



Stream Restoration Design Sachs Branch BWI Airport

Location: Anne Arundel County, Maryland
Client: Maryland Aviation Administration

Description:

In 1997, the Maryland Department of the Environment (MDE) issued a permit to the Maryland Aviation Administration (MAA) for construction of the Midfield Cargo Complex at Baltimore/Washington International Thurgood Marshall (BWI) Airport. Straughan Environmental Services, Inc. (SES) reviewed and updated stream restoration plans for Sachs Branch, an intermittent headwater stream, as partial mitigation for these impacts.

SES reviewed the stream restoration plans associated with Sachs Branch, and performed a geomorphic assessment on Sachs Branch using Rosgen I and II techniques to determine whether the plans would need revisions based on changes in stream geomorphology due to increased development in the watershed.

As part of this analysis, SES studied the land use and topography of the watershed; determined the stream's existing dimensions, pattern, and profile; studied United States Geological Survey (USGS) gauge data and stable stream reaches (reference reaches) in the same physiographic province to verify regional discharge and channel dimension curves; studied existing and future hydrology, sediment transport, and hydraulics; identified the new stream channel geometry using dimensionless ratios from the reference reach data; and developed the new stream channel plan view, cross-sections, and details.

SES prepared the final designs that included:

- Raising the streambed to re-establish connection to the existing floodplain
- Adding sinuosity to the stream channel to increase stream length to dissipate energy
- Applying grade stabilization and bio-engineering techniques to stabilize the bed and banks of the restored channel. These included rock vanes, rock cross vanes, step pools, plunge pools, toe protection, fiber rolls, and live stakes
- Enhancing the riparian buffer by planting native vegetation and removing invasive species

Construction was completed in early 2007 and the first year of mitigation monitoring is underway.