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Tailings basins are often large, complex facilities that are continuously evolving as impoundment dams are raised to allow for additional tailings storage. The complex and dynamic nature of these facilities requires close monitoring and surveillance to promote safe operations and to allow for more-optimized designs through use of the Observational Approach. This often results in large data sets that are difficult to manage, increasing the risk that important information will be missed, misinterpreted, or not received quickly enough.

This paper presents a case history in which a tablet computer application and customized database with GIS interface was developed to compile, synthesize, and interpret large datasets that were previously scattered and cumbersome. For the facility and engineer of record, the primary benefit of the system has been quick access to various datasets, including instrumentation monitoring, dam safety inspection, construction observation, material testing, and site photographs. This has allowed timely decisions to be made based on the simultaneous review of the same data by both parties, including decisions regarding changes in site conditions (seepage, cracking, etc.) and instrumentation threshold exceedances. With these successes, have also come challenges, such as integrating multiple software systems to provide the desired functionality, managing stakeholder expectations, identifying and controlling scope creep, and instrumentation survivability in a harsh climate. Recommendations for similar systems are provided based on these experiences.