

# San Bernard River Mouth Opening

## Clean Waters Initiative

*Sediments in Our Waterways*

*June 22, 2011*

Karl Brown

Operations Manager

*U.S. Army Corps of Engineers, Galveston*



US Army Corps of Engineers

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# San Bernard River Mouth Opening

- Brief History
- Need for Opening the Mouth
- Dredging
- Dredged Material Placement
- Post Dredging
- Today



# April 2011 – Brazos River Mouth



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# January 2005-2008 – San Bernard River Mouth



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# November 2005 – San Bernard River Mouth



*Photos Courtesy: Friends of the River, San Bernard Website*



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# Intersection between the San Bernard River And the Gulf Intracoastal Waterway



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*Photos Courtesy: 2011 Google – Imagery DigitalGlobe*

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# Re-opening of the San Bernard River Mouth

**Objective:** Open the closed river mouth to reduce unanticipated currents at the Brazos River Floodgates on the Gulf Intracoastal Waterway

**Strategy:** Work with nature – open the river mouth relatively deep and narrow for stability, then let it migrate over next few decades

## **In a nutshell (year 2009):**

- Contract awarded January 13<sup>th</sup>.
- Dredging started January 26<sup>th</sup>.
- Shoreline reached and flow enters Gulf at 2:12 p.m. February 22<sup>nd</sup>
- Dredge Entered Gulf of Mexico March 1<sup>st</sup>.
- Mike Hooks, Inc., *Dredge 32*.
- 27-inch cutterhead suction dredge.
- Total volume removed 340,000 cy.
- Dredged material pumped into a confined placement area and to the surf zone
- No piping plover or sea turtles observed.
- Contract cost \$2.4 million
- Total effort cost \$2.9 million



GIWW: MOUTH OF  
THE SAN BERNARD RIVER  
BRAZORIA COUNTY, TEXAS



# February 2009 – San Bernard River Mouth



2009-03 FLOWN 2-20-09

# March 2009 – San Bernard River Mouth



Photo: 3 Mar 2009



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# March 2009 – San Bernard River Mouth



Photo: 16 Mar 2009

*Photos Courtesy: Friends of the River, San Bernard Website*



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# Four Current Meter Stations (each meter beams across the channel)

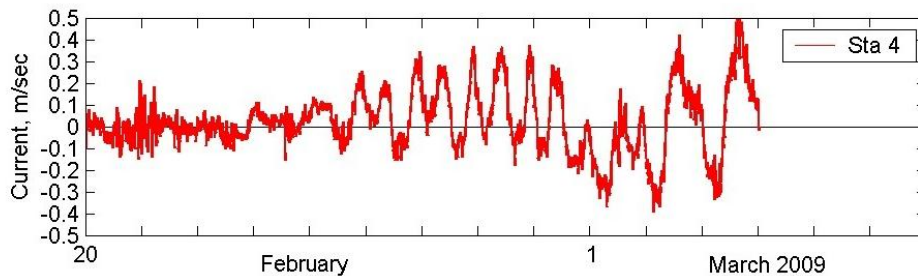
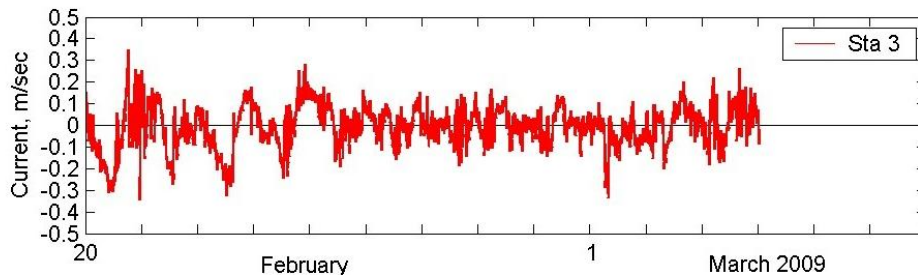
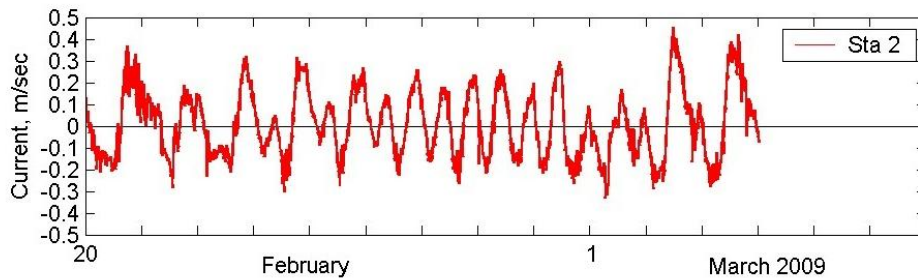
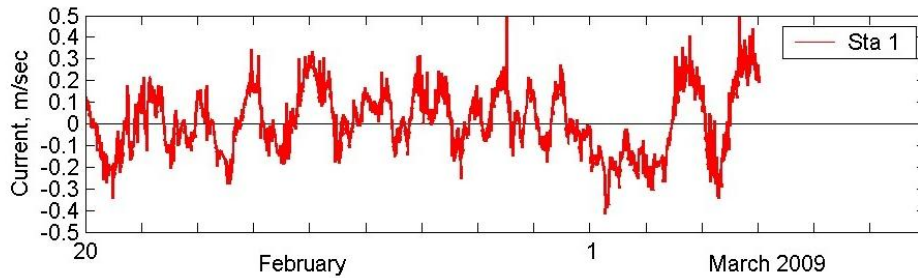




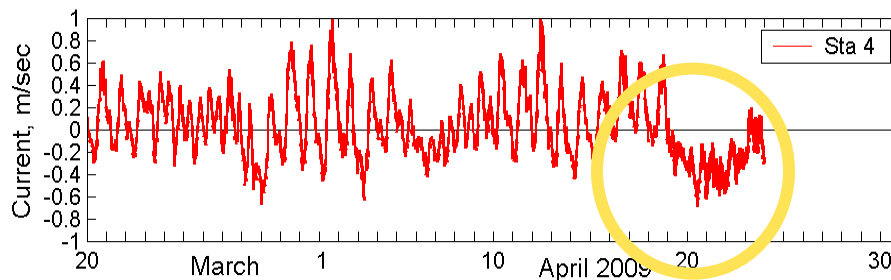
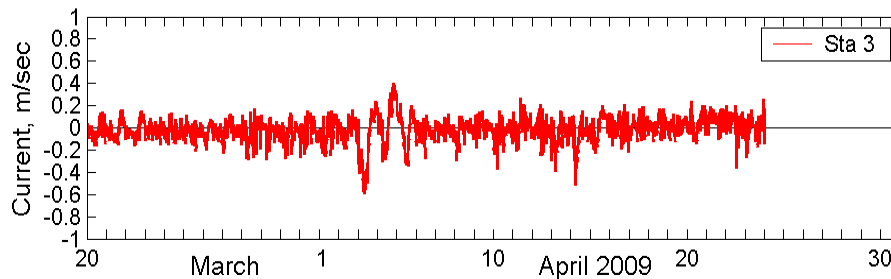
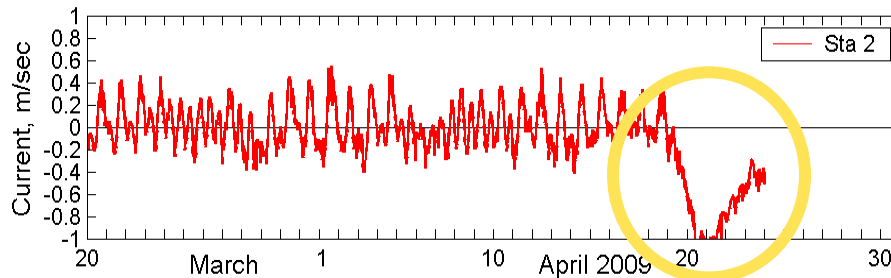
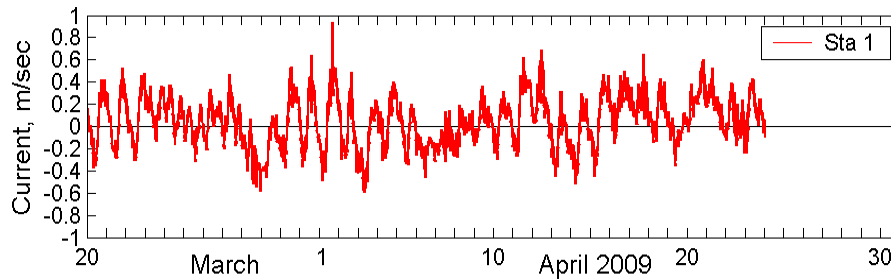
# Currents at the four gages

## COMMENTS

- Data available from 21 Nov 08
- Current at Sta 4 (River South) starts to increase 23 Feb 09
- Large increase in current and tidal flow from ~ 2 Mar
- From 2 Mar, increased flow in river (N & S, and in GIWW W, but not to east (where the Brazos River gates are)
- Flooding (entering) current is positive, ebbing current to the Gulf is negative



# Currents at the four gages

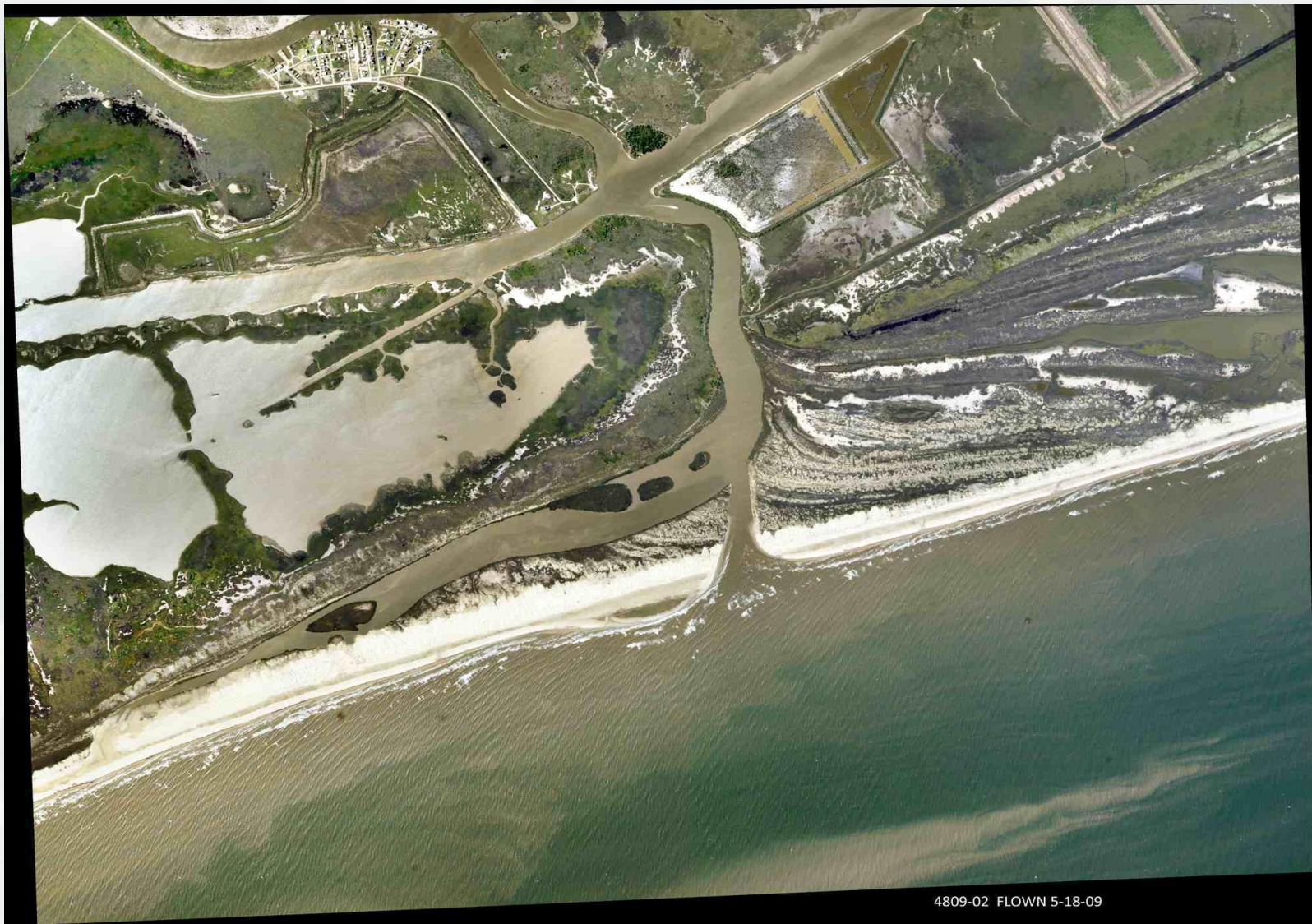


## COMMENTS

- Recent flood on San Bernard overwhelmed the tide for about a week (Sta 2 & 4), causing a strong ebb (negative) flow out the river mouth. This strong discharge will help stabilize the river mouth.
- Even the strong flood extreme event did not send water toward the Brazos gates, so opening the mouth has been a success. (Sta 3 almost flat.)



# May 2009 – San Bernard River Mouth



4809-02 FLOWN 5-18-09



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# March 2010 – San Bernard River Mouth



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# July 2010 – San Bernard River Mouth



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# November 2010 – San Bernard River Mouth



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# March 2011 – San Bernard River Mouth



[www.sanbernardriver.com](http://www.sanbernardriver.com)

*Photos Courtesy: Friends of the River, San Bernard Website*



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Karl Brown

Operations Manager

*U.S. Army Corps of Engineers, Galveston*

409-766-3069

*karl.b.brown@usace.army.mil*

US Army Corps of Engineers

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