# Stream Restoration Design
# Kitten Branch/Sachs Branch
# BWI Airport

**Location:** Anne Arundel County, Maryland

**Client:** Maryland Department of Transportation, 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, and developed a planting plan for Kitten Branch, a perennial tributary of Stony Run, 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.

Under a separate contract, SES prepared the final design and specifications based on this geomorphic assessment.

Additionally, SES designed a riparian planting plan for approximately 168 linear feet of the Kitten Branch floodplain and a small portion of an emergent wetland adjacent to the instrument landing system at the end of Runway 15R-33L. SES identified vegetation types, densities, vegetative health, and hydrology as well as soil conditions both at the mitigation site and at a nearby biological benchmark site. SES prepared draft planting plans, specifications, and a cost estimate for the riparian planting project, which included detail sheets illustrating planting locations, vegetation types, and planting densities.