



Information & Data Management

Retained values of Monthly Totals - Retained Rainfall result when stormwater or snow melt from the previous month are discharged as drainage. Note that rainfall measurements are for liquid precipitation and do not include most of the snowfall or any irrigation done on the roof.

CEC's custom Information & Data Management solutions serve the diverse needs of a range of industry clients. Interaction with robust real-time facility, site, and compliance data allows clients to make informed decisions related to planning, construction, performance, and environmental management.

Scalable solutions range from custom databases on a per-project basis to enterprise-level data hosting for hundreds of users across dozens of sites. Eliminating manual report generation, automating data exchange, and reducing compliance penalties through email alerts and immediate data validation lead to cost and time savings.

In addition, CEC's breadth and depth of expertise in a range of programming languages, front-end development platforms, and database technologies translates to better flexibility in applying the proper tools and workflows to efficiently suit client needs. CEC can integrate and enhance existing client workflows or build custom tools from the ground up. Service offerings range from the development of initial data collection programs to the deployment of final reporting applications.

DATA COLLECTION AND INTEGRATION

CEC develops custom programs and/or workflows that streamline data collection and facilitate seamless, real-time data transfer to custom-built information warehouses, reducing human error and enabling faster delivery to project stakeholders. Data can be collected in the field or integrated from existing legacy datasets. Examples include:

- User-friendly, intelligent tablet (e.g., iPad, Windows) applications sync field-collected data
- Custom data forms enable live entry into a web-based portal or dashboard
- Electronic Data Deliverable files create seamless direct upload
- Custom scripts translate and map legacy data to match new system parameters

DATABASE DEVELOPMENT AND MAINTENANCE

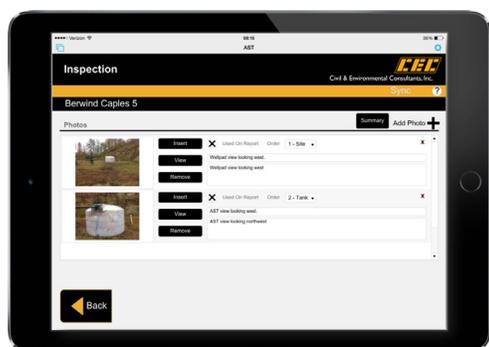
CEC builds secure relational databases within several existing platforms. These intuitive, scalable, and accessible databases provide the foundation for client-facing software applications. In-house hosting and maintenance by CEC technologists provides peace of mind and time savings, allowing clients to focus on their business needs. Examples of data include:

- Laboratory Analytical Data
- Equipment Roster Inventory
- Location-based environmental survey data

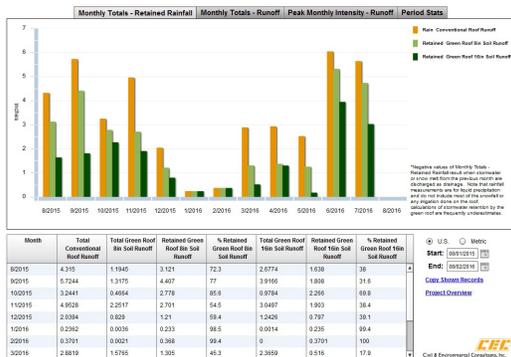
APPLICATION DESIGN AND DEPLOYMENT

CEC's team works closely with each client to develop customized and flexible mobile- and web-based dashboards and portals with rich user-friendly interfaces that cater specifically to organizational and project needs, helping clients avoid the constraints of off-the-shelf products. Accurate, real-time facility, site, and compliance data can be viewed, interacted with, packaged, and delivered in client-specified formats. Examples include:

- Asset Management Systems enable more effective inventory control, infrastructure maintenance, compliance reporting, and facility document management
- Compliance Tracking and Reporting Systems assist with identifying potential compliance issues, managing permit deadlines and regulatory filing schedules, and developing automated reports
- Graphic User Interfaces (GUI) and Geographic Information Systems (GIS) lay the foundation for interactive dashboards for data visualization, real-time web-mapping, and graphic data summaries



CEC's aboveground storage tank (AST) tablet application



Web-based dashboard for real-time data monitoring of green roof system performance



Civil & Environmental Consultants, Inc.

Information & Data Management

TECHNOLOGY RESOURCES

To support CEC's customized approach, the following industry leading technologies are utilized:

Database Management

- MS SQL Server, ESRI Geodatabase/SDE, and FileMaker Pro

Web Service Frameworks

- .NET, PHP, and Java

Application Development

- Javascript, HTML5, and Flex/Flash

Geographic Information Systems (GIS)

- ArcGIS Desktop/Server/Portal/Online