | [fps]    | Flow    | Flow    | Delta           | Velocity | Velocity |
|           |                                    |             |       | [cfs]   |          |          | [hrs]   | [hrs]   | Flow            | [hrs]    | [hrs]    |
|           |                                    |             |       |         |          |          |         |         |                 |          |          |

L-78P L-78P

100y3D 5y1D

6.89 6.89

-1.15 -0.97

4.23 4.23

5.62 5.62

5.62 5.62

0.0029 0.0029

52.5858 17.2054

0.0029 0.0029

0.0029

[hrs] 0.0009

Link Min/Max Conditions with Times

Sim Name

Max Flow [cfs]

Min Flow [cfs]

Min/Max Delta Flow [cfs]

Max Us Velocity

Max Ds Velocity [fps]

Time to Max Flow [hrs]

Time to Min Flow [hrs]

Time to Min/Max Delta Flow

Time to Max Us Velocity

Time to Max Ds Velocity

| L-79P   | L-79P   |       |       |          | Name     | Link           |
|---|---|-------|-------|----------|----------|----------------|
| 5y1D  | 100y3D  |       |       |          | Name     | Sim            |
| 18.40   | 18.40   |       |       | [cfs]    | Flow     | Max            |
| -1.79   | -2.01   |       |       | [cfs]    | Flow     | Min            |
| 2.18  | 2.93  |       | [cfs] | Flow     | Delta    | Min/Max Max Us |
| 14.99   | 14.99   |       |       | [fps]    | Velocity |                |
| 15.37   | 15.37   |       |       | [fps]    | Velocity | Max Ds         |
| 0.0009  | 0.0009  |       | [hrs] | Flow     | Max      | Time to        |
| 17.2142   | 65.2800   |       | [hrs] | Flow     | Min      | Time to        |
| 17.2231   | 64.1644   | [hrs] | Flow  | Delta    | Min/Max  | Time to        |
| 18.40 -1.79 2.18 14.99 15.37 0.0009 17.2142 17.2231 0.0009 0.0009 | -2.01 2.93 14.99 15.37 0.0009 65.2800 64.1644 0.0009 0.0009 |       | [hrs] | Velocity | Max Us   | Time to        |
| 0.0009  | 0.0009  |       | [hrs] | Velocity | Max Ds   | Time to        |

Link Min/Max Conditions with Times

| 0.0470   | 0.0468   | 3.26 17.2356 16.1991 17.2356 0.0468  | 16.1991 | 17.2356 | 3.26     | 1.50     | -7.79 10.21 | -7.79 | 10.21 | 5y1D   | L-80P |
|----------|----------|--------------------------------------|---------|---------|----------|----------|-------------|-------|-------|--------|-------|
| 0.0470   | 65.4640  | 3.26 65.4640 64.1645 65.4640 65.4640 | 64.1645 | 65.4640 |          | 1.58     | -8.03 10.95 | -8.03 | 10.96 | 100y3D | L-80P |
|          |          | [hrs]                                |         |         |          |          |             |       |       |        |       |
| [hrs]    | [hrs]    | Flow                                 | [hrs]   | [hrs]   |          |          | [cfs]       |       |       |        |       |
| Velocity | Velocity | Delta                                | Flow    | Flow    | [fps]    | [fps]    | Flow        | [cfs] | [cfs] |        |       |
| Max Ds   | Max Us   | Min/Max                              | Min     | Max     | Velocity | Velocity | Delta       | Flow  | Flow  | Name   | Name  |
| Time to  |          | Time to Time to                      | Time to | Time to | Max Ds   | Max Us   | Min/Max     | Min   | Max   | Sim    | Link  |

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| Link Min/ | Link Min/Max Conditions with Times | ons with Ti | mes   |         |                     |          |         |         |  |          |          |
|-----------|------------------------------------|-------------|-------|---------|---------------------|----------|---------|---------|--|----------|----------|
| Link      | Sim                                | Мах         | Min   | Min/Max | Max Us              | Max Ds   | Time to | Time to | Time to Time to                                      |          | Time to  |
| Name      | Name                               | Flow        | Flow  | Delta   | Velocity            | Velocity | Мах     | Min     | Min/Max  | Max Us   | Max Ds   |
|           |                                    | [cfs]       | [cfs] | Flow    | [fps]               | [fps]    | Flow    | Flow    | Delta  | Velocity | Velocity |
|           |                                    |             |       | [cfs]   |                     |          | [hrs]   | [hrs]   | Flow   | [hrs]    | [hrs]    |
|           |                                    |             |       |         |                     |          |         |         | [hrs]  |          |          |
| L-81P     | 100y3D                             | 0.05        | 0.00  |         | 0.51                | 0.00     | 59.9133 | 0.0000  | 0.00 0.51 0.00 59.9133 0.0000 54.2456 59.9133 0.0000 | 59.9133  | 0.0000   |
| 1-81P     | 5v1D                               | 0 04        | 00.00 | 0 00    | 0 04 0 00 0 00 0 48 |          | 12 0016 | 0 0000  | 0 00 12 0016 0 0000 10 7304 12 0016 0 0000           | 12 0016  | 0 0000   |

| 0.0000   | 12.0016  | 10.7304 | 0.0000                 | 0.00 12.0016 0.0000 10.7304 12.0016 |          | 0.48     | 0.00    | 0.00  | 0.04  | 5y1D   | L-81P |
|----------|----------|---------|------------------------|-------------------------------------|----------|----------|---------|-------|-------|--------|-------|
| 0.0000   | 59.9133  | 54.2456 | 0.0000 54.2456 59.9133 | 0.00 59.9133                        |          | 0.51     | 0.00    | 0.00  | 0.05  | 100y3D | L-81P |
|          |          | [hrs]   |                        |                                     |          |          |         |       |       |        |       |
| [hrs]    | [hrs]    | Flow    | [hrs]                  | [hrs]                               |          |          | [cfs]   |       |       |        |       |
| Velocity | Velocity | Delta   | Flow                   | Flow                                | [fps]    | [fps]    | Flow    | [cfs] | [cfs] |        |       |
| Max Ds   | Max Us   | Min/Max | Min                    | Max                                 | Velocity | Velocity | Delta   | Flow  | Flow  | Name   | Name  |
| Time to  | Time to  | Time to | Time to                | Time to                             | Max Ds   | Max Us   | Min/Max | Min   | Max   | Sim    | Link  |

| 0.0 | 12.0016 | 10.7304 | 0.0000 | 0.04 0.00 0.00 0.48 0.00 12.0016 0.0000 10.7304 12.0016 0.0000 | 0.00 | 0.48 | 0.00 | 0.00 | 0.04 | 5y1D   | L-81P |
|-----|---------|---------|--------|--|------|------|------|------|------|--------|-------|
| 0.0 | 59.9133 | 54.2456 | 0.0000 | 0.05 0.00 0.00 0.51 0.00 59.9133 0.0000 54.2456 59.9133 0.0000 | 0.00 | 0.51 | 0.00 | 0.00 | 0.05 | 100y3D | L-81P |
|     |         |         |        |  |      |      |      |      |      |        |       |

|   | Link Min/I | Link Min/Max Conditions with Times | ons with Ti | mes   |         |          |          |         |   |                |          |          |
|---|------------|------------------------------------|-------------|-------|---------|----------|----------|---------|---|----------------|----------|----------|
| _ | Link       | Sim                                | Max         | Min   | Min/Max | Max Us   | Max Ds   | Time to | Time to                                     | Time to        | Time to  | Time to  |
| _ | Name       | Name                               | Flow        | Flow  | Delta   | Velocity | Velocity | Max     | Min   | Min/Max Max Us | Max Us   | Max Ds   |
| _ |            |                                    | [cfs]       | [cfs] | Flow    | [fps]    | [fps]    | Flow    | Flow  | Delta          | Velocity | Velocity |
| _ |            |                                    |             |       | [cfs]   |          |          | [hrs]   | [hrs]                                       | Flow           | [hrs]    | [hrs]    |
| _ |            |                                    |             |       |         |          |          |         |   | [hrs]          |          |          |
| _ | L-82P      | 100v3D                             | 10.66       | 0.00  | 10.36   | 1.51     | 1.51     | 52.5822 | 1.51 52.5822 0.0000 52.5822 52.5822 52.5822 | 52.5822        | 52.5822  | 52.5822  |

Link Min/Max Conditions with Times

L-82P

5y1D

10.60

0.00

10.34

1.50

 1.50
 16.4702
 0.0000
 16.4702
 16.4702
 16.4702

|      | LITIN MILLI MAA COTINICIOTIS WITH TITLES |       |       |         |          |                   |         |         |         |                       |          |
|------|--|-------|-------|---------|----------|-------------------|---------|---------|---------|-----------------------|----------|
| Link | Sim                                      | Мах   | Min   | Min/Max | Max Us N | /lax Ds           | Time to | Time to | Time to | Time to               | Time to  |
| Name | Name                                     | Flow  | Flow  | Delta   | Velocity | Velocity Velocity | Max     | Min     | Min/Max | Min/Max Max Us Max Ds | Max Ds   |
|      |  | [cfs] | [cfs] | Flow    | [fps]    | [fps]             | Flow    | Flow    | Delta   | Velocity              | Velocity |
|      |  |       |       | [cfs]   |          |                   | [hrs]   | [hrs]   | Flow    | [hrs]                 | [hrs]    |

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| L-86PP  | L-86PP                                       |       |       |          | Name     | Link           |
|---|--|-------|-------|----------|----------|----------------|
| 5y1D  | 100y3D                                       |       |       |          | Name     | Sim            |
| 3.54  |  |       |       | [cfs]    | Flow     | Max            |
| -3.35   | 3.50 -3.30                                   |       |       | [cfs]    | Flow     | Min            |
| 3.54  | 3.50   |       | [cfs] | Flow     | Delta    | Min/Max        |
| 2.00  | 1.98   |       |       | [fps]    | Velocity | Min/Max Max Us |
| 2.00  |  |       |       | [fps]    | Velocity | Max Ds         |
| 21.7929   | 34.2018                                      |       | [hrs] | Flow     | Max      | Time to        |
| 22.2996   | 24.8347                                      |       | [hrs] | Flow     | Min      | Time to        |
| 21.7929   | 34.2018                                      | [hrs] | Flow  | Delta    | Min/Max  | Time to        |
| 3.54 -3.35 3.54 2.00 2.00 21.7929 22.2996 21.7929 21.7929 21.7929 | 1.98 34.2018 24.8347 34.2018 34.2018 34.2018 |       | [hrs] | Velocity | Max Us   | Time to        |
| 21.7929   | 34.2018                                      |       | [hrs] | Velocity | Max Ds   | Time to        |

Link Min/Max Conditions with Times

| Link   | Sim    | Max   | Min   | Min/Max                | Ain/Max Max Us | Max Ds   | Time to | Time to                                       | Time to Time to | Time to        | Time to  |
|--------|--------|-------|-------|------------------------|----------------|----------|---------|---|-----------------|----------------|----------|
| Name   | Name   | Flow  | Flow  | Delta                  | Velocity       | Velocity | Max     | Min   | Min/Max         | Min/Max Max Us | Max Ds   |
|        |        | [cfs] | [cfs] | Flow                   | [fps]          | [fps]    | Flow    | Flow  | Delta           | Velocity       | Velocity |
|        |        |       |       | [cfs]                  |                |          | [hrs]   | [hrs]   | Flow            | [hrs]          | [hrs]    |
|        |        |       |       |                        |                |          |         |   | [hrs]           |                |          |
| L-89PP | 100y3D | 5.61  | -6.35 | -6.35                  | -3.59          |          | 60.3166 | -3.59 60.3166 24.6356 24.6356 24.6356 24.6356 | 24.6356         | 24.6356        | 24.6356  |
| dd68-1 | 5v1D   | 3.77  | -5.70 | 3 77 -5 70 -4 49 -3 23 | -3.23          |          | 21.7280 | -3.23 21 7280 12 6224 14 5653 22 6224 12 6224 | 14.5653         | 12.6224        | 12.6224  |

Link Min/Max Conditions with Times

| Link   | Sim           | Max   | Min   | Min/Max | Max Us   | Max Ds   | Time to | Time to | Time to | Time to   | Time to  |
|--------|---------------|-------|-------|---------|----------|----------|---------|---------|---------|---|----------|
| Name   | Name          | Flow  | Flow  | Delta   | Velocity | Velocity | Max     | Min     | Min/Max | Max Us  | Max Ds   |
|        |               | [cfs] | [cfs] | Flow    | [fps]    | [fps]    | Flow    | Flow    | Delta   | Velocity  | Velocity |
|        |               |       |       | [cfs]   |          |          | [hrs]   | [hrs]   | Flow    | [hrs]   | [hrs]    |
|        |               |       |       |         |          |          |         |         | [hrs]   |   |          |
| L-91PP | L-91PP 100y3D | 11.72 | -4.49 |         | 3.73     | 3.73     | 60.0145 | 24.8347 | 34.2018 | 4.67 3.73 3.73 60.0145 24.8347 34.2018 60.0145 60.0145  | 60.0145  |
| L-91PP | L-91PP 5y1D   | 8.57  | -4.02 | 4.95    | 2.73     | 2.73     | 11.9523 | 22.2996 | 21.7929 | -4.02         4.95         2.73         11.9523         22.2996         21.7929         11.9523         11.9523 | 11.9523  |

| 12.6224  | 12.6224  | 9.45 -13.52 -10.17 -2.75 -2.75 21.7280 12.6224 23.3636 12.6224 12.6224          | 12.6224 | 21.7280 | -2.75    | -2.75          | -10.17  | -13.52 | 9.45        | L-96PP 5y1D                        | L-96PP    |
|----------|----------|---|---------|---------|----------|----------------|---------|--------|-------------|------------------------------------|-----------|
| 70.9182  | 70.9182  | 12.15 -14.53 -14.53 -2.96 -2.96 60.0193 70.9182 70.9182 70.9182 70.9182 70.9182 | 70.9182 | 60.0193 | -2.96    | -2.96          | -14.53  | -14.53 |             | 100y3D                             | L-96PP    |
|          |          | [hrs]   |         |         |          |                |         |        |             |                                    |           |
| [hrs]    | [hrs]    | Flow  | [hrs]   | [hrs]   |          |                | [cfs]   |        |             |                                    |           |
| Velocity | Velocity | Delta   | Flow    | Flow    | [fps]    | [fps]          | Flow    | [cfs]  | [cfs]       |                                    |           |
| Max Ds   | Max Us   | Min/Max   | Min     | Max     | Velocity | Velocity       | Delta   | Flow   | Flow        | Name                               | Name      |
| Time to  | Time to  | Time to   | Time to | Time to | Max Ds   | Min/Max Max Us | Min/Max | Min    | Max         | Sim                                | Link      |
|          |          |   |         |         |          |                |         | mes    | ons with Ti | Link Min/Max Conditions with Times | Link Min/ |

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### APPENDIX 5I SHORT-TERM INUNDATION MAPS







## **OPINION OF PROBABLE CONSTRUCTION COST APPENDIX 5J**



Opinion of Probable Cost City of Miani Shore Crest - Short Term Drainage Feasibility Study



| ITEM NO.    | DESCRIPTION   | UNIT | QUANTITY | UNIT PRICE   | AMOUNT       |
|-------------|---|------|----------|--------------|--------------|
|             | ROADWAY   |      |          |              |              |
| 101-1       | MOBILIZATION  | LS   | 1        | \$197,175.39 | \$197,175.39 |
| 102-1       | MAINTENANCE OF TRAFFIC  | LS   | 1        | \$140,839.56 | \$140,839.56 |
| 110-1-1     | CLEARING AND GRUBBING   | LS   | 1        | \$84,503.74  | \$84,503.74  |
|             | RAISE EXISTING ROADS  |      |          |              |              |
|             | 0"- 6" (INCLUDES 0-5" OF BASE GROUP 6 TYPE B-12.5 AND 1" OF   |      |          |              |              |
|             | TYPE S-III ASPHALT)   | SY   | 566      | \$24.00      | \$13,584.00  |
|             | 6" - 12" (INCLUDES 0-3" OF LIMEROCK, 5-8" OF BASE GROUP 6     |      |          |              |              |
|             | TYPE B-12.5 AND 1" OF TYPE S-III ASPHALT)                     | SY   | 3644     | \$61.50      | \$224,106.00 |
|             | 12" - 18" (INCLUDES 3-9" OF LIMEROCK, 8" OF BASE GROUP 6 TYPE |      |          |              |              |
|             | B-12.5 AND 1" OF TYPE S-III ASPHALT)                          | SY   | 6163     | \$66.50      | \$409,839.50 |
|             | 18" - 24" (INCLUDES 9-15" OF LIMEROCK, 8" OF BASE GROUP 6     |      |          |              |              |
|             | TYPE B-12.5 AND 1" OF TYPE S-III ASPHALT)                     | SY   | 4253     | \$111.50     | \$474,209.50 |
|             | 24" - 30" (INCLUDES 15-21" OF LIMEROCK, 8" OF BASE GROUP 6    |      |          |              |              |
|             | TYPE B-12.5 AND 1" OF TYPE S-III ASPHALT)                     | SY   | 1520     | \$136.50     | \$207,480.00 |
|             | 30" - 36" (INCLUDES 21-27" OF LIMEROCK, 8" OF BASE GROUP 6    |      |          |              |              |
|             | TYPE B-12.5 AND 1" OF TYPE S-III ASPHALT)                     | SY   | 98       | \$162.00     | \$15,876.00  |
| 327-70-1    | MILLING EXIST ASPH PAVT, 1" AVG DEPTH                         | YS   | 1521     | \$5.00       | \$7,605.00   |
| 331-2       | TYPE S-III ASPHALTIC CONCRETE, 1" (AS PER CITY OF MIAMI)      | ΤN   | 92       | \$145.00     | \$13,340.00  |
| 425-1-541   | CITY OF MIAMI TYPE 'D' INLET, ≤10'                            | EA   | 74       | \$3,500.00   | \$259,000.00 |
| 425-2-41    | MANHOLE (CITY OF MIAMI TYPE A), $\leq 10^{\circ}$             | EA   | 38       | \$4,500.00   | \$171,000.00 |
| 430-175-118 | PIPE CULVERT, OPT MATERIAL, ROUND 18" (HP STORM PIPE)         | LF   | 3260     | \$75.00      | \$244,500.00 |
| 430-175-124 | PIPE CULVERT, OPT MATERIAL, ROUND 24" (HP STORM PIPE)         | LF   | 1680     | \$80.00      | \$134,400.00 |
| 430-175-130 | PIPE CULVERT, OPT MATERIAL, ROUND 30" (HP STORM PIPE)         | LF   | 255      | \$115.00     | \$29,325.00  |
|             | PIPE CULVERT, OPT MATERIAL, ROUND 36" (HP STORM PIPE)         | F    | 375      | \$125.00     | \$46,875.00  |
| 430-175-142 | PIPE CULVERT, OPT MATERIAL, ROUND 42" (HP STORM PIPE)         | LF   | 380      | \$155.00     | \$58,900.00  |
| 430-175-148 | PIPE CULVERT, OPT MATERIAL, ROUND 48" (HP STORM PIPE)         | LF   | 175      | \$205.00     | \$35,875.00  |
| 430-175-154 | PIPE CULVERT, OPT MATERIAL, ROUND 54" (HP STORM PIPE)         | LF   | 910      | \$255.00     | \$232,050.00 |
| 430-175-184 | PIPE CULVERT, OPT MATERIAL, ROUND 84" (HP STORM PIPE)         | F    | 195      | \$425.00     | \$82,875.00  |
| 570-1-2     | PERFORMANCE TURF, SOD   | SY   | 0068     | \$3.50       | \$31,150.00  |
|             | INLINE CHECK VALVE FOR PROPOSED OUTFALL                       | EA   | _        | \$32,880.00  | \$32,880.00  |
|             |   | 2    | 4        | \$10 000 00  | \$10 000 00  |

### SUBTOTAL ROADWAY

\$3,239,309.94

# SUMMARY OF PROBABLE CONSTRUCTION COST

| DESCRIPTION          | COST           |
|----------------------|----------------|
| Roadway              | \$3,239,309.94 |
| Permitting Fees (5%) | \$161,965.50   |
| SUBTOTAL PROJECT     | \$3,401,275.43 |
| 30% Contingency      | \$1,020,382.63 |
|                      | \$1,020,02100  |
| TOTAL PROJECT        | \$4,421,658.06 |

Opinion of Probable Cost City of Miami Shore Crest - Mid Range Drainage Feasibility Study



SUBTOTAL ROADWAY

\$9,368,809.94

| SUMMARY OF PROBABLE CONSTRUCTION COST |                |
|---------------------------------------|----------------|
| DESCRIPTION                           | COST           |
| Roadway                               | \$9,368,809.94 |
| Permitting Fees (5%)                  | \$468,440.50   |
| SUBTOTAL PROJECT                      | \$9,837,250.43 |
|                                       | ¢0 0F1 17F 10  |
|                                       |                |

TOTAL PROJECT

\$12,788,425.56