CAN YOU DIGG IT

Stephanie Wynn, P.E.
Alabama Department of Transportation
Bureau of Materials and Tests
Assistant Geotechnical Engineer

DiGGS
DATA INTERCHANGE FOR GEOTECHNICAL AND GEOENVIRONMENTAL SPECIALISTS

SO WHAT IS DIGGS

- Data Interchange for Geotechnical and Geoenvironmental Specialists
- Data Transfer Protocol
- Not a Database
- https://www.geoinstitute.org/special-projects/diggs

WHAT IS A DATABASE

- Database – a usually large collection of data organized especially for rapid search and retrieval (as by a computer)

WHERE DOES OUR INFORMATION COME FROM

57
608
607
605
501
540.4
19
1.18
534.6
540.4
536.0
500

Atterberg Limits	Lab	includes both Fall Cone and Casagrande test for liquid limits
Driven Penetration test	In situ	includes SPT and other hammer-based penetration tests
Particle Size	Lab	includes both sieve and hydrometer tests
Chemical tests	Lab	
Compaction	Lab	includes Proctor, Modified Proctor, Porter Static, California Test 216
Density	Lab	
Photolonization Detector test	Lab	
Specific Gravity	Lab	
Shrinkage Limit	Lab	
Static Cone Penetration test	In situ	e.g., CPT
Water Content	Lab	
Wireline logs	In situ	includes any kind of downhole sensors, including suspension velocity logs

- Current tests vetted and ready for use/adoption
- Future inclusions include:
  - Several Aggregate tests
  - Compressive Strength
  - Consolidation
  - Triaxial Tests
  - Other Insitu and Lab tests

FIELD
DiGGS
LAB
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DiGGS
DiGGS
ANALYSIS
Google Earth
GIS
DiGGS
DiGGS
DATA INTERCHANGE FOR GEOTECHNICAL AND GEOENVIRONMENTAL SPECIALISTS
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DATA BASE
DiGGS
PRESENTATION

SO AGAIN… WHAT IS DIGGS

- XML Schema Definition (XSD)
- Dictionaries defining controlled terms and coordinate systems, and business rules
- Data transfer as XML (structured text) that follows the DIGGS rules
  - Everyone knows how to read it
- Basically the same language web pages are written in

```
<?xml version="1.0" encoding="utf-8"?>
<Diggs xmlns="http://diggsml.org/schemas/2.0.b" xmlns:diggs="http://diggs
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xlink="http:/
 xmlns:gml="http://www.opengis.net/gml/3.2" xmlns:g3.3="http://www.opengi
xmlns:glr="http://www.opengis.net/gml/3.3/lr" xmlns:glrov="http://www.ope
xmlns:diggs_geo="http://diggsml.org/schemas/2.0.b/geotechnical" xmlns:wit
http://www.witsml.org/schemas/131" xsi:schemaLocation="http://diggsml.org
http://diggsml.org/schemas/2.0.b/Complete.xsd" gml:id="bcd">
  <documentInformation>
    <DocumentInformation gml:id="d1">
      <creationDate>2019-01-30</creationDate>
      <effectiveDate>2019-01-30</effectiveDate>
      <authorRef/>
      <author>WSP</author>
      <sourceSoftware>
        <SoftwareApplication gml:id="diggit">
          <gml:name>DiggIT v1.0</gml:name>
        </SoftwareApplication>
      </sourceSoftware>
    </DocumentInformation>
  </documentInformation>
  <project>
    <Project gml:id="123">
      <gml:name>Test Project</gml:name>
      <contract>
        <Contract gml:id="contract">
          <gml:name>c-123</gml:name>
          <client>Client 3</client>
          <contractor>Contractor name</contractor>
        </Contract>
      </contract>
    </Project>
  </project>
  <samplingFeature>
    <Borehole gml:id="B-1">
      <gml:name codeSpace="usgs">urn:diggs:def:fi:USGS:B-1</gml:name>
      <projectRef xlink:href="#p1"/>
      <referencePoint>
```

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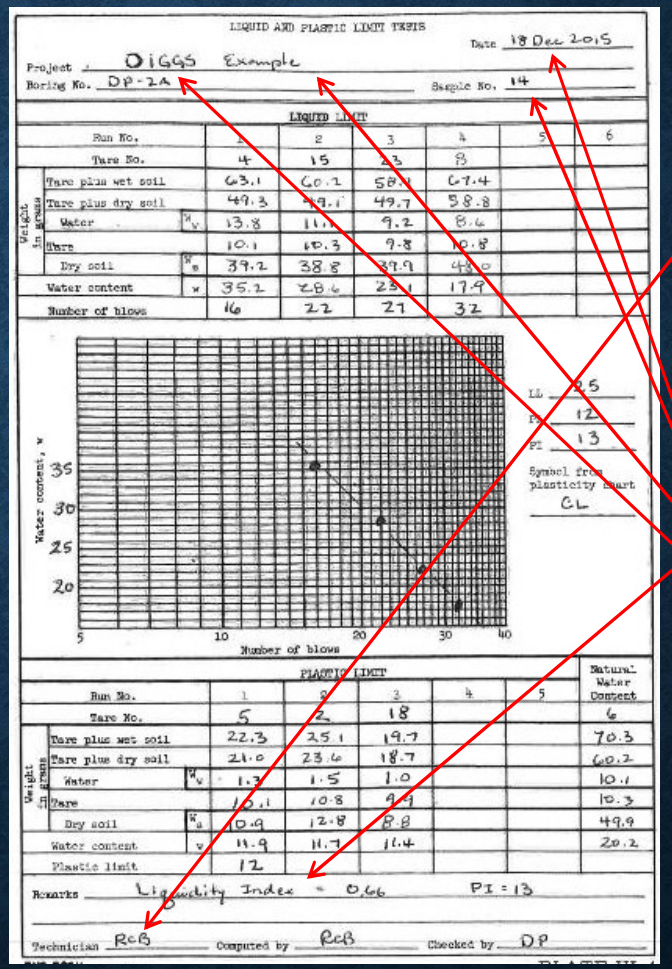
SO AGAIN… WHAT IS DIGGS

- Geography Markup Language (GML)
  - Data is tied to a location and the geometry of the feature
  - Elements are located in space
  - They don't have to be vertical or linear
- Extensible
  - We can add other things
  - Geophysics, Piles, Instruments, MWD, etc




```
<measurement>
  <Test gml:id="atterberg">
    <gml:name>Atterberg Limits Test</gml:name>
    <role>
      <Role>
        <rolePerformed>Technician</rolePerformed>
        <businessAssociate>RCB</businessAssociate>
      </Role>
    </role>
    <role>
      <Role>
        <rolePerformed>Computed by</rolePerformed>
        <businessAssociate>RCB</businessAssociate>
      </Role>
    </role>
    <role>
      <Role>
        <rolePerformed>Checked by</rolePerformed>
        <businessAssociate>DP</businessAssociate>
      </Role>
    </role>
    <remark>
      <Remark>
        <content>Liquidity Index = 0.66; PI = 13</content>
      </Remark>
    </remark>
    <investigationTarget>Natural
      Ground</investigationTarget>
    <projectRef xlink:href=#DiggsExample"/>
    <relatedSamplingFeatureRef xlink:href="#DP-2A"/>
    <sampleRef xlink:href="#s14"/>
    <resultTime>
      <TimeInterval gml:id="t3">
        <start>2015-12-18</start>
      </TimeInterval>
    </resultTime>
    <outcome>
```

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CURRENT VENDOR ENGAGEMENT

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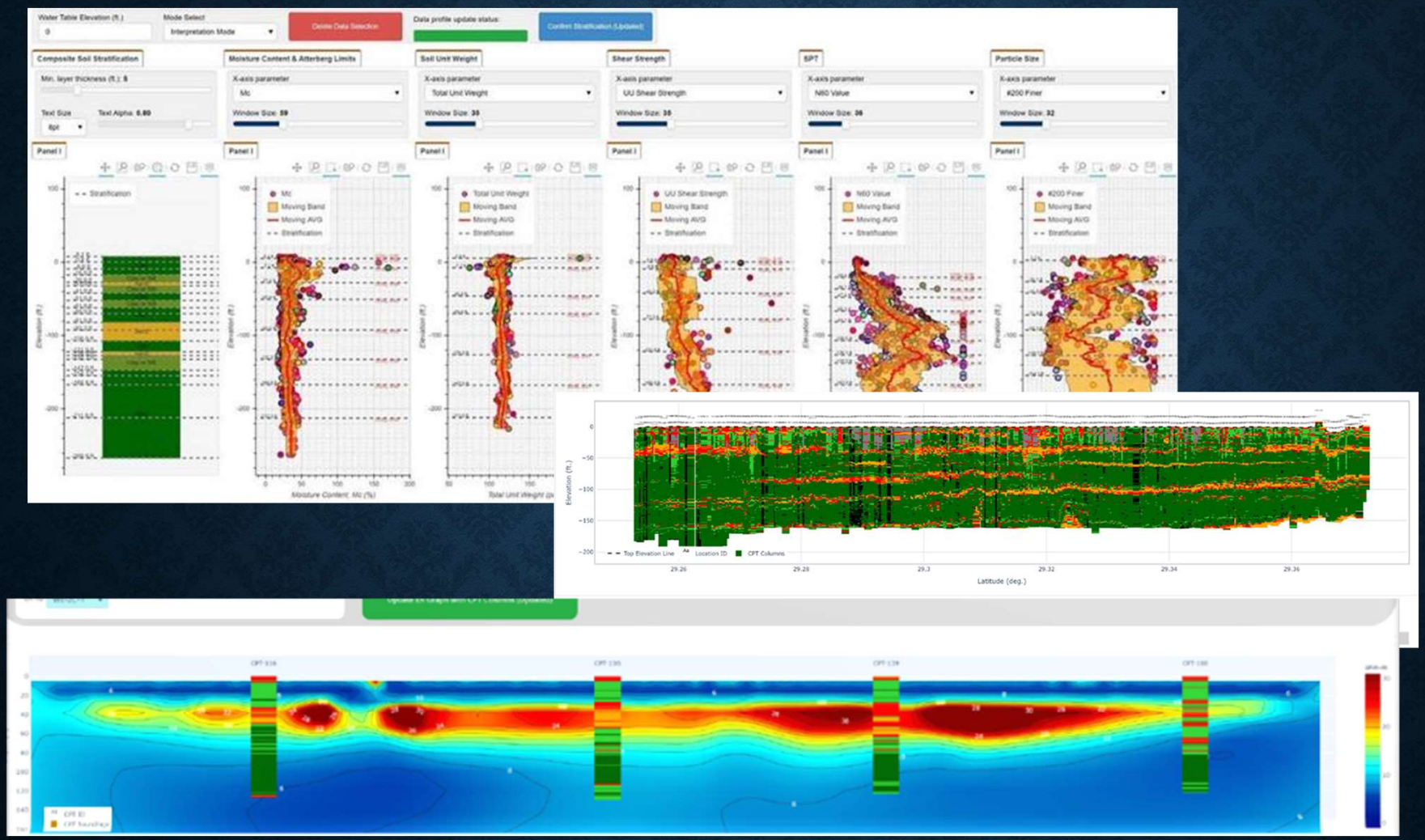
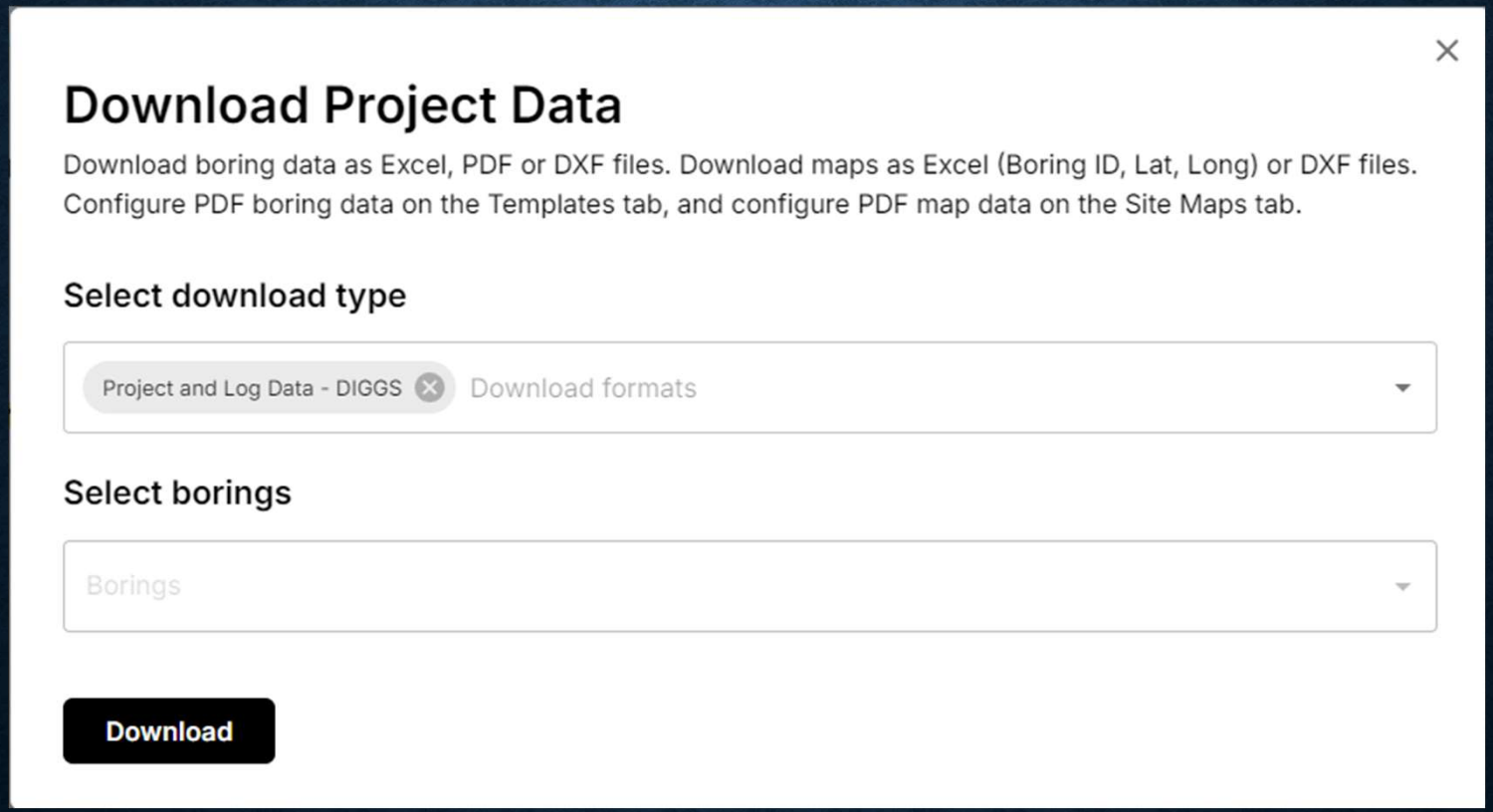
DIGGS is not a Database
DIGGS is not a scheme to collect and share data

- Select groupings of explorations
- Plot moisture, unit weight, shear strength, N-values, fines content, etc. with depth
- Develop tools to provide the statistics of the data
- Present a suggested stratigraphy
- Delete outliers and see the impact

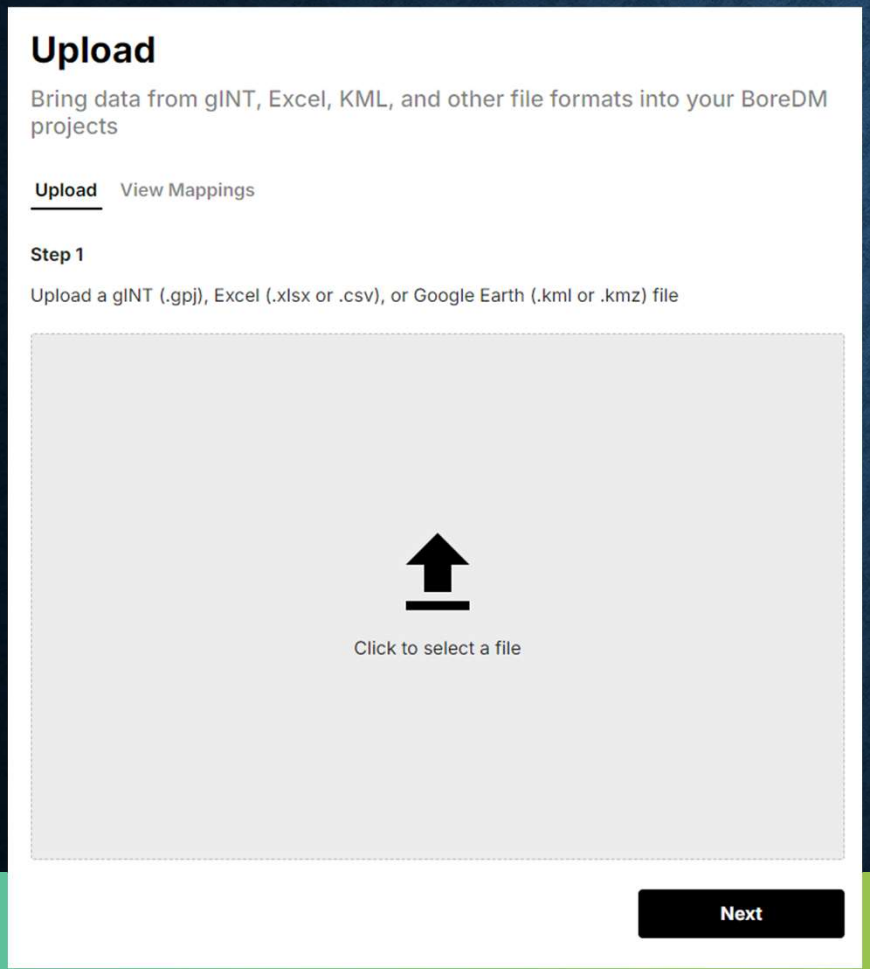


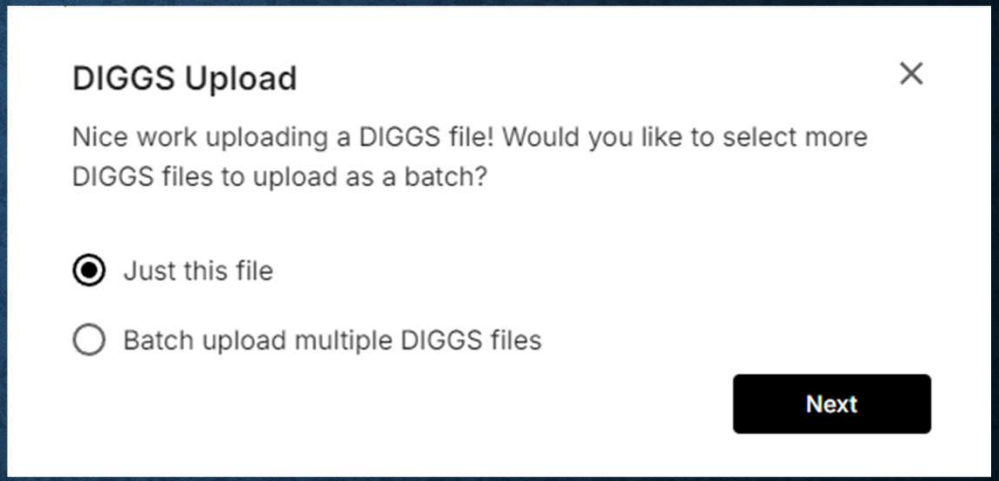
Xin Peng, Ardaman and Jesse Rauser, LADOT

EXPORTING DIGGS DATA

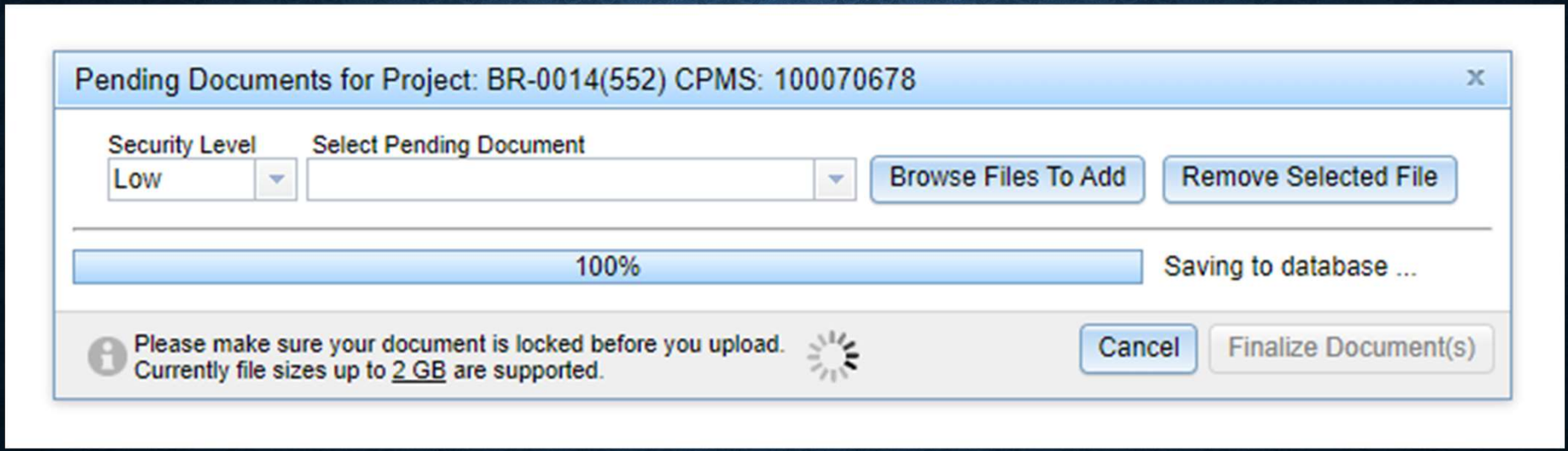


IMPORTING DIGGS DATA





IMPORT DIGGS INTO GEOGIS



I HOPE YOU CAN TELL SOMEONE WHAT DIGGS IS NOW

- Special Thank You to Allen Cadden with Schnabel Engineering

Thank You