**Functional Areas Video Script**

**YouTube Information:**

Title: Virtual Hydraulics Lab Tour – The Hydraulics Research Functional Areas

Description: Viewers are introduced to the six functional areas of hydraulics research within the FHWA Hydraulics Research Program.

**Script:**

Functional Area: Hydrology. The objective of this research is to provide hydraulic engineers with the tools to account for hydrologic issues and changes in flood frequencies and precipitation estimates.

Functional Area: Bridge Scour. Bridge scour is the leading cause of bridge failures in the U.S. As a response, scour design methods are developed to be conservative. More research is needed to better understand bridge scour and to develop improved scour design tools.

Functional Area: Bridge Hydraulics. The research will develop elements to support and improve the next generation hydraulic engineering modeling tools that will offer enhanced visualization tools to assist engineers in their understanding of hydraulic conditions for bridge design.

Functional Area: Culvert Hydraulics. The research investigates issues that must be considered during the hydraulic design of culverts, including inlet versus outlet control and any necessary Aquatic Organism Passage (AOP) criteria and more.

Functional Area: Drainage/Hydroplaning. The lab explores methods for the hydraulic design of storm drainage systems. Currently research studies include catch basins, curb inlets and water film thickness on pavements to mitigate hydroplaning risk.

Functional Area: Coastal Highways. The research develops guidance for the analysis, planning, design and operation of highways in the coastal environment. It is estimated that there are over 60,000 road miles in the United States that can be defined as “coastal highways”.

**508 Caption Description:**

Description: Functional Area: Hydrology. A elevated view shows a computer animation of a river and a road situated within a valley. The water level elevation of the river rises and falls, at times inundating the roadway and flooding the valley.

Functional Area: Bridge Scour. An animated split-screen shows both the interior view from a driver’s perspective and an exterior view from above of a car driving down a road in the rain towards a small bridge. The car slows down because flooding has undermined the abutment, washing out the material and causing a segment of pavement to collapse into the scour hole.

Functional Area: Bridge Hydraulics. An animated split-screen shows both the interior view from a driver’s perspective and an exterior view from above of a car driving down a road in the rain towards a small bridge. As the car crosses the bridge, the water level of the river increases and submerges the road forcing the car to stop.

Functional Area: Culvert Hydraulics. An animated split-screen shows both the interior view from a driver’s perspective and an exterior view from above of a car driving down a road in the rain towards a small bridge. The car stops as the center of the bridge washes out and a large circular culvert becomes partially dislodged and floats to the surface.

Functional Area: Drainage/Hydroplaning. An animated split-screen shows both the interior view from a driver’s perspective and an exterior view from above of a car driving down a road in the rain towards a small bridge. As the car approaches the bridge the driver loses control and the car begins hydroplaning, turning perpendicular to the road and blocking both lanes.

Functional Area: Coastal Highways. An animated split-screen shows both the interior view from a driver’s perspective and an exterior view from above of a cable-stayed bridge crossing an ocean. Large waves pass under the bridge, sometimes topping the deck and spilling onto the roadway.