



Updated Study Report

Infrastructure Study

Pensacola Hydroelectric Project
Project No. 1494

September 30, 2022

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Executive Summary

Mead & Hunt, Inc. (Mead & Hunt) is assisting Grand River Dam Authority (GRDA, Licensee) in the relicensing of the Pensacola Hydroelectric Project (Project), which is regulated by the Federal Energy Regulatory Commission (FERC, Commission). Flood control operations at the Project are regulated by the United States Army Corps of Engineers (USACE).

The Commission recommended an Infrastructure Study (Study) to determine a range of inflow conditions for which hydraulic model results (separate study) show Project operations may influence the frequency or depth of flooding. Specifically, the Commission requested maps and tables identifying the frequency and depth of flooding for each item of infrastructure.

Mead & Hunt developed a hydraulic model of the area upstream of the Project along with a range of starting reservoir elevations. Inflow events representing a range of flood frequency were used for the Study. Hydraulic results were extracted at infrastructure locations. Infrastructure locations were mapped, and tabular data of inundation depth were developed. The difference in depth between different starting reservoir elevations was also tabulated.

According to analysis results, only 7% of the infrastructure locations studied experience an appreciable increase in maximum inundation depth for different starting reservoir elevations within GRDA's anticipated operational range of 742 feet PD to 745 feet PD. In addition, all appreciable increases in maximum inundation depth occur during high-flow conditions when the USACE controls the flood control operations under the Flood Control Act of 1944 and its other statutory mandates, except when the time of maximum inundation depth is solely a function of inflow event arrival time and not reservoir elevation, meaning the time of maximum depth at the infrastructure location was completely independent of the Project reservoir elevation. The inflow event moved down the river and then arrived at the infrastructure location completely independent of Project operations. Therefore, infrastructure locations are not adversely affected by GRDA's anticipated Project operations.

Additionally, except for two parks, a reduction in reservoir operational elevation to 734 feet PD would not decrease the loss of infrastructure use for any of the inflow events studied. The first park, Wolf Creek Park, was designed (and partially funded) by GRDA to avoid being impacted by inflow events, and only a low-lying portion of the park near Grand Lake would experience a difference in inundation for the October 2009 (3 year) inflow event. Therefore, any potential adverse impacts have already been mitigated by GRDA through their assistance in designing and funding the recent improvements to the park.

At the second park, Grove Springs Park, low-lying portions of the park would experience a difference in inundation for the October 2009 (3 year) inflow event. Decreasing the low end of the anticipated operation range from 742 to 734 feet PD, a difference of 8 feet in operational elevation, would only change infrastructure adverse impacts slightly at Grove Springs Park.

Because infrastructure such as parks are generally sited in areas that are subject to frequent flooding and are the most-resistant type of infrastructure being reviewed in this Study, the minor potential reduction in impacts to infrastructure identified through operating at an extreme, hypothetical elevation of 734 feet PD do not significantly decrease loss of infrastructure use at the Project.

Extreme, hypothetical operational levels up to and including 757 feet PD were analyzed. If GRDA operated at 757 feet PD, a reservoir elevation that is 12 feet higher than the top of GRDA's anticipated operational range and an elevation equal to the top of dam, infrastructure locations would be inundated by depths similar to or greater than those depths for operational levels within GRDA's anticipated operational range. Practically speaking, increasing the top of the operational range to 757 feet PD is simply not possible.

In summary, infrastructure locations are not adversely affected by GRDA's baseline or anticipated operations of the Project, which consist of reservoir levels within an operational range of 742 feet PD to 745 feet PD. Even under the hypothetical and extreme operational level of 734 feet PD, only two parks would experience a minor decrease in the loss of infrastructure use.

List of Abbreviations and Terms

| | |
|----------------------|---|
| Commission/FERC..... | Federal Energy Regulatory Commission |
| DHS..... | Department of Homeland Security |
| EPA..... | Environmental Protection Agency |
| FAA..... | Federal Aviation Administration |
| FEMA..... | Federal Emergency Management Agency |
| FRS..... | Facility Registry Service |
| FSA..... | Farm Service Agency |
| GIS..... | Geographic Information Systems |
| GNIS..... | Geographic Names Information System |
| Grand Lake..... | Grand Lake O' the Cherokees |
| GRDA..... | Grand River Dam Authority |
| HEC..... | Hydrologic Engineering Center |
| HIFLD..... | Homeland Infrastructure Foundation Level Database |
| ISR..... | Initial Study Report |
| Kerr Dam..... | Robert S. Kerr Dam |
| Licensee..... | Grand River Dam Authority |
| MESTA..... | Mayes Emergency Service Trust Authority |
| NAIP..... | National Agricultural Imagery Program |
| NAVD88..... | North American Vertical Datum of 1988 |
| NGVD29..... | National Geodetic Vertical Datum of 1929 |
| ODOT..... | Oklahoma Department of Transportation |
| PD..... | Pensacola Datum |
| Project..... | Pensacola Hydroelectric Project |
| PSP..... | Proposed Study Plan |
| RAS..... | River Analysis System |
| RM..... | River Mile |
| RSP..... | Revised Study Plan |
| SPD..... | Study Plan Determination |
| Study..... | Infrastructure Study |
| USR..... | Updated Study Report |
| USACE..... | United States Army Corps of Engineers |
| USGS..... | United States Geological Survey |

1. Introduction and Background

1.1 Project Description

The Pensacola Hydroelectric Project is owned and operated by GRDA and regulated by the FERC, except that flood control operations at the Project are dictated and regulated by USACE under the authority of Section 7 of the 1944 Flood Control Act. In addition, section 7612(c) of NDAA 2020 clearly states that “The Secretary [of the Army] shall have exclusive jurisdiction and responsibility for management of the flood pool for flood control operations at Grand Lake O’ the Cherokees” (116th Congress, 2019). NDAA 2020 also forbids FERC or any other agency from regulating water surface elevations of Grand Lake O’ the Cherokees (Grand Lake), except with respect to USACE’s flood control operations and FERC’s regulations for dam safety and human health: “the Commission or any other Federal or State agency shall not include in any license for the project any condition or other requirement relating to—(i) surface elevations of the conservation pool; or (ii) the flood pool (except to the extent it references flood control requirements prescribed by the Secretary)” (116th Congress, 2019).

The Pensacola Dam is located in Mayes County, Oklahoma on the Grand-Neosho River. Pensacola Dam impounds Grand Lake. Construction of Pensacola Dam was completed in 1940. Downstream of Pensacola Dam, GRDA also owns and operates the Robert S. Kerr Dam (Kerr Dam) also known as the Markham Ferry Hydroelectric Project. Kerr Dam is also in Mayes County and impounds Lake Hudson, also known as Markham Ferry Reservoir. Flood control operations at both Pensacola Dam and Kerr Dam are regulated by USACE.

1.2 Vertical Datums

Data sources for this Study use a variety of vertical datums. Unless otherwise noted, data are presented in the Pensacola Datum (PD). To convert from PD to the National Geodetic Vertical Datum of 1929 (NGVD29), add 1.07 feet. To convert from NGVD29 to the North American Vertical Datum of 1988 (NAVD88), add 0.33 feet. **Figure 1**; displays datum transformations and conversions (Hunter, Trevisan, Villa, & Smith, 2020).

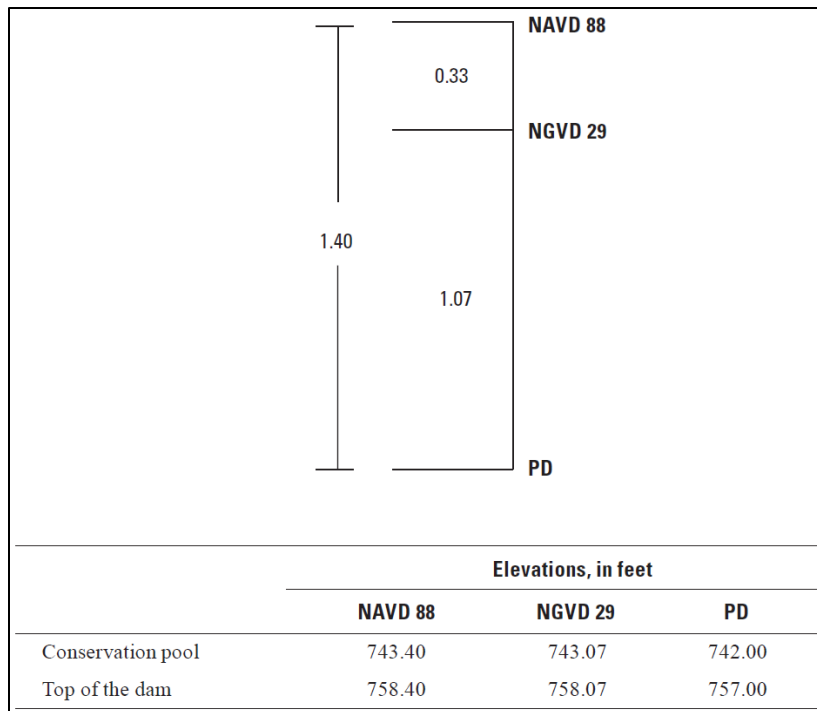


Figure 1. Datum transformations and conversions.

Source: (Hunter, Trevisan, Villa, & Smith, 2020).

1.3 Study Plan Proposals and Determination

GRDA is currently relicensing the Project. The timeline of study plan proposals and determination is as follows:

1. On April 27, 2018, GRDA filed its Proposed Study Plan (PSP) to address hydrologic and hydraulic modeling in support of its intent to relicense the Project.
2. On September 24, 2018, GRDA filed its Revised Study Plan (RSP).
3. On November 8, 2018, the FERC issued its Study Plan Determination (SPD) for the Project.
4. On January 23, 2020, the FERC issued an Order on the Request for Clarification and Rehearing, which clarified the timeline for certain milestones applicable to the relicensing study plan.
5. On September 30, 2021, GRDA filed its Initial Study Report (ISR).
6. On February 24, 2022, the FERC issued its Determination on Requests for Study Modifications and New Studies for the Project.
7. On September 30, 2022, GRDA filed this report, the Updated Study Report (USR).

The PSP and RSP did not include an infrastructure study. The SPD recommended the following strategy for assessing infrastructure impacts (FERC, 2018):

1. In consultation with the stakeholders, determine a list of infrastructure types to be included in the recommended infrastructure study. At a minimum, the list should include bridges, roads, structures, and other public amenities (e.g., recreation facilities) that have the potential to be flooded under all operating scenarios (e.g., by both the USACE-directed flood control operations and GRDA's Project operations).
2. Using output from the H&H modeling study, determine the range of inflow conditions for which model results show that Project operations for hydropower and other purposes under the Federal

Power Act in combination with USACE directed flood control operations are likely to have an effect on the frequency or depth of flooding. Based on the infrastructure identified in step 1, provide maps and tables identifying the frequency and depth of flooding for each item of infrastructure under baseline operations, as defined above, and for the range of inflow conditions where such operations may have an effect on flooding.

3. If needed based on H&H study results, provide additional maps and tables for anticipated operations.

The Study's purpose is to analyze the impact, if any, of Project operations on inundation of critical infrastructure such as bridges, roads, water systems, electric transmission, and information and communication technology.

GRDA's ISR concluded only a different inflow event, and not Project operation, can cause an appreciable difference in maximum water surface elevation and maximum inundation extent. Therefore, additional work on the Infrastructure Study was not proposed.

Despite these conclusions, FERC's February 2022 Determination recommended the following modifications to the Infrastructure Study:

1. On maps and in tabular format, for each affected infrastructure location, show the change in depth and frequency for the same starting elevations required in the H&H Study (*i.e.*, 734 feet PD through 757 feet PD).
2. Include maps and tabular data for the June 2004 (1-year event) and October 2009 (3-year event) inflow events. These maps and tabular data will be in addition to the September 1993 (21-year event), July 2007 (4-year event), and December 2015 (15-year event) inflow events.
3. On the tables and maps, clearly show the frequency of flooding (*i.e.*, return period) for each modeled event.

As documented in this report, GRDA has completed FERC's requested modifications.

2. Study Objectives and Schedule

Preliminary work for the Study occurred during the first study season. The Study and this report were updated during the second study season according to FERC’s February 2022 Determination. **Table 1** provides major tasks identified for each study season.

Table 1. Infrastructure study schedule and tasks.

| STUDY SEASON | MAJOR TASKS |
|--------------|--|
| 1 | <ul style="list-style-type: none"> • Develop list of infrastructure types. • Begin developing Geographic Information Systems (GIS) tools to extract flooding characteristics from simulation results. • Consult with stakeholders to update list of infrastructure types. • Map infrastructure locations. • Determine a range of inflow conditions for which modeling results show that Project operations are likely to have an effect on frequency and depth of flooding. • Use GIS tools to process modeling results to determine frequency and depth of flooding at mapped infrastructure locations. • Prepare maps and tabular data as part of analysis. • Develop an ISR. |
| 2 | <p>Stakeholder comments on the ISR are addressed according to FERC’s determination in this USR by including the following:</p> <ul style="list-style-type: none"> • On maps and in tabular format, for each affected infrastructure location, show the change in depth and frequency for the same starting elevations required in the H&H Study (<i>i.e.</i>, 734 feet PD through 757 feet PD). • Include maps and tabular data for the June 2004 (1-year event) and October 2009 (3-year event) inflow events. These maps and tabular data will be in addition to the September 1993 (21-year event), July 2007 (4-year event), and December 2015 (15-year event) inflow events. • On the tables and maps, clearly show the frequency of flooding (<i>i.e.</i>, return period) for each modeled event. |

3. Study Area

The Study area encompasses areas where Project operations are likely to influence the frequency or depth of flooding upstream of the Project. Infrastructure locations potentially impacted by Project operations are displayed in **Figure 2**.

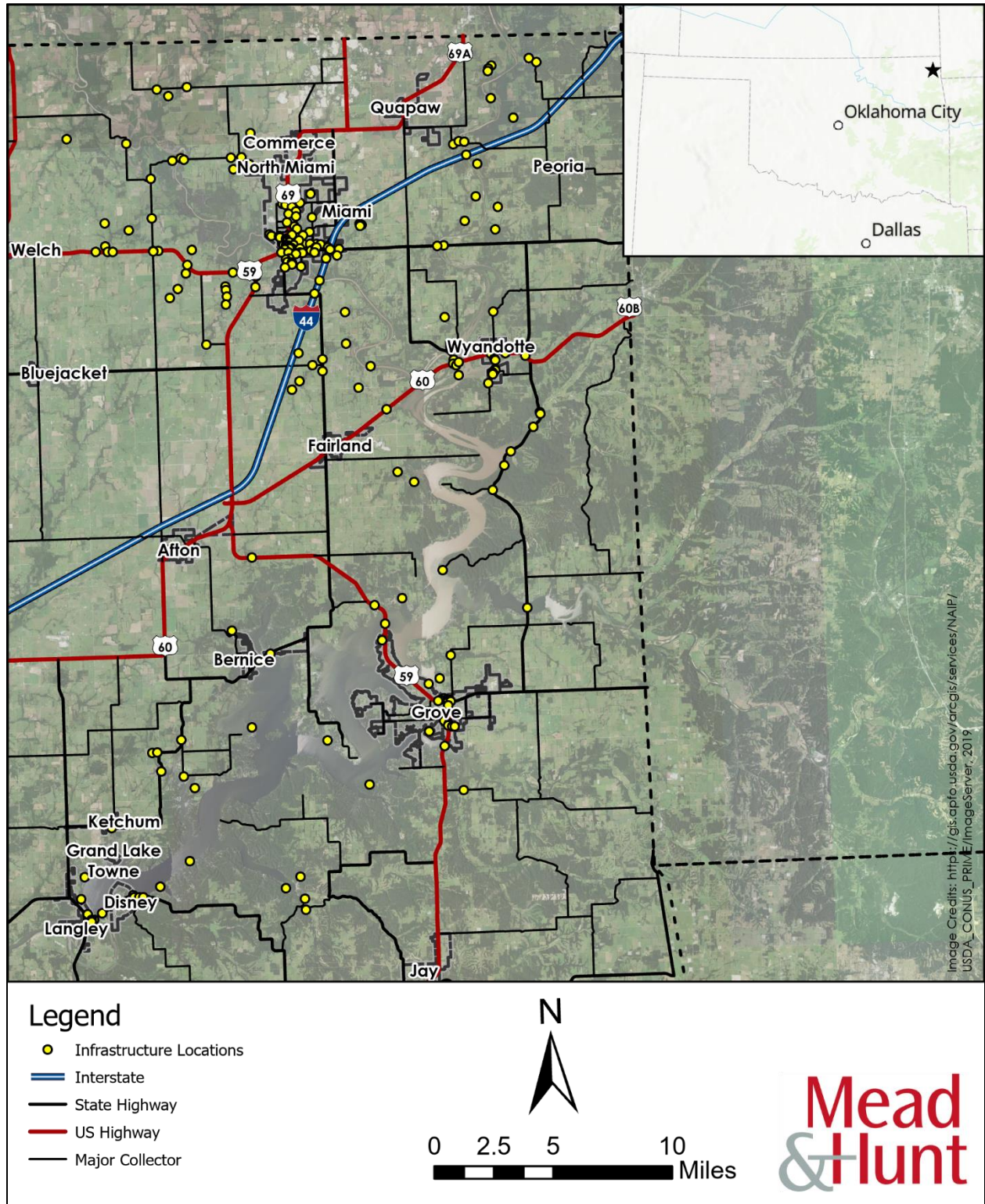


Figure 2. Infrastructure study area.

4. Methodology

Mead & Hunt defined a list of infrastructure types, gathered and mapped locations, consulted with stakeholders to refine the initial infrastructure list, and extracted inundation characteristics from simulation results. Historic inflows were examined to determine a range of conditions for which modeling results show Project operations potentially influence frequency and depth of flooding at the infrastructure locations. Maps showing the extent of inundation for multiple inflow events and starting reservoir elevations were developed. Tabular data for depth of inundation at each infrastructure location were developed for each simulated scenario.

4.1 Infrastructure Types and Data Sources

Infrastructure for the purposes of this Study is defined as facilities or structures that should be given consideration when there is potential for inundation due to Project operations. The Federal Emergency Management Agency (FEMA) includes hospitals, fire stations, police stations, and schools as examples of critical facilities (FEMA, 2020). The Department of Homeland Security (DHS) considers elements of transportation, clean water, and electricity to be of vital importance and identifies bridges and tunnels, energy infrastructure, and drinking water as key infrastructure elements (DHS, 2021).

The SPD (Federal Energy Regulatory Commission, 2018) states that:

Characterizing existing infrastructure that could be affected under flood conditions would help staff analyze the broad effect of project operation (including operation during flood conditions) on land uses, including uses related to infrastructure or municipal recreation areas.

An initial list of potential infrastructure types was developed based on examples cited above and the availability of location information from accessible data sources. These data sources include Oklahoma state sources and U.S. government sources such as the United States Geological Survey (USGS), Environmental Protection Agency (EPA), and DHS.

Mead & Hunt compiled infrastructure locations from available data sources. The primary data source for GIS features and location information was Oklahoma Digital Data Online (Oklahoma Geographic Information Council, 2021). Features obtained from this source were supplemented with data obtained from the USGS Geographic Names Information System (GNIS), EPA's Facility Registry Service (FRS), Federal Aviation Administration (FAA), and Homeland Infrastructure Foundation Level Database (HIFLD). **Table 2** presents the list of infrastructure types, features, and sources of data.

The location accuracy and original source data of these features may vary based on the data provider. Many locations were likely compiled from earlier sources of data and made available for download. Locations were cross-checked with independent mapping sources such as Google maps and county online mapping where available. Features were adjusted based on these independent sources as needed, and no ground-truthing was performed. Given multiple data sources for some of the infrastructure types, a review for duplicate features was completed and duplicates were removed.

Table 2. List of infrastructure types and data sources.

| INFRASTRUCTURE TYPE | FEATURES | DATA SOURCE |
|-----------------------------|--|---|
| Airports/Heliports | FAA public use airports | https://www.faa.gov/airports/airport_safety/airportdata_5010/ |
| Bridges | ODOT ¹ On-system bridges | Oklahoma Digital Data Online (https://okmaps.org/OGI/search.aspx) |
| | ODOT Off-system bridges | Oklahoma Digital Data Online (https://okmaps.org/OGI/search.aspx) |
| Medical/Hospitals | Hospitals and Clinics | Oklahoma Digital Data Online (https://okmaps.org/OGI/search.aspx); USGS GNIS (https://www.usgs.gov/core-science-systems/ngp/board-on-geographic-names/download-gnis-data) |
| Law Enforcement | Police, State, Sheriff's, Patrol | Oklahoma Digital Data Online (https://okmaps.org/OGI/search.aspx) |
| Fire Stations | Fire Stations | Oklahoma Digital Data Online (https://okmaps.org/OGI/search.aspx); USGS GNIS (https://www.usgs.gov/core-science-systems/ngp/board-on-geographic-names/download-gnis-data) |
| Education/Schools | Public Schools | Oklahoma Digital Data Online (https://okmaps.org/OGI/search.aspx); USGS GNIS (https://www.usgs.gov/core-science-systems/ngp/board-on-geographic-names/download-gnis-data) |
| Recreation/Public Use Areas | Parks, Fairgrounds | Oklahoma Digital Data Online (https://okmaps.org/OGI/search.aspx); USGS GNIS (https://www.usgs.gov/core-science-systems/ngp/board-on-geographic-names/download-gnis-data) |
| Waste and Water Treatment | Plants | EPA's FRS (https://www.epa.gov/frs) |
| Power supply | Power plants, Substations, Electric Transmission Lines | Homeland Infrastructure Foundation Level Database (HIFLD) (https://gii.dhs.gov/HIFLD); U.S. Energy Information Administration |
| FM Transmission Towers | | HIFLD (https://gii.dhs.gov/HIFLD) |
| Cell towers | | HIFLD (https://gii.dhs.gov/HIFLD) |

¹ Oklahoma Department of Transportation

4.2 Consultation with Stakeholders

4.2.1 Emergency Management Agencies

To refine and supplement the list of infrastructure, local emergency management agencies were contacted and given the opportunity to provide information on and/or the location of infrastructure features of concern to their jurisdictions. These contacts included county, city, and tribal emergency management entities, as well as the State of Oklahoma and USACE, Tulsa District Office.

Additional infrastructure locations identified through coordination with emergency management entities were added to the facilities GIS data layer. The list of entities contacted is provided in **Table 3**.

Table 3. Emergency management agencies contacted.

| AGENCY |
|---|
| Miami Emergency Management |
| Ottawa County Emergency Management |
| Quapaw Tribe |
| Wyandotte Emergency Management |
| Delaware County Emergency Management |
| Grove Emergency Management |
| Seneca Cayuga Nation Emergency Management |
| Craig County Emergency Management |
| Vinita Emergency Management |
| Mayes Emergency Service Trust Authority (MESTA) |
| State of Oklahoma Risk Management |
| USACE Tulsa Office |

A sample request email to emergency management agencies and the record of correspondence is included in **Appendix A**. Contact with each agency was initiated through email followed by a phone contact if there was no response to the initial email. A list of the agencies contacted is included in **Appendix B**.

4.2.2 Tribal Consultation

A certified return-receipt letter was sent for tribal consultation soliciting information on and/or the location of infrastructure features of concern to their jurisdictions on November 25, 2020. Additional certified letters were sent if no receipt was returned from the initial letter, followed by a phone call if the second receipt was not returned. A sample request letter is included in **Appendix C**. The list of entities to which a certified letter was sent is included in **Appendix D**.

4.3 Modeling Scenarios

Mead & Hunt developed a hydraulic model of the area upstream of the Project, using the USACE Hydrologic Engineering Center (HEC) River Analysis System (RAS) software. A separate report on the Hydrologic and Hydraulic Modeling Study is filed concurrently with this Study report. For more information on development of the HEC-RAS model and the simulations used in the Study, see the H&H Modeling Study: Upstream Hydraulic Model Report (Mead & Hunt, 2022).

For the Study, five inflow events were used in combination with eleven starting reservoir elevations. Estimated return periods of the inflow events ranged from 1 year (June 2004 event) up to 21 years (September 1993 event). Starting reservoir elevations were split into two categories:

1. Starting reservoir elevations within GRDA's anticipated operational range of 742 feet PD to 745 feet PD.
2. Hypothetical, extreme values of starting reservoir elevations well outside of GRDA's anticipated operational range. Values below and above GRDA's anticipated operational range were included in the Infrastructure Study based on FERC's February 2022 Determination.

Table 4 presents a summary of the inflow events and starting reservoir elevations simulated for the Infrastructure Study.

Table 4. List of inflow events and initial stages used in the Infrastructure Study.

| Inflow Event | Estimated Return Period ¹ | Pensacola Dam Starting Reservoir Elevation (ft, PD) | |
|--------------|--------------------------------------|---|-----------------------------|
| | | Anticipated Operational Range | Hypothetical, Extreme Range |
| Sept. 1993 | 21 years | 742.0, 742.5, 743.0, 743.5, 744.0, 744.5, 745.0 | 734.0, 749.0, 753.0, 757.0 |
| June 2004 | 1 year | 742.0, 742.5, 743.0, 743.5, 744.0, 744.5, 745.0 | 734.0, 749.0, 753.0, 757.0 |
| July 2007 | 4 years | 742.0, 742.5, 743.0, 743.5, 744.0, 744.5, 745.0 | 734.0, 749.0, 753.0, 757.0 |
| Oct. 2009 | 3 years | 742.0, 742.5, 743.0, 743.5, 744.0, 744.5, 745.0 | 734.0, 749.0, 753.0, 757.0 |
| Dec. 2015 | 15 years | 742.0, 742.5, 743.0, 743.5, 744.0, 744.5, 745.0 | 734.0, 749.0, 753.0, 757.0 |

Each simulation included a historical inflow event with a modified reservoir starting elevation. What residents experienced in real life when the historical events took place, regarding maximum inundation depth, only occurred when USACE had assumed control of Project operations pursuant to its exclusive jurisdiction under federal law, except when the time of maximum inundation depth was solely a function of inflow event arrival time and not reservoir elevation¹, meaning that the time of maximum depth at the infrastructure location was completely independent of Project reservoir elevation. The inflow event moved down the river and then arrived at the infrastructure location completely independent of Project operations. During the June 2004 inflow event, the reservoir elevation never exceeded 745 feet PD and there was no inundation of identified infrastructure² during this inflow event.

Similarly, the maximum inundation depths reported in this study for the various inflow events and reservoir starting elevations only occur when the reservoir elevation is above 745 feet PD, in which circumstance the USACE would control Project operations, except when the time of maximum inundation depth was solely a function of inflow event arrival time and not reservoir elevation. An example of this function-of-inflow-event-arrival-time situation is presented in **Figure 3**. Regardless of the starting reservoir elevation, all the stage hydrographs at the infrastructure location were virtually identical. The time of maximum depth at the infrastructure location was completely independent of Project reservoir elevation.

¹ For more information on how inflow events impact maximum water surface elevations and maximum inundation extents, see the Hydraulic and Hydraulic Modeling: Upstream Hydraulic Model Initial Study Report.

² With the singular exception of Bacon’s Heliport (ID 206). However, that structure is not physically “inundated” at any time because it floats on the surface of the reservoir.

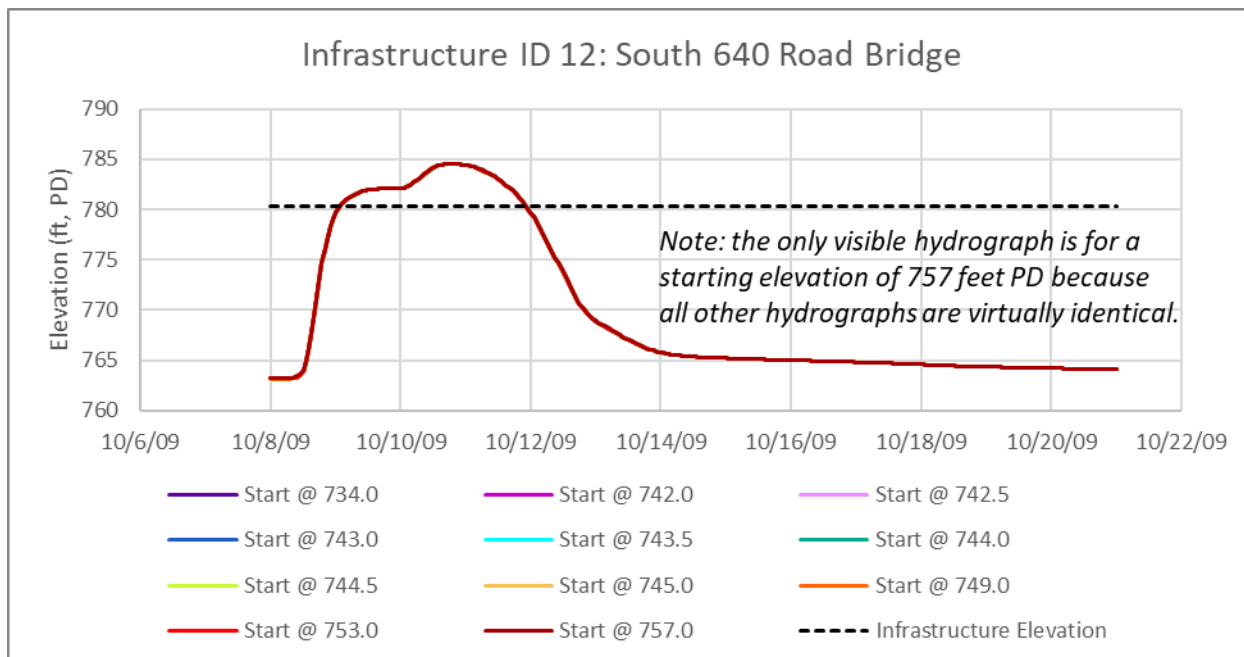


Figure 3. Example infrastructure location where time of maximum depth was completely independent of Project reservoir elevation.

As presented in **Table 4**, the simulated inflow events represent a variety of flood frequencies at the Project. All maps and tabular data included in the appendices of this report state the estimated return period of the inflow event. Calculating an estimated return period at each infrastructure location is not feasible because flow at each location is unique based on its position in the watershed. Reporting a unique return period at each infrastructure location would require a separate hydrologic study at each infrastructure location. However, estimated return periods at the Project can be considered when reviewing inundation depths and the criticality of each infrastructure location. For more information on the development of estimated return periods, see the H&H Modeling Study: Upstream Hydraulic Model Report (Mead & Hunt, 2022).

4.4 GIS Data Extraction

Infrastructure locations are represented as point locations in the GIS data. For each of the simulations used in the Study, maximum water depth values were extracted at each infrastructure location. The water depth values are compiled in tabular format for each infrastructure location and are presented along with the maps as described below.

4.5 Mapping and Tabular Data

4.5.1 Purpose of Maps

The infrastructure maps provided in **Appendix E** show which infrastructure locations may be impacted under different hydraulic conditions. The infrastructure locations and simulated inundation areas are displayed on the maps.

Base map information such as roads, municipal boundaries, and county boundaries were also collected to provide reference. The 2019 aerial images displayed on the maps are provided by the U.S. Department

of Agriculture's Farm Service Agency (FSA) National Agricultural Imagery Program (NAIP) (U.S. Department of Agriculture, 2021).

4.5.2 Map Description

A series of 37 maps at a scale of 1:24,000 (1 inch = 2000 ft) cover the upstream modeling area. This scale is sufficient for less developed areas. In **Appendix E**, one map set is presented for each simulated inflow event: September 1993 (21-year estimated return period), June 2004 (1-year estimated return period), July 2007 (4-year estimated return period), October 2009 (3-year estimated return period) and December 2015 (15-year estimated return period). The simulated inundation areas at all the starting reservoir elevations listed in **Table 4** are displayed on each map set.

Each 1:24,000-scale map sheet is divided further into four 1:12,000-scale map sheets for developed areas requiring more detail to present the infrastructure locations in relation to the modeled inundation area. For each simulated inflow event, five 1:12,000-scale map sheets are provided for the Miami, OK area which has the largest concentration of infrastructure locations in the study area.

An overview map provided in **Appendix E** details the 1:24,000 scale and 1:12,000 scale map sheet index, provides the infrastructure point legend, and describes the inundation scenario symbology used on each map sheet.

4.5.3 Tabular Data

Tabular data presented in **Appendix F** lists maximum water depths for all simulated scenarios at each infrastructure location. Tabular data is also provided for the difference in maximum water depth for starting reservoir elevations within GRDA's anticipated operational range of 742 feet PD to 745 feet PD and for hypothetical, extreme values of starting reservoir elevations outside of GRDA's anticipated operational range, as recommended in FERC's February 2022 Determination. The tables provide a description of the infrastructure type and list the map sheet where the infrastructure feature is located. Maximum water depths and differences in maximum depth are reported to the nearest tenth of a foot.

5. Study Results

The difference in inundation depth is discussed for simulations with starting reservoir elevations within GRDA's anticipated operational range of 742 feet PD to 745 feet PD.³ In addition to discussion of differences in depth for these simulations, Section 6 also discusses differences in depth for a starting reservoir elevation of 734 feet PD, a hypothetical operational condition considered extreme and well outside of GRDA's anticipated operational range.⁴ However, it is being reviewed to determine whether a reduction in reservoir operational elevation would decrease loss of infrastructure use. In accordance with FERC's February 2022 Determination, a hypothetical, extreme starting reservoir elevation of 757 feet PD was also analyzed. Results are presented in Appendices E and F. Results for that hypothetical, extreme starting reservoir elevation can be summarized as follows: if GRDA operated at 757 feet PD, a reservoir elevation that is 12 feet higher than the top of GRDA's anticipated operational range and an elevation equal to the top of dam, infrastructure locations would be inundated by depths similar to or greater than those depths for operational levels within GRDA's anticipated operational range. Practically speaking, increasing the top of the operational range to 757 feet PD is simply not possible.

Infrastructure locations with differences in depth greater than 0.1 feet for starting elevations within GRDA's anticipated operational range were divided into three classes for discussion:

1. Class 1 differences range from greater than 0.1 feet up to 0.3 feet.
2. Class 2 differences range from greater than or equal to 0.3 feet up to 0.5 feet.
3. Class 3 differences are greater than or equal to 0.5 feet.

Infrastructure locations meeting these criteria were placed in a class based on the greatest difference in depth for the inflow events.

5.1 Class 1 Differences

Table 5 lists infrastructure locations with Class 1 differences, which include the following:

- ID 57 is a bridge over Tar Creek. The bridge is on Rockdale Boulevard in the left overbank⁵ of the Neosho River at River Mile (RM) 134.0.
- ID 86 is a bridge over Little Elm Creek. The bridge is on State Highway 10/E 100 Road in the left overbank of the Neosho River at RM 133.0.
- ID 88 is a bridge over Tar Creek. The bridge is on State Highway 10/3rd Avenue SE in the left overbank of the Neosho River at RM 134.5.
- ID 94 is Lion Taylor Park in Miami, OK. It is in the left overbank of the Neosho River at RM 134.5.
- ID 97 is a bridge over Little Elm Creek. The bridge is on S 580 Road in the left overbank of the Neosho River at RM 133.0. The location is approximately 0.5 miles downstream of Interstate 44 (Will Rogers Turnpike).

³ Results were also analyzed for hypothetical, extreme values of starting reservoir elevations outside of GRDA's anticipated operational range, as recommended in FERC's February 2022 Determination. Mapped results are presented in Appendix E and tabular results are presented in Appendix F.

⁴ The Commission in its February 2022 Determination requested analysis of hypothetical, extreme elevations up to 757 feet PD. Elevations up to and including 757 feet have been analyzed and results are presented in Appendix E and Appendix F.

⁵ In hydraulic modeling terms, left and right sides of the river are based on the downstream direction. If you are floating down the river in a boat and you look to your left, that is the left bank of the river.

Table 5. Infrastructure locations with Class 1 differences under the anticipated operational range.

| Infra-structure ID | Map Panel | Location | Difference in Depth (ft) | | | | |
|--------------------|-----------|---------------------------------------|--------------------------|--------------------|--------------------|--------------------|---------------------|
| | | | Sep. 1993 (21 year) | June 2004 (1 year) | July 2007 (4 year) | Oct. 2009 (3 year) | Dec. 2015 (15 year) |
| 57 | B4, B4-3 | Rockdale Blvd Bridge over Tar Creek | 0.2 | 0.0 | 0.1 | 0.0 | 0.0 |
| 86 | B4, B4-4 | SH 10 Bridge over Little Elm Creek | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 |
| 88 | B4, B4-3 | SH 10 Bridge over Tar Creek | 0.2 | 0.0 | 0.1 | 0.0 | 0.0 |
| 94 | B4, B4-3 | Lion Taylor Park | 0.2 | 0.0 | 0.1 | 0.0 | 0.0 |
| 97 | B4, B4-4 | S 580 Rd Bridge over Little Elm Creek | 0.2 | 0.0 | 0.2 | 0.2 | 0.1 |

Note: Infrastructure ID 103, Riverview Park, was included as a Class 1 difference in the ISR. With FERC-required modifications to the Operations Model, the differences in depth are now less than or equal to 0.1 feet at that location. Infrastructure IDs 86 and 88 were not included as Class 1 differences in the ISR. With FERC-required modifications to the Operations Model, depth differences at Infrastructure IDs 86 and 88 now exceed 0.1 feet and are thus included in the USR.

5.2 Class 2 Differences

There were no infrastructure locations with Class 2 differences. Infrastructure ID 127, Hudson Creek Bridge, and ID 150, Wyandotte High School, were classified as Class 2 differences in the ISR. With FERC-required modifications to the Operations Model, these two infrastructure locations were reclassified as Class 3 differences in the USR.

5.3 Class 3 Differences

Table 6 lists infrastructure locations with Class 3 differences, which include the following:

- ID 127 is a bridge over Hudson Creek. The bridge is on S 580 Road in the right overbank of the Neosho River at RM 128.0.
- ID 139 is the Twin Bridges State Park at the confluence of the Neosho and Spring Rivers, along the left bank of the Neosho River at RM 122.5.
- ID 140 is a bridge over Shawnee Branch. The bridge is on S 645 Road in the left overbank of the Spring River at RM 3.0.
- ID 150 is Wyandotte High School in Wyandotte, OK. It is in the left overbank of the Neosho River at RM 122.0, slightly downstream of the BN Railroad bridge.
- ID 166 is a bridge over Fly Creek. The bridge is on E 262 Road in the right overbank of Grand Lake at RM 90.0.
- ID 167 is Bernice State Park, off E Highway 85A in the right overbank of Grand Lake at RM 90.0.
- ID 175 is the Cherokee Seaplane Base in Red Arrow, OK. It is in the right overbank of Grand Lake at RM 89.0.
- ID 181 is the Wolf Creek Park and Boat Ramp near Grove, OK. It is along the left edge of Grand Lake at RM 102.5, just upstream of Sailboat Bridge.

- ID 185 is Grove Springs Park in Grove, OK. It is in the left overbank of Grand Lake at RM 102.5, just upstream of Sailboat Bridge.
- ID 206 is Bacon's Heliport. It is along the left edge of Grand Lake at RM 82.8.

Table 6. Infrastructure locations with Class 3 differences under the anticipated operational range.

| Infra-structure ID | Map Panel | Location | Difference in Depth (ft) | | | | |
|--------------------|-----------|-------------------------|--------------------------|--------------------|--------------------|--------------------|---------------------|
| | | | Sep. 1993 (21 year) | June 2004 (1 year) | July 2007 (4 year) | Oct. 2009 (3 year) | Dec. 2015 (15 year) |
| 127 | C4 | Hudson Creek Bridge | 0.1 | 0.0 | 0.5 | 0.4 | 0.0 |
| 139 | C5 | Twin Bridges State Park | 0.1 | 0.0 | 1.1 | 0.5 | 0.0 |
| 140 | C6 | Shawnee Branch Bridge | 0.1 | 0.0 | 1.1 | 0.0 | 0.0 |
| 150 | C6 | Wyandotte High School | 0.1 | 0.0 | 0.8 | 0.0 | 0.0 |
| 166 | E3 | Fly Creek Bridge | 0.0 | 0.0 | 0.6 | 0.0 | 0.0 |
| 167 | E3 | Bernice State Park | 0.0 | 0.0 | 0.6 | 0.0 | 0.0 |
| 175 | F3 | Cherokee Seaplane Base | 0.0 | 0.0 | 0.6 | 0.0 | 0.0 |
| 181 | F5 | Wolf Creek Park | 0.0 | 0.0 | 0.5 | 0.8 | 0.1 |
| 185 | F5 | Grove Springs Park | 0.0 | 0.0 | 0.5 | 0.8 | 0.1 |
| 206 | G3 | Bacon's Heliport | 0.0 | 0.4 | 0.6 | 0.8 | 0.0 |

6. Discussion of Results

Locations where difference in maximum depth between different starting reservoir elevations is 0.1 feet or less have not been described in this study because they are not appreciable for the purpose of studying impacts on infrastructure.

Only 15 out of 228 infrastructure locations (7% of locations) studied show an appreciable increase in inundation depth for different starting reservoir elevations within GRDA's anticipated operational range. Of the fifteen infrastructure locations, five are categorized as Class 1 differences, none are classified as a Class 2 difference, and ten are categorized as Class 3 differences.

For a given infrastructure location, the inflow event that causes the largest difference in depth is discussed first, followed by discussion of difference in depth for the other inflow events. For simplicity, figures in Section 6 present inundation areas for the inflow event that causes the largest difference in depth. In each figure, inundation areas for a starting reservoir elevation of 742 feet PD (the lowest elevation in GRDA's anticipated operational range) and 745 feet PD (the highest elevation in GRDA's anticipated operational range) are presented. Full sets of maps, which include all inflow events and starting reservoir elevations within GRDA's anticipated operational range and hypothetical, extreme starting reservoir elevations outside of GRDA's anticipated operational range, are presented in **Appendix E**.

6.1 Class 1 Differences

Class 1 differences range from greater than 0.1 feet up to 0.3 feet in this study. Class 1 differences are located at Rockdale Boulevard Bridge over Tar Creek, State Highway 10/E 100 Road Bridge over Little Elm Creek, State Highway 10/3rd Avenue SE Bridge over Tar Creek, Lion Taylor Park, and S 580 Road Bridge over Little Elm Creek.

6.1.1 Rockdale Boulevard Bridge Over Tar Creek (ID 57)

Within GRDA's anticipated operational range, Rockdale Boulevard Bridge over Tar Creek is inundated by 1.3 to 1.5 feet of water for the September 1993 (21 year) inflow event. The inundation, displayed in **Figure 4**, extends well beyond the bridge. Within the anticipated operational range, the bridge is unusable regardless of starting reservoir elevation.

Within the anticipated operational range, for the July 2007 (4 year) inflow event, the location is inundated by 6.8 to 6.9 feet of water and will be impassible regardless of the starting reservoir elevation. For the June 2004 (1 year) inflow event, the October 2009 (3 year) inflow event, and the December 2015 (15 year) inflow event, the infrastructure location is not inundated. For all events, starting reservoir elevations within the anticipated operational range do not result in additional loss of infrastructure use at this location.

If GRDA operated at 734 feet PD, this infrastructure location would still be inundated by the same inflow events and would be inundated by depths similar to those depths for operational levels within GRDA's anticipated operational range. For the September 1993 (21 year) inflow event, the location would still be inundated by 1.1 feet of water. For the July 2007 (4 year) event, the location would still be inundated by 6.7 feet of water. Reducing the operational range to 734 feet PD would still result in the same loss of infrastructure use at this location.

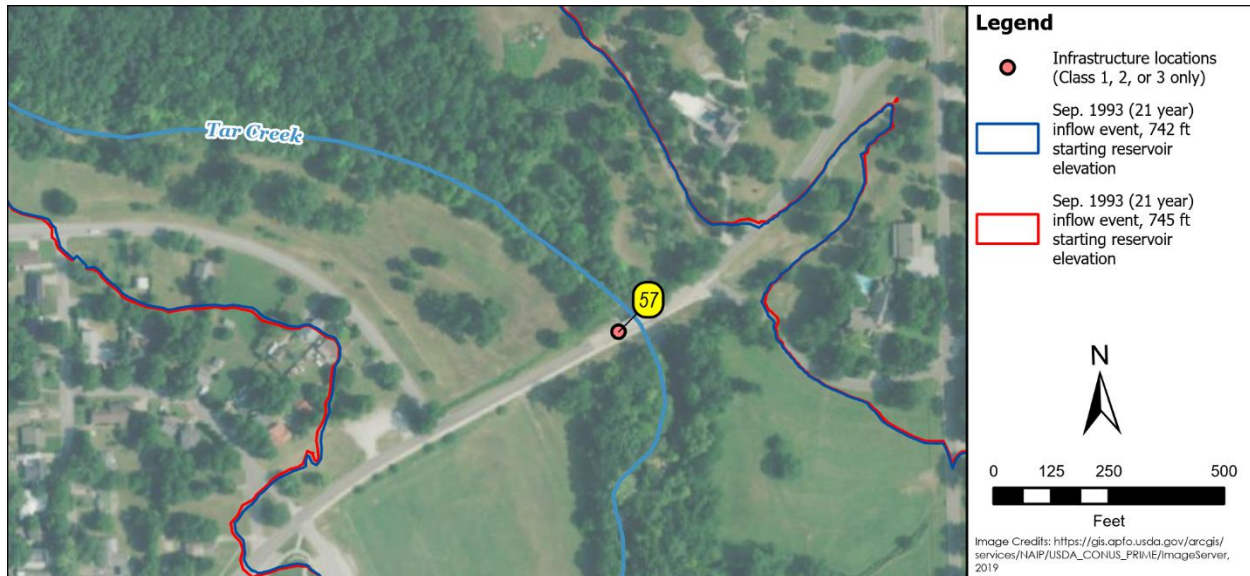


Figure 4. September 1993 event inundation extents at Rockdale Boulevard Bridge (ID 57).

6.1.2 State Highway 10/E 100 Road Bridge Over Little Elm Creek (ID 86)

Within GRDA's anticipated operational range, State Highway 10/E 100 Road Bridge over Little Elm Creek is inundated by 4.7 to 4.9 feet of water for the July 2007 (4 year) inflow event. Inundation extends beyond the bridge and is displayed in **Figure 5**. Within the anticipated operational range, the bridge is unusable regardless of starting reservoir elevation for the July 2007 (4 year) inflow event.

Within the anticipated operational range, the infrastructure location is not inundated for the September 1993 (21 year), June 2004 (1 year), October 2009 (3 year), and December 2015 (15 year) inflow events. For all events, starting reservoir elevations within the anticipated operational range do not result in additional loss of infrastructure use at this location.

If GRDA operated at 734 feet PD, this infrastructure location would still be inundated by the same inflow event and would be inundated by depths similar to those depths for operational levels within GRDA's anticipated operational range. For the July 2007 (4 year) inflow event, the location would still be inundated by 4.7 feet of water. Reducing the operational range to 734 feet PD would still result in the same loss of infrastructure use at this location.

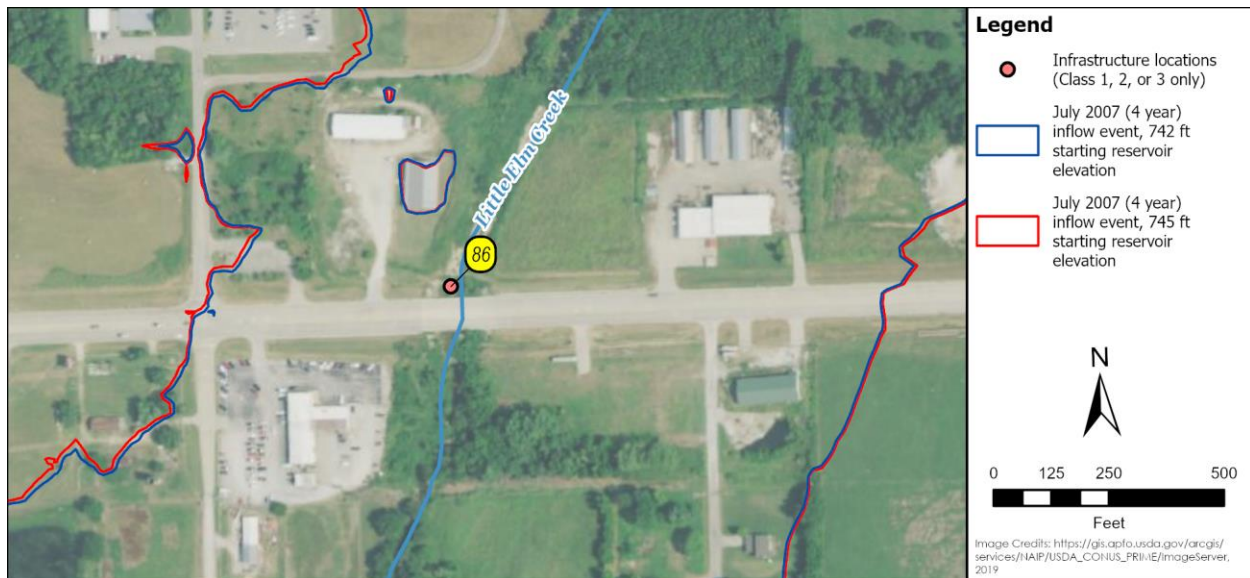


Figure 5. July 2007 event inundation extents at State Highway 10/E 100 Road Bridge (ID 86).

6.1.3 State Highway 10/3rd Avenue SE Bridge Over Tar Creek (ID 88)

Within GRDA's anticipated operational range, the State Highway 10/3rd Avenue SE Bridge over Tar Creek is inundated by 2.1 to 2.3 feet of water for the September 1993 (21 year) inflow event. Inundation is displayed in **Figure 6** and extends well beyond the bridge. Within the anticipated operational range, the bridge is unusable regardless of starting reservoir elevation.

The location is inundated by 7.6 to 7.7 feet of water for the July 2007 (4 year) inflow event and will be unusable regardless of starting reservoir elevation within the anticipated operational range. The infrastructure location is not inundated for the June 2004 (1 year), October 2009 (3 year), and December 2015 (15 year) inflow events. For all events, starting reservoir elevations within the anticipated operational range do not result in additional loss of infrastructure use at this location.

If GRDA operated at 734 feet PD, this infrastructure location would still be inundated by the same inflow events and would be inundated by depths similar to those depths for operational levels within GRDA's anticipated operational range. For the September 1993 (21 year) inflow event, the location would still be inundated by 1.9 feet of water. For the July 2007 (4 year) event, the location would still be inundated by 7.5 feet of water. Reducing the operational range to 734 feet PD would still result in the same loss of infrastructure use at this location.

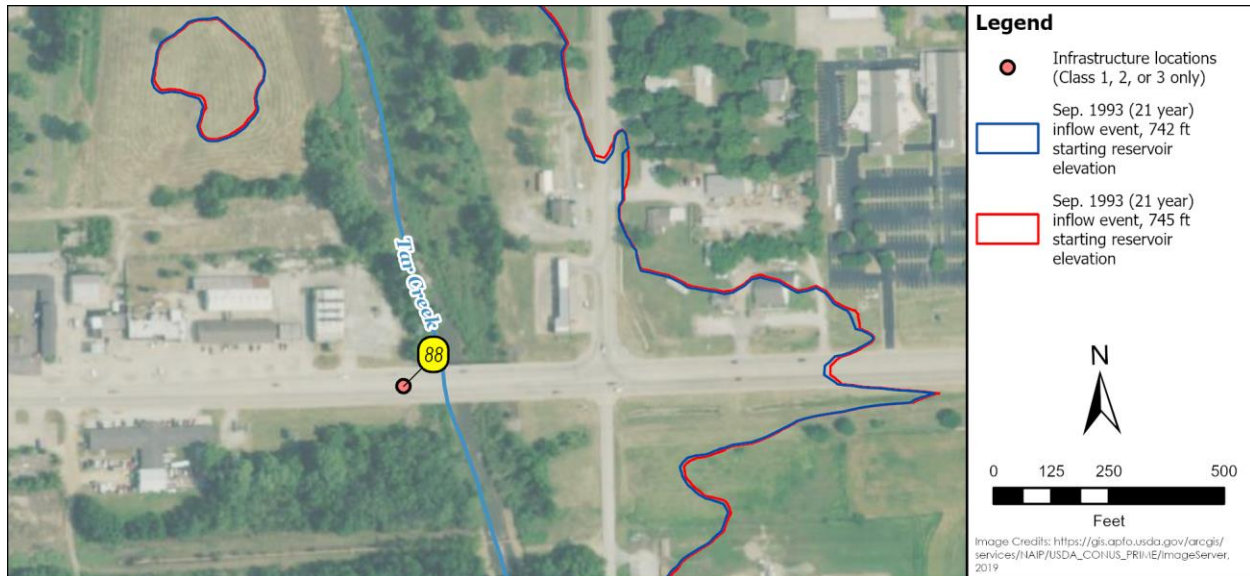


Figure 6. September 1993 event inundation extents at State Highway 10/3rd Avenue SE Bridge (ID 88).

6.1.4 Lion Taylor Park (ID 94)

Within GRDA's anticipated operational range, Lion Taylor Park is inundated by 0.3 to 0.5 feet of water for the September 1993 (21 year) inflow event. While the maximum depths are relatively shallow, the park is mostly inundated regardless of starting reservoir elevation within the anticipated operational range, as displayed in **Figure 7**.

For the July 2007 (4 year) inflow event, the park is inundated by 5.8 to 5.9 feet of water within the anticipated operational range. The location is not inundated for the June 2004 (1 year), October 2009 (3 year), and December 2015 (15 year) inflow events. Within the anticipated operational range, starting reservoir elevations do not result in additional loss of infrastructure use at this location.

If GRDA operated at 734 feet PD, this infrastructure location would still be inundated by the same inflow events and would be inundated by depths similar to those depths for operational levels within GRDA's anticipated operational range. For the September 1993 (21 year) inflow event, the location would still be inundated by 0.1 feet of water, a relatively shallow depth similar to the 0.3 feet of depth that would occur for an operational level of 742 feet PD. For the July 2007 (4 year) event, the location would still be inundated by 5.7 feet of water. Reducing the operational range to 734 feet PD would still result in the same loss of infrastructure use at this location.



Figure 7. September 1993 event inundation extents at Lion Taylor Park (ID 94).

6.1.5 S 580 Road Bridge Over Little Elm Creek (ID 97)

Within GRDA's anticipated operational range, S 580 Road Bridge over Little Elm Creek is inundated by 15.1 to 15.3 feet of water for the July 2007 (4 year) inflow event. The July 2007 (4 year) inflow event inundation extends well beyond the bridge and is displayed in **Figure 8**. For the September 1993 (21 year) inflow event, the bridge is inundated by 10.1 to 10.3 feet of water. For the October 2009 (3 year) inflow event, it is inundated by 1.9 to 2.1 feet of water. For the December 2015 (15 year) inflow event, the bridge is inundated by 5.4 to 5.5 feet of water. Within the anticipated operational range, the bridge is unusable regardless of starting reservoir elevation for the July 2007 (4 year), September 1993 (21 year), October 2009 (3 year), and December 2015 (15 year) inflow events.

For the June 2004 (1 year) inflow event, the infrastructure location is not inundated. For all events, starting reservoir elevations within the anticipated operational range do not result in additional loss of infrastructure use at this location.

If GRDA operated at 734 feet PD, this infrastructure location would still be inundated by the same inflow events and would be inundated by depths similar to those depths for operational levels within GRDA's anticipated operational range. For the July 2007 (4 year) inflow event, the location would still be inundated by 15.1 feet of water. For the September 1993 (21 year) event, the depth would be 9.9 feet. For the October 2009 (3 year) event, the depth would be 1.5 feet. For the December 2015 (15 year) event, the depth would be 4.1 feet. Reducing the operational range to 734 feet PD would still result in the same loss of infrastructure use at this location.

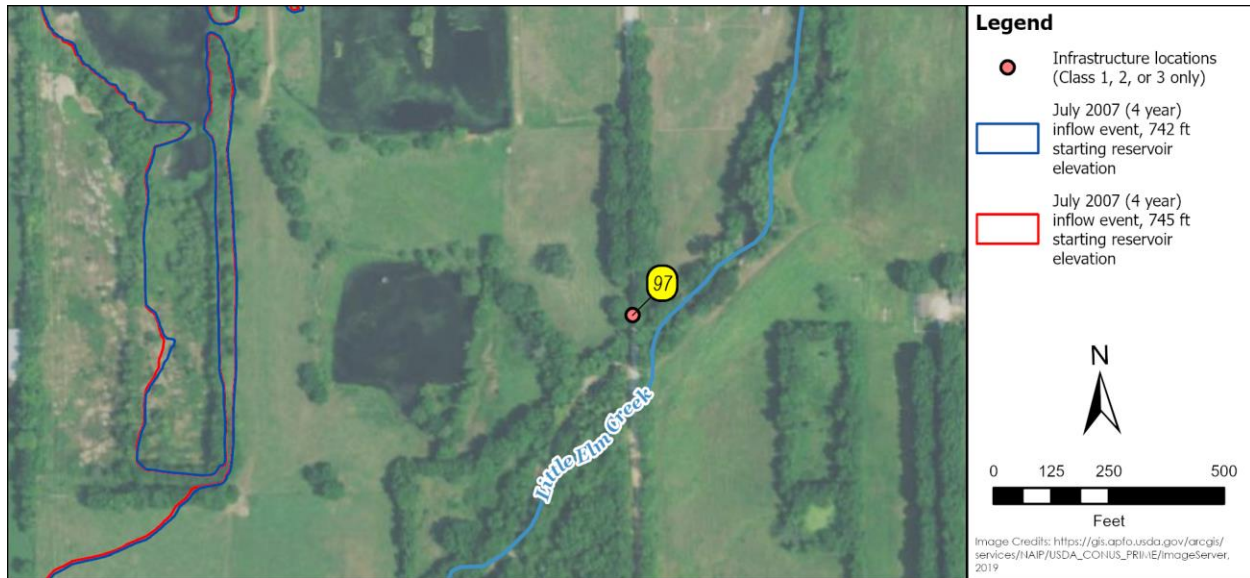


Figure 8. July 2007 event inundation extents at S 580 Road Bridge (ID 97).

6.2 Class 2 Differences

Class 2 differences range from greater than or equal to 0.3 feet up to 0.5 feet in this study. There were no infrastructure locations with Class 2 differences.

6.3 Class 3 Differences

Class 3 differences are greater than or equal to 0.5 feet in this study. Class 3 differences are located at Hudson Creek Bridge, Twin Bridges State Park, Shawnee Branch Bridge, Wyandotte High School, Fly Creek Bridge, Bernice State Park, Cherokee Seaplane Base, Wolf Creek Park, Grove Springs Park, and Bacon's Heliport.

6.3.1 Hudson Creek Bridge (ID 127)

Within GRDA's anticipated operational range, Hudson Creek Bridge is inundated by 17.8 to 18.3 feet of water for the July 2007 (4 year) inflow event. Inundation is displayed in **Figure 9** and extends well beyond the bridge. Within the anticipated operational range, the bridge is unusable regardless of starting reservoir elevation.

Within GRDA's anticipated operational range, this location is inundated by 15.0 to 15.1 feet of water for the September 1993 (21 year) inflow event. For the October 2009 (3 year) inflow event, the location is inundated by 6.5 to 6.9 feet of water. For the December 2015 (15 year) inflow event, the location is inundated by 12.6 feet of water. The location is not inundated for the June 2004 (1 year) inflow event. For all events, starting reservoir elevations within the anticipated operational range do not result in additional loss of infrastructure use at this location.

If GRDA operated at 734 feet PD, this infrastructure location would still be inundated by the same inflow events and would be inundated by depths similar to those depths for operational levels within GRDA's anticipated operational range. For the July 2007 (4 year) inflow event, the location would still be inundated by 17.8 feet of water. For the September 1993 (21 year) event, the depth would be 14.9 feet. For the October 2009 (3 year) event, the depth would be 5.9 feet. For the December 2015 (15 year)

event, the depth would be 10.6 feet. Reducing the operational range to 734 feet PD would still result in the same loss of infrastructure use at this location.



Figure 9. July 2007 event inundation extents at Hudson Creek Bridge (ID 127).

6.3.2 Twin Bridges State Park (ID 139)

Within GRDA's anticipated operational range, Twin Bridges State Park is inundated by 7.8 to 8.9 feet of water for the July 2007 (4 year) inflow event. As displayed in **Figure 10**, the infrastructure location is completely inundated and will be unusable regardless of starting reservoir elevation within the anticipated operational range.

For the September 1993 (21 year) inflow event, the location is inundated by 12.4 to 12.5 feet of water. For the October 2009 (3 year) inflow event, the location is inundated by 3.2 to 3.7 feet of water. For the December 2015 (15 year) inflow event, the location is inundated by 10.3 feet of water. The location is not inundated for the June 2004 (1 year) inflow event. For all events, starting reservoir elevations within the anticipated operational range do not result in additional loss of infrastructure use at this location.

If GRDA operated at 734 feet PD, this infrastructure location would still be inundated by the same inflow events and would be inundated by depths similar to those depths for operational levels within GRDA's anticipated operational range. For the July 2007 (4 year) inflow event, the location would still be inundated by 7.1 feet of water. For the September 1993 (21 year) event, the depth would be 12.3 feet. For the October 2009 (3 year) event, the depth would be 2.5 feet. For the December 2015 (15 year) event, the depth would be 8.1 feet. Reducing the operational range to 734 feet PD would still result in the same loss of infrastructure use at this location.



Figure 10. July 2007 event inundation at Twin Bridges State Park (ID 139).

6.3.3 Shawnee Branch Bridge (ID 140)

Within GRDA's anticipated operational range, Shawnee Branch Bridge is inundated by 2.4 to 3.5 feet of water for the July 2007 (4 year) inflow event. Inundation is displayed in **Figure 11**. Within the anticipated operational range, the bridge is unusable regardless of starting reservoir elevation for the July 2007 (4 year) inflow event.

For the September 1993 (21 year) inflow event, the location is inundated by 10.5 to 10.6 feet of water. For the December 2015 (15 year) inflow event, the location is inundated by 6.5 feet of water. For both the September 1993 (21 year) and December 2015 (15 year) inflow events, the bridge will be impassible regardless of the starting reservoir elevation within the anticipated operational range. The infrastructure location is not inundated for the June 2004 (1 year) and October 2009 (3 year) inflow events. For all events, starting reservoir elevations within the anticipated operational range do not result in additional loss of infrastructure use at this location.

If GRDA operated at 734 feet PD, this infrastructure location would still be inundated by the same inflow events and would be inundated by depths similar to those depths for operational levels within GRDA's anticipated operational range. For the July 2007 (4 year) inflow event, the location would still be inundated by 1.7 feet of water. For the September 1993 (21 year) event, the depth would be 10.5 feet. For the December 2015 (15 year) event, the depth would be 5.7 feet. Reducing the operational range to 734 feet PD would still result in the same loss of infrastructure use at this location.



Figure 11. July 2007 event inundation at Shawnee Branch Bridge (ID 140).

6.3.4 Wyandotte High School (ID 150)

The school property is protected by an embankment that is maintained by GRDA. As displayed in **Figure 12**, there is a break in inundation due to the embankment. The inundation polygon that includes the school is disconnected from the main inundation polygon. This is a limitation of the study data and indicates that the school should not be inundated because the embankment prevents overland flow from entering the school property.

GRDA already maintains the embankment, which assures it will continue to function correctly by blocking any overland flow from entering the infrastructure. Thus, Wyandotte High School is protected from any potential adverse impacts on the infrastructure that could occur as a result of Project operations.

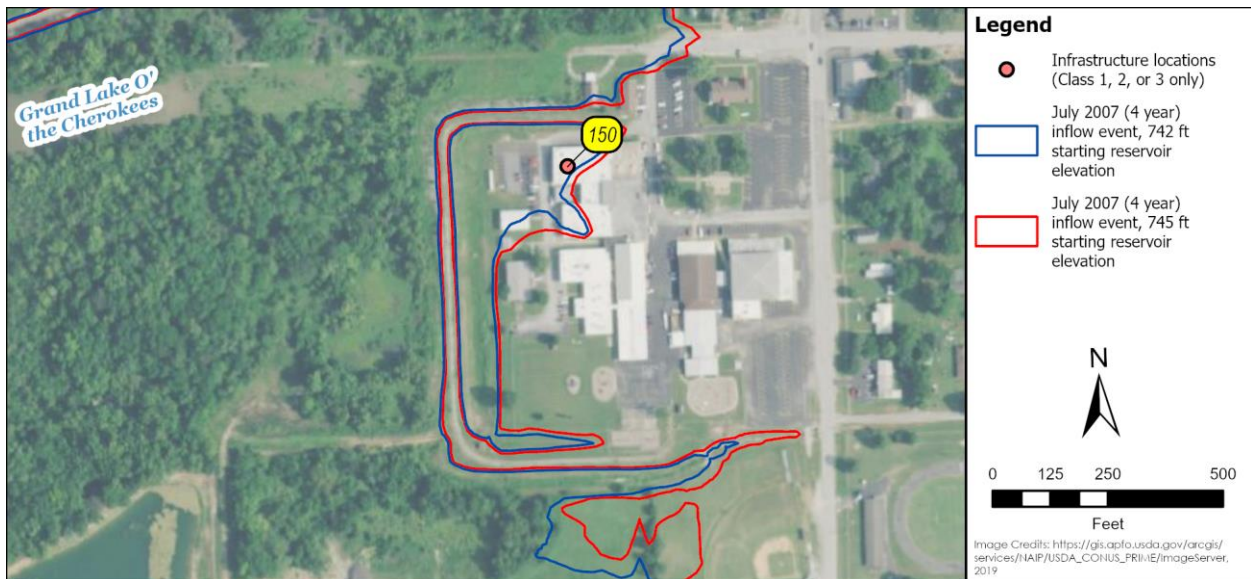


Figure 12. July 2007 event inundation at Wyandotte High School (ID 150).

6.3.5 Fly Creek Bridge (ID 166)

Within GRDA's anticipated operational range, Fly Creek Bridge is inundated by 3.0 to 3.6 feet of water for the July 2007 (4 year) inflow event and will be impassible regardless of the starting reservoir elevation within the anticipated operational range as displayed in **Figure 13**.

For the September 1993 (21 year) and December 2015 (15 year) inflow events, the bridge is inundated by 3.6 feet of water. The bridge is not inundated for the June 2004 (1 year) and October 2009 (3 year) inflow events. For all events, starting reservoir elevations within the anticipated operational range do not result in additional loss of infrastructure use at this location.

If GRDA operated at 734 feet PD, this infrastructure location would still be inundated by the same inflow events and would be inundated by depths similar to those depths for operational levels within GRDA's anticipated operational range. For the July 2007 (4 year) inflow event, the location would still be inundated by 2.8 feet of water. For the September 1993 (21 year) event, the depth would be 2.9 feet. For the December 2015 (15 year) event, the depth would be 3.3 feet. Reducing the operational range to 734 feet PD would still result in the same loss of infrastructure use at this location.

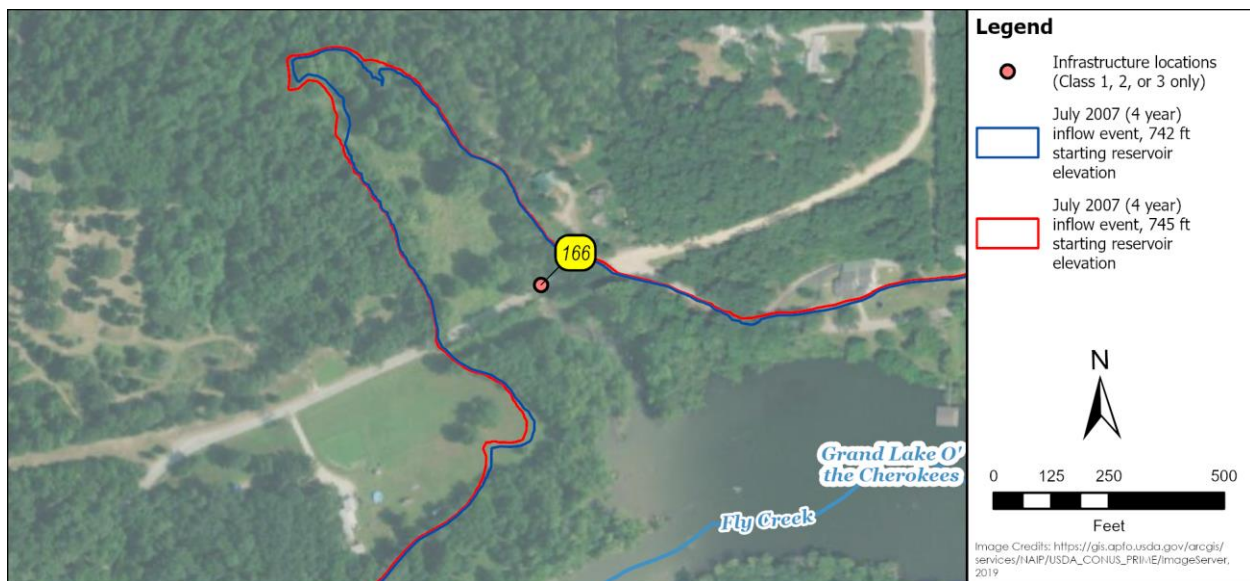


Figure 13. July 2007 event inundation at Fly Creek Bridge (ID 166).

6.3.6 Bernice State Park (ID 167)

Within GRDA's anticipated operational range, Bernice State Park is inundated by 2.3 to 2.9 feet of water for the July 2007 (4 year) inflow event. As shown in **Figure 14**, most of the park is inundated within the anticipated operational range and would be unusable regardless of starting reservoir elevation.

For the September 1993 (21 year) and December 2015 (15 year) inflow events, the location is inundated by 2.9 feet of water. The location is not inundated for the June 2004 (1 year) and October 2009 (3 year) inflow events. For all events, starting reservoir elevations within the anticipated operational range do not result in additional loss of infrastructure use at this location.

If GRDA operated at 734 feet PD, this infrastructure location would still be inundated by the same inflow events and would be inundated by depths similar to those depths for operational levels within GRDA's

anticipated operational range. For the July 2007 (4 year) inflow event, the location would still be inundated by 2.1 feet of water. For the September 1993 (21 year) event, the depth would be 2.2 feet. For the December 2015 (15 year) event, the depth would be 2.6 feet. Reducing the operational range to 734 feet PD would still result in the same loss of infrastructure use at this location.



Figure 14. July 2007 event inundation at Bernice State Park (ID 167).

6.3.7 Cherokee Seaplane Base (ID 175)

Within GRDA's anticipated operational range, Cherokee Seaplane Base is inundated by 2.9 to 3.5 feet of water for the July 2007 (4 year) inflow event. As shown in **Figure 15**, the location is unusable within the anticipated operational range regardless of starting reservoir elevation.

For the September 1993 (21 year) and December 2015 (15 year) inflow events, the location is inundated by 3.5 feet of water. This location is not inundated for the June 2004 (1 year) and October 2009 (3 year) inflow events. For all events, starting reservoir elevations within the anticipated operational range do not result in additional loss of infrastructure use at this location.

If GRDA operated at 734 feet PD, this infrastructure location would still be inundated by the same inflow events and would be inundated by depths similar to those depths for operational levels within GRDA's anticipated operational range. For the July 2007 (4 year) inflow event, the location would still be inundated by 2.7 feet of water. For the September 1993 (21 year) event, the depth would be 2.8 feet. For the December 2015 (15 year) event, the depth would be 3.2 feet. Reducing the operational range to 734 feet PD would still result in the same loss of infrastructure use at this location.



Figure 15. July 2007 event inundation at Cherokee Seaplane Base (ID 175).

6.3.8 Wolf Creek Park (ID 181)

Within GRDA's anticipated operational range, Wolf Creek Park is inundated by 0.8 to 1.6 feet of water for the October 2009 (3 year) inflow event. As displayed in **Figure 16**, only the low-lying areas are unusable for the October 2009 (3 year) inflow event regardless of starting reservoir elevation. The structures subject to flooding are outside the inundation for all studied inflow events. This site was designed (and funded) by GRDA to not be impacted by inflow events.

For the September 1993 (21 year) inflow event, the location is inundated by 5.5 feet of water. For the July 2007 (4 year) inflow event, the location is inundated by 5.0 to 5.5 feet of water. For the December 2015 (15 year) inflow event, the location is inundated by 5.5 to 5.6 feet of water. The location is not inundated for the June 2004 (1 year) inflow event. For all events, starting reservoir elevations within the anticipated operational range do not result in additional loss of infrastructure use at this location.

If GRDA operated at 734 feet PD, this infrastructure location would still be inundated by the same inflow events and would be inundated by depths similar to those depths for operational levels within GRDA's anticipated operational range, except for the October 2009 (3 year) inflow event, for which no inundation would occur. For the September 1993 (21 year) inflow event, the depth would be 4.8 feet. For the July 2007 (4 year) event, the depth would be 4.7 feet. For the December 2015 (15 year) event, the depth would be 5.2 feet. Because the site was designed (and funded) by GRDA to not be impacted by inflow events, only the low-lying areas near Grand Lake are inundated. Reducing the operational range to 734 feet PD would still result in the same impact to infrastructure use at this location.



Figure 16. October 2009 event inundation at Wolf Creek Park (ID 181).

6.3.9 Grove Springs Park (ID 185)

Within GRDA's anticipated operational range, Grove Springs Park is inundated by 0.8 to 1.6 feet of water for the October 2009 (3 year) inflow event. The inundation, as displayed in **Figure 17**, extends out quite far and will make most of the park unusable for the October 2009 (3 year) inflow event regardless of anticipated starting reservoir elevation being 742 feet PD or 745 feet PD. This park does not contain structures that can be damaged if exposed to periodic flooding.

For the September 1993 (21 year) inflow event, the location is inundated by 5.5 feet of water. For the July 2007 (4 year) inflow event, the location is inundated by 5.0 to 5.5 feet of water. For the December 2015 (15 year) inflow event, the location is inundated by 5.5 to 5.6 feet of water. The location is not inundated for the June 2004 (1 year) inflow event. For all events, starting reservoir elevations within the anticipated operational range do not result in additional loss of infrastructure use at this location.

If GRDA operated at 734 feet PD, this infrastructure location would still be inundated by the same inflow events and would be inundated by depths similar to those depths for operational levels within GRDA's anticipated operational range, except for the October 2009 (3 year) inflow event, for which no inundation would occur. For the September 1993 (21 year) inflow event, the depth would be 4.8 feet. For the July 2007 (4 year) event, the depth would be 4.7 feet. For the December 2015 (15 year) event, the depth would be 5.2 feet. Except for the October 2009 (3 year) inflow event, for which no inundation would occur if GRDA operated at 734 feet PD, reducing the operational range to 734 feet PD would still result in the same impact to infrastructure use at this location.

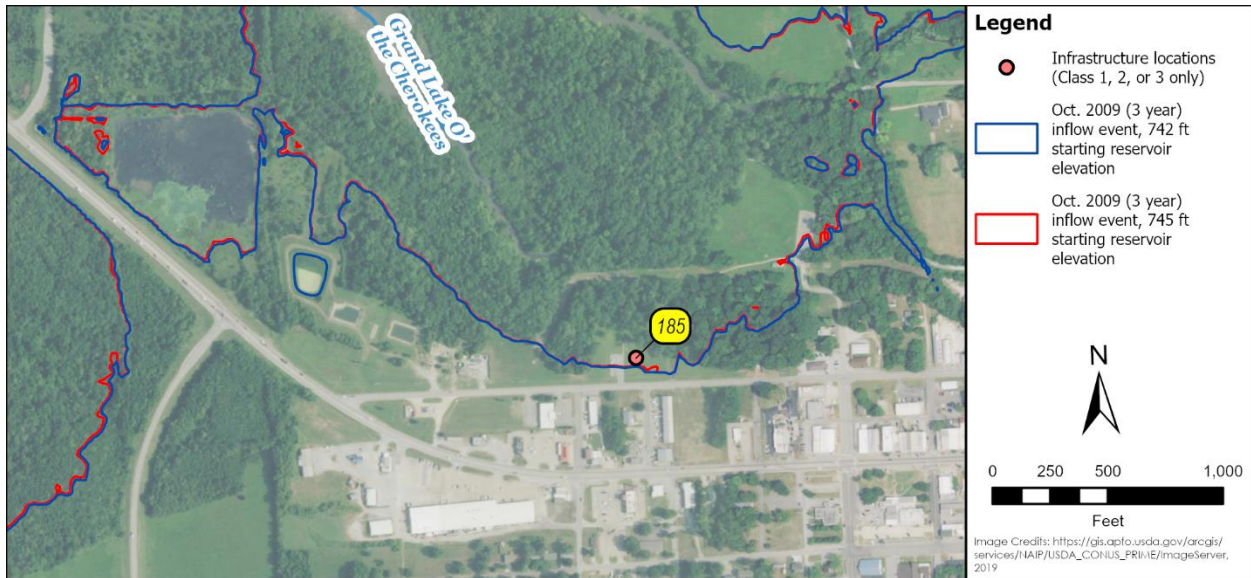


Figure 17. October 2009 event inundation at Grove Springs Park (ID 185).

6.3.10 Bacon's Heliport (ID 206)

Bacon's Heliport is a floating structure. Therefore, it does not become inundated during any of the inflow events studied. Reducing the operational range to 734 feet PD would still result in the same impact to infrastructure use at this location.



Figure 18. October 2009 event inundation at Bacon's Heliport (ID 206).

7. Conclusions

According to the analysis results, only 7% of the infrastructure locations studied experience an appreciable increase (greater than 0.1 feet) in maximum inundation depth for different starting reservoir elevations within GRDA's anticipated operational range of 742 feet PD to 745 feet PD. In addition, all appreciable increases in maximum inundation depth occur during high-flow conditions when the USACE controls the flood control operations under federal law, except when the time of maximum inundation depth is solely a function of inflow event arrival time and not reservoir elevation, meaning that the time of maximum depth at the infrastructure location was completely independent of the Project reservoir elevation. Therefore, infrastructure locations are not adversely affected by GRDA's anticipated Project operations.

Except for two parks, a reduction in reservoir operational elevation to 734 feet PD would not decrease the loss of infrastructure use for any of the inflow events studied. The first park, Wolf Creek Park, was designed (and partially funded) by GRDA to avoid being impacted by inflow events. Only a low-lying portion of the park near Grand Lake would experience a difference in inundation for the October 2009 (3 year) inflow event. Therefore, any potential adverse impacts have already been mitigated by GRDA during their assistance in the design and funding of the improvements to the park.

At the second park, Grove Springs Park, low-lying portions of the park would experience a difference in inundation for the October 2009 (3 year) inflow event. Decreasing the low end of the anticipated operation range from 742 to 734 feet PD, a difference of 8 feet in operational elevation, would only change infrastructure adverse impacts slightly at Grove Springs Park.

Because infrastructure such as parks are generally sited in areas that are subject to frequent flooding and are the most-resistant type of infrastructure being reviewed in this Study, the minor potential reduction in impacts to infrastructure identified through operating at an extreme, hypothetical elevation of 734 feet PD do not significantly decrease loss of infrastructure use at the Project. The results do not provide a significant benefit to consider an elevation of 734 feet PD as a realistic option for reducing flooding impacts on infrastructure.

Extreme, hypothetical operational levels up to and including 757 feet PD were analyzed. If GRDA operated at 757 feet PD, a reservoir elevation that is 12 feet higher than the top of GRDA's anticipated operational range and an elevation equal to the top of dam, infrastructure locations would be inundated by depths similar to or greater than those depths for operational levels within GRDA's anticipated operational range. Practically speaking, increasing the top of the operational range to 757 feet PD is simply not possible.

In summary, infrastructure locations are not adversely affected by GRDA's baseline or anticipated operations of the Project, which consist of reservoir levels within an operational range of 742 feet PD to 745 feet PD. Even under the hypothetical and extreme operational level of 734 feet PD, only two parks would experience a minor decrease in the loss of infrastructure use.

8. References

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APPENDIX A:
SAMPLE EMAIL TO LOCAL EMERGENCY MANAGEMENT AGENCIES

Brauna Hartzell

From: Jesse Piotrowski
Sent: Thursday, June 18, 2020 3:44 PM
To: tanderson@miamiokla.net
Cc: Shawn Puzen
Subject: Grand Lake Infrastructure Study

Categories: Important, Filed by Newforma

Mr. Anderson,

Mead & Hunt is performing a study at the direction of the Federal Energy Regulatory Commission (FERC) in support of the Grand River Dam Authority's intent to relicense the Pensacola Hydroelectric Project. The study is an effort to identify if hydrologic events could potentially have an effect on the frequency or depth of flooding for critical infrastructure such as:

1. Bridges and roads
2. Structures (fire stations, hospitals, substations, schools, wastewater treatment plants, etc.)
3. Public amenities (e.g. parks)

We have already compiled publicly available data sources such as shelters, airports, bridges, churches, fire stations, hospitals, law enforcement facilities, parks, power plants, substations, schools, wastewater treatment facilities, and water treatment facilities.

We are respectfully requesting your assistance in helping us identify any additional critical infrastructure that will not be included in the above datasets that could be affected by Pensacola Dam operations. To help you answer our question above, please answer the following questions to yourself:

1. Do you maintain a list of infrastructure that could potentially be affected by Pensacola Dam operations?
2. Do you have an emergency response plan?
3. Do you have a list of critical road intersections or road segments that are necessary for emergency response?

Answering the above questions may help you identify additional critical information that could assist with the study.

We greatly appreciate your assistance in this matter. If you would like, we can set up a teleconference to discuss our request. Please direct all responses to jesse.piotrowski@meadhunt.com. We would like to complete the identification of critical infrastructure by July 20, 2020.

Thank you in advance for your time and effort,
Jesse Piotrowski

JESSE PIOTROWSKI, PE, CFM
ENGINEER, WATER
Mead & Hunt
Direct: 608-443-0434 | Transfer Files
meadhunt.com | [LinkedIn](#) | [Twitter](#) | [Facebook](#) | [Instagram](#)

 120 YEARS OF SHAPING THE FUTURE

APPENDIX B:
LIST OF EMERGENCY MANAGEMENT AGENCIES CONTACTED

Emergency Management Contact List

Oklahoma Emergency Management Directory

| Ottawa | | | | | | | |
|--------------------------------|-----------------------|--------------------------|-----------|----|-------|---------------------|--|
| Jurisdiction | Director | Address | City | St | ZIP | W-Phone | Email |
| Miami Emergency Mgmt | Thomas Anderson | 129 5th Ave NW | Miami | OK | 74354 | 918-541-2302 | tanderson@miamiokla.net |
| Ottawa County Emergency Mgmt | Chad Holcomb | 123 East Central Suite 1 | Miami | OK | 74354 | 918-961-1676 | ottawacountvem@gmail.com |
| Quapaw Tribe | Jeff Reeves | P.O. Box 200 | Quapaw | OK | 74344 | 918-675-4200 | picherchief1@yahoo.com |
| | Randy Jackson | | | | | 918-533-4359 | rjackson@quapawnation.com |
| Wyandotte Emergency Mgmt | Leon Crow | P.O. Box 240 | Wyandotte | OK | 74370 | 918-542-1853 | leoncrow@yahoo.com |
| Delaware | | | | | | | |
| Jurisdiction | Director | Address | City | St | ZIP | W-Phone | Email |
| Delaware County Emergency Mgmt | Travis Beesley | P.O. Box 309 | Jay | OK | 74342 | 918-353-2041 | delawarecountvem@yahoo.com |
| Grove Emergency Management | Frank Close | 104 West 3rd Street | Grove | OK | 74344 | 918-787-4357 | fclose@cityofgroveok.gov |
| | Main line (City Hall) | | | | | 918-786-6107 | |
| | Calvin Igney | | | | | 918-290-1975 (cell) | cigney@cityofgroveok.gov |
| | Russ Schmidt (GIS) | | | | | 918-964-3002 (cell) | rschmidt@cityofgroveok.gov |
| Seneca Cayuga Nation Emergency | Chris Arnold | P.O. Box 453220 | Grove | OK | 74345 | 918-787-9272 | carold@sctribe.com |
| Craig County | | | | | | | |
| Jurisdiction | Director | Address | City | St | ZIP | W-Phone | Email |
| Craig Co Emergency Mgmt | Morris Bluejacket | 210 W Delaware Suite 1 | Vinita | OK | 74301 | 918-323-0055 | craigco.em1@gmail.com |
| Vinita Emergency Mgmt | Morris Bluejacket | 210 W Delaware Suite 1 | Vinita | OK | 74301 | 918-323-0055 | craigco.em1@gmail.com |
| Mayes County | | | | | | | |
| Jurisdiction | Director | Address | City | St | ZIP | W-Phone | Email |
| Mayes County Emergency Mgmt | Johnny Janzen | 1 Court Pl Suite 140 | Pryor | OK | 74361 | 918-825-4650 | mayescountvem@yahoo.com |
| Pryor Emergency Mgmt | Johnny Janzen | 12 North Rowe Street | Pryor | OK | 74361 | 918-825-4650 | mayescountvem@yahoo.com |

GRDA Contact List

| Agency | Phone | Email |
|--|-------------------------|--|
| Mayes Emergency Service Trust Authority (MESTA) | 918-825-1155 | info@mestaems.org |
| Oklahoma Department of Civil Emergency Management (OCEM) | 800-800-2481 (24-hours) | |
| | 405-521-2481 (main) | |
| | 405-833-3159 (Allison) | allison.whitsitt@oem.ok.gov |
| State of Oklahoma Risk Management | 405-521-4999 (main) | |
| Gene Lidyard, Administrator | | |
| Janet Morrow | 405-521-6051 | |
| U.S. Army Corps of Engineers (USACE) Tulsa Office: Kerri Parks Stark | 918-669-7431 | kerri.stark@usace.army.mil |

APPENDIX C:
SAMPLE CERTIFIED LETTER



November 25, 2020

Chief Nelson Harjo
Alabama-Quassarte Tribal Town
PO Box 187
Wetumka, OK 74883

Subject: Grand Lake Infrastructure Study

Dear Chief Nelson Harjo:

Mead & Hunt is performing a study at the direction of the Federal Energy Regulatory Commission (FERC) in support of the Grand River Dam Authority's intent to relicense the Pensacola Hydroelectric Project. The study is an effort to identify if hydrologic events could potentially have an effect on the frequency or depth of flooding for critical infrastructure such as:

1. Bridges and roads
2. Structures (fire stations, hospitals, substations, schools, wastewater treatment plants, etc.)
3. Public amenities (e.g. parks)

We have already compiled publicly available data sources such as shelters, airports, bridges, churches, fire stations, hospitals, law enforcement facilities, parks, power plants, substations, schools, wastewater treatment facilities, and water treatment facilities.

We are respectfully requesting your assistance in helping us identify any additional critical infrastructure that may not be available in publicly available data sources, but which could be affected by Pensacola Dam operations. To help you consider whether you may be aware of any such critical infrastructure, please consider the following questions:

1. Do you maintain a list of infrastructure that could potentially be affected by Pensacola Dam operations?
2. Do you have an emergency response plan?
3. Do you have a list of critical road intersections or road segments that are necessary for emergency response?

If you are aware of any critical infrastructure that could be affected by Pensacola Dam operations, please send a description of the infrastructure and locational information, so that we can include it in our study.

Chief Nelson Harjo
November 25, 2020
Page 2

We greatly appreciate your assistance in this matter. If you would like, we can set up a teleconference to discuss our request. Please direct all responses to shawn.puzen@meadhunt.com. We would like to complete the identification of critical infrastructure by January 8, 2020.

Thank you in advance for your time and effort,

Sincerely,

MEAD & HUNT, Inc.



Shawn Puzen
FERC Hydropower Relicensing and Compliance

SAMPLE

APPENDIX D:
MAILING LIST FOR CERTIFIED LETTERS

Emergency Management Contact List

Socioeconomic Study Distribution List Tribal Organizations

| Organization | Name | Address | City | St | ZIP | Phone | Email |
|---|------------------------------------|-----------------------------------|----------------|----|------------|-------------------|--|
| Alabama-Quassart Tribal Town | Chief Nelson Harjo | PO Box 187 | Wetumka | OK | 74883 | | |
| Apache Tribe of Oklahoma | Chairman Bobby Komardley | 511 E Colorado | Anadarko | OK | 73005 | | |
| Caddo Nation | Derek Hill | PO Box 487 | Binger | OK | 73009 | | dhill@caddonation.org |
| Caddo Nation of Oklahoma | Chairman Tamara Francis-Fourkiller | PO Box 487 | Binger | OK | 73009 | | caddochair.cn@gmail.com |
| Cherokee Nation | Chief Chuck Hoskins | PO Box 948 | Tahlequah | OK | 74465 | | |
| Cherokee Nation | Elizabeth Toombs | PO Box 948 | Tahlequah | OK | 74465 | | elizabeth-toombs@cherokee.org |
| Delaware Nation | Deborah Dotson | PO Box 825 | Anadarko | OK | 73005 | | ddotson@delawarenation.com |
| Delaware Tribe of Indians | Chief Chester Brooks | 170 NE Barbara | Bartlesville | OK | 74006 | | cbrooks@delawaretribe.org |
| Eastern Shawnee Tribe of Oklahoma | Chief Glenna J. Wallace | 70500 E 128 Road | Wyandotte | OK | 74370 | | gwallace@estoo.net |
| Inter-Tribal Council Inc. | | 21 N S Eight Tribe Trail, Suite C | Miami | OK | 74354 | | |
| Iowa Tribe of Oklahoma | Chairman Bobby Walkup | 335588 E 750 Road | Perkins | OK | 74059 | | |
| Jacobson Law Group (Counsel for Miami Nation) | Joe Halloran | 180 East 5th Street, Suite 940 | St. Paul | MN | 55101 | | jhalloran@thecobsonlawgroup.com |
| Kiowa Tribe Office of Historic Preservation | Kellie Lewis | PO Box 369 | Carnegie | OK | 73015 | | kellie@tribaladminsivices.org |
| Little Traverse Bay Bands of Odawa Indians | Regina Gasco-Bentley | 7500 Odawa Circle | Harbor Springs | MI | 49740 | | |
| Miami Tribe of Oklahoma | Chief Douglas G. Lankford | PO Box 1326 | Miami | OK | 74354 | | dlankford@miamination.com |
| Modoc Tribe of Oklahoma | Chief Bill Follis | 515 G Street SE | Miami | OK | 74354 | | modoctribe@cableone.net |
| Muscogee (Creek) Nation | Chief James Floyd | PO Box 580 | Okmulgee | OK | 74447 | | jfloyd@mcn-nsn.gov |
| Osage Nation | Chief Geoffrey Standing Bear | 627 Grandview Avenue | Pawhuska | OK | 74056 | | |
| Osage Nation Historic Preservation Office | James Munkres | 627 Grandview Avenue | Pawhuska | OK | 74056 | | jmunkres@osagenation-nsn.gov |
| Osage Nation Historic Preservation Office | Andrea Hunter | 627 Grandview Avenue | Pawhuska | OK | 74056 | | ahunter@osagenation-nsn.gov |
| Otoe-Missouria Tribe of Indians | Chairman John Shotton | 8151 Hwy 177 | Red Rock | OK | 74651 | | jshotton@omtribe.org |
| Ottawa Tribe of Oklahoma | Chief Ethel Cook | PO Box 110 | Miami | OK | 74354 | | cethel.oto@gmail.com |
| Ottawa Tribe of Oklahoma | Rhonda Hayworth | PO Box 110 | Miami | OK | 74355 | | rhonda.oto@gmail.com |
| Peoria Tribe of Oklahoma | Chief Craig Harper | 118 South Eight Tribes Trail | Miami | OK | 74354 | 918-540-2535 | chiefharper@peoriatribe.com |
| Quapaw Tribe of Oklahoma | Chairman John Berrey | PO Box 765 | Quapaw | OK | 74363 | | |
| Quapaw Tribe of Oklahoma | Everett Bandy | PO Box 765 | Quapaw | OK | 74363 | | ebandy@quapatribes.com |
| Sac and Fox Nation of Oklahoma | Chief Kay Rhoads | 920963 S Hwy 99, Building A | Stroud | OK | 74079 | | |
| Seneca-Cayuga Nation | Chief William Fisher | PO Box 453220 | Grove | OK | 74345-3220 | | wfisher@sctribes.com |
| Shawnee Tribe of Oklahoma | Chief Ron Sparkman | PO Box 189 | Miami | OK | 74354 | | rondede1@gmail.com |
| | Office | 29 S. Hwy 69A | Miami | OK | 74354 | 918-542-2441 x101 | agnes@shawnee-tribe.com |
| Tonkawa Tribe of Oklahoma | President Russel Martin | 1 Rush Buffalo Road | Tonkawa | OK | 74653 | 580-628-2561 | |
| United Keetoowah Band of Cherokees | Chief Joe Bunch | PO Box 746 | Tahlequah | OK | 74465 | | |
| Wichita and Affiliated Tribes | President Terri Parton | PO Box 729 | Anadarko | OK | 735005 | | terri.parton@wichitatribe.com |
| Wyandotte Nation | Norman Hildebrand, Jr. | 64700 East Highway 60 | Wyandotte | OK | 74370 | | nhildebrand@wyandotte-nation.org |
| Wyandotte Tribe of Oklahoma | Chief Billy Friend | 64700 East Highway 60 | Wyandotte | OK | 74370 | | bfriend@wyandotte-nation.org |

APPENDIX E: INFRASTRUCTURE MAPS

Note: This appendix is included as a separate set of PDF files and is presented in combination with the Hydrologic and Hydraulic Modeling Study Upstream Hydraulic Model Inundation Maps.



APPENDIX F:
TABULAR DATA SHEETS



PENSACOLA DAM
GRAND RIVER DAM AUTHORITY

INFRASTRUCTURE DEPTH DATA SHEET
SEPTEMBER 1993 INFLOW EVENT (21-YEAR EVENT)

| Infra-structure ID | Map Panel | Location | Ground Elev. (ft, PD) | Maximum depth (ft) for the simulation with a starting reservoir WSEL (PD datum) listed immediately below. | | | | | | | | | | | Anticipated Operational Range Depth Difference ¹ (ft) | Extreme, Hypothetical Range Depth Difference ² (ft) |
|--------------------|-----------|----------------|-----------------------|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|--|
| | | | | 734.0 ft | 742.0 ft | 742.5 ft | 743.0 ft | 743.5 ft | 744.0 ft | 744.5 ft | 745.0 ft | 749.0 ft | 753.0 ft | 757.0 ft | | |
| 1 | A1 | Bridge,Off-sys | 782.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 2 | A2 | Church | 789.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 3 | A2 | Bridge,Off-sys | 783.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 4 | A2 | Bridge,Off-sys | 772.4 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 0.0 | 0.0 |
| 5 | A3 | Bridge,Off-sys | 782.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 6 | A3 | Bridge,Off-sys | 783.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 7 | A5 | Bridge,Off-sys | 769.7 | 19.8 | 19.8 | 19.8 | 19.8 | 19.8 | 19.8 | 19.8 | 19.8 | 19.8 | 19.8 | 19.8 | 0.0 | 0.0 |
| 8 | A6 | Bridge,Off-sys | 797.0 | 7.4 | 7.4 | 7.4 | 7.4 | 7.4 | 7.4 | 7.4 | 7.4 | 7.4 | 7.4 | 7.4 | 0.0 | 0.0 |
| 9 | A6 | Bridge,Off-sys | 787.7 | 15.3 | 15.3 | 15.3 | 15.3 | 15.3 | 15.3 | 15.3 | 15.3 | 15.3 | 15.3 | 15.3 | 0.0 | 0.0 |
| 10 | A6 | Bridge,Off-sys | 796.0 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 0.0 | 0.0 |
| 11 | A6 | Bridge,Off-sys | 781.3 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 21.0 | 0.0 | 0.0 |
| 12 | A6 | Bridge,Off-sys | 780.3 | 22.1 | 22.1 | 22.1 | 22.1 | 22.1 | 22.1 | 22.1 | 22.1 | 22.1 | 22.1 | 22.1 | 0.0 | 0.0 |
| 13 | A6 | Park | 776.0 | 23.2 | 23.2 | 23.2 | 23.2 | 23.2 | 23.2 | 23.2 | 23.2 | 23.2 | 23.2 | 23.2 | 0.0 | 0.0 |
| 14 | A6 | Bridge,Off-sys | 800.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 15 | A6 | Bridge,Off-sys | 794.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 16 | A6 | Bridge,Off-sys | 779.5 | 10.4 | 10.4 | 10.4 | 10.4 | 10.4 | 10.4 | 10.4 | 10.4 | 10.4 | 10.4 | 10.4 | 0.0 | 0.0 |
| 17 | B2 | Bridge,Off-sys | 766.6 | 4.9 | 4.9 | 4.9 | 4.9 | 4.9 | 4.9 | 4.9 | 4.9 | 5.0 | 5.0 | 5.1 | 0.0 | 0.2 |
| 18 | B2 | Bridge,Off-sys | 765.8 | 5.4 | 5.4 | 5.4 | 5.4 | 5.4 | 5.4 | 5.4 | 5.5 | 5.5 | 5.6 | 5.6 | 0.1 | 0.2 |
| 19 | B2 | Bridge,Off-sys | 770.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.1 |
| 20 | B2 | Bridge,Off-sys | 786.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 21 | B2 | Bridge,Off-sys | 781.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 22 | B2 | Bridge,Off-sys | 785.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 23 | B2 | Bridge,On-sys | 796.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 24 | B2 | Bridge,On-sys | 790.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 25 | B2 | Bridge,On-sys | 795.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 26 | B2 | Bridge,On-sys | 779.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 27 | B2 | School | 788.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 28 | B2 | Church | 788.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 29 | B3 | Bridge,Off-sys | 773.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 30 | B3 | Bridge,Off-sys | 778.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 31 | B3 | Bridge,Off-sys | 779.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 32 | B3 | Bridge,Off-sys | 767.8 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.8 | 3.9 | 0.0 | 0.2 |
| 33 | B3 | Bridge,Off-sys | 793.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 34 | B3 | Bridge,Off-sys | 775.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 35 | B3, B3-4 | Church | 780.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 36 | B3 | Bridge,Off-sys | 764.3 | 5.2 | 5.2 | 5.2 | 5.2 | 5.3 | 5.3 | 5.3 | 5.3 | 5.4 | 5.5 | 5.6 | 0.1 | 0.4 |
| 37 | B3 | Bridge,On-sys | 778.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 38 | B3, B3-4 | Bridge,On-sys | 764.2 | 5.1 | 5.2 | 5.2 | 5.2 | 5.2 | 5.2 | 5.3 | 5.3 | 5.3 | 5.5 | 5.6 | 0.1 | 0.5 |
| 39 | B4, B4-1 | Park | 789.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

1 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 742.0 to El. 745.0 ft.

2 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 734.0 to El. 757.0 ft.

PENSACOLA DAM
GRAND RIVER DAM AUTHORITY

INFRASTRUCTURE DEPTH DATA SHEET
SEPTEMBER 1993 INFLOW EVENT (21-YEAR EVENT)

| Infra-structure ID | Map Panel | Location | Ground Elev. (ft, PD) | Maximum depth (ft) for the simulation with a starting reservoir WSEL (PD datum) listed immediately below. | | | | | | | | | | | Anticipated Operational Range Depth Difference ¹ (ft) | Extreme, Hypothetical Range Depth Difference ² (ft) |
|--------------------|-----------|---------------------|-----------------------|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|--|
| | | | | 734.0 ft | 742.0 ft | 742.5 ft | 743.0 ft | 743.5 ft | 744.0 ft | 744.5 ft | 745.0 ft | 749.0 ft | 753.0 ft | 757.0 ft | | |
| 40 | B4, B4-1 | Shelter - Evac Only | 781.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 41 | B4, B4-1 | Church | 788.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 42 | B4, B4-1 | Church | 792.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 43 | B4, B4-1 | Bridge,Off-sys | 781.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 44 | B4, B4-1 | Bridge,Off-sys | 788.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 45 | B4, B4-1 | Church | 788.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 46 | B4, B4-1 | School | 781.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 47 | B4, B4-3 | Park | 770.4 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 2.7 | 0.0 | 0.0 |
| 48 | B4, B4-3 | Bridge,On-sys | 779.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 49 | B4, B4-3 | Bridge,Off-sys | 769.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 0.0 | 0.0 |
| 50 | B4, B4-3 | Bridge,Off-sys | 776.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 51 | B4, B4-3 | Fire Station | 788.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 52 | B4, B4-4 | Church | 787.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 53 | B4, B4-3 | Church | 778.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 54 | B4, B4-4 | Bridge,Off-sys | 783.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 55 | B4, B4-4 | Bridge,Off-sys | 785.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 56 | B4, B4-3 | Cell Tower | 769.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 57 | B4, B4-3 | Bridge,Off-sys | 765.2 | 1.1 | 1.3 | 1.3 | 1.3 | 1.3 | 1.4 | 1.4 | 1.5 | 1.5 | 1.7 | 1.8 | 0.2 | 0.7 |
| 58 | B4, B4-3 | Cell Tower | 787.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 59 | B4, B4-3 | Church | 778.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 60 | B4, B4-3 | Church | 794.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 61 | B4, B4-3 | School | 796.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 62 | B4, B4-3 | Church | 795.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 63 | B4, B4-3 | Church | 792.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 64 | B4, B4-3 | School | 768.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 65 | B4, B4-3 | Law Enforcement | 775.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 66 | B4, B4-3 | School | 781.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 67 | B4, B4-3 | Church | 786.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 68 | B4, B4-3 | Church | 793.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 70 | B4, B4-3 | Church | 784.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 71 | B4, B4-3 | School | 784.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 72 | B4, B4-3 | Church | 787.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 73 | B4, B4-3 | Bridge,Off-sys | 771.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 74 | B4, B4-3 | Church | 785.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 75 | B4, B4-3 | Church | 791.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 76 | B4, B4-3 | Shelter - Evac Only | 794.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 77 | B4, B4-4 | School | 788.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 78 | B4, B4-3 | Church | 794.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 79 | B4, B4-3 | Church | 791.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

1 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 742.0 to El. 745.0 ft.

2 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 734.0 to El. 757.0 ft.

PENSACOLA DAM
GRAND RIVER DAM AUTHORITY

INFRASTRUCTURE DEPTH DATA SHEET
SEPTEMBER 1993 INFLOW EVENT (21-YEAR EVENT)

| Infra-structure ID | Map Panel | Location | Ground Elev. (ft, PD) | Maximum depth (ft) for the simulation with a starting reservoir WSEL (PD datum) listed immediately below. | | | | | | | | | | | Anticipated Operational Range Depth Difference ¹ (ft) | Extreme, Hypothetical Range Depth Difference ² (ft) | |
|--------------------|-----------|---------------------|-----------------------|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|--|-----|
| | | | | 734.0 ft | 742.0 ft | 742.5 ft | 743.0 ft | 743.5 ft | 744.0 ft | 744.5 ft | 745.0 ft | 749.0 ft | 753.0 ft | 757.0 ft | | | |
| 80 | B4, B4-3 | Hospital | 788.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 81 | B4, B4-3 | Hospital | 789.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 82 | B4, B4-3 | Church | 791.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 83 | B4, B4-4 | Law Enforcement | 783.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 84 | B4, B4-3 | Church | 774.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 85 | B4, B4-3 | Airport | 784.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 86 | B4, B4-4 | Bridge,On-sys | 765.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.2 | 0.0 | 0.2 |
| 87 | B4, B4-4 | Bridge,On-sys | 808.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 88 | B4, B4-3 | Bridge,On-sys | 764.3 | 1.9 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 2.3 | 2.3 | 2.5 | 2.6 | 0.2 | 0.7 | 0.7 |
| 89 | B4, B4-3 | Shelter - Evac Only | 780.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 90 | B4, B4-3 | Church | 780.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 91 | B4, B4-3 | Bridge,On-sys | 782.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 92 | B4, B4-3 | School | 780.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 93 | B4, B4-3 | School | 769.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 94 | B4, B4-3 | Park | 766.1 | 0.1 | 0.3 | 0.3 | 0.3 | 0.3 | 0.4 | 0.4 | 0.5 | 0.5 | 0.7 | 0.8 | 0.2 | 0.7 | 0.7 |
| 95 | B4, B4-3 | Substation | 774.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 96 | B4, B4-3 | Substation | 777.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 97 | B4, B4-4 | Bridge,Off-sys | 755.6 | 9.9 | 10.1 | 10.1 | 10.1 | 10.2 | 10.2 | 10.2 | 10.3 | 10.4 | 10.5 | 10.6 | 0.2 | 0.7 | 0.7 |
| 98 | B4, B4-3 | Fire Station | 771.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 99 | B4, B4-3 | Bridge,RR | 771.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 100 | B4, B4-4 | Bridge,On-sys | 801.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 101 | B4, B4-3 | Bridge,On-sys | 776.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 102 | B4, B4-3 | Park | 760.8 | 7.0 | 7.2 | 7.2 | 7.2 | 7.2 | 7.2 | 7.3 | 7.3 | 7.4 | 7.5 | 7.6 | 0.1 | 0.6 | 0.6 |
| 103 | B4, B4-3 | Park | 754.1 | 13.6 | 13.8 | 13.8 | 13.8 | 13.8 | 13.8 | 13.8 | 13.9 | 13.9 | 14.1 | 14.2 | 0.1 | 0.6 | 0.6 |
| 104 | B4, B4-3 | WW Treatment | 773.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 105 | B4, B4-3 | Park | 759.6 | 8.2 | 8.3 | 8.3 | 8.3 | 8.4 | 8.4 | 8.4 | 8.4 | 8.5 | 8.6 | 8.8 | 0.1 | 0.6 | 0.6 |
| 106 | B5 | Bridge,On-sys | 776.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 107 | B5 | Bridge,On-sys | 806.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 108 | B6 | Bridge,On-sys | 808.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 109 | B6 | Bridge,Off-sys | 781.1 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 0.0 | 0.0 | 0.0 |
| 110 | B6 | Bridge,Off-sys | 778.4 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 | 0.0 | 0.0 |
| 111 | B6 | Bridge,Off-sys | 773.1 | 5.3 | 5.3 | 5.3 | 5.3 | 5.3 | 5.3 | 5.3 | 5.3 | 5.3 | 5.3 | 5.3 | 0.0 | 0.0 | 0.0 |
| 112 | B6 | Bridge,Off-sys | 768.6 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 8.3 | 0.0 | 0.0 | 0.0 |
| 113 | B6 | Bridge,Off-sys | 773.9 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 0.0 | 0.0 |
| 114 | C2 | Bridge,Off-sys | 786.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 115 | C3 | Bridge,Off-sys | 772.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 116 | C3 | Bridge,On-sys | 809.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 117 | C3 | Bridge,Off-sys | 763.3 | 6.1 | 6.2 | 6.2 | 6.2 | 6.2 | 6.2 | 6.3 | 6.3 | 6.3 | 6.5 | 6.6 | 0.1 | 0.5 | 0.5 |
| 118 | C3 | Bridge,Off-sys | 778.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

1 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 742.0 to El. 745.0 ft.

2 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 734.0 to El. 757.0 ft.

PENSACOLA DAM
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INFRASTRUCTURE DEPTH DATA SHEET
SEPTEMBER 1993 INFLOW EVENT (21-YEAR EVENT)

| Infra-structure ID | Map Panel | Location | Ground Elev. (ft, PD) | Maximum depth (ft) for the simulation with a starting reservoir WSEL (PD datum) listed immediately below. | | | | | | | | | | | Anticipated Operational Range Depth Difference ² (ft) | Extreme, Hypothetical Range Depth Difference ² (ft) |
|--------------------|-----------|-----------------|-----------------------|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|--|
| | | | | 734.0 ft | 742.0 ft | 742.5 ft | 743.0 ft | 743.5 ft | 744.0 ft | 744.5 ft | 745.0 ft | 749.0 ft | 753.0 ft | 757.0 ft | | |
| 119 | C3 | Bridge,On-sys | 789.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 120 | C3 | Bridge,Off-sys | 765.7 | 3.6 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.8 | 3.8 | 3.8 | 4.0 | 4.1 | 0.1 | 0.5 |
| 121 | C3 | Bridge,Off-sys | 770.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 122 | C3 | Bridge,Off-sys | 774.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 123 | C3 | Bridge,Off-sys | 792.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 124 | C4 | Bridge,On-sys | 784.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 125 | C4, C4-1 | Bridge,On-sys | 810.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 126 | C4 | Bridge,Off-sys | 772.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 127 | C4 | Bridge,Off-sys | 746.7 | 14.9 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.1 | 15.2 | 15.6 | 15.9 | 0.1 | 1.0 |
| 128 | C4 | Bridge,Off-sys | 775.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 129 | C4 | Bridge,On-sys | 765.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 130 | C4 | Bridge,Off-sys | 771.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 131 | C4 | Church | 793.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 132 | C4 | Bridge,Off-sys | 772.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 133 | C4 | Bridge,Off-sys | 775.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 134 | C4 | Bridge,Off-sys | 769.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 135 | C5 | Bridge,Off-sys | 780.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 136 | C5 | Park | 806.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 137 | C5 | Bridge,Off-sys | 766.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 138 | C5 | Bridge,On-sys | 765.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 139 | C5 | Park | 748.4 | 12.3 | 12.4 | 12.4 | 12.4 | 12.4 | 12.4 | 12.5 | 12.5 | 12.6 | 13.0 | 13.3 | 0.1 | 1.0 |
| 140 | C6 | Bridge,Off-sys | 753.9 | 10.5 | 10.5 | 10.5 | 10.5 | 10.6 | 10.6 | 10.6 | 10.6 | 10.7 | 11.0 | 11.3 | 0.1 | 0.8 |
| 141 | C6 | Law Enforcement | 773.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 142 | C6 | Bridge,On-sys | 778.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 143 | C6 | Bridge,On-sys | 763.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 144 | C6 | Bridge,On-sys | 795.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 145 | C6 | School | 784.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 146 | C6 | Bridge,Off-sys | 763.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 147 | C6 | Bridge,On-sys | 765.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 148 | C6 | Fire Station | 761.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 149 | C6 | Church | 759.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 150 | C6 | School | 754.9 | 1.9 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.3 | 3.1 | 3.8 | 0.1 | 1.9 |
| 151 | C6 | School | 759.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 152 | C6 | Shelter - Both | 761.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 153 | C6 | School | 759.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 154 | C6 | Bridge,RR | 758.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 155 | C6 | WW Treatment | 777.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 156 | D5 | Bridge,On-sys | 774.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 157 | D5 | Bridge,Off-sys | 769.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

1 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 742.0 to El. 745.0 ft.

2 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 734.0 to El. 757.0 ft.

PENSACOLA DAM
GRAND RIVER DAM AUTHORITY

INFRASTRUCTURE DEPTH DATA SHEET
SEPTEMBER 1993 INFLOW EVENT (21-YEAR EVENT)

| Infra-structure ID | Map Panel | Location | Ground Elev. (ft, PD) | Maximum depth (ft) for the simulation with a starting reservoir WSEL (PD datum) listed immediately below. | | | | | | | | | | | Anticipated Operational Range Depth Difference ¹ (ft) | Extreme, Hypothetical Range Depth Difference ² (ft) |
|--------------------|-----------|---------------------|-----------------------|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|--|
| | | | | 734.0 ft | 742.0 ft | 742.5 ft | 743.0 ft | 743.5 ft | 744.0 ft | 744.5 ft | 745.0 ft | 749.0 ft | 753.0 ft | 757.0 ft | | |
| 158 | D5 | Bridge,Off-sys | 763.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 159 | D6 | Bridge,On-sys | 774.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 160 | D6 | Bridge,On-sys | 770.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 161 | D6 | Bridge,On-sys | 773.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 162 | D6 | Bridge,On-sys | 763.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 163 | D6 | Bridge,On-sys | 764.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 164 | D6 | Bridge,On-sys | 768.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 165 | E3 | Bridge,On-sys | 773.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 166 | E3 | Bridge,Off-sys | 751.3 | 2.9 | 3.6 | 3.6 | 3.6 | 3.6 | 3.6 | 3.6 | 3.6 | 3.6 | 3.6 | 5.8 | 0.0 | 2.9 |
| 167 | E3 | Park | 751.9 | 2.2 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 5.1 | 0.0 | 2.9 |
| 168 | E5 | Fire Station | 770.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 169 | E5 | Bridge,Off-sys | 756.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.1 |
| 170 | E5 | Substation | 766.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 171 | E5 | Bridge,On-sys | 804.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 172 | E5 | Church | 766.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 173 | E6 | Bridge,On-sys | 772.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 174 | F3 | Bridge,On-sys | 756.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.7 | 0.0 | 0.7 |
| 175 | F3 | Airport | 751.3 | 2.8 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 5.7 | 0.0 | 2.9 |
| 176 | F3 | Fire Station | 766.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 177 | F3 | Airport | 770.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 178 | F4 | Airport | 759.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 179 | F5 | Bridge,Off-sys | 768.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 180 | F5 | WW Treatment | 798.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 181 | F5 | Park | 749.3 | 4.8 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 7.7 | 0.0 | 2.9 |
| 182 | F5 | Church | 758.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 183 | F5 | Bridge,Off-sys | 759.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 184 | F5 | Church | 760.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 185 | F5 | Park | 749.4 | 4.8 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 7.7 | 0.0 | 2.9 |
| 186 | F5 | Fire Station | 761.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 187 | F5 | Bridge,Off-sys | 760.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 188 | F5 | Church | 759.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 189 | F5 | Church | 775.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 190 | F5 | Law Enforcement | 772.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 191 | F5 | Bridge,On-sys | 766.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 192 | F5 | Shelter - Both | 783.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 193 | F5 | Shelter - Both | 836.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 194 | F5 | Water Treatment | 771.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 195 | F5 | Bridge,On-sys | 767.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 196 | F5 | Shelter - Evac Only | 768.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

1 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 742.0 to El. 745.0 ft.

2 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 734.0 to El. 757.0 ft.

PENSACOLA DAM
GRAND RIVER DAM AUTHORITY

INFRASTRUCTURE DEPTH DATA SHEET
SEPTEMBER 1993 INFLOW EVENT (21-YEAR EVENT)

| Infra-structure ID | Map Panel | Location | Ground Elev. (ft, PD) | Maximum depth (ft) for the simulation with a starting reservoir WSEL (PD datum) listed immediately below. | | | | | | | | | | | Anticipated Operational Range Depth Difference ¹ (ft) | Extreme, Hypothetical Range Depth Difference ² (ft) | |
|--------------------|-----------|---------------------|-----------------------|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|--|-----|
| | | | | 734.0 ft | 742.0 ft | 742.5 ft | 743.0 ft | 743.5 ft | 744.0 ft | 744.5 ft | 745.0 ft | 749.0 ft | 753.0 ft | 757.0 ft | | | |
| 197 | F5 | Bridge,Off-sys | 770.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 198 | F5 | Bridge,Off-sys | 769.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 199 | F5 | Park | 812.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 200 | F5 | Bridge,On-sys | 769.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 201 | G2 | Bridge,Off-sys | 757.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 202 | G2 | Bridge,Off-sys | 766.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 203 | G2 | Bridge,On-sys | 756.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 0.2 |
| 204 | G2 | Shelter - Evac Only | 761.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 205 | G3 | Fire Station | 798.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 206 | G3 | Airport | 721.1 | 33.1 | 33.8 | 33.8 | 33.8 | 33.8 | 33.8 | 33.8 | 33.8 | 33.8 | 33.8 | 36.0 | 0.0 | 0.0 | 2.9 |
| 207 | G4 | Bridge,Off-sys | 763.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 208 | G4 | Bridge,Off-sys | 761.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 209 | G4 | Church | 767.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 210 | G5 | Airport | 915.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 211 | G6 | Bridge,Off-sys | 757.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 212 | H1 | Park | 806.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 213 | H2 | Airport | 815.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 214 | H2 | Airport | 771.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 215 | H2 | Park | 767.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 216 | H2 | Bridge,On-sys | 757.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 217 | H2 | Bridge,On-sys | 757.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 218 | H2 | Fire Station | 793.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 219 | H2 | Park | 769.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 220 | H2 | Fire Station | 786.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 221 | H2 | Law Enforcement | 786.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 222 | H2 | Law Enforcement | 799.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 223 | H2 | Bridge,On-sys | 757.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 224 | H2 | Substation | 764.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 225 | H2 | Power Plant | 764.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 226 | H2 | Substation | 783.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 227 | H2 | Substation | 778.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 228 | H4 | Bridge,Off-sys | 758.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

1 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 742.0 to El. 745.0 ft.

2 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 734.0 to El. 757.0 ft.

PENSACOLA DAM
GRAND RIVER DAM AUTHORITY

INFRASTRUCTURE DEPTH DATA SHEET
JUNE 2004 INFLOW EVENT (1-YEAR EVENT)

| Infra-structure ID | Map Panel | Location | Ground Elev. (ft, PD) | Maximum depth (ft) for the simulation with a starting reservoir WSEL (PD datum) listed immediately below. | | | | | | | | | | | Anticipated Operational Range Depth Difference ¹ (ft) | Extreme, Hypothetical Range Depth Difference ² (ft) |
|--------------------|-----------|----------------|-----------------------|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|--|
| | | | | 734.0 ft | 742.0 ft | 742.5 ft | 743.0 ft | 743.5 ft | 744.0 ft | 744.5 ft | 745.0 ft | 749.0 ft | 753.0 ft | 757.0 ft | | |
| 1 | A1 | Bridge,Off-sys | 782.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 2 | A2 | Church | 789.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 3 | A2 | Bridge,Off-sys | 783.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 4 | A2 | Bridge,Off-sys | 772.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 5 | A3 | Bridge,Off-sys | 782.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 6 | A3 | Bridge,Off-sys | 783.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 7 | A5 | Bridge,Off-sys | 769.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 8 | A6 | Bridge,Off-sys | 797.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 9 | A6 | Bridge,Off-sys | 787.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 10 | A6 | Bridge,Off-sys | 796.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 11 | A6 | Bridge,Off-sys | 781.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 12 | A6 | Bridge,Off-sys | 780.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 13 | A6 | Park | 776.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 14 | A6 | Bridge,Off-sys | 800.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 15 | A6 | Bridge,Off-sys | 794.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 16 | A6 | Bridge,Off-sys | 779.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 17 | B2 | Bridge,Off-sys | 766.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 18 | B2 | Bridge,Off-sys | 765.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 19 | B2 | Bridge,Off-sys | 770.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 20 | B2 | Bridge,Off-sys | 786.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 21 | B2 | Bridge,Off-sys | 781.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 22 | B2 | Bridge,Off-sys | 785.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 23 | B2 | Bridge,On-sys | 796.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 24 | B2 | Bridge,On-sys | 790.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 25 | B2 | Bridge,On-sys | 795.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 26 | B2 | Bridge,On-sys | 779.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 27 | B2 | School | 788.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 28 | B2 | Church | 788.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 29 | B3 | Bridge,Off-sys | 773.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 30 | B3 | Bridge,Off-sys | 778.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 31 | B3 | Bridge,Off-sys | 779.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 32 | B3 | Bridge,Off-sys | 767.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 33 | B3 | Bridge,Off-sys | 793.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 34 | B3 | Bridge,Off-sys | 775.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 35 | B3, B3-4 | Church | 780.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 36 | B3 | Bridge,Off-sys | 764.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 37 | B3 | Bridge,On-sys | 778.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 38 | B3, B3-4 | Bridge,On-sys | 764.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 39 | B4, B4-1 | Park | 789.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

1 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 742.0 to El. 745.0 ft.

2 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 734.0 to El. 757.0 ft.

PENSACOLA DAM
GRAND RIVER DAM AUTHORITY

INFRASTRUCTURE DEPTH DATA SHEET
JUNE 2004 INFLOW EVENT (1-YEAR EVENT)

| Infra-structure ID | Map Panel | Location | Ground Elev. (ft, PD) | Maximum depth (ft) for the simulation with a starting reservoir WSEL (PD datum) listed immediately below. | | | | | | | | | | Anticipated Operational Range Depth Difference ¹ (ft) | Extreme, Hypothetical Range Depth Difference ² (ft) | |
|--------------------|-----------|---------------------|-----------------------|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|--|----------|
| | | | | 734.0 ft | 742.0 ft | 742.5 ft | 743.0 ft | 743.5 ft | 744.0 ft | 744.5 ft | 745.0 ft | 749.0 ft | 753.0 ft | | | 757.0 ft |
| 40 | B4, B4-1 | Shelter - Evac Only | 781.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 41 | B4, B4-1 | Church | 788.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 42 | B4, B4-1 | Church | 792.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 43 | B4, B4-1 | Bridge,Off-sys | 781.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 44 | B4, B4-1 | Bridge,Off-sys | 788.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 45 | B4, B4-1 | Church | 788.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 46 | B4, B4-1 | School | 781.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 47 | B4, B4-3 | Park | 770.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 48 | B4, B4-3 | Bridge,On-sys | 779.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 49 | B4, B4-3 | Bridge,Off-sys | 769.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 50 | B4, B4-3 | Bridge,Off-sys | 776.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 51 | B4, B4-3 | Fire Station | 788.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 52 | B4, B4-4 | Church | 787.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 53 | B4, B4-3 | Church | 778.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 54 | B4, B4-4 | Bridge,Off-sys | 783.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 55 | B4, B4-4 | Bridge,Off-sys | 785.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 56 | B4, B4-3 | Cell Tower | 769.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 57 | B4, B4-3 | Bridge,Off-sys | 765.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 58 | B4, B4-3 | Cell Tower | 787.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 59 | B4, B4-3 | Church | 778.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 60 | B4, B4-3 | Church | 794.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 61 | B4, B4-3 | School | 796.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 62 | B4, B4-3 | Church | 795.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 63 | B4, B4-3 | Church | 792.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 64 | B4, B4-3 | School | 768.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 65 | B4, B4-3 | Law Enforcement | 775.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 66 | B4, B4-3 | School | 781.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 67 | B4, B4-3 | Church | 786.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 68 | B4, B4-3 | Church | 793.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 70 | B4, B4-3 | Church | 784.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 71 | B4, B4-3 | School | 784.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 72 | B4, B4-3 | Church | 787.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 73 | B4, B4-3 | Bridge,Off-sys | 771.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 74 | B4, B4-3 | Church | 785.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 75 | B4, B4-3 | Church | 791.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 76 | B4, B4-3 | Shelter - Evac Only | 794.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 77 | B4, B4-4 | School | 788.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 78 | B4, B4-3 | Church | 794.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 79 | B4, B4-3 | Church | 791.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

1 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 742.0 to El. 745.0 ft.

2 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 734.0 to El. 757.0 ft.

PENSACOLA DAM
GRAND RIVER DAM AUTHORITY

INFRASTRUCTURE DEPTH DATA SHEET
JUNE 2004 INFLOW EVENT (1-YEAR EVENT)

| Infra-structure ID | Map Panel | Location | Ground Elev. (ft, PD) | Maximum depth (ft) for the simulation with a starting reservoir WSEL (PD datum) listed immediately below. | | | | | | | | | | | Anticipated Operational Range Depth Difference ¹ (ft) | Extreme, Hypothetical Range Depth Difference ² (ft) |
|--------------------|-----------|---------------------|-----------------------|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|--|
| | | | | 734.0 ft | 742.0 ft | 742.5 ft | 743.0 ft | 743.5 ft | 744.0 ft | 744.5 ft | 745.0 ft | 749.0 ft | 753.0 ft | 757.0 ft | | |
| 80 | B4, B4-3 | Hospital | 788.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 81 | B4, B4-3 | Hospital | 789.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 82 | B4, B4-3 | Church | 791.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 83 | B4, B4-4 | Law Enforcement | 783.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 84 | B4, B4-3 | Church | 774.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 85 | B4, B4-3 | Airport | 784.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 86 | B4, B4-4 | Bridge,On-sys | 765.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 87 | B4, B4-4 | Bridge,On-sys | 808.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 88 | B4, B4-3 | Bridge,On-sys | 764.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 89 | B4, B4-3 | Shelter - Evac Only | 780.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 90 | B4, B4-3 | Church | 780.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 91 | B4, B4-3 | Bridge,On-sys | 782.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 92 | B4, B4-3 | School | 780.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 93 | B4, B4-3 | School | 769.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 94 | B4, B4-3 | Park | 766.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 95 | B4, B4-3 | Substation | 774.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 96 | B4, B4-3 | Substation | 777.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 97 | B4, B4-4 | Bridge,Off-sys | 755.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.5 | 0.0 | 1.5 |
| 98 | B4, B4-3 | Fire Station | 771.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 99 | B4, B4-3 | Bridge,RR | 771.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 100 | B4, B4-4 | Bridge,On-sys | 801.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 101 | B4, B4-3 | Bridge,On-sys | 776.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 102 | B4, B4-3 | Park | 760.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 103 | B4, B4-3 | Park | 754.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.6 | 2.9 | 0.0 | 2.9 |
| 104 | B4, B4-3 | WW Treatment | 773.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 105 | B4, B4-3 | Park | 759.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 106 | B5 | Bridge,On-sys | 776.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 107 | B5 | Bridge,On-sys | 806.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 108 | B6 | Bridge,On-sys | 808.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 109 | B6 | Bridge,Off-sys | 781.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 110 | B6 | Bridge,Off-sys | 778.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 111 | B6 | Bridge,Off-sys | 773.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 112 | B6 | Bridge,Off-sys | 768.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 113 | B6 | Bridge,Off-sys | 773.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 114 | C2 | Bridge,Off-sys | 786.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 115 | C3 | Bridge,Off-sys | 772.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 116 | C3 | Bridge,On-sys | 809.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 117 | C3 | Bridge,Off-sys | 763.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 118 | C3 | Bridge,Off-sys | 778.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

1 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 742.0 to El. 745.0 ft.

2 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 734.0 to El. 757.0 ft.

PENSACOLA DAM
GRAND RIVER DAM AUTHORITY

INFRASTRUCTURE DEPTH DATA SHEET
JUNE 2004 INFLOW EVENT (1-YEAR EVENT)

| Infra-structure ID | Map Panel | Location | Ground Elev. (ft, PD) | Maximum depth (ft) for the simulation with a starting reservoir WSEL (PD datum) listed immediately below. | | | | | | | | | | | Anticipated Operational Range Depth Difference ² (ft) | Extreme, Hypothetical Range Depth Difference ² (ft) |
|--------------------|-----------|-----------------|-----------------------|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|--|
| | | | | 734.0 ft | 742.0 ft | 742.5 ft | 743.0 ft | 743.5 ft | 744.0 ft | 744.5 ft | 745.0 ft | 749.0 ft | 753.0 ft | 757.0 ft | | |
| 119 | C3 | Bridge,On-sys | 789.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 120 | C3 | Bridge,Off-sys | 765.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 121 | C3 | Bridge,Off-sys | 770.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 122 | C3 | Bridge,Off-sys | 774.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 123 | C3 | Bridge,Off-sys | 792.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 124 | C4 | Bridge,On-sys | 784.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 125 | C4, C4-1 | Bridge,On-sys | 810.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 126 | C4 | Bridge,Off-sys | 772.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 127 | C4 | Bridge,Off-sys | 746.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.4 | 6.3 | 10.3 | 0.0 | 10.3 |
| 128 | C4 | Bridge,Off-sys | 775.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 129 | C4 | Bridge,On-sys | 765.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 130 | C4 | Bridge,Off-sys | 771.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 131 | C4 | Church | 793.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 132 | C4 | Bridge,Off-sys | 772.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 133 | C4 | Bridge,Off-sys | 775.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 134 | C4 | Bridge,Off-sys | 769.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 135 | C5 | Bridge,Off-sys | 780.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 136 | C5 | Park | 806.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 137 | C5 | Bridge,Off-sys | 766.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 138 | C5 | Bridge,On-sys | 765.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 139 | C5 | Park | 748.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.6 | 4.6 | 8.6 | 0.0 | 8.6 |
| 140 | C6 | Bridge,Off-sys | 753.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.2 | 0.0 | 3.2 |
| 141 | C6 | Law Enforcement | 773.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 142 | C6 | Bridge,On-sys | 778.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 143 | C6 | Bridge,On-sys | 763.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 144 | C6 | Bridge,On-sys | 795.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 145 | C6 | School | 784.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 146 | C6 | Bridge,Off-sys | 763.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 147 | C6 | Bridge,On-sys | 765.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 148 | C6 | Fire Station | 761.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 149 | C6 | Church | 759.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 150 | C6 | School | 754.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.1 | 0.0 | 2.1 |
| 151 | C6 | School | 759.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 152 | C6 | Shelter - Both | 761.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 153 | C6 | School | 759.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 154 | C6 | Bridge,RR | 758.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 155 | C6 | WW Treatment | 777.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 156 | D5 | Bridge,On-sys | 774.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 157 | D5 | Bridge,Off-sys | 769.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

1 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 742.0 to El. 745.0 ft.

2 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 734.0 to El. 757.0 ft.

PENSACOLA DAM
GRAND RIVER DAM AUTHORITY

INFRASTRUCTURE DEPTH DATA SHEET
JUNE 2004 INFLOW EVENT (1-YEAR EVENT)

| Infra-structure ID | Map Panel | Location | Ground Elev. (ft, PD) | Maximum depth (ft) for the simulation with a starting reservoir WSEL (PD datum) listed immediately below. | | | | | | | | | | | Anticipated Operational Range Depth Difference ¹ (ft) | Extreme, Hypothetical Range Depth Difference ² (ft) |
|--------------------|-----------|---------------------|-----------------------|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|--|
| | | | | 734.0 ft | 742.0 ft | 742.5 ft | 743.0 ft | 743.5 ft | 744.0 ft | 744.5 ft | 745.0 ft | 749.0 ft | 753.0 ft | 757.0 ft | | |
| 158 | D5 | Bridge,Off-sys | 763.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 159 | D6 | Bridge,On-sys | 774.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 160 | D6 | Bridge,On-sys | 770.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 161 | D6 | Bridge,On-sys | 773.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 162 | D6 | Bridge,On-sys | 763.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 163 | D6 | Bridge,On-sys | 764.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 164 | D6 | Bridge,On-sys | 768.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 165 | E3 | Bridge,On-sys | 773.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 166 | E3 | Bridge,Off-sys | 751.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.8 | 5.8 | 0.0 | 5.8 |
| 167 | E3 | Park | 751.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.1 | 5.1 | 0.0 | 5.1 |
| 168 | E5 | Fire Station | 770.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 169 | E5 | Bridge,Off-sys | 756.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.1 |
| 170 | E5 | Substation | 766.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 171 | E5 | Bridge,On-sys | 804.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 172 | E5 | Church | 766.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 173 | E6 | Bridge,On-sys | 772.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 174 | F3 | Bridge,On-sys | 756.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.7 | 0.0 | 0.7 |
| 175 | F3 | Airport | 751.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.7 | 5.7 | 0.0 | 5.7 |
| 176 | F3 | Fire Station | 766.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 177 | F3 | Airport | 770.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 178 | F4 | Airport | 759.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 179 | F5 | Bridge,Off-sys | 768.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 180 | F5 | WW Treatment | 798.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 181 | F5 | Park | 749.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.7 | 7.7 | 0.0 | 7.7 |
| 182 | F5 | Church | 758.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 183 | F5 | Bridge,Off-sys | 759.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 184 | F5 | Church | 760.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 185 | F5 | Park | 749.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.7 | 7.7 | 0.0 | 7.7 |
| 186 | F5 | Fire Station | 761.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 187 | F5 | Bridge,Off-sys | 760.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 188 | F5 | Church | 759.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 189 | F5 | Church | 775.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 190 | F5 | Law Enforcement | 772.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 191 | F5 | Bridge,On-sys | 766.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 192 | F5 | Shelter - Both | 783.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 193 | F5 | Shelter - Both | 836.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 194 | F5 | Water Treatment | 771.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 195 | F5 | Bridge,On-sys | 767.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 196 | F5 | Shelter - Evac Only | 768.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

1 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 742.0 to El. 745.0 ft.

2 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 734.0 to El. 757.0 ft.

PENSACOLA DAM
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INFRASTRUCTURE DEPTH DATA SHEET
JUNE 2004 INFLOW EVENT (1-YEAR EVENT)

| Infra-structure ID | Map Panel | Location | Ground Elev. (ft, PD) | Maximum depth (ft) for the simulation with a starting reservoir WSEL (PD datum) listed immediately below. | | | | | | | | | | Anticipated Operational Range Depth Difference ¹ (ft) | Extreme, Hypothetical Range Depth Difference ² (ft) | |
|--------------------|-----------|---------------------|-----------------------|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|--|----------|
| | | | | 734.0 ft | 742.0 ft | 742.5 ft | 743.0 ft | 743.5 ft | 744.0 ft | 744.5 ft | 745.0 ft | 749.0 ft | 753.0 ft | | | 757.0 ft |
| 197 | F5 | Bridge,Off-sys | 770.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 198 | F5 | Bridge,Off-sys | 769.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 199 | F5 | Park | 812.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 200 | F5 | Bridge,On-sys | 769.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 201 | G2 | Bridge,Off-sys | 757.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 202 | G2 | Bridge,Off-sys | 766.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 203 | G2 | Bridge,On-sys | 756.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 0.2 |
| 204 | G2 | Shelter - Evac Only | 761.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 205 | G3 | Fire Station | 798.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 206 | G3 | Airport | 721.1 | 23.2 | 23.6 | 23.6 | 23.7 | 23.8 | 23.8 | 23.7 | 24.0 | 28.0 | 32.0 | 36.0 | 0.4 | 12.8 |
| 207 | G4 | Bridge,Off-sys | 763.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 208 | G4 | Bridge,Off-sys | 761.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 209 | G4 | Church | 767.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 210 | G5 | Airport | 915.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 211 | G6 | Bridge,Off-sys | 757.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 212 | H1 | Park | 806.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 213 | H2 | Airport | 815.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 214 | H2 | Airport | 771.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 215 | H2 | Park | 767.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 216 | H2 | Bridge,On-sys | 757.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 217 | H2 | Bridge,On-sys | 757.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 218 | H2 | Fire Station | 793.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 219 | H2 | Park | 769.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 220 | H2 | Fire Station | 786.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 221 | H2 | Law Enforcement | 786.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 222 | H2 | Law Enforcement | 799.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 223 | H2 | Bridge,On-sys | 757.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 224 | H2 | Substation | 764.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 225 | H2 | Power Plant | 764.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 226 | H2 | Substation | 783.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 227 | H2 | Substation | 778.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 228 | H4 | Bridge,Off-sys | 758.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

1 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 742.0 to El. 745.0 ft.

2 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 734.0 to El. 757.0 ft.

PENSACOLA DAM
GRAND RIVER DAM AUTHORITY

INFRASTRUCTURE DEPTH DATA SHEET
JULY 2007 INFLOW EVENT (4-YEAR EVENT)

| Infra-structure ID | Map Panel | Location | Ground Elev. (ft, PD) | Maximum depth (ft) for the simulation with a starting reservoir WSEL (PD datum) listed immediately below. | | | | | | | | | | | Anticipated Operational Range Depth Difference ¹ (ft) | Extreme, Hypothetical Range Depth Difference ² (ft) |
|--------------------|-----------|----------------|-----------------------|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|--|
| | | | | 734.0 ft | 742.0 ft | 742.5 ft | 743.0 ft | 743.5 ft | 744.0 ft | 744.5 ft | 745.0 ft | 749.0 ft | 753.0 ft | 757.0 ft | | |
| 1 | A1 | Bridge,Off-sys | 782.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 2 | A2 | Church | 789.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 3 | A2 | Bridge,Off-sys | 783.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 4 | A2 | Bridge,Off-sys | 772.4 | 5.0 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 0.0 | 0.1 |
| 5 | A3 | Bridge,Off-sys | 782.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 6 | A3 | Bridge,Off-sys | 783.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 7 | A5 | Bridge,Off-sys | 769.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 8 | A6 | Bridge,Off-sys | 797.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 9 | A6 | Bridge,Off-sys | 787.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 10 | A6 | Bridge,Off-sys | 796.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 11 | A6 | Bridge,Off-sys | 781.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 12 | A6 | Bridge,Off-sys | 780.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 13 | A6 | Park | 776.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 14 | A6 | Bridge,Off-sys | 800.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 15 | A6 | Bridge,Off-sys | 794.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 16 | A6 | Bridge,Off-sys | 779.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 17 | B2 | Bridge,Off-sys | 766.6 | 9.0 | 9.1 | 9.1 | 9.1 | 9.1 | 9.1 | 9.1 | 9.1 | 9.1 | 9.1 | 9.1 | 0.0 | 0.1 |
| 18 | B2 | Bridge,Off-sys | 765.8 | 9.7 | 9.7 | 9.7 | 9.7 | 9.7 | 9.7 | 9.7 | 9.7 | 9.8 | 9.8 | 9.8 | 0.0 | 0.1 |
| 19 | B2 | Bridge,Off-sys | 770.7 | 4.4 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 | 4.6 | 0.0 | 0.2 |
| 20 | B2 | Bridge,Off-sys | 786.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 21 | B2 | Bridge,Off-sys | 781.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 22 | B2 | Bridge,Off-sys | 785.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 23 | B2 | Bridge,On-sys | 796.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 24 | B2 | Bridge,On-sys | 790.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 25 | B2 | Bridge,On-sys | 795.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 26 | B2 | Bridge,On-sys | 779.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 27 | B2 | School | 788.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 28 | B2 | Church | 788.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 29 | B3 | Bridge,Off-sys | 773.8 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 2.0 | 0.0 | 0.1 |
| 30 | B3 | Bridge,Off-sys | 778.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 31 | B3 | Bridge,Off-sys | 779.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 32 | B3 | Bridge,Off-sys | 767.8 | 7.8 | 7.8 | 7.9 | 7.9 | 7.9 | 7.8 | 7.8 | 7.9 | 7.9 | 7.9 | 7.9 | 0.1 | 0.1 |
| 33 | B3 | Bridge,Off-sys | 793.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 34 | B3 | Bridge,Off-sys | 775.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 35 | B3, B3-4 | Church | 780.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 36 | B3 | Bridge,Off-sys | 764.3 | 10.1 | 10.1 | 10.2 | 10.2 | 10.2 | 10.1 | 10.1 | 10.2 | 10.2 | 10.2 | 10.3 | 0.1 | 0.2 |
| 37 | B3 | Bridge,On-sys | 778.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 38 | B3, B3-4 | Bridge,On-sys | 764.2 | 10.1 | 10.1 | 10.1 | 10.1 | 10.1 | 10.1 | 10.1 | 10.1 | 10.2 | 10.2 | 10.2 | 0.0 | 0.1 |
| 39 | B4, B4-1 | Park | 789.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

1 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 742.0 to El. 745.0 ft.

2 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 734.0 to El. 757.0 ft.

PENSACOLA DAM
GRAND RIVER DAM AUTHORITY

INFRASTRUCTURE DEPTH DATA SHEET
JULY 2007 INFLOW EVENT (4-YEAR EVENT)

| Infra-structure ID | Map Panel | Location | Ground Elev. (ft, PD) | Maximum depth (ft) for the simulation with a starting reservoir WSEL (PD datum) listed immediately below. | | | | | | | | | | Anticipated Operational Range Depth Difference ¹ (ft) | Extreme, Hypothetical Range Depth Difference ² (ft) | | |
|--------------------|-----------|---------------------|-----------------------|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|--|----------|-----|
| | | | | 734.0 ft | 742.0 ft | 742.5 ft | 743.0 ft | 743.5 ft | 744.0 ft | 744.5 ft | 745.0 ft | 749.0 ft | 753.0 ft | | | 757.0 ft | |
| 40 | B4, B4-1 | Shelter - Evac Only | 781.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| 41 | B4, B4-1 | Church | 788.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| 42 | B4, B4-1 | Church | 792.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| 43 | B4, B4-1 | Bridge,Off-sys | 781.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| 44 | B4, B4-1 | Bridge,Off-sys | 788.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| 45 | B4, B4-1 | Church | 788.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| 46 | B4, B4-1 | School | 781.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| 47 | B4, B4-3 | Park | 770.4 | 1.5 | 1.6 | 1.7 | 1.7 | 1.7 | 1.6 | 1.7 | 1.7 | 1.7 | 1.7 | 1.8 | 1.8 | 0.1 | 0.3 |
| 48 | B4, B4-3 | Bridge,On-sys | 779.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 49 | B4, B4-3 | Bridge,Off-sys | 769.7 | 2.1 | 2.2 | 2.3 | 2.3 | 2.3 | 2.2 | 2.3 | 2.3 | 2.3 | 2.3 | 2.4 | 2.4 | 0.1 | 0.3 |
| 50 | B4, B4-3 | Bridge,Off-sys | 776.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 51 | B4, B4-3 | Fire Station | 788.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 52 | B4, B4-4 | Church | 787.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 53 | B4, B4-3 | Church | 778.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 54 | B4, B4-4 | Bridge,Off-sys | 783.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 55 | B4, B4-4 | Bridge,Off-sys | 785.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 56 | B4, B4-3 | Cell Tower | 769.9 | 1.9 | 2.0 | 2.1 | 2.1 | 2.1 | 2.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.2 | 2.2 | 0.1 | 0.3 |
| 57 | B4, B4-3 | Bridge,Off-sys | 765.2 | 6.7 | 6.8 | 6.9 | 6.9 | 6.9 | 6.8 | 6.9 | 6.9 | 6.9 | 6.9 | 7.0 | 7.0 | 0.1 | 0.3 |
| 58 | B4, B4-3 | Cell Tower | 787.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 59 | B4, B4-3 | Church | 778.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 60 | B4, B4-3 | Church | 794.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 61 | B4, B4-3 | School | 796.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 62 | B4, B4-3 | Church | 795.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 63 | B4, B4-3 | Church | 792.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 64 | B4, B4-3 | School | 768.7 | 3.2 | 3.3 | 3.4 | 3.4 | 3.4 | 3.3 | 3.4 | 3.4 | 3.4 | 3.4 | 3.5 | 3.5 | 0.1 | 0.3 |
| 65 | B4, B4-3 | Law Enforcement | 775.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 66 | B4, B4-3 | School | 781.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 67 | B4, B4-3 | Church | 786.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 68 | B4, B4-3 | Church | 793.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 70 | B4, B4-3 | Church | 784.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 71 | B4, B4-3 | School | 784.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 72 | B4, B4-3 | Church | 787.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 73 | B4, B4-3 | Bridge,Off-sys | 771.4 | 0.4 | 0.5 | 0.6 | 0.6 | 0.6 | 0.5 | 0.6 | 0.6 | 0.6 | 0.6 | 0.7 | 0.7 | 0.1 | 0.3 |
| 74 | B4, B4-3 | Church | 785.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 75 | B4, B4-3 | Church | 791.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 76 | B4, B4-3 | Shelter - Evac Only | 794.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 77 | B4, B4-4 | School | 788.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 78 | B4, B4-3 | Church | 794.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 79 | B4, B4-3 | Church | 791.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

1 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 742.0 to El. 745.0 ft.

2 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 734.0 to El. 757.0 ft.

PENSACOLA DAM
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INFRASTRUCTURE DEPTH DATA SHEET
JULY 2007 INFLOW EVENT (4-YEAR EVENT)

| Infra-structure ID | Map Panel | Location | Ground Elev. (ft, PD) | Maximum depth (ft) for the simulation with a starting reservoir WSEL (PD datum) listed immediately below. | | | | | | | | | | | Anticipated Operational Range Depth Difference ¹ (ft) | Extreme, Hypothetical Range Depth Difference ² (ft) |
|--------------------|-----------|---------------------|-----------------------|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|--|
| | | | | 734.0 ft | 742.0 ft | 742.5 ft | 743.0 ft | 743.5 ft | 744.0 ft | 744.5 ft | 745.0 ft | 749.0 ft | 753.0 ft | 757.0 ft | | |
| 80 | B4, B4-3 | Hospital | 788.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 81 | B4, B4-3 | Hospital | 789.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 82 | B4, B4-3 | Church | 791.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 83 | B4, B4-4 | Law Enforcement | 783.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 84 | B4, B4-3 | Church | 774.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 85 | B4, B4-3 | Airport | 784.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 86 | B4, B4-4 | Bridge,On-sys | 765.9 | 4.7 | 4.7 | 4.8 | 4.8 | 4.8 | 4.7 | 4.8 | 4.9 | 4.9 | 4.9 | 5.0 | 0.2 | 0.3 |
| 87 | B4, B4-4 | Bridge,On-sys | 808.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 88 | B4, B4-3 | Bridge,On-sys | 764.3 | 7.5 | 7.6 | 7.7 | 7.7 | 7.7 | 7.6 | 7.7 | 7.7 | 7.7 | 7.8 | 7.8 | 0.1 | 0.3 |
| 89 | B4, B4-3 | Shelter - Evac Only | 780.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 90 | B4, B4-3 | Church | 780.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 91 | B4, B4-3 | Bridge,On-sys | 782.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 92 | B4, B4-3 | School | 780.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 93 | B4, B4-3 | School | 769.8 | 2.8 | 2.8 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 3.0 | 3.0 | 3.0 | 0.1 | 0.2 |
| 94 | B4, B4-3 | Park | 766.1 | 5.7 | 5.8 | 5.9 | 5.9 | 5.9 | 5.8 | 5.9 | 5.9 | 6.0 | 6.0 | 6.0 | 0.1 | 0.3 |
| 95 | B4, B4-3 | Substation | 774.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 96 | B4, B4-3 | Substation | 777.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 97 | B4, B4-4 | Bridge,Off-sys | 755.6 | 15.1 | 15.1 | 15.2 | 15.2 | 15.2 | 15.1 | 15.2 | 15.3 | 15.3 | 15.3 | 15.4 | 0.2 | 0.3 |
| 98 | B4, B4-3 | Fire Station | 771.6 | 1.6 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.8 | 1.8 | 1.8 | 1.9 | 0.1 | 0.3 |
| 99 | B4, B4-3 | Bridge,RR | 771.6 | 1.6 | 1.6 | 1.7 | 1.7 | 1.7 | 1.6 | 1.7 | 1.7 | 1.7 | 1.8 | 1.8 | 0.1 | 0.2 |
| 100 | B4, B4-4 | Bridge,On-sys | 801.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 101 | B4, B4-3 | Bridge,On-sys | 776.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 102 | B4, B4-3 | Park | 760.8 | 12.3 | 12.3 | 12.4 | 12.4 | 12.4 | 12.3 | 12.4 | 12.4 | 12.4 | 12.5 | 12.5 | 0.1 | 0.2 |
| 103 | B4, B4-3 | Park | 754.1 | 18.9 | 18.9 | 19.0 | 19.0 | 19.0 | 18.9 | 19.0 | 19.0 | 19.0 | 19.1 | 19.1 | 0.1 | 0.2 |
| 104 | B4, B4-3 | WW Treatment | 773.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 105 | B4, B4-3 | Park | 759.6 | 13.5 | 13.5 | 13.6 | 13.6 | 13.6 | 13.5 | 13.5 | 13.6 | 13.6 | 13.6 | 13.7 | 0.1 | 0.2 |
| 106 | B5 | Bridge,On-sys | 776.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 107 | B5 | Bridge,On-sys | 806.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 108 | B6 | Bridge,On-sys | 808.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 109 | B6 | Bridge,Off-sys | 781.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 110 | B6 | Bridge,Off-sys | 778.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 111 | B6 | Bridge,Off-sys | 773.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 112 | B6 | Bridge,Off-sys | 768.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 113 | B6 | Bridge,Off-sys | 773.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 114 | C2 | Bridge,Off-sys | 786.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 115 | C3 | Bridge,Off-sys | 772.2 | 2.3 | 2.3 | 2.4 | 2.4 | 2.4 | 2.3 | 2.3 | 2.4 | 2.4 | 2.4 | 2.5 | 0.1 | 0.2 |
| 116 | C3 | Bridge,On-sys | 809.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 117 | C3 | Bridge,Off-sys | 763.3 | 11.1 | 11.1 | 11.1 | 11.1 | 11.1 | 11.1 | 11.1 | 11.1 | 11.2 | 11.2 | 11.2 | 0.0 | 0.1 |
| 118 | C3 | Bridge,Off-sys | 778.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

1 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 742.0 to El. 745.0 ft.

2 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 734.0 to El. 757.0 ft.

PENSACOLA DAM
GRAND RIVER DAM AUTHORITY

INFRASTRUCTURE DEPTH DATA SHEET
JULY 2007 INFLOW EVENT (4-YEAR EVENT)

| Infra-structure ID | Map Panel | Location | Ground Elev. (ft), PD) | Maximum depth (ft) for the simulation with a starting reservoir WSEL (PD datum) listed immediately below. | | | | | | | | | | | Anticipated Operational Range Depth Difference ¹ (ft) | Extreme, Hypothetical Range Depth Difference ² (ft) |
|--------------------|-----------|-----------------|------------------------|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|--|
| | | | | 734.0 ft | 742.0 ft | 742.5 ft | 743.0 ft | 743.5 ft | 744.0 ft | 744.5 ft | 745.0 ft | 749.0 ft | 753.0 ft | 757.0 ft | | |
| 119 | C3 | Bridge,On-sys | 789.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 120 | C3 | Bridge,Off-sys | 765.7 | 8.6 | 8.6 | 8.6 | 8.6 | 8.6 | 8.6 | 8.6 | 8.6 | 8.7 | 8.7 | 8.7 | 0.0 | 0.1 |
| 121 | C3 | Bridge,Off-sys | 770.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.7 | 3.8 | 3.8 | 3.8 | 0.0 | 0.1 |
| 122 | C3 | Bridge,Off-sys | 774.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 123 | C3 | Bridge,Off-sys | 792.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 124 | C4 | Bridge,On-sys | 784.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 125 | C4, C4-1 | Bridge,On-sys | 810.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 126 | C4 | Bridge,Off-sys | 772.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 127 | C4 | Bridge,Off-sys | 746.7 | 17.8 | 17.8 | 18.3 | 18.3 | 18.3 | 18.0 | 18.3 | 18.3 | 18.4 | 18.4 | 18.5 | 0.5 | 0.7 |
| 128 | C4 | Bridge,Off-sys | 775.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 129 | C4 | Bridge,On-sys | 765.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 130 | C4 | Bridge,Off-sys | 771.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 131 | C4 | Church | 793.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 132 | C4 | Bridge,Off-sys | 772.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 133 | C4 | Bridge,Off-sys | 775.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 134 | C4 | Bridge,Off-sys | 769.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 135 | C5 | Bridge,Off-sys | 780.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 136 | C5 | Park | 806.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 137 | C5 | Bridge,Off-sys | 766.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 138 | C5 | Bridge,On-sys | 765.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 139 | C5 | Park | 748.4 | 7.1 | 7.8 | 8.9 | 8.9 | 8.9 | 8.2 | 8.9 | 8.9 | 8.9 | 8.9 | 9.0 | 1.1 | 1.9 |
| 140 | C6 | Bridge,Off-sys | 753.9 | 1.7 | 2.4 | 3.5 | 3.5 | 3.5 | 2.8 | 3.5 | 3.5 | 3.5 | 3.6 | 3.6 | 1.1 | 1.9 |
| 141 | C6 | Law Enforcement | 773.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 142 | C6 | Bridge,On-sys | 778.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 143 | C6 | Bridge,On-sys | 763.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 144 | C6 | Bridge,On-sys | 795.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 145 | C6 | School | 784.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 146 | C6 | Bridge,Off-sys | 763.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 147 | C6 | Bridge,On-sys | 765.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 148 | C6 | Fire Station | 761.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 149 | C6 | Church | 759.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 150 | C6 | School | 754.9 | 0.0 | 0.6 | 1.4 | 1.4 | 1.4 | 1.0 | 1.4 | 1.4 | 1.4 | 1.4 | 2.1 | 0.8 | 2.1 |
| 151 | C6 | School | 759.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 152 | C6 | Shelter - Both | 761.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 153 | C6 | School | 759.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 154 | C6 | Bridge,RR | 758.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 155 | C6 | WW Treatment | 777.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 156 | D5 | Bridge,On-sys | 774.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 157 | D5 | Bridge,Off-sys | 769.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

1 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 742.0 to El. 745.0 ft.

2 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 734.0 to El. 757.0 ft.

PENSACOLA DAM
GRAND RIVER DAM AUTHORITY

INFRASTRUCTURE DEPTH DATA SHEET
JULY 2007 INFLOW EVENT (4-YEAR EVENT)

| Infra-structure ID | Map Panel | Location | Ground Elev. (ft, PD) | Maximum depth (ft) for the simulation with a starting reservoir WSEL (PD datum) listed immediately below. | | | | | | | | | | | Anticipated Operational Range Depth Difference ¹ (ft) | Extreme, Hypothetical Range Depth Difference ² (ft) |
|--------------------|-----------|---------------------|-----------------------|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|--|
| | | | | 734.0 ft | 742.0 ft | 742.5 ft | 743.0 ft | 743.5 ft | 744.0 ft | 744.5 ft | 745.0 ft | 749.0 ft | 753.0 ft | 757.0 ft | | |
| 158 | D5 | Bridge,Off-sys | 763.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 159 | D6 | Bridge,On-sys | 774.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 160 | D6 | Bridge,On-sys | 770.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 161 | D6 | Bridge,On-sys | 773.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 162 | D6 | Bridge,On-sys | 763.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 163 | D6 | Bridge,On-sys | 764.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 164 | D6 | Bridge,On-sys | 768.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 165 | E3 | Bridge,On-sys | 773.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 166 | E3 | Bridge,Off-sys | 751.3 | 2.8 | 3.0 | 3.6 | 3.6 | 3.6 | 3.5 | 3.6 | 3.6 | 3.6 | 3.6 | 5.8 | 0.6 | 3.0 |
| 167 | E3 | Park | 751.9 | 2.1 | 2.3 | 2.9 | 2.9 | 2.9 | 2.8 | 2.9 | 2.9 | 2.9 | 2.9 | 5.1 | 0.6 | 3.0 |
| 168 | E5 | Fire Station | 770.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 169 | E5 | Bridge,Off-sys | 756.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.1 |
| 170 | E5 | Substation | 766.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 171 | E5 | Bridge,On-sys | 804.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 172 | E5 | Church | 766.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 173 | E6 | Bridge,On-sys | 772.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 174 | F3 | Bridge,On-sys | 756.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.7 | 0.0 | 0.7 |
| 175 | F3 | Airport | 751.3 | 2.7 | 2.9 | 3.5 | 3.5 | 3.5 | 3.4 | 3.5 | 3.5 | 3.5 | 3.5 | 5.7 | 0.6 | 3.0 |
| 176 | F3 | Fire Station | 766.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 177 | F3 | Airport | 770.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 178 | F4 | Airport | 759.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 179 | F5 | Bridge,Off-sys | 768.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 180 | F5 | WW Treatment | 798.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 181 | F5 | Park | 749.3 | 4.7 | 5.0 | 5.5 | 5.5 | 5.5 | 5.4 | 5.5 | 5.5 | 5.5 | 5.5 | 7.7 | 0.5 | 3.0 |
| 182 | F5 | Church | 758.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 183 | F5 | Bridge,Off-sys | 759.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 184 | F5 | Church | 760.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 185 | F5 | Park | 749.4 | 4.7 | 5.0 | 5.5 | 5.5 | 5.5 | 5.4 | 5.5 | 5.5 | 5.5 | 5.5 | 7.7 | 0.5 | 3.0 |
| 186 | F5 | Fire Station | 761.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 187 | F5 | Bridge,Off-sys | 760.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 188 | F5 | Church | 759.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 189 | F5 | Church | 775.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 190 | F5 | Law Enforcement | 772.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 191 | F5 | Bridge,On-sys | 766.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 192 | F5 | Shelter - Both | 783.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 193 | F5 | Shelter - Both | 836.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 194 | F5 | Water Treatment | 771.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 195 | F5 | Bridge,On-sys | 767.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 196 | F5 | Shelter - Evac Only | 768.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

1 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 742.0 to El. 745.0 ft.

2 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 734.0 to El. 757.0 ft.

PENSACOLA DAM
GRAND RIVER DAM AUTHORITY

INFRASTRUCTURE DEPTH DATA SHEET
JULY 2007 INFLOW EVENT (4-YEAR EVENT)

| Infra-structure ID | Map Panel | Location | Ground Elev. (ft, PD) | Maximum depth (ft) for the simulation with a starting reservoir WSEL (PD datum) listed immediately below. | | | | | | | | | | | Anticipated Operational Range Depth Difference ¹ (ft) | Extreme, Hypothetical Range Depth Difference ² (ft) | |
|--------------------|-----------|---------------------|-----------------------|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|--|-----|
| | | | | 734.0 ft | 742.0 ft | 742.5 ft | 743.0 ft | 743.5 ft | 744.0 ft | 744.5 ft | 745.0 ft | 749.0 ft | 753.0 ft | 757.0 ft | | | |
| 197 | F5 | Bridge,Off-sys | 770.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 198 | F5 | Bridge,Off-sys | 769.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 199 | F5 | Park | 812.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 200 | F5 | Bridge,On-sys | 769.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 201 | G2 | Bridge,Off-sys | 757.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 202 | G2 | Bridge,Off-sys | 766.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 203 | G2 | Bridge,On-sys | 756.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 0.2 |
| 204 | G2 | Shelter - Evac Only | 761.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 205 | G3 | Fire Station | 798.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 206 | G3 | Airport | 721.1 | 33.0 | 33.2 | 33.8 | 33.8 | 33.8 | 33.7 | 33.8 | 33.8 | 33.8 | 33.8 | 36.0 | 0.6 | 3.0 | 3.0 |
| 207 | G4 | Bridge,Off-sys | 763.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 208 | G4 | Bridge,Off-sys | 761.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 209 | G4 | Church | 767.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 210 | G5 | Airport | 915.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 211 | G6 | Bridge,Off-sys | 757.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 212 | H1 | Park | 806.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 213 | H2 | Airport | 815.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 214 | H2 | Airport | 771.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 215 | H2 | Park | 767.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 216 | H2 | Bridge,On-sys | 757.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 217 | H2 | Bridge,On-sys | 757.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 218 | H2 | Fire Station | 793.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 219 | H2 | Park | 769.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 220 | H2 | Fire Station | 786.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 221 | H2 | Law Enforcement | 786.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 222 | H2 | Law Enforcement | 799.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 223 | H2 | Bridge,On-sys | 757.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 224 | H2 | Substation | 764.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 225 | H2 | Power Plant | 764.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 226 | H2 | Substation | 783.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 227 | H2 | Substation | 778.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 228 | H4 | Bridge,Off-sys | 758.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

1 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 742.0 to El. 745.0 ft.

2 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 734.0 to El. 757.0 ft.

PENSACOLA DAM
GRAND RIVER DAM AUTHORITY

INFRASTRUCTURE DEPTH DATA SHEET
OCTOBER 2009 INFLOW EVENT (3-YEAR EVENT)

| Infra-structure ID | Map Panel | Location | Ground Elev. (ft, PD) | Maximum depth (ft) for the simulation with a starting reservoir WSEL (PD datum) listed immediately below. | | | | | | | | | | | Anticipated Operational Range Depth Difference ¹ (ft) | Extreme, Hypothetical Range Depth Difference ² (ft) |
|--------------------|-----------|----------------|-----------------------|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|--|
| | | | | 734.0 ft | 742.0 ft | 742.5 ft | 743.0 ft | 743.5 ft | 744.0 ft | 744.5 ft | 745.0 ft | 749.0 ft | 753.0 ft | 757.0 ft | | |
| 1 | A1 | Bridge,Off-sys | 782.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 2 | A2 | Church | 789.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 3 | A2 | Bridge,Off-sys | 783.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 4 | A2 | Bridge,Off-sys | 772.4 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.0 | 0.0 |
| 5 | A3 | Bridge,Off-sys | 782.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 6 | A3 | Bridge,Off-sys | 783.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 7 | A5 | Bridge,Off-sys | 769.7 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 0.0 | 0.0 |
| 8 | A6 | Bridge,Off-sys | 797.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 9 | A6 | Bridge,Off-sys | 787.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 10 | A6 | Bridge,Off-sys | 796.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 11 | A6 | Bridge,Off-sys | 781.3 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 0.0 | 0.0 |
| 12 | A6 | Bridge,Off-sys | 780.3 | 4.3 | 4.3 | 4.3 | 4.3 | 4.3 | 4.3 | 4.3 | 4.3 | 4.3 | 4.3 | 4.3 | 0.0 | 0.0 |
| 13 | A6 | Park | 776.0 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.1 | 5.2 | 0.0 | 0.1 |
| 14 | A6 | Bridge,Off-sys | 800.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 15 | A6 | Bridge,Off-sys | 794.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 16 | A6 | Bridge,Off-sys | 779.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 17 | B2 | Bridge,Off-sys | 766.6 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 0.0 | 0.0 |
| 18 | B2 | Bridge,Off-sys | 765.8 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 0.0 | 0.0 |
| 19 | B2 | Bridge,Off-sys | 770.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 20 | B2 | Bridge,Off-sys | 786.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 21 | B2 | Bridge,Off-sys | 781.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 22 | B2 | Bridge,Off-sys | 785.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 23 | B2 | Bridge,On-sys | 796.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 24 | B2 | Bridge,On-sys | 790.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 25 | B2 | Bridge,On-sys | 795.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 26 | B2 | Bridge,On-sys | 779.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 27 | B2 | School | 788.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 28 | B2 | Church | 788.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 29 | B3 | Bridge,Off-sys | 773.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 30 | B3 | Bridge,Off-sys | 778.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 31 | B3 | Bridge,Off-sys | 779.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 32 | B3 | Bridge,Off-sys | 767.8 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.0 | 0.0 |
| 33 | B3 | Bridge,Off-sys | 793.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 34 | B3 | Bridge,Off-sys | 775.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 35 | B3, B3-4 | Church | 780.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 36 | B3 | Bridge,Off-sys | 764.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 37 | B3 | Bridge,On-sys | 778.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 38 | B3, B3-4 | Bridge,On-sys | 764.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 39 | B4, B4-1 | Park | 789.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

1 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 742.0 to El. 745.0 ft.

2 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 734.0 to El. 757.0 ft.

PENSACOLA DAM

GRAND RIVER DAM AUTHORITY

INFRASTRUCTURE DEPTH DATA SHEET
OCTOBER 2009 INFLOW EVENT (3-YEAR EVENT)

| Infra-structure ID | Map Panel | Location | Ground Elev. (ft, PD) | Maximum depth (ft) for the simulation with a starting reservoir WSEL (PD datum) listed immediately below. | | | | | | | | | | | Anticipated Operational Range Depth Difference ¹ (ft) | Extreme, Hypothetical Range Depth Difference ² (ft) |
|--------------------|-----------|---------------------|-----------------------|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|--|
| | | | | 734.0 ft | 742.0 ft | 742.5 ft | 743.0 ft | 743.5 ft | 744.0 ft | 744.5 ft | 745.0 ft | 749.0 ft | 753.0 ft | 757.0 ft | | |
| 40 | B4, B4-1 | Shelter - Evac Only | 781.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 41 | B4, B4-1 | Church | 788.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 42 | B4, B4-1 | Church | 792.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 43 | B4, B4-1 | Bridge,Off-sys | 781.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 44 | B4, B4-1 | Bridge,Off-sys | 788.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 45 | B4, B4-1 | Church | 788.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 46 | B4, B4-1 | School | 781.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 47 | B4, B4-3 | Park | 770.4 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.0 | 0.0 |
| 48 | B4, B4-3 | Bridge,On-sys | 779.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 49 | B4, B4-3 | Bridge,Off-sys | 769.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 50 | B4, B4-3 | Bridge,Off-sys | 776.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 51 | B4, B4-3 | Fire Station | 788.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 52 | B4, B4-4 | Church | 787.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 53 | B4, B4-3 | Church | 778.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 54 | B4, B4-4 | Bridge,Off-sys | 783.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 55 | B4, B4-4 | Bridge,Off-sys | 785.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 56 | B4, B4-3 | Cell Tower | 769.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 57 | B4, B4-3 | Bridge,Off-sys | 765.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 58 | B4, B4-3 | Cell Tower | 787.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 59 | B4, B4-3 | Church | 778.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 60 | B4, B4-3 | Church | 794.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 61 | B4, B4-3 | School | 796.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 62 | B4, B4-3 | Church | 795.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 63 | B4, B4-3 | Church | 792.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 64 | B4, B4-3 | School | 768.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 65 | B4, B4-3 | Law Enforcement | 775.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 66 | B4, B4-3 | School | 781.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 67 | B4, B4-3 | Church | 786.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 68 | B4, B4-3 | Church | 793.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 70 | B4, B4-3 | Church | 784.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 71 | B4, B4-3 | School | 784.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 72 | B4, B4-3 | Church | 787.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 73 | B4, B4-3 | Bridge,Off-sys | 771.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 74 | B4, B4-3 | Church | 785.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 75 | B4, B4-3 | Church | 791.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 76 | B4, B4-3 | Shelter - Evac Only | 794.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 77 | B4, B4-4 | School | 788.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 78 | B4, B4-3 | Church | 794.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 79 | B4, B4-3 | Church | 791.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

1 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 742.0 to El. 745.0 ft.

2 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 734.0 to El. 757.0 ft.

PENSACOLA DAM
GRAND RIVER DAM AUTHORITY

INFRASTRUCTURE DEPTH DATA SHEET
OCTOBER 2009 INFLOW EVENT (3-YEAR EVENT)

| Infra-structure ID | Map Panel | Location | Ground Elev. (ft, PD) | Maximum depth (ft) for the simulation with a starting reservoir WSEL (PD datum) listed immediately below. | | | | | | | | | | | Anticipated Operational Range Depth Difference ¹ (ft) | Extreme, Hypothetical Range Depth Difference ² (ft) |
|--------------------|-----------|---------------------|-----------------------|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|--|
| | | | | 734.0 ft | 742.0 ft | 742.5 ft | 743.0 ft | 743.5 ft | 744.0 ft | 744.5 ft | 745.0 ft | 749.0 ft | 753.0 ft | 757.0 ft | | |
| 80 | B4, B4-3 | Hospital | 788.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 81 | B4, B4-3 | Hospital | 789.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 82 | B4, B4-3 | Church | 791.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 83 | B4, B4-4 | Law Enforcement | 783.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 84 | B4, B4-3 | Church | 774.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 85 | B4, B4-3 | Airport | 784.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 86 | B4, B4-4 | Bridge,On-sys | 765.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 87 | B4, B4-4 | Bridge,On-sys | 808.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 88 | B4, B4-3 | Bridge,On-sys | 764.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 89 | B4, B4-3 | Shelter - Evac Only | 780.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 90 | B4, B4-3 | Church | 780.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 91 | B4, B4-3 | Bridge,On-sys | 782.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 92 | B4, B4-3 | School | 780.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 93 | B4, B4-3 | School | 769.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 94 | B4, B4-3 | Park | 766.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 95 | B4, B4-3 | Substation | 774.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 96 | B4, B4-3 | Substation | 777.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 97 | B4, B4-4 | Bridge,Off-sys | 755.6 | 1.5 | 2.0 | 1.9 | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 | 2.3 | 3.2 | 4.0 | 0.2 | 2.5 |
| 98 | B4, B4-3 | Fire Station | 771.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 99 | B4, B4-3 | Bridge,RR | 771.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 100 | B4, B4-4 | Bridge,On-sys | 801.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 101 | B4, B4-3 | Bridge,On-sys | 776.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 102 | B4, B4-3 | Park | 760.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.7 | 0.0 | 0.7 |
| 103 | B4, B4-3 | Park | 754.1 | 5.6 | 5.9 | 5.9 | 5.9 | 5.9 | 5.9 | 5.9 | 6.0 | 6.1 | 6.7 | 7.3 | 0.1 | 1.7 |
| 104 | B4, B4-3 | WW Treatment | 773.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 105 | B4, B4-3 | Park | 759.6 | 0.2 | 0.4 | 0.4 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.7 | 1.2 | 1.8 | 0.1 | 1.6 |
| 106 | B5 | Bridge,On-sys | 776.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 107 | B5 | Bridge,On-sys | 806.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 108 | B6 | Bridge,On-sys | 808.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 109 | B6 | Bridge,Off-sys | 781.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 110 | B6 | Bridge,Off-sys | 778.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 111 | B6 | Bridge,Off-sys | 773.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 112 | B6 | Bridge,Off-sys | 768.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 113 | B6 | Bridge,Off-sys | 773.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 114 | C2 | Bridge,Off-sys | 786.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 115 | C3 | Bridge,Off-sys | 772.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 116 | C3 | Bridge,On-sys | 809.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 117 | C3 | Bridge,Off-sys | 763.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 118 | C3 | Bridge,Off-sys | 778.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

1 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 742.0 to El. 745.0 ft.

2 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 734.0 to El. 757.0 ft.

PENSACOLA DAM
GRAND RIVER DAM AUTHORITY

INFRASTRUCTURE DEPTH DATA SHEET
OCTOBER 2009 INFLOW EVENT (3-YEAR EVENT)

| Infra-structure ID | Map Panel | Location | Ground Elev. (ft, PD) | Maximum depth (ft) for the simulation with a starting reservoir WSEL (PD datum) listed immediately below. | | | | | | | | | | | Anticipated Operational Range Depth Difference ¹ (ft) | Extreme, Hypothetical Range Depth Difference ² (ft) |
|--------------------|-----------|-----------------|-----------------------|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|--|
| | | | | 734.0 ft | 742.0 ft | 742.5 ft | 743.0 ft | 743.5 ft | 744.0 ft | 744.5 ft | 745.0 ft | 749.0 ft | 753.0 ft | 757.0 ft | | |
| 119 | C3 | Bridge,On-sys | 789.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 120 | C3 | Bridge,Off-sys | 765.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 121 | C3 | Bridge,Off-sys | 770.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 122 | C3 | Bridge,Off-sys | 774.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 123 | C3 | Bridge,Off-sys | 792.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 124 | C4 | Bridge,On-sys | 784.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 125 | C4, C4-1 | Bridge,On-sys | 810.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 126 | C4 | Bridge,Off-sys | 772.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 127 | C4 | Bridge,Off-sys | 746.7 | 5.9 | 6.5 | 6.5 | 6.7 | 6.6 | 6.7 | 6.6 | 6.9 | 7.5 | 9.1 | 10.5 | 0.4 | 4.6 |
| 128 | C4 | Bridge,Off-sys | 775.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 129 | C4 | Bridge,On-sys | 765.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 130 | C4 | Bridge,Off-sys | 771.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 131 | C4 | Church | 793.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 132 | C4 | Bridge,Off-sys | 772.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 133 | C4 | Bridge,Off-sys | 775.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 134 | C4 | Bridge,Off-sys | 769.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 135 | C5 | Bridge,Off-sys | 780.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 136 | C5 | Park | 806.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 137 | C5 | Bridge,Off-sys | 766.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 138 | C5 | Bridge,On-sys | 765.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 139 | C5 | Park | 748.4 | 2.5 | 3.3 | 3.2 | 3.5 | 3.4 | 3.5 | 3.4 | 3.7 | 4.5 | 6.4 | 8.8 | 0.5 | 6.3 |
| 140 | C6 | Bridge,Off-sys | 753.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.4 | 3.4 | 0.0 | 3.4 |
| 141 | C6 | Law Enforcement | 773.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 142 | C6 | Bridge,On-sys | 778.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 143 | C6 | Bridge,On-sys | 763.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 144 | C6 | Bridge,On-sys | 795.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 145 | C6 | School | 784.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 146 | C6 | Bridge,Off-sys | 763.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 147 | C6 | Bridge,On-sys | 765.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 148 | C6 | Fire Station | 761.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 149 | C6 | Church | 759.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 150 | C6 | School | 754.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 2.3 | 0.0 | 2.3 |
| 151 | C6 | School | 759.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 152 | C6 | Shelter - Both | 761.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 153 | C6 | School | 759.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 154 | C6 | Bridge,RR | 758.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 155 | C6 | WW Treatment | 777.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 156 | D5 | Bridge,On-sys | 774.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 157 | D5 | Bridge,Off-sys | 769.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

1 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 742.0 to El. 745.0 ft.

2 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 734.0 to El. 757.0 ft.

PENSACOLA DAM
GRAND RIVER DAM AUTHORITY

INFRASTRUCTURE DEPTH DATA SHEET
OCTOBER 2009 INFLOW EVENT (3-YEAR EVENT)

| Infra-structure ID | Map Panel | Location | Ground Elev. (ft, PD) | Maximum depth (ft) for the simulation with a starting reservoir WSEL (PD datum) listed immediately below. | | | | | | | | | | | Anticipated Operational Range Depth Difference ¹ (ft) | Extreme, Hypothetical Range Depth Difference ² (ft) |
|--------------------|-----------|---------------------|-----------------------|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|--|
| | | | | 734.0 ft | 742.0 ft | 742.5 ft | 743.0 ft | 743.5 ft | 744.0 ft | 744.5 ft | 745.0 ft | 749.0 ft | 753.0 ft | 757.0 ft | | |
| 158 | D5 | Bridge,Off-sys | 763.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 159 | D6 | Bridge,On-sys | 774.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 160 | D6 | Bridge,On-sys | 770.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 161 | D6 | Bridge,On-sys | 773.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 162 | D6 | Bridge,On-sys | 763.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 163 | D6 | Bridge,On-sys | 764.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 164 | D6 | Bridge,On-sys | 768.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 165 | E3 | Bridge,On-sys | 773.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 166 | E3 | Bridge,Off-sys | 751.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 2.3 | 5.8 | 0.0 | 5.8 |
| 167 | E3 | Park | 751.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 1.6 | 5.1 | 0.0 | 5.1 |
| 168 | E5 | Fire Station | 770.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 169 | E5 | Bridge,Off-sys | 756.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.1 |
| 170 | E5 | Substation | 766.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 171 | E5 | Bridge,On-sys | 804.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 172 | E5 | Church | 766.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 173 | E6 | Bridge,On-sys | 772.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 174 | F3 | Bridge,On-sys | 756.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.7 | 0.0 | 0.7 |
| 175 | F3 | Airport | 751.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.9 | 2.2 | 5.7 | 0.0 | 5.7 |
| 176 | F3 | Fire Station | 766.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 177 | F3 | Airport | 770.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 178 | F4 | Airport | 759.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 179 | F5 | Bridge,Off-sys | 768.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 180 | F5 | WW Treatment | 798.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 181 | F5 | Park | 749.3 | 0.0 | 1.0 | 1.6 | 1.6 | 0.8 | 0.8 | 0.8 | 0.9 | 2.9 | 4.2 | 7.7 | 0.8 | 7.7 |
| 182 | F5 | Church | 758.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 183 | F5 | Bridge,Off-sys | 759.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 184 | F5 | Church | 760.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 185 | F5 | Park | 749.4 | 0.0 | 1.0 | 1.6 | 1.6 | 0.8 | 0.8 | 0.8 | 0.9 | 2.9 | 4.2 | 7.7 | 0.8 | 7.7 |
| 186 | F5 | Fire Station | 761.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 187 | F5 | Bridge,Off-sys | 760.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 188 | F5 | Church | 759.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 189 | F5 | Church | 775.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 190 | F5 | Law Enforcement | 772.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 191 | F5 | Bridge,On-sys | 766.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 192 | F5 | Shelter - Both | 783.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 193 | F5 | Shelter - Both | 836.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 194 | F5 | Water Treatment | 771.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 195 | F5 | Bridge,On-sys | 767.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 196 | F5 | Shelter - Evac Only | 768.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

1 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 742.0 to El. 745.0 ft.

2 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 734.0 to El. 757.0 ft.

PENSACOLA DAM
GRAND RIVER DAM AUTHORITY

INFRASTRUCTURE DEPTH DATA SHEET
OCTOBER 2009 INFLOW EVENT (3-YEAR EVENT)

| Infra-structure ID | Map Panel | Location | Ground Elev. (ft, PD) | Maximum depth (ft) for the simulation with a starting reservoir WSEL (PD datum) listed immediately below. | | | | | | | | | | | Anticipated Operational Range Depth Difference ¹ (ft) | Extreme, Hypothetical Range Depth Difference ² (ft) | |
|--------------------|-----------|---------------------|-----------------------|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|--|-----|
| | | | | 734.0 ft | 742.0 ft | 742.5 ft | 743.0 ft | 743.5 ft | 744.0 ft | 744.5 ft | 745.0 ft | 749.0 ft | 753.0 ft | 757.0 ft | | | |
| 197 | F5 | Bridge,Off-sys | 770.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 198 | F5 | Bridge,Off-sys | 769.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 199 | F5 | Park | 812.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 200 | F5 | Bridge,On-sys | 769.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 201 | G2 | Bridge,Off-sys | 757.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 202 | G2 | Bridge,Off-sys | 766.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 203 | G2 | Bridge,On-sys | 756.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 0.2 |
| 204 | G2 | Shelter - Evac Only | 761.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 205 | G3 | Fire Station | 798.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 206 | G3 | Airport | 721.1 | 26.4 | 29.3 | 29.9 | 29.9 | 29.1 | 29.1 | 29.1 | 29.2 | 31.2 | 32.5 | 36.0 | 0.8 | 9.6 | 9.6 |
| 207 | G4 | Bridge,Off-sys | 763.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 208 | G4 | Bridge,Off-sys | 761.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 209 | G4 | Church | 767.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 210 | G5 | Airport | 915.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 211 | G6 | Bridge,Off-sys | 757.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 212 | H1 | Park | 806.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 213 | H2 | Airport | 815.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 214 | H2 | Airport | 771.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 215 | H2 | Park | 767.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 216 | H2 | Bridge,On-sys | 757.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 217 | H2 | Bridge,On-sys | 757.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 218 | H2 | Fire Station | 793.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 219 | H2 | Park | 769.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 220 | H2 | Fire Station | 786.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 221 | H2 | Law Enforcement | 786.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 222 | H2 | Law Enforcement | 799.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 223 | H2 | Bridge,On-sys | 757.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 224 | H2 | Substation | 764.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 225 | H2 | Power Plant | 764.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 226 | H2 | Substation | 783.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 227 | H2 | Substation | 778.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 228 | H4 | Bridge,Off-sys | 758.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

1 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 742.0 to El. 745.0 ft.

2 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 734.0 to El. 757.0 ft.

PENSACOLA DAM
GRAND RIVER DAM AUTHORITY

INFRASTRUCTURE DEPTH DATA SHEET
DECEMBER 2015 INFLOW EVENT (15-YEAR EVENT)

| Infra-structure ID | Map Panel | Location | Ground Elev. (ft, PD) | Maximum depth (ft) for the simulation with a starting reservoir WSEL (PD datum) listed immediately below. | | | | | | | | | | | Anticipated Operational Range Depth Difference ¹ (ft) | Extreme, Hypothetical Range Depth Difference ² (ft) |
|--------------------|-----------|----------------|-----------------------|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|--|
| | | | | 734.0 ft | 742.0 ft | 742.5 ft | 743.0 ft | 743.5 ft | 744.0 ft | 744.5 ft | 745.0 ft | 749.0 ft | 753.0 ft | 757.0 ft | | |
| 1 | A1 | Bridge,Off-sys | 782.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 2 | A2 | Church | 789.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 3 | A2 | Bridge,Off-sys | 783.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 4 | A2 | Bridge,Off-sys | 772.4 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.0 | 0.0 |
| 5 | A3 | Bridge,Off-sys | 782.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 6 | A3 | Bridge,Off-sys | 783.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 7 | A5 | Bridge,Off-sys | 769.7 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | 0.0 | 0.0 |
| 8 | A6 | Bridge,Off-sys | 797.0 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 0.0 | 0.0 |
| 9 | A6 | Bridge,Off-sys | 787.7 | 9.8 | 9.8 | 9.8 | 9.8 | 9.8 | 9.8 | 9.8 | 9.8 | 9.8 | 9.8 | 9.8 | 0.0 | 0.0 |
| 10 | A6 | Bridge,Off-sys | 796.0 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 | 3.3 | 0.0 | 0.0 |
| 11 | A6 | Bridge,Off-sys | 781.3 | 15.6 | 15.6 | 15.6 | 15.6 | 15.6 | 15.6 | 15.6 | 15.6 | 15.6 | 15.6 | 15.6 | 0.0 | 0.0 |
| 12 | A6 | Bridge,Off-sys | 780.3 | 16.7 | 16.7 | 16.7 | 16.7 | 16.7 | 16.7 | 16.7 | 16.7 | 16.7 | 16.7 | 16.7 | 0.0 | 0.0 |
| 13 | A6 | Park | 776.0 | 17.7 | 17.7 | 17.7 | 17.7 | 17.7 | 17.7 | 17.7 | 17.7 | 17.7 | 17.7 | 17.7 | 0.0 | 0.0 |
| 14 | A6 | Bridge,Off-sys | 800.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 15 | A6 | Bridge,Off-sys | 794.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 16 | A6 | Bridge,Off-sys | 779.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 0.0 | 0.0 |
| 17 | B2 | Bridge,Off-sys | 766.6 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.3 | 1.3 | 1.3 | 0.0 | 0.1 |
| 18 | B2 | Bridge,Off-sys | 765.8 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 0.0 | 0.0 |
| 19 | B2 | Bridge,Off-sys | 770.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 20 | B2 | Bridge,Off-sys | 786.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 21 | B2 | Bridge,Off-sys | 781.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 22 | B2 | Bridge,Off-sys | 785.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 23 | B2 | Bridge,On-sys | 796.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 24 | B2 | Bridge,On-sys | 790.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 25 | B2 | Bridge,On-sys | 795.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 26 | B2 | Bridge,On-sys | 779.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 27 | B2 | School | 788.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 28 | B2 | Church | 788.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 29 | B3 | Bridge,Off-sys | 773.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 30 | B3 | Bridge,Off-sys | 778.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 31 | B3 | Bridge,Off-sys | 779.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 32 | B3 | Bridge,Off-sys | 767.8 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.0 | 0.2 |
| 33 | B3 | Bridge,Off-sys | 793.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 34 | B3 | Bridge,Off-sys | 775.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 35 | B3, B3-4 | Church | 780.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 36 | B3 | Bridge,Off-sys | 764.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 0.2 |
| 37 | B3 | Bridge,On-sys | 778.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 38 | B3, B3-4 | Bridge,On-sys | 764.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 39 | B4, B4-1 | Park | 789.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

1 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 742.0 to El. 745.0 ft.

2 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 734.0 to El. 757.0 ft.

PENSACOLA DAM
GRAND RIVER DAM AUTHORITY

INFRASTRUCTURE DEPTH DATA SHEET
DECEMBER 2015 INFLOW EVENT (15-YEAR EVENT)

| Infra-structure ID | Map Panel | Location | Ground Elev. (ft, PD) | Maximum depth (ft) for the simulation with a starting reservoir WSEL (PD datum) listed immediately below. | | | | | | | | | | | Anticipated Operational Range Depth Difference ¹ (ft) | Extreme, Hypothetical Range Depth Difference ² (ft) |
|--------------------|-----------|---------------------|-----------------------|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|--|
| | | | | 734.0 ft | 742.0 ft | 742.5 ft | 743.0 ft | 743.5 ft | 744.0 ft | 744.5 ft | 745.0 ft | 749.0 ft | 753.0 ft | 757.0 ft | | |
| 40 | B4, B4-1 | Shelter - Evac Only | 781.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 41 | B4, B4-1 | Church | 788.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 42 | B4, B4-1 | Church | 792.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 43 | B4, B4-1 | Bridge,Off-sys | 781.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 44 | B4, B4-1 | Bridge,Off-sys | 788.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 45 | B4, B4-1 | Church | 788.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 46 | B4, B4-1 | School | 781.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 47 | B4, B4-3 | Park | 770.4 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.7 | 0.0 | 0.0 |
| 48 | B4, B4-3 | Bridge,On-sys | 779.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 49 | B4, B4-3 | Bridge,Off-sys | 769.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 50 | B4, B4-3 | Bridge,Off-sys | 776.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 51 | B4, B4-3 | Fire Station | 788.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 52 | B4, B4-4 | Church | 787.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 53 | B4, B4-3 | Church | 778.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 54 | B4, B4-4 | Bridge,Off-sys | 783.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 55 | B4, B4-4 | Bridge,Off-sys | 785.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 56 | B4, B4-3 | Cell Tower | 769.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 57 | B4, B4-3 | Bridge,Off-sys | 765.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 58 | B4, B4-3 | Cell Tower | 787.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 59 | B4, B4-3 | Church | 778.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 60 | B4, B4-3 | Church | 794.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 61 | B4, B4-3 | School | 796.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 62 | B4, B4-3 | Church | 795.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 63 | B4, B4-3 | Church | 792.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 64 | B4, B4-3 | School | 768.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 65 | B4, B4-3 | Law Enforcement | 775.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 66 | B4, B4-3 | School | 781.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 67 | B4, B4-3 | Church | 786.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 68 | B4, B4-3 | Church | 793.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 70 | B4, B4-3 | Church | 784.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 71 | B4, B4-3 | School | 784.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 72 | B4, B4-3 | Church | 787.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 73 | B4, B4-3 | Bridge,Off-sys | 771.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 74 | B4, B4-3 | Church | 785.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 75 | B4, B4-3 | Church | 791.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 76 | B4, B4-3 | Shelter - Evac Only | 794.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 77 | B4, B4-4 | School | 788.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 78 | B4, B4-3 | Church | 794.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 79 | B4, B4-3 | Church | 791.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

1 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 742.0 to El. 745.0 ft.

2 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 734.0 to El. 757.0 ft.

PENSACOLA DAM
GRAND RIVER DAM AUTHORITY

INFRASTRUCTURE DEPTH DATA SHEET
DECEMBER 2015 INFLOW EVENT (15-YEAR EVENT)

| Infra-structure ID | Map Panel | Location | Ground Elev. (ft, PD) | Maximum depth (ft) for the simulation with a starting reservoir WSEL (PD datum) listed immediately below. | | | | | | | | | | | Anticipated Operational Range Depth Difference ¹ (ft) | Extreme, Hypothetical Range Depth Difference ² (ft) |
|--------------------|-----------|---------------------|-----------------------|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|--|
| | | | | 734.0 ft | 742.0 ft | 742.5 ft | 743.0 ft | 743.5 ft | 744.0 ft | 744.5 ft | 745.0 ft | 749.0 ft | 753.0 ft | 757.0 ft | | |
| 80 | B4, B4-3 | Hospital | 788.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 81 | B4, B4-3 | Hospital | 789.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 82 | B4, B4-3 | Church | 791.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 83 | B4, B4-4 | Law Enforcement | 783.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 84 | B4, B4-3 | Church | 774.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 85 | B4, B4-3 | Airport | 784.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 86 | B4, B4-4 | Bridge,On-sys | 765.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 87 | B4, B4-4 | Bridge,On-sys | 808.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 88 | B4, B4-3 | Bridge,On-sys | 764.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 89 | B4, B4-3 | Shelter - Evac Only | 780.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 90 | B4, B4-3 | Church | 780.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 91 | B4, B4-3 | Bridge,On-sys | 782.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 92 | B4, B4-3 | School | 780.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 93 | B4, B4-3 | School | 769.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 94 | B4, B4-3 | Park | 766.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 95 | B4, B4-3 | Substation | 774.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 96 | B4, B4-3 | Substation | 777.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 97 | B4, B4-4 | Bridge,Off-sys | 755.6 | 4.1 | 5.4 | 5.4 | 5.4 | 5.4 | 5.4 | 5.4 | 5.5 | 5.6 | 5.7 | 6.2 | 0.1 | 2.1 |
| 98 | B4, B4-3 | Fire Station | 771.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 99 | B4, B4-3 | Bridge,RR | 771.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 100 | B4, B4-4 | Bridge,On-sys | 801.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 101 | B4, B4-3 | Bridge,On-sys | 776.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 102 | B4, B4-3 | Park | 760.8 | 0.7 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.6 | 1.7 | 1.8 | 2.3 | 0.1 | 1.6 |
| 103 | B4, B4-3 | Park | 754.1 | 7.3 | 8.1 | 8.1 | 8.1 | 8.1 | 8.1 | 8.1 | 8.2 | 8.3 | 8.4 | 8.9 | 0.1 | 1.6 |
| 104 | B4, B4-3 | WW Treatment | 773.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 105 | B4, B4-3 | Park | 759.6 | 1.8 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.7 | 2.9 | 2.9 | 3.4 | 0.1 | 1.6 |
| 106 | B5 | Bridge,On-sys | 776.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 107 | B5 | Bridge,On-sys | 806.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 108 | B6 | Bridge,On-sys | 808.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 109 | B6 | Bridge,Off-sys | 781.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 110 | B6 | Bridge,Off-sys | 778.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 111 | B6 | Bridge,Off-sys | 773.1 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 0.0 | 0.0 |
| 112 | B6 | Bridge,Off-sys | 768.6 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 0.0 | 0.0 |
| 113 | B6 | Bridge,Off-sys | 773.9 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 0.0 | 0.0 |
| 114 | C2 | Bridge,Off-sys | 786.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 115 | C3 | Bridge,Off-sys | 772.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 116 | C3 | Bridge,On-sys | 809.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 117 | C3 | Bridge,Off-sys | 763.3 | 0.0 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.5 | 0.5 | 1.0 | 0.0 | 1.0 |
| 118 | C3 | Bridge,Off-sys | 778.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

1 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 742.0 to El. 745.0 ft.

2 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 734.0 to El. 757.0 ft.

PENSACOLA DAM
GRAND RIVER DAM AUTHORITY

INFRASTRUCTURE DEPTH DATA SHEET
DECEMBER 2015 INFLOW EVENT (15-YEAR EVENT)

| Infra-structure ID | Map Panel | Location | Ground Elev. (ft, PD) | Maximum depth (ft) for the simulation with a starting reservoir WSEL (PD datum) listed immediately below. | | | | | | | | | | | Anticipated Operational Range Depth Difference ² (ft) | Extreme, Hypothetical Range Depth Difference ² (ft) |
|--------------------|-----------|-----------------|-----------------------|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|--|
| | | | | 734.0 ft | 742.0 ft | 742.5 ft | 743.0 ft | 743.5 ft | 744.0 ft | 744.5 ft | 745.0 ft | 749.0 ft | 753.0 ft | 757.0 ft | | |
| 119 | C3 | Bridge,On-sys | 789.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 120 | C3 | Bridge,Off-sys | 765.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 121 | C3 | Bridge,Off-sys | 770.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 122 | C3 | Bridge,Off-sys | 774.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 123 | C3 | Bridge,Off-sys | 792.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 124 | C4 | Bridge,On-sys | 784.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 125 | C4, C4-1 | Bridge,On-sys | 810.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 126 | C4 | Bridge,Off-sys | 772.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 127 | C4 | Bridge,Off-sys | 746.7 | 10.6 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 | 12.6 | 12.7 | 12.7 | 13.5 | 0.0 | 2.9 |
| 128 | C4 | Bridge,Off-sys | 775.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 129 | C4 | Bridge,On-sys | 765.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 130 | C4 | Bridge,Off-sys | 771.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 131 | C4 | Church | 793.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 132 | C4 | Bridge,Off-sys | 772.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 133 | C4 | Bridge,Off-sys | 775.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 134 | C4 | Bridge,Off-sys | 769.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 135 | C5 | Bridge,Off-sys | 780.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 136 | C5 | Park | 806.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 137 | C5 | Bridge,Off-sys | 766.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 138 | C5 | Bridge,On-sys | 765.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 139 | C5 | Park | 748.4 | 8.1 | 10.3 | 10.3 | 10.3 | 10.3 | 10.3 | 10.3 | 10.3 | 10.3 | 10.4 | 11.2 | 0.0 | 3.1 |
| 140 | C6 | Bridge,Off-sys | 753.9 | 5.7 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 6.5 | 7.1 | 7.2 | 8.1 | 0.0 | 2.4 |
| 141 | C6 | Law Enforcement | 773.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 142 | C6 | Bridge,On-sys | 778.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 143 | C6 | Bridge,On-sys | 763.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 144 | C6 | Bridge,On-sys | 795.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 145 | C6 | School | 784.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 146 | C6 | Bridge,Off-sys | 763.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 147 | C6 | Bridge,On-sys | 765.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 148 | C6 | Fire Station | 761.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 149 | C6 | Church | 759.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 150 | C6 | School | 754.9 | 0.1 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.2 | 2.6 | 0.0 | 2.5 |
| 151 | C6 | School | 759.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 152 | C6 | Shelter - Both | 761.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 153 | C6 | School | 759.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 154 | C6 | Bridge,RR | 758.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 155 | C6 | WW Treatment | 777.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 156 | D5 | Bridge,On-sys | 774.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 157 | D5 | Bridge,Off-sys | 769.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

1 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 742.0 to El. 745.0 ft.

2 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 734.0 to El. 757.0 ft.

PENSACOLA DAM
GRAND RIVER DAM AUTHORITY

INFRASTRUCTURE DEPTH DATA SHEET
DECEMBER 2015 INFLOW EVENT (15-YEAR EVENT)

| Infra-structure ID | Map Panel | Location | Ground Elev. (ft, PD) | Maximum depth (ft) for the simulation with a starting reservoir WSEL (PD datum) listed immediately below. | | | | | | | | | | | Anticipated Operational Range Depth Difference ¹ (ft) | Extreme, Hypothetical Range Depth Difference ² (ft) |
|--------------------|-----------|---------------------|-----------------------|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|--|
| | | | | 734.0 ft | 742.0 ft | 742.5 ft | 743.0 ft | 743.5 ft | 744.0 ft | 744.5 ft | 745.0 ft | 749.0 ft | 753.0 ft | 757.0 ft | | |
| 158 | D5 | Bridge,Off-sys | 763.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 159 | D6 | Bridge,On-sys | 774.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 160 | D6 | Bridge,On-sys | 770.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 161 | D6 | Bridge,On-sys | 773.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 162 | D6 | Bridge,On-sys | 763.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 163 | D6 | Bridge,On-sys | 764.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 164 | D6 | Bridge,On-sys | 768.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 165 | E3 | Bridge,On-sys | 773.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 166 | E3 | Bridge,Off-sys | 751.3 | 3.3 | 3.6 | 3.6 | 3.6 | 3.6 | 3.6 | 3.6 | 3.6 | 3.6 | 3.6 | 5.8 | 0.0 | 2.5 |
| 167 | E3 | Park | 751.9 | 2.6 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 | 5.1 | 0.0 | 2.5 |
| 168 | E5 | Fire Station | 770.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 169 | E5 | Bridge,Off-sys | 756.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.1 |
| 170 | E5 | Substation | 766.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 171 | E5 | Bridge,On-sys | 804.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 172 | E5 | Church | 766.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 173 | E6 | Bridge,On-sys | 772.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 174 | F3 | Bridge,On-sys | 756.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.7 | 0.0 | 0.7 |
| 175 | F3 | Airport | 751.3 | 3.2 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 5.7 | 0.0 | 2.5 |
| 176 | F3 | Fire Station | 766.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 177 | F3 | Airport | 770.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 178 | F4 | Airport | 759.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 179 | F5 | Bridge,Off-sys | 768.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 180 | F5 | WW Treatment | 798.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 181 | F5 | Park | 749.3 | 5.2 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.6 | 5.6 | 5.5 | 5.5 | 7.7 | 0.1 | 2.5 |
| 182 | F5 | Church | 758.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 183 | F5 | Bridge,Off-sys | 759.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 184 | F5 | Church | 760.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 185 | F5 | Park | 749.4 | 5.2 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.6 | 5.6 | 5.6 | 5.6 | 7.7 | 0.1 | 2.5 |
| 186 | F5 | Fire Station | 761.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 187 | F5 | Bridge,Off-sys | 760.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 188 | F5 | Church | 759.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 189 | F5 | Church | 775.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 190 | F5 | Law Enforcement | 772.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 191 | F5 | Bridge,On-sys | 766.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 192 | F5 | Shelter - Both | 783.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 193 | F5 | Shelter - Both | 836.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 194 | F5 | Water Treatment | 771.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 195 | F5 | Bridge,On-sys | 767.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 196 | F5 | Shelter - Evac Only | 768.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

1 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 742.0 to El. 745.0 ft.

2 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 734.0 to El. 757.0 ft.

PENSACOLA DAM
GRAND RIVER DAM AUTHORITY

INFRASTRUCTURE DEPTH DATA SHEET
DECEMBER 2015 INFLOW EVENT (15-YEAR EVENT)

| Infra-structure ID | Map Panel | Location | Ground Elev. (ft, PD) | Maximum depth (ft) for the simulation with a starting reservoir WSEL (PD datum) listed immediately below. | | | | | | | | | | | Anticipated Operational Range Depth Difference ¹ (ft) | Extreme, Hypothetical Range Depth Difference ² (ft) | |
|--------------------|-----------|---------------------|-----------------------|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|--|-----|
| | | | | 734.0 ft | 742.0 ft | 742.5 ft | 743.0 ft | 743.5 ft | 744.0 ft | 744.5 ft | 745.0 ft | 749.0 ft | 753.0 ft | 757.0 ft | | | |
| 197 | F5 | Bridge,Off-sys | 770.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 198 | F5 | Bridge,Off-sys | 769.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 199 | F5 | Park | 812.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 200 | F5 | Bridge,On-sys | 769.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 201 | G2 | Bridge,Off-sys | 757.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 202 | G2 | Bridge,Off-sys | 766.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 203 | G2 | Bridge,On-sys | 756.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 0.2 |
| 204 | G2 | Shelter - Evac Only | 761.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 205 | G3 | Fire Station | 798.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 206 | G3 | Airport | 721.1 | 33.5 | 33.8 | 33.8 | 33.8 | 33.8 | 33.8 | 33.8 | 33.8 | 33.8 | 33.8 | 33.8 | 36.0 | 0.0 | 2.5 |
| 207 | G4 | Bridge,Off-sys | 763.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 208 | G4 | Bridge,Off-sys | 761.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 209 | G4 | Church | 767.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 210 | G5 | Airport | 915.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 211 | G6 | Bridge,Off-sys | 757.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 212 | H1 | Park | 806.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 213 | H2 | Airport | 815.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 214 | H2 | Airport | 771.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 215 | H2 | Park | 767.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 216 | H2 | Bridge,On-sys | 757.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 217 | H2 | Bridge,On-sys | 757.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 218 | H2 | Fire Station | 793.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 219 | H2 | Park | 769.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 220 | H2 | Fire Station | 786.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 221 | H2 | Law Enforcement | 786.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 222 | H2 | Law Enforcement | 799.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 223 | H2 | Bridge,On-sys | 757.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 224 | H2 | Substation | 764.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 225 | H2 | Power Plant | 764.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 226 | H2 | Substation | 783.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 227 | H2 | Substation | 778.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 228 | H4 | Bridge,Off-sys | 758.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

1 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 742.0 to El. 745.0 ft.

2 Max difference in max depth from simulations with Pensacola Dam starting stages of El. 734.0 to El. 757.0 ft.