

# Hultgren-Tillis Engineers

## Geotechnical Engineering For Water Resources & Wetlands Restoration Projects

**Hultgren - Tillis Engineers (HT)** was founded in 1993 and provides geotechnical engineering services for water resource, flood control, and wetlands habitat restoration projects. HT also provides services for municipal, commercial and heavy industry projects including marine structures. HT is a certified small business specializing in providing geotechnical engineering on technically challenged projects.

HT's water resources work has been primarily for levee districts, municipal improvement districts, conservation agencies, water agencies, and private land owners. More than half of HT's professional effort in the last five years has been on flood protection infrastructure projects. HT personnel have provided engineering design and/or evaluation on 30 dams and hundreds of miles of levees.

### Services offered include:

- Geotechnical Engineering
- Seismicity and Seismic Engineering
- Engineering Geology
- Construction Engineering Support
- Borrow Site Investigations
- Dam Safety
- Levee Embankments
- Floodwalls and Channels
- Dewatering Systems
- Spillways
- Canals, and/or Related Structures
- Marsh Restoration
- Seepage and Stability Berms
- Impermeable Blankets
- Cutoff Walls



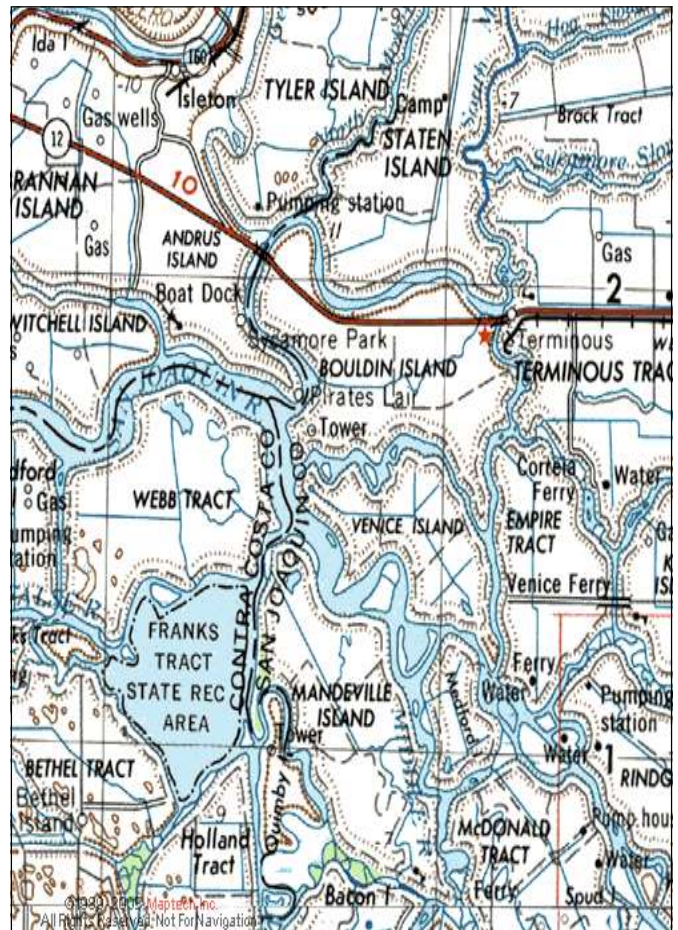
## Specialized Experience and Technical Expertise

### Sacramento – San Joaquin River Delta Levees

Many of the levee systems that HT has worked on were constructed as part of private land reclamation projects in the late 1800's to early 1900's. They are in tidal lands, such that the levees constantly retain water. The levees were built on peat, and settlement due to both consolidation and lateral deformation caused a loss of freeboard. The weak foundation conditions made it difficult to achieve levee freeboards normally associated with a flood control levee. These levees overtopped, causing frequent flooding. Following flooding of several levee systems in the early 1980's, increased subvention funding from the State allowed reclamation districts to raise levee crests and flooding risks have decreased.

HT staff began working on these levees in the late 1980's. Over the past ten years, levee projects have become a major focus of HT's practice. While funding remained limited, HT developed rational plans for making levee improvements.

Due to risk of overtopping, the first goal of most reclamation/levee districts has been to achieve and maintain crest elevations. With weak foundation conditions, stability berms at and beyond the landside toe of the levee are needed to provide acceptable margins of foundation stability. HT has developed stage loading criteria for safely constructing toe berms and subsequent levee crest fills. Considering the limited financial resources available to improve multiple miles of reclamation district levees, HT developed schemes that utilize on-site materials, stage loading, and fill thickness monitoring to successfully strengthen and raise Delta levees, while maintaining stable slopes. HT is recognized as an expert in evaluating the strength and deformation characteristics of organic soil foundations beneath levees.



### ***Hultgren - Tillis has extensive experience within the Sacramento-San Joaquin Delta and the Suisun Marsh with projects on the following sites:***

- Bacon Island
- Bethel Island
- Bouldin Island
- Brack Tract
- Bradford Island
- Byron Tract
- Decker Island
- Empire Tract
- Franks Tract
- Grand Island
- Holland Tract
- Hotchkiss Tract
- Jersey Island
- Jones Tract
- King Island
- McCormack-Williamson Tract
- Medford Island
- Rindge Tract
- Simmons Island
- Staten Island
- Stewart Tract
- Van Sickle Island
- Webb Tract
- Wheeler Island

## Representative Projects

***Threemile Slough Tidal Gate (Sacramento County, CA)*** – This 500-foot-wide, 25-foot-deep tidal gate will be located across a slough, approximately 900 feet from its intersection with the Sacramento River. HT explored the abutments and mid-river gate foundation conditions. They developed preliminary designs that included using stone columns to densify new levee buttress foundations. The “stones” in the stone columns will be uniform-grained, medium to coarse sand so as to also serve as an under-seepage relief feature. As part of the site selection process, HT made a preliminary levee safety assessment using existing data for existing levees along West False River and along Threemile Slough.

***Montezuma Wetlands (Solano County, CA)*** – The Montezuma Wetlands project takes marine clays and silts (Bay Mud) excavated from harbors and channels and puts them to beneficial re-use to create tidal wetlands. A section of diked grazing land at the junction of Montezuma Slough and the Sacramento River is being transformed into a tidal wetlands. New dikes of compacted fill are creating large cells to receive materials excavated from dredging projects within the San Francisco Bay. The dredged sediments are pumped into the cells and allowed to settle and self-consolidate to elevations between the mid-tide and higher high tide levels.

***Mid-Valley Levee Rehabilitation (Yolo County, CA)*** – HT was part of a joint venture charged with developing designs for levee improvements along the Sacramento River and Knights Landing Ridge Cut, in Yolo County, California for the USACE Sacramento District. The work includes surveying and topographic mapping; collecting subsurface data and laboratory test results; developing design recommendations through seepage analyses and slope stability analyses; and preparing construction plans and specifications.

***Periodic Levee Inspection (Omaha, NE)*** – HT was part of a joint venture charged with performing periodic inspection for 210 miles of levees for USACE Omaha District. The task included reviewing design criteria for the levees, developing pre-inspection packets, inspecting the levees by walking and inspecting miles of channels, several floodwalls and drainage structures, documenting encroachments, maintenance practices, and producing reports that included final ratings for the levee segments and systems.



### ***Delta Coves at Bethel Island, CA***

*Hultgren - Tillis Engineers provided geotechnical engineering services for the local levee agency, Bethel Island Municipal Improvement District (BIMID), and for Contra Costa County. The project included constructing 3 miles of perimeter levees and interior peninsulas for building pads within the interior of Bethel Island. The new levees connect to the existing levee where a 300 foot wide section of the existing levee was removed to inundate about 300 acres of land. A deep lagoon extending up to 35 feet below the levee crest was created as part of the project.*

## Principal Engineers



***Edwin M. Hultgren***

**(California Civil and Geotechnical Engineer)** has **40 years of experience** as a consulting geotechnical engineer. He has undertaken a wide range of water retention and seepage study projects in varied geologic settings. Over the last 15 years, he has designed or evaluated numerous levees in the Sacramento - San Joaquin Delta and around the margins of San Francisco Bay.



***R. Kevin Tillis***

**(California Civil and Geotechnical Engineer)** has **over 25 years experience** as a consulting geotechnical engineer. For the past 20 years, his practice has focused on flood control levees and waterfront and marine structures. Mr. Tillis has developed expertise in shear strength of soils, slope stability for embankments and seepage analysis. Over the past 20 years, he has inspected, evaluated and designed rehabilitation for over 200 miles of agricultural levee within or near the San Joaquin-Sacramento River Delta.

***Christian Muller***



**(California Civil and Geotechnical Engineer)** has **over 30 years of geotechnical engineering experience**. He served as project manager and project engineer on soil and foundation investigations and construction inspections for dams and levees and a broad range of other projects located in widely varying geologic environments. Mr. Muller has monitored many types of earthwork construction such as levee construction; deep basement excavations with related dewatering, shoring and underpinning; fill placement and compaction; vibro-floatation; soldier-pile/lagging and tieback systems; soil nails; sheet-piles; driven concrete, steel and timber piles; micro-piles; drilled piers and belled caissons; inclinometers for slope movements; and excavations for keyways, footings, mats, and anchors. He managed several geotechnical projects requiring geologic trenching within fault rupture hazard zones.