Automated Environmental Data Management

with ArcGIS and SQL Server
EEC Environmental

- Environmental consulting
- Wastewater, storm water
- Regulatory compliance
- Soil and groundwater
  - Assessment
  - Remediation
  - Litigation support
- I.T. consulting
EEC Environmental

- **Offices:**
  - Orange, CA
  - Oakland, CA
  - Annapolis, MD
  - Tampa, FL

- **Booth:** 1610
Environmental Data Management

- Sample Location
  - Field Parameters
    - Results
  - Samples
    - Lab Tests
      - Results
  - QC Info
Prior Art

- ArcHydro Groundwater
- EQuIS
- Hosts of Others...
In the beginning…

1. Faxed Lab Reports ‡ Excel ‡ Tables
2. Field Data ‡ Excel ‡ Tables
3. Tables ‡ CAD ‡ Figures
4. Tables ‡ Modeling ‡ CAD ‡ Figures
5. Tables & Figures ‡ Written Report
6. QC Everything!
7. All data ‡ other formats ‡ regulator
The Problems

- Separate datasets per site
- Inconsistent data formats
- Multiple applications
- Tedious data entry and transfer
  - Copy and paste
  - Manual data entry
- Lots of QC
The Solution

- One central database
- One preferred format
- Integrated with ArcGIS
- Still plenty of QC (but better QC)
The Solution: Database

One SQL Server database for all sites

• Write once, use multiple
• One-stop shop
• Forces consistency
• Separation of concerns
The Solution: Data Format

- Preferred: **LabEDF**
  - Well documented
  - Standardized (but extensible) valid value lists
  - Logical structure
  - Used by **GeoTracker**

- Define mappings for other formats
The Solution: Applications

- Customized Microsoft Access
- SQL Server
- ArcGIS
- AutoCAD
The Solution: Data Entry

- Batch import, batch delete
- All data pulled from database
- Scripts to transfer between applications
Live demos are the best!
Next!

- Upload data to regulator
- Generate lots of figures!

Using Python to Automate Map Series Creation
- Tomorrow 1:30 PM
- Room 26B
Other Uses

- Works with any analytical data
  - Soil
  - Groundwater
  - Air
  - Water quality
  - Wastewater
  - …
Future

- Incremental upgrades
- ArcGIS Server / ArcGIS Online?
- Deploy outside EEC
- Auto-upload to regulator
So What?

- Consolidate!
- Centralize!
- Use the tools you know
- Make it easy to install and update
EEC Environmental

Booth 1610
(714) 667-2300
www.eecenvironmental.com

• Ramon Gallegos
  rgallegos@eecenvironmental.com

• Steve Shaffer
  sshaffer@eecenvironmental.com