2017 Coastal Master Plan

Attachment C3-26.2: Flow Data

Report: Final
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Coastal Protection and Restoration Authority

This document was prepared in support of the 2017 Coastal Master Plan being prepared by the Coastal Protection and Restoration Authority (CPRA). CPRA was established by the Louisiana Legislature in response to Hurricanes Katrina and Rita through Act 8 of the First Extraordinary Session of 2005. Act 8 of the First Extraordinary Session of 2005 expanded the membership, duties and responsibilities of CPRA and charged the new authority to develop and implement a comprehensive coastal protection plan, consisting of a master plan (revised every five years) and annual plans. CPRA’s mandate is to develop, implement and enforce a comprehensive coastal protection and restoration master plan.

Suggested Citation:

Total of 2 gaps (99% Complete) with maximum gap length of 2
No data filled using rating curve
No fitted timeseries
Total of 6 gaps (99% Complete) with maximum gap length of 4
Discharge Ratio between
and Q at 030450 ATCHAFALAYA RIVER at SIMMSPORT
and Q at 011000 MISSISSIPPI RIVER at TARBERT LANDING

\[ Q_{\text{stream}} = 0.4311Q + -0.0315 \]

Fit Statistics
- \( N = 3066 \)
- Corr.Coeff = 1.00
- RMSE = 4%
- NS = 1.00
- Bias = 0%
Total of 112 gaps (96% Complete), with maximum gap length of 27 days.
Flow-Depth Ratio for
Q at USGS 02470629 MOBILE RIVER AT RIVER MILE 31.0 AT BUCKS

\[ Q_{\text{stream}} = -104.8 H^2 + 1039 H + 22.83 \]

Fit Statistics
- \( N = 2221 \)
- Corr.Coeff = 0.92
- RMSE = 30%
- NS = 0.85
- Bias = 0%
Total of 111 gaps (96% Complete) with maximum gap length of 27
Discharge Ratio between
and Q at USGS 02471019 TENSAW RIVER NR MOUNT VERNON, ALA
and Q at USGS 02470629 MOBILE RIVER AT RIVER MILE 31.0 AT BUCKS, AL

\[ Q_{\text{stream}} = 0.000184 Q^2 + 0.6388 H + 32.7 \]

Fit Statistics
- \( N = 2918 \)
- Corr.Coeff = 1.00
- RMSE = 3%
- NS = 1.00
- Bias = -0%
USGS 02479000 PASCAGOULA RIVER AT MERRILL, MS

Total of 7 gaps (99% Complete) with maximum gap length of 5 measured data
data gap
Discharge Ratio between
and Q at USGS 02479000 PASCAGOULA RIVER AT MERRILL, MS
and Q at USGS 02489500 Pearl River near Bogalusa, LA

Q_{stream} = 0.8302 Q + 23.15

Fit Statistics
RMSE = 84%
NS = 0.67
Bias = 0%
No data filled using linear interpolation
Q at USGS 02479000 PASCAGOULA RIVER AT MERRILL, MS – Filled

Original Q at USGS 02479000 PASCAGOULA RIVER AT MERRILL, MS

Fitted to Q at USGS 02489500 Pearl River near Bogalusa, LA
USGS 02481000 BILOXI RIVER AT WORTHAM, MS

Date
Discharge (m³/s)

No data gaps

measured data

USGS 02481510 WOLF RIVER NR LANDON, MS

No data gaps

Discharge (m³/s)

Date


measured data
USGS 07375000 Tchefuncte River near Folsom, LA

No data gaps measured data
No data filled using rating curve

Q at USGS 07376000 Tickfaw River at Holden, LA

measured data
filled data - linear
No fitted timeseries
No data filled using rating curve
Total of 247 gaps (91% Complete) with maximum gap length of 45 days.

Measured data

Data gap
Flow-Depth Ratio for
Q at USGS 07381000 Bayou Lafourche at Thibodaux

\[ Q_{\text{stream}} = 3.62H^2 - 2.359H + 2.392 \]

Fit Statistics
- Corr. Coeff = 0.46
- RMSE = 33%
- NS = 0.23
- Bias = 0%

N = 2796
Discharge Ratio between
and Q at USGS 07381235 GIWW West of Bayou Lafourche at Larose, LA
and Q at USGS 07381331 GIWW at Houma, LA

\[ Q_{\text{stream}} = 0.0009914 Q^2 + 0.4895 H + 9.37 \]

**Fit Statistics**
- \( N = 2311 \)
- Corr. Coeff = 0.63
- RMSE = 78%
- NS = 0.41
- Bias = −0%
Total of 427 gaps (85% Complete) with maximum gap length of 120
Discharge Ratio between
and Q at USGS 07381670 GIWW at Bayou Sale Ridge near Franklin, LA
and Q at USGS 07381590 Wax Lake Outlet at Calumet, LA

Q_{stream} = 0.08815 Q - 13.34

Fit Statistics
N = 2584
Corr.Coeff = 0.97
RMSE = 15%
NS = 0.93
Bias = 0%
Q at USGS 07381670 GIWW at Bayou Sale Ridge near Franklin, LA

- measured data
- filled data using fit

Q [m³/s] measured data filled data - linear
Discharge Ratio between
and Q at USGS 07385790 Charenton Drainage Canal at Baldwin, LA
and Q at USGS 07385765 Bayou Teche at Adeline Bridge near Jeanerette, LA

\[ Q_{\text{stream}} = -0.1165 Q^2 + 13.57 H - 75.82 \]

N = 2049
Corr.Coeff = 0.68
Fit Statistics:
RMSE = 111%
NS = 0.49
Bias = 3%
Total of 278 gaps (90% Complete) with maximum gap length of 72 measured data gaps.
Discharge Ratio between
and Q at USGS 07386880 Vermilion River at Perry, LA
and Q at USGS 07386880 Vermilion River at Surrey St. at Lafayette, LA

Q_{stream} = 0.9284 Q + 10.26

N = 2664
Corr.Coeff = 0.49
Fit Statistics
RMSE = 73%
NS = 0.24
Bias = −0%
Total of 270 gaps (91% Complete) with maximum gap length of 74 data gap
Flow-Depth Ratio for $Q$ at USGS 08012150 Mermentau River At Mermentau, LA

$Q_{stream} = 71.16 \cdot H^2 + 179.2 \cdot H - 110$

Fit Statistics
- $N = 2773$
- Corr. Coeff = 0.83
- RMSE = 107%
- NS = 0.71
- Bias = -0%

$Q$ at USGS 08012150 Mermentau River At Mermentau, LA [m]$^3$/s

$H$ at USGS 08012150 Mermentau River At Mermentau, LA [in]
Total of 3043 gaps (0% Complete) with maximum gap length of 3043.

No data for 2006 - 2014
Discharge Ratio between
and Q at USGS 08012470 Bayou Lacassine near Lake Arthur, LA
and Q at USGS 08012150 Mermentau River At Mermentau, LA

\[
Q_{\text{stream}} = -7.014 \times 10^{-5} Q^2 + 0.2057 H + 2.266
\]

N = 2282
Corr.Coeff = 0.69
Fit Statistics
RMSE = 121%
NS = 0.48
Bias = 0%
Q at USGS 08012470 Bayou Lacassine near Lake Arthur, LA

- measured data
- filled data using fit

*time-series created from relationship*

Q at USGS 08012470 Bayou Lacassine near Lake Arthur, LA

- measured data
- filled data – linear

*gaps in above time-series filled using linear interpolation*
No original data for USGS 08012470 from 2006 - 2014
Discharge Ratio between
Q at USGS 08041000 Neches Rv at Evadale, TX
and Q at USGS 08041780 Neches Rv Saltwater Barrier at Beaumont, TX

$Q_{\text{stream}} = 1.533 Q - 13.83$

Fit Statistics
- $N = 2753$
- Corr. Coeff = 0.90
- RMSE = 50%
- NS = 0.81
- Bias = 0%