Highlights From the Basin

GEORGIA Water
PLANNING & POLICY CENTER
ALBANY STATE UNIVERSITY

LAKE SIDNEY LANIER – BUFORD DAM PROJECT RICK COMMUNICATION

Timothy A. Rainey

Operations Project Manager

US Army Corps of Engineers

Lake Sidney Lanier – Buford Dam Project

U.S. ARMY

US Army Corps of Engineers

AGENDA

- USACE DAM Safety Program
- Briefing Purpose
- Why now?
- Buford Dam Authorized Purposes
- Location Overview
- Buford Dam Structures and Components
- Buford Dam Benefits
- USACE Risk Management Measures
- Risk Assessment
- High Water Operations – Non-Breach
- Breach
- Probability of Occurrence
- Consequences
- National Inventory of Dams
- Additional Risk Mitigation Measures
- Closing
- Resources

U.S. ARMY

US Army Corps of Engineers

USACE DAM SAFETY PROGRAM

The purpose of the USACE Dam Safety Program is to protect life, property, and the environment by ensuring that all dams are designed, constructed, regulated, operated, and maintained as safely and effectively as is reasonably practicable. Communication remains integral to the success of the program to include sharing risk information with internal and external audiences to foster an informed and engaged public that understands risk, can contribute to the evaluation of risk management options, and can take responsibility for its safety.

U.S. ARMY

US Army Corps of Engineers

BRIEFING PURPOSE

To educate stakeholders on Buford Dam and Buford Dam Risk Communication.

U.S. ARMY

US Army Corps of Engineers

WHY NOW?

- Nationally, USACE is rolling out a communication campaign to inform the public about our dams. Buford Dam is not unique in this, and the communication is not due to any change in the dam's status. We are communicating the dam's risk due to a change in policy, not because of any problems.
- Recent update to Policy and Procedure
  - Include the elements of communication throughout the program.
  - Risk Communication is as important as assessing and managing risk.
  - Risk Communication is a shared responsibility.
  - Risk Communication is necessary to ***Reduce*** potential Loss of Life and Property.

U.S. ARMY

US Army Corps of Engineers

BUFORD DAM AUTHORIZED PURPOSES

- Hydropower
- Flood Risk Management
- Navigation
- Recreation
- Fish and Wildlife Management
- Water Quality
- Water Supply

U.S. ARMY

US Army Corps of Engineers

LOCATION OVERVIEW

West Point Lake and Dam

Walter. F. George Lake and Dam

Jim Woodruff Dam - Lake Seminole

Buford Dam - Lake Sidney Lanier

George Andrews Lock and Dam

Apalachicola Bay

U.S. ARMY

US Army Corps of Engineers

STRUCTURE AND COMPONENTS

- Main Dam
- Saddle Dikes 1, 2, and 3
- Reservoir
- Intake Structure
- Powerhouse
- Emergency Spillway

U.S. ARMY

US Army Corps of Engineers

STRUCTURE AND COMPONENTS

U.S. ARMY

US Army Corps
of Engineers

MAIN DAM AND POWERHOUSE

U.S. ARMY

US Army Corps of Engineers

INTAKE STRUCTURE

U.S. ARMY

US Army Corps of Engineers

SADDLE DIKES 1 AND 2

U.S. ARMY

US Army Corps of Engineers

SADDLE DIKE 3 AND SPILLWAY

U.S. ARMY

US Army Corps of Engineers

BENEFITS OF BUFORD DAM

- Reduces frequency of flood events downstream, reducing property damage.
- Billions of dollars in flood damages to property prevented since construction.
- Provides clean renewable energy.
- Returns ~$16 million annually to the US Treasury from Hydropower and Recreation revenues.
- Provides for significant Regional Recreational opportunities.
- Generates over ~$100 Million in National Economic Development Benefit annually.
- Generates ~$700 Million in visitor spending in local communities annually.
- Provides for ~$4 Million in payments to the State of Georgia annually.
- Provides a water source for ~5 Million people daily.
- Provides for an abundant Trout Fishery (Trout fishing spending ~$6 Million annually).
- Provides for adequate flow downstream for water quality.

U.S. ARMY

US Army Corps of Engineers

USACE RISK MANAGEMENT MEASURES (MITIGATION)

- Routine communications with local and State Emergency Management Agencies.
- Annual updates to the Emergency Action Plan.
- Coordinate emergency exercises with State and local response teams (tabletop exercise every 5 years).
- Annual instrument inspections.
- Monthly visual and instrument monitoring and seepage flow measurements (increases with lake levels to sometimes daily monitoring).
- Alternating Periodic Evaluation and Periodic Assessment every 5 years.
- Routine and regular maintenance and repair.
- Training
- **Risk Communication**

U.S. ARMY

US Army Corps of Engineers

RISK ASSESSMENT

- Dams reduce the risk of flooding but do not eliminate it.

- Assessment of Risk is a function of the **probability** of an event and that events **consequences.**

- Buford Dam Risk Assessment:
  - Risk is characterized as Moderate.
  - Designed well, constructed well, maintained well
  - Continued Reliability expected.

- Identified Risks:
  - High water operations
    - With and without emergency spillway flows.
  - Dam Breach due to Overtopping
  - Dam Breach due to Seepage

U.S. ARMY

US Army Corps of Engineers

HIGH WATER OPERATIONS – NON-BREACH

- Buford Dam is operated under an approved Water Control Manual
- Bank full condition in the Chattahoochee River between Buford Dam and Morgan Falls Dam is ~10,000 cfs.
- Buford Dam Water Control Manual allows for up to ~40,000 cfs to intentionally be discharged to protect the structure.
  - ~12,500 cfs through hydropower generators.
  - ~11,500 cfs through the Sluice Gate.
  - ~16,000 cfs through the Emergency Spillway.
  - This will be in addition to the current river conditions
- The above conditions are established operations under the approved Water Control Manual thus the Dam would be operating as designed.
- With these high-water operations, significant flooding can occur downstream.

- Development encroaching in the floodplain downstream increases the risk of property damage.

U.S. ARMY

US Army Corps of Engineers

BREACH

- Overtopping
  - Buford Dam is limited in discharge capacity.
  - A storm, or a series of storms, producing inflows greater than outflow capacity could cause the lake to continue to rise.
  - This could lead to overtopping of the dam crest.
  - Overtopping may result in erosion of the dam surface leading to failure.

- Seepage
  - Water seeping through a Saddle Dike could erode its embankment to the point of failure.

U.S. ARMY

US Army Corps of Engineers

PROBABILITY OF OCCURRENCE

- High Water Operations – Non-Breach

- Breach
  - Overtopping
  - Seepage

- Probability for each identified potential occurrence is ***Low to Remote.***

- Buford Dam is a ***High Hazard Dam***, not a ***High-Risk Dam.***
  - Buford Dam condition is good, low probability of occurrence, high consequences

U.S. ARMY

US Army Corps of Engineers

CONSEQUENCES - IMPACTS

- High Water Operations – Non-Breach
  - Significant flooding and damage to property.
  - Impacts are reduced as distance from the dam increases.

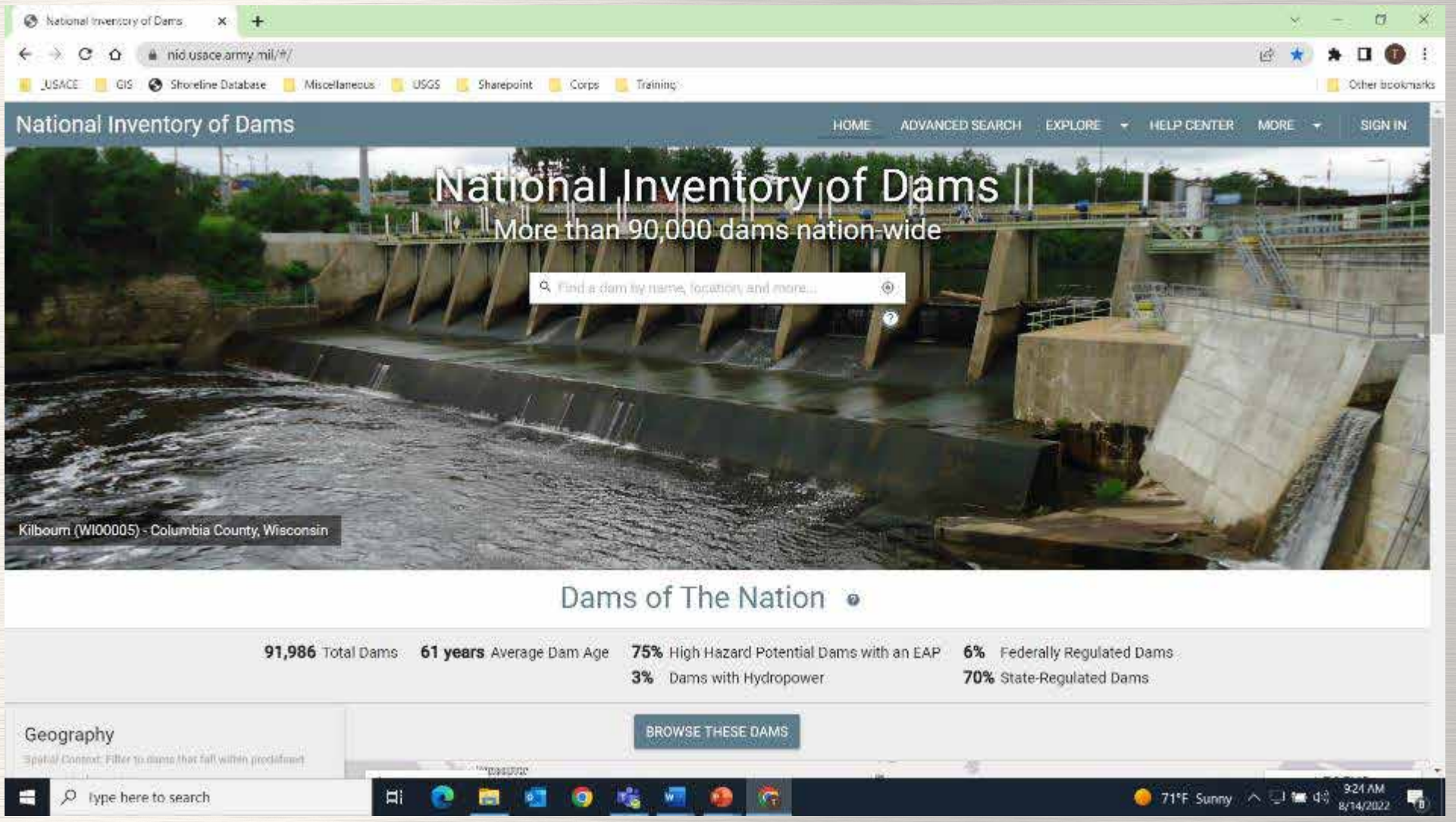
- Breach
  - Impacts could be catastrophic over a great distance.
  - Impacts through the basin to Apalachicola, Florida.
  - Property damage significant (infrastructure, water, power, communications, emergency services, transportation, etc…).
  - Potential for Loss of Life is significant.

- Buford Dam is a ***High Hazard Dam***, not a ***High-Risk Dam.***
  - Buford Dam condition is good, low probability of occurrence, high consequences

U.S. ARMY

US Army Corps of Engineers

NID LANDING PAGE

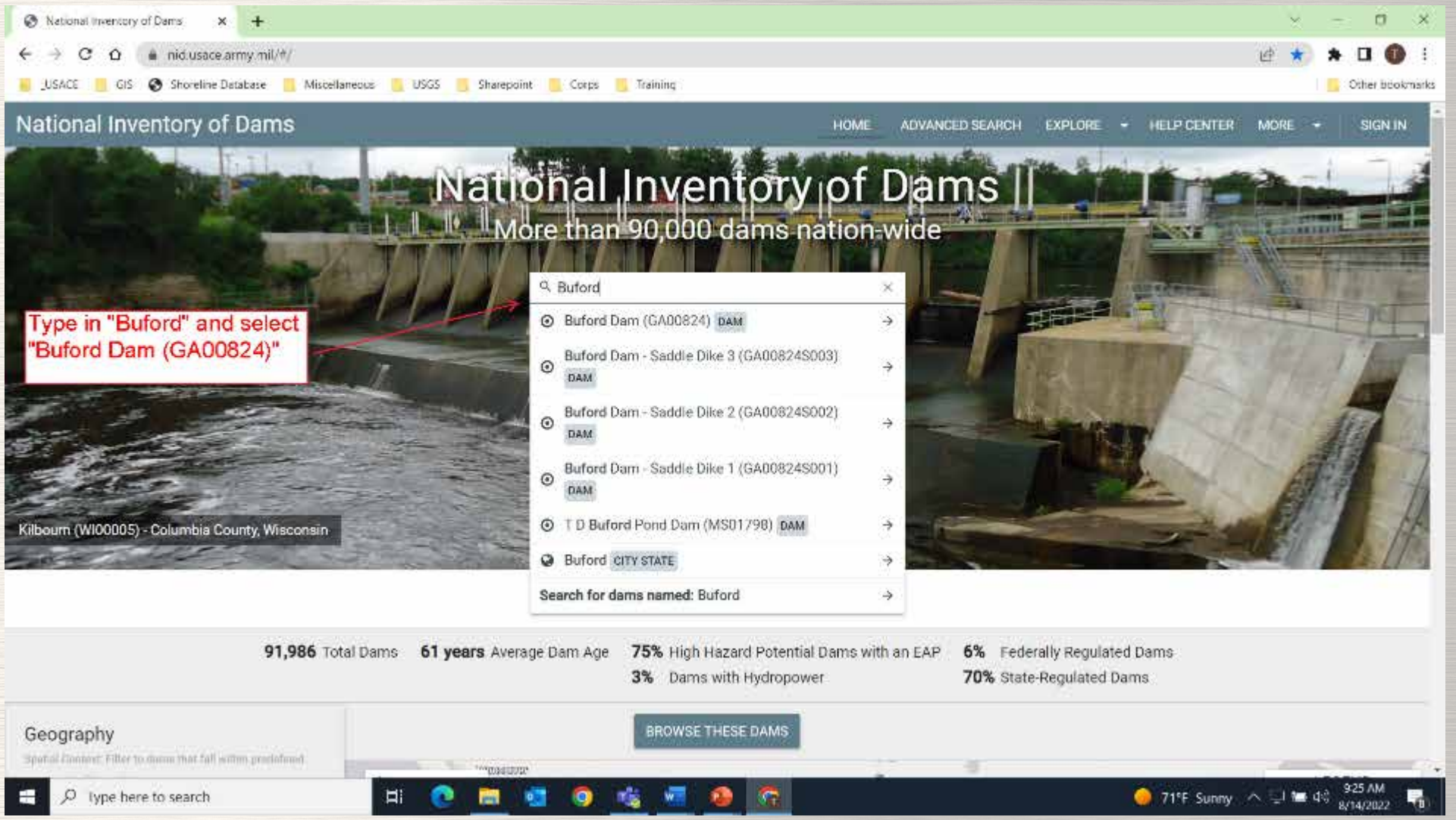


https://nid.sec.usace.army.mil/#/

U.S. ARMY

US Army Corps of Engineers

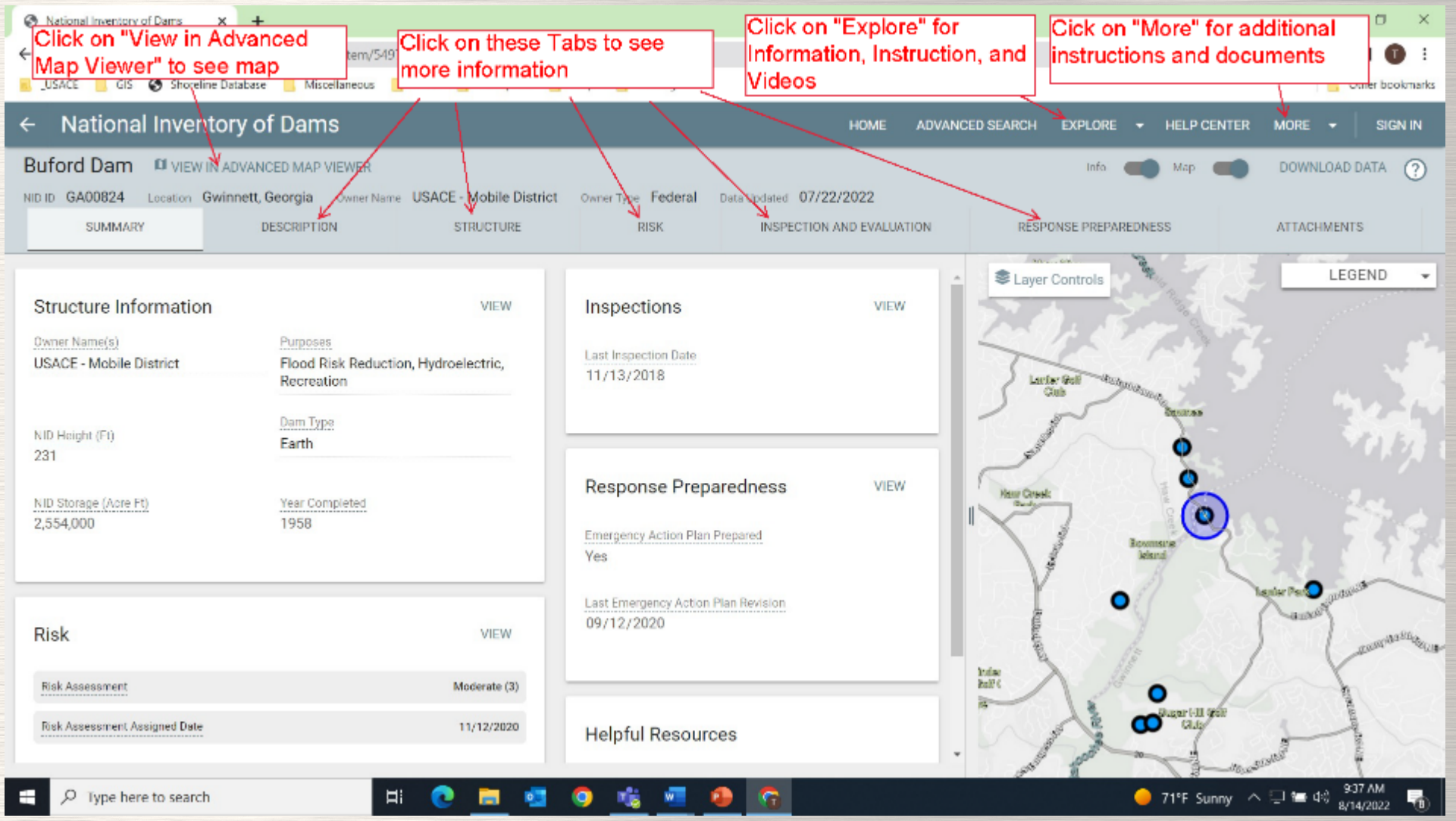
NID



U.S. ARMY

US Army Corps of Engineers

NID SUMMARY TAB (LANDING)

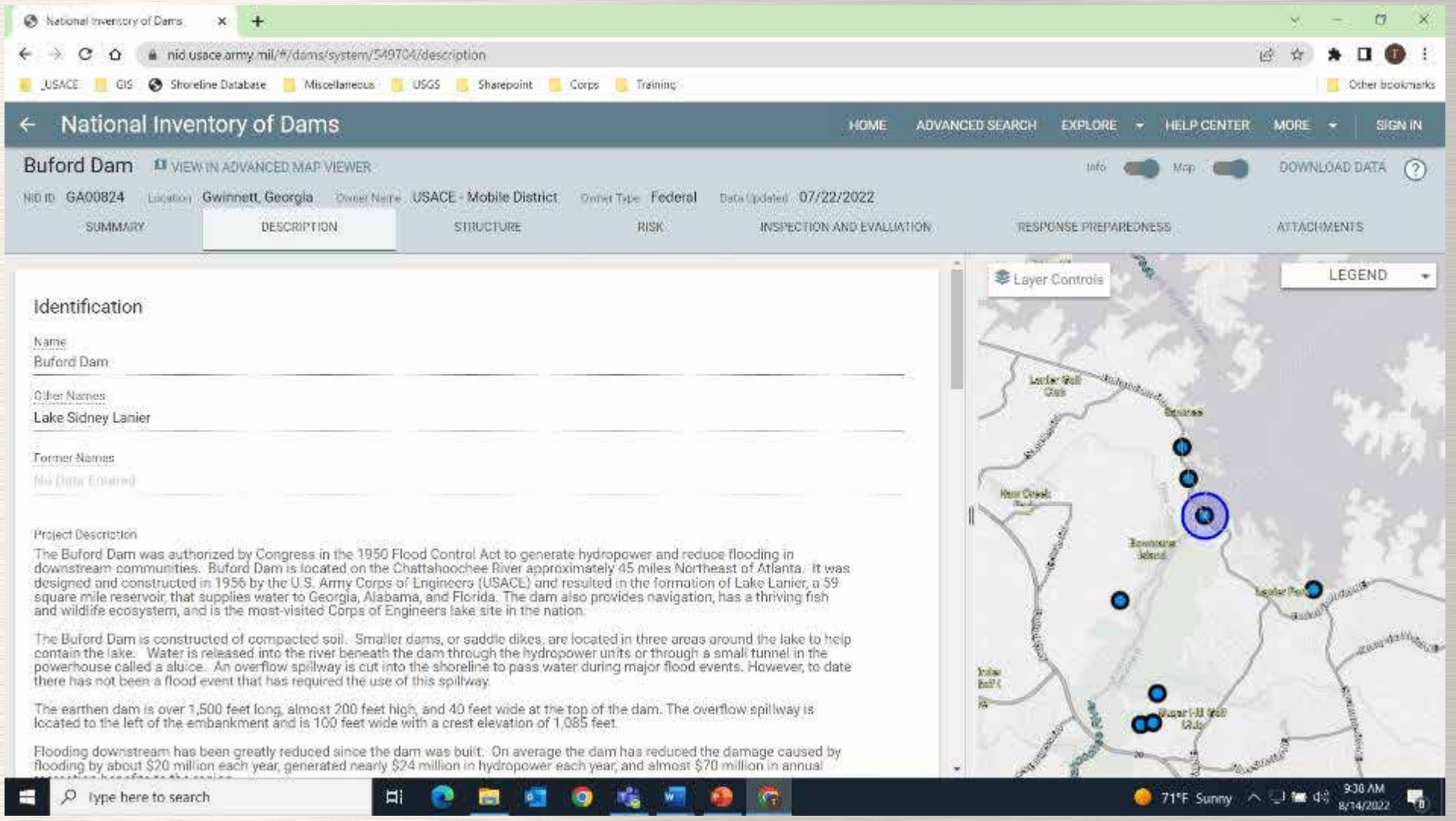


https://nid.sec.usace.army.mil/#/

U.S. ARMY

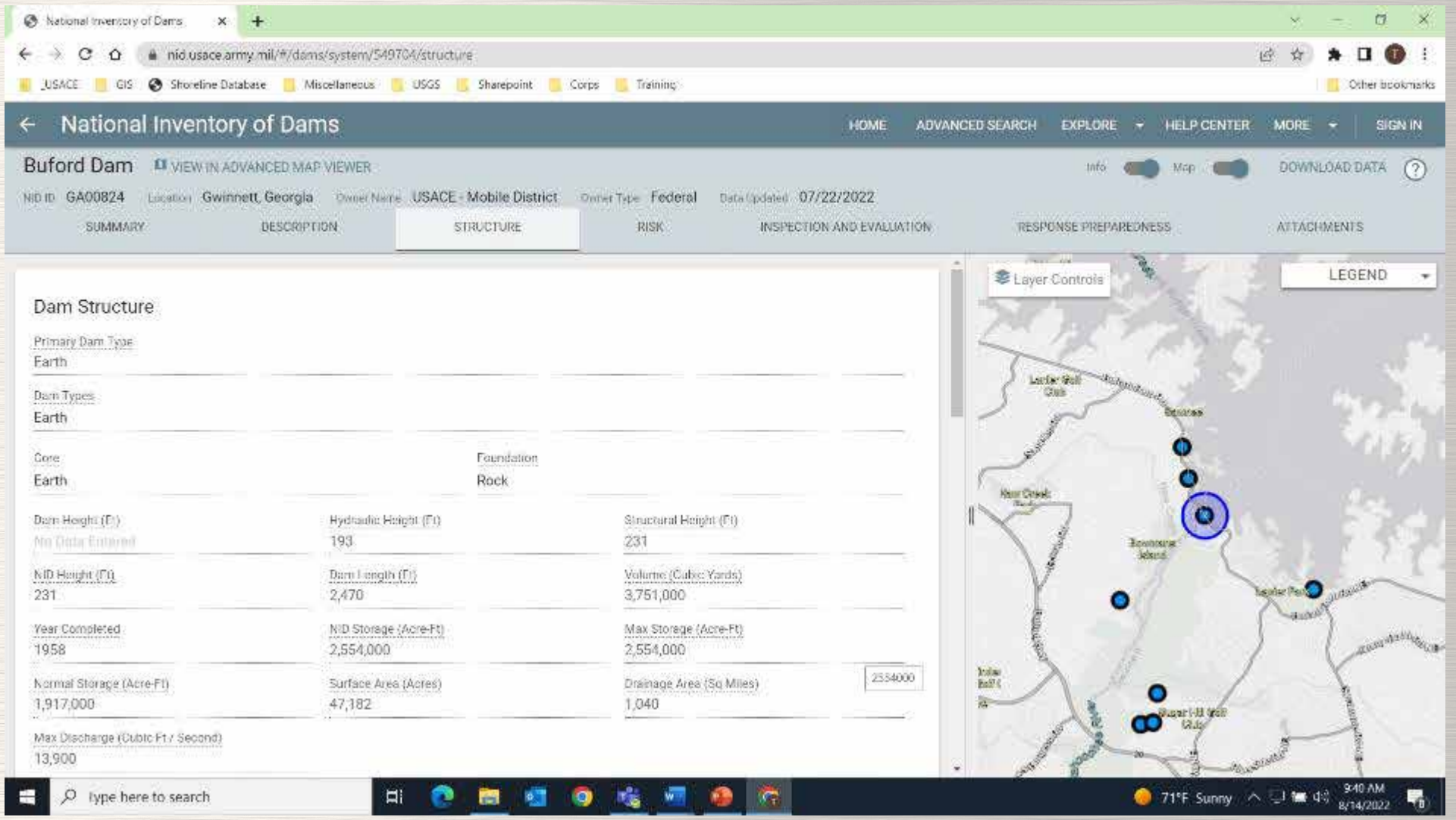
US Army Corps of Engineers

NID DESCRIPTION TAB



Description of the Project

NID STRUCTURE TAB

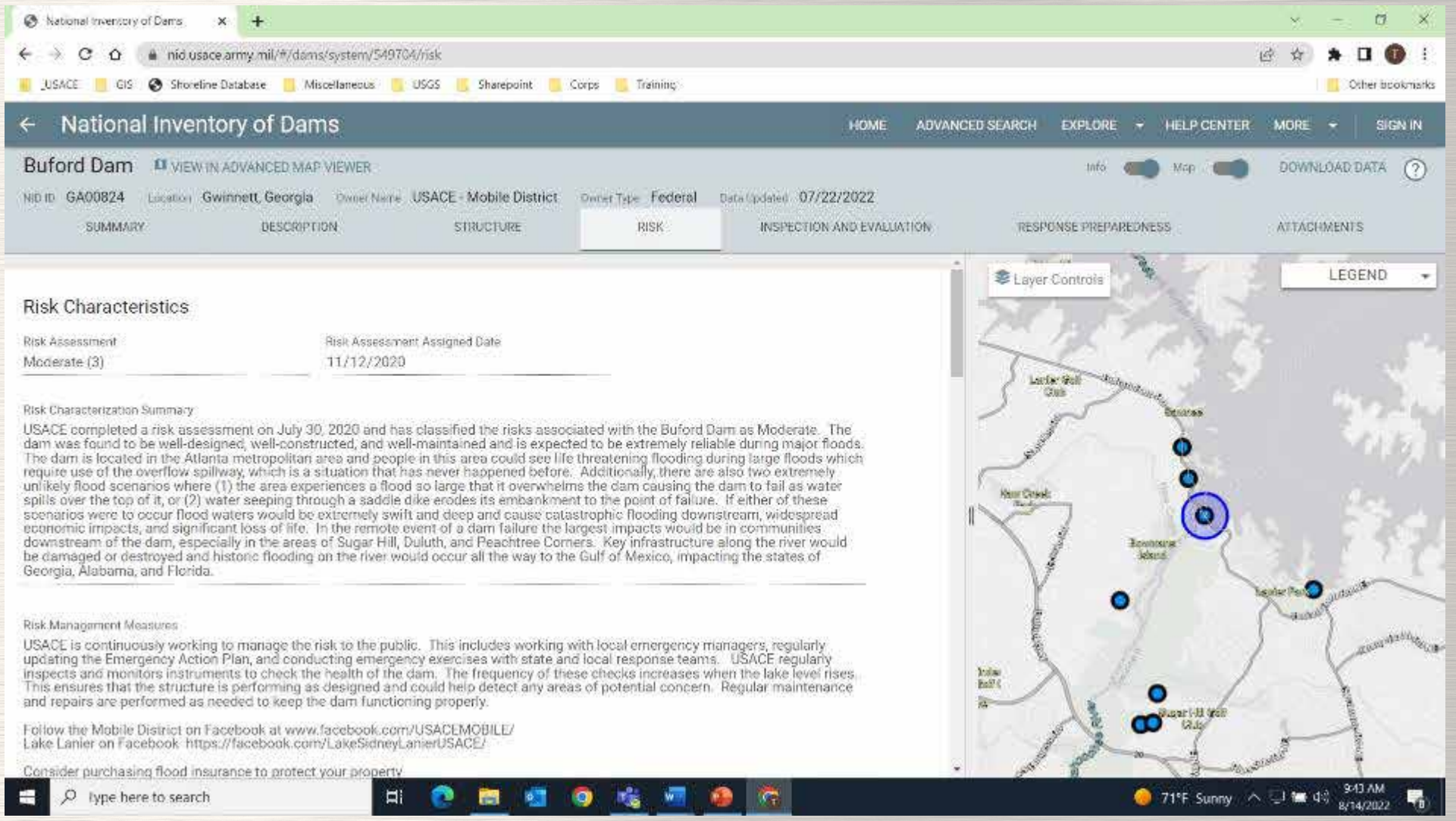


Provides Structure Information

U.S. ARMY

US Army Corps of Engineers

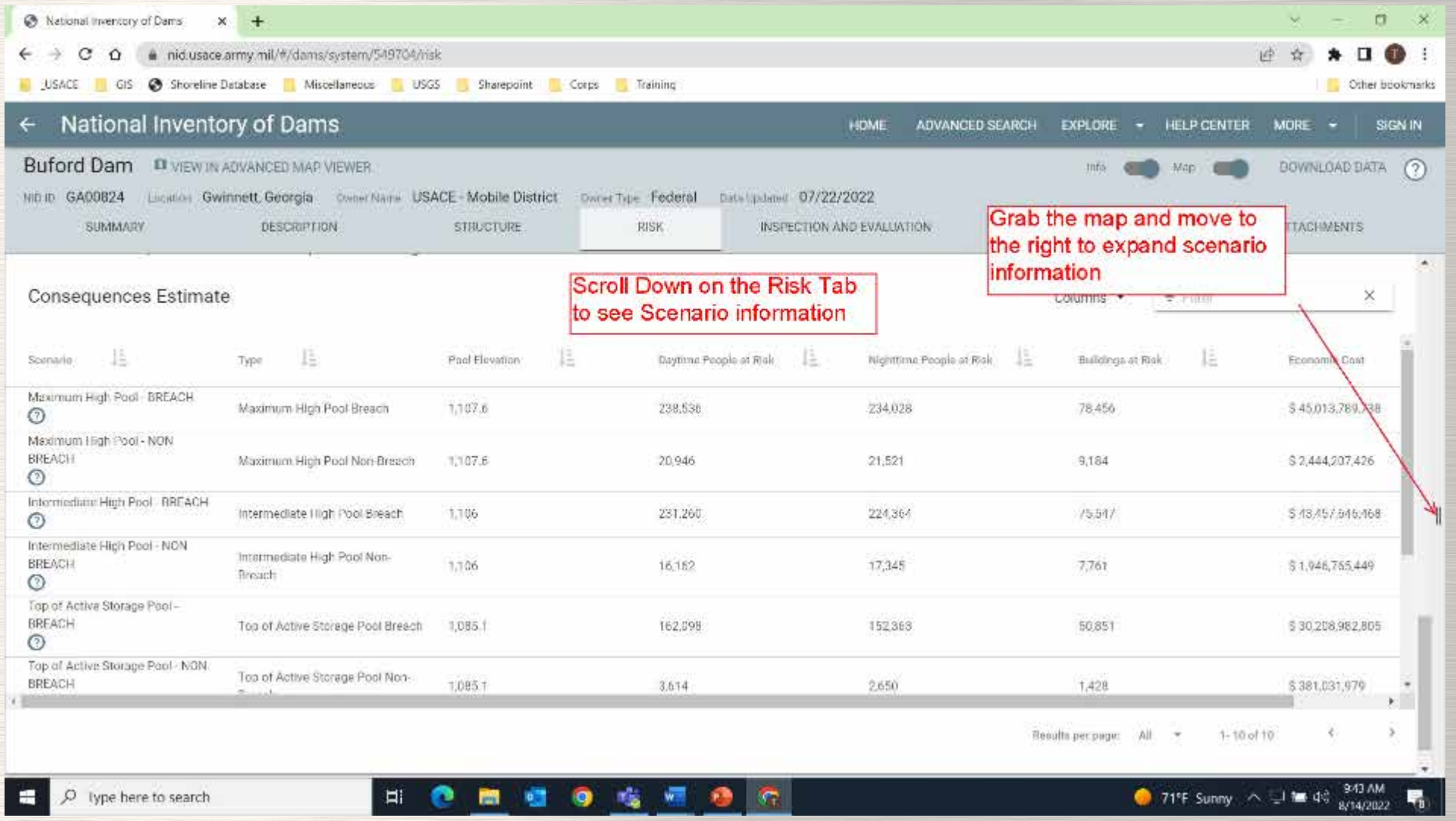
NID RISK TAB



Provides Risk Characterization and Risk Management Measures

US Army Corps of Engineers
U.S. ARMY

NID RISK TAB

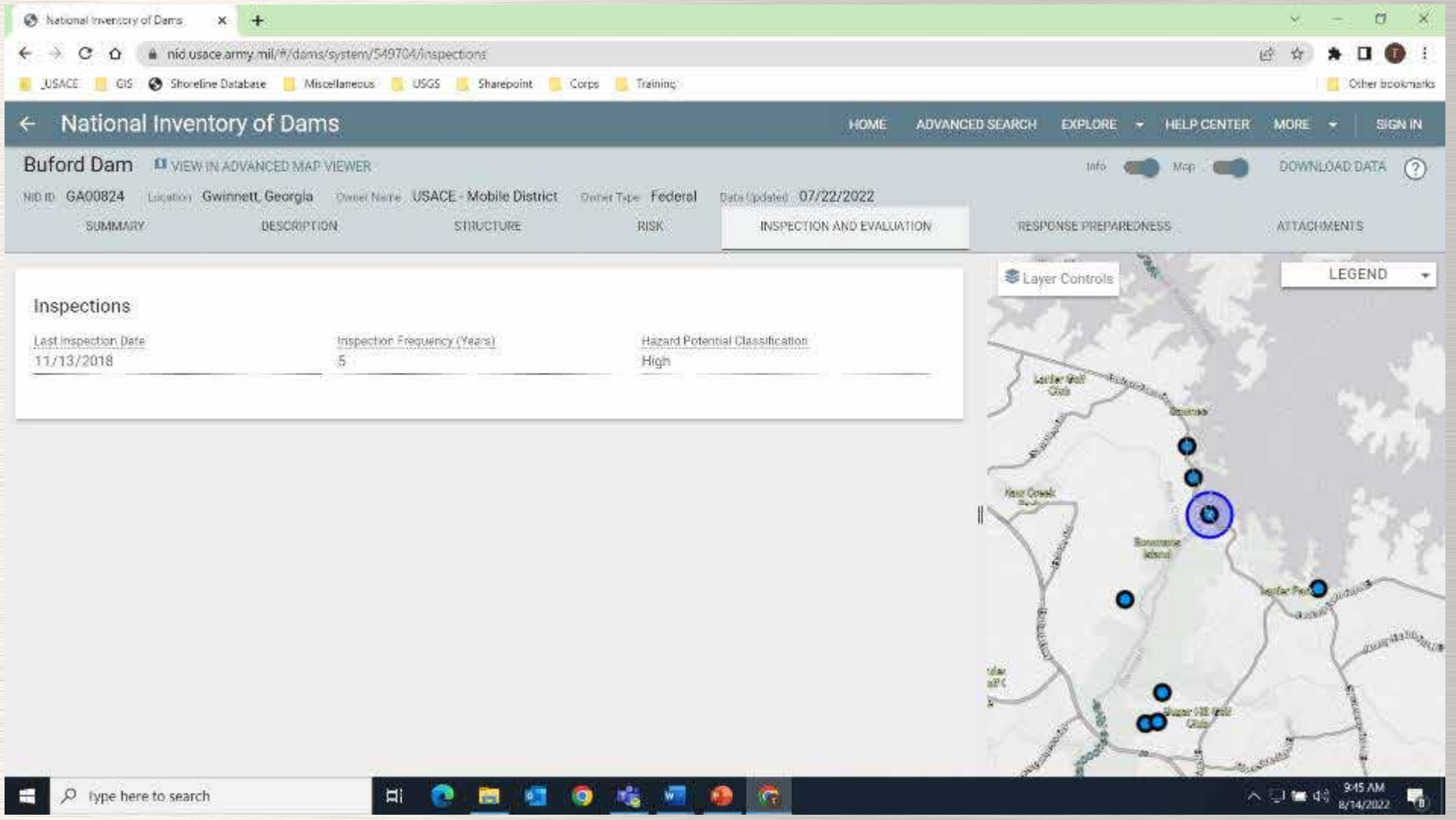


Different Scenario Information

U.S. ARMY

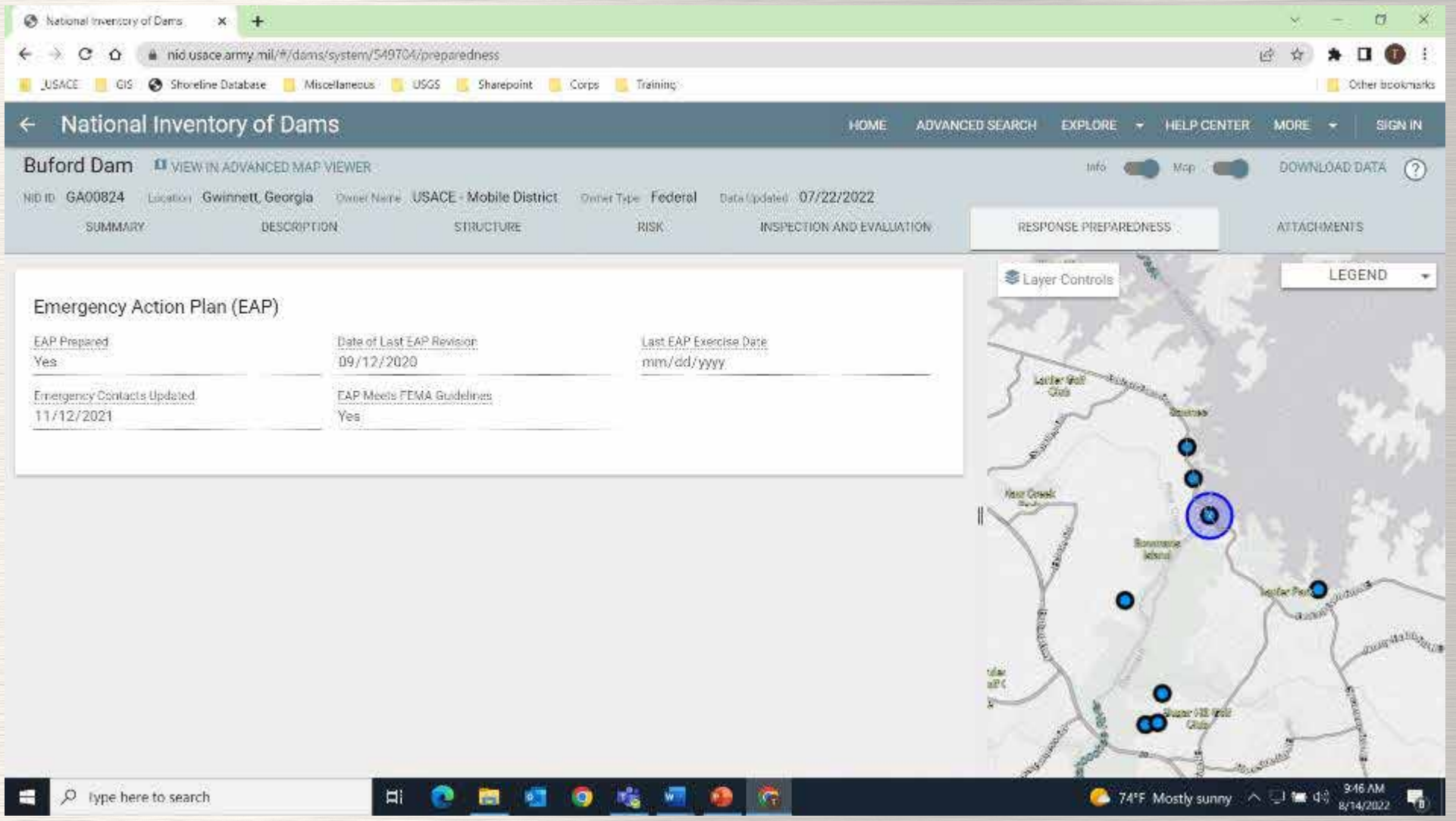
US Army Corps of Engineers

NID INSPECTION AND EVALUATION TAB



Provides Date of last Periodic Evaluation/Assessment

NID RESPONSE PREPAREDNESS TAB

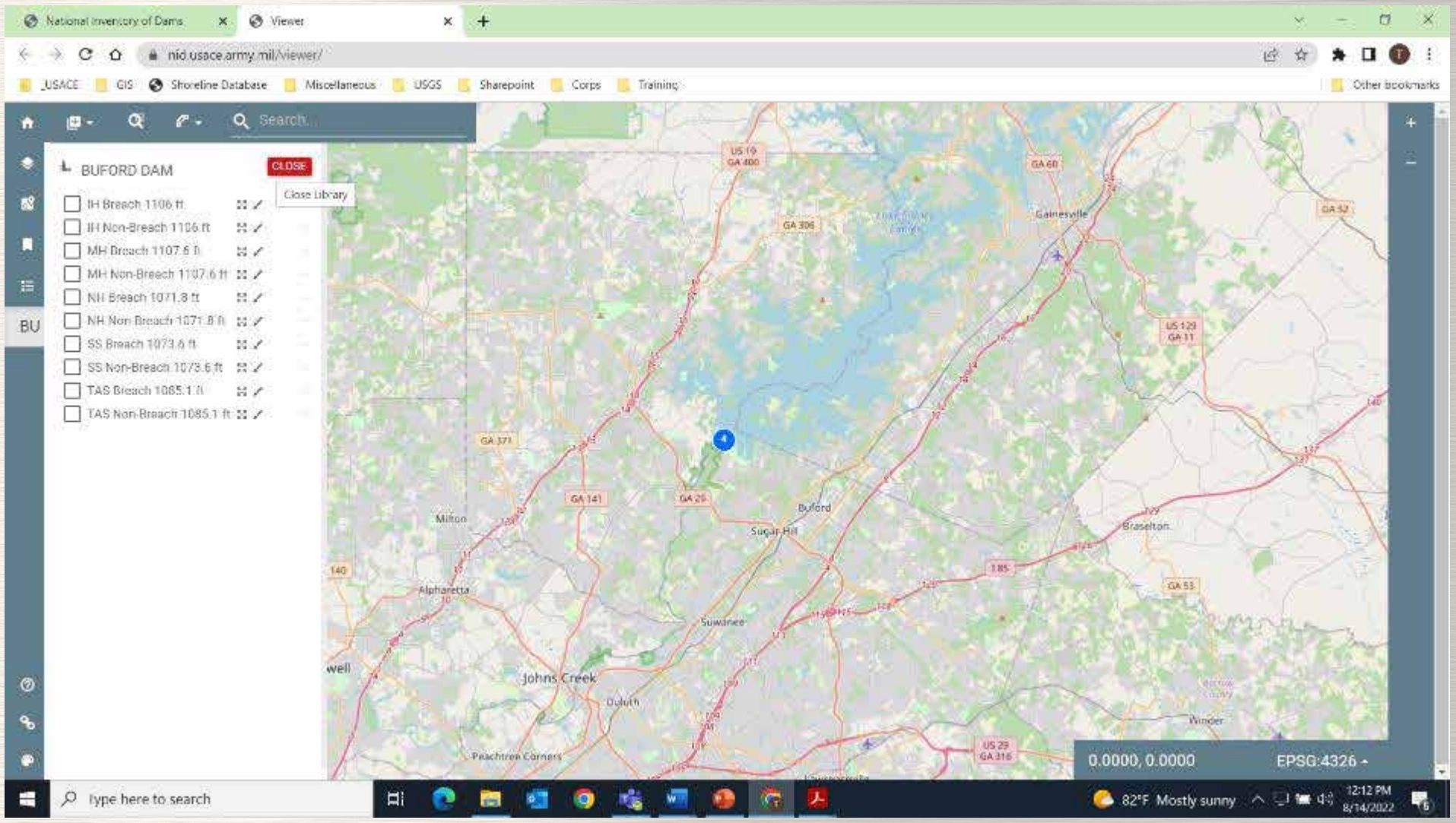


Provides Emergency Action Plan Information

U.S. ARMY

US Army Corps of Engineers

NID ADVANCED MAP VIEWER

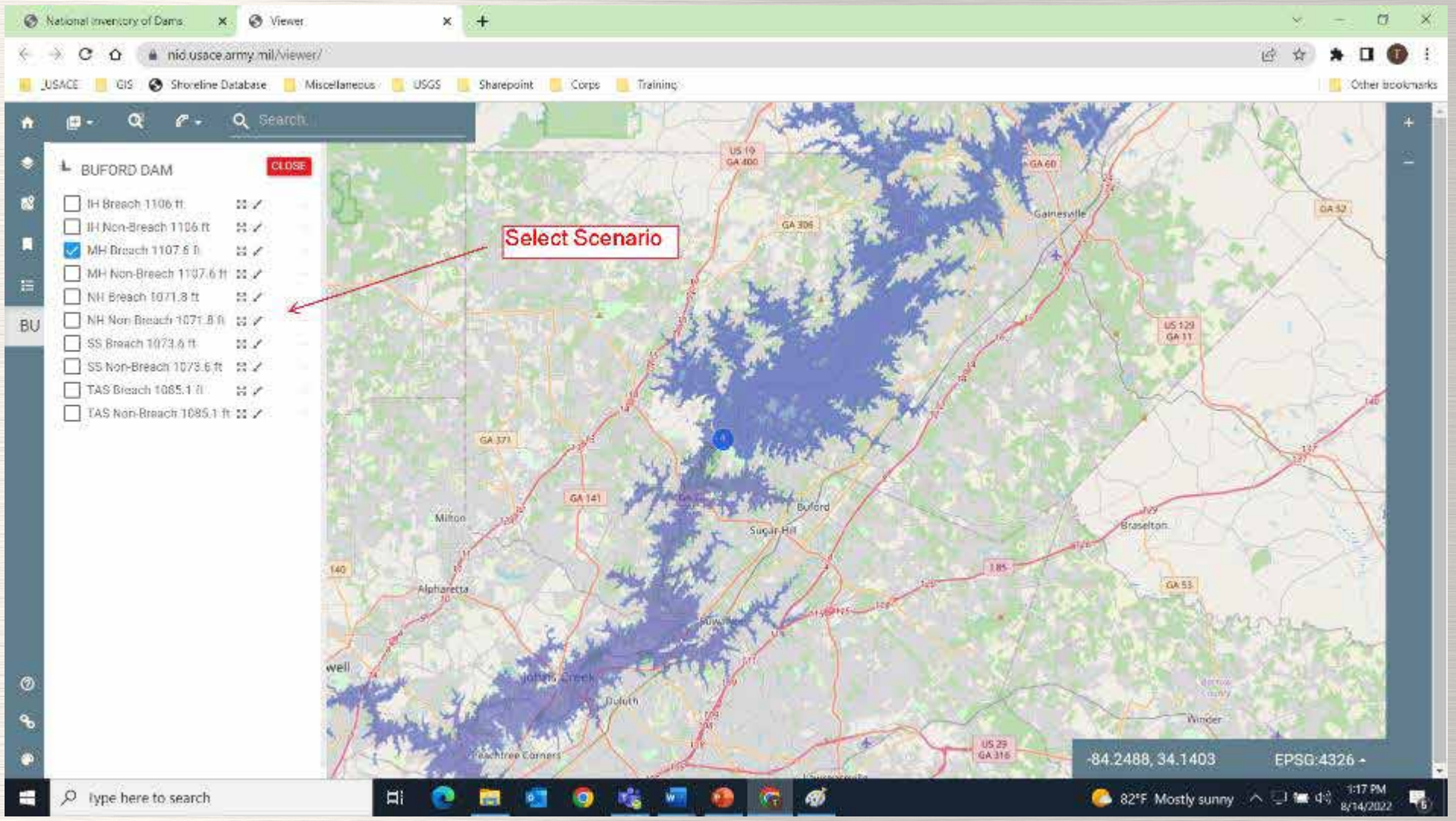


Landing Page

U.S. ARMY

US Army Corps of Engineers

NID ADVANCED MAP VIEWER

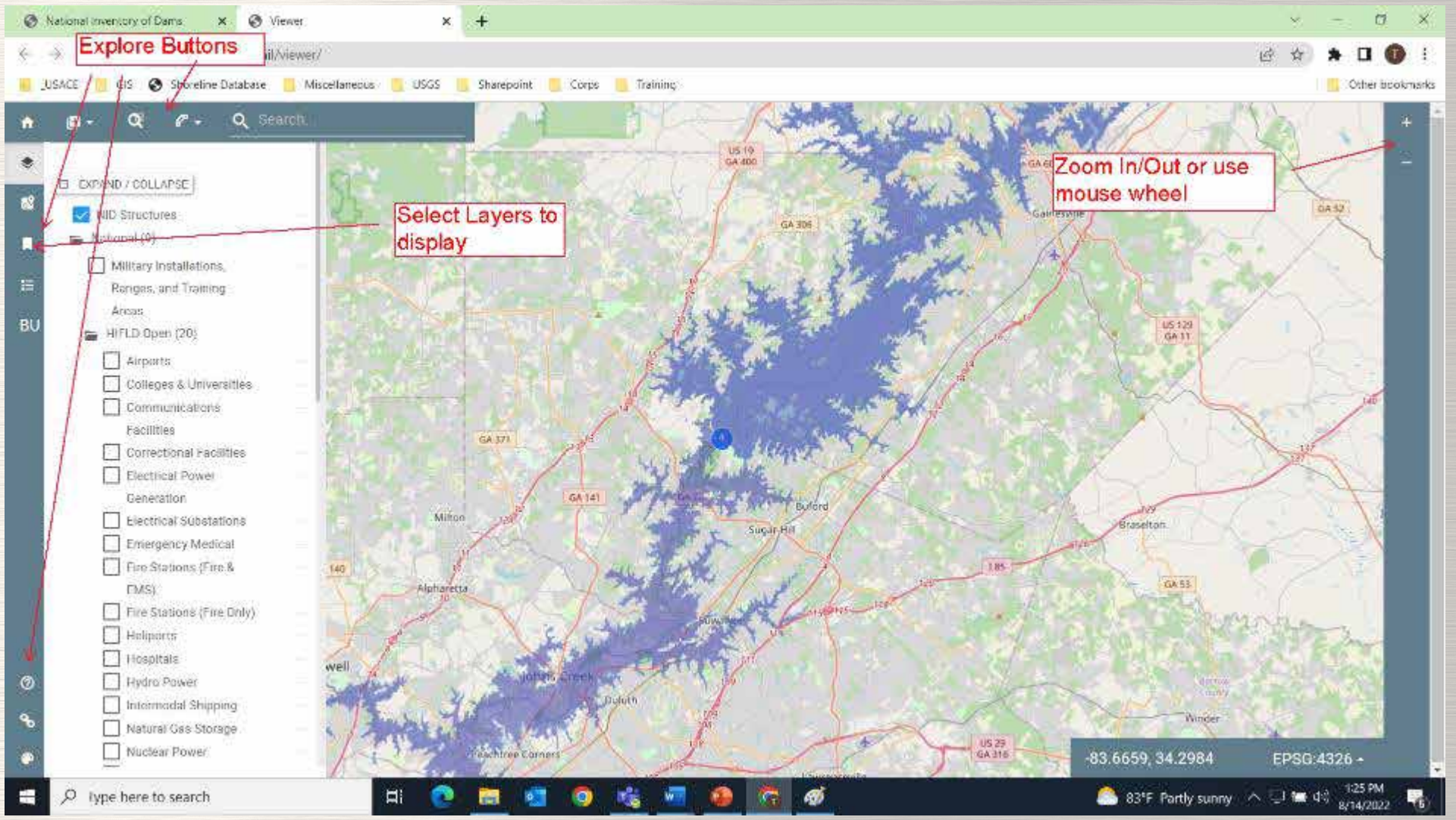


Select Scenario

U.S. ARMY

US Army Corps of Engineers

NID ADVANCED MAP VIEWER

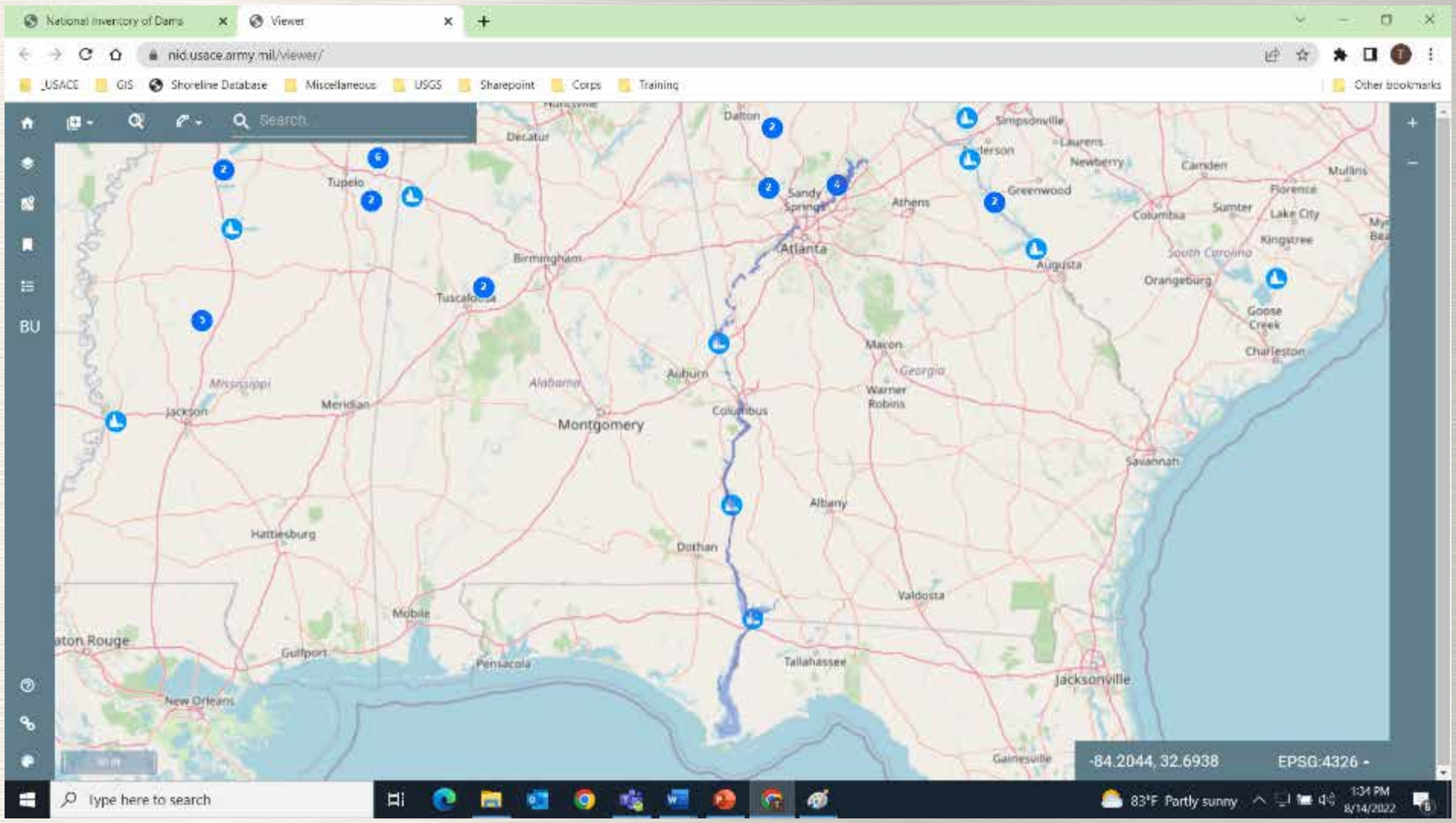


Select Layers and explore other buttons

U.S. ARMY

US Army Corps of Engineers

NID ADVANCED MAP VIEWER

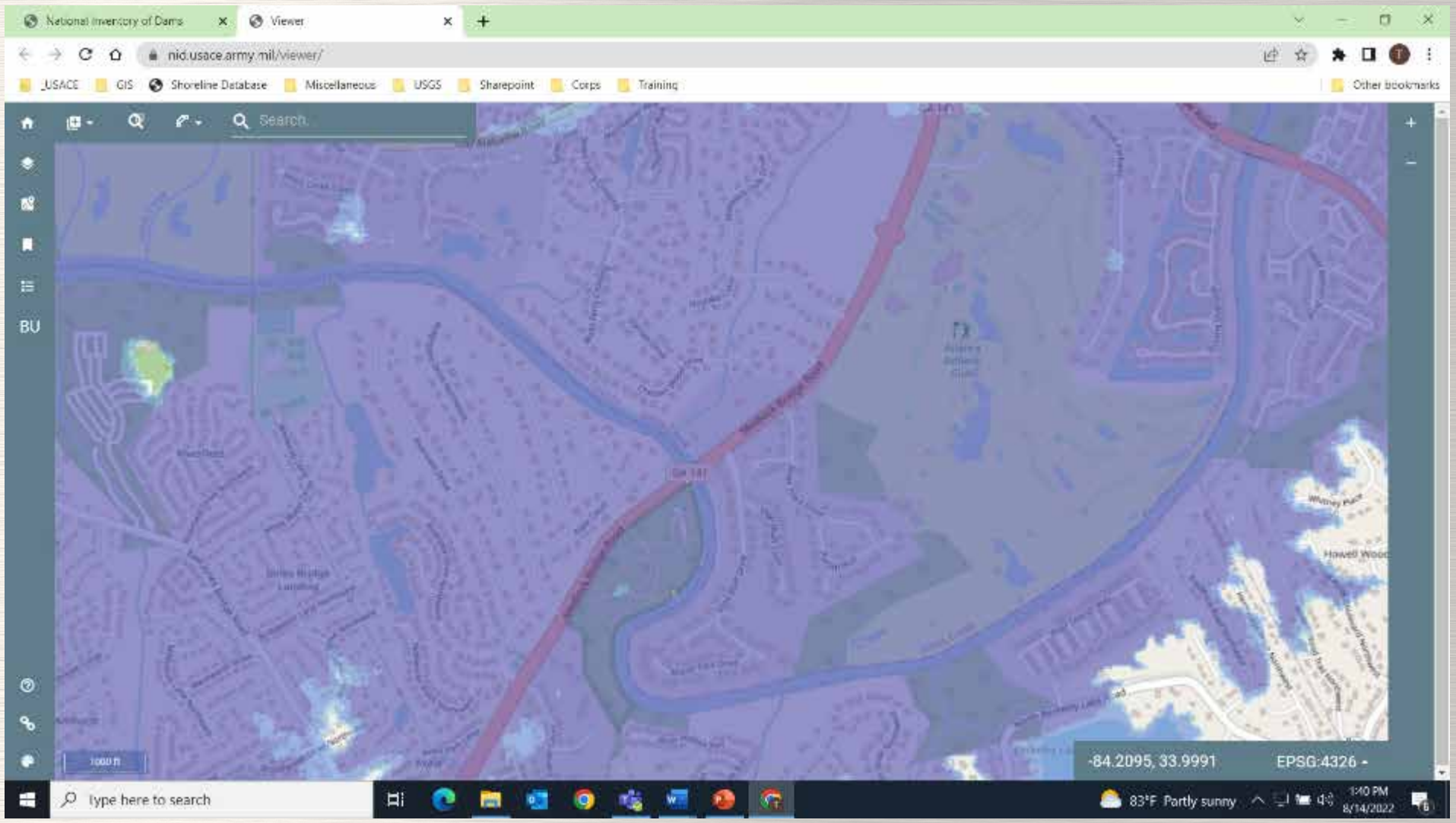


Zoom Out

U.S. ARMY

US Army Corps of Engineers

NID ADVANCED MAP VIEWER

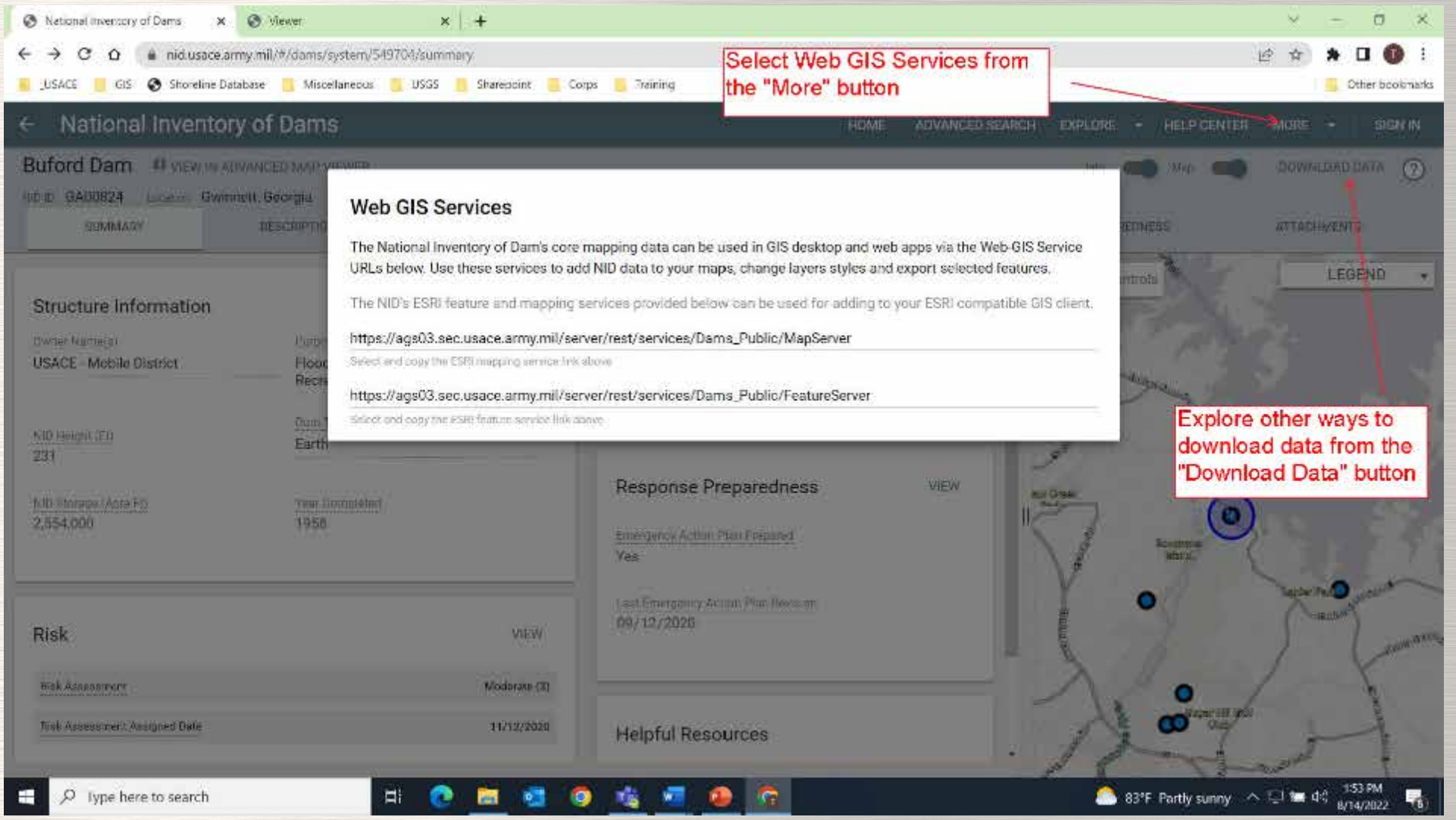


Zoom In and use mouse to explore map

U.S. ARMY

US Army Corps of Engineers

NID DATA DOWNLOAD AND GIS SERVICES



Incorporate data into your system

ADDITIONAL RISK MANAGEMENT MEASURES (MITIGATION)

- Since the risk is driven by the large population below Buford Dam (consequences), and NOT the condition of the dam, **Risk Communication** (education, awareness, preparedness) is the best thing we can do to mitigate that risk.

- **Risk Management is a Shared Responsibility**
  - USACE
  - Federal / State / Local Government
  - Business and Industry
  - Individual

U.S. ARMY

US Army Corps of Engineers

CLOSING

- Buford Dam is a High Hazard Dam, Not a High Risk Dam
- Risk Management is a Shared Responsibility
- Risk Communication is conducted so the public and stakeholders can understand the risk from the project and use the information to make informed decisions.
- USACE looks to its partners, and the public, to utilize this information to make plans and educate the populace that live, work, and play in potentially impacted areas within your jurisdiction or area of responsibility.

U.S. ARMY

US Army Corps of Engineers

RESOURCES

- USACE
  - National Inventory of Dams
    - https://nid.usace.army.mil/#/
  - Mobile District Dam Safety Webpage
    - https://www.sam.usace.army.mil/Missions/Dam-Safety-Program/
- FEMA
  - https://www.fema.gov/
- Georgia Safe Dams Program
  - https://epd.georgia.gov/watershed-protection-branch/safe-dams-program

U.S. ARMY

US Army Corps of Engineers

QUESTIONS

Tim Rainey

timothy.a.rainey2@usace.army.mil

(O) 770-945-9531

(C) 770-780-6224

U.S. ARMY

US Army Corps of Engineers