LABORATORY DATA MANAGEMENT SYSTEM FOR SOIL, ROCK AND WATER

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Outline

- OGE Initiative (Overview)
- Current ODOT Geot. Lab Test Capability
- Geo-LIMS Features
- Anticipated Benefits from Geo-LIMS
OGE Initiatives on Enhanced Data Generation and Data Sharing Experiences

- Geotechnical Data
- Document Management
- Geotechnical Lab Data (Geo LIMS)
- Field Drilling Data Borehole Log
- ODNR Data
- Geology Data (US Geological Survey)
- Drilling Request Service (DRS), SPM (Sample Planning Module) EDGE (Field Data Collection)
- EQUIS: Central Data Server GIS platform
- Other Applications Structures Pavements

Internet
Geological Hazard Management System (GHMS)

- Landslide
- Rockfall
- Underground Voids
- Shoreline Erosion
- Karst

EQUIS: Central Data Server
GIS platform

Internet

Monitoring Data
Hazard Rating
Inventory
Remediation Cost Benefit/Cost
Project Tracking Decision Making

Tablet PC
Bluetooth Devices
Simplified High-Level View

Geot. Data
Geology Data
Other Data
Planning Data
Socio-Econ Data

EQUIS Database Server

GHMS

Other Applications
- Structures office
- Pavement office
- Consultants
- Public
ODOT Geotechnical Laboratory-Current Operations

Types of Test Samples:

- **Soils**
  - Drilling
    - Undisturbed
    - Disturbed
  - Construction Site - Disturbed

- **Rocks**
  - Coring from Drilling
  - Samples from Geological Hazard Sites

- **Water**
  - Outsourced to ODNR
ODOT Geotechnical Laboratory-Current Capability and Future Additions (Soil Tests)

**Current**
- Visual classification
- Moisture content
- Sieve test ...
- Hydrometer test
- Atterberg limits test
- Specific gravity
- LOI
- Compaction test
- Direct shear test
- Incremental Odometer (consolidation) tests
- Unconfined compression test
- Triaxial test (CU with pore pressure measurement, CD)

**Future**
- Constant strain consolidation test
- Permeability test
ODOT Geotechnical Laboratory-Current Capability and Future Additions  *(Rock Tests)*

**Current**
- Moisture
- Unconfined compression
- Slake durability
- Point load test
- Unit weight
- Ultrasonic velocity
- Permeability

**Future**
- Direct shear test
- Resistance angle test
- Franklin shale test
- Porosity test
- Schmidt Hamer
ODOT Geotechnical Laboratory-Current Capability

*(Water Sample Tests)*

*Outsourced to ODNR*

Current

- PH
- Conductivity
- Alkalinity total
- Sulfate
- Total Dissolved Solids

- Total Suspended Solids
- Hardness-Calcium, Magnesium
- Iron (total)
- Magnesium (total)
- Sodium (total)
- Potassium (total)
- Barium
- Strontium
- Electronic data verification
- Relational database
- GIS Platform

- Geo-LIMS Server
- Geo-LIMS
- Internet
- Document Management

- ODNR Water Sample Test Data
- DIGGS complaint

- DRS
- To be phased out
- Planning Module
- Soil, rock and water

- SPM
- Project
- Borehole
- Sample ID
- Picture

- EDGE
- Internet
- Sample/Specimen ID
- Test Manual (AASHTO & ASTM Standards)
- Status Tracking
- Calculation/Plotting
- Data Validation

Sample ID (Barcode Label)

Auto Read Record

Scale

Touch Screen Computer

Lab Touch-Screen Control Station

EDGES

Sample ID (Barcode Label)
Anticipated Benefits

**Business**
- Enhanced data generation/sharing experience through GIS based database and Internet connections
- Preserve data
- Intelligent database for future data mining and applications
- Fusion of historical, Current, and future data

**Management**
- Efficient tracking
- Effective administrative management - work flow, task assignments
- Easy communications with various constituents (clients and in-house users)
- Eliminate data transcribing and transfer error
- Eliminate duplication
Anticipated Benefits

Test Capabilities

- Test automation for both testing undisturbed and disturbed soil/Rock samples
- Improved lab technician work efficiency
- No hard-written data recording.
- Data plotting
- Enhanced communication between drilling crew and lab technicians
- Electric data validation
- Avoid data fragmentation
- Upgraded test equipment
- Embedded data calculations
THE END