Hudson River
Kingston to Waterford, NY
Survey Reach Key Map

Map A: Reach 1N - 2

Map B: Reach 3 - 22

Map C: Reach 22 - 37

Map D: Reach 37 - 51

Map E: Reach 51 - 63

NOT TO BE USED FOR NAVIGATION

Disclaimer – While the United States Army Corps of Engineers (hereinafter referred to as USACE) has made every reasonable effort to ensure the accuracy of the maps and associated data, it should be explicitly noted that USACE makes no warranty, representation, or guarantee, either expressed or implied, as to the content, sequence, accuracy, timeliness, or completeness of any of the data provided herein. The USACE, its officers, agents, employees, or servants shall assume no liability of any nature for any errors, omissions, or inaccuracies in the information provided regardless of the cause. The USACE, its officers, agents, employees, or servants shall assume no liability for any decisions made or actions taken or not taken by the user of the maps and associated data in reliance upon any information or data furnished here. By using these maps and associated data the user does so entirely at their own risk and explicitly acknowledges that he/she is aware of and agrees to be bound by this disclaimer and agrees not to present any claim or demand of any nature against the USACE, its officers, agents, employees, or servants in any forum whatsoever for any damages of any nature whatsoever that may result from or be caused in any way by the use of the maps and associated data.

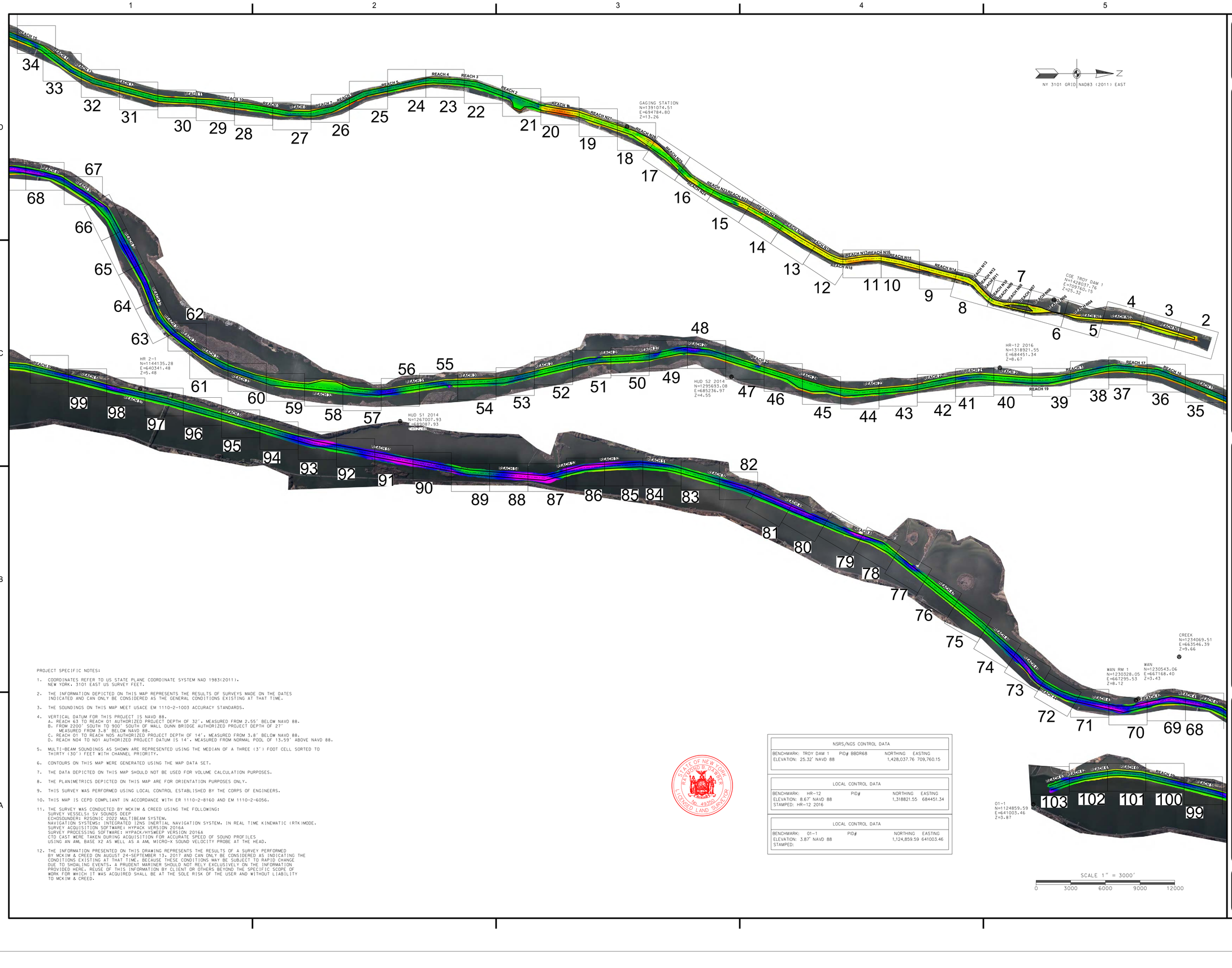
Sources: ESRI, USACE, NYSDEC, NYSDOT, NYSITS GPO, NYSITS GIS,

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Coordinate system used is NAD 1927 State Plane New York East. Basemap courtesy of ESRI.

- Map Matchline
- Federal Navigation Channel Line
- Tributaries & Streams
- Dikes
- Boat Launch
- Light House
- Hydrographic Features
- DEC Lands
- Cities and Towns
- Counties

0 0.375 0.75 1.5 2.25 3 Miles



PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011). NEW YORK, 3101 EAST US SURVEY FEET.
2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.
3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.
4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32', MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14', MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14', MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.
5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.
6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.
7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.
8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.
9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.
10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.
11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED I2NS INERTIAL NAVIGATION SYSTEM. IN REAL TIME KINEMATIC (RTK)MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.
12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS, A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.

STATE OF NEW YORK
RAYMOND B. DANNER
LICENSED LAND SURVEYOR
No. 49350

NSRS/NGS CONTROL DATA

BENCHMARK:	TROY DAM 1	PID#	BBDR68	NORTHING	EASTING
ELEVATION:	25.32' NAVD 88			1,428,037.76	709,760.15

LOCAL CONTROL DATA

BENCHMARK:	HR-12	PID#	NORTHING	EASTING
ELEVATION:	8.67' NAVD 88		1,318821.55	684451.34
STAMPED:	HR-12 2016			

LOCAL CONTROL DATA

BENCHMARK:	01-1	PID#	NORTHING	EASTING
ELEVATION:	3.87' NAVD 88		1,124,859.59	641003.46
STAMPED:				

US Army Corps of Engineers
New York District

MARK	DESCRIPTION	DATE	APPR.

DATE: AUGUST-SEPTEMBER 2017
SOLICITATION NO.:
CONTRACT NO.: W912DS-14-D-0004
FILE NUMBER:
ISSUE DATE: DEC 2017
FILE NAME: VH101-0S889043_HUDSON_MB.DGN

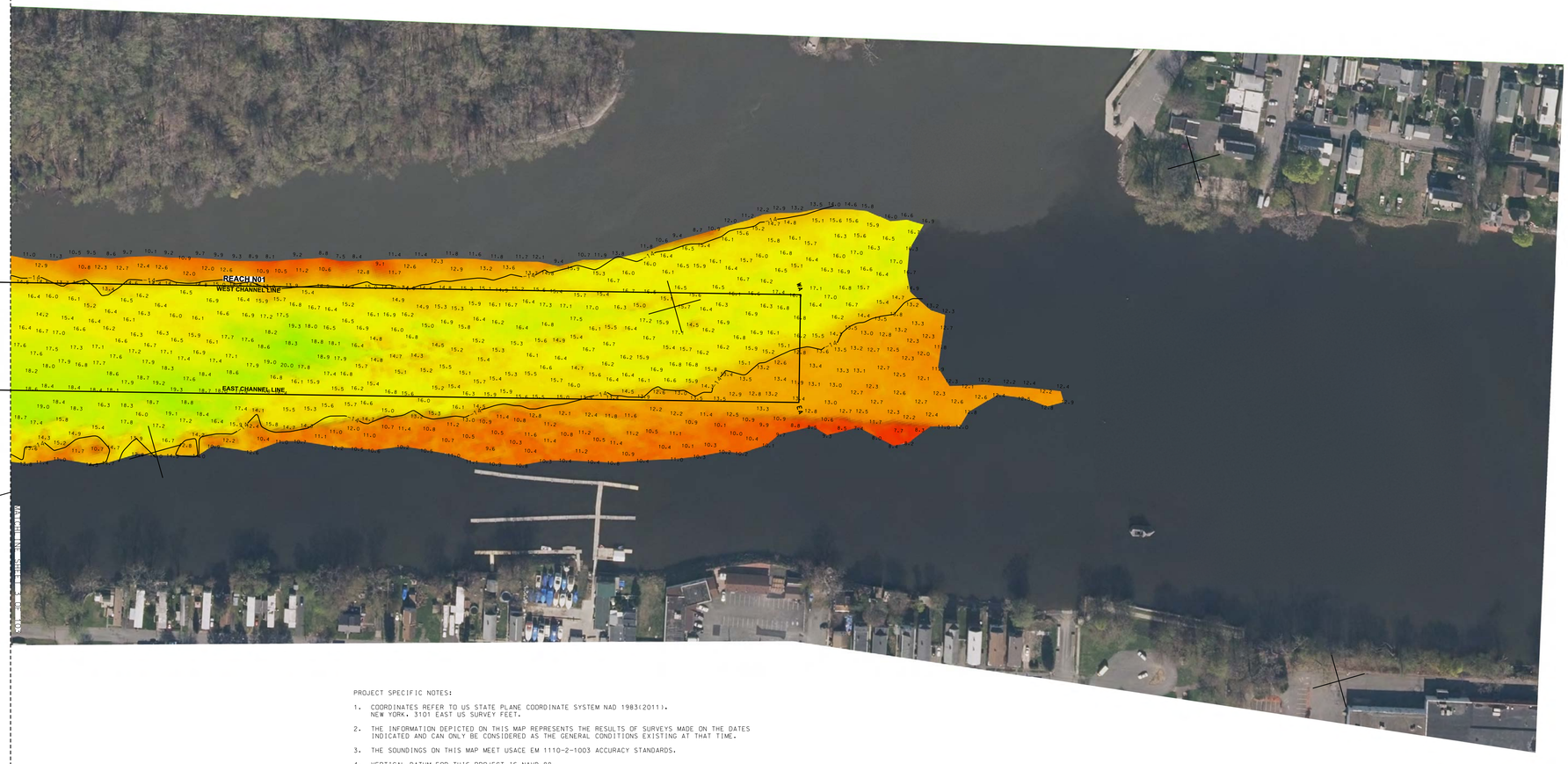
DESIGNED BY: DBG
DWN BY: MBH
CKD BY: RBD
SUBMITTED BY: DLJ
PLOT SCALE: 1" = 3000'
SIZE: ANSI F

U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

McKIM&CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TELEPHONE (910) 251-8448
FAX (910) 251-8282

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL BETWEEN KINGSTON TO WATERFORD, NY
REACH 63 TO REACH N01
KINGSTON, NY TO ABOVE THE FEDERAL DAM IN TROY

SHEET IDENTIFICATION
VH-101
SHEET 1 OF 103



PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011). NEW YORK, 3101 EAST US SURVEY FEET.
2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.
3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.
4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32'. MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14'. MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14'. MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.
5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.
6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.
7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.
8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.
9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.
10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.
11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED I2NS INERTIAL NAVIGATION SYSTEM. IN REAL TIME KINEMATIC (RTK)MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES.
    USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.
12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS. A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.

STATE OF NEW YORK
RAYMOND B. DARBY
049358
LICENSED LAND SURVEYOR

NSRS/NGS CONTROL DATA			
BENCHMARK: TROY DAM 1	PID# BBDR68	NORTHING	EASTING
ELEVATION: 25.32' NAVD 88		1,428,037.76	709,760.15

LOCAL CONTROL DATA			
BENCHMARK: HR-12	PID#	NORTHING	EASTING
ELEVATION: 8.67' NAVD 88		1,318821.55	684451.34
STAMPED: HR-12 2016			

LOCAL CONTROL DATA			
BENCHMARK: 01-1	PID#	NORTHING	EASTING
ELEVATION: 3.87' NAVD 88		1,124,859.59	641003.46
STAMPED:			

SCALE 1" = 100'
0 100 200 300 400

US Army Corps of Engineers ®
New York District

MARK	DESCRIPTION	DATE	APPR.

MARK	DESCRIPTION	DATE	APPR.

U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

MCKIM & CREED
241 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL: (910) 251-8444
FAX: (910) 251-8282

DESIGNED BY:	
DWN BY: MBH	CKD BY: RBD
SUBMITTED BY: DLJ	
PLOT SCALE: 1=1	ISSUE DATE: 10/27/2017
SIZE: ANSI F	FILE NAME: VH101-056899043_HUDSON_MB.DGN
DATE: AUGUST-SEPTEMBER 2017	
SOLICITATION NO.:	
CONTRACT NO.: W912DS-14-D-0004	
FILE NUMBER:	

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL
REACH N01

SHEET IDENTIFICATION
VH-102
SHEET 2 OF 103

1 2 3 4 5

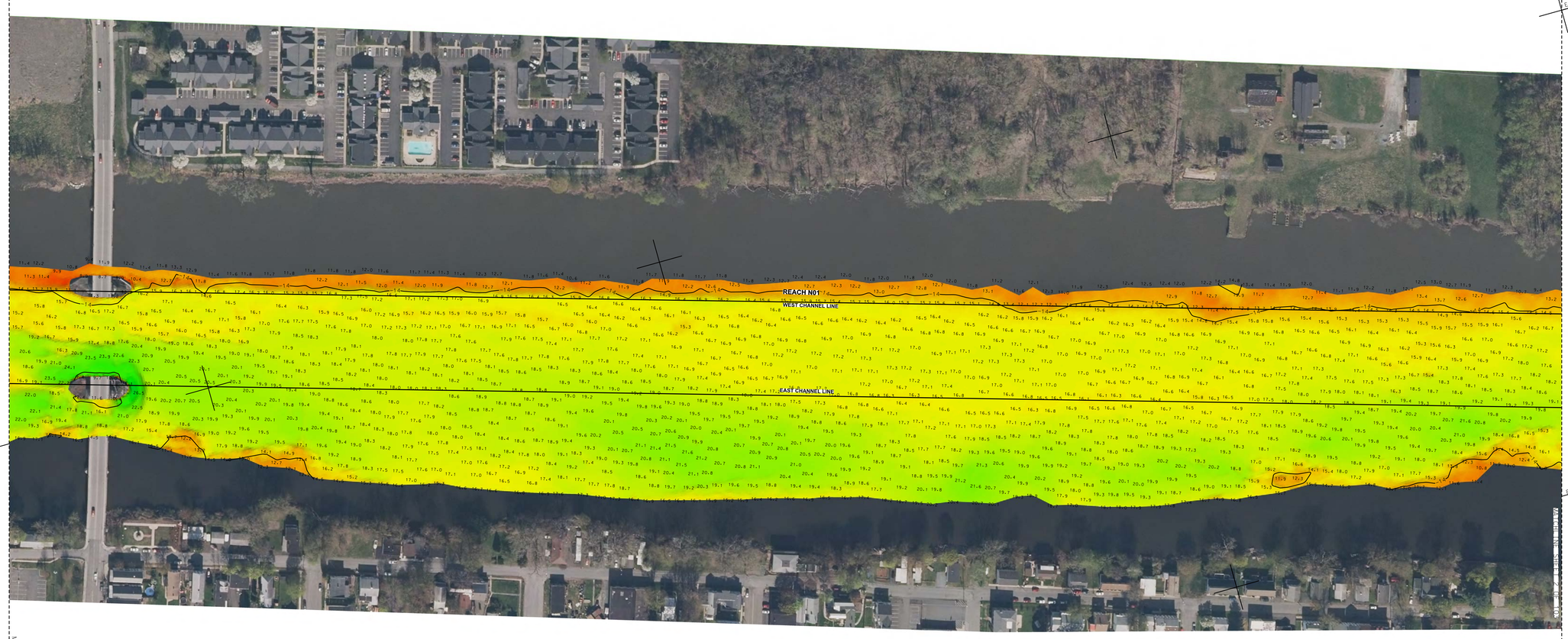
D

C

B

A

N:1,436000 E:711000 N:1,437000 E:712000 N:1,438000 E:713000 N:1,439000 E:714000



NY 3101 GR10 NAD83 (2011) EAST

PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011). NEW YORK. 3101 EAST US SURVEY FEET.
2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.
3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.
4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32'. MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14'. MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14'. MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.
5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.
6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.
7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.
8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.
9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.
10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.
11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: 5V SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED I2NS INERTIAL NAVIGATION SYSTEM. IN REAL TIME KINEMATIC (RTK)MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES
    USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.
12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS, A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.

RICHARD B. BAKER — STATE OF NEW YORK — 49350 — LICENSED LAND SURVEYOR

SCALE 1" = 100'
0 100 200 300 400

NSRS/NGS CONTROL DATA			
BENCHMARK: TROY DAM 1	PID# BBDR68	NORTHING	EASTING
ELEVATION: 25.32' NAVD 88		1,428,037.76	709,760.15

LOCAL CONTROL DATA			
BENCHMARK: HR-12	PID#	NORTHING	EASTING
ELEVATION: 8.67' NAVD 88		1,318821.55	684451.34
STAMPED: HR-12 2016			

LOCAL CONTROL DATA			
BENCHMARK: 01-1	PID#	NORTHING	EASTING
ELEVATION: 3.87' NAVD 88		1,124,859.59	641003.46
STAMPED:			

US Army Corps of Engineers ®
New York District

MARK	DESCRIPTION	DATE	APPR.	MARK	DESCRIPTION	DATE	APPR.

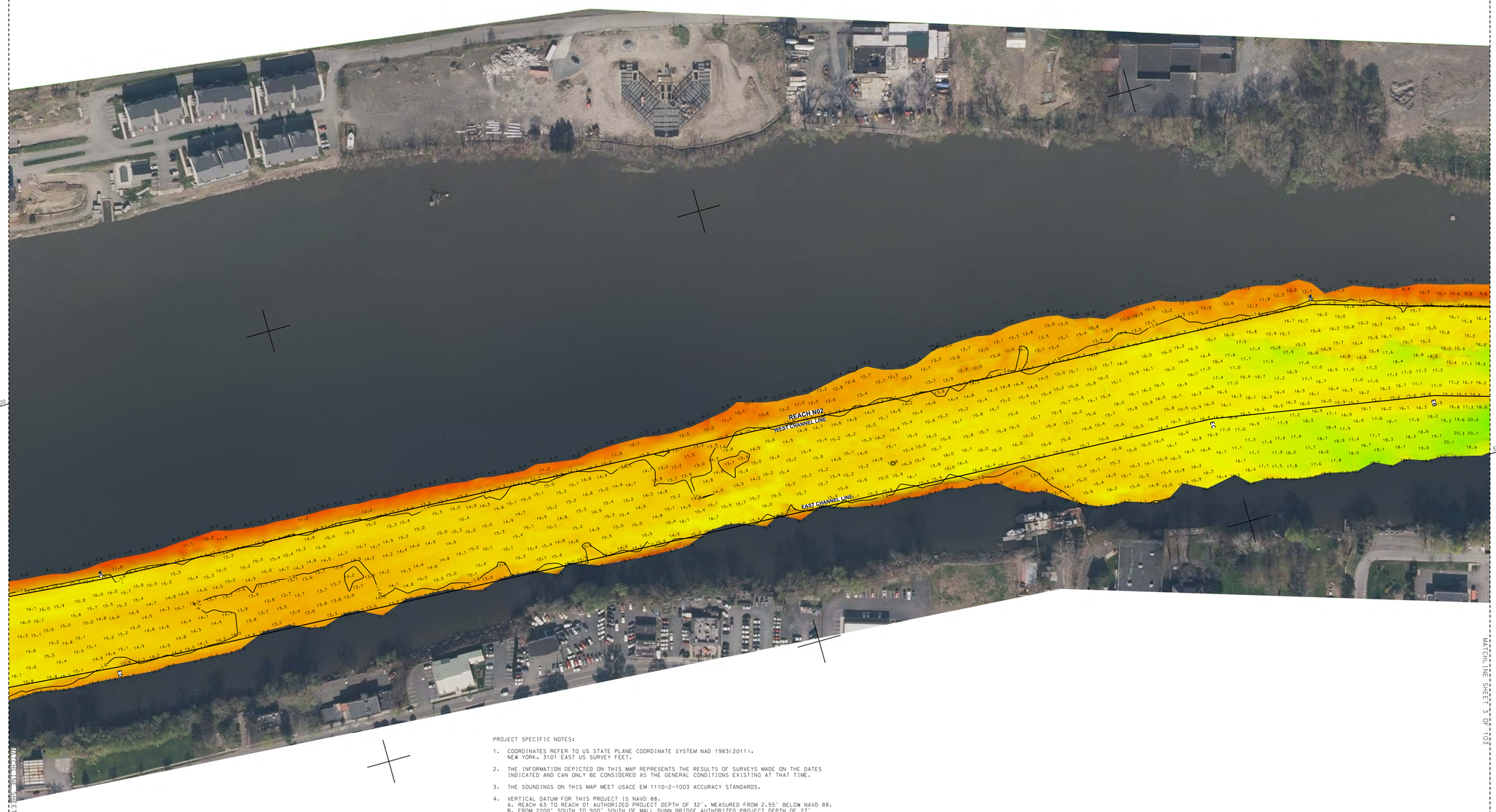
DESIGNED BY: DGB
DWN BY: MBH
CKD BY: RBD
SUBMITTED BY: DLJ
PLOT SCALE: 1=1
PLOT DATE:
SIZE: ANSI F
DATE: AUGUST-SEPTEMBER 2017
SOLICITATION NO.:
CONTRACT NO.: W912DS-14-D-0004
FILE NUMBER:
ISSUE DATE:
FILE NAME: VH101-056899043_HUDSON_MB.DGN

U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

McKIM & CREED
241 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TELEPHONE: (910) 251-0468
FAX: (910) 251-4282

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL
REACH N01

SHEET IDENTIFICATION
VH-103
SHEET 3 OF 103



PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011). NEW YORK. 3101 EAST US SURVEY FEET.
2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.
3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.
4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32', MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14', MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14', MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.
5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.
6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.
7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.
8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.
9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.
10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.
11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED I2NS INERTIAL NAVIGATION SYSTEM. IN REAL TIME KINEMATIC (RTK) MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.
12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME, BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS. A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.

NSRS/NGS CONTROL DATA		
BENCHMARK: TROY DAM 1	PID# BBDR68	NORTHING EASTING
ELEVATION: 25.32' NAVD 88		1,428,037.76 709,760.15

LOCAL CONTROL DATA		
BENCHMARK: HR-12	PID#	NORTHING EASTING
ELEVATION: 8.67' NAVD 88		1,318821.55 684451.34
STAMPED: HR-12 2016		

LOCAL CONTROL DATA		
BENCHMARK: 01-1	PID#	NORTHING EASTING
ELEVATION: 3.87' NAVD 88		1,124,859.59 641003.46
STAMPED:		

STATE OF NEW YORK
RAYMOND B. DAWES
LICENSED LAND SURVEYOR
No. 49239

SCALE 1" = 100'
0 100 200 300 400

US Army Corps of Engineers
New York District

MARK	DESCRIPTION	DATE	APPR.	MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY: DSA
DWN BY: MBH
CKD BY: RBD
SUBMITTED BY: DLJ
PLOT SCALE: 1" = 100'
PLOT DATE: 26-OCT-2017
SIZE: ANSI F
DATE: AUGUST-SEPTEMBER 2017
SOLICITATION NO.:
CONTRACT NO.: W912DS-14-D-0004
FILE NUMBER:
FILE NAME: VH101-056890043_HUDSON_MB.DGN

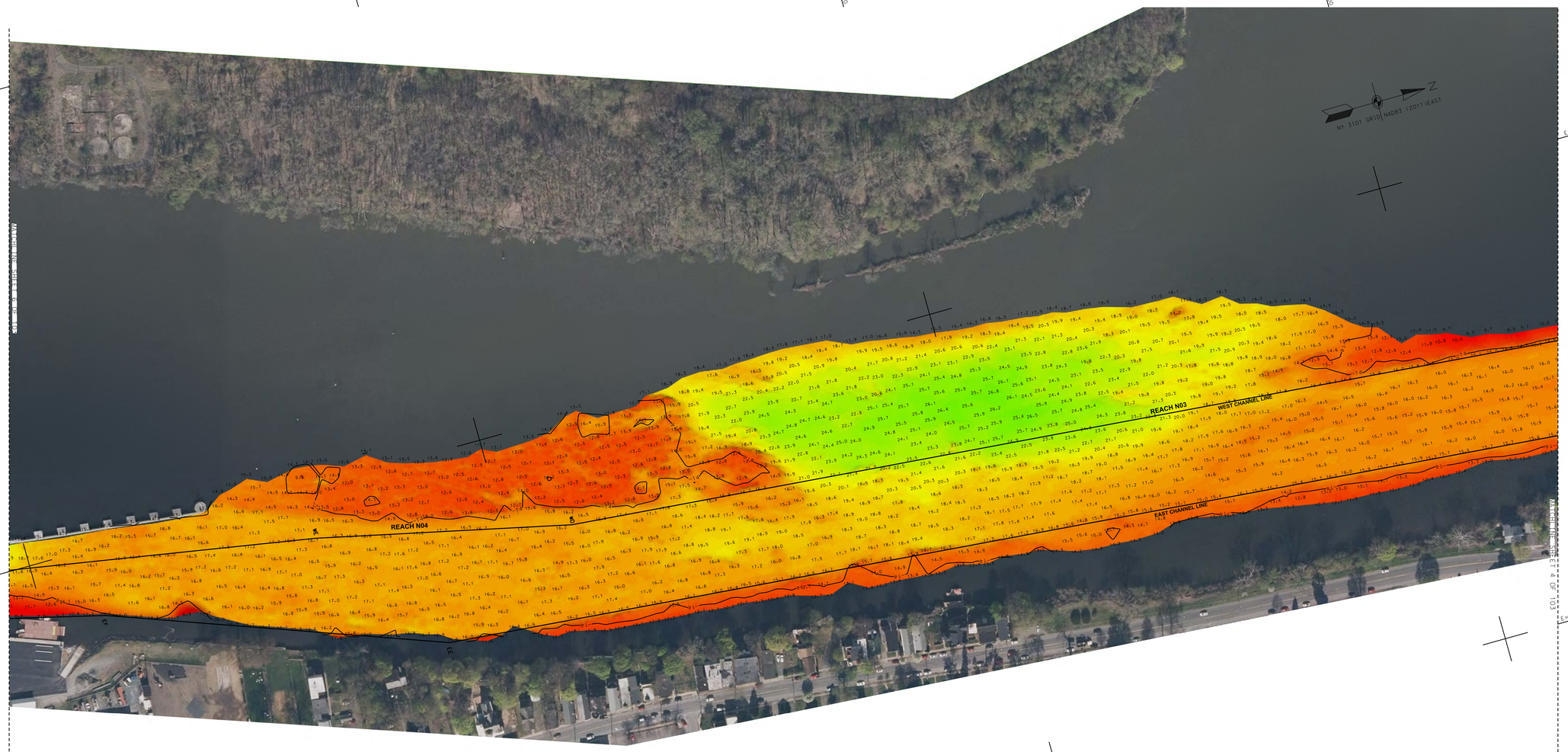
U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

MCKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TELEPHONE: (910) 251-8444
FAX: (910) 251-8282

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL
REACH N02
FATHOMETER SOUNDINGS IN FEET

SHEET IDENTIFICATION
VH-104
SHEET 4 OF 103

MATCHLINE SHEET 5 OF 103
MATCHLINE SHEET 3 OF 103



PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011). NEW YORK. 3101 EAST US SURVEY FEET.

2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.

3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.

4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32'. MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14'. MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14'. MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.

5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.

6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.

7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.

8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.

9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.

10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.

11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED I2NS INERTIAL NAVIGATION SYSTEM. IN REAL TIME KINEMATIC (RTK)MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.

12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS, A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.

NSRS/NGS CONTROL DATA			
BENCHMARK: TROY DAM 1	PID# BBDR68	NORTHING	EASTING
ELEVATION: 25.32' NAVD 88		1,428,037.76	709,760.15

LOCAL CONTROL DATA			
BENCHMARK: HR-12	PID#	NORTHING	EASTING
ELEVATION: 8.67' NAVD 88		1,318821.55	684451.34
STAMPED: HR-12 2016			

LOCAL CONTROL DATA			
BENCHMARK: 01-1	PID#	NORTHING	EASTING
ELEVATION: 3.87' NAVD 88		1,124,859.59	641003.46
STAMPED:			

SCALE 1" = 100'
0 100 200 300 400

US Army Corps of Engineers ®
New York District

MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY:
DRAWN BY: MBH
CHK'D BY: RBD
SUBMITTED BY: DLJ
PLOT SCALE: 1:100'
PLOT DATE: 1:1
SIZE: ANSI F
DATE: AUGUST-SEPTEMBER 2017
SOLICITATION NO.:
CONTRACT NO.: W912DS-14-D-0004
ISSUE DATE:
FILE NUMBER:
FILE NAME: VH101-DS880043_HUDSON_MB.DGN

U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

MCKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TELEPHONE: (910) 251-1646
FAX: (910) 251-4262

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL
REACH N03-N04

SHEET IDENTIFICATION
VH-105
SHEET 5 OF 103

PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011). NEW YORK. 3101 EAST US SURVEY FEET.

2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.

3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.

4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32'. MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14'. MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14'. MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.

5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.

6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.

7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.

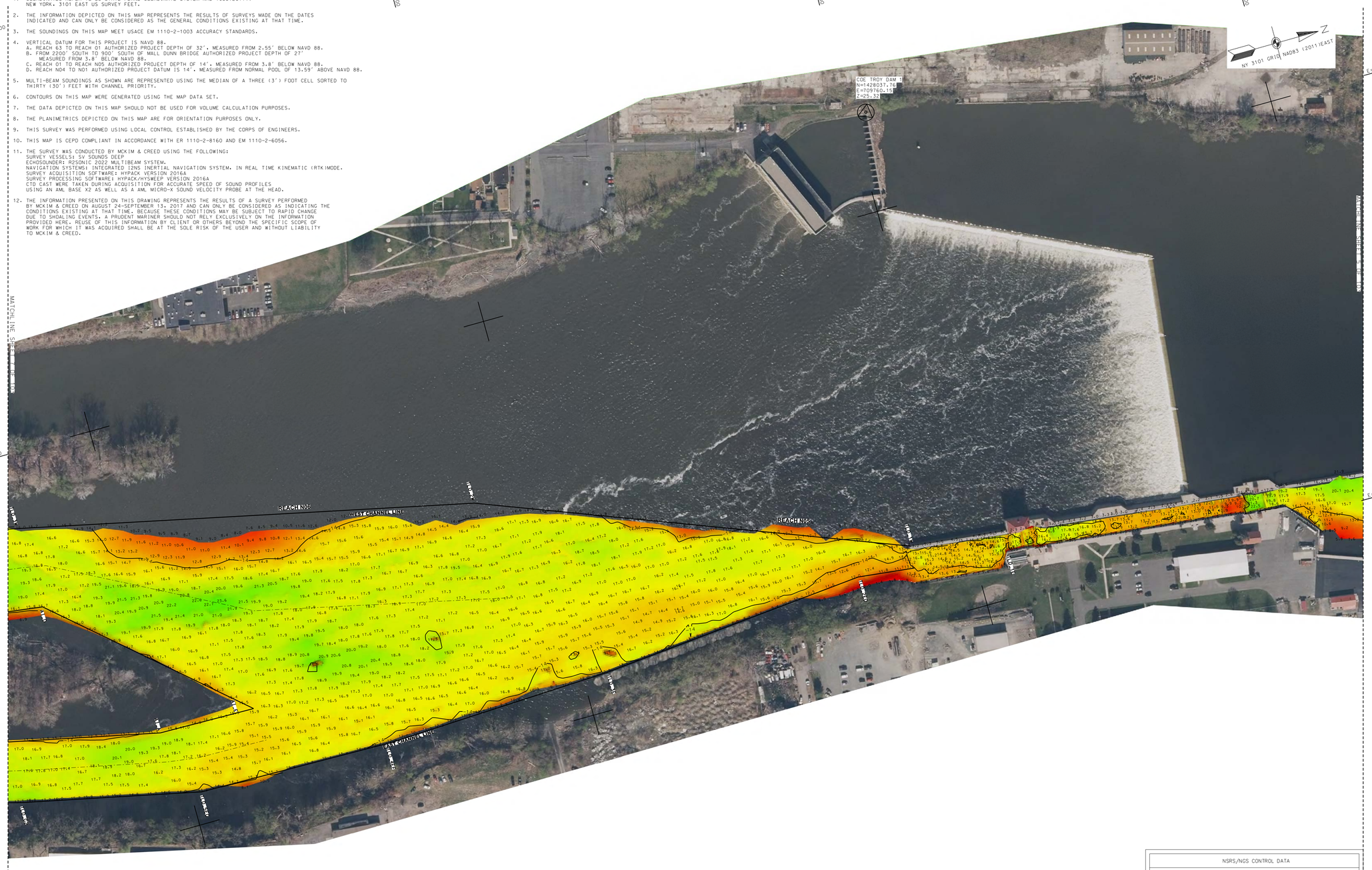
8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.

9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.

10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.

11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED I2NS INERTIAL NAVIGATION SYSTEM. IN REAL TIME KINEMATIC (RTK)MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.

12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS. A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.



NSRS/NGS CONTROL DATA			
BENCHMARK: TROY DAM 1	PID# BBDR68	NORTHING	EASTING
ELEVATION: 25.32' NAVD 88		1,428,037.76	709,760.15

LOCAL CONTROL DATA			
BENCHMARK: HR-12	PID#	NORTHING	EASTING
ELEVATION: 8.67' NAVD 88		1,318821.55	684451.34
STAMPED: HR-12 2016			

LOCAL CONTROL DATA			
BENCHMARK: 01-1	PID#	NORTHING	EASTING
ELEVATION: 3.87' NAVD 88		1,124,859.59	641003.46
STAMPED:			

STATE OF NEW YORK
RAYMOND B. DWYER
No. 49350
LICENSED LAND SURVEYOR

SCALE 1" = 100'
0 100 200 300 400

US Army Corps of Engineers ®
New York District

MARK	DESCRIPTION	DATE	APPR.	MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY: DBA
DWN BY: MBH
CKD BY: RBD
SUBMITTED BY: DLJ
PLOT SCALE: 1:100
PLOT DATE: 2017
SIZE: ANSI F
DATE: AUGUST-SEPTEMBER 2017
SOLICITATION NO.:
CONTRACT NO.: W912DS-14-D-0004
FILE NUMBER:
ISSUE DATE:
FILE NAME: VH101-x356890043_HUDSON_MB.DGN

U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

MCKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TELEPHONE: (910) 251-8444
FAX: (910) 251-8282

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL
REACH N05-N06

SHEET IDENTIFICATION
VH-106
SHEET 6 OF 103

PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011). NEW YORK. 3101 EAST US SURVEY FEET.

2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.

3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.

4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32'. MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14'. MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14'. MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.

5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.

6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.

7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.

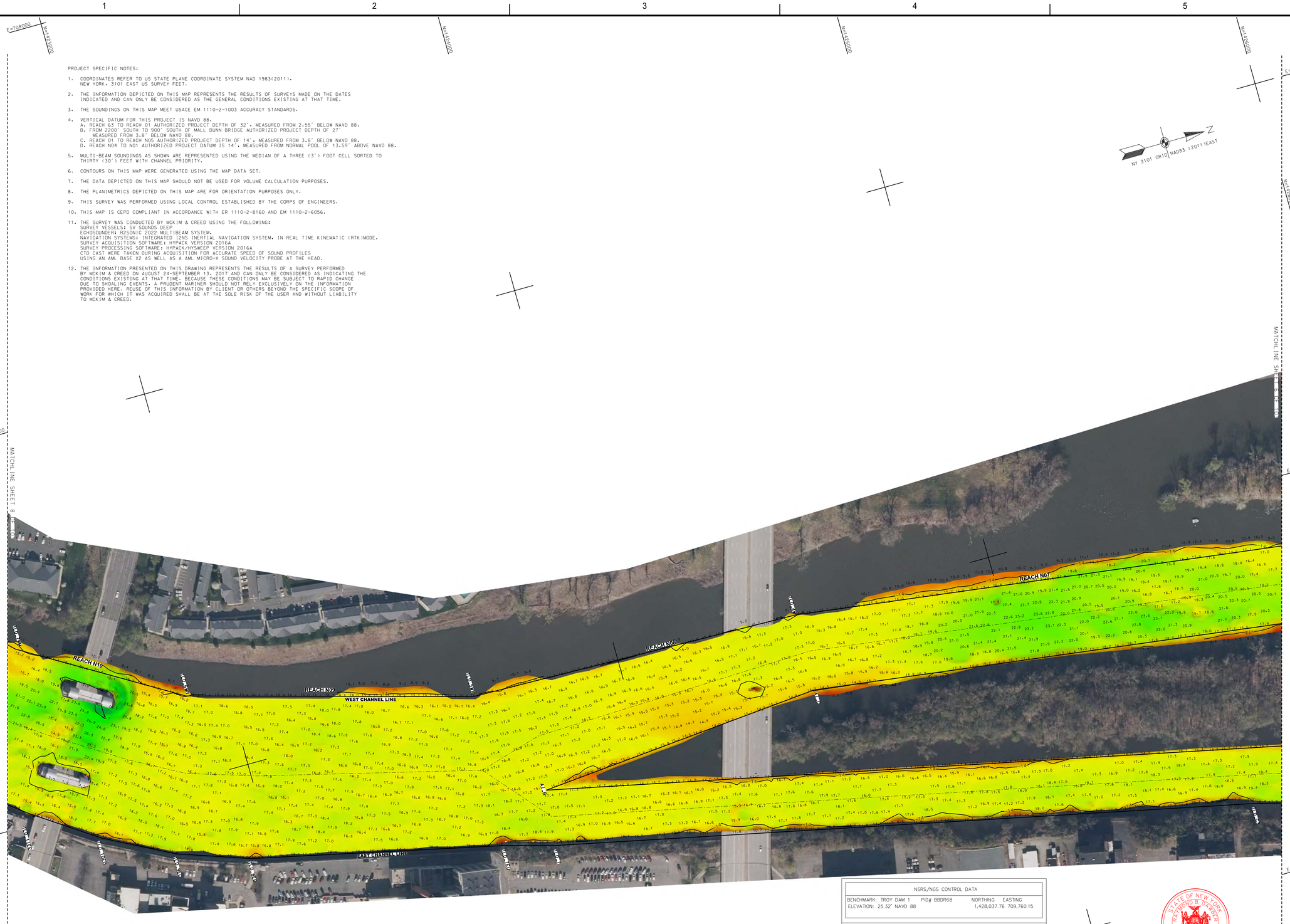
8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.

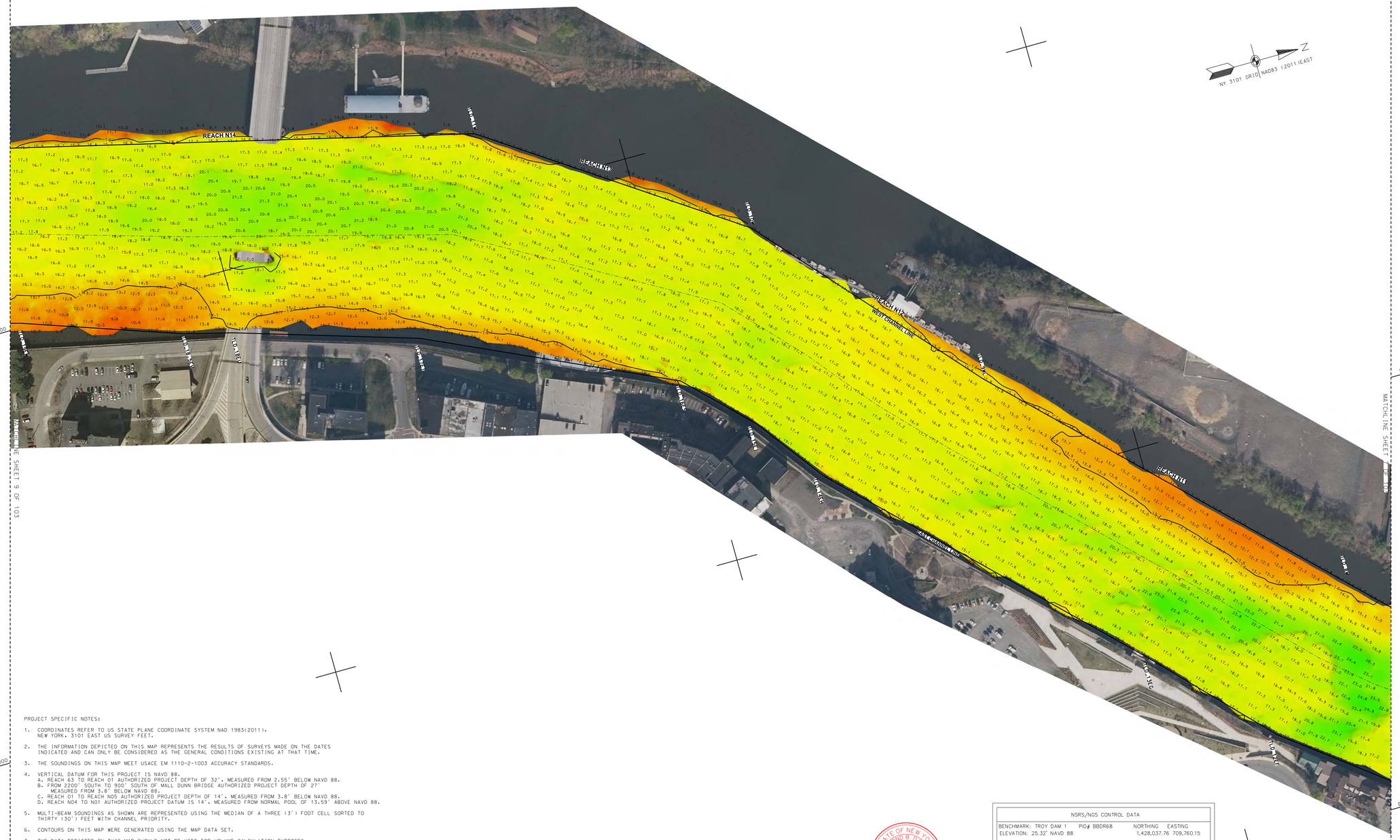
9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.

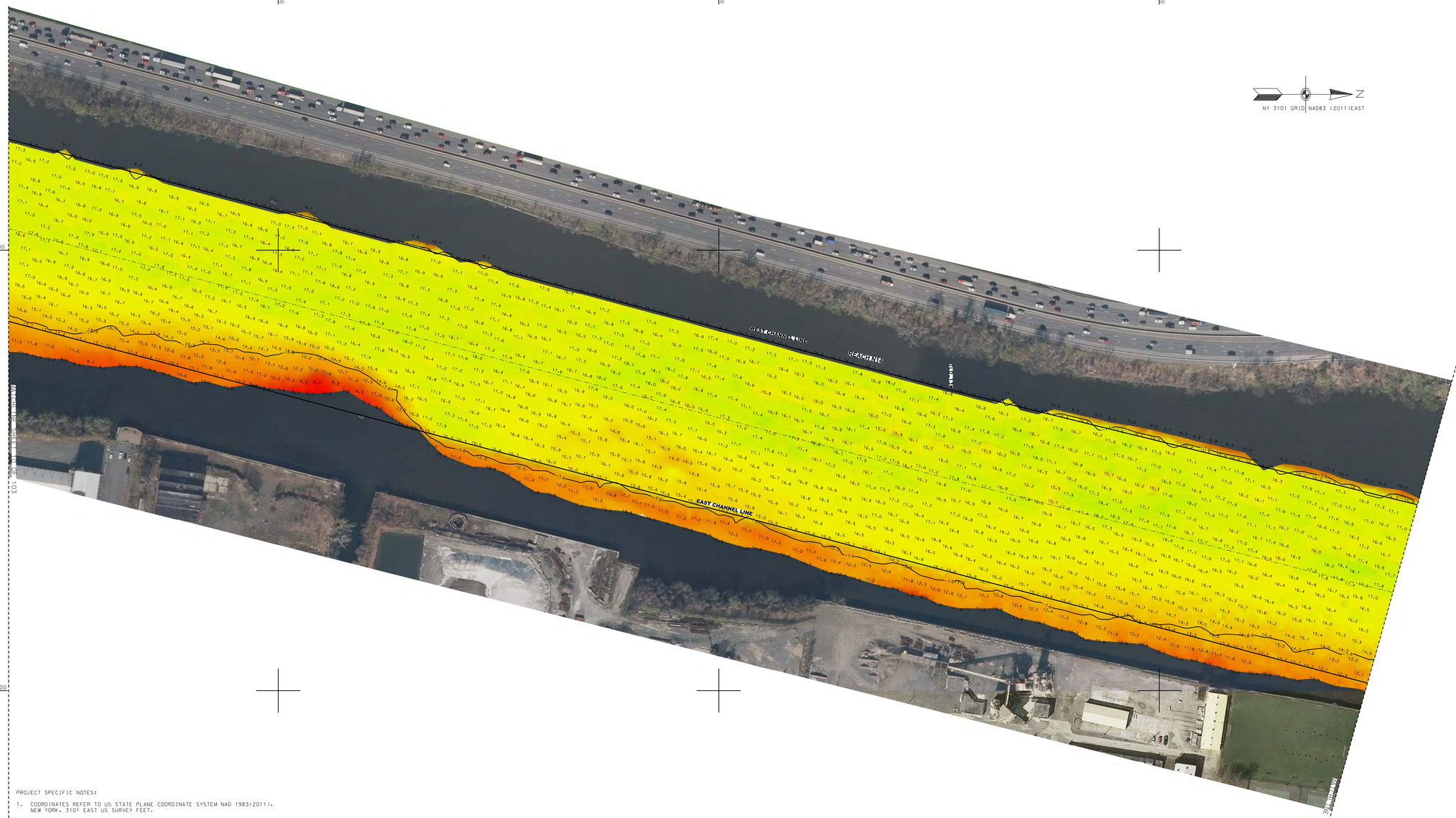
10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.

11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED IXNS INERTIAL NAVIGATION SYSTEM. IN REAL TIME KINEMATIC (RTK)MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.

12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS, A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.


E=708000
N=1423500
N=1424000
N=1424500
N=1425000
N=1425500
N=1426000
E=709000
E=710000
E=711000
MATCHLINE SHEET 8
MATCHLINE SHEET 6
NY 3101 GRID NAD83 (2011) EAST
REACH N10
REACH N09
REACH N08
REACH N07
WEST CHANNEL LINE
EAST CHANNEL LINE
A1-B
A1-A
1H:1V
1H:1V
1H:1V


REACH N14
REACH N13
REACH N12
REACH N11
WEST CHANNEL LINE
MAIN CHANNEL LINE
MAIN CHANNEL
MAIN CHANNEL
MAIN CHANNEL



1 2 3 4 5

D C B A

N=1417000 N=1418000 N=1419000

E=707000 E=708000

PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011). NEW YORK. 3101 EAST US SURVEY FEET.

2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.

3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.

4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32'. MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14'. MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14'. MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.

5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.

6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.

7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.

8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.

9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.

10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.

11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED I2NS INERTIAL NAVIGATION SYSTEM. IN REAL TIME KINEMATIC (RTK)MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.

12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS. A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.

NSRS/NGS CONTROL DATA			
BENCHMARK: TROY DAM 1	PID# BBDR68	NORTHING	EASTING
ELEVATION: 25.32' NAVD 88		1,428,037.76	709,760.15

LOCAL CONTROL DATA			
BENCHMARK: HR-12	PID#	NORTHING	EASTING
ELEVATION: 8.67' NAVD 88		1,318821.55	684451.34
STAMPED: HR-12 2016			

LOCAL CONTROL DATA			
BENCHMARK: 01-1	PID#	NORTHING	EASTING
ELEVATION: 3.87' NAVD 88		1,124,859.59	641003.46
STAMPED:			

STATE OF NEW YORK
RAYMOND B. PARKER
LICENSED LAND SURVEYOR
No. 49350

SCALE 1" = 100'
0 100 200 300 400

US Army Corps of Engineers ®
New York District

MARK	DESCRIPTION	DATE	APPR.	MARK	DESCRIPTION	DATE	APPR.

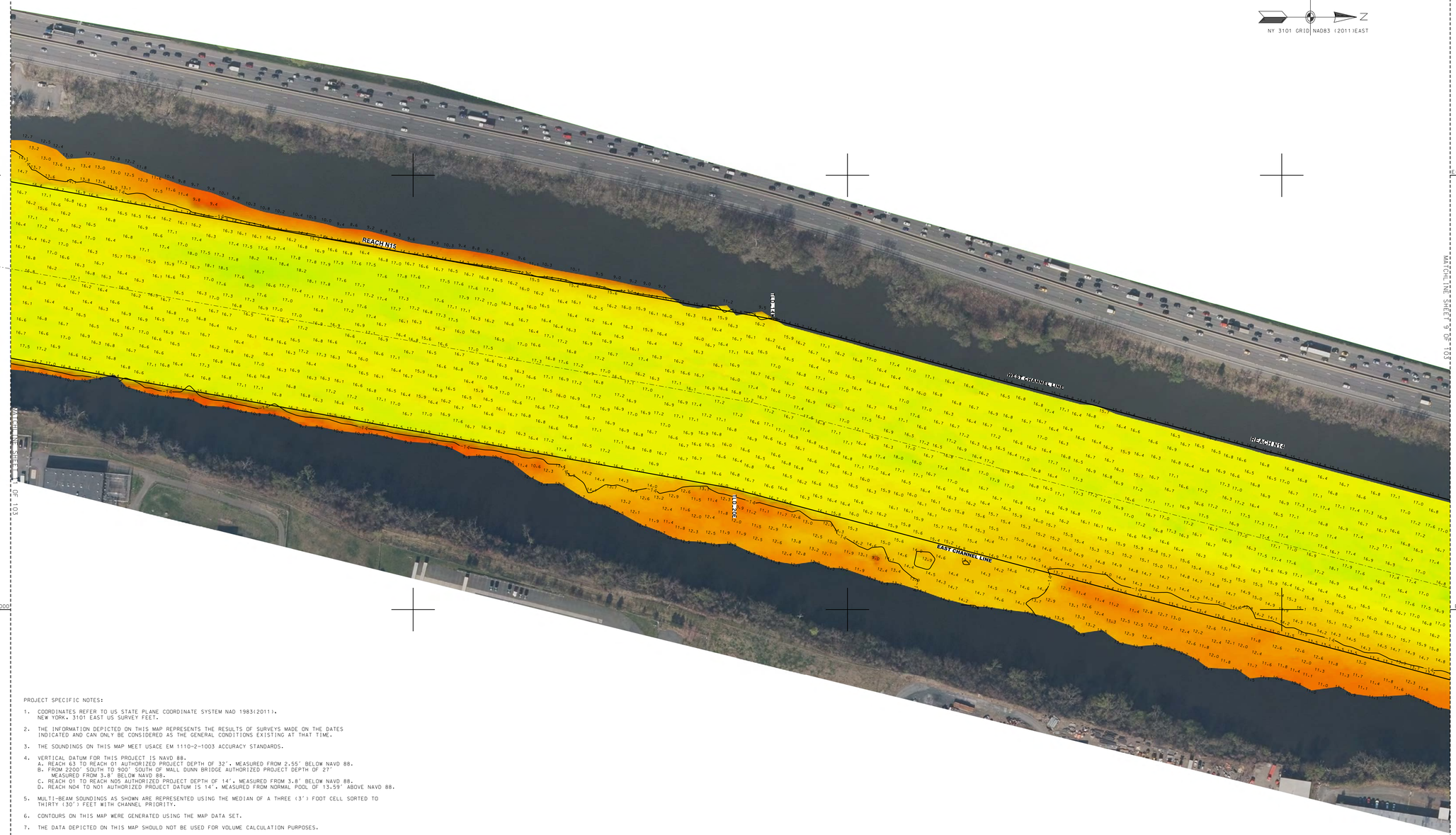
DESIGNED BY: DLJ
DRAWN BY: MBH
CKD BY: RBD
SUBMITTED BY: DLJ
PLOT SCALE: 1" = 100'
PLOT DATE: 10/5/2017
SIZE: ANSI F
ISSUE DATE: 10/5/2017
FILE NAME: VH101-056890043_HUDSON_MB.DGN
DATE: AUGUST - SEPTEMBER 2017
SOLICITATION NO.:
CONTRACT NO.: W912DS-14-D-0004
FILE NUMBER:

U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

MCKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TELEPHONE: (910) 251-1848
FAX: (910) 251-8282

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL
REACH N14

SHEET IDENTIFICATION
VH-109
SHEET 9 OF 103



PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011). NEW YORK. 3101 EAST US SURVEY FEET.
2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.
3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.
4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32'. MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14'. MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14'. MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.
5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.
6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.
7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.
8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.
9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.
10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.
11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED I2NS INERTIAL NAVIGATION SYSTEM. IN REAL TIME KINEMATIC (RTK)MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES
    USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.
12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS, A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.

NSRS/NGS CONTROL DATA			
BENCHMARK: TROY DAM 1	PID# BBDR68	NORTHING	EASTING
ELEVATION: 25.32' NAVD 88		1,428,037.76	709,760.15

LOCAL CONTROL DATA			
BENCHMARK: HR-12	PID#	NORTHING	EASTING
ELEVATION: 8.67' NAVD 88		1,318821.55	684451.34
STAMPED: HR-12 2016			

LOCAL CONTROL DATA			
BENCHMARK: 01-1	PID#	NORTHING	EASTING
ELEVATION: 3.87' NAVD 88		1,124,859.59	641003.46
STAMPED:			

STATE OF NEW YORK
RAYMOND B. PARKER
LICENSED LAND SURVEYOR
No. 49360

SCALE 1" = 100'
0 100 200 300 400

US Army Corps of Engineers ®
New York District

MARK	DESCRIPTION	DATE	APPR.	MARK	DESCRIPTION	DATE	APPR.

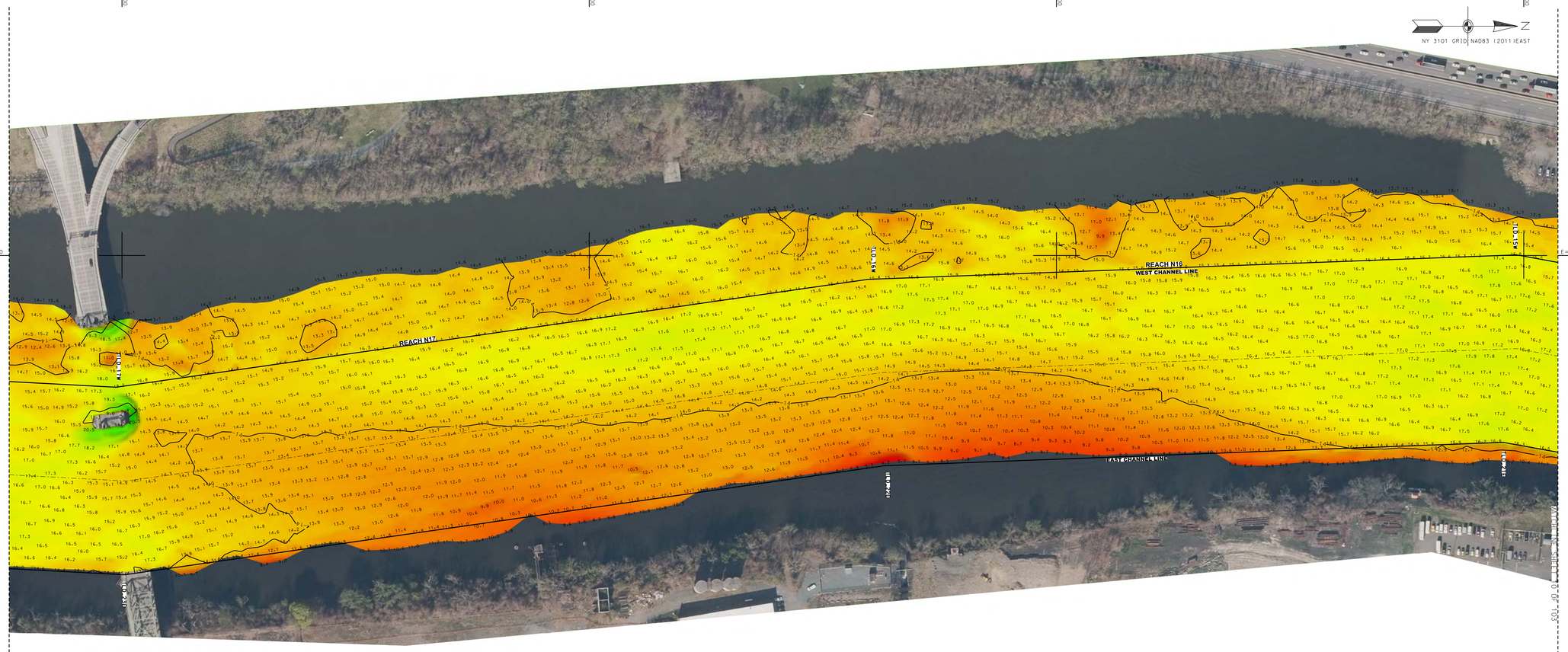
DESIGNED BY:
DWN BY: MBH
CKD BY: RBD
SUBMITTED BY: DLJ
PLOT SCALE: 1" = 100'
SIZE: ANSI F
DATE: AUGUST - SEPTEMBER 2017
SOLICITATION NO.:
CONTRACT NO.: W912DS-14-D-0004
FILE NUMBER:
ISSUE DATE:
SHEET NO.:
FILE NAME: VH101-406890043_HUDSON_MB.DGN

U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

McKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TELEPHONE: (910) 251-8444
FAX: (910) 251-8282

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL
REACH 14-15

SHEET IDENTIFICATION
VH-110
SHEET 10 OF 103



PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011). NEW YORK, 3101 EAST US SURVEY FEET.
2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.
3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.
4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32'. MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14'. MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14'. MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.
5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.
6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.
7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.
8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.
9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.
10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.
11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED I2NS INERTIAL NAVIGATION SYSTEM. IN REAL TIME KINEMATIC (RTK)MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.
12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS, A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.

NSRS/NGS CONTROL DATA		
BENCHMARK: TROY DAM 1 PID# BBDR68	NORTHING	EASTING
ELEVATION: 25.32' NAVD 88	1,428,037.76	709,760.15

LOCAL CONTROL DATA		
BENCHMARK: HR-12 PID#	NORTHING	EASTING
ELEVATION: 8.67' NAVD 88	1,318821.55	684451.34
STAMPED: HR-12 2016		

LOCAL CONTROL DATA		
BENCHMARK: 01-1 PID#	NORTHING	EASTING
ELEVATION: 3.87' NAVD 88	1,124,859.59	641003.46
STAMPED:		

STATE OF NEW YORK
RAYMOND B. DARBER
049501
LICENSED LAND SURVEYOR

SCALE 1" = 100'
0 100 200 300 400

US Army Corps of Engineers ®
New York District

MARK	DESCRIPTION	DATE	APPR.	MARK	DESCRIPTION	DATE	APPR.

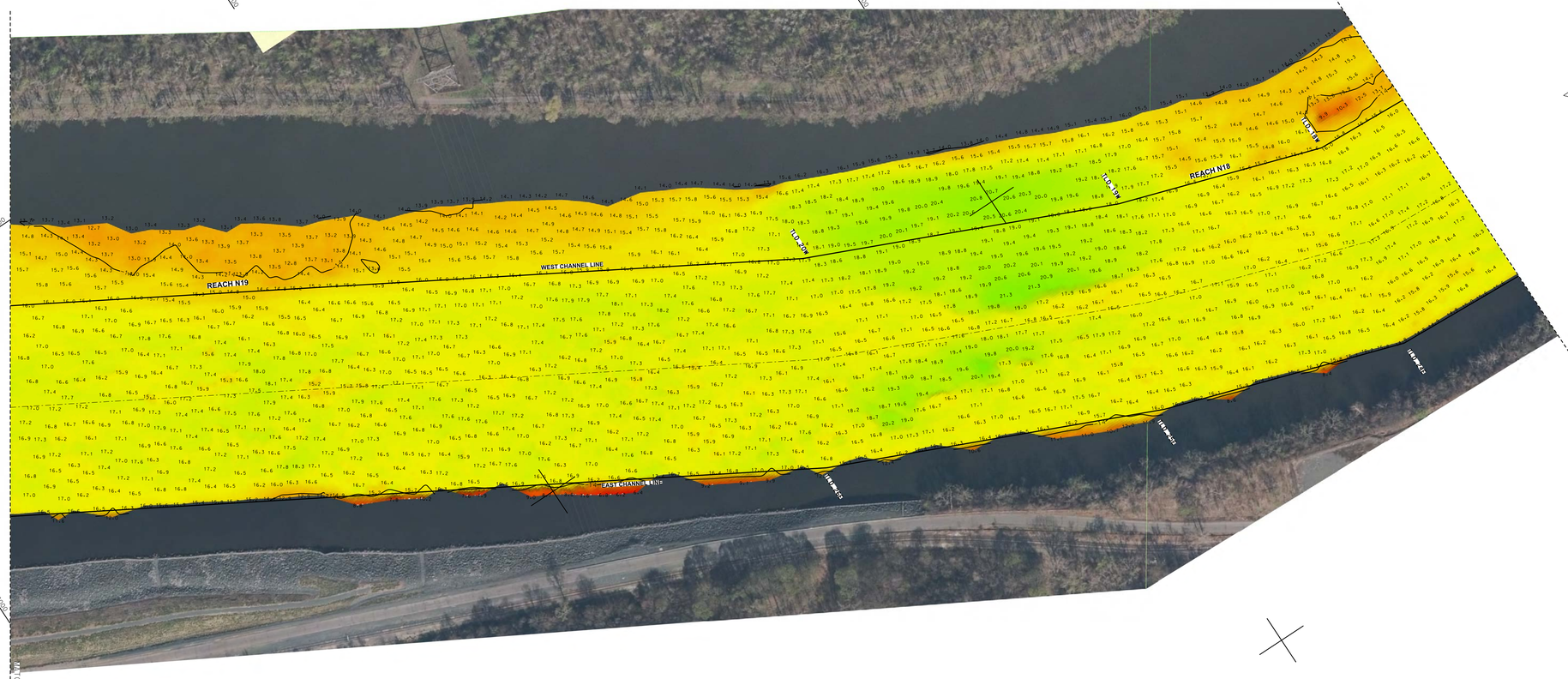
DESIGNED BY: DBJ
DWN BY: MBH
CKD BY: RBD
SUBMITTED BY: DLJ
PLOT SCALE: 1" = 100'
ISSUE DATE: ISSUE PLOT
SIZE: ANSI F
DATE: AUGUST - SEPTEMBER 2017
SOLICITATION NO.:
CONTRACT NO.: W912DS-14-D-0004
FILE NUMBER:
FILE NAME: VH101-056890043_HUDSON_MB.DGN

U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

MCKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TELEPHONE: (910) 251-8444
FAX: (910) 251-8282

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL
REACH N16-N17

SHEET IDENTIFICATION
VH-111
SHEET 11 OF 103



PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011), NEW YORK, 3101 EAST US SURVEY FEET.
2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.
3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.
4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32', MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14', MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14', MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.
5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.
6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.
7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.
8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.
9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.
10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.
11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED I2NS INERTIAL NAVIGATION SYSTEM. IN REAL TIME KINEMATIC (RTK) MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.
12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS, A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.

NSRS/NGS CONTROL DATA			
BENCHMARK: TROY DAM 1	PID# BBDR68	NORTHING	EASTING
ELEVATION: 25.32' NAVD 88		1,428,037.76	709,760.15

LOCAL CONTROL DATA			
BENCHMARK: HR-12	PID#	NORTHING	EASTING
ELEVATION: 8.67' NAVD 88		1,318821.55	684451.34
STAMPED: HR-12 2016			

LOCAL CONTROL DATA			
BENCHMARK: 01-1	PID#	NORTHING	EASTING
ELEVATION: 3.87' NAVD 88		1,124,859.59	641003.46
STAMPED:			

SCALE 1" = 100'
0 100 200 300 400

STATE OF NEW YORK
RAYMOND B. DAVIES
No. 49290
LICENSED LAND SURVEYOR

US Army Corps of Engineers ®
New York District

MARK	DESCRIPTION	DATE	APPR.

DATE: AUGUST-SEPTEMBER 2017
SOLICITATION NO.:
CONTRACT NO.: W912DS-14-D-0004
FILE NUMBER:
FILE NAME: VH101-056890043_HUDSON_MB.DGN
ISSUE DATE: DEC 2017
PLOT SCALE: 1" = 100'
SIZE: ANSI F

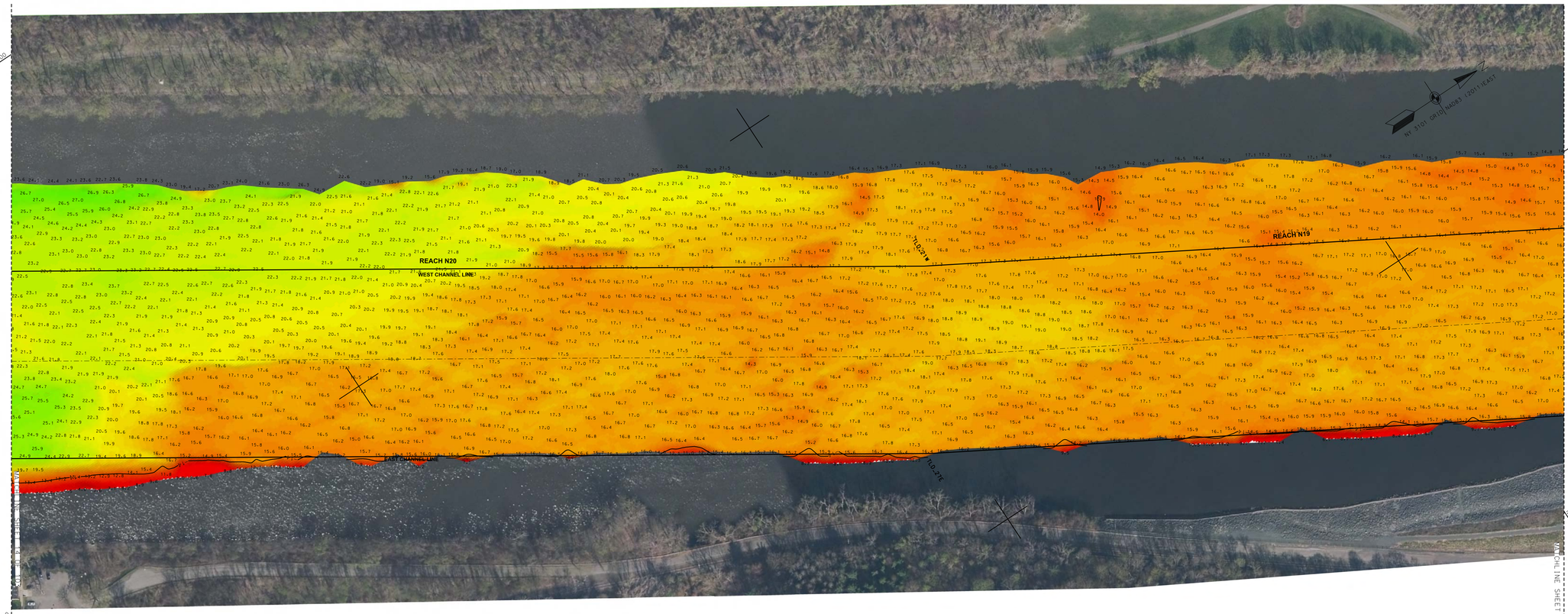
DESIGNED BY: DBG
DWN BY: MBH
SUBMITTED BY: DLJ
CKD BY: RBD

U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

MCKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TELEPHONE: (910) 251-8444
FAX: (910) 251-8282

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL
REACH N18-N19

SHEET IDENTIFICATION
VH-112
SHEET 12 OF 103



PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011). NEW YORK, 3101 EAST US SURVEY FEET.
2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.
3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.
4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH O1 AUTHORIZED PROJECT DEPTH OF 32'. MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH O1 TO REACH NO5 AUTHORIZED PROJECT DEPTH OF 14'. MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH NO4 TO NO1 AUTHORIZED PROJECT DATUM IS 14'. MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.
5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.
6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.
7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.
8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.
9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.
10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.
11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED I2NS INERTIAL NAVIGATION SYSTEM, IN REAL TIME KINEMATIC (RTK)MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES
    USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.
12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS, A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.

NSRS/NGS CONTROL DATA			
BENCHMARK: TROY DAM 1	PID# BBDR68	NORTHING	EASTING
ELEVATION: 25.32' NAVD 88		1,428,037.76	709,760.15

LOCAL CONTROL DATA			
BENCHMARK: HR-12	PID#	NORTHING	EASTING
ELEVATION: 8.67' NAVD 88		1,318821.55	684451.34
STAMPED: HR-12 2016			

LOCAL CONTROL DATA			
BENCHMARK: 01-1	PID#	NORTHING	EASTING
ELEVATION: 3.87' NAVD 88		1,124,859.59	641003.46
STAMPED:			

SCALE 1" = 100'
0 100 200 300 400

US Army Corps of Engineers ®
New York District

MARK	DESCRIPTION	DATE	APPR.	MARK	DESCRIPTION	DATE	APPR.

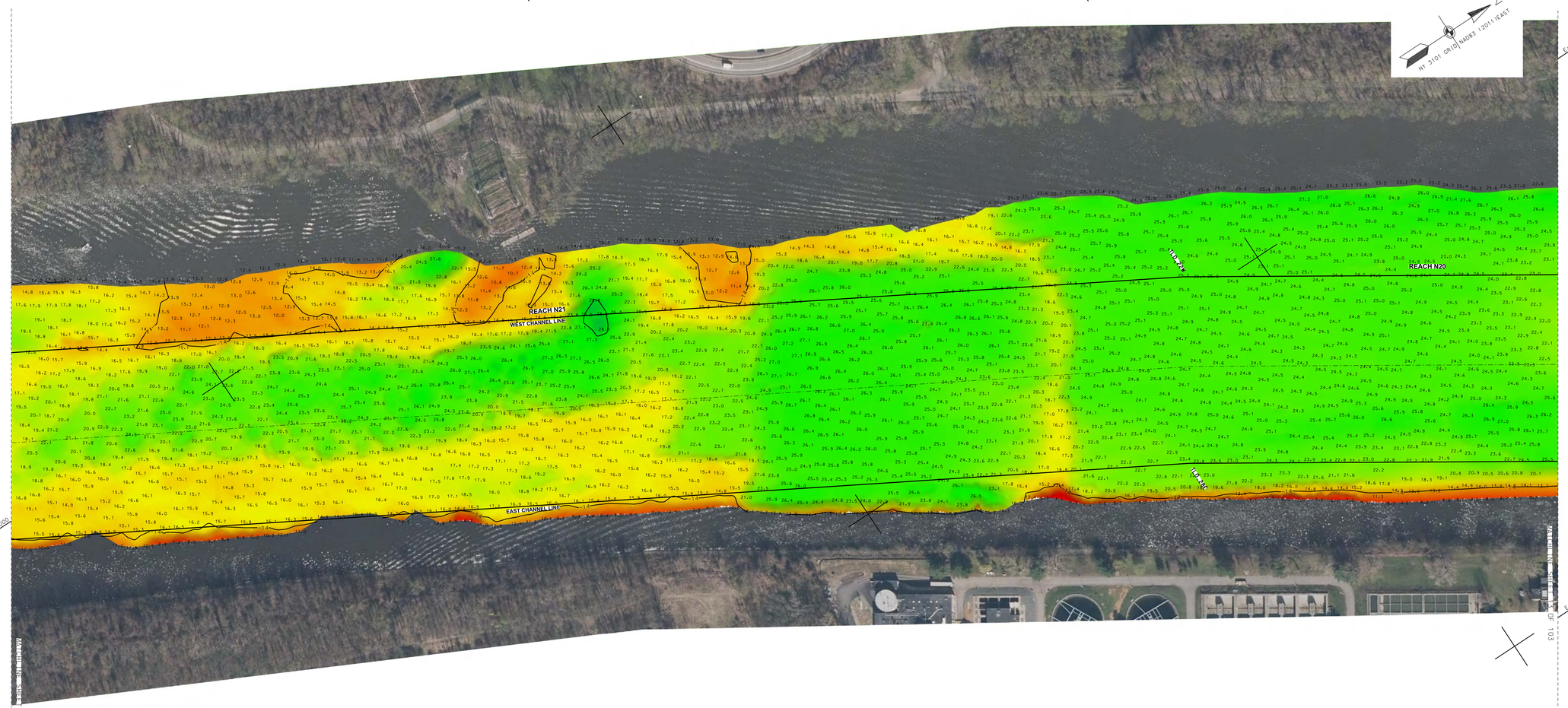
DESIGNED BY: DBA
DWN BY: MBH
SUBMITTED BY: DLJ
CKD BY: RBD
PLOT SCALE: 1" = 100'
SIZE: ANSI F
DATE: AUGUST-SEPTEMBER 2017
SOLICITATION NO.:
CONTRACT NO.: W912DS-14-D-0004
FILE NUMBER:
ISSUE DATE: DEC 2017
FILE NAME: VH101-056890043_HUDSON_MB.DGN

U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

MCKIM&CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TELEPHONE (910) 251-8348
FAX (910) 251-8282

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL
REACH N19-N20

SHEET IDENTIFICATION
VH-113
SHEET 13 OF 103



PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011). NEW YORK, 3101 EAST US SURVEY FEET.

2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.

3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.

4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32'. MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14', MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14', MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.

5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.

6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.

7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.

8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.

9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.

10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.

11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED I2NS INERTIAL NAVIGATION SYSTEM. IN REAL TIME KINEMATIC (RTK)MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.

12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS. A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.

STATE OF NEW YORK
RAYMOND B. BARBER
049350
LICENSED LAND SURVEYOR

NSRS/NGS CONTROL DATA			
BENCHMARK: TROY DAM 1	PID# BBDR68	NORTHING	EASTING
ELEVATION: 25.32' NAVD 88		1,428,037.76	709,760.15

LOCAL CONTROL DATA			
BENCHMARK: HR-12	PID#	NORTHING	EASTING
ELEVATION: 8.67' NAVD 88		1,318821.55	684451.34
STAMPED: HR-12 2016			

LOCAL CONTROL DATA			
BENCHMARK: 01-1	PID#	NORTHING	EASTING
ELEVATION: 3.87' NAVD 88		1,124,859.59	641003.46
STAMPED:			

SCALE 1" = 100'
0 100 200 300 400

US Army Corps of Engineers
New York District

MARK	DESCRIPTION	DATE	APPR.	MARK	DESCRIPTION	DATE	APPR.

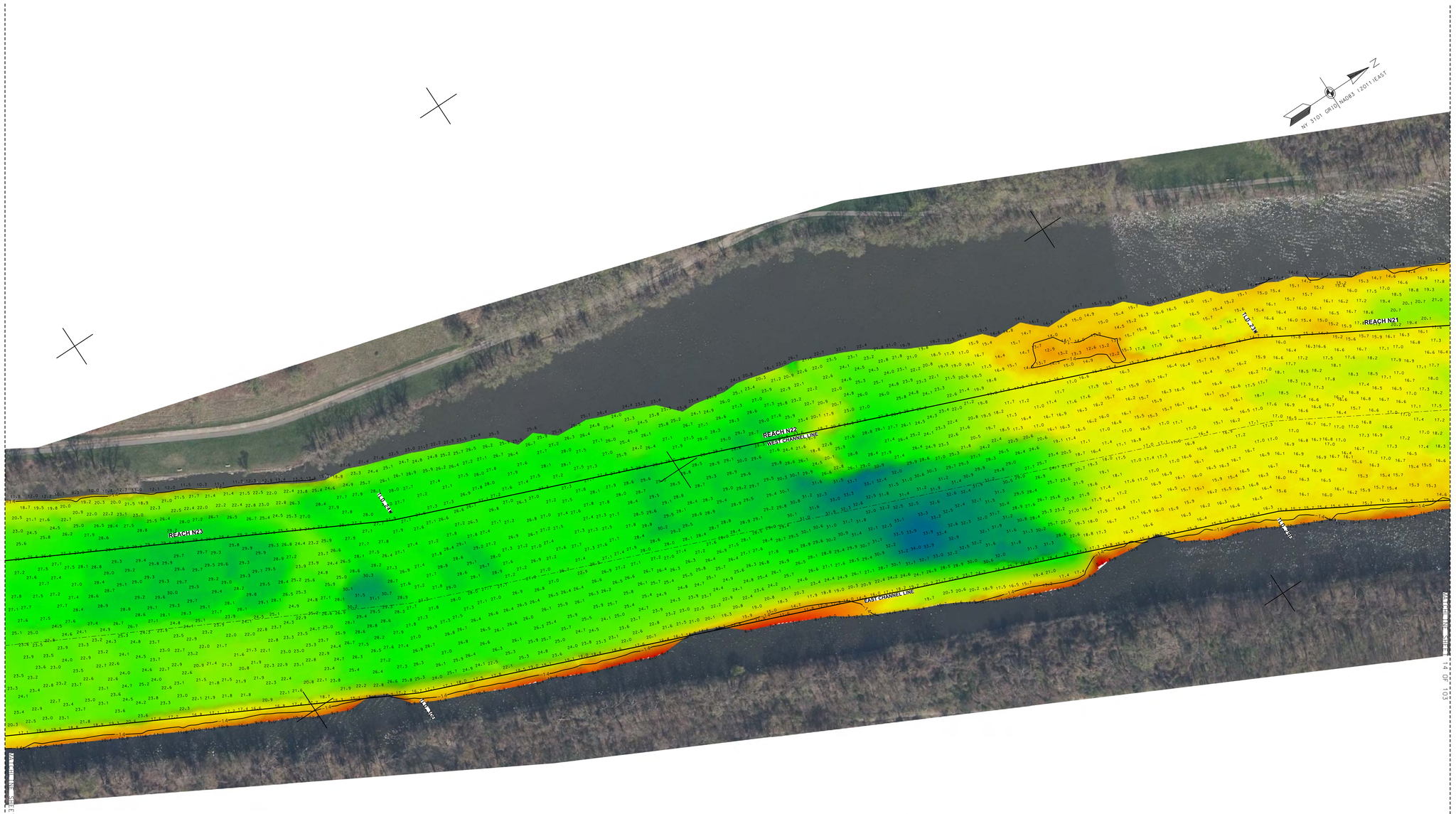
U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

MCKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TELEPHONE: (910) 341-7848
FAX: (910) 251-8262

DESIGNED BY: DGT	
DWN BY: MBH	CKD BY: RBD
SUBMITTED BY: DLJ	
PLOT SCALE: 1" = 100'	ISSUE DATE: DECEMBER 2017
SIZE: ANSI F	FILE NAME: VH101-058890043_HUDSON_MB.DGN
DATE: AUGUST-SEPTEMBER 2017	
SOLICITATION NO.:	
CONTRACT NO.: W912DS-14-D-0004	
FILE NUMBER:	

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL
REACH N20-N21

SHEET IDENTIFICATION
VH-114
SHEET 14 OF 103



PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011). NEW YORK, 3101 EAST US SURVEY FEET.
2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.
3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.
4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32', MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14', MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14', MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.
5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.
6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.
7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.
8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.
9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.
10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.
11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED I2NS INERTIAL NAVIGATION SYSTEM. IN REAL TIME KINEMATIC (RTK)MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.
12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS, A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.

STATE OF NEW YORK
RAYMOND B. DWYER
No. 49350
LICENSED LAND SURVEYOR

NSRS/NGS CONTROL DATA			
BENCHMARK: TROY DAM 1	PID# BBDR68	NORTHING	EASTING
ELEVATION: 25.32' NAVD 88		1,428,037.76	709,760.15

LOCAL CONTROL DATA			
BENCHMARK: HR-12	PID#	NORTHING	EASTING
ELEVATION: 8.67' NAVD 88		1,318821.55	684451.34
STAMPED: HR-12 2016			

LOCAL CONTROL DATA			
BENCHMARK: 01-1	PID#	NORTHING	EASTING
ELEVATION: 3.87' NAVD 88		1,124,859.59	641003.46
STAMPED:			

US Army Corps of Engineers ®
New York District

MARK	DESCRIPTION	DATE	APPR.	MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY: DLJ
DWN BY: MBH
CKD BY: RBD
SUBMITTED BY: DLJ
PLOT SCALE: 1:100' FULL SIZE
SIZE: ANSI F
DATE: AUGUST-SEPTEMBER 2017
SOLICITATION NO.:
CONTRACT NO.: W912DS-14-D-0004
TASK ORDER NUMBER:
ISSUE DATE: 19-APR-2021
FILE NUMBER: VH101-356890043_HUDSON_MB.DGN

U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

McKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TELEPHONE: (910) 251-8444
FAX: (910) 251-8282

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL
REACHS N21-N23

SHEET IDENTIFICATION
VH-115
SHEET 15 OF 103

PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011). NEW YORK. 3101 EAST US SURVEY FEET.

2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.

3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.

4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32'. MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14'. MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14'. MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.

5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.

6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.

7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.

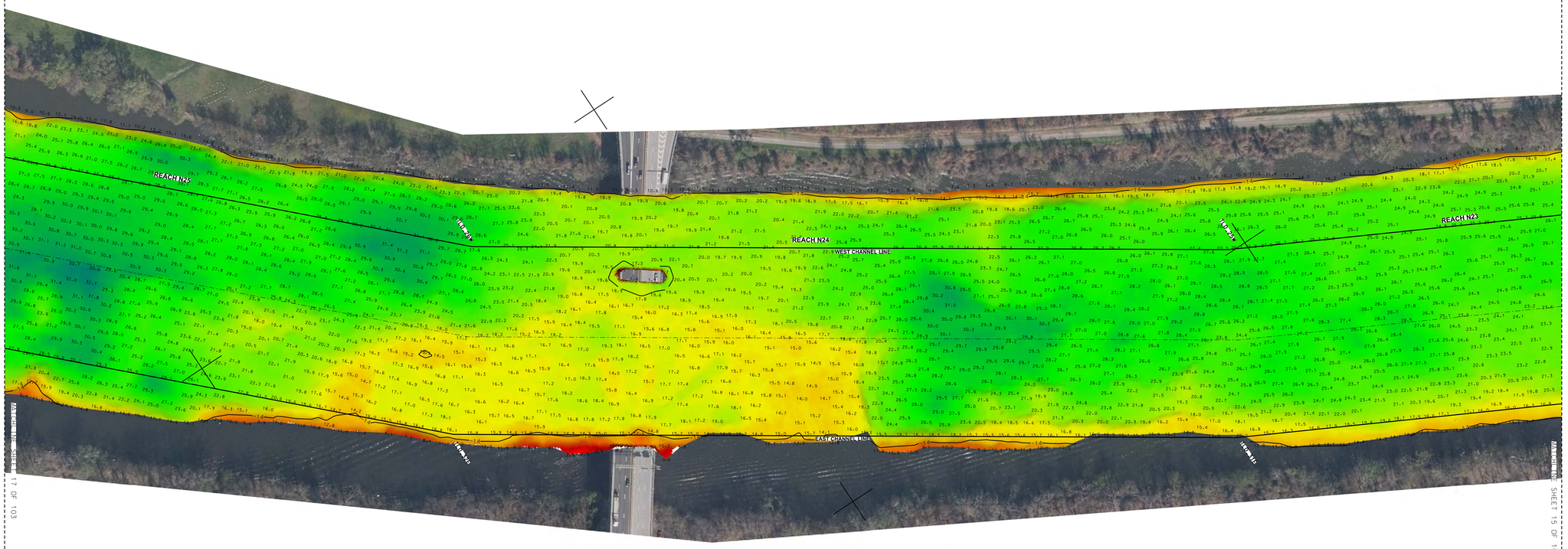
8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.

9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.

10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.

11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED I2NS INERTIAL NAVIGATION SYSTEM. IN REAL TIME KINEMATIC (RTK) MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.

12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS. A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.



NSRS/NGS CONTROL DATA			
BENCHMARK: TROY DAM 1	PID# BBDR68	NORTHING	EASTING
ELEVATION: 25.32' NAVD 88		1,428,037.76	709,760.15

LOCAL CONTROL DATA			
BENCHMARK: HR-12	PID#	NORTHING	EASTING
ELEVATION: 8.67' NAVD 88		1,318821.55	684451.34
STAMPED: HR-12 2016			

LOCAL CONTROL DATA			
BENCHMARK: 01-1	PID#	NORTHING	EASTING
ELEVATION: 3.87' NAVD 88		1,124,859.59	641003.46
STAMPED:			

STATE OF NEW YORK
RICHARD P. BAKER
No. 49350
LICENSED LAND SURVEYOR

SCALE 1" = 100'
0 100 200 300 400

US Army Corps of Engineers ®
New York District

MARK	DESCRIPTION	DATE	APPR.

MARK	DESCRIPTION	DATE	APPR.

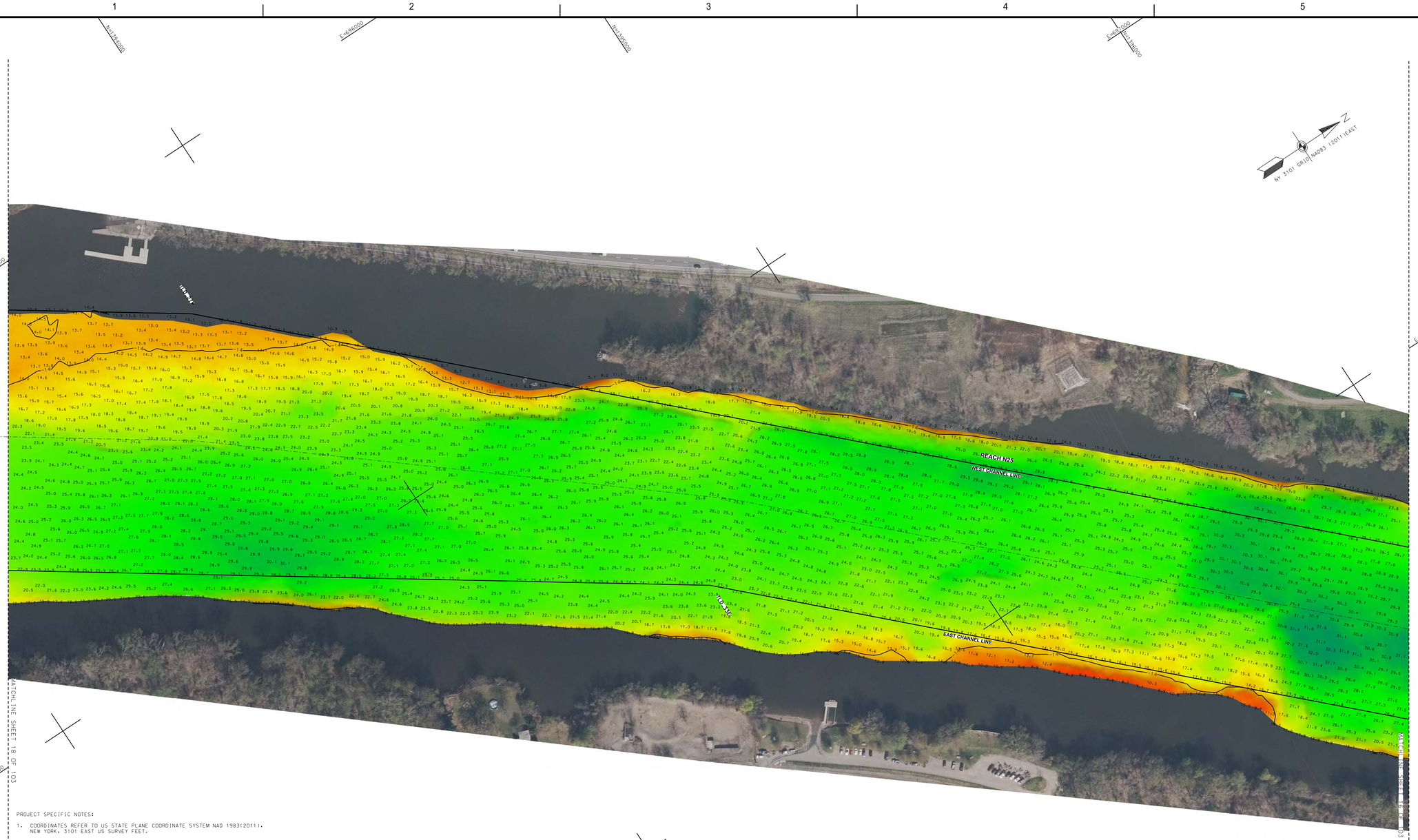
U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

DESIGNED BY: DWG
DWN BY: MBH
CKD BY: RBD
SUBMITTED BY: DLJ
PLOT SCALE: 1:100'
SIZE: ANSI F
DATE: AUGUST-SEPTEMBER 2017
SOLICITATION NO.:
CONTRACT NO.: W912DS-14-D-0004
ISSUE DATE: DECEMBER 2017
FILE NUMBER:
FILE NAME: VH101-DS880043_HUDSON_MB.DGN

McKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TELEPHONE: (910) 251-8246
FAX: (910) 251-4262

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL
REACH N23-N25

SHEET IDENTIFICATION
VH-116
SHEET 16 OF 103



PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011). NEW YORK, 3101 EAST US SURVEY FEET.
2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.
3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.
4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32'. MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14'. MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14'. MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.
5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.
6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.
7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.
8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.
9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.
10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.
11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED I2NS INERTIAL NAVIGATION SYSTEM. IN REAL TIME KINEMATIC (RTK)MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.
12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS. A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.

NSRS/NGS CONTROL DATA			
BENCHMARK: TROY DAM 1	PID# BBDR68	NORTHING	EASTING
ELEVATION: 25.32' NAVD 88		1,428,037.76	709,760.15

LOCAL CONTROL DATA			
BENCHMARK: HR-12	PID#	NORTHING	EASTING
ELEVATION: 8.67' NAVD 88		1,318821.55	684451.34
STAMPED: HR-12 2016			

LOCAL CONTROL DATA			
BENCHMARK: 01-1	PID#	NORTHING	EASTING
ELEVATION: 3.87' NAVD 88		1,124,859.59	641003.46
STAMPED:			

STATE OF NEW YORK
RAYMOND B. WARNER
049350
LICENSED LAND SURVEYOR

US Army Corps of Engineers ®
New York District

MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY:
DRAWN BY: MBH
SUBMITTED BY: DLJ
PLOT SCALE: 1:100'
SIZE: ANSI F
DATE: AUGUST-SEPTEMBER 2017
SOLICITATION NO.:
CONTRACT NO.: W912DS-14-D-0004
FILE NUMBER:
ISSUE DATE: DECEMBER 2017
FILE NAME: VH101-DSB890043_HUDSON-MB.DGN

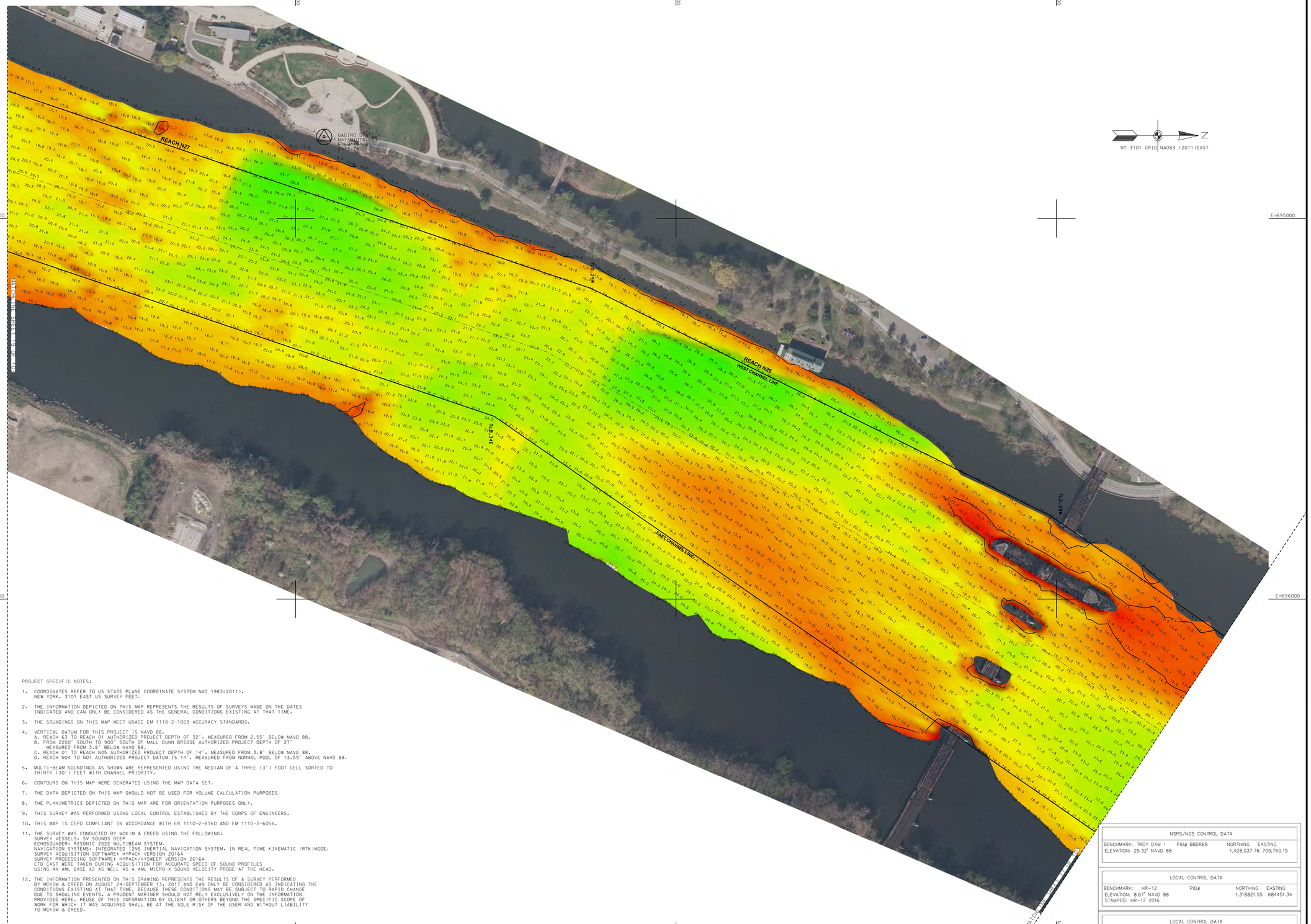
U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

CKD BY: RBD

McKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TELEPHONE: (910) 251-0048
FAX: (910) 251-4262

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL
REACH N25

SHEET IDENTIFICATION
VH-117
SHEET 17 OF 103



PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011). NEW YORK. 3101 EAST US SURVEY FEET.
2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.
3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.
4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32', MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14', MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14', MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.
5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.
6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.
7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.
8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.
9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.
10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.
11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED I2NS INERTIAL NAVIGATION SYSTEM. IN REAL TIME KINEMATIC (RTK) MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.
12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME, BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS. A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.

NSRS/NGS CONTROL DATA			
BENCHMARK: TROY DAM 1	PID# BBDR68	NORTHING	EASTING
ELEVATION: 25.32' NAVD 88		1,428,037.76	709,760.15

LOCAL CONTROL DATA			
BENCHMARK: HR-12	PID#	NORTHING	EASTING
ELEVATION: 8.67' NAVD 88		1,318821.55	684451.34
STAMPED: HR-12 2016			

LOCAL CONTROL DATA			
BENCHMARK: 01-1	PID#	NORTHING	EASTING
ELEVATION: 3.87' NAVD 88		1,124,859.59	641003.46
STAMPED:			

US Army Corps of Engineers ®
New York District

MARK	DESCRIPTION	DATE	APPR.	MARK	DESCRIPTION	DATE	APPR.

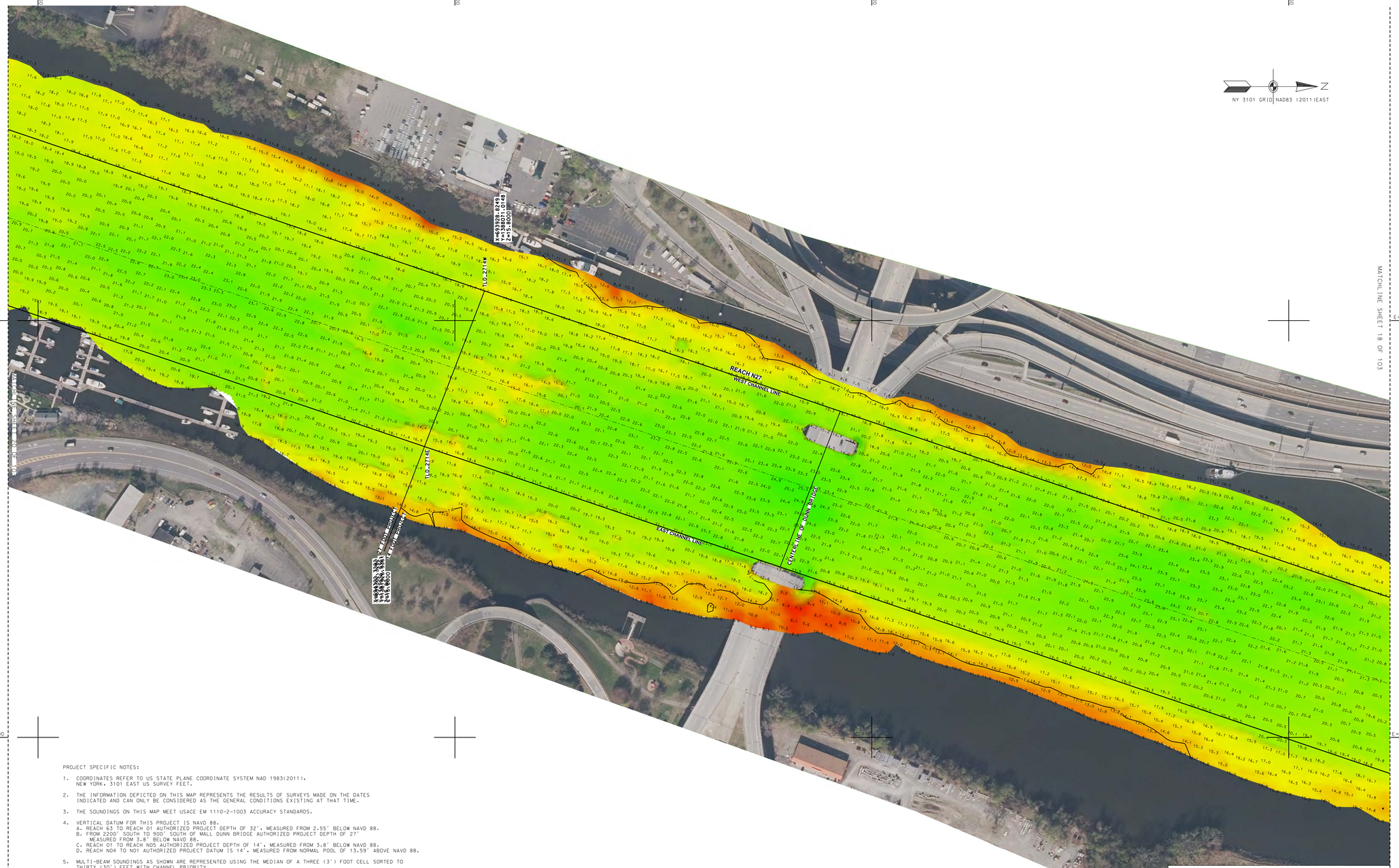
DESIGNED BY: DLJ
DWN BY: MBH
CKD BY: RBD
SUBMITTED BY: DLJ
PLOT SCALE: 1:1
PLOT DATE: 10/2/2017
SIZE: ANSI F
DATE: AUGUST-SEPTEMBER 2017
SOLICITATION NO.:
CONTRACT NO.: W912DS-14-D-0004
FILE NUMBER:
FILE NAME: VH101-056899043_HUDSON_MB.DGN

U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

McKIM & CREED
241 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TELEPHONE: (910) 251-0046
FAX: (910) 251-4282

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL
REACH N26-N27

SHEET IDENTIFICATION
VH-118
SHEET 18 OF 103



PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011). NEW YORK. 3101 EAST US SURVEY FEET.
2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.
3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.
4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32'. MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14'. MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14'. MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.
5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.
6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.
7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.
8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.
9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.
10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.
11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED IXNS INERTIAL NAVIGATION SYSTEM. IN REAL TIME KINEMATIC (RTK) MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.
12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS, A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.

NSRS/NGS CONTROL DATA			
BENCHMARK: TROY DAM 1	PID# BBDR68	NORTHING	EASTING
ELEVATION: 25.32' NAVD 88		1,428,037.76	709,760.15

LOCAL CONTROL DATA			
BENCHMARK: HR-12	PID#	NORTHING	EASTING
ELEVATION: 8.67' NAVD 88		1,318821.55	684451.34
STAMPED: HR-12 2016			

LOCAL CONTROL DATA			
BENCHMARK: 01-1	PID#	NORTHING	EASTING
ELEVATION: 3.87' NAVD 88		1,124,859.59	641003.46
STAMPED:			

STATE OF NEW YORK
RAYMOND B. DARBY
No. 49350
LICENSED LAND SURVEYOR

US Army Corps of Engineers ®
New York District

MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY:
DRAWN BY: MBH
SUBMITTED BY: DLJ
PLOT SCALE: 1:00'
SIZE: ANSI F

DATE: AUGUST-SEPTEMBER 2017
SOLICITATION NO.:
CONTRACT NO.: W912DS-14-D-0004
ISSUE DATE: DEC 2017
FILE NUMBER:
FILE NAME: VH101-0588890043_HUDSON_MB.DGN

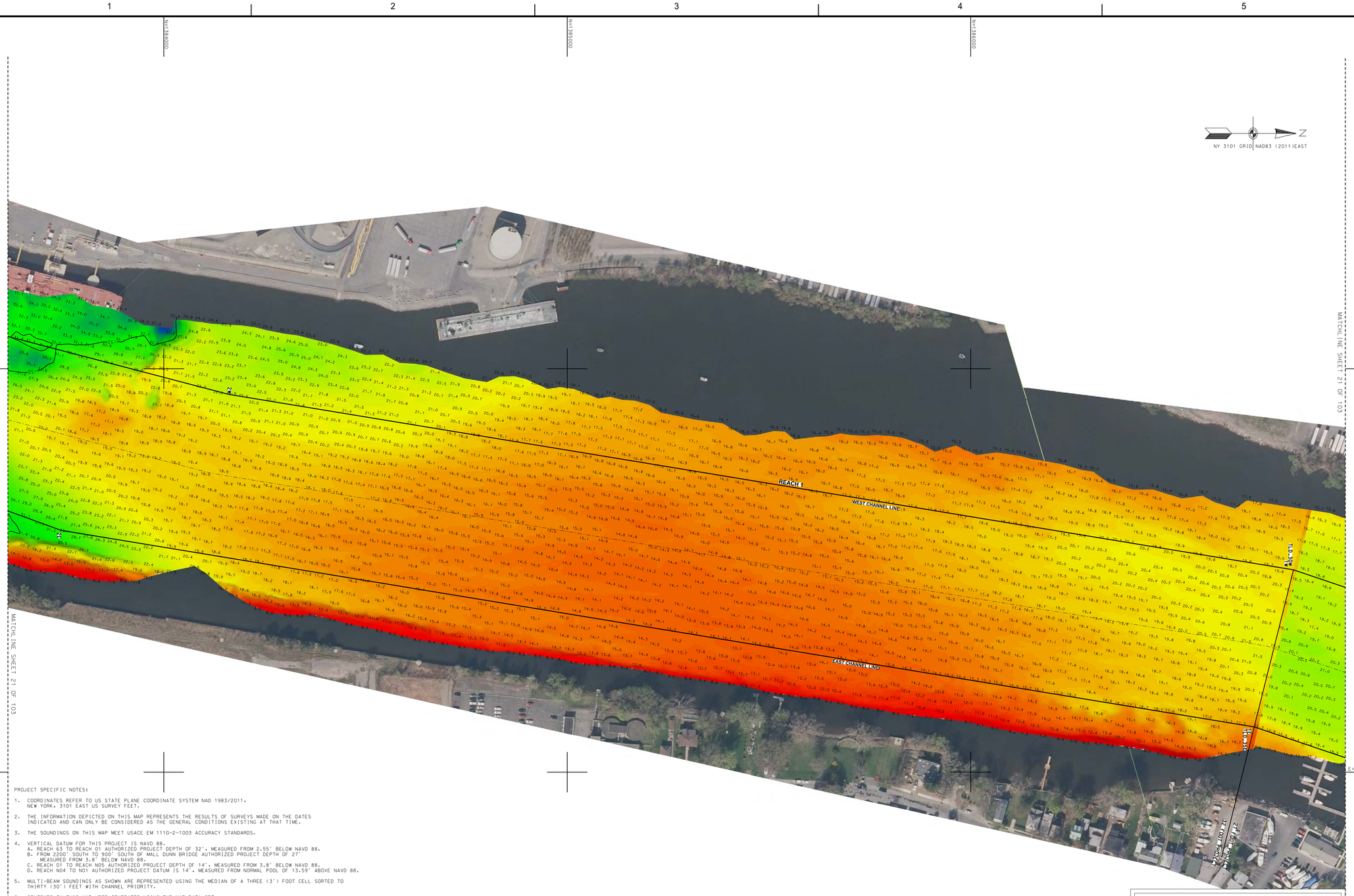
U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

CHKD BY: RBD

MCKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TELEPHONE: (910) 251-8448
FAX: (910) 251-4262

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL
REACH N27

SHEET IDENTIFICATION
VH-119
SHEET 19 OF 103



PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983/2011. NEW YORK. 3101 EAST US SURVEY FEET.
2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.
3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.
4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32'. MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14'. MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14'. MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.
5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.
6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.
7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.
8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.
9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.
10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.
11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED I2NS INERTIAL NAVIGATION SYSTEM. IN REAL TIME KINEMATIC (RTK)MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES
    USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.
12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS, A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.

STATE OF NEW YORK
RAYMOND B. DARBEE
No. 49350
LICENSED LAND SURVEYOR

NSRS/NGS CONTROL DATA			
BENCHMARK: TROY DAM 1	PID# BBDR68	NORTHING	EASTING
ELEVATION: 25.32' NAVD 88		1,428,037.76	709,760.15

LOCAL CONTROL DATA			
BENCHMARK: HR-12	PID#	NORTHING	EASTING
ELEVATION: 8.67' NAVD 88		1,318821.55	684451.34
STAMPED: HR-12 2016			

LOCAL CONTROL DATA			
BENCHMARK: 01-1	PID#	NORTHING	EASTING
ELEVATION: 3.87' NAVD 88		1,124,859.59	641003.46
STAMPED:			

SCALE 1" = 100'
0 100 200 300 400

US Army Corps of Engineers ®
New York District

MARK	DESCRIPTION	DATE	APPR.

MARK	DESCRIPTION	DATE	APPR.

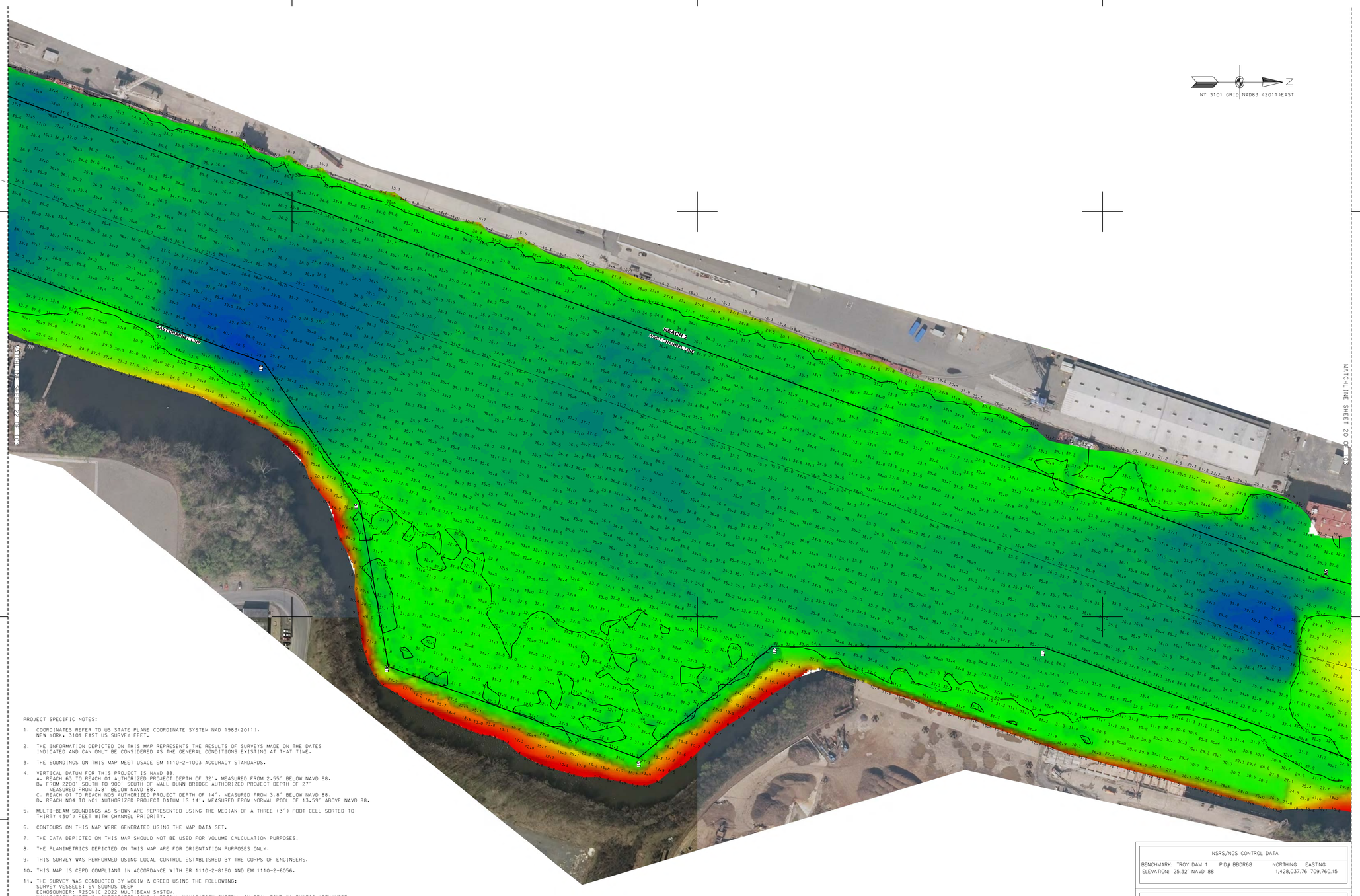
U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

DESIGNED BY: DLJ
DRAWN BY: MBH
CKD BY: RBD
SUBMITTED BY: DLJ
PLOT SCALE: 1:100
PLOT DATE: 1/2/2018
DATE: AUGUST-SEPTEMBER 2017
SOLICITATION NO.:
CONTRACT NO.: W912DS-14-D-0004
ISSUE DATE: DECEMBER 2017
FILE NUMBER:
FILE NAME: VH101-DSB890043_HUDSON_MB.DGN
SIZE: ANSI F

MCKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TELEPHONE: (910) 251-8246
FAX: (910) 251-4262

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL
REACH 01

SHEET IDENTIFICATION
VH-120
SHEET 20 OF 103



PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011). NEW YORK. 3101 EAST US SURVEY FEET.
2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.
3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.
4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 03 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32', MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14', MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14', MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.
5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.
6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.
7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.
8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.
9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.
10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.
11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED I2NS INERTIAL NAVIGATION SYSTEM. IN REAL TIME KINEMATIC (RTK) MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.
12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS, A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.

NSRS/NGS CONTROL DATA			
BENCHMARK: TROY DAM 1	PID# BBDR68	NORTHING	EASTING
ELEVATION: 25.32' NAVD 88		1,428,037.76	709,760.15

LOCAL CONTROL DATA			
BENCHMARK: HR-12	PID#	NORTHING	EASTING
ELEVATION: 8.67' NAVD 88		1,318821.55	684451.34
STAMPED: HR-12 2016			

LOCAL CONTROL DATA			
BENCHMARK: 01-1	PID#	NORTHING	EASTING
ELEVATION: 3.87' NAVD 88		1,124,859.59	641003.46
STAMPED:			

STATE OF NEW YORK
RAYMOND B. DWYER
No. 49326
LICENSED LAND SURVEYOR

SCALE 1" = 100'
0 100 200 300 400

US Army Corps of Engineers ®
New York District

MARK	DESCRIPTION	DATE	APPR.	MARK	DESCRIPTION	DATE	APPR.

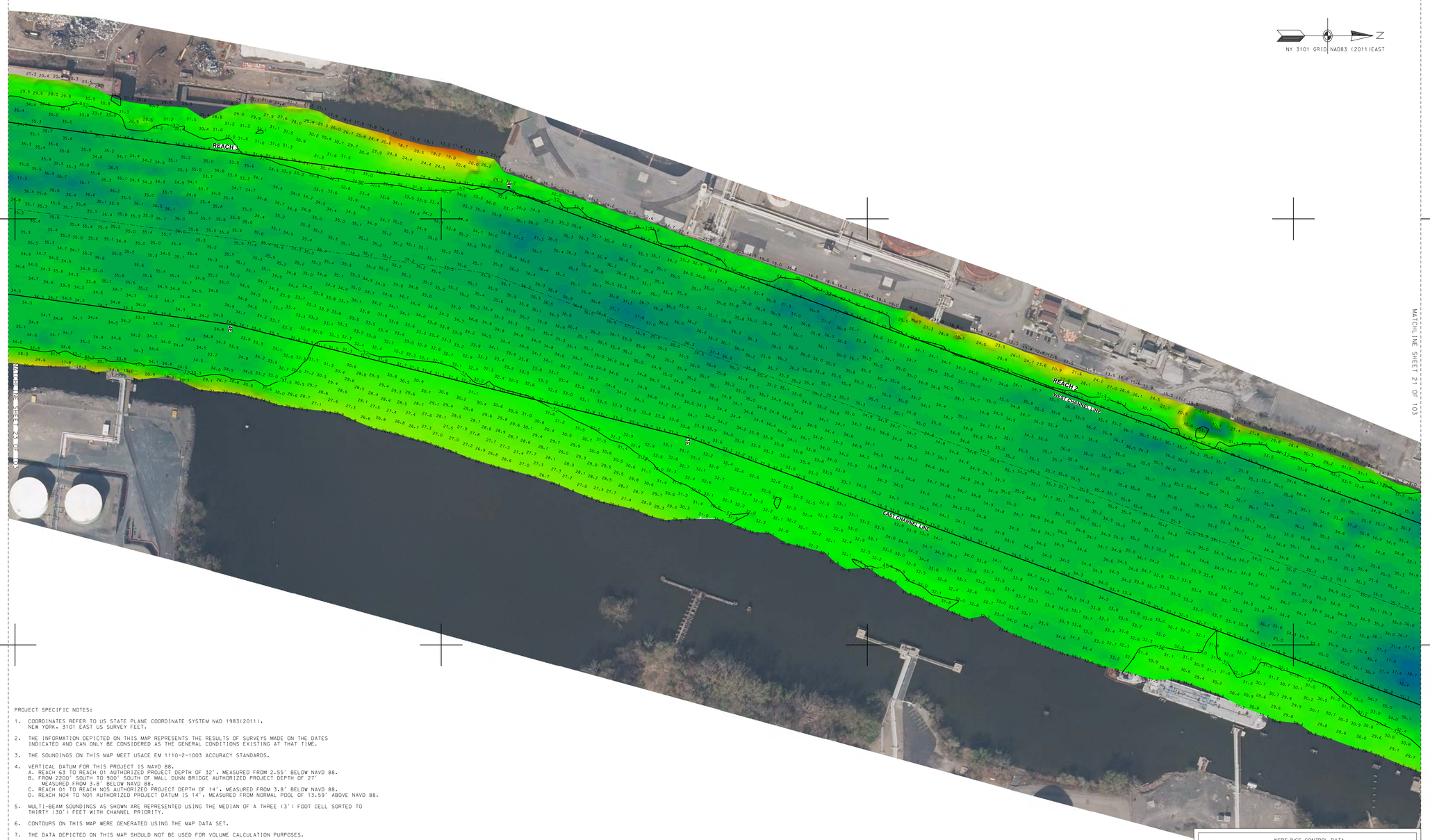
DESIGNED BY: DLJ
DRAWN BY: MBH
CKD BY: RBD
SUBMITTED BY: DLJ
PLOT SCALE: 1:100'
SIZE: ANSI F
DATE: AUGUST-SEPTEMBER 2017
SOLICITATION NO.:
CONTRACT NO.: W912DS-14-D-0004
FILE NUMBER:
ISSUE DATE: DEC 2017
FILE NAME: VH101-056890043_HUDSON_MB.DGN

U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

McKIM&CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TELEPHONE: (910) 251-1646
FAX: (910) 251-8282

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL
REACH 02

SHEET IDENTIFICATION
VH-121
SHEET 21 OF 103



PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011). NEW YORK. 3101 EAST US SURVEY FEET.
2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.
3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.
4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32'. MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14'. MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14'. MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.
5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.
6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.
7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.
8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.
9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.
10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.
11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED I2NS INERTIAL NAVIGATION SYSTEM. IN REAL TIME KINEMATIC (RTK) MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES.
    USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.
12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS. A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.

NSRS/NGS CONTROL DATA			
BENCHMARK: TROY DAM 1	PID# BBDR68	NORTHING	EASTING
ELEVATION: 25.32' NAVD 88		1,428,037.76	709,760.15

LOCAL CONTROL DATA			
BENCHMARK: HR-12	PID#	NORTHING	EASTING
ELEVATION: 8.67' NAVD 88		1,318821.55	684451.34
STAMPED: HR-12 2016			

LOCAL CONTROL DATA			
BENCHMARK: 01-1	PID#	NORTHING	EASTING
ELEVATION: 3.87' NAVD 88		1,124,859.59	641003.46
STAMPED:			

STATE OF NEW YORK
RAYMOND B. DWYER
049262
LICENSED LAND SURVEYOR

SCALE 1" = 100'
0 100 200 300 400

US Army Corps of Engineers ®
New York District

MARK	DESCRIPTION	DATE	APPR.	MARK	DESCRIPTION	DATE	APPR.

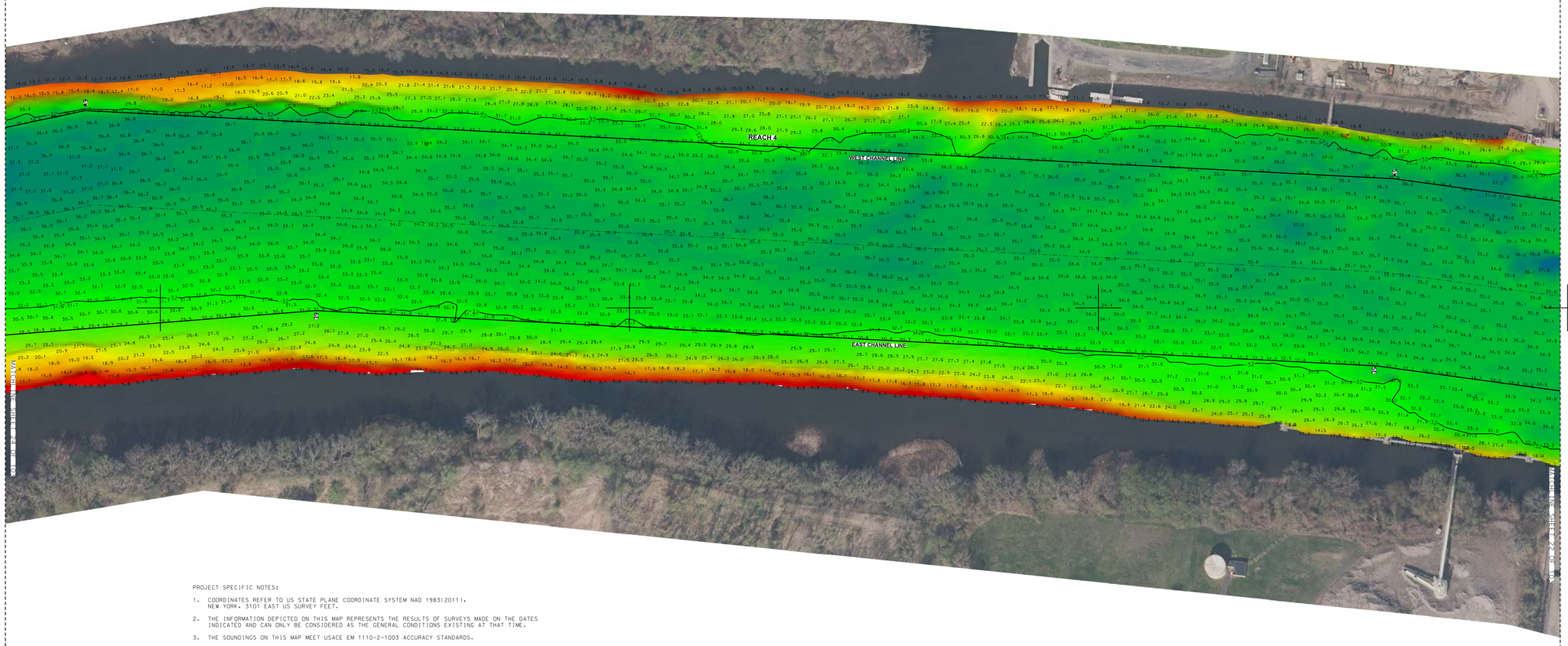
DESIGNED BY: DEJ
DWN BY: MBH
CKD BY: RBD
SUBMITTED BY: DEJ
PLOT SCALE: 1" = 100'
SIZE: ANSI F
DATE: AUGUST-SEPTEMBER 2017
SOLICITATION NO.:
CONTRACT NO.: W912DS-14-D-0004
FILE NUMBER:
PLOT DATE: 10/27/2017
FILE NAME: VH101-056880043_HUDSON_MB.DGN

U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

McKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TELEPHONE: (910) 251-0486
FAX: (910) 251-8282

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL
REACH 02-03

SHEET IDENTIFICATION
VH-122
SHEET 22 OF 103



N 3 1 GRID NAD83 (2011) EAST

PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011). NEW YORK. 3101 EAST US SURVEY FEET.
2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.
3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.
4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32'. MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 220' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14'. MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14'. MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.
5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.
6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.
7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.
8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.
9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.
10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.
11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED I2NS INERTIAL NAVIGATION SYSTEM. IN REAL TIME KINEMATIC (RTK) MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.
12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS. A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.

NSRS/NGS CONTROL DATA			
BENCHMARK: TROY DAM 1	PID# BBDR68	NORTHING	EASTING
ELEVATION: 25.32' NAVD 88		1,428,037.76	709,760.15

LOCAL CONTROL DATA			
BENCHMARK: HR-12	PID#	NORTHING	EASTING
ELEVATION: 8.67' NAVD 88		1,318821.55	684451.34
STAMPED: HR-12 2016			

LOCAL CONTROL DATA			
BENCHMARK: 01-1	PID#	NORTHING	EASTING
ELEVATION: 3.87' NAVD 88		1,124,859.59	641003.46
STAMPED:			

STATE OF NEW YORK
RAYMOND B. BARKER
No. 49351
LICENSED LAND SURVEYOR

SCALE 1" = 100'
0 100 200 300 400

US Army Corps of Engineers ®
New York District

MARK	DESCRIPTION	DATE	APPR.

MARK	DESCRIPTION	DATE	APPR.

U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

MCKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TELEPHONE: (910) 251-8444
FAX: (910) 251-8282

DESIGNED BY: EDA	CKD BY: RBD	DATE: AUGUST-SEPTEMBER 2017	
DWN BY: MBH		SOLICITATION NO.:	
SUBMITTED BY: DLJ		CONTRACT NO.: W912DS-14-D-0004	
PLOT SCALE: 1:100'	ISSUE DATE: DEC 2017	FILE NUMBER:	
SIZE: ANSI F		FILE NAME: V:\101\c058890043_HUDSON_MB.DGN	

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL
REACH 04

SHEET IDENTIFICATION
VH-123
SHEET 23 OF 103

PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011). NEW YORK, 3101 EAST US SURVEY FEET.

2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.

3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.

4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32'. MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14'. MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14'. MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.

5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.

6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.

7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.

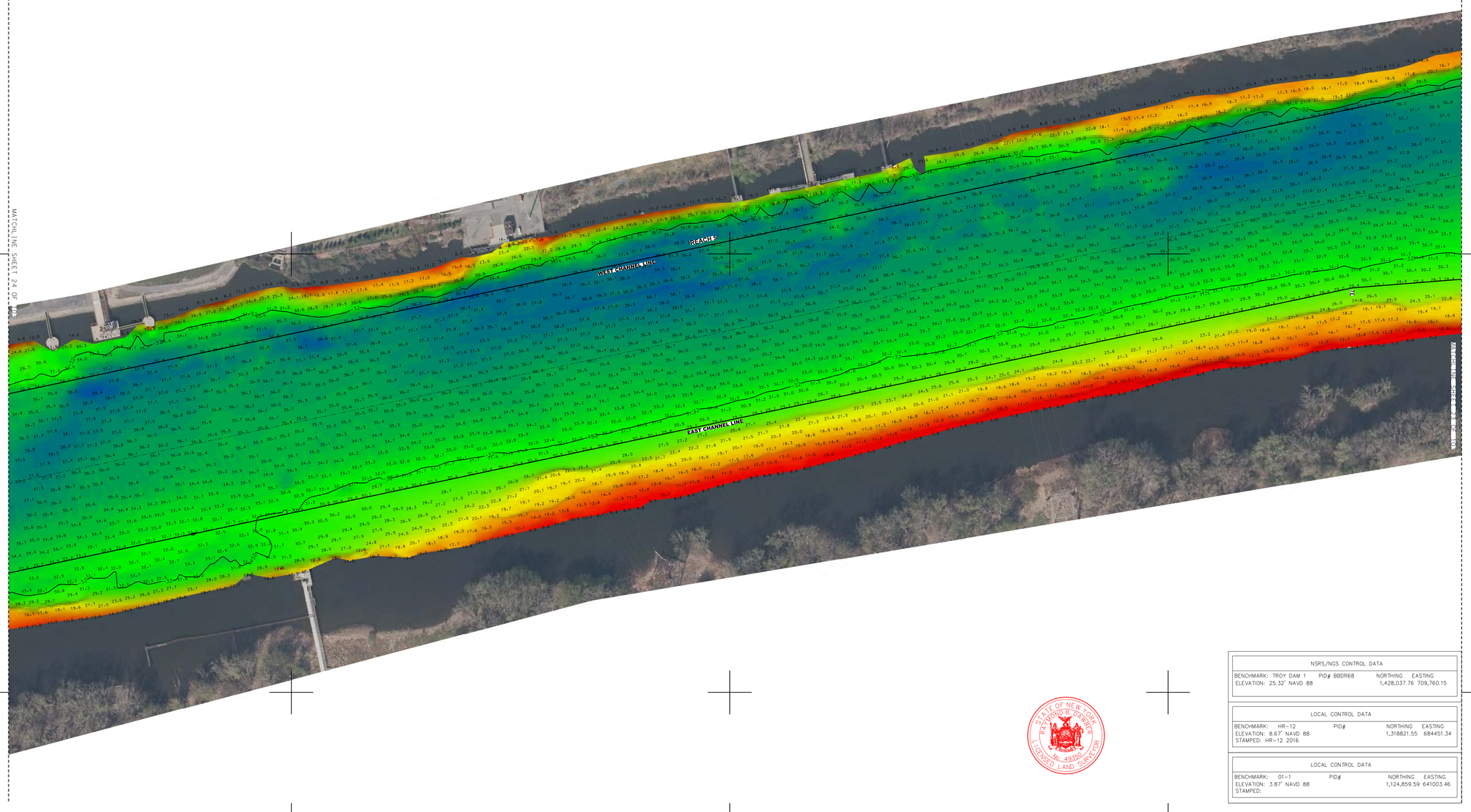
8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.

9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.

10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.

11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED I2NS INERTIAL NAVIGATION SYSTEM. IN REAL TIME KINEMATIC (RTK)MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES
    USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.

12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24 -SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS, A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.



NY 3101 GRID NAD83 (2011) EAST

NSRS/NGS CONTROL DATA			
BENCHMARK: TROY DAM 1	PID# BBDR68	NORTHING	EASTING
ELEVATION: 25.32' NAVD 88		1,428,037.76	709,760.15

LOCAL CONTROL DATA			
BENCHMARK: HR-12	PID#	NORTHING	EASTING
ELEVATION: 8.67' NAVD 88		1,318821.55	684451.34
STAMPED: HR-12 2016			

LOCAL CONTROL DATA			
BENCHMARK: 01-1	PID#	NORTHING	EASTING
ELEVATION: 3.87' NAVD 88		1,124,859.59	641003.46
STAMPED:			

STATE OF NEW YORK
RICHARD B. TANNER
049350
LICENSED LAND SURVEYOR

SCALE 1" = 100'
0 100 200 300 400

US Army Corps of Engineers ®
New York District

MARK	DESCRIPTION	DATE	APPR.	MARK	DESCRIPTION	DATE	APPR.

DATE: AUGUST - SEPTEMBER 2017
SOLICITATION NO.:
CONTRACT NO.: W912DS-14-D-0004
FILE NUMBER:
ISSUE DATE: NOV 2017
FILE NAME: VH101-056890043_HUDSON_MB.DGN

DESIGNED BY: DEJ
DWN BY: MBH
CKD BY: RBD
SUBMITTED BY: DEJ
PLOT SCALE: 1:600
SIZE: ANSI F

U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

MCKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TELEPHONE: (910) 251-0406
FAX: (910) 251-8282

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL
REACH 05

SHEET IDENTIFICATION
VH-124
SHEET 24 OF 103

PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011). NEW YORK, 3101 EAST US SURVEY FEET.

2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.

3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.

4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32'. MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14'. MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14'. MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.

5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.

6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.

7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.

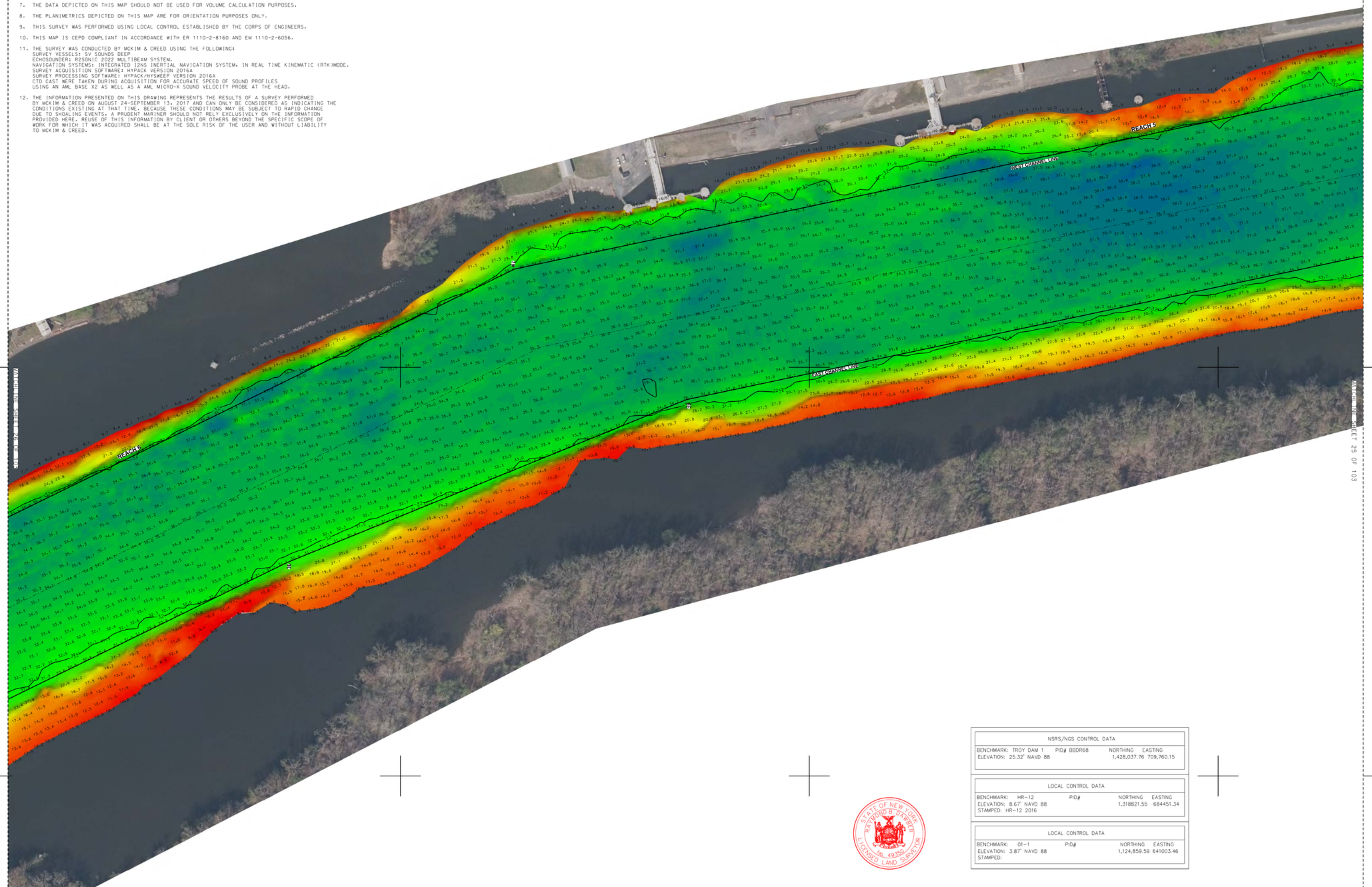
8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.

9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.

10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.

11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED I2NS INERTIAL NAVIGATION SYSTEM. IN REAL TIME KINEMATIC (RTK)MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.

12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS, A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.



NY 3101 GRID NAD83 (2011)EAST

N=1568000 N=1569000 N=1570000

E=691000 E=692000 E=693000

NSRS/NGS CONTROL DATA			
BENCHMARK: TROY DAM 1	PID# BBDR68	NORTHING	EASTING
ELEVATION: 25.32' NAVD 88		1,428,037.76	709,760.15

LOCAL CONTROL DATA			
BENCHMARK: HR-12	PID#	NORTHING	EASTING
ELEVATION: 8.67' NAVD 88		1,318821.55	684451.34
STAMPED: HR-12 2016			

LOCAL CONTROL DATA			
BENCHMARK: 01-1	PID#	NORTHING	EASTING
ELEVATION: 3.87' NAVD 88		1,124,859.59	641003.46
STAMPED:			

STATE OF NEW YORK RAYMOND B. TARVER No. 49350 LICENSED LAND SURVEYOR

SCALE 1" = 100'
0 100 200 300 400

US Army Corps of Engineers ®
New York District

MARK	DESCRIPTION	DATE	APPR.

DATE: AUGUST-SEPTEMBER 2017
SOLICITATION NO.:
CONTRACT NO.: W912DS-14-D-0004
FILE NUMBER:
ISSUE DATE: DECEMBER 2017
FILE NAME: VH101-058890043_HUDSON_MB.DGN
PLOT SCALE: 1:100'
SIZE: ANSI F

DESIGNED BY: DGB
DWN BY: MBH
CKD BY: RBD
SUBMITTED BY: DLJ

U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

McKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TELEPHONE: (910) 251-8444
FAX: (910) 251-8282

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL
REACH 05-06

SHEET IDENTIFICATION
VH-125
SHEET 25 OF 103

PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011). NEW YORK. 3101 EAST US SURVEY FEET.

2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.

3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.

4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32', MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14', MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14', MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.

5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.

6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.

7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.

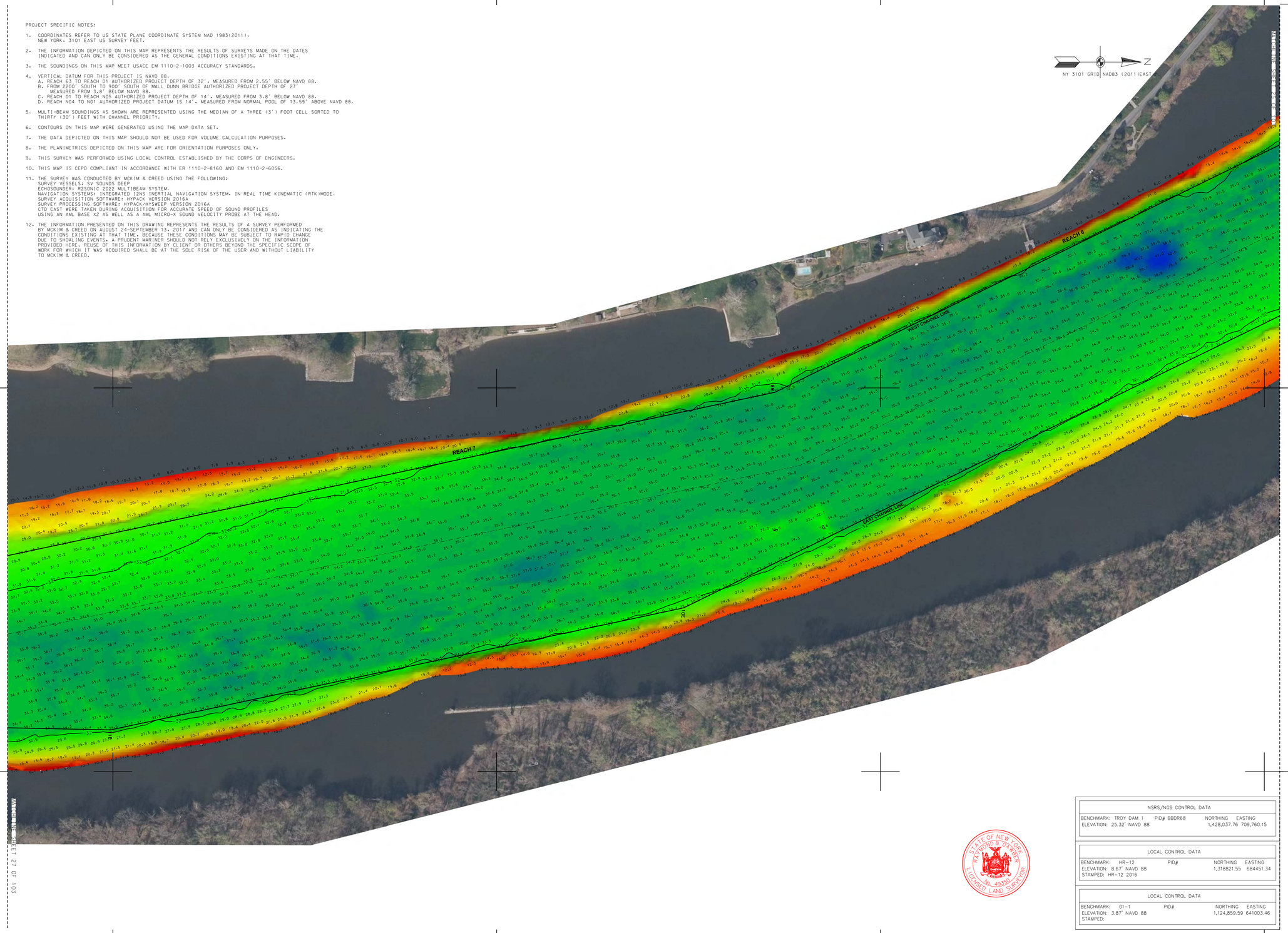
8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.

9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.

10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.

11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED I2NS INERTIAL NAVIGATION SYSTEM. IN REAL TIME KINEMATIC (RTK)MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.

12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS, A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.



N:1364000 N:1365000 N:1366000 N:1367000

E=692000 E=693000 E=694000

NY 3101 GRID NAD83 (2011)EAST

NSRS/NGS CONTROL DATA			
BENCHMARK: TROY DAM 1	PID# BBDR68	NORTHING	EASTING
ELEVATION: 25.32' NAVD 88		1,428,037.76	709,760.15

LOCAL CONTROL DATA			
BENCHMARK: HR-12	PID#	NORTHING	EASTING
ELEVATION: 8.67' NAVD 88		1,318821.55	684451.34
STAMPED: HR-12 2016			

LOCAL CONTROL DATA			
BENCHMARK: 01-1	PID#	NORTHING	EASTING
ELEVATION: 3.87' NAVD 88		1,124,859.59	641003.46
STAMPED:			

STATE OF NEW YORK
RAYMOND B. BARBER
No. 49350
LICENSED LAND SURVEYOR

SCALE 1" = 100'
0 100 200 300 400

US Army Corps of Engineers ®
New York District

MARK	DESCRIPTION	DATE	APPR.

MARK	DESCRIPTION	DATE	APPR.

DATE: AUGUST-SEPTEMBER 2017
SOLICITATION NO.:
CONTRACT NO.: W912DS-14-D-0004
FILE NUMBER:
ISSUE DATE: DEC 2017
FILE NAME: VH101-0588900043_HUDSON_MB.DGN
PLOT SCALE: 1=96'
SIZE: ANSI F

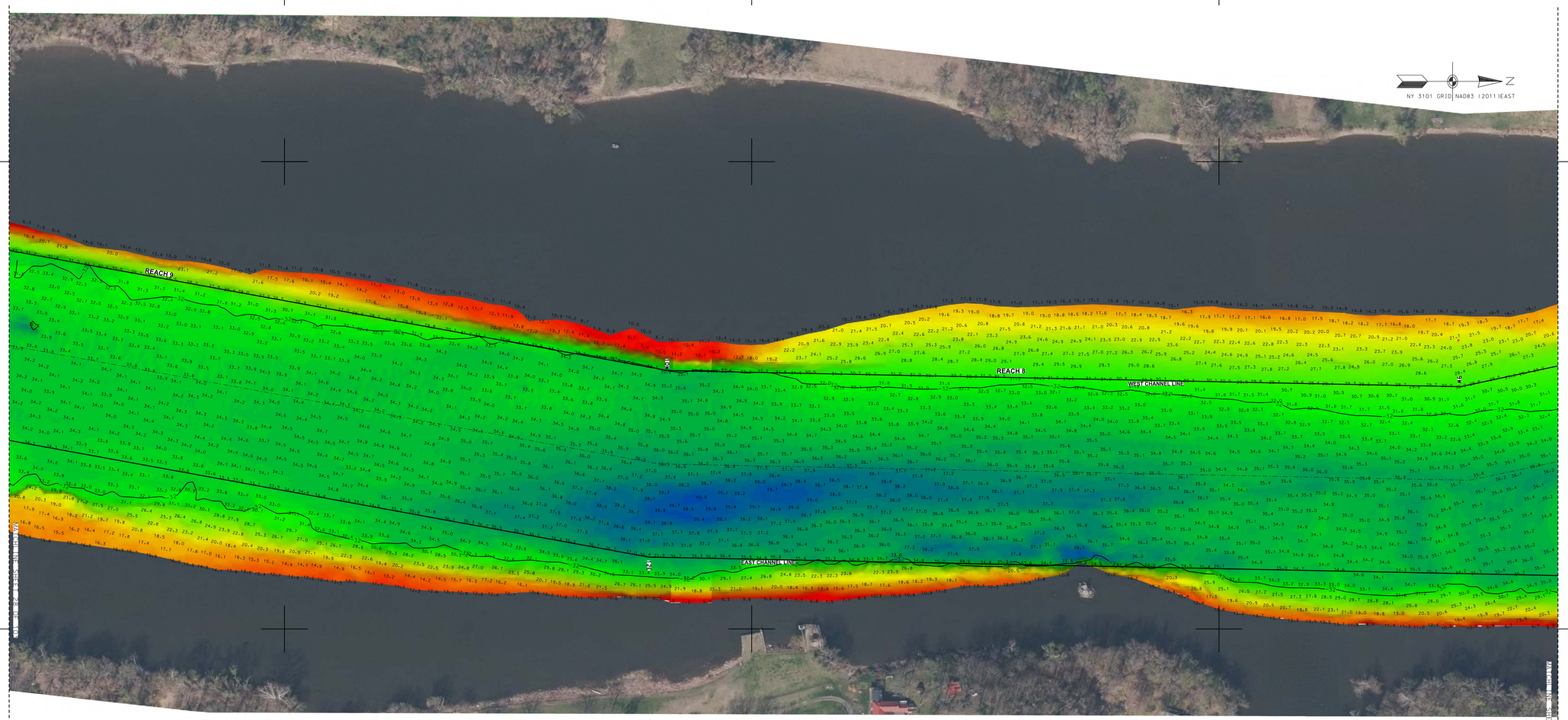
DESIGNED BY: DLJ
DWN BY: MBH
CKD BY: RBD
SUBMITTED BY: DLJ

U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

MCKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TELEPHONE: (910) 251-8848
FAX: (910) 251-4262

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL
REACH 06-07

SHEET IDENTIFICATION
VH-126
SHEET 26 OF 103



PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011). NEW YORK, 3101 EAST US SURVEY FEET.
2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.
3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.
4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32', MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14', MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14', MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.
5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.
6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.
7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.
8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.
9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.
10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.
11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED I2NS INERTIAL NAVIGATION SYSTEM. IN REAL TIME KINEMATIC (RTK)MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.
12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS, A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.

STATE OF NEW YORK
RAYMOND B. OWNER
LICENSED LAND SURVEYOR
No. 49330

NSRS/NGS CONTROL DATA			
BENCHMARK: TROY DAM 1	PID# BBDR68	NORTHING	EASTING
ELEVATION: 25.32' NAVD 88		1,428,037.76	709,760.15

LOCAL CONTROL DATA			
BENCHMARK: HR-12	PID#	NORTHING	EASTING
ELEVATION: 8.67' NAVD 88		1,318821.55	684451.34
STAMPED: HR-12 2016			

LOCAL CONTROL DATA			
BENCHMARK: 01-1	PID#	NORTHING	EASTING
ELEVATION: 3.87' NAVD 88		1,124,859.59	641003.46
STAMPED:			

SCALE 1" = 100'
0 100 200 300 400

US Army Corps of Engineers
New York District

MARK	DESCRIPTION	DATE	APPR.

DATE: AUGUST-SEPTEMBER 2017
SOLICITATION NO.:
CONTRACT NO.: W912DS-14-D-0004
FILE NUMBER:

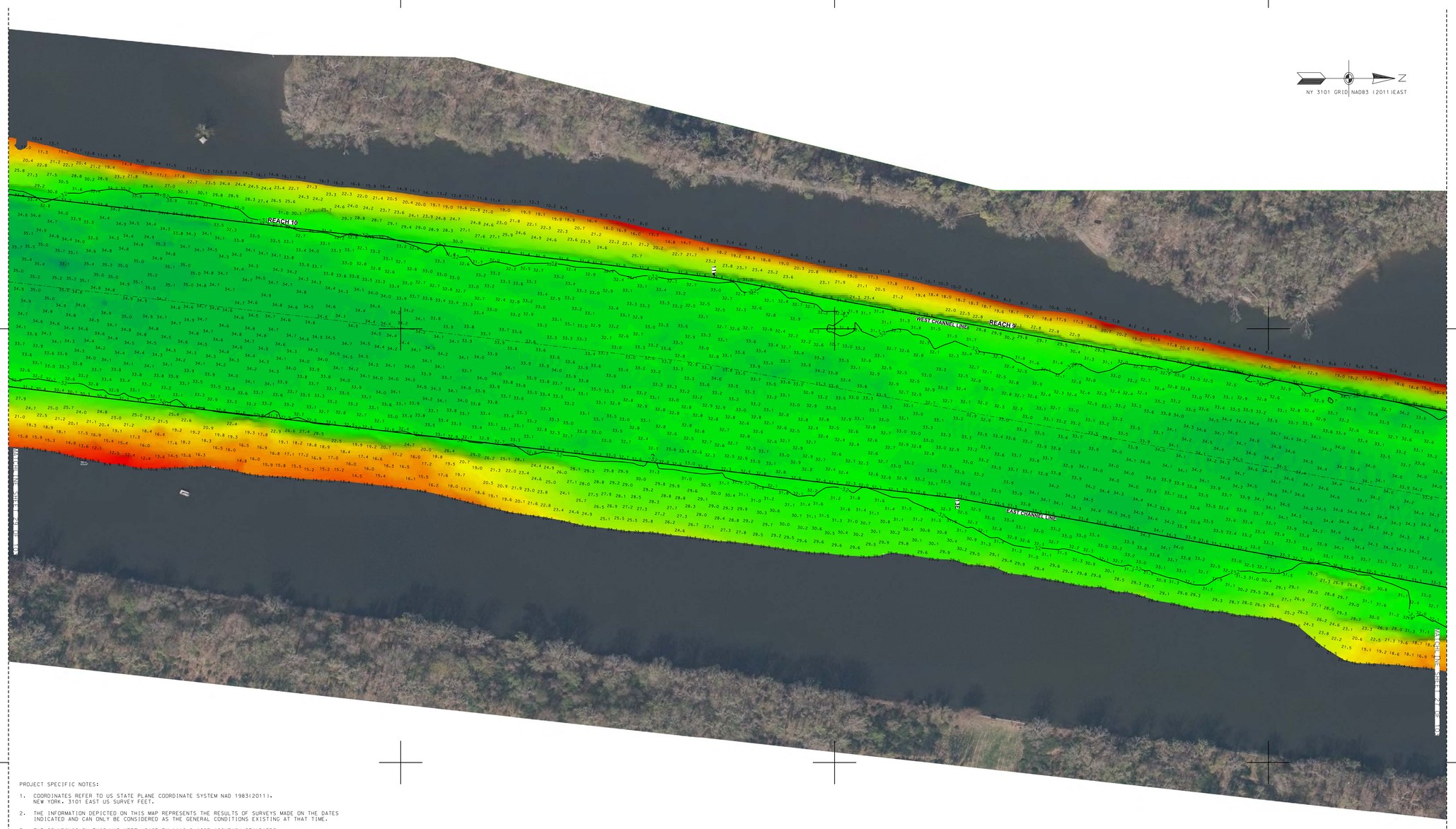
DESIGNED BY: DBJ
DWN BY: MBH
CKD BY: RED
SUBMITTED BY: DBJ
PLOT SCALE: 1" = 100'
ISSUE DATE: [illegible]
SHEET NO.: 27
FILE NAME: VH101-056880043_HUDSON_MB.DGN
SIZE: ANSI F

U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

MCKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TELEPHONE: (910) 251-8444
FAX: (910) 251-8282

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL
REACH 08-09

SHEET IDENTIFICATION
VH-127
SHEET 27 OF 103



PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011). NEW YORK. 3101 EAST US SURVEY FEET.

2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.

3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.

4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32', MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14', MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14', MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.

5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.

6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.

7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.

8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.

9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.

10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.

11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED I2NS INERTIAL NAVIGATION SYSTEM. IN REAL TIME KINEMATIC (RTK)MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.

12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS, A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.

STATE OF NEW YORK
RAYMOND B. DRAKER
No. 49355
LICENSED LAND SURVEYOR

NSRS/NGS CONTROL DATA			
BENCHMARK: TROY DAM 1	PID# BBDR68	NORTHING	EASTING
ELEVATION: 25.32' NAVD 88		1,428,037.76	709,760.15

LOCAL CONTROL DATA			
BENCHMARK: HR-12	PID#	NORTHING	EASTING
ELEVATION: 8.67' NAVD 88		1,318821.55	684451.34
STAMPED: HR-12 2016			

LOCAL CONTROL DATA			
BENCHMARK: 01-1	PID#	NORTHING	EASTING
ELEVATION: 3.87' NAVD 88		1,124,859.59	641003.46
STAMPED:			

SCALE 1" = 100'
0 100 200 300 400

US Army Corps of Engineers ®
New York District

MARK	DESCRIPTION	DATE	APPR.	MARK	DESCRIPTION	DATE	APPR.

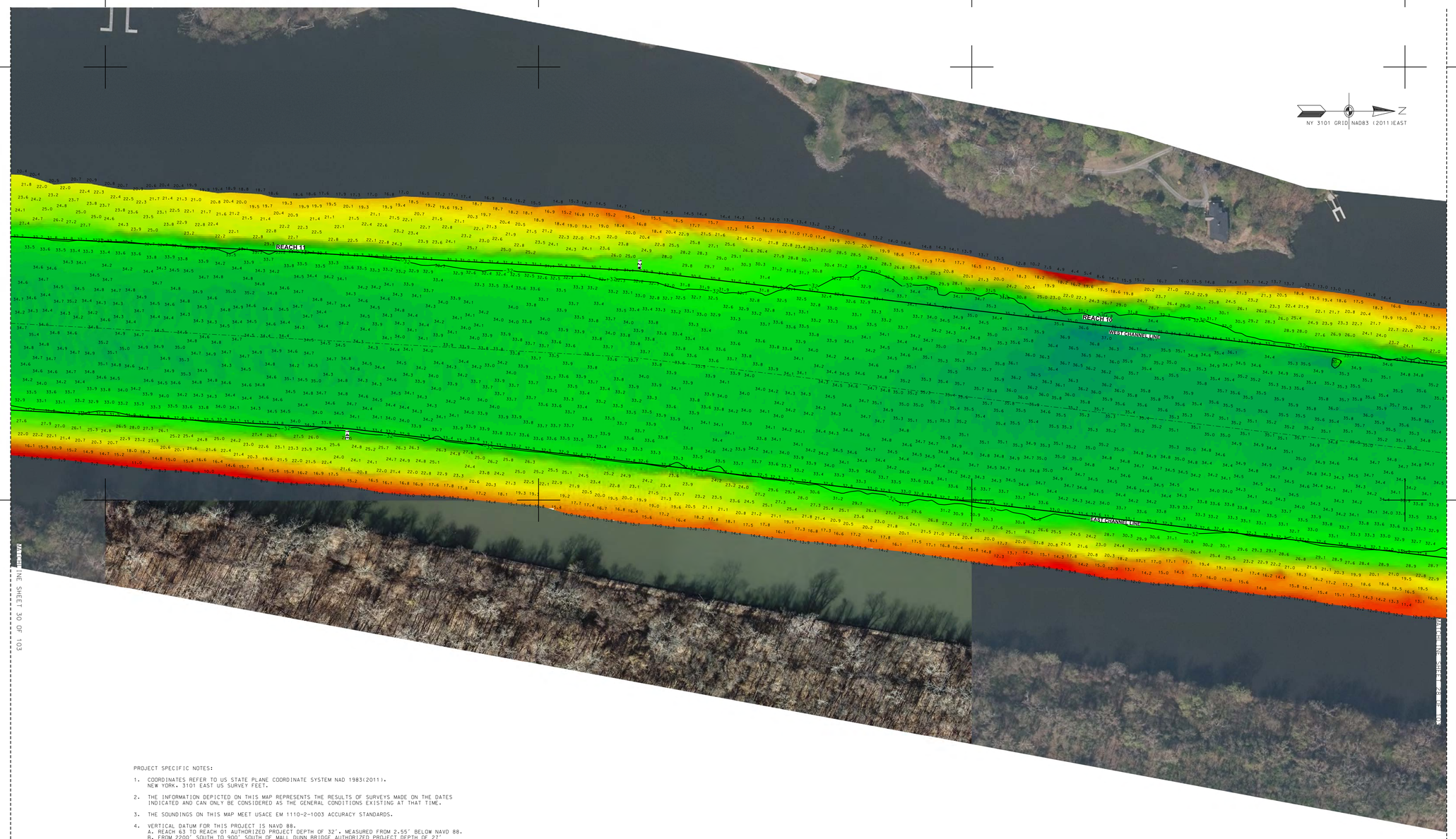
DESIGNED BY: DEG
DRAWN BY: MBH
SUBMITTED BY: DLJ
PLOT SCALE: 1" = 100'
SIZE: ANSI F
DATE: AUGUST-SEPTEMBER 2017
SOLICITATION NO.:
CKD BY: RBD
ISSUE DATE: DEC 2017
CONTRACT NO.: W912DS-14-D-0004
FILE NUMBER:
FILE NAME: V4101-058890043_HUDSON_MB.DGN

U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

MCKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TELEPHONE: (910) 254-0568
FAX: (910) 251-8282

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL
REACH 09-10

SHEET IDENTIFICATION
VH-128
SHEET 28 OF 103



PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011). NEW YORK, 3101 EAST US SURVEY FEET.
2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.
3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.
4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32', MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14', MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14', MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.
5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.
6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.
7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.
8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.
9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.
10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.
11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED I2NS INERTIAL NAVIGATION SYSTEM. IN REAL TIME KINEMATIC (RTK)MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.
12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS, A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.

STATE OF NEW YORK
RAYMOND B. OWEN
LICENSED LAND SURVEYOR
No. 49326

NSRS/NGS CONTROL DATA			
BENCHMARK: TROY DAM 1	PID# BBDR68	NORTHING	EASTING
ELEVATION: 25.32' NAVD 88		1,428,037.76	709,760.15

LOCAL CONTROL DATA			
BENCHMARK: HR-12	PID#	NORTHING	EASTING
ELEVATION: 8.67' NAVD 88		1,318821.55	684451.34
STAMPED: HR-12 2016			

LOCAL CONTROL DATA			
BENCHMARK: 01-1	PID#	NORTHING	EASTING
ELEVATION: 3.87' NAVD 88		1,124,859.59	641003.46
STAMPED:			

SCALE 1" = 100'
0 100 200 300 400

US Army Corps of Engineers
New York District

MARK	DESCRIPTION	DATE	APPR.	MARK	DESCRIPTION	DATE	APPR.

DATE: AUGUST-SEPTEMBER 2017
SOLICITATION NO.:
CONTRACT NO.: W912DS-14-D-0004
FILE NUMBER:

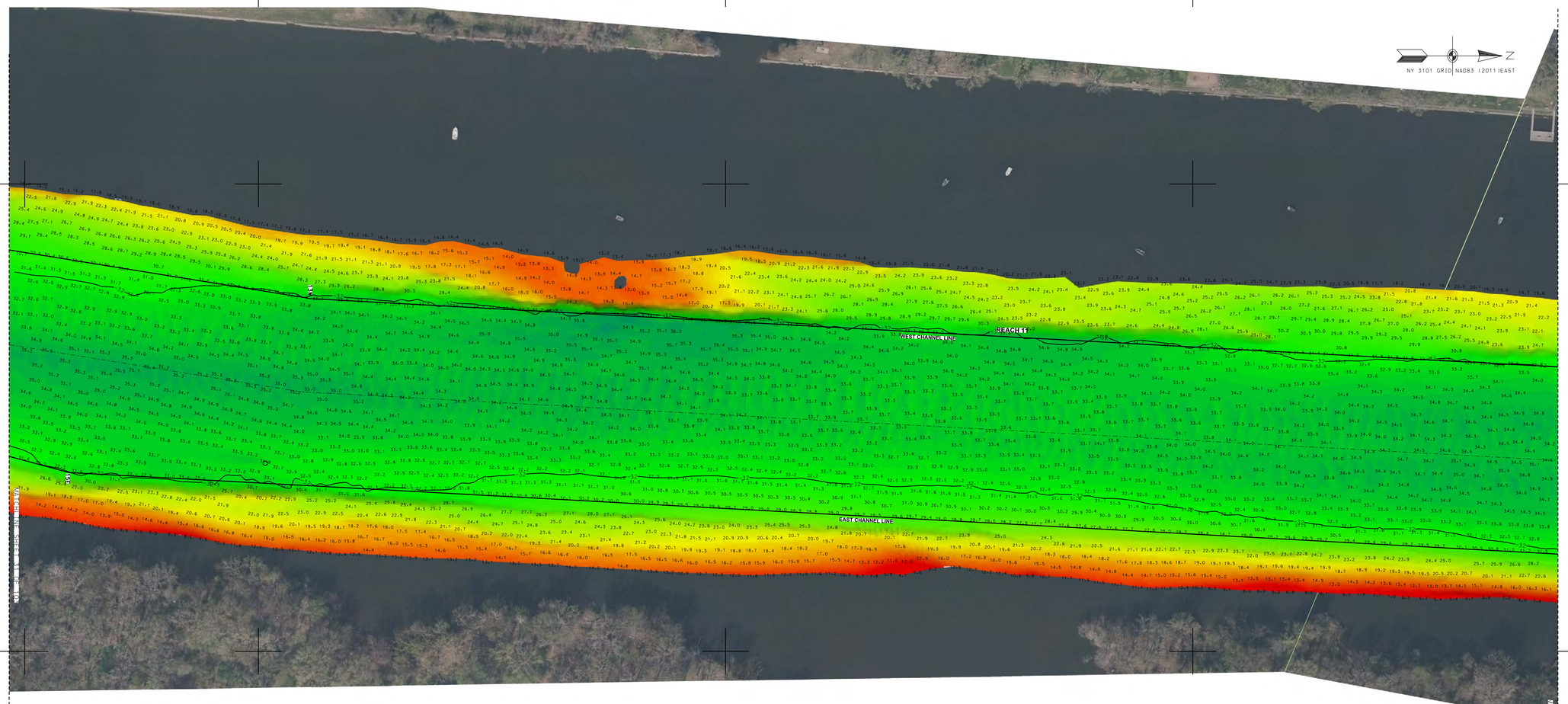
DESIGNED BY: DBG
DWN BY: MBH
CKD BY: RBD
SUBMITTED BY: DEJ
PLOT SCALE: 1" = 100'
ISSUE DATE:
RE: SHEET
FILE NAME: V:\410-056880043_HUDSON_MB.DGN
SIZE: ANSI F

U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

MCKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TELEPHONE: (910) 251-8251
FAX: (910) 251-8282

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL
REACH 10-11

SHEET IDENTIFICATION
VH-129
SHEET 29 OF 103



PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011). NEW YORK, 3101 EAST US SURVEY FEET.

2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.

3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.

4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32', MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14', MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14', MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.

5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.

6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.

7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.

8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.

9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.

10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.

11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED I2NS INERTIAL NAVIGATION SYSTEM. IN REAL TIME KINEMATIC (RTK) MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.

12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS, A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.

RAYMOND B. PAYNE
LICENSED LAND SURVEYOR
No. 49350
STATE OF NEW YORK

NSRS/NGS CONTROL DATA			
BENCHMARK: TROY DAM 1	PID# BBDR68	NORTHING	EASTING
ELEVATION: 25.32' NAVD 88		1,428,037.76	709,760.15

LOCAL CONTROL DATA			
BENCHMARK: HR-12	PID#	NORTHING	EASTING
ELEVATION: 8.67' NAVD 88		1,318821.55	684451.34
STAMPED: HR-12 2016			

LOCAL CONTROL DATA			
BENCHMARK: 01-1	PID#	NORTHING	EASTING
ELEVATION: 3.87' NAVD 88		1,124,859.59	641003.46
STAMPED:			

US Army Corps of Engineers
New York District

MARK	DESCRIPTION	DATE	APPR.
MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY: DBG
DWN BY: MBH
CKD BY: RBD
SUBMITTED BY: DLJ
PLOT SCALE: 1" = 100'
PLOT DATE: 10/31/2017
SIZE: ANSI F
ISSUE DATE: 10/31/2017
FILE NAME: VH101-056890043_HUDSON_MB.DGN

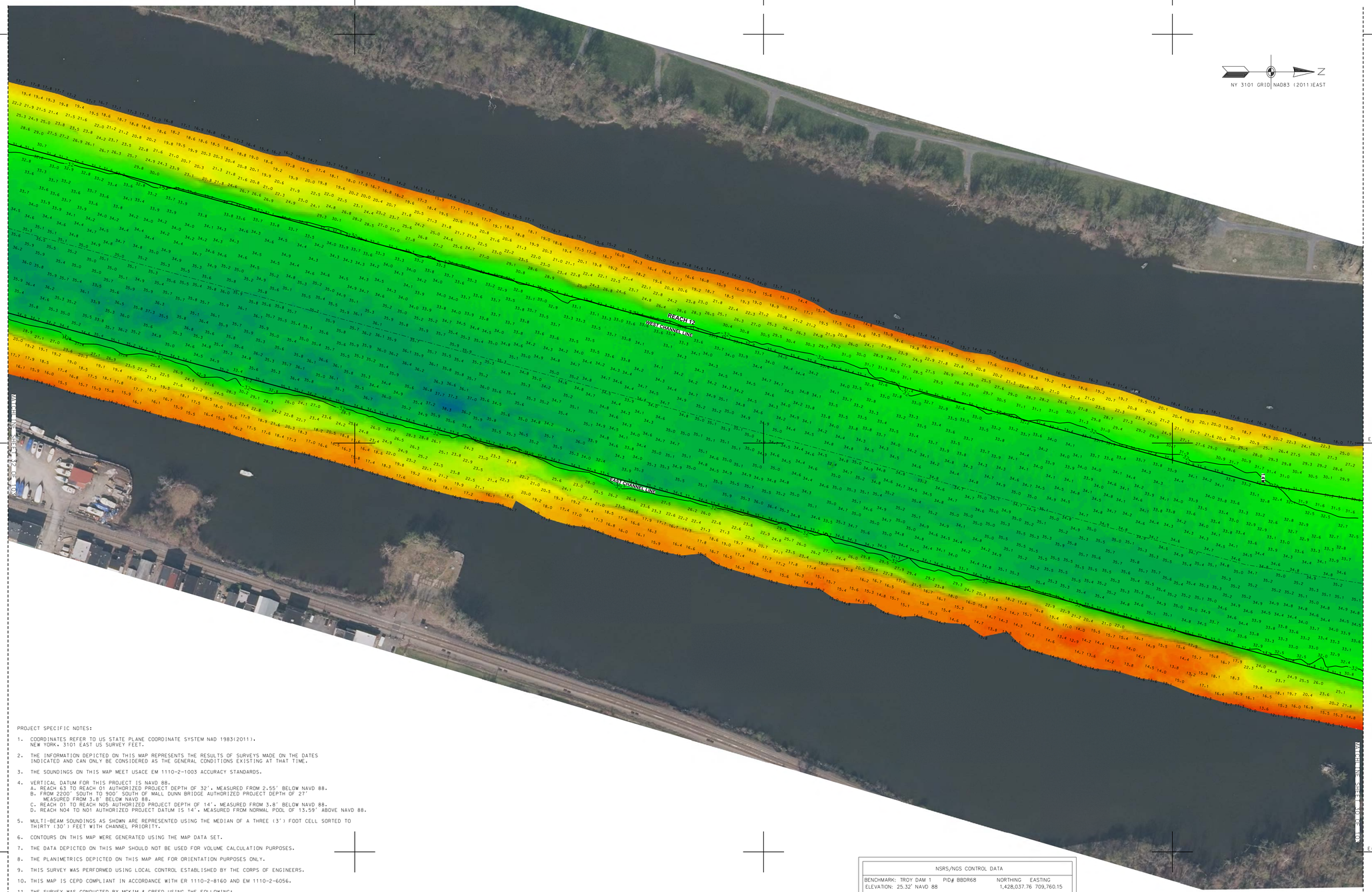
DATE: AUGUST-SEPTEMBER 2017
SOLICITATION NO.:
CONTRACT NO.: W912DS-14-D-0004
FILE NUMBER:

U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

McKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TELEPHONE: (910) 341-0646
FAX: (910) 251-8282

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL
REACH 11

SHEET IDENTIFICATION
VH-130
SHEET 30 OF 103



PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011), NEW YORK, 3101 EAST US SURVEY FEET.
2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.
3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.
4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32'. MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14'. MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14'. MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.
5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.
6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.
7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.
8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.
9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.
10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.
11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED I2NS INERTIAL NAVIGATION SYSTEM. IN REAL TIME KINEMATIC (RTK)MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.
12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS, A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.

NSRS/NGS CONTROL DATA			
BENCHMARK: TROY DAM 1	PID# BBDR68	NORTHING	EASTING
ELEVATION: 25.32' NAVD 88		1,428,037.76	709,760.15

LOCAL CONTROL DATA			
BENCHMARK: HR-12	PID#	NORTHING	EASTING
ELEVATION: 8.67' NAVD 88		1,318821.55	684451.34
STAMPED: HR-12 2016			

LOCAL CONTROL DATA			
BENCHMARK: 01-1	PID#	NORTHING	EASTING
ELEVATION: 3.87' NAVD 88		1,124,859.59	641003.46
STAMPED:			

STATE OF NEW YORK
RAYMOND B. DWYER
No. 49326
LICENSED LAND SURVEYOR

US Army Corps of Engineers ®
New York District

MARK	DESCRIPTION	DATE	APPR.	MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY: DEJ
DWN BY: MBH
CKD BY: RBD
SUBMITTED BY: DEJ
PLOT SCALE: 1" = 100'
ISSUE DATE: DEC 2017
SIZE: ANSI F
FILE NAME: V:\4101-056899043_HUDSON_MB.DGN

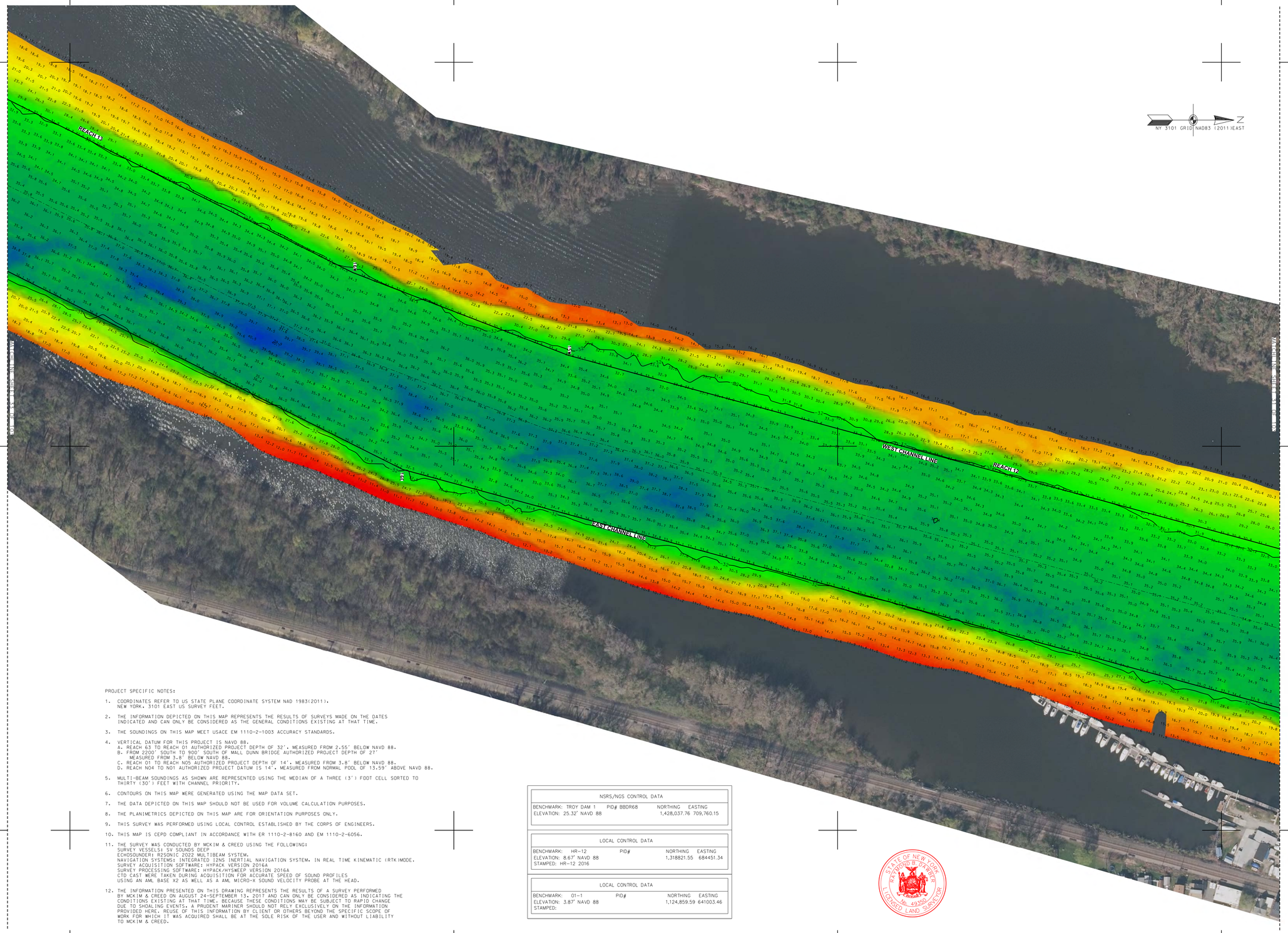
DATE: AUGUST-SEPTEMBER 2017
SOLICITATION NO.:
CONTRACT NO.: W912DS-14-D-0004
FILE NUMBER:

U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

MCKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TELEPHONE: (910) 251-8444
FAX: (910) 251-8282

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL
REACH 12

SHEET IDENTIFICATION
VH-131
SHEET 31 OF 103



PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011). NEW YORK, 3101 EAST US SURVEY FEET.
2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.
3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.
4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32', MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14', MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14', MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.
5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.
6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.
7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.
8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.
9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.
10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.
11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED I2NS INERTIAL NAVIGATION SYSTEM. IN REAL TIME KINEMATIC (RTK)MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.
12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS, A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.

NSRS/NGS CONTROL DATA			
BENCHMARK: TROY DAM 1	PID# BBDR68	NORTHING	EASTING
ELEVATION: 25.32' NAVD 88		1,428,037.76	709,760.15

LOCAL CONTROL DATA			
BENCHMARK: HR-12	PID#	NORTHING	EASTING
ELEVATION: 8.67' NAVD 88		1,318821.55	684451.34
STAMPED: HR-12 2016			

LOCAL CONTROL DATA			
BENCHMARK: 01-1	PID#	NORTHING	EASTING
ELEVATION: 3.87' NAVD 88		1,124,859.59	641003.46
STAMPED:			

STATE OF NEW YORK
RAYMOND B. PFEIFER
No. 49358
LICENSED LAND SURVEYOR

US Army Corps of Engineers ®
New York District

MARK	DESCRIPTION	DATE	APPR.
MARK	DESCRIPTION	DATE	APPR.

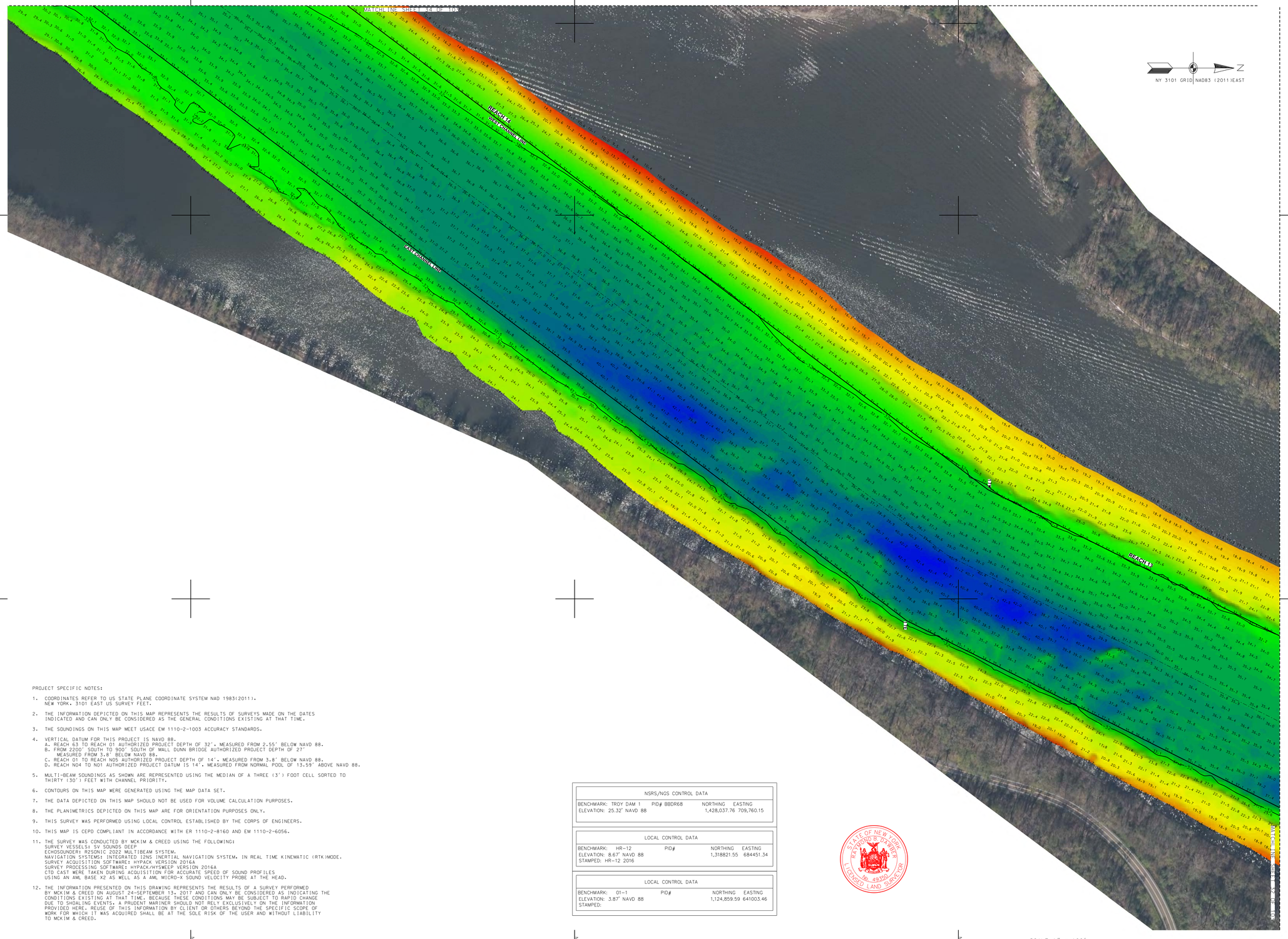
DESIGNED BY:
DWN BY: MBH
CKD BY: RBD
SUBMITTED BY: DLJ
PLOT SCALE: 1:100
PLOT DATE: 1/8/2018
SIZE: ANSI F
DATE: AUGUST-SEPTEMBER 2017
SOLICITATION NO.:
CONTRACT NO.: W912DS-14-D-0004
FILE NUMBER:
FILE NAME: VH101-058890043_HUDSON_MB.DGN

U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

MCKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TEL: (910) 251-8586
FAX: (910) 251-4282

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL
REACH 12-13

SHEET IDENTIFICATION
VH-132
SHEET 32 OF 103



PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011). NEW YORK, 3101 EAST US SURVEY FEET.
2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.
3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.
4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32', MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14', MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14', MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.
5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.
6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.
7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.
8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.
9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.
10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.
11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED IXNS INERTIAL NAVIGATION SYSTEM. IN REAL TIME KINEMATIC (RTK)MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.
12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME, BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS. A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.

NSRS/NGS CONTROL DATA			
BENCHMARK: TROY DAM 1	PID# BBDR68	NORTHING	EASTING
ELEVATION: 25.32' NAVD 88		1,428,037.76	709,760.15

LOCAL CONTROL DATA			
BENCHMARK: HR-12	PID#	NORTHING	EASTING
ELEVATION: 8.67' NAVD 88		1,318821.55	684451.34
STAMPED: HR-12 2016			

LOCAL CONTROL DATA			
BENCHMARK: 01-1	PID#	NORTHING	EASTING
ELEVATION: 3.87' NAVD 88		1,124,859.59	641003.46
STAMPED:			

STATE OF NEW YORK
RAYMOND B. DWYER
No. 49324
LICENSED LAND SURVEYOR

US Army Corps of Engineers ®
New York District

MARK	DESCRIPTION	DATE	APPR.	MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY: DLJ
DRAWN BY: MBH
CHKD BY: RBD
SUBMITTED BY: DLJ
PLOT SCALE: 1"=100'
SIZE: ANSI F
DATE: AUGUST-SEPTEMBER 2017
SOLICITATION NO.:
CONTRACT NO.: W912DS-14-D-0004
FILE NUMBER:
FILE NAME: VH101-056890043_HUDSON_MB.DGN

U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

McKIM&CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TELEPHONE (910) 251-8444
FAX (910) 251-8282

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL
REACH 13-14

SHEET IDENTIFICATION
VH-133
SHEET 33 OF 103

PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011), NEW YORK, 3101 EAST US SURVEY FEET.
2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.
3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.
4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32', MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14', MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14', MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.
5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.
6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.
7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.
8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.
9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.
10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.
11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED IXNS INERTIAL NAVIGATION SYSTEM. IN REAL TIME KINEMATIC (RTK)MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES
    USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.
12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS, A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.

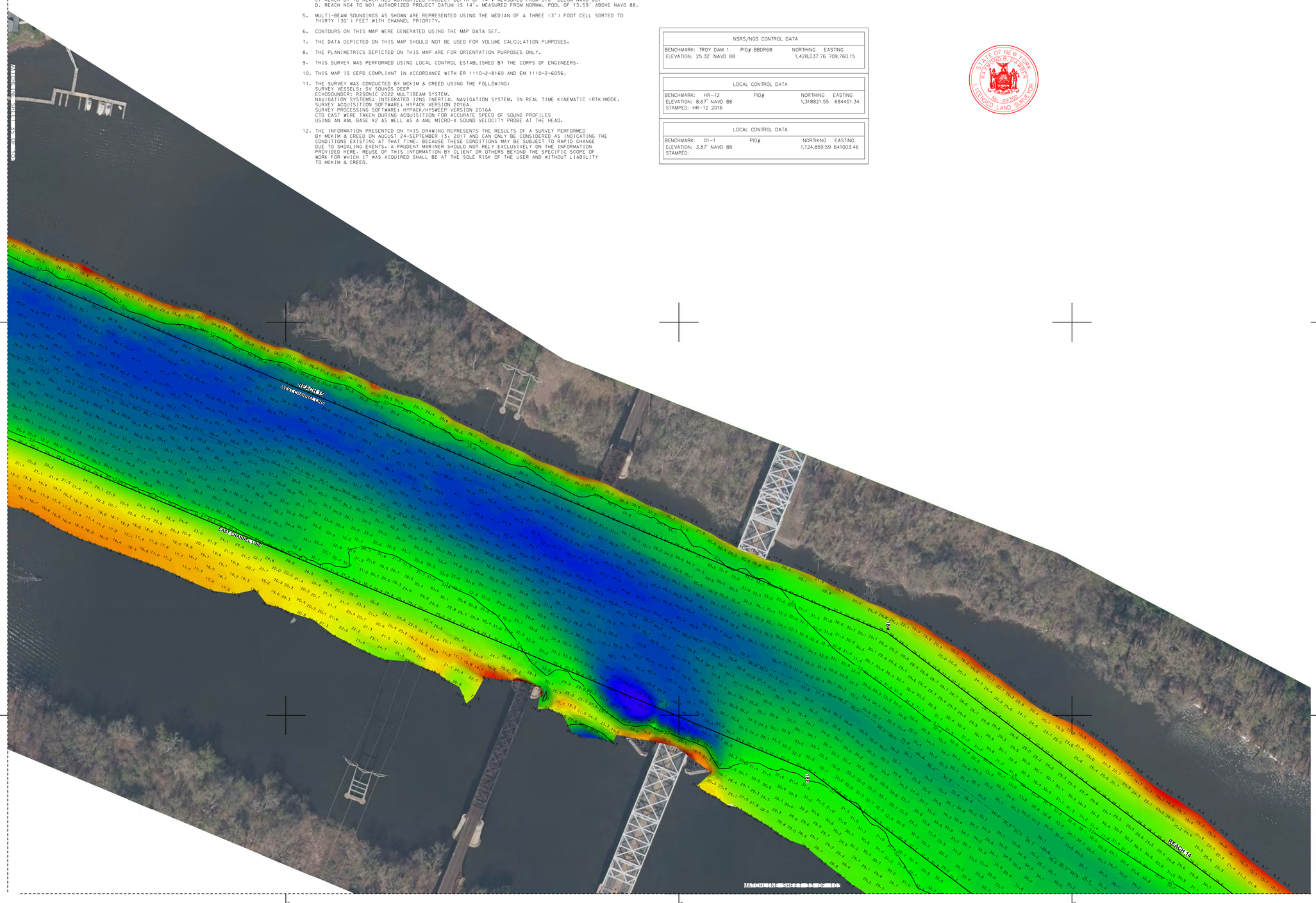
NSRS/NGS CONTROL DATA			
BENCHMARK: TROY DAM 1	PID# BBDR68	NORTHING	EASTING
ELEVATION: 25.32' NAVD 88		1,428,037.76	709,760.15

LOCAL CONTROL DATA			
BENCHMARK: HR-12	PID#	NORTHING	EASTING
ELEVATION: 8.67' NAVD 88		1,318821.55	684451.34
STAMPED: HR-12 2016			

LOCAL CONTROL DATA			
BENCHMARK: 01-1	PID#	NORTHING	EASTING
ELEVATION: 3.87' NAVD 88		1,124,859.59	641003.46
STAMPED:			

STATE OF NEW YORK
RAYMOND B. O'KEEFE
090434
LICENSED LAND SURVEYOR

NY 3101 GRID NAD83 (2011) EAST



SCALE 1" = 100'
0 100 200 300 400

US Army Corps of Engineers ®
New York District

MARK	DESCRIPTION	DATE	APPR.

MARK	DESCRIPTION	DATE	APPR.

U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

MCKIM&CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TELEPHONE: (910) 341-0646
FAX: (910) 251-8282

DESIGNED BY: DLJ	CKD BY: RBD	DATE: AUGUST-SEPTEMBER 2017	SOLICITATION NO.:
DWN BY: MBH	SUBMITTED BY: DLJ		CONTRACT NO.: W912DS-14-D-0004
PLOT SCALE: 1:100	ISSUE DATE: DEC 2017		FILE NUMBER:
SIZE: ANSI F	FILE NAME: VH101-058890043_HUDSON_MBDGN		

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL
REACH 14-15

SHEET IDENTIFICATION
VH-134
SHEET 34 OF 103

1 2 3 4 5

D C B A

E=685000 E=686000 E=687000

N=1338000 N=1337000

NY 3101 GRID NAD83 (2011)EAST

REACH 1

REACH 2

REACH 3

REACH 4

REACH 5

REACH 6

REACH 7

REACH 8

REACH 9

REACH 10

REACH 11

REACH 12

REACH 13

REACH 14

REACH 15

REACH 16

REACH 17

REACH 18

REACH 19

REACH 20

REACH 21

REACH 22

REACH 23

REACH 24

REACH 25

REACH 26

REACH 27

REACH 28

REACH 29

REACH 30

REACH 31

REACH 32

REACH 33

REACH 34

REACH 35

REACH 36

REACH 37

REACH 38

REACH 39

REACH 40

REACH 41

REACH 42

REACH 43

REACH 44

REACH 45

REACH 46

REACH 47

REACH 48

REACH 49

REACH 50

REACH 51

REACH 52

REACH 53

REACH 54

REACH 55

REACH 56

REACH 57

REACH 58

REACH 59

REACH 60

REACH 61

REACH 62

REACH 63

REACH 64

REACH 65

REACH 66

REACH 67

REACH 68

REACH 69

REACH 70

REACH 71

REACH 72

REACH 73

REACH 74

REACH 75

REACH 76

REACH 77

REACH 78

REACH 79

REACH 80

REACH 81

REACH 82

REACH 83

REACH 84

REACH 85

REACH 86

REACH 87

REACH 88

REACH 89

REACH 90

REACH 91

REACH 92

REACH 93

REACH 94

REACH 95

REACH 96

REACH 97

REACH 98

REACH 99

REACH 100

REACH 101

REACH 102

REACH 103

REACH 104

REACH 105

REACH 106

REACH 107

REACH 108

REACH 109

REACH 110

REACH 111

REACH 112

REACH 113

REACH 114

REACH 115

REACH 116

REACH 117

REACH 118

REACH 119

REACH 120

REACH 121

REACH 122

REACH 123

REACH 124

REACH 125

REACH 126

REACH 127

REACH 128

REACH 129

REACH 130

REACH 131

REACH 132

REACH 133

REACH 134

REACH 135

REACH 136

REACH 137

REACH 138

REACH 139

REACH 140

REACH 141

REACH 142

REACH 143

REACH 144

REACH 145

REACH 146

REACH 147

REACH 148

REACH 149

REACH 150

REACH 151

REACH 152

REACH 153

REACH 154

REACH 155

REACH 156

REACH 157

REACH 158

REACH 159

REACH 160

REACH 161

REACH 162

REACH 163

REACH 164

REACH 165

REACH 166

REACH 167

REACH 168

REACH 169

REACH 170

REACH 171

REACH 172

REACH 173

REACH 174

REACH 175

REACH 176

REACH 177

REACH 178

REACH 179

REACH 180

REACH 181

REACH 182

REACH 183

REACH 184

REACH 185

REACH 186

REACH 187

REACH 188

REACH 189

REACH 190

REACH 191

REACH 192

REACH 193

REACH 194

REACH 195

REACH 196

REACH 197

REACH 198

REACH 199

REACH 200

REACH 201

REACH 202

REACH 203

REACH 204

REACH 205

REACH 206

REACH 207

REACH 208

REACH 209

REACH 210

REACH 211

REACH 212

REACH 213

REACH 214

REACH 215

REACH 216

REACH 217

REACH 218

REACH 219

REACH 220

REACH 221

REACH 222

REACH 223

REACH 224

REACH 225

REACH 226

REACH 227

REACH 228

REACH 229

REACH 230

REACH 231

REACH 232

REACH 233

REACH 234

REACH 235

REACH 236

REACH 237

REACH 238

REACH 239

REACH 240

REACH 241

REACH 242

REACH 243

REACH 244

REACH 245

REACH 246

REACH 247

REACH 248

REACH 249

REACH 250

REACH 251

REACH 252

REACH 253

REACH 254

REACH 255

REACH 256

REACH 257

REACH 258

REACH 259

REACH 260

REACH 261

REACH 262

REACH 263

REACH 264

REACH 265

REACH 266

REACH 267

REACH 268

REACH 269

REACH 270

REACH 271

REACH 272

REACH 273

REACH 274

REACH 275

REACH 276

REACH 277

REACH 278

REACH 279

REACH 280

REACH 281

REACH 282

REACH 283

REACH 284

REACH 285

REACH 286

REACH 287

REACH 288

REACH 289

REACH 290

REACH 291

REACH 292

REACH 293

REACH 294

REACH 295

REACH 296

REACH 297

REACH 298

REACH 299

REACH 300

REACH 301

REACH 302

REACH 303

REACH 304

REACH 305

REACH 306

REACH 307

REACH 308

REACH 309

REACH 310

REACH 311

REACH 312

REACH 313

REACH 314

REACH 315

REACH 316

REACH 317

REACH 318

REACH 319

REACH 320

REACH 321

REACH 322

REACH 323

REACH 324

REACH 325

REACH 326

REACH 327

REACH 328

REACH 329

REACH 330

REACH 331

REACH 332

REACH 333

REACH 334

REACH 335

REACH 336

REACH 337

REACH 338

REACH 339

REACH 340

REACH 341

REACH 342

REACH 343

REACH 344

REACH 345

REACH 346

REACH 347

REACH 348

REACH 349

REACH 350

REACH 351

REACH 352

REACH 353

REACH 354

REACH 355

REACH 356

REACH 357

REACH 358

REACH 359

REACH 360

REACH 361

REACH 362

REACH 363

REACH 364

REACH 365

REACH 366

REACH 367

REACH 368

REACH 369

REACH 370

REACH 371

REACH 372

REACH 373

REACH 374

REACH 375

REACH 376

REACH 377

REACH 378

REACH 379

REACH 380

REACH 381

REACH 382

REACH 383

REACH 384

REACH 385

REACH 386

REACH 387

REACH 388

REACH 389

REACH 390

REACH 391

REACH 392

REACH 393

REACH 394

REACH 395

REACH 396

REACH 397

REACH 398

REACH 399

REACH 400

REACH 401

REACH 402

REACH 403

REACH 404

REACH 405

REACH 406

REACH 407

REACH 408

REACH 409

REACH 410

REACH 411

REACH 412

REACH 413

REACH 414

REACH 415

REACH 416

REACH 417

REACH 418

REACH 419

REACH 420

REACH 421

REACH 422

REACH 423

REACH 424

REACH 425

REACH 426

REACH 427

REACH 428

REACH 429

REACH 430

REACH 431

REACH 432

REACH 433

REACH 434

REACH 435

REACH 436

REACH 437

REACH 438

REACH 439

REACH 440

REACH 441

REACH 442

REACH 443

REACH 444

REACH 445

REACH 446

REACH 447

REACH 448

REACH 449

REACH 450

REACH 451

REACH 452

REACH 453

REACH 454

REACH 455

REACH 456

REACH 457

REACH 458

REACH 459

REACH 460

REACH 461

REACH 462

REACH 463

REACH 464

REACH 465

REACH 466

REACH 467

REACH 468

REACH 469

REACH 470

REACH 471

REACH 472

REACH 473

REACH 474

REACH 475

REACH 476

REACH 477

REACH 478

REACH 479

REACH 480

REACH 481

REACH 482

REACH 483

REACH 484

REACH 485

REACH 486

REACH 487

REACH 488

REACH 489

REACH 490

REACH 491

REACH 492

REACH 493

REACH 494

REACH 495

REACH 496

REACH 497

REACH 498

REACH 499

REACH 500

REACH 501

REACH 502

REACH 503

REACH 504

REACH 505

REACH 506

REACH 507

REACH 508

REACH 509

REACH 510

REACH 511

REACH 512

REACH 513

REACH 514

REACH 515

REACH 516

REACH 517

REACH 518

REACH 519

REACH 520

REACH 521

REACH 522

REACH 523

REACH 524

REACH 525

REACH 526

REACH 527

REACH 528

REACH 529

REACH 530

REACH 531

REACH 532

REACH 533

REACH 534

REACH 535

REACH 536

REACH 537

REACH 538

REACH 539

REACH 540

REACH 541

REACH 542

REACH 543

REACH 544

REACH 545

REACH 546

REACH 547

REACH 548

REACH 549

REACH 550

REACH 551

REACH 552

REACH 553

REACH 554

REACH 555

REACH 556

REACH 557

REACH 558

REACH 559

REACH 560

REACH 561

REACH 562

REACH 563

REACH 564

REACH 565

REACH 566

REACH 567

REACH 568

REACH 569

REACH 570

REACH 571

REACH 572

REACH 573

REACH 574

REACH 575

REACH 576

REACH 577

REACH 578

REACH 579

REACH 580

REACH 581

REACH 582

REACH 583

REACH 584

REACH 585

REACH 586

REACH 587

REACH 588

REACH 589

REACH 590

REACH 591

REACH 592

REACH 593

REACH 594

REACH 595

REACH 596

REACH 597

REACH 598

REACH 599

REACH 600

REACH 601

REACH 602

REACH 603

REACH 604

REACH 605

REACH 606

REACH 607

REACH 608

REACH 609

REACH 610

REACH 611

REACH 612

REACH 613

REACH 614

REACH 615

REACH 616

REACH 617

REACH 618

REACH 619

REACH 620

REACH 621

REACH 622

REACH 623

REACH 624

REACH 625

REACH 626

REACH 627

REACH 628

REACH 629

REACH 630

REACH 631

REACH 632

REACH 633

REACH 634

REACH 635

REACH 636

REACH 637

REACH 638

REACH 639

REACH 640

REACH 641

REACH 642

REACH 643

REACH 644

REACH 645

REACH 646

REACH 647

REACH 648

REACH 649

REACH 650

REACH 651

REACH 652

REACH 653

REACH 654

REACH 655

REACH 656

REACH 657

REACH 658

REACH 659

REACH 660

REACH 661

REACH 662

REACH 663

REACH 664

REACH 665

REACH 666

REACH 667

REACH 668

REACH 669

REACH 670

REACH 671

REACH 672

REACH 673

REACH 674

REACH 675

REACH 676

REACH 677

REACH 678

REACH 679

REACH 680

REACH 681

REACH 682

REACH 683

REACH 684

REACH 685

REACH 686

REACH 687

REACH 688

REACH 689

REACH 690

REACH 691

REACH 692

REACH 693

REACH 694

REACH 695

REACH 696

REACH 697

REACH 698

REACH 699

REACH 700

REACH 701

REACH 702

REACH 703

REACH 704

REACH 705

REACH 706

REACH 707

REACH 708

REACH 709

REACH 710

REACH 711

REACH 712

REACH 713

REACH 714

REACH 715

REACH 716

REACH 717

REACH 718

REACH 719

REACH 720

REACH 721

REACH 722

REACH 723

REACH 724

REACH 725

REACH 726

REACH 727

REACH 728

REACH 729

REACH 730

REACH 731

REACH 732

REACH 733

REACH 734

REACH 735

REACH 736

REACH 737

REACH 738

REACH 739

REACH 740

REACH 741

REACH 742

REACH 743

REACH 744

REACH 745

REACH 746

REACH 747

REACH 748

REACH 749

REACH 750

REACH 751

REACH 752

REACH 753

REACH 754

REACH 755

REACH 756

REACH 757

REACH 758

REACH 759

REACH 760

REACH 761

REACH 762

REACH 763

REACH 764

REACH 765

REACH 766

REACH 767

REACH 768

REACH 769

REACH 770

REACH 771

REACH 772

REACH 773

REACH 774

REACH 775

REACH 776

REACH 777

REACH 778

REACH 779

REACH 780

REACH 781

REACH 782

REACH 783

REACH 784

REACH 785

REACH 786

REACH 787

REACH 788

REACH 789

REACH 790

REACH 791

REACH 792

REACH 793

REACH 794

REACH 795

REACH 796

REACH 797

REACH 798

REACH 799

REACH 800

REACH 801

REACH 802

REACH 803

REACH 804

REACH 805

REACH 806

REACH 807

REACH 808

REACH 809

REACH 810

REACH 811

REACH 812

REACH 813

REACH 814

REACH 815

REACH 816

REACH 817

REACH 818

REACH 819

REACH 820

REACH 821

REACH 822

REACH 823

REACH 824

REACH 825

REACH 826

REACH 827

REACH 828

REACH 829

REACH 830

REACH 831

REACH 832

REACH 833

REACH 834

REACH 835

REACH 836

REACH 837

REACH 838

REACH 839

REACH 840

REACH 841

REACH 842

REACH 843

REACH 844

REACH 845

REACH 846

REACH 847

REACH 848

REACH 849

REACH 850

REACH 851

REACH 852

REACH 853

REACH 854

REACH 855

REACH 856

REACH 857

REACH 858

REACH 859

REACH 860

REACH 861

REACH 862

REACH 863

REACH 864

REACH 865

REACH 866

REACH 867

REACH 868

REACH 869

REACH 870

REACH 871

REACH 872

REACH 873

REACH 874

REACH 875

REACH 876

REACH 877

REACH 878

REACH 879

REACH 880

REACH 881

REACH 882

REACH 883

REACH 884

REACH 885

REACH 886

REACH 887

REACH 888

REACH 889

REACH 890

REACH 891

REACH 892

REACH 893

REACH 894

REACH 895

REACH 896

REACH 897

REACH 898

REACH 899

REACH 900

REACH 901

REACH 902

REACH 903

REACH 904

REACH 905

REACH 906

REACH 907

REACH 908

REACH 909

REACH 910

REACH 911

REACH 912

REACH 913

REACH 914

REACH 915

REACH 916

REACH 917

REACH 918

REACH 919

REACH 920

REACH 921

REACH 922

REACH 923

REACH 924

REACH 925

REACH 926

REACH 927

REACH 928

REACH 929

REACH 930

REACH 931

REACH 932

REACH 933

REACH 934

REACH 935

REACH 936

REACH 937

REACH 938

REACH 939

REACH 940

REACH 941

REACH 942

REACH 943

REACH 944

REACH 945

REACH 946

REACH 947

REACH 948

REACH 949

REACH 950

REACH 951

REACH 952

REACH 953

REACH 954

REACH 955

REACH 956

REACH 957

REACH 958

REACH 959

REACH 960

REACH 961

REACH 962

REACH 963

REACH 964

REACH 965

REACH 966

REACH 967

REACH 968

REACH 969

REACH 970

REACH 971

REACH 972

REACH 973

REACH 974

REACH 975

REACH 976

REACH 977

REACH 978

REACH 979

REACH 980

REACH 981

REACH 982

REACH 983

REACH 984

REACH 985

REACH 986

REACH 987

REACH 988

REACH 989

REACH 990

REACH 991

REACH 992

REACH 993

REACH 994

REACH 995

REACH 996

REACH 997

REACH 998

REACH 999

REACH 1000

REACH 1001

REACH 1002

REACH 1003

REACH 1004

REACH 1005

REACH 1006

REACH 1007

REACH 1008

REACH 1009

REACH 1010

REACH 1011

REACH 1012

REACH 1013

REACH 1014

REACH 1015

REACH 1016

REACH 1017

REACH 1018

REACH 1019

REACH 1020

REACH 1021

REACH 1022

REACH 1023

REACH 1024

REACH 1025

REACH 1026

REACH 1027

REACH 1028

REACH 1029

REACH 1030

REACH 1031

REACH 1032

REACH 1033

REACH 1034

REACH 1035

REACH 1036

REACH 1037

REACH 1038

REACH 1039

REACH 1040

REACH 1041

REACH 1042

REACH 1043

REACH 1044

REACH 1045

REACH 1046

REACH 1047

REACH 1048

REACH 1049

REACH 1050

REACH 1051

REACH 1052

REACH 1053

REACH 1054

REACH 1055

REACH 1056

REACH 1057

REACH 1058

REACH 1059

REACH 1060

REACH 1061

REACH 1062

REACH 1063

REACH 1064

REACH 1065

REACH 1066

REACH 1067

REACH 1068

REACH 1069

REACH 1070

REACH 1071

REACH 1072

REACH 1073

REACH 1074

REACH 1075

REACH 1076

REACH 1077

REACH 1078

REACH 1079

REACH 1080

REACH 1081

REACH 1082

REACH 1083

REACH 1084

REACH 1085

REACH 1086

REACH 1087

REACH 1088

REACH 1089

REACH 1090

REACH 1091

REACH 1092

REACH 1093

REACH 1094

REACH 1095

REACH 1096

REACH 1097

REACH 1098

REACH 1099

REACH 1100

REACH 1101

REACH 1102

REACH 1103

REACH 1104

REACH 1105

REACH 1106

REACH 1107

REACH 1108

REACH 1109

REACH 1110

REACH 1111

REACH 1112

REACH 1113

REACH 1114

REACH 1115

REACH 1116

REACH 1117

REACH 1118

REACH 1119

REACH 1120

REACH 1121

REACH 1122

REACH 1123

REACH 1124

REACH 1125

REACH 1126

REACH 1127

REACH 1128

REACH 1129

REACH 1130

REACH 1131

REACH 1132

REACH 1133

REACH 1134

REACH 1135

REACH 1136

REACH 1137

REACH 1138

REACH 1139

REACH 1140

REACH 1141

REACH 1142

REACH 1143

REACH 1144

REACH 1145

REACH 1146

REACH 1147

REACH 1148

REACH 1149

REACH 1150

REACH 1151

REACH 1152

REACH 1153

REACH 1154

REACH 1155

REACH 1156

REACH 1157

REACH 1158

REACH 1159

REACH 1160

REACH 1161

REACH 1162

REACH 1163

REACH 1164

REACH 1165

REACH 1166

REACH 1167

REACH 1168

REACH 1169

REACH 1170

REACH 1171

REACH 1172

REACH 1173

REACH 1174

REACH 1175

REACH 1176

REACH 1177

REACH 1178

REACH 1179

REACH 1180

REACH 1181

REACH 1182

REACH 1183

REACH 1184

REACH 1185

REACH 1186

REACH 1187

REACH 1188

REACH 1189

REACH 1190

REACH 1191

REACH 1192

REACH 1193

REACH 1194

REACH 1195

REACH 1196

REACH 1197

REACH 1198

REACH 1199

REACH 1200

REACH 1201

REACH 1202

REACH 1203

REACH 1204

REACH 1205

REACH 1206

REACH 1207

REACH 1208

REACH 1209

REACH 1210

REACH 1211

REACH 1212

REACH 1213

REACH 1214

REACH 1215

REACH 1216

REACH 1217

REACH 1218

REACH 1219

REACH 1220

REACH 1221

REACH 1222

REACH 1223

REACH 1224

REACH 1225

REACH 1226

REACH 1227

REACH 1228

REACH 1229

REACH 1230

REACH 1231

REACH 1232

REACH 1233

REACH 1234

REACH 1235

REACH 1236

REACH 1237

REACH 1238

REACH 1239

REACH 1240

REACH 1241

REACH 1242

REACH 1243

REACH 1244

REACH 1245

REACH 1246

REACH 1247

REACH 1248

REACH 1249

REACH 1250

REACH 1251

REACH 1252

REACH 1253

REACH 1254

REACH 1255

REACH 1256

REACH 1257

REACH 1258

REACH 1259

REACH 1260

REACH 1261

REACH 1262

REACH 1263

REACH 1264

REACH 1265

REACH 1266

REACH 1267

REACH 1268

REACH 1269

REACH 1270

REACH 1271

REACH 1272

REACH 1273

REACH 1274

REACH 1275

REACH 1276

REACH 1277

REACH 1278

REACH 1279

REACH 1280

REACH 1281

REACH 1282

REACH 1283

REACH 1284

REACH 1285

REACH 1286

REACH 1287

REACH 1288

REACH 1289

REACH 1290

REACH 1291

REACH 1292

REACH 1293

REACH 1294

REACH 1295

REACH 1296

REACH 1297

REACH 1298

REACH 1299

REACH 1300

REACH 1301

REACH 1302

REACH 1303

REACH 1304

REACH 1305

REACH 1306

REACH 1307

REACH 1308

REACH 1309

REACH 1310

REACH 1311

REACH 1312

REACH 1313

REACH 1314

REACH 1315

REACH 1316

REACH 1317

REACH 1318

REACH 1319

REACH 1320

REACH 1321

REACH 1322

REACH 1323

REACH 1324

REACH 1325

REACH 1326

REACH 1327

REACH 1328

REACH 1329

REACH 1330

REACH 1331

REACH 1332

REACH 1333

REACH 1334

REACH 1335

REACH 1336

REACH 1337

REACH 1338

REACH 1339

REACH 1340

REACH 1341

REACH 1342

REACH 1343

REACH 1344

REACH 1345

REACH 1346

REACH 1347

REACH 1348

REACH 1349

REACH 1350

REACH 1351

REACH 1352

REACH 1353

REACH 1354

REACH 1355

REACH 1356

REACH 1357

REACH 1358

REACH 1359

REACH 1360

REACH 1361

REACH 1362

REACH 1363

REACH 1364

REACH 1365

REACH 1366

REACH 1367

REACH 1368

REACH 1369

REACH 1370

REACH 1371

REACH 1372

REACH 1373

REACH 1374

REACH 1375

REACH 1376

REACH 1377

REACH 1378

REACH 1379

REACH 1380

REACH 1381

REACH 1382

REACH 1383

REACH 1384

REACH 1385

REACH 1386

REACH 1387

REACH 1388

REACH 1389

REACH 1390

REACH 1391

REACH 1392

REACH 1393

REACH 1394

REACH 1395

REACH 1396

REACH 1397

REACH 1398

REACH 1399

REACH 1400

REACH 1401

REACH 1402

REACH 1403

REACH 1404

REACH 1405

REACH 1406

REACH 1407

REACH 1408

REACH 1409

REACH 1410

REACH 1411

REACH 1412

REACH 1413

REACH 1414

REACH 1415

REACH 1416

REACH 1417

REACH 1418

REACH 1419

REACH 1420

REACH 1421

REACH 1422

REACH 1423

REACH 1424

REACH 1425

REACH 1426

REACH 1427

REACH 1428

REACH 1429

REACH 1430

REACH 1431

REACH 1432

REACH 1433

REACH 1434

REACH 1435

REACH 1436

REACH 1437

REACH 1438

REACH 1439

REACH 1440

REACH 1441

REACH 1442

REACH 1443

REACH 1444

REACH 1445

REACH 1446

REACH 1447

REACH 1448

REACH 1449

REACH 1450

REACH 1451

REACH 1452

REACH 1453

REACH 1454

REACH 1455

REACH 1456

REACH 1457

REACH 1458

REACH 1459

REACH 1460

REACH 1461

REACH 1462

REACH 1463

REACH 1464

REACH 1465

REACH 1466

REACH 1467

REACH 1468

REACH 1469

REACH 1470

REACH 1471

REACH 1472

REACH 1473

REACH 1474

REACH 1475

REACH 1476

REACH 1477

REACH 1478

REACH 1479

REACH 1480

REACH 1481

REACH 1482

REACH 1483

REACH 1484

REACH 1485

REACH 1486

REACH 1487

REACH 1488

REACH 1489

REACH 1490

REACH 1491

REACH 1492

REACH 1493

REACH 1494

REACH 1495

REACH 1496

REACH 1497

REACH 1498

REACH 1499

REACH 1500

REACH 1501

REACH 1502

REACH 1503

REACH 1504

REACH 1505

REACH 1506

REACH 1507

REACH 1508

REACH 1509

REACH 1510

REACH 1511

REACH 1512

REACH 1513

REACH 1514

REACH 1515

REACH 1516

REACH 1517

REACH 1518

REACH 1519

REACH 1520

REACH 1521

REACH 1522

REACH 1523

REACH 1524

REACH 1525

REACH 1526

REACH 1527

REACH 1528

REACH 1529

REACH 1530

REACH 1531

REACH 1532

REACH 1533

REACH 1534

REACH 1535

REACH 1536

REACH 1537

REACH 1538

REACH 1539

REACH 1540

REACH 1541

REACH 1542

REACH 1543

REACH 1544

REACH 1545

REACH 1546

REACH 1547

REACH 1548

REACH 1549

REACH 1550

REACH 1551

REACH 1552

REACH 1553

REACH 1554

REACH 1555

REACH 1556

REACH 1557

REACH 1558

REACH 1559

REACH 1560

REACH 1561

REACH 1562

REACH 1563

REACH 1564

REACH 1565

REACH 1566

REACH 1567

REACH 1568

REACH 1569

REACH 1570

REACH 1571

REACH 1572

REACH 1573

REACH 1574

REACH 1575

REACH 1576

REACH 1577

REACH 1578

REACH 1579

REACH 1580

REACH 1581

REACH 1582

REACH 1583

REACH 1584

REACH 1585

REACH 1586

REACH 1587

REACH 1588

REACH 1589

REACH 1590

REACH 1591

REACH 1592

REACH 1593

REACH 1594

REACH 1595

REACH 1596

REACH 1597

REACH 1598

REACH 1599

REACH 1600

REACH 1601

REACH 1602

REACH 1603

REACH 1604

REACH 1605

REACH 1606

REACH 1607

REACH 1608

REACH 1609

REACH 1610

REACH 1611

REACH 1612

REACH 1613

REACH 1614

REACH 1615

REACH 1616

REACH 1617

REACH 1618

REACH 1619

REACH 1620

REACH 1621

REACH 1622

REACH 1623

REACH 1624

REACH 1625

REACH 1626

REACH 1627

REACH 1628

REACH 1629

REACH 1630

REACH 1631

REACH 1632

REACH 1633

REACH 1634

REACH 1635

REACH 1636

REACH 1637

REACH 1638

REACH 1639

REACH 1640

REACH 1641

REACH 1642

REACH 1643

REACH 1644

REACH 1645

REACH 1646

REACH 1647

REACH 1648

REACH 1649

REACH 1650

REACH 1651

REACH 1652

REACH 1653

REACH 1654

REACH 1655

REACH 1656

REACH 1657

REACH 1658

REACH 1659

REACH 1660

REACH 1661

REACH 1662

REACH 1663

REACH 1664

REACH 1665

REACH 1666

REACH 1667

REACH 1668

REACH 1669

REACH 1670

REACH 1671

REACH 1672

REACH 1673

REACH 1674

REACH 1675

REACH 1676

REACH 1677

REACH 1678

REACH 1679

REACH 1680

REACH 1681

REACH 1682

REACH 1683

REACH 1684

REACH 1685

REACH 1686

REACH 1687

REACH 1688

REACH 1689

REACH 1690

REACH 1691

REACH 1692

REACH 1693

REACH 1694

REACH 1695

REACH 1696

REACH 1697

REACH 1698

REACH 1699

REACH 1700

REACH 1701

REACH 1702

REACH 1703

REACH 1704

REACH 1705

REACH 1706

REACH 1707

REACH 1708

REACH 1709

REACH 1710

REACH 1711

REACH 1712

REACH 1713

REACH 1714

REACH 1715

REACH 1716

REACH 1717

REACH 1718

REACH 1719

REACH 1720

REACH 1721

REACH 1722

REACH 1723

REACH 1724

REACH 1725

REACH 1726

REACH 1727

REACH 1728

REACH 1729

REACH 1730

REACH 1731

REACH 1732

REACH 1733

REACH 1734

REACH 1735

REACH 1736

REACH 1737

REACH 1738

REACH 1739

REACH 1740

REACH 1741

REACH 1742

REACH 1743

REACH 1744

REACH 1745

REACH 1746

REACH 1747

REACH 1748

REACH 1749

REACH 1750

REACH 1751

REACH 1752

REACH 1753

REACH 1754

REACH 1755

REACH 1756

REACH 1757

REACH 1758

REACH 1759

REACH 1760

REACH 1761

REACH 1762

REACH 1763

REACH 1764

REACH 1765

REACH 1766

REACH 1767

REACH 1768

REACH 1769

REACH 1770

REACH 1771

REACH 1772

REACH 1773

REACH 1774

REACH 1775

REACH 1776

REACH 1777

REACH 1778

REACH 1779

REACH 1780

REACH 1781

REACH 1782

REACH 1783

REACH 1784

REACH 1785

REACH 1786

REACH 1787

REACH 1788

REACH 1789

REACH 1790

REACH 1791

REACH 1792

REACH 1793

REACH 1794

REACH 1795

REACH 1796

REACH 1797

REACH 1798

REACH 1799

REACH 1800

REACH 1801

REACH 1802

REACH 1803

REACH 1804

REACH 1805

REACH 1806

REACH 1807

REACH 1808

REACH 1809

REACH 1810

REACH 1811

REACH 1812

REACH 1813

REACH 1814

REACH 1815

REACH 1816

REACH 1817

REACH 1818

REACH 1819

REACH 1820

REACH 1821

REACH 1822

REACH 1823

REACH 1824

REACH 1825

REACH 1826

REACH 1827

REACH 1828

REACH 1829

REACH 1830

REACH 1831

REACH 1832

REACH 1833

REACH 1834

REACH 1835

REACH 1836

REACH 1837

REACH 1838

REACH 1839

REACH 1840

REACH 1841

REACH 1842

REACH 1843

REACH 1844

REACH 1845

REACH 1846

REACH 1847

REACH 1848

REACH 1849

REACH 1850

REACH 1851

REACH 1852

REACH 1853

REACH 1854

REACH 1855

REACH 1856

REACH 1857

REACH 1858

REACH 1859

REACH 1860

REACH 1861

REACH 1862

REACH 1863

REACH 1864

REACH 1865

REACH 1866

REACH 1867

REACH 1868

REACH 1869

REACH 1870

REACH 1871

REACH 1872

REACH 1873

REACH 1874

REACH 1875

REACH 1876

REACH 1877

REACH 1878

REACH 1879

REACH 1880

REACH 1881

REACH 1882

REACH 1883

REACH 1884

REACH 1885

REACH 1886

REACH 1887

REACH 1888

REACH 1889

REACH 1890

REACH 1891

REACH 1892

REACH 1893

REACH 1894

REACH 1895

REACH 1896

REACH 1897

REACH 1898

REACH 1899

REACH 1900

REACH 1901

REACH 1902

REACH 1903

REACH 1904

REACH 1905

REACH 1906

REACH 1907

REACH 1908

REACH 1909

REACH 1910

REACH 1911

REACH 1912

REACH 1913

REACH 1914

REACH 1915

REACH 1916

REACH 1917

REACH 1918

REACH 1919

REACH 1920

REACH 1921

REACH 1922

REACH 1923

REACH 1924

REACH 1925

REACH 1926

REACH 1927

REACH 1928

REACH 1929

REACH 1930

REACH 1931

REACH 1932

REACH 1933

REACH 1934

REACH 1935

REACH 1936

REACH 1937

REACH 1938

REACH 1939

REACH 1940

REACH 1941

REACH 1942

REACH 1943

REACH 1944

REACH 1945

REACH 1946

REACH 1947

REACH 1948

REACH 1949

REACH 1950

REACH 1951

REACH 1952

REACH 1953

REACH 1954

REACH 1955

REACH 1956

REACH 1957

REACH 1958

REACH 1959

REACH 1960

REACH 1961

REACH 1962

REACH 1963

REACH 1964

REACH 1965

REACH 1966

REACH 1967

REACH 1968

REACH 1969

REACH 1970

REACH 1971

REACH 1972

REACH 1973

REACH 1974

REACH 1975

REACH 1976

REACH 1977

REACH 1978

REACH 1979

REACH 1980

REACH 1981

REACH 1982

REACH 1983

REACH 1984

REACH 1985

REACH 1986

REACH 1987

REACH 1988

REACH 1989

REACH 1990

REACH 1991

REACH 1992

REACH 1993

REACH 1994

REACH 1995

REACH 1996

REACH 1997

REACH 1998

REACH 1999

REACH 2000

REACH 2001

REACH 2002

REACH 2003

REACH 2004

REACH 2005

REACH 2006

REACH 2007

REACH 2008

REACH 2009

REACH 2010

REACH 2011

REACH 2012

REACH 2013

REACH 2014

REACH 2015

REACH 2016

REACH 2017

REACH 2018

REACH 2019

REACH 2020

REACH 2021

REACH 2022

REACH 2023

REACH 2024

REACH 2025

REACH 2026

REACH 2027

REACH 2028

REACH 2029

REACH 2030

REACH 2031

REACH 2032

REACH 2033

REACH 2034

REACH 2035

REACH 2036

REACH 2037

REACH 2038

REACH 2039

REACH 2040

REACH 2041

REACH 2042

REACH 2043

REACH 2044

REACH 2045

REACH 2046

REACH 2047

REACH 2048

REACH 2049

REACH 2050

REACH 2051

REACH 2052

REACH 2053

REACH 2054

REACH 2055

REACH 2056

REACH 2057

REACH 2058

REACH 2059

REACH 2060

REACH 2061

REACH 2062

REACH 2063

REACH 2064

REACH 2065

REACH 2066

REACH 2067

REACH 2068

REACH 2069

REACH 2070

REACH 2071

REACH 2072

REACH 2073

REACH 2074

REACH 2075

REACH 2076

REACH 2077

REACH 2078

REACH 2079

REACH 2080

REACH 2081

REACH 2082

REACH 2083

REACH 2084

REACH 2085

REACH 2086

REACH 2087

REACH 2088

REACH 2089

REACH 2090

REACH 2091

REACH 2092

REACH 2093

REACH 2094

REACH 2095

REACH 2096

REACH 2097

REACH 2098

REACH 2099

REACH 2100

REACH 2101

REACH 2102

REACH 2103

REACH 2104

REACH 2105

REACH 2106

REACH 2107

REACH 2108

REACH 2109

REACH 2110

REACH 2111

REACH 2112

REACH 2113

REACH 2114

REACH 2115

REACH 2116

REACH 2117

REACH 2118

REACH 2119

REACH 2120

REACH 2121

REACH 2122

REACH 2123

REACH 2124

REACH 2125

REACH 2126

REACH 2127

REACH 2128

REACH 2129

REACH 2130

REACH 2131

REACH 2132

REACH 2133

REACH 2134

REACH 2135

REACH 2136

REACH 2137

REACH 2138

REACH 2139

REACH 2140

REACH 2141

REACH 2142

REACH 2143

REACH 2144

REACH 2145

REACH 2146

REACH 2147

REACH 2148

REACH 2149

REACH 2150

REACH 2151

REACH 2152

REACH 2153

REACH 2154

REACH 2155

REACH 2156

REACH 2157

REACH 2158

REACH 2159

REACH 2160

REACH 2161

REACH 2162

REACH 2163

REACH 2164

REACH 2165

REACH 2166

REACH 2167

REACH 2168

REACH 2169

REACH 2170

REACH 2171

REACH 2172

REACH 2173

REACH 2174

REACH 2175

REACH 2176

REACH 2177

REACH 2178

REACH 2179

REACH 2180

REACH 2181

REACH 2182

REACH 2183

REACH 2184

REACH 2185

REACH 2186

REACH 2187

REACH 2188

REACH 2189

REACH 2190

REACH 2191

REACH 2192

REACH 2193

REACH 2194

REACH 2195

REACH 2196

REACH 2197

REACH 2198

REACH 2199

REACH 2200

REACH 2201

REACH 2202

REACH 2203

REACH 2204

REACH 2205

REACH 2206

REACH 2207

REACH 2208

REACH 2209

REACH 2210

REACH 2211

REACH 2212

REACH 2213

REACH 2214

REACH 2215

REACH 2216

REACH 2217

REACH 2218

REACH 2219

REACH 2220

REACH 2221

REACH 2222

REACH 2223

REACH 2224

REACH 2225

REACH 2226

REACH 2227

REACH 2228

REACH 2229

REACH 2230

REACH 2231

REACH 2232

REACH 2233

REACH 2234

REACH 2235

REACH 2236

REACH 2237

REACH 2238

REACH 2239

REACH 2240

REACH 2241

REACH 2242

REACH 2243

REACH 2244

REACH 2245

REACH 2246

REACH 2247

REACH 2248

REACH 2249

REACH 2250

REACH 2251

REACH 2252

REACH 2253

REACH 2254

REACH 2255

REACH 2256

REACH 2257

REACH 2258

REACH 2259

REACH 2260

REACH 2261

REACH 2262

REACH 2263

REACH 2264

REACH 2265

REACH 2266

REACH 2267

REACH 2268

REACH 2269

REACH 2270

REACH 2271

REACH 2272

REACH 2273

REACH 2274

REACH 2275

REACH 2276

REACH 2277

REACH 2278

REACH 2279

REACH 2280

REACH 2281

REACH 2282

REACH 2283

REACH 2284

REACH 2285

REACH 2286

REACH 2287

REACH 2288

REACH 2289

REACH 2290

REACH 2291

REACH 2292

REACH 2293

REACH 2294

REACH 2295

REACH 2296

REACH 2297

REACH 2298

REACH 2299

REACH 2300

REACH 2301

REACH 2302

REACH 2303

REACH 2304

REACH 2305

REACH 2306

REACH 2307

REACH 2308

REACH 2309

REACH 2310

REACH 2311

REACH 2312

REACH 2313

REACH 2314

REACH 2315

REACH 2316

REACH 2317

REACH 2318

REACH 2319

REACH 2320

REACH 2321

REACH 2322

REACH 2323

REACH 2324

REACH 2325

REACH 2326

REACH 2327

REACH 2328

REACH 2329

REACH 2330

REACH 2331

REACH 2332

REACH 2333

REACH 2334

REACH 2335

REACH 2336

REACH 2337

REACH 2338

REACH 2339

REACH 2340

REACH 2341

REACH 2342

REACH 2343

REACH 2344

REACH 2345

REACH 2346

REACH 2347

REACH 2348

REACH 2349

REACH 2350

REACH 2351

REACH 2352

REACH 2353

REACH 2354

REACH 2355

REACH 2356

REACH 2357

REACH 2358

REACH 2359

REACH 2360

REACH 2361

REACH 2362

REACH 2363

REACH 2364

REACH 2365

REACH 2366

REACH 2367

REACH 2368

REACH 2369

REACH 2370

REACH 2371

REACH 2372

REACH 2373

REACH 2374

REACH 2375

REACH 2376

REACH 2377

REACH 2378

REACH 2379

REACH 2380

REACH 2381

REACH 2382

REACH 2383

REACH 2384

REACH 2385

REACH 2386

REACH 2387

REACH 2388

REACH 2389

REACH 2390

REACH 2391

REACH 2392

REACH 2393

REACH 2394

REACH 2395

REACH 2396

REACH 2397

REACH 2398

REACH 2399

REACH 2400

REACH 2401

REACH 2402

REACH 2403

REACH 2404

REACH 2405

REACH 2406

REACH 2407

REACH 2408

REACH 2409

REACH 2410

REACH 2411

REACH 2412

REACH 2413

REACH 2414

REACH 2415

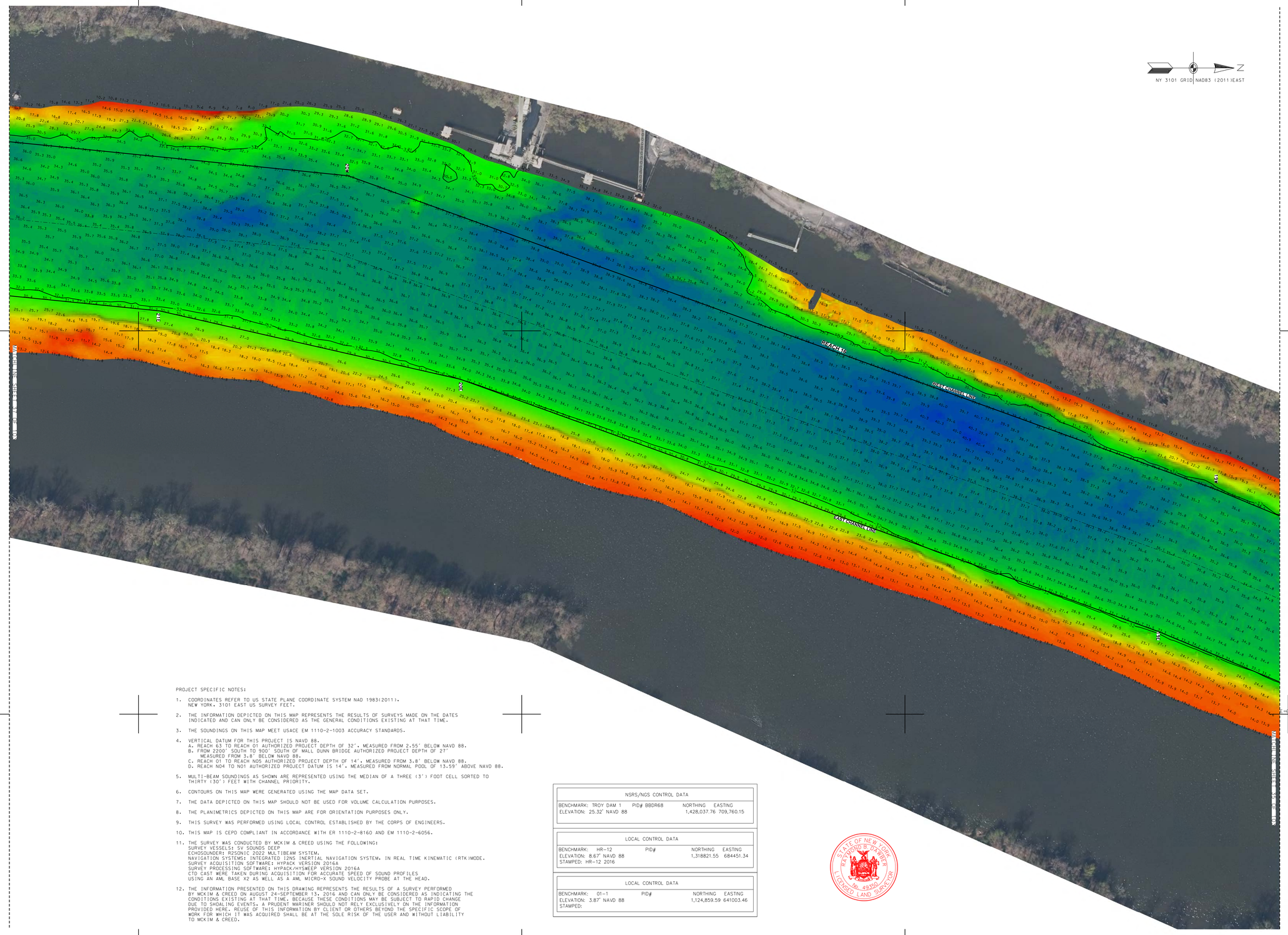
REACH 2416

REACH 2417

REACH 2418

REACH 2419

REAC



PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011). NEW YORK. 3101 EAST US SURVEY FEET.
2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.
3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.
4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32', MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14', MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14', MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.
5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.
6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.
7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.
8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.
9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.
10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.
11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED I2NS INERTIAL NAVIGATION SYSTEM. IN REAL TIME KINEMATIC (RTK)MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.
12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2016 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS, A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.

NSRS/NGS CONTROL DATA			
BENCHMARK: TROY DAM 1	PID# BBDR68	NORTHING	EASTING
ELEVATION: 25.32' NAVD 88		1,428,037.76	709,760.15

LOCAL CONTROL DATA			
BENCHMARK: HR-12	PID#	NORTHING	EASTING
ELEVATION: 8.67' NAVD 88		1,318821.55	684451.34
STAMPED: HR-12 2016			

LOCAL CONTROL DATA			
BENCHMARK: 01-1	PID#	NORTHING	EASTING
ELEVATION: 3.87' NAVD 88		1,124,859.59	641003.46
STAMPED:			

STATE OF NEW YORK
RICHARD B. DAYBER
LICENSED LAND SURVEYOR
No. 49350

US Army Corps of Engineers ®
New York District

MARK	DESCRIPTION	DATE	APPR.

MARK	DESCRIPTION	DATE	APPR.

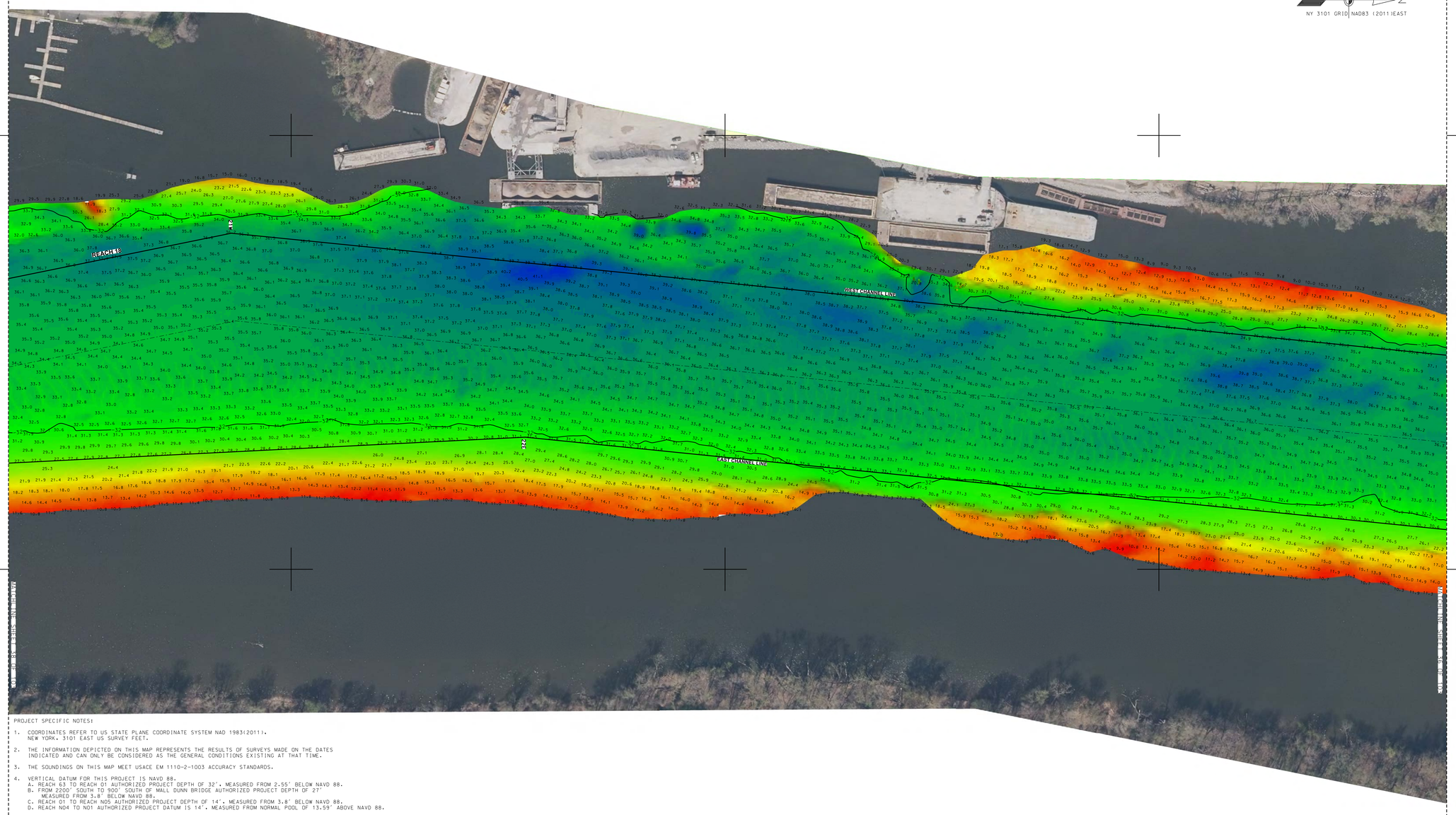
DESIGNED BY: DBJ
DWN BY: MBH
CKD BY: RBD
SUBMITTED BY: DLJ
PLOT SCALE: 1" = 100'
SIZE: ANSI F
DATE: AUGUST-SEPTEMBER 2017
SOLICITATION NO.:
CONTRACT NO.: W912DS-14-D-0004
ISSUE DATE:
REVISION DATE:
FILE NUMBER:
FILE NAME: VH101-056890043_HUDSON_MB.DGN

U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

MCKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TELEPHONE: (910) 251-8444
FAX: (910) 251-8282

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL
REACH 16

SHEET IDENTIFICATION
VH-136
SHEET 36 OF 103



PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011). NEW YORK. 3101 EAST US SURVEY FEET.
2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.
3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.
4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32'. MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14'. MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14'. MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.
5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.
6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.
7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.
8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.
9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.
10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.
11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED I2NS INERTIAL NAVIGATION SYSTEM, IN REAL TIME KINEMATIC (RTK)MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.
12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME, BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS. A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.

NSRS/NGS CONTROL DATA			
BENCHMARK: TROY DAM 1	PID# BBDR68	NORTHING	EASTING
ELEVATION: 25.32' NAVD 88		1,428,037.76	709,760.15

LOCAL CONTROL DATA			
BENCHMARK: HR-12	PID#	NORTHING	EASTING
ELEVATION: 8.67' NAVD 88		1,318821.55	684451.34
STAMPED: HR-12 2016			

LOCAL CONTROL DATA			
BENCHMARK: 01-1	PID#	NORTHING	EASTING
ELEVATION: 3.87' NAVD 88		1,124,859.59	641003.46
STAMPED:			

STATE OF NEW YORK
RAYMOND E. PARKER
No. 49350
LICENSED LAND SURVEYOR

SCALE 1" = 100'
0 100 200 300 400

US Army Corps of Engineers ®
New York District

MARK	DESCRIPTION	DATE	APPR.

MARK	DESCRIPTION	DATE	APPR.

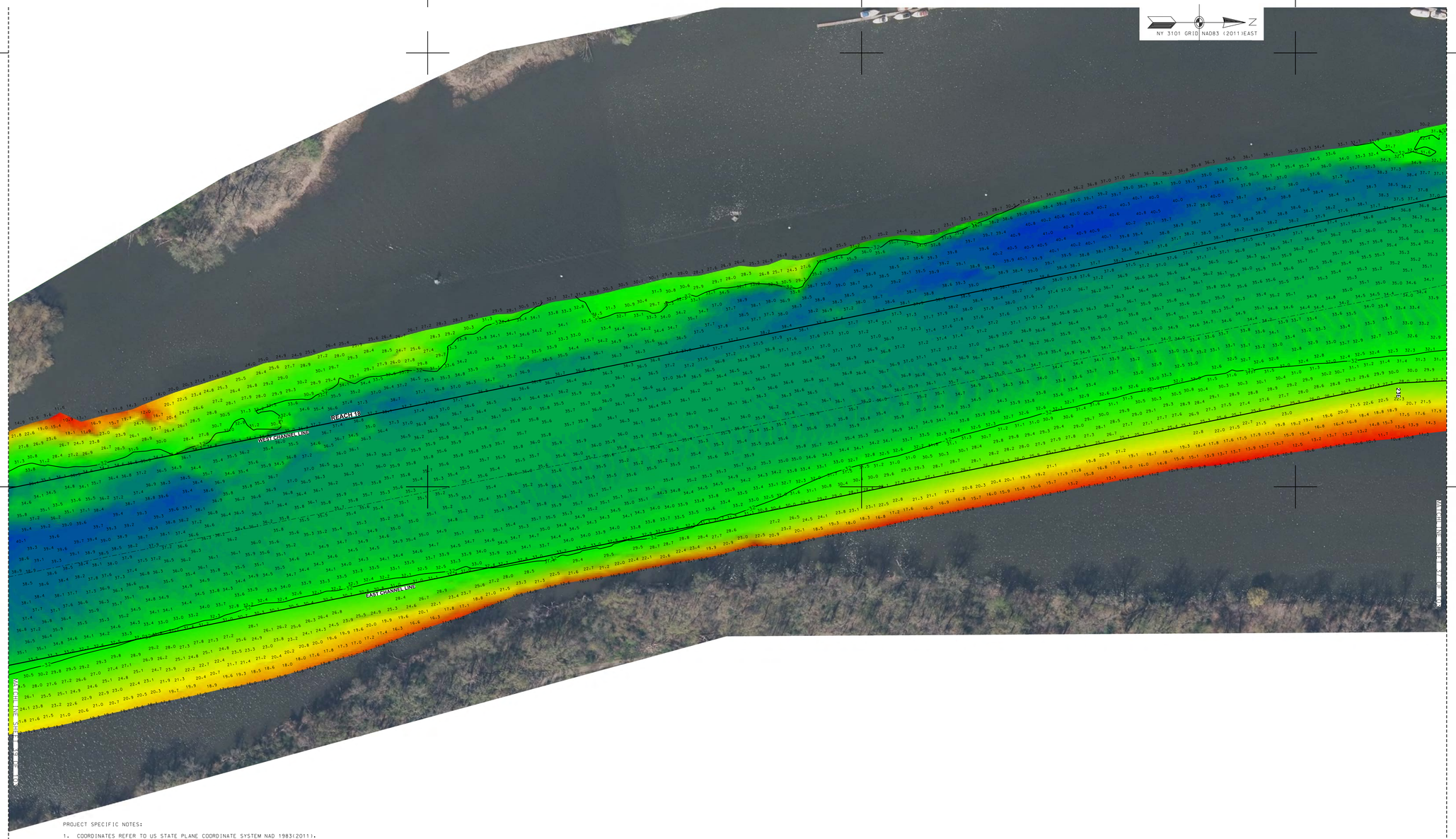
U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

McKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TELEPHONE: (910) 251-8444
FAX: (910) 251-8282

DESIGNED BY: DEM	CKD BY: RBD	DATE: AUGUST-SEPTEMBER 2017	SOLICITATION NO.:
DWN BY: MBH			
SUBMITTED BY: DLJ		CONTRACT NO.: W912DS-14-D-0004	
PLOT SCALE: 1" = 100'	ISSUE DATE: NOV 2017	FILE NUMBER:	
SIZE: ANSI F	FILE NAME: VH101-0268900043_HUDSON_MB.DGN		

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL
REACH 17-18

SHEET IDENTIFICATION
VH-137
SHEET 37 OF 103



PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011). NEW YORK, 3101 EAST US SURVEY FEET.
2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.
3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.
4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32', MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14', MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14', MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.
5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.
6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.
7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.
8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.
9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.
10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.
11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED IXNS INERTIAL NAVIGATION SYSTEM, IN REAL TIME KINEMATIC (RTK)MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.
12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS, A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.

NSRS/NGS CONTROL DATA			
BENCHMARK: TROY DAM 1	PID# BBDR68	NORTHING	EASTING
ELEVATION: 25.32' NAVD 88		1,428,037.76	709,760.15

LOCAL CONTROL DATA			
BENCHMARK: HR-12	PID#	NORTHING	EASTING
ELEVATION: 8.67' NAVD 88		1,318821.55	684451.34
STAMPED: HR-12 2016			

LOCAL CONTROL DATA			
BENCHMARK: 01-1	PID#	NORTHING	EASTING
ELEVATION: 3.87' NAVD 88		1,124,859.59	641003.46
STAMPED:			

STATE OF NEW YORK
RAYMOND F. DAHER
No. 49350
LICENSED LAND SURVEYOR

SCALE 1" = 100'
0 100 200 300 400

US Army Corps of Engineers ®
New York District

MARK	DESCRIPTION	DATE	APPR.	MARK	DESCRIPTION	DATE	APPR.

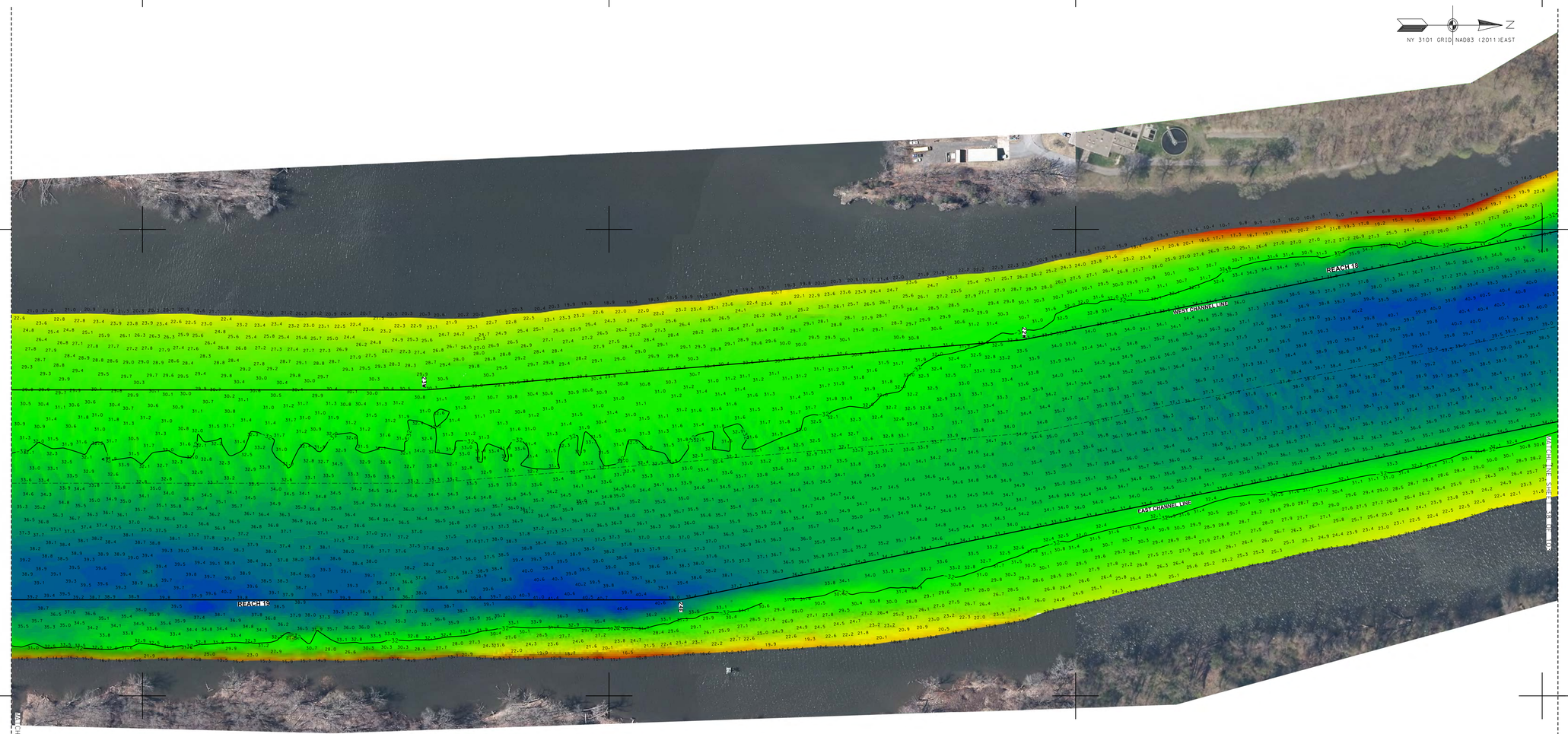
DESIGNED BY:
DWN BY: MBH
CKD BY: RBD
SUBMITTED BY: DLJ
PLOT SCALE: 1" = 100'
PLOT DATE:
SIZE: ANSI F
DATE: AUGUST-SEPTEMBER 2017
SOLICITATION NO.:
CONTRACT NO.: W912DS-14-D-0004
FILE NUMBER:
FILE NAME: VH101-058890043_HUDSON_MB.DGN

U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

MCKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TELEPHONE: (910) 251-0486
FAX: (910) 251-4282

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL
REACH 18

SHEET IDENTIFICATION
VH-138
SHEET 38 OF 103



PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011). NEW YORK. 3101 EAST US SURVEY FEET.
2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.
3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.
4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32'. MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14'. MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14'. MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.
5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.
6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.
7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.
8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.
9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.
10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.
11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED I2NS INERTIAL NAVIGATION SYSTEM. IN REAL TIME KINEMATIC (RTK)MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES
    USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.
12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS, A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.

NSRS/NGS CONTROL DATA			
BENCHMARK: TROY DAM 1	PID# BBDR68	NORTHING	EASTING
ELEVATION: 25.32' NAVD 88		1,428,037.76	709,760.15

LOCAL CONTROL DATA			
BENCHMARK: HR-12	PID#	NORTHING	EASTING
ELEVATION: 8.67' NAVD 88		1,318821.55	684451.34
STAMPED: HR-12 2016			

LOCAL CONTROL DATA			
BENCHMARK: 01-1	PID#	NORTHING	EASTING
ELEVATION: 3.87' NAVD 88		1,124,859.59	641003.46
STAMPED:			

STATE OF NEW YORK
RICHARD B. BAYER
LICENSED LAND SURVEYOR
No. 49791

SCALE 1" = 100'
0 100 200 300 400

US Army Corps of Engineers ®
New York District

MARK	DESCRIPTION	DATE	APPR.
MARK	DESCRIPTION	DATE	APPR.
MARK	DESCRIPTION	DATE	APPR.

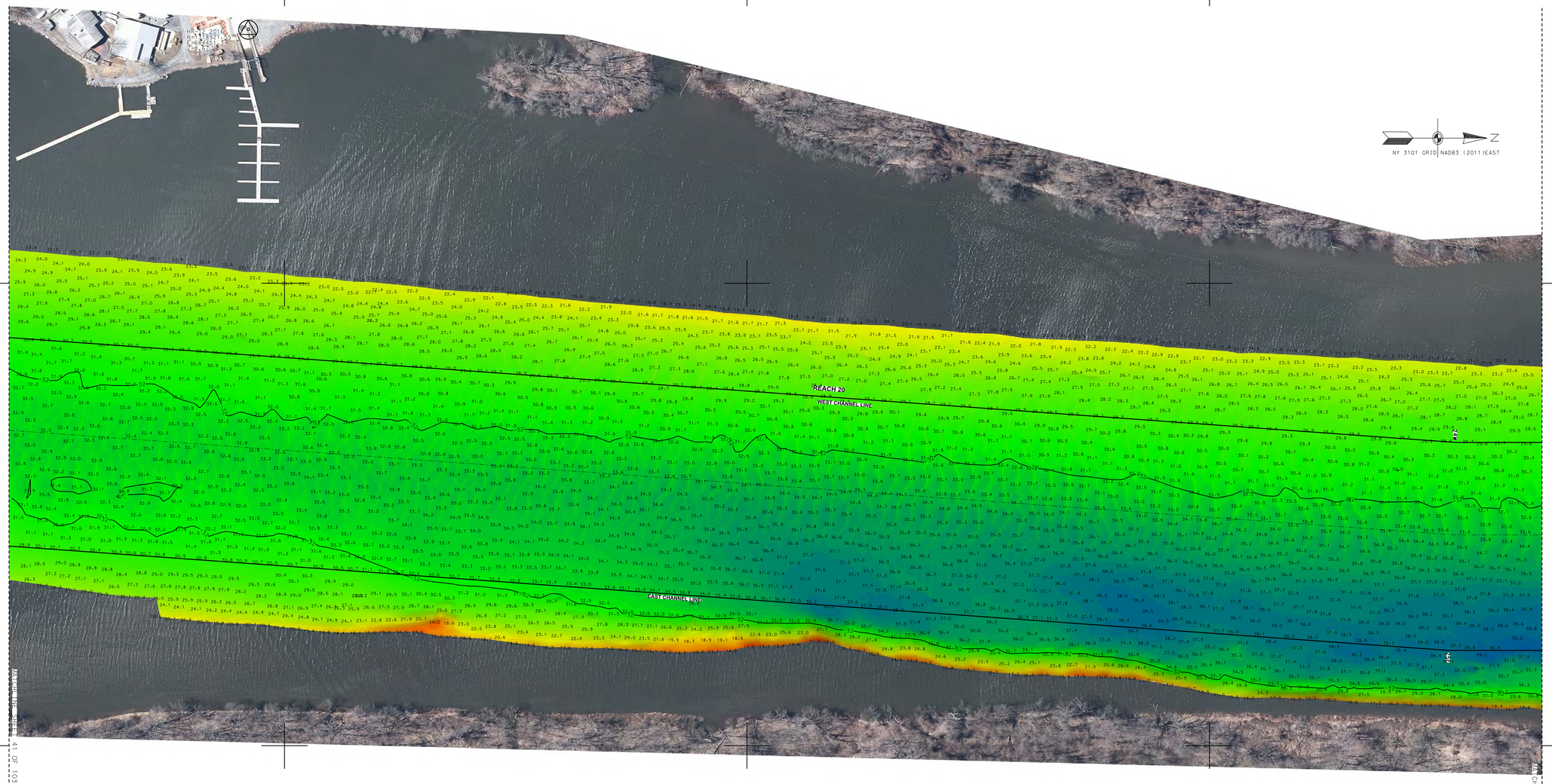
DATE: AUGUST-SEPTEMBER 2017
SOLICITATION NO.:
CONTRACT NO.: W912DS-14-D-0004
FILE NUMBER:
ISSUE DATE: DECEMBER 2017
FILE NAME: VH101-0588890043_HUDSON_MB.DGN
PLOT SCALE: 1:600'
SIZE: ANSI F
DESIGNED BY:
DWN BY: MBH
CKD BY: RBD
SUBMITTED BY: DLJ

U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

MCKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TELEPHONE: (910) 251-8848
FAX: (910) 251-4362

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL
REACH 18-19

SHEET IDENTIFICATION
VH-139
SHEET 39 OF 103



PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011). NEW YORK. 3101 EAST US SURVEY FEET.

2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.

3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.

4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32'. MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14'. MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14'. MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.

5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.

6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.

7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.

8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.

9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.

10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.

11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED I2NS INERTIAL NAVIGATION SYSTEM. IN REAL TIME KINEMATIC (RTK)MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.

12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS, A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.

STATE OF NEW YORK
RAYMOND D. PARKER
LICENSED LAND SURVEYOR
No. 49350

NSRS/NGS CONTROL DATA		
BENCHMARK: TROY DAM 1	PID# BBDR68	NORTHING EASTING
ELEVATION: 25.32' NAVD 88		1,428,037.76 709,760.15

LOCAL CONTROL DATA		
BENCHMARK: HR-12	PID#	NORTHING EASTING
ELEVATION: 8.67' NAVD 88		1,318821.55 684451.34
STAMPED: HR-12 2016		

LOCAL CONTROL DATA		
BENCHMARK: 01-1	PID#	NORTHING EASTING
ELEVATION: 3.87' NAVD 88		1,124,859.59 641003.46
STAMPED:		

SCALE 1" = 100'
0 100 200 300 400

US Army Corps of Engineers ®
New York District

MARK	DESCRIPTION	DATE	APPR.

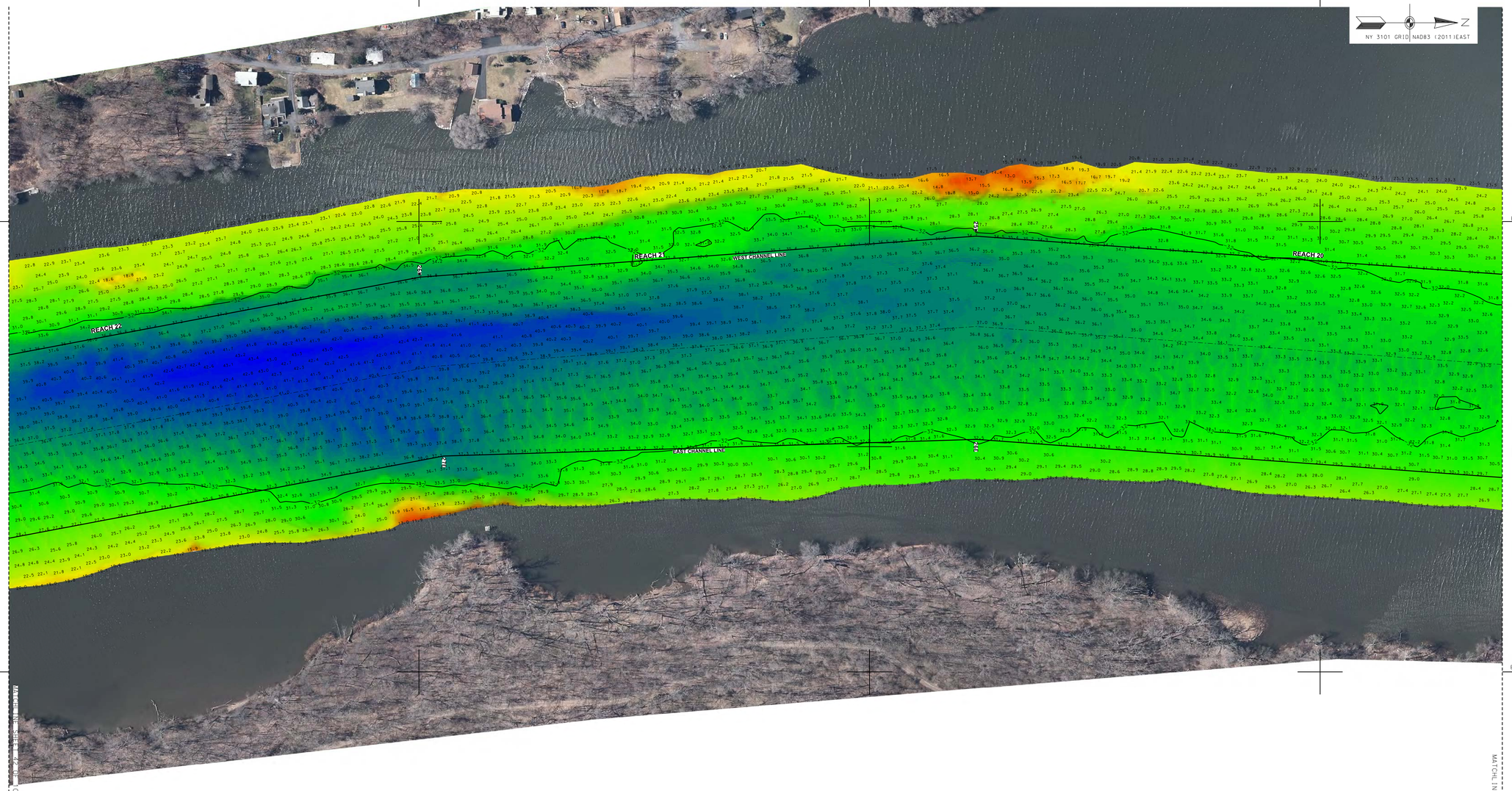
DESIGNED BY:		DATE: AUGUST-SEPTEMBER 2017	
DWN BY: MBH	CKD BY: RBD	SOLICITATION NO.:	
SUBMITTED BY: DLJ		CONTRACT NO.: W912DS-14-D-0004	
PLOT SCALE: 1:100'	ISSUE DATE: NOV 2017	FILE NUMBER:	
SIZE: ANSI F		FILE NAME: V:\110-058890043_HUDSON_MB.DGN	

U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

MCKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TELEPHONE: (910) 251-8444
FAX: (910) 251-8282

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL
REACH 20

SHEET IDENTIFICATION
VH-140
SHEET 40 OF 103



PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011). NEW YORK. 3101 EAST US SURVEY FEET.
2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.
3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.
4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32'. MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14'. MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14'. MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.
5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.
6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.
7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.
8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.
9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.
10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.
11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED I2NS INERTIAL NAVIGATION SYSTEM. IN REAL TIME KINEMATIC (RTK) MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2015
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.
12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS, A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.

STATE OF NEW YORK
BRANDON D. BAKER
049350
LICENSED LAND SURVEYOR

NSRS/NGS CONTROL DATA		
BENCHMARK: TROY DAM 1	PID# BBDR68	NORTHING EASTING
ELEVATION: 25.32' NAVD 88		1,428,037.76 709,760.15

LOCAL CONTROL DATA		
BENCHMARK: HR-12	PID#	NORTHING EASTING
ELEVATION: 8.67' NAVD 88		1,318821.55 684451.34
STAMPED: HR-12 2016		

LOCAL CONTROL DATA		
BENCHMARK: 01-1	PID#	NORTHING EASTING
ELEVATION: 3.87' NAVD 88		1,124,859.59 641003.46
STAMPED:		

SCALE 1" = 100'
0 100 200 300 400

US Army Corps of Engineers ®
New York District

MARK	DESCRIPTION	DATE	APPR.	MARK	DESCRIPTION	DATE	APPR.

DATE: AUGUST-SEPTEMBER 2017
SOLICITATION NO.:
CONTRACT NO.: W912DS-14-D-0004
FILE NUMBER:

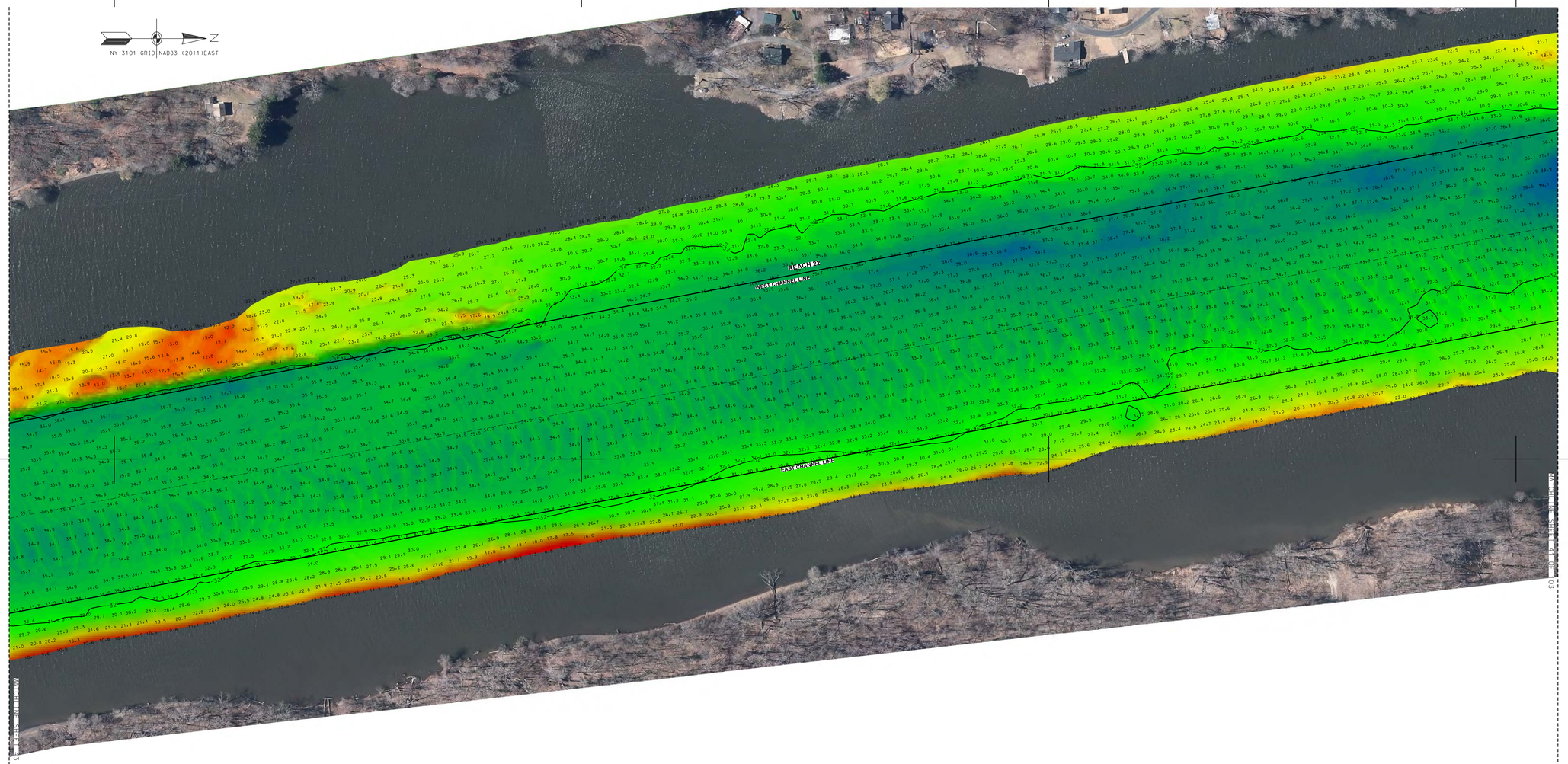
DESIGNED BY: DEA
DWN BY: MBH
CKD BY: RBD
SUBMITTED BY: DEJ
PLOT SCALE: 1" = 100'
ISSUE DATE: ISSUE DT
SIZE: ANSI F
FILE NAME: VH101-0368900A3_HUDSON_MB.DGN

U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

MCKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TELEPHONE: (910) 251-8444
FAX: (910) 251-8282

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL
REACH 20-22

SHEET IDENTIFICATION
VH-141
SHEET 41 OF 103



PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011), NEW YORK, 3101 EAST US SURVEY FEET.

2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.

3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.

4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32', MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14', MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14', MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.

5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.

6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.

7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.

8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.

9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.

10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.

11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED I2NS INERTIAL NAVIGATION SYSTEM. IN REAL TIME KINEMATIC (RTK)MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.

12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS, A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.

STATE OF NEW YORK
RAYMOND B. BAKER
LICENSED LAND SURVEYOR
No. 49150

NSRS/NGS CONTROL DATA			
BENCHMARK: TROY DAM 1	PID# BBDR68	NORTHING	EASTING
ELEVATION: 25.32' NAVD 88		1,428,037.76	709,760.15

LOCAL CONTROL DATA			
BENCHMARK: HR-12	PID#	NORTHING	EASTING
ELEVATION: 8.67' NAVD 88		1,318821.55	684451.34
STAMPED: HR-12 2016			

LOCAL CONTROL DATA			
BENCHMARK: 01-1	PID#	NORTHING	EASTING
ELEVATION: 3.87' NAVD 88		1,124,859.59	641003.46
STAMPED:			

SCALE 1" = 100'
0 100 200 300 400

US Army Corps of Engineers ®
New York District

MARK	DESCRIPTION	DATE	APPR.

MARK	DESCRIPTION	DATE	APPR.

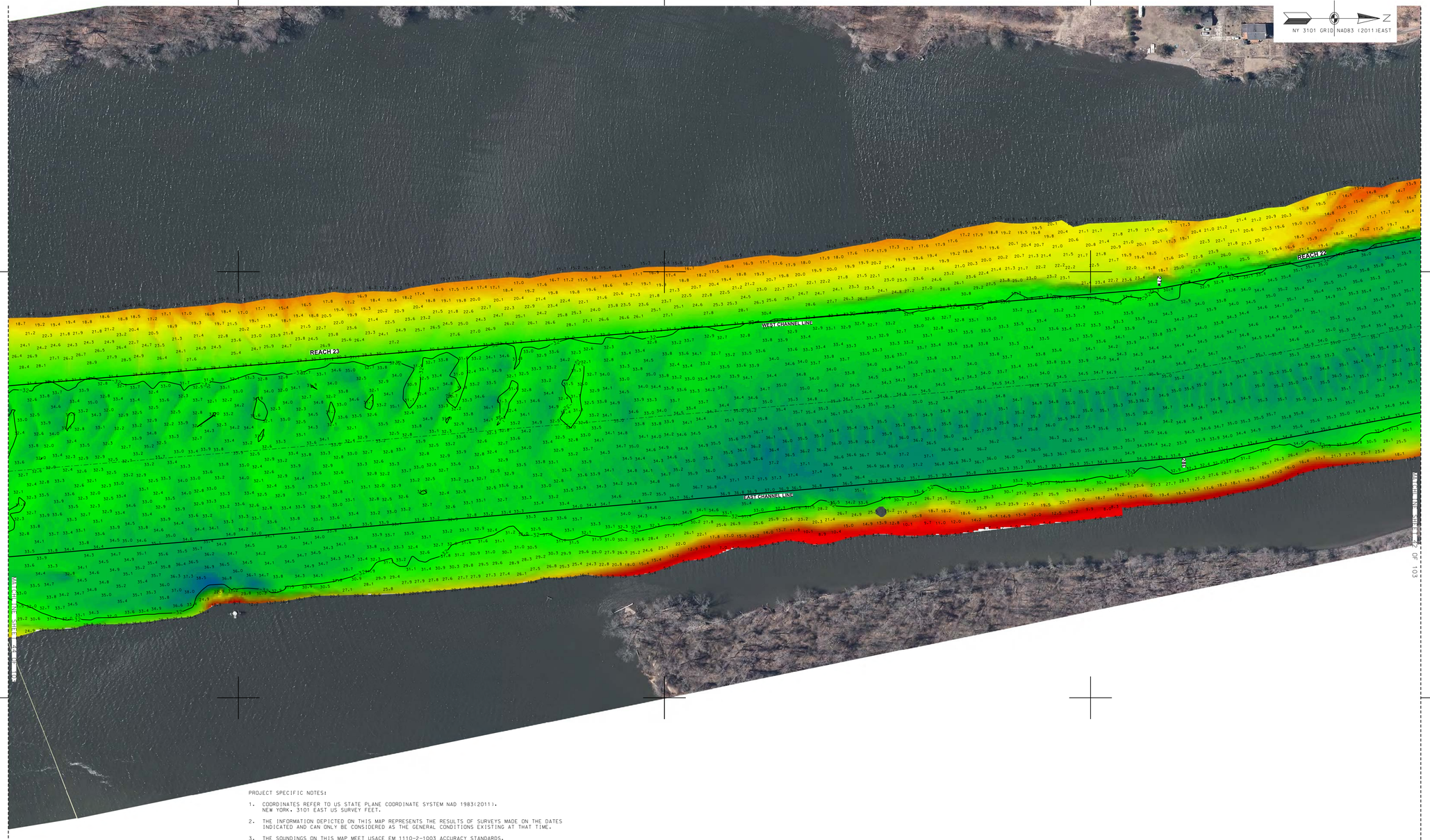
DESIGNED BY:
DWN BY: MBH
CKD BY: RBD
SUBMITTED BY: DLJ
PLOT SCALE: 1" = 100'
SIZE: ANSI F
DATE: AUGUST-SEPTEMBER 2017
SOLICITATION NO.:
CONTRACT NO.: W912DS-14-D-0004
ISSUE DATE:
DESIGN DATE:
FILE NUMBER:
FILE NAME: VH101-058890043_HUDSON_MB.DGN

U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

MCKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TELEPHONE: (910) 341-0646
FAX: (910) 251-8282

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL
REACH 22

SHEET IDENTIFICATION
VH-142
SHEET 42 OF 103



PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011). NEW YORK. 3101 EAST US SURVEY FEET.
2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.
3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.
4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32'. MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14'. MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14'. MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.
5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.
6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.
7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.
8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.
9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.
10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.
11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED IXNS INERTIAL NAVIGATION SYSTEM. IN REAL TIME KINEMATIC (RTK)MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.
12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS. A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.

STATE OF NEW YORK
RAYMOND B. BARBER
No. 49350
LICENSED LAND SURVEYOR

NSRS/NGS CONTROL DATA		
BENCHMARK: TROY DAM 1 PID# BBDR68	NORTHING	EASTING
ELEVATION: 25.32' NAVD 88	1,428,037.76	709,760.15

LOCAL CONTROL DATA		
BENCHMARK: HR-12 PID#	NORTHING	EASTING
ELEVATION: 8.67' NAVD 88	1,318821.55	684451.34
STAMPED: HR-12 2016		

LOCAL CONTROL DATA		
BENCHMARK: 01-1 PID#	NORTHING	EASTING
ELEVATION: 3.87' NAVD 88	1,124,859.59	641003.46
STAMPED:		

SCALE 1" = 100'
0 100 200 300 400

US Army Corps of Engineers ®
New York District

MARK	DESCRIPTION	DATE	APPR.

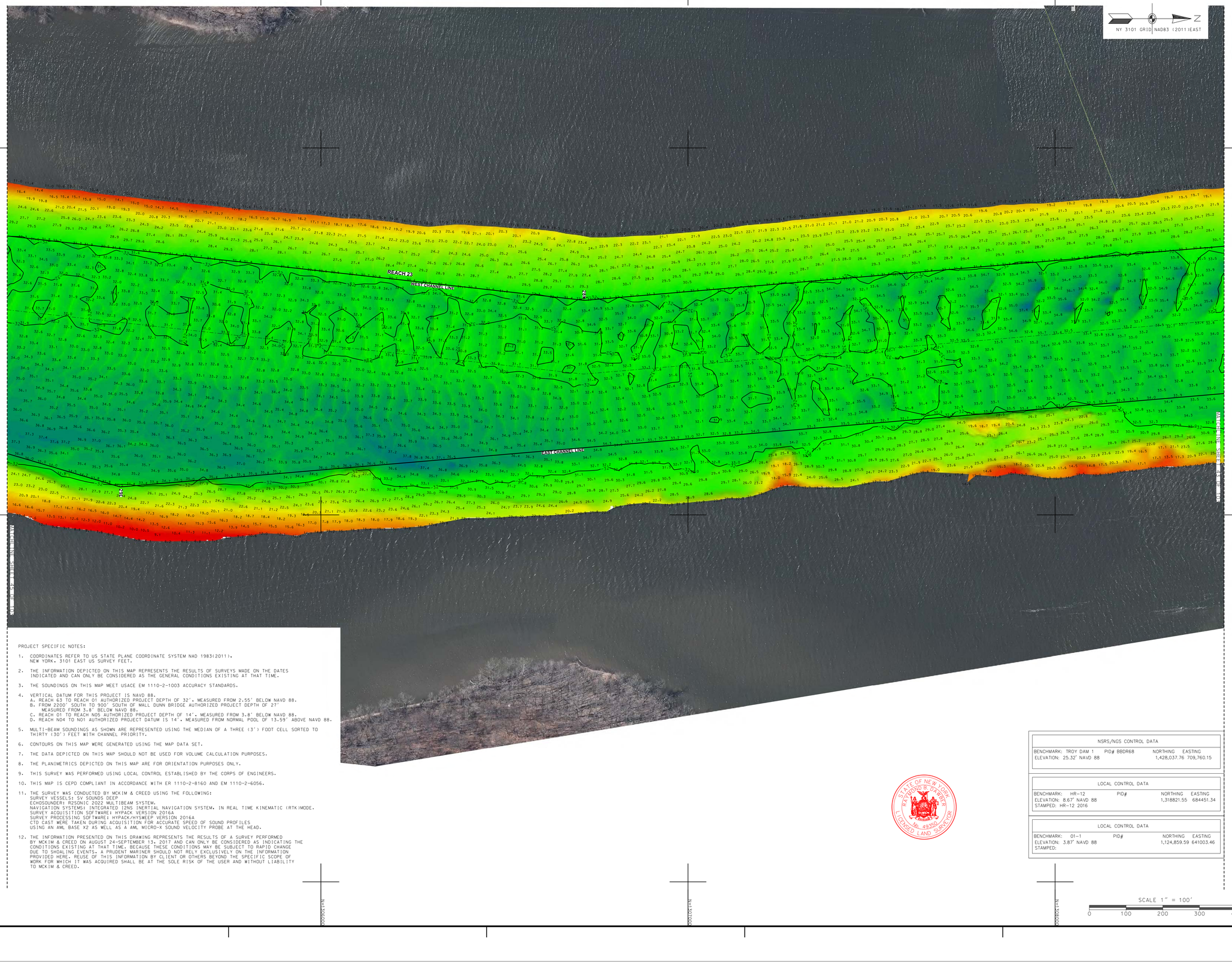
DATE: AUGUST-SEPTEMBER 2017
SOLICITATION NO.:
CONTRACT NO.: W912DS-14-D-0004
FILE NUMBER:
DESIGNED BY: EDA
DRWN BY: MBH
CKD BY: RBD
SUBMITTED BY: DLJ
PLOT SCALE: 1" = 100'
PLOT DATE: 10/5/2017
SIZE: ANSI F
FILE NAME: VH101-056890043_HUDSON_MB.DGN

U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

MCKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TELEPHONE: (910) 251-8444
FAX: (910) 251-8282

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL
REACH 22-23

SHEET IDENTIFICATION
VH-143
SHEET 43 OF 103



PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011). NEW YORK. 3101 EAST US SURVEY FEET.

2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.

3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.

4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32', MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14', MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14', MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.

5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.

6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.

7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.

8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.

9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.

10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.

11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED I2NS INERTIAL NAVIGATION SYSTEM. IN REAL TIME KINEMATIC (RTK)MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.

12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS, A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.

NSRS/NGS CONTROL DATA			
BENCHMARK: TROY DAM 1	PID# BBDR68	NORTHING	EASTING
ELEVATION: 25.32' NAVD 88		1,428,037.76	709,760.15

LOCAL CONTROL DATA			
BENCHMARK: HR-12	PID#	NORTHING	EASTING
ELEVATION: 8.67' NAVD 88		1,318821.55	684451.34
STAMPED: HR-12 2016			

LOCAL CONTROL DATA			
BENCHMARK: 01-1	PID#	NORTHING	EASTING
ELEVATION: 3.87' NAVD 88		1,124,859.59	641003.46
STAMPED:			

RAYMOND B. PRAPPE — STATE OF NEW YORK — No. 49326 — LICENSED LAND SURVEYOR

SCALE 1" = 100'
0 100 200 300 400

US Army Corps of Engineers ®
New York District

MARK	DESCRIPTION	DATE	APPR.

MARK	DESCRIPTION	DATE	APPR.

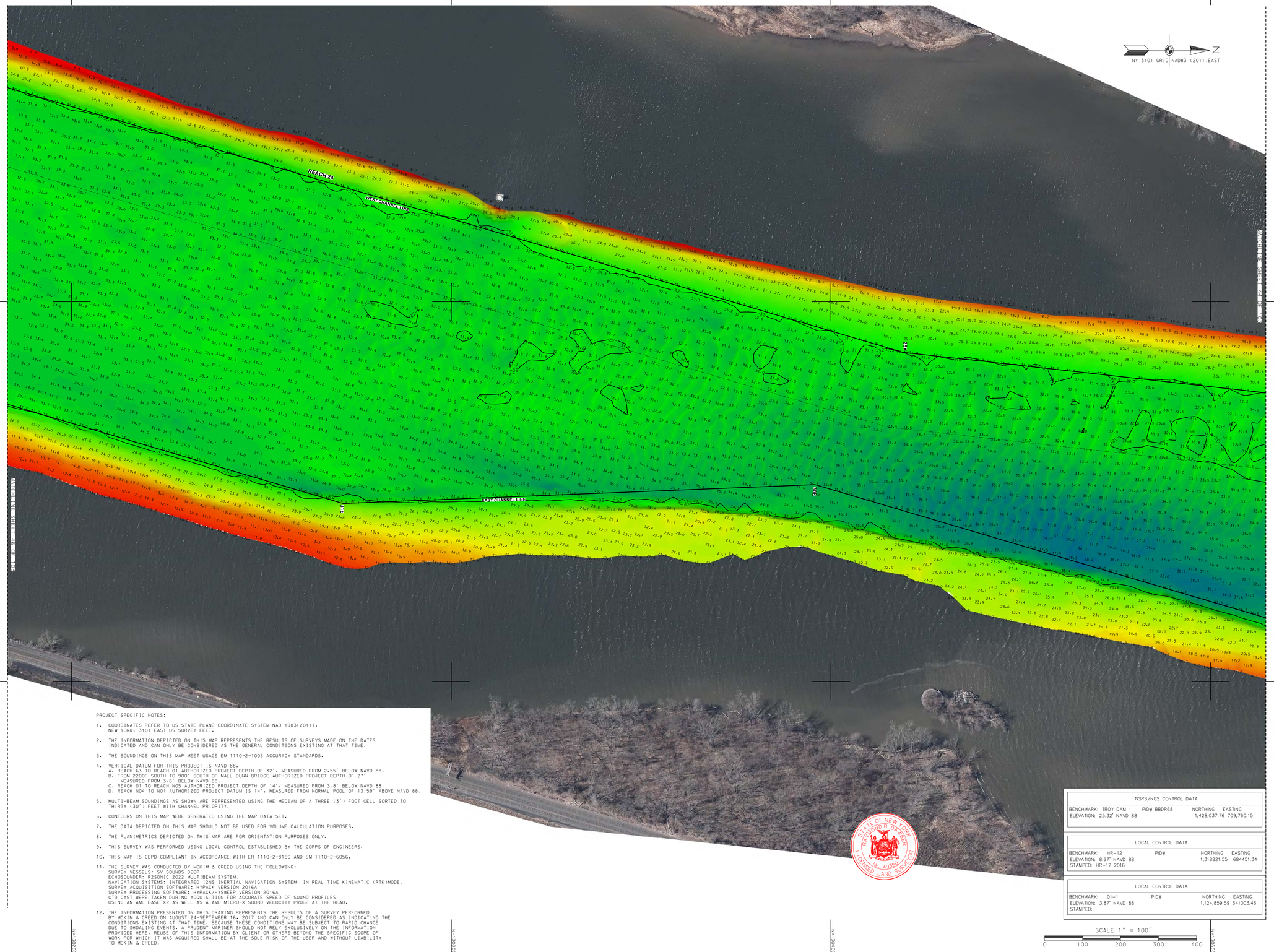
DESIGNED BY: RBD
DWN BY: MBH
CKD BY: RBD
SUBMITTED BY: DLJ
PLOT SCALE: 1" = 100'
SIZE: ANSI F
DATE: AUGUST-SEPTEMBER 2017
SOLICITATION NO.:
CONTRACT NO.: W912DS-14-D-0004
FILE NUMBER:
ISSUE DATE: NOVEMBER 2017
FILE NAME: VH101-056890043_HUDSON_MB.DGN

U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

McKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TELEPHONE: (910) 251-8444
FAX: (910) 251-8282

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL
REACH 23

SHEET IDENTIFICATION
VH-144
SHEET 44 OF 103



PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011). NEW YORK, 3101 EAST US SURVEY FEET.
2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.
3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.
4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32', MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14', MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14', MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.
5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.
6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.
7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.
8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.
9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.
10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.
11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED I2NS INERTIAL NAVIGATION SYSTEM. IN REAL TIME KINEMATIC (RTK)MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.
12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 16, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS, A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.

STATE OF NEW YORK
RAYMOND B. O'BRIEN
LICENSED LAND SURVEYOR
NO. 49150

NSRS/NGS CONTROL DATA			
BENCHMARK: TROY DAM 1	PID# BBDR68	NORTHING	EASTING
ELEVATION: 25.32' NAVD 88		1,428,037.76	709,760.15

LOCAL CONTROL DATA			
BENCHMARK: HR-12	PID#	NORTHING	EASTING
ELEVATION: 8.67' NAVD 88		1,318821.55	684451.34
STAMPED: HR-12 2016			

LOCAL CONTROL DATA			
BENCHMARK: 01-1	PID#	NORTHING	EASTING
ELEVATION: 3.87' NAVD 88		1,124,859.59	641003.46
STAMPED:			

SCALE 1" = 100'
0 100 200 300 400

US Army Corps of Engineers ®
New York District

MARK	DESCRIPTION	DATE	APPR.

MARK	DESCRIPTION	DATE	APPR.

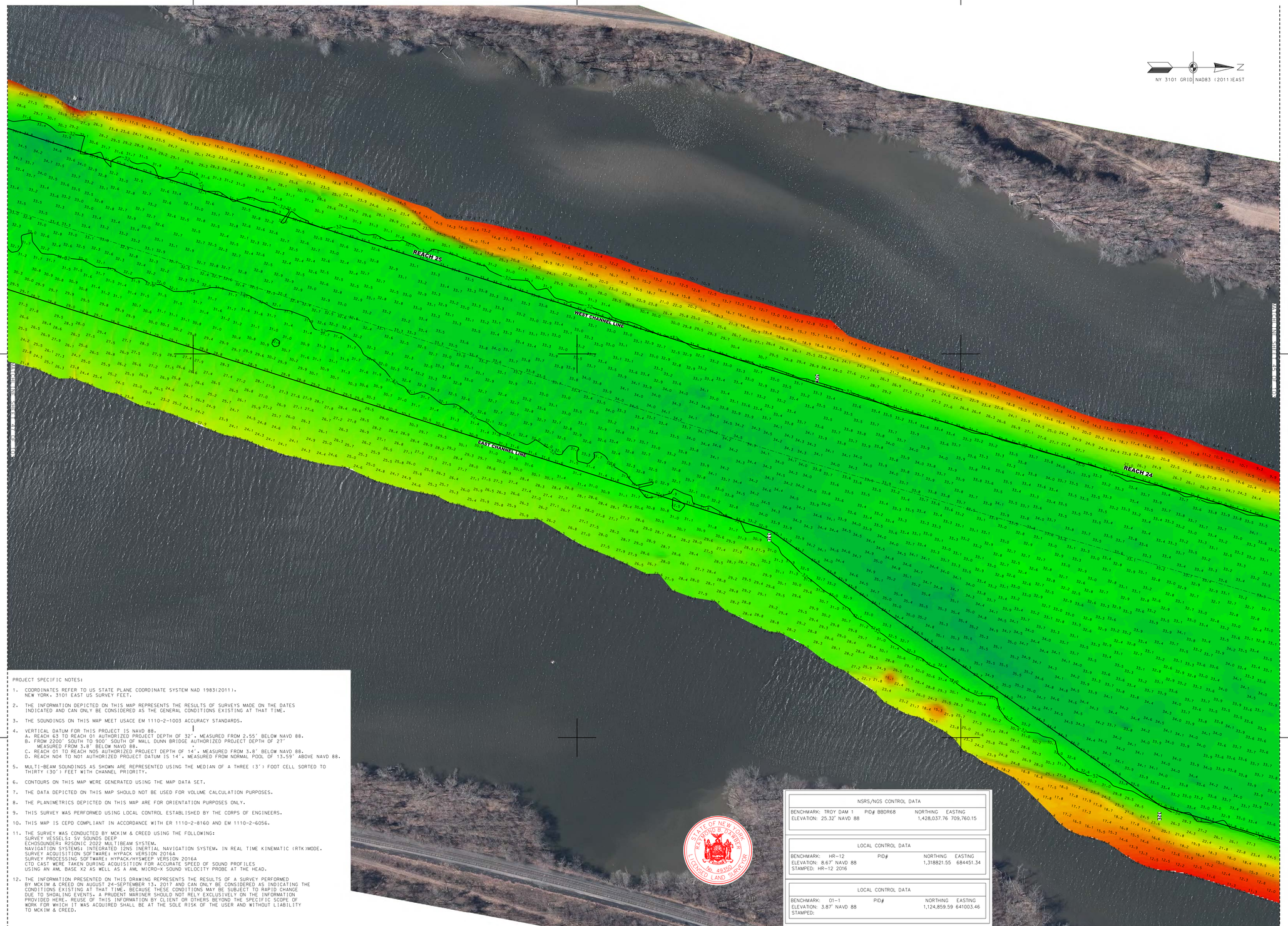
U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

MCKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TELEPHONE: (910) 251-8444
FAX: (910) 251-8282

DESIGNED BY: DLJ	DATE: AUGUST-SEPTEMBER 2017
DWN BY: MBH	CKD BY: RBD
SUBMITTED BY: DLJ	SOLICITATION NO.:
PLOT SCALE: 1=100'	CONTRACT NO.: W912DS-14-D-0004
SIZE: ANSI F	ISSUE DATE: NOV 2017
	FILE NUMBER:
	FILE NAME: VH101-0268990043_HUDSON_MB.DGN

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL
REACH 24

SHEET IDENTIFICATION
VH-145
SHEET 45 OF 103



PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011). NEW YORK. 3101 EAST US SURVEY FEET.
2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.
3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.
4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32', MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14', MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14', MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.
5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.
6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.
7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.
8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.
9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.
10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.
11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED 12NS INERTIAL NAVIGATION SYSTEM. IN REAL TIME KINEMATIC (RTK) MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.
12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS, A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.

STATE OF NEW YORK
RAYMOND E. DWYER
No. 49355
LICENSED LAND SURVEYOR

NSRS/NGS CONTROL DATA			
BENCHMARK: TROY DAM 1	PID# BBDR68	NORTHING	EASTING
ELEVATION: 25.32' NAVD 88		1,428,037.76	709,760.15

LOCAL CONTROL DATA			
BENCHMARK: HR-12	PID#	NORTHING	EASTING
ELEVATION: 8.67' NAVD 88		1,318821.55	684451.34
STAMPED: HR-12 2016			

LOCAL CONTROL DATA			
BENCHMARK: 01-1	PID#	NORTHING	EASTING
ELEVATION: 3.87' NAVD 88		1,124,859.59	641003.46
STAMPED:			

SCALE 1" = 100'
0 100 200 300 400

US Army Corps of Engineers
New York District

MARK	DESCRIPTION	DATE	APPR.	MARK	DESCRIPTION	DATE	APPR.

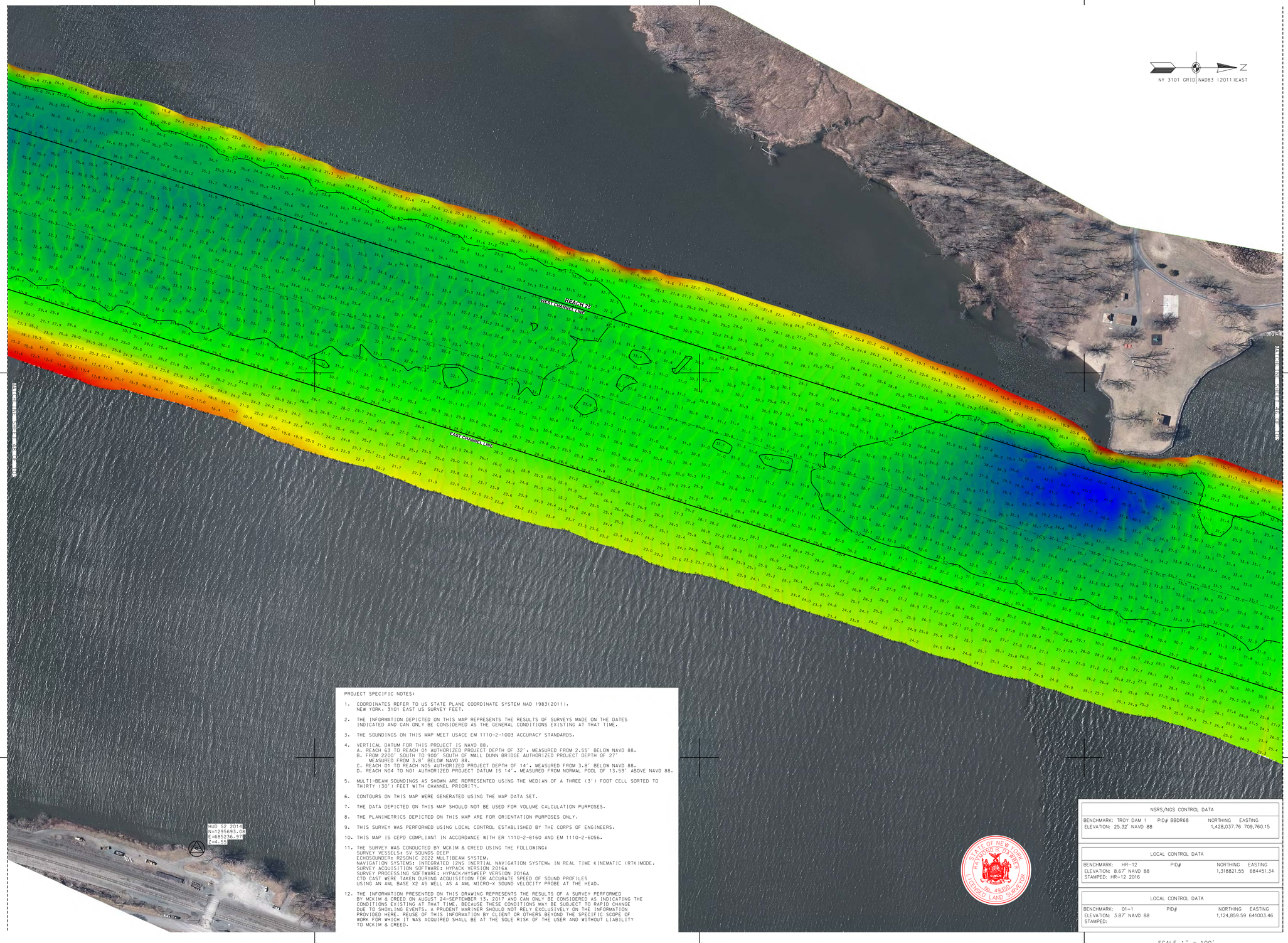
DESIGNED BY:
DWN BY: MBH
CKD BY: RED
SUBMITTED BY: DLJ
PLOT SCALE: 1:100
PLOT DATE: 11/6/2017
SIZE: ANSI F
DATE: AUGUST-SEPTEMBER 2017
SOLICITATION NO.:
CONTRACT NO.: W912DS-14-D-0004
FILE NUMBER:
FILE NAME: VH101-058890043_HUDSON_MB.DGN

U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

McKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TELEPHONE: (910) 251-8848
FAX: (910) 251-4362

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL
REACH 24-25

SHEET IDENTIFICATION
VH-146
SHEET 46 OF 103



PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011). NEW YORK. 3101 EAST US SURVEY FEET.

2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.

3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.

4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32'. MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14'. MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14'. MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.

5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.

6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.

7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.

8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.

9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.

10. THIS MAP IS CEPO COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.

11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED I2NS INERTIAL NAVIGATION SYSTEM. IN REAL TIME KINEMATIC (RTK)MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.

12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS, A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.

NSRS/NGS CONTROL DATA			
BENCHMARK: TROY DAM 1	PID# BBDR68	NORTHING	EASTING
ELEVATION: 25.32' NAVD 88		1,428,037.76	709,760.15

LOCAL CONTROL DATA			
BENCHMARK: HR-12	PID#	NORTHING	EASTING
ELEVATION: 8.67' NAVD 88		1,318821.55	684451.34
STAMPED: HR-12 2016			

LOCAL CONTROL DATA			
BENCHMARK: 01-1	PID#	NORTHING	EASTING
ELEVATION: 3.87' NAVD 88		1,124,859.59	641003.46
STAMPED:			

STATE OF NEW YORK · RICHARD B. RIVER · 49356 · LICENSED LAND SURVEYOR

SCALE 1" = 100'
0 100 200 300 400

US Army Corps of Engineers ®
New York District

MARK	DESCRIPTION	DATE	APPR.

MARK	DESCRIPTION	DATE	APPR.

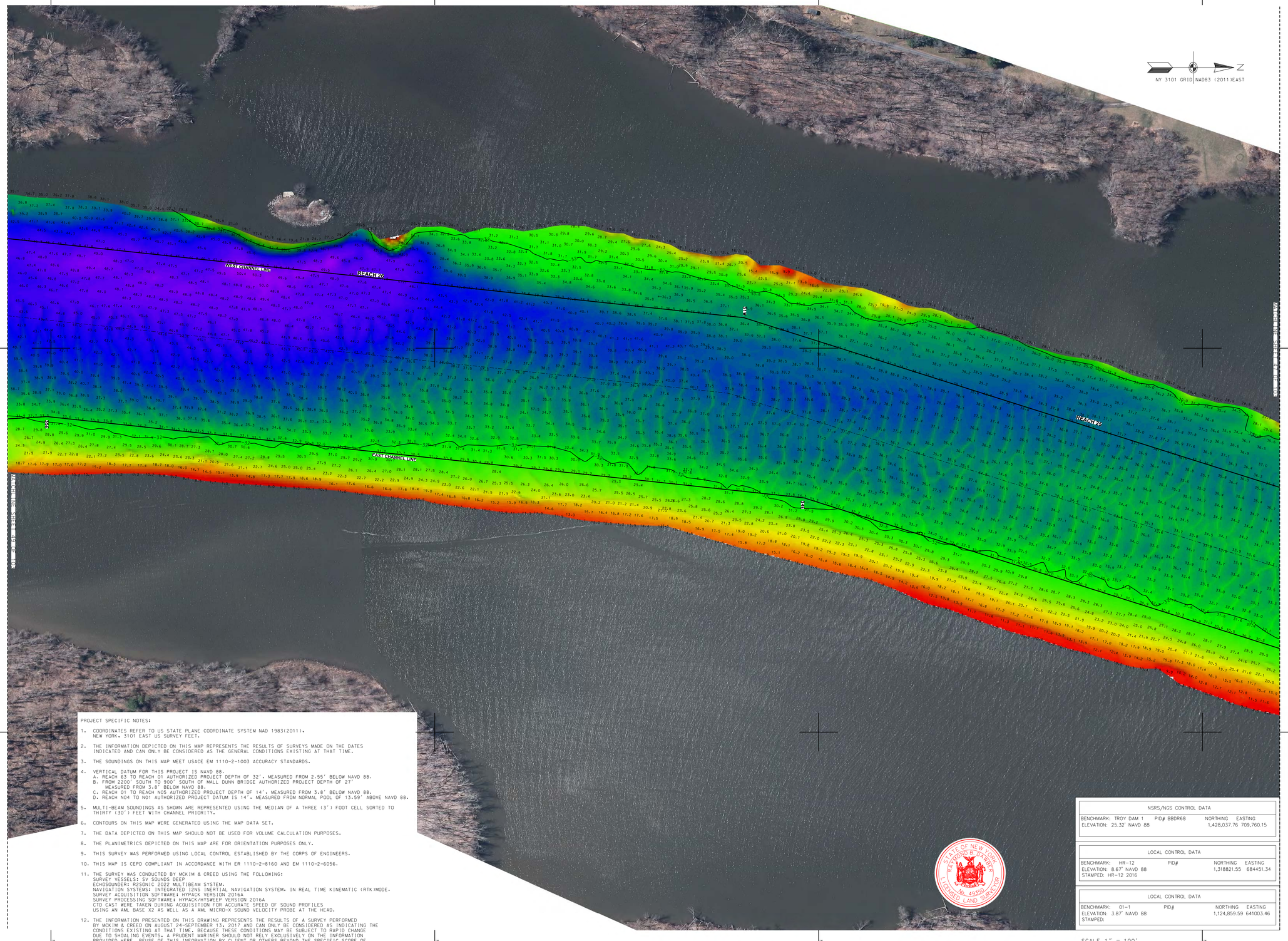
U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

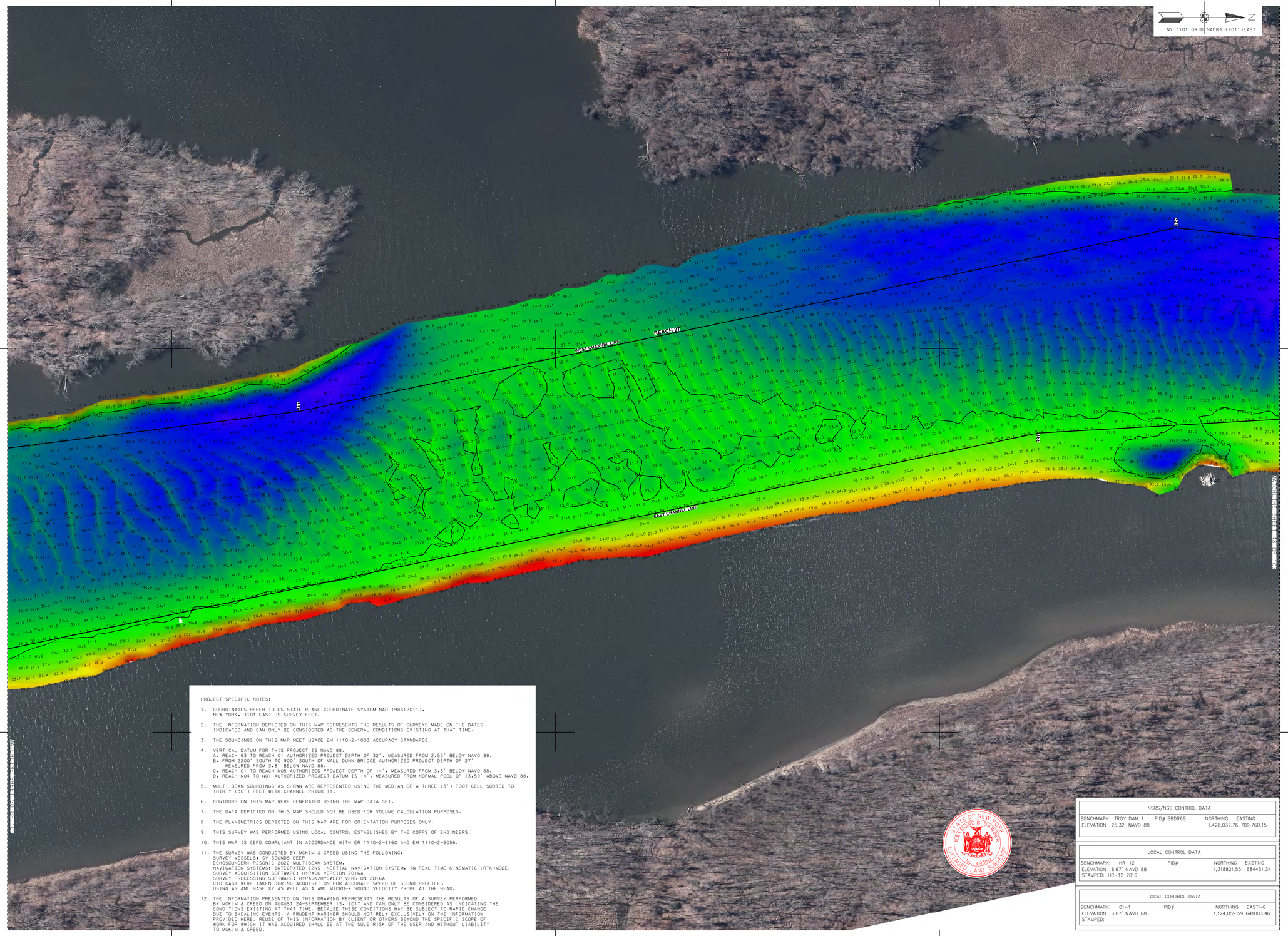
MCKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TELEPHONE: (910) 251-8444
FAX: (910) 251-8282

DESIGNED BY: DEA	CKD BY: RBD	DATE: AUGUST-SEPTEMBER 2017	SOLICITATION NO.:
DWN BY: MBH			CONTRACT NO.: W912DS-14-D-0004
SUBMITTED BY: DLJ			FILE NUMBER:
PLOT SCALE: 1" = 100'	ISSUE DATE: DEC 2017		
SIZE: ANSI F	FILE NAME: VH101-c058890043_HUDSON_MB.DGN		

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL
REACH 25

SHEET IDENTIFICATION
VH-147
SHEET 47 OF 103


NY 3101 GRID NAD83 (2011) EAST
N
WEST CHANNEL LINE
EAST CHANNEL LINE
REACH 01
REACH 02
REACH 03
REACH 04
REACH 05
REACH 06
REACH 07
REACH 08
REACH 09
REACH 10
REACH 11
REACH 12
REACH 13
REACH 14
REACH 15
REACH 16
REACH 17
REACH 18
REACH 19
REACH 20
REACH 21
REACH 22
REACH 23
REACH 24
REACH 25
REACH 26
REACH 27
REACH 28
REACH 29
REACH 30
REACH 31
REACH 32
REACH 33
REACH 34
REACH 35
REACH 36
REACH 37
REACH 38
REACH 39
REACH 40
REACH 41
REACH 42
REACH 43
REACH 44
REACH 45
REACH 46
REACH 47
REACH 48
REACH 49
REACH 50
REACH 51
REACH 52
REACH 53
REACH 54
REACH 55
REACH 56
REACH 57
REACH 58
REACH 59
REACH 60
REACH 61
REACH 62
REACH 63
REACH 64
REACH 65
REACH 66
REACH 67
REACH 68
REACH 69
REACH 70
REACH 71
REACH 72
REACH 73
REACH 74
REACH 75
REACH 76
REACH 77
REACH 78
REACH 79
REACH 80
REACH 81
REACH 82
REACH 83
REACH 84
REACH 85
REACH 86
REACH 87
REACH 88
REACH 89
REACH 90
REACH 91
REACH 92
REACH 93
REACH 94
REACH 95
REACH 96
REACH 97
REACH 98
REACH 99
REACH 100
REACH 101
REACH 102
REACH 103
REACH 104
REACH 105
REACH 106
REACH 107
REACH 108
REACH 109
REACH 110
REACH 111
REACH 112
REACH 113
REACH 114
REACH 115
REACH 116
REACH 117
REACH 118
REACH 119
REACH 120
REACH 121
REACH 122
REACH 123
REACH 124
REACH 125
REACH 126
REACH 127
REACH 128
REACH 129
REACH 130
REACH 131
REACH 132
REACH 133
REACH 134
REACH 135
REACH 136
REACH 137
REACH 138
REACH 139
REACH 140
REACH 141
REACH 142
REACH 143
REACH 144
REACH 145
REACH 146
REACH 147
REACH 148
REACH 149
REACH 150
REACH 151
REACH 152
REACH 153
REACH 154
REACH 155
REACH 156
REACH 157
REACH 158
REACH 159
REACH 160
REACH 161
REACH 162
REACH 163
REACH 164
REACH 165
REACH 166
REACH 167
REACH 168
REACH 169
REACH 170
REACH 171
REACH 172
REACH 173
REACH 174
REACH 175
REACH 176
REACH 177
REACH 178
REACH 179
REACH 180
REACH 181
REACH 182
REACH 183
REACH 184
REACH 185
REACH 186
REACH 187
REACH 188
REACH 189
REACH 190
REACH 191
REACH 192
REACH 193
REACH 194
REACH 195
REACH 196
REACH 197
REACH 198
REACH 199
REACH 200
REACH 201
REACH 202
REACH 203
REACH 204
REACH 205
REACH 206
REACH 207
REACH 208
REACH 209
REACH 210
REACH 211
REACH 212
REACH 213
REACH 214
REACH 215
REACH 216
REACH 217
REACH 218
REACH 219
REACH 220
REACH 221
REACH 222
REACH 223
REACH 224
REACH 225
REACH 226
REACH 227
REACH 228
REACH 229
REACH 230
REACH 231
REACH 232
REACH 233
REACH 234
REACH 235
REACH 236
REACH 237
REACH 238
REACH 239
REACH 240
REACH 241
REACH 242
REACH 243
REACH 244
REACH 245
REACH 246
REACH 247
REACH 248
REACH 249
REACH 250
REACH 251
REACH 252
REACH 253
REACH 254
REACH 255
REACH 256
REACH 257
REACH 258
REACH 259
REACH 260
REACH 261
REACH 262
REACH 263
REACH 264
REACH 265
REACH 266
REACH 267
REACH 268
REACH 269
REACH 270
REACH 271
REACH 272
REACH 273
REACH 274
REACH 275
REACH 276
REACH 277
REACH 278
REACH 279
REACH 280
REACH 281
REACH 282
REACH 283
REACH 284
REACH 285
REACH 286
REACH 287
REACH 288
REACH 289
REACH 290
REACH 291
REACH 292
REACH 293
REACH 294
REACH 295
REACH 296
REACH 297
REACH 298
REACH 299
REACH 300
REACH 301
REACH 302
REACH 303
REACH 304
REACH 305
REACH 306
REACH 307
REACH 308
REACH 309
REACH 310
REACH 311
REACH 312
REACH 313
REACH 314
REACH 315
REACH 316
REACH 317
REACH 318
REACH 319
REACH 320
REACH 321
REACH 322
REACH 323
REACH 324
REACH 325
REACH 326
REACH 327
REACH 328
REACH 329
REACH 330
REACH 331
REACH 332
REACH 333
REACH 334
REACH 335
REACH 336
REACH 337
REACH 338
REACH 339
REACH 340
REACH 341
REACH 342
REACH 343
REACH 344
REACH 345
REACH 346
REACH 347
REACH 348
REACH 349
REACH 350
REACH 351
REACH 352
REACH 353
REACH 354
REACH 355
REACH 356
REACH 357
REACH 358
REACH 359
REACH 360
REACH 361
REACH 362
REACH 363
REACH 364
REACH 365
REACH 366
REACH 367
REACH 368
REACH 369
REACH 370
REACH 371
REACH 372
REACH 373
REACH 374
REACH 375
REACH 376
REACH 377
REACH 378
REACH 379
REACH 380
REACH 381
REACH 382
REACH 383
REACH 384
REACH 385
REACH 386
REACH 387
REACH 388
REACH 389
REACH 390
REACH 391
REACH 392
REACH 393
REACH 394
REACH 395
REACH 396
REACH 397
REACH 398
REACH 399
REACH 400
REACH 401
REACH 402
REACH 403
REACH 404
REACH 405
REACH 406
REACH 407
REACH 408
REACH 409
REACH 410
REACH 411
REACH 412
REACH 413
REACH 414
REACH 415
REACH 416
REACH 417
REACH 418
REACH 419
REACH 420
REACH 421
REACH 422
REACH 423
REACH 424
REACH 425
REACH 426
REACH 427
REACH 428
REACH 429
REACH 430
REACH 431
REACH 432
REACH 433
REACH 434
REACH 435
REACH 436
REACH 437
REACH 438
REACH 439
REACH 440
REACH 441
REACH 442
REACH 443
REACH 444
REACH 445
REACH 446
REACH 447
REACH 448
REACH 449
REACH 450
REACH 451
REACH 452
REACH 453
REACH 454
REACH 455
REACH 456
REACH 457
REACH 458
REACH 459
REACH 460
REACH 461
REACH 462
REACH 463
REACH 464
REACH 465
REACH 466
REACH 467
REACH 468
REACH 469
REACH 470
REACH 471
REACH 472
REACH 473
REACH 474
REACH 475
REACH 476
REACH 477
REACH 478
REACH 479
REACH 480
REACH 481
REACH 482
REACH 483
REACH 484
REACH 485
REACH 486
REACH 487
REACH 488
REACH 489
REACH 490
REACH 491
REACH 492
REACH 493
REACH 494
REACH 495
REACH 496
REACH 497
REACH 498
REACH 499
REACH 500
REACH 501
REACH 502
REACH 503
REACH 504
REACH 505
REACH 506
REACH 507
REACH 508
REACH 509
REACH 510
REACH 511
REACH 512
REACH 513
REACH 514
REACH 515
REACH 516
REACH 517
REACH 518
REACH 519
REACH 520
REACH 521
REACH 522
REACH 523
REACH 524
REACH 525
REACH 526
REACH 527
REACH 528
REACH 529
REACH 530
REACH 531
REACH 532
REACH 533
REACH 534
REACH 535
REACH 536
REACH 537
REACH 538
REACH 539
REACH 540
REACH 541
REACH 542
REACH 543
REACH 544
REACH 545
REACH 546
REACH 547
REACH 548
REACH 549
REACH 550
REACH 551
REACH 552
REACH 553
REACH 554
REACH 555
REACH 556
REACH 557
REACH 558
REACH 559
REACH 560
REACH 561
REACH 562
REACH 563
REACH 564
REACH 565
REACH 566
REACH 567
REACH 568
REACH 569
REACH 570
REACH 571
REACH 572
REACH 573
REACH 574
REACH 575
REACH 576
REACH 577
REACH 578
REACH 579
REACH 580
REACH 581
REACH 582
REACH 583
REACH 584
REACH 585
REACH 586
REACH 587
REACH 588
REACH 589
REACH 590
REACH 591
REACH 592
REACH 593
REACH 594
REACH 595
REACH 596
REACH 597
REACH 598
REACH 599
REACH 600
REACH 601
REACH 602
REACH 603
REACH 604
REACH 605
REACH 606
REACH 607
REACH 608
REACH 609
REACH 610
REACH 611
REACH 612
REACH 613
REACH 614
REACH 615
REACH 616
REACH 617
REACH 618
REACH 619
REACH 620
REACH 621
REACH 622
REACH 623
REACH 624
REACH 625
REACH 626
REACH 627
REACH 628
REACH 629
REACH 630
REACH 631
REACH 632
REACH 633
REACH 634
REACH 635
REACH 636
REACH 637
REACH 638
REACH 639
REACH 640
REACH 641
REACH 642
REACH 643
REACH 644
REACH 645
REACH 646
REACH 647
REACH 648
REACH 649
REACH 650
REACH 651
REACH 652
REACH 653
REACH 654
REACH 655
REACH 656
REACH 657
REACH 658
REACH 659
REACH 660
REACH 661
REACH 662
REACH 663
REACH 664
REACH 665
REACH 666
REACH 667
REACH 668
REACH 669
REACH 670
REACH 671
REACH 672
REACH 673
REACH 674
REACH 675
REACH 676
REACH 677
REACH 678
REACH 679
REACH 680
REACH 681
REACH 682
REACH 683
REACH 684
REACH 685
REACH 686
REACH 687
REACH 688
REACH 689
REACH 690
REACH 691
REACH 692
REACH 693
REACH 694
REACH 695
REACH 696
REACH 697
REACH 698
REACH 699
REACH 700
REACH 701
REACH 702
REACH 703
REACH 704
REACH 705
REACH 706
REACH 707
REACH 708
REACH 709
REACH 710
REACH 711
REACH 712
REACH 713
REACH 714
REACH 715
REACH 716
REACH 717
REACH 718
REACH 719
REACH 720
REACH 721
REACH 722
REACH 723
REACH 724
REACH 725
REACH 726
REACH 727
REACH 728
REACH 729
REACH 730
REACH 731
REACH 732
REACH 733
REACH 734
REACH 735
REACH 736
REACH 737
REACH 738
REACH 739
REACH 740
REACH 741
REACH 742
REACH 743
REACH 744
REACH 745
REACH 746
REACH 747
REACH 748
REACH 749
REACH 750
REACH 751
REACH 752
REACH 753
REACH 754
REACH 755
REACH 756
REACH 757
REACH 758
REACH 759
REACH 760
REACH 761
REACH 762
REACH 763
REACH 764
REACH 765
REACH 766
REACH 767
REACH 768
REACH 769
REACH 770
REACH 771
REACH 772
REACH 773
REACH 774
REACH 775
REACH 776
REACH 777
REACH 778
REACH 779
REACH 780
REACH 781
REACH 782
REACH 783
REACH 784
REACH 785
REACH 786
REACH 787
REACH 788
REACH 789
REACH 790
REACH 791
REACH 792
REACH 793
REACH 794
REACH 795
REACH 796
REACH 797
REACH 798
REACH 799
REACH 800
REACH 801
REACH 802
REACH 803
REACH 804
REACH 805
REACH 806
REACH 807
REACH 808
REACH 809
REACH 810
REACH 811
REACH 812
REACH 813
REACH 814
REACH 815
REACH 816
REACH 817
REACH 818
REACH 819
REACH 820
REACH 821
REACH 822
REACH 823
REACH 824
REACH 825
REACH 826
REACH 827
REACH 828
REACH 829
REACH 830
REACH 831
REACH 832
REACH 833
REACH 834
REACH 835
REACH 836
REACH 837
REACH 838
REACH 839
REACH 840
REACH 841
REACH 842
REACH 843
REACH 844
REACH 845
REACH 846
REACH 847
REACH 848
REACH 849
REACH 850
REACH 851
REACH 852
REACH 853
REACH 854
REACH 855
REACH 856
REACH 857
REACH 858
REACH 859
REACH 860
REACH 861
REACH 862
REACH 863
REACH 864
REACH 865
REACH 866
REACH 867
REACH 868
REACH 869
REACH 870
REACH 871
REACH 872
REACH 873
REACH 874
REACH 875
REACH 876
REACH 877
REACH 878
REACH 879
REACH 880
REACH 881
REACH 882
REACH 883
REACH 884
REACH 885
REACH 886
REACH 887
REACH 888
REACH 889
REACH 890
REACH 891
REACH 892
REACH 893
REACH 894
REACH 895
REACH 896
REACH 897
REACH 898
REACH 899
REACH 900
REACH 901
REACH 902
REACH 903
REACH 904
REACH 905
REACH 906
REACH 907
REACH 908
REACH 909
REACH 910
REACH 911
REACH 912
REACH 913
REACH 914
REACH 915
REACH 916
REACH 917
REACH 918
REACH 919
REACH 920
REACH 921
REACH 922
REACH 923
REACH 924
REACH 925
REACH 926
REACH 927
REACH 928
REACH 929
REACH 930
REACH 931
REACH 932
REACH 933
REACH 934
REACH 935
REACH 936
REACH 937
REACH 938
REACH 939
REACH 940
REACH 941
REACH 942
REACH 943
REACH 944
REACH 945
REACH 946
REACH 947
REACH 948
REACH 949
REACH 950
REACH 951
REACH 952
REACH 953
REACH 954
REACH 955
REACH 956
REACH 957
REACH 958
REACH 959
REACH 960
REACH 961
REACH 962
REACH 963
REACH 964
REACH 965
REACH 966
REACH 967
REACH 968
REACH 969
REACH 970
REACH 971
REACH 972
REACH 973
REACH 974
REACH 975
REACH 976
REACH 977
REACH 978
REACH 979
REACH 980
REACH 981
REACH 982
REACH 983
REACH 984
REACH 985
REACH 986
REACH 987
REACH 988
REACH 989
REACH 990
REACH 991
REACH 992
REACH 993
REACH 994
REACH 995
REACH 996
REACH 997
REACH 998
REACH 999
REACH 1000
REACH 1001
REACH 1002
REACH 1003
REACH 1004
REACH 1005
REACH 1006
REACH 1007
REACH 1008
REACH 1009
REACH 1010
REACH 1011
REACH 1012
REACH 1013
REACH 1014
REACH 1015
REACH 1016
REACH 1017
REACH 1018
REACH 1019
REACH 1020
REACH 1021
REACH 1022
REACH 1023
REACH 1024
REACH 1025
REACH 1026
REACH 1027
REACH 1028
REACH 1029
REACH 1030
REACH 1031
REACH 1032
REACH 1033
REACH 1034
REACH 1035
REACH 1036
REACH 1037
REACH 1038
REACH 1039
REACH 1040
REACH 1041
REACH 1042
REACH 1043
REACH 1044
REACH 1045
REACH 1046
REACH 1047
REACH 1048
REACH 1049
REACH 1050
REACH 1051
REACH 1052
REACH 1053
REACH 1054
REACH 1055
REACH 1056
REACH 1057
REACH 1058
REACH 1059
REACH 1060
REACH 1061
REACH 1062
REACH 1063
REACH 1064
REACH 1065
REACH 1066
REACH 1067
REACH 1068
REACH 1069
REACH 1070
REACH 1071
REACH 1072
REACH 1073
REACH 1074
REACH 1075
REACH 1076
REACH 1077
REACH 1078
REACH 1079
REACH 1080
REACH 1081
REACH 1082
REACH 1083
REACH 1084
REACH 1085
REACH 1086
REACH 1087
REACH 1088
REACH 1089
REACH 1090
REACH 1091
REACH 1092
REACH 1093
REACH 1094
REACH 1095
REACH 1096
REACH 1097
REACH 1098
REACH 1099
REACH 1100
REACH 1101
REACH 1102
REACH 1103
REACH 1104
REACH 1105
REACH 1106
REACH 1107
REACH 1108
REACH 1109
REACH 1110
REACH 1111
REACH 1112
REACH 1113
REACH 1114
REACH 1115
REACH 1116
REACH 1117
REACH 1118
REACH 1119
REACH 1120
REACH 1121
REACH 1122
REACH 1123
REACH 1124
REACH 1125
REACH 1126
REACH 1127
REACH 1128
REACH 1129
REACH 1130
REACH 1131
REACH 1132
REACH 1133
REACH 1134
REACH 1135
REACH 1136
REACH 1137
REACH 1138
REACH 1139
REACH 1140
REACH 1141
REACH 1142
REACH 1143
REACH 1144
REACH 1145
REACH 1146
REACH 1147
REACH 1148
REACH 1149
REACH 1150
REACH 1151
REACH 1152
REACH 1153
REACH 1154
REACH 1155
REACH 1156
REACH 1157
REACH 1158
REACH 1159
REACH 1160
REACH 1161
REACH 1162
REACH 1163
REACH 1164
REACH 1165
REACH 1166
REACH 1167
REACH 1168
REACH 1169
REACH 1170
REACH 1171
REACH 1172
REACH 1173
REACH 1174
REACH 1175
REACH 1176
REACH 1177
REACH 1178
REACH 1179
REACH 1180
REACH 1181
REACH 1182
REACH 1183
REACH 1184
REACH 1185
REACH 1186
REACH 1187
REACH 1188
REACH 1189
REACH 1190
REACH 1191
REACH 1192
REACH 1193
REACH 1194
REACH 1195
REACH 1196
REACH 1197
REACH 1198
REACH 1199
REACH 1200
REACH 1201
REACH 1202
REACH 1203
REACH 1204
REACH 1205
REACH 1206
REACH 1207
REACH 1208
REACH 1209
REACH 1210
REACH 1211
REACH 1212
REACH 1213
REACH 1214
REACH 1215
REACH 1216
REACH 1217
REACH 1218
REACH 1219
REACH 1220
REACH 1221
REACH 1222
REACH 1223
REACH 1224
REACH 1225
REACH 1226
REACH 1227
REACH 1228
REACH 1229
REACH 1230
REACH 1231
REACH 1232
REACH 1233
REACH 1234
REACH 1235
REACH 1236
REACH 1237
REACH 1238
REACH 1239
REACH 1240
REACH 1241
REACH 1242
REACH 1243
REACH 1244
REACH 1245
REACH 1246
REACH 1247
REACH 1248
REACH 1249
REACH 1250
REACH 1251
REACH 1252
REACH 1253
REACH 1254
REACH 1255
REACH 1256
REACH 1257
REACH 1258
REACH 1259
REACH 1260
REACH 1261
REACH 1262
REACH 1263
REACH 1264
REACH 1265
REACH 1266
REACH 1267
REACH 1268
REACH 1269
REACH 1270
REACH 1271
REACH 1272
REACH 1273
REACH 1274
REACH 1275
REACH 1276
REACH 1277
REACH 1278
REACH 1279
REACH 1280
REACH 1281
REACH 1282
REACH 1283
REACH 1284
REACH 1285
REACH 1286
REACH 1287
REACH 1288
REACH 1289
REACH 1290
REACH 1291
REACH 1292
REACH 1293
REACH 1294
REACH 1295
REACH 1296
REACH 1297
REACH 1298
REACH 1299
REACH 1300
REACH 1301
REACH 1302
REACH 1303
REACH 1304
REACH 1305
REACH 1306
REACH 1307
REACH 1308
REACH 1309
REACH 1310
REACH 1311
REACH 1312
REACH 1313
REACH 1314
REACH 1315
REACH 1316
REACH 1317
REACH 1318
REACH 1319
REACH 1320
REACH 1321
REACH 1322
REACH 1323
REACH 1324
REACH 1325
REACH 1326
REACH 1327
REACH 1328
REACH 1329
REACH 1330
REACH 1331
REACH 1332
REACH 1333
REACH 1334
REACH 1335
REACH 1336
REACH 1337
REACH 1338
REACH 1339
REACH 1340
REACH 1341
REACH 1342
REACH 1343
REACH 1344
REACH 1345
REACH 1346
REACH 1347
REACH 1348
REACH 1349
REACH 1350
REACH 1351
REACH 1352
REACH 1353
REACH 1354
REACH 1355
REACH 1356
REACH 1357
REACH 1358
REACH 1359
REACH 1360
REACH 1361
REACH 1362
REACH 1363
REACH 1364
REACH 1365
REACH 1366
REACH 1367
REACH 1368
REACH 1369
REACH 1370
REACH 1371
REACH 1372
REACH 1373
REACH 1374
REACH 1375
REACH 1376
REACH 1377
REACH 1378
REACH 1379
REACH 1380
REACH 1381
REACH 1382
REACH 1383
REACH 1384
REACH 1385
REACH 1386
REACH 1387
REACH 1388
REACH 1389
REACH 1390
REACH 1391
REACH 1392
REACH 1393
REACH 1394
REACH 1395
REACH 1396
REACH 1397
REACH 1398
REACH 1399
REACH 1400
REACH 1401
REACH 1402
REACH 1403
REACH 1404
REACH 1405
REACH 1406
REACH 1407
REACH 1408
REACH 1409
REACH 1410
REACH 1411
REACH 1412
REACH 1413
REACH 1414
REACH 1415
REACH 1416
REACH 1417
REACH 1418
REACH 1419
REACH 1420
REACH 1421
REACH 1422
REACH 1423
REACH 1424
REACH 1425
REACH 1426
REACH 1427
REACH 1428
REACH 1429
REACH 1430
REACH 1431
REACH 1432
REACH 1433
REACH 1434
REACH 1435
REACH 1436
REACH 1437
REACH 1438
REACH 1439
REACH 1440
REACH 1441
REACH 1442
REACH 1443
REACH 1444
REACH 1445
REACH 1446
REACH 1447
REACH 1448
REACH 1449
REACH 1450
REACH 1451
REACH 1452
REACH 1453
REACH 1454
REACH 1455
REACH 1456
REACH 1457
REACH 1458
REACH 1459
REACH 1460
REACH 1461
REACH 1462
REACH 1463
REACH 1464
REACH 1465
REACH 1466
REACH 1467
REACH 1468
REACH 1469
REACH 1470
REACH 1471
REACH 1472
REACH 1473
REACH 1474
REACH 1475
REACH 1476
REACH 1477
REACH 1478
REACH 1479
REACH 1480
REACH 1481
REACH 1482
REACH 1483
REACH 1484
REACH 1485
REACH 1486
REACH 1487
REACH 1488
REACH 1489
REACH 1490
REACH 1491
REACH 1492
REACH 1493
REACH 1494
REACH 1495
REACH 1496
REACH 1497
REACH 1498
REACH 1499
REACH 1500
REACH 1501
REACH 1502
REACH 1503
REACH 1504
REACH 1505
REACH 1506
REACH 1507
REACH 1508
REACH 1509
REACH 1510
REACH 1511
REACH 1512
REACH 1513
REACH 1514
REACH 1515
REACH 1516
REACH 1517
REACH 1518
REACH 1519
REACH 1520
REACH 1521
REACH 1522
REACH 1523
REACH 1524
REACH 1525
REACH 1526
REACH 1527
REACH 1528
REACH 1529
REACH 1530
REACH 1531
REACH 1532
REACH 1533
REACH 1534
REACH 1535
REACH 1536
REACH 1537
REACH 1538
REACH 1539
REACH 1540
REACH 1541
REACH 1542
REACH 1543
REACH 1544
REACH 1545
REACH 1546
REACH 1547
REACH 1548
REACH 1549
REACH 1550
REACH 1551
REACH 1552
REACH 1553
REACH 1554
REACH 1555
REACH 1556
REACH 1557
REACH 1558
REACH 1559
REACH 1560
REACH 1561
REACH 1562
REACH 1563
REACH 1564
REACH 1565
REACH 1566
REACH 1567
REACH 1568
REACH 1569
REACH 1570
REACH 1571
REACH 1572
REACH 1573
REACH 1574
REACH 1575
REACH 1576
REACH 1577
REACH 1578
REACH 1579
REACH 1580
REACH 1581
REACH 1582
REACH 1583
REACH 1584
REACH 1585
REACH 1586
REACH 1587
REACH 1588
REACH 1589
REACH 1590
REACH 1591
REACH 1592
REACH 1593
REACH 1594
REACH 1595
REACH 1596
REACH 1597
REACH 1598
REACH 1599
REACH 1600
REACH 1601
REACH 1602
REACH 1603
REACH 1604
REACH 1605
REACH 1606
REACH 1607
REACH 1608
REACH 1609
REACH 1610
REACH 1611
REACH 1612
REACH 1613
REACH 1614
REACH 1615
REACH 1616
REACH 1617
REACH 1618
REACH 1619
REACH 1620
REACH 1621
REACH 1622
REACH 1623
REACH 1624
REACH 1625
REACH 1626
REACH 1627
REACH 1628
REACH 1629
REACH 1630
REACH 1631
REACH 1632
REACH 1633
REACH 1634
REACH 1635
REACH 1636
REACH 1637
REACH 1638
REACH 1639
REACH 1640
REACH 1641
REACH 1642
REACH 1643
REACH 1644
REACH 1645
REACH 1646
REACH 1647
REACH 1648
REACH 1649
REACH 1650
REACH 1651
REACH 1652
REACH 1653
REACH 1654
REACH 1655
REACH 1656
REACH 1657
REACH 1658
REACH 1659
REACH 1660
REACH 1661
REACH 1662
REACH 1663
REACH 1664
REACH 1665
REACH 1666
REACH 1667
REACH 1668
REACH 1669
REACH 1670
REACH 1671
REACH 1672
REACH 1673
REACH 1674
REACH 1675
REACH 1676
REACH 1677
REACH 1678
REACH 1679
REACH 1680
REACH 1681
REACH 1682
REACH 1683
REACH 1684
REACH 1685
REACH 1686
REACH 1687
REACH 1688
REACH 1689
REACH 1690
REACH 1691
REACH 1692
REACH 1693
REACH 1694
REACH 1695
REACH 1696
REACH 1697
REACH 1698
REACH 1699
REACH 1700
REACH 1701
REACH 1702
REACH 1703
REACH 1704
REACH 1705
REACH 1706
REACH 1707
REACH 1708
REACH 1709
REACH 1710
REACH 1711
REACH 1712
REACH 1713
REACH 1714
REACH 1715
REACH 1716
REACH 1717
REACH 1718
REACH 1719
REACH 1720
REACH 1721
REACH 1722
REACH 1723
REACH 1724
REACH 1725
REACH 1726
REACH 1727
REACH 1728
REACH 1729
REACH 1730
REACH 1731
REACH 1732
REACH 1733
REACH 1734
REACH 1735
REACH 1736
REACH 1737
REACH 1738
REACH 1739
REACH 1740
REACH 1741
REACH 1742
REACH 1743
REACH 1744
REACH 1745
REACH 1746
REACH 1747
REACH 1748
REACH 1749
REACH 1750
REACH 1751
REACH 1752
REACH 1753
REACH 1754
REACH 1755
REACH 1756
REACH 1757
REACH 1758
REACH 1759
REACH 1760
REACH 1761
REACH 1762
REACH 1763
REACH 1764
REACH 1765
REACH 1766
REACH 1767
REACH 1768
REACH 1769
REACH 1770
REACH 1771
REACH 1772
REACH 1773
REACH 1774
REACH 1775
REACH 1776
REACH 1777
REACH 1778
REACH 1779
REACH 1780
REACH 1781
REACH 1782
REACH 1783
REACH 1784
REACH 1785
REACH 1786
REACH 1787
REACH 1788
REACH 1789
REACH 1790
REACH 1791
REACH 1792
REACH 1793
REACH 1794
REACH 1795
REACH 1796
REACH 1797
REACH 1798
REACH 1799
REACH 1800
REACH 1801
REACH 1802
REACH 1803
REACH 1804
REACH 1805
REACH 1806
REACH 1807
REACH 1808
REACH 1809
REACH 1810
REACH 1811
REACH 1812
REACH 1813
REACH 1814
REACH 1815
REACH 1816
REACH 1817
REACH 1818
REACH 1819
REACH 1820
REACH 1821
REACH 1822
REACH 1823
REACH 1824
REACH 1825
REACH 1826
REACH 1827
REACH 1828
REACH 1829
REACH 1830
REACH 1831
REACH 1832
REACH 1833
REACH 1834
REACH 1835
REACH 1836
REACH 1837
REACH 1838
REACH 1839
REACH 1840
REACH 1841
REACH 1842
REACH 1843
REACH 1844
REACH 1845
REACH 1846
REACH 1847
REACH 1848
REACH 1849
REACH 1850
REACH 1851
REACH 1852
REACH 1853
REACH 1854
REACH 1855
REACH 1856
REACH 1857
REACH 1858
REACH 1859
REACH 1860
REACH 1861
REACH 1862
REACH 1863
REACH 1864
REACH 1865
REACH 1866
REACH 1867
REACH 1868
REACH 1869
REACH 1870
REACH 1871
REACH 1872
REACH 1873
REACH 1874
REACH 1875
REACH 1876
REACH 1877
REACH 1878
REACH 1879
REACH 1880
REACH 1881
REACH 1882
REACH 1883
REACH 1884
REACH 1885
REACH 1886
REACH 1887
REACH 1888
REACH 1889
REACH 1890
REACH 1891
REACH 1892
REACH 1893
REACH 1894
REACH 1895
REACH 1896
REACH 1897
REACH 1898
REACH 1899
REACH 1900
REACH 1901
REACH 1902
REACH 1903
REACH 1904
REACH 1905
REACH 1906
REACH 1907
REACH 1908
REACH 1909
REACH 1910
REACH 1911
REACH 1912
REACH 1913
REACH 1914
REACH 1915
REACH 1916
REACH 1917
REACH 1918
REACH 1919
REACH 1920
REACH 1921
REACH 1922
REACH 1923
REACH 1924
REACH 1925
REACH 1926
REACH 1927
REACH 1928
REACH 1929
REACH 1930
REACH 1931
REACH 1932
REACH 1933
REACH 1934
REACH 1935
REACH 1936
REACH 1937
REACH 1938
REACH 1939
REACH 1940
REACH 1941
REACH 1942
REACH 1943
REACH 1944
REACH 1945
REACH 1946
REACH 1947
REACH 1948
REACH 1949
REACH 1950
REACH 1951
REACH 1952
REACH 1953
REACH 1954
REACH 1955
REACH 1956
REACH 1957
REACH 1958
REACH 1959
REACH 1960
REACH 1961
REACH 1962
REACH 1963
REACH 1964
REACH 1965
REACH 1966
REACH 1967
REACH 1968
REACH 1969
REACH 1970
REACH 1971
REACH 1972
REACH 1973
REACH 1974
REACH 1975
REACH 1976
REACH 1977
REACH 1978
REACH 1979
REACH 1980
REACH 1981
REACH 1982
REACH 1983
REACH 1984
REACH 1985
REACH 1986
REACH 1987
REACH 1988
REACH 1989
REACH 1990
REACH 1991
REACH 1992
REACH 1993
REACH 1994
REACH 1995
REACH 1996
REACH 1997
REACH 1998
REACH 1999
REACH 2000
REACH 2001
REACH 2002
REACH 2003
REACH 2004
REACH 2005
REACH 2006
REACH 2007
REACH 2008
REACH 2009
REACH 2010
REACH 2011
REACH 2012
REACH 2013
REACH 2014
REACH 2015
REACH 2016
REACH 2017
REACH 2018
REACH 2019
REACH 2020
REACH 2021
REACH 2022
REACH 2023
REACH 2024
REACH 2025
REACH 2026
REACH 2027
REACH 2028
REACH 2029
REACH 2030
REACH 2031
REACH 2032
REACH 2033
REACH 2034
REACH 2035
REACH 2036
REACH 2037
REACH 2038
REACH 2039
REACH 2040
REACH 2041
REACH 2042
REACH 2043
REACH 2044
REACH 2045
REACH 2046
REACH 2047
REACH 2048
REACH 2049
REACH 2050
REACH 2051
REACH 2052
REACH 2053
REACH 2054
REACH 2055
REACH 2056
REACH 2057
REACH 2058
REACH 2059
REACH 2060
REACH 2061
REACH 2062
REACH 2063
REACH 2064
REACH 2065
REACH 2066
REACH 2067
REACH 2068
REACH 2069
REACH 2070
REACH 2071
REACH 2072
REACH 2073
REACH 2074
REACH 2075
REACH 2076
REACH 2077
REACH 2078
REACH 2079
REACH 2080
REACH 2081
REACH 2082
REACH 2083
REACH 2084
REACH 2085
REACH 2086
REACH 2087
REACH 2088
REACH 2089
REACH 2090
REACH 2091
REACH 2092
REACH 2093
REACH 2094
REACH 2095
REACH 2096
REACH 2097
REACH 2098
REACH 2099
REACH 2100
REACH 2101
REACH 2102
REACH 2103
REACH 2104
REACH 2105
REACH 2106
REACH 2107
REACH 2108
REACH 2109
REACH 2110
REACH 2111
REACH 2112
REACH 2113
REACH 2114
REACH 2115
REACH 2116
REACH 2117
REACH 2118
REACH 2119
REACH 2120
REACH 2121
REACH 2122
REACH 2123
REACH 2124
REACH 2125
REACH 2126
REACH 2127
REACH 2128
REACH 2129
REACH 2130
REACH 2131
REACH 2132
REACH 2133
REACH 2134
REACH 2135
REACH 2136
REACH 2137
REACH 2138
REACH 2139
REACH 2140
REACH 2141
REACH 2142
REACH 2143
REACH 2144
REACH 2145
REACH 2146
REACH 2147
REACH 2148
REACH 2149
REACH 2150
REACH 2151
REACH 2152
REACH 2153
REACH 2154
REACH 2155
REACH 2156
REACH 2157
REACH 2158
REACH 2159
REACH 2160
REACH 2161
REACH 2162
REACH 2163
REACH 2164
REACH 2165
REACH 2166
REACH 2167
REACH 2168
REACH 2169
REACH 2170
REACH 2171
REACH 2172
REACH 2173
REACH 2174
REACH 2175
REACH 2176
REACH 2177
REACH 2178
REACH 2179
REACH 2180
REACH 2181
REACH 2182
REACH 2183
REACH 2184
REACH 2185
REACH 2186
REACH 2187
REACH 2188
REACH 2189
REACH 2190
REACH 2191
REACH 2192
REACH 2193
REACH 2194
REACH 2195
REACH 2196
REACH 2197
REACH 2198
REACH 2199
REACH 2200
REACH 2201
REACH 2202
REACH 2203
REACH 2204
REACH 2205
REACH 2206
REACH 2207
REACH 2208
REACH 2209
REACH 2210
REACH 2211
REACH 2212
REACH 2213
REACH 2214
REACH 2215
REACH 2216
REACH 2217
REACH 2218
REACH 2219
REACH 2220
REACH 2221
REACH 2222
REACH 2223
REACH 2224
REACH 2225
REACH 2226
REACH 2227
REACH 2228
REACH 2229
REACH 2230
REACH 2231
REACH 2232
REACH 2233
REACH 2234
REACH 2235
REACH 2236
REACH 2237
REACH 2238
REACH 2239
REACH 2240
REACH 2241
REACH 2242
REACH 2243
REACH 2244
REACH 2245
REACH 2246
REACH 2247
REACH 2248
REACH 2249
REACH 2250
REACH 2251
REACH 2252
REACH 2253
REACH 2254
REACH 2255
REACH 2256
REACH 2257
REACH 2258
REACH 2259
REACH 2260
REACH 2261
REACH 2262
REACH 2263
REACH 2264
REACH 2265
REACH 2266
REACH 2267
REACH 2268
REACH 2269
REACH 2270
REACH 2271
REACH 2272
REACH 2273
REACH 2274
REACH 2275
REACH 2276
REACH 2277
REACH 2278
REACH 2279
REACH 2280
REACH 2281
REACH 2282
REACH 2283
REACH 2284
REACH 2285
REACH 2286
REACH 2287
REACH 2288
REACH 2289
REACH 2290
REACH 2291
REACH 2292
REACH 2293
REACH 2294
REACH 2295
REACH 2296
REACH 2297
REACH 2298
REACH 2299
REACH 2300
REACH 2301
REACH 2302
REACH 2303
REACH 2304
REACH 2305
REACH 2306
REACH 2307
REACH 2308
REACH 2309
REACH 2310
REACH 2311
REACH 2312
REACH 2313
REACH 2314
REACH 2315
REACH 2316
REACH 2317
REACH 2318
REACH 2319
REACH 2320
REACH 2321
REACH 2322
REACH 2323
REACH 2324
REACH 2325
REACH 2326
REACH 2327
REACH 2328
REACH 2329
REACH 2330
REACH 2331
REACH 2332
REACH 2333
REACH 2334
REACH 2335
REACH 2336
REACH 2337
REACH 2338
REACH 2339
REACH 2340
REACH 2341
REACH 2342
REACH 2343
REACH 2344
REACH 2345
REACH 2346
REACH 2347
REACH 2348
REACH 2349
REACH 2350
REACH 2351
REACH 2352
REACH 2353
REACH 2354
REACH 2355
REACH 2356
REACH 2357
REACH 2358
REACH 2359
REACH 2360
REACH 2361
REACH 2362
REACH 2363
REACH 2364
REACH 2365
REACH 2366
REACH 2367
REACH 2368
REACH 2369
REACH 2370
REACH 2371
REACH 2372
REACH 2373
REACH 2374
REACH 2375
REACH 2376
REACH 2377
REACH 2378
REACH 2379
REACH 2380
REACH 2381
REACH 2382
REACH 2383
REACH 2384
REACH 2385
REACH 2386
REACH 2387
REACH 2388
REACH 2389
REACH 2390
REACH 2391
REACH 2392
REACH 2393
REACH 2394
REACH 2395
REACH 2396
REACH 2397
REACH 2398
REACH 2399
REACH 2400
REACH 2401
REACH 2402
REACH 2403
REACH 2404
REACH 2405
REACH 2406
REACH 2407
REACH 2408
REACH 2409
REACH 2410
REACH 2411
REACH 2412
REAC



PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011). NEW YORK. 3101 EAST US SURVEY FEET.
2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.
3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.
4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32', MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14', MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14', MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.
5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.
6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.
7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.
8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.
9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.
10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.
11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED I2NS INERTIAL NAVIGATION SYSTEM. IN REAL TIME KINEMATIC (RTK)MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.
12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS, A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.

NSRS/NGS CONTROL DATA			
BENCHMARK: TROY DAM 1	PID# BBDR68	NORTHING	EASTING
ELEVATION: 25.32' NAVD 88		1,428,037.76	709,760.15

LOCAL CONTROL DATA			
BENCHMARK: HR-12	PID#	NORTHING	EASTING
ELEVATION: 8.67' NAVD 88		1,318821.55	684451.34
STAMPED: HR-12 2016			

LOCAL CONTROL DATA			
BENCHMARK: 01-1	PID#	NORTHING	EASTING
ELEVATION: 3.87' NAVD 88		1,124,859.59	641003.46
STAMPED:			

STATE OF NEW YORK
RICHARD B. STAFFER
049610
LICENSED LAND SURVEYOR

SCALE 1" = 100'
0 100 200 300 400

US Army Corps of Engineers ®
New York District

MARK	DESCRIPTION	DATE	APPR.	MARK	DESCRIPTION	DATE	APPR.

DATE: AUGUST - SEPTEMBER 2017
SOLICITATION NO.:
CONTRACT NO.: W912DS-14-D-0004
FILE NUMBER:
ISSUE DATE:
RE SHT #:
FILE NAME: V4101-005880043_HUDSON_MB.DGN

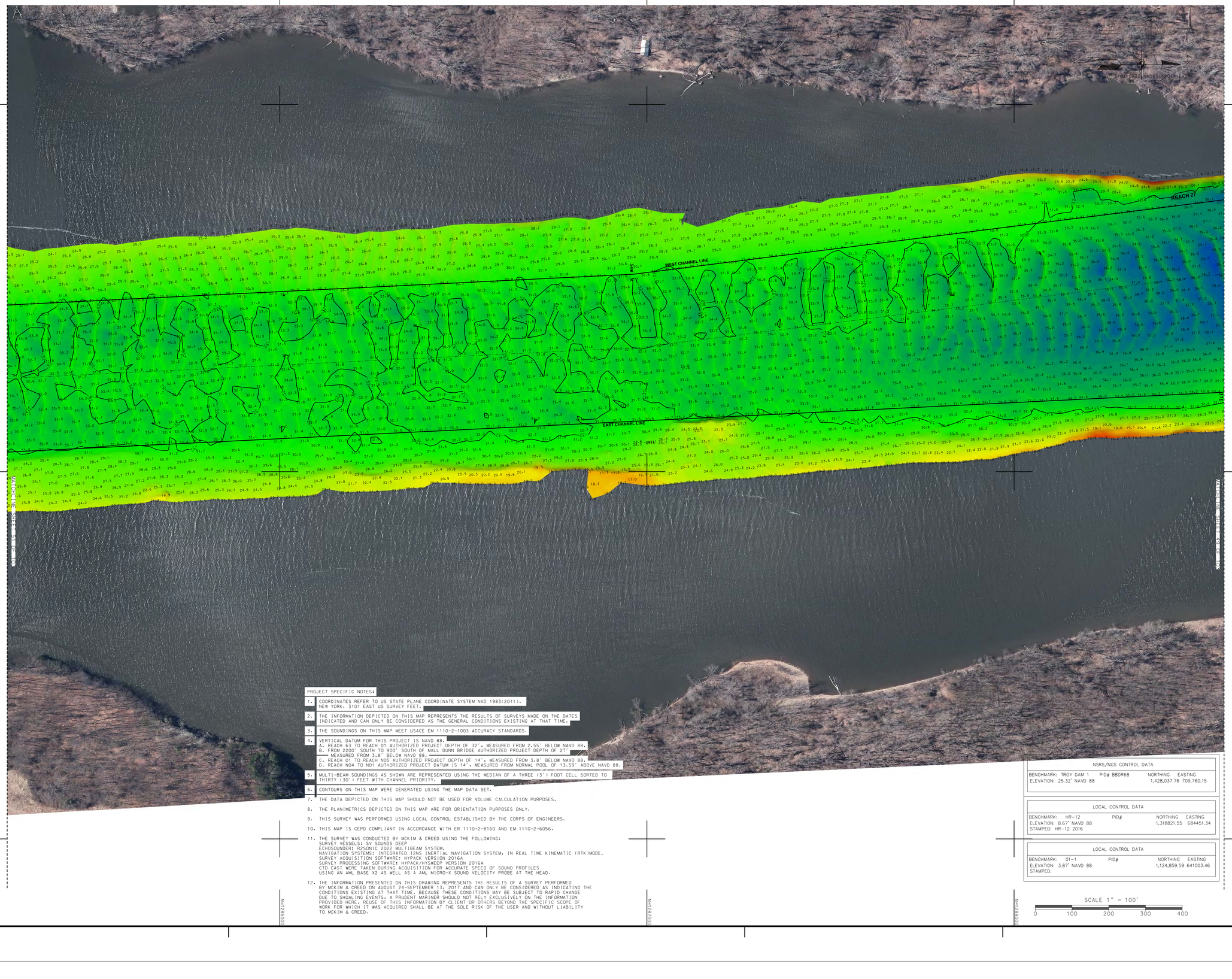
DESIGNED BY: DEJ
DWN BY: MBH
CKD BY: RBD
SUBMITTED BY: DEJ
PLOT SCALE: 1" = 100'
SIZE: ANSI F

U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

McKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TELEPHONE: (910) 251-0048
FAX: (910) 251-8282

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL
REACH 27

SHEET IDENTIFICATION
VH-149
SHEET 49 OF 103



PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011), NEW YORK, 3101 EAST US SURVEY FEET.
2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.
3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.
4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32', MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14', MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14', MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.
5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.
6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.
7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.
8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.
9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.
10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.
11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED I2NS INERTIAL NAVIGATION SYSTEM. IN REAL TIME KINEMATIC (RTK)MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.
12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS, A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.

NSRS/NGS CONTROL DATA

BENCHMARK: TROY DAM 1	PID# BBDR68	NORTHING	EASTING
ELEVATION: 25.32' NAVD 88		1,428,037.76	709,760.15

LOCAL CONTROL DATA

BENCHMARK: HR-12	PID#	NORTHING	EASTING
ELEVATION: 8.67' NAVD 88		1,318821.55	684451.34
STAMPED: HR-12 2016			

LOCAL CONTROL DATA

BENCHMARK: 01-1	PID#	NORTHING	EASTING
ELEVATION: 3.87' NAVD 88		1,124,859.59	641003.46
STAMPED:			

SCALE 1" = 100'

0 100 200 300 400

US Army Corps of Engineers ®
New York District

MARK	DESCRIPTION	DATE	APPR.

MARK	DESCRIPTION	DATE	APPR.

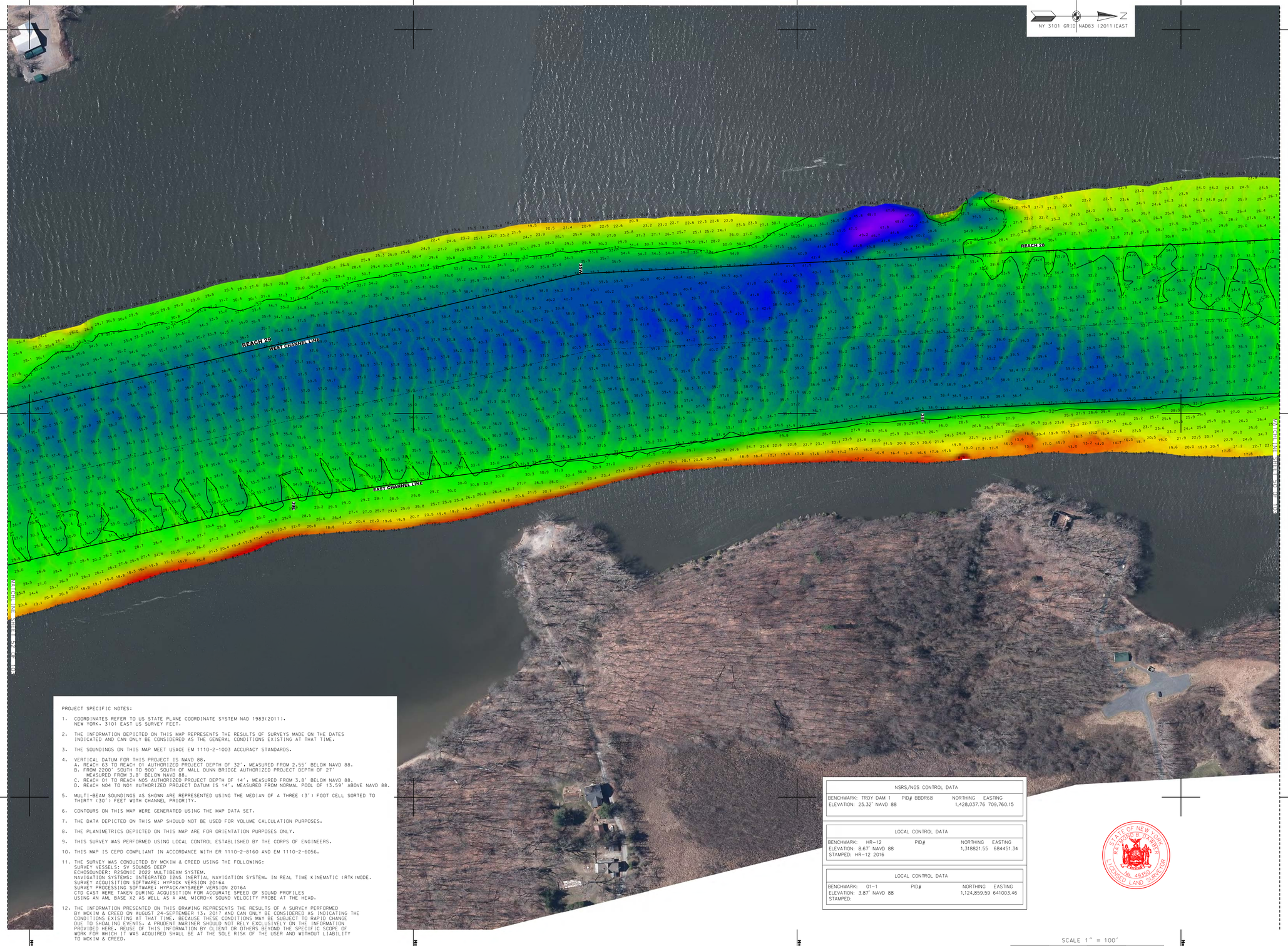
DESIGNED BY: DLJ
DWN BY: MBH
CKD BY: RBD
SUBMITTED BY: DLJ
PLOT SCALE: 1" = 100'
SIZE: ANSI F
DATE: AUGUST-SEPTEMBER 2017
SOLICITATION NO.:
CONTRACT NO.: W912DS-14-D-0004
ISSUE DATE: DEC 2017
FILE NUMBER:
FILE NAME: VH101-0368900#3_HUDSON_MB.DGN

U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

McKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TELEPHONE: (910) 251-8444
FAX: (910) 251-8282

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL
REACH 27-28

SHEET IDENTIFICATION
VH-150
SHEET 50 OF 103



PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011). NEW YORK. 3101 EAST US SURVEY FEET.

2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.

3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.

4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32', MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14', MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14', MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.

5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.

6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.

7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.

8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.

9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.

10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.

11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED I2NS INERTIAL NAVIGATION SYSTEM. IN REAL TIME KINEMATIC (RTK)MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.

12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS, A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.

NSRS/NGS CONTROL DATA			
BENCHMARK: TROY DAM 1	PID# BBDR68	NORTHING	EASTING
ELEVATION: 25.32' NAVD 88		1,428,037.76	709,760.15

LOCAL CONTROL DATA			
BENCHMARK: HR-12	PID#	NORTHING	EASTING
ELEVATION: 8.67' NAVD 88		1,318821.55	684451.34
STAMPED: HR-12 2016			

LOCAL CONTROL DATA			
BENCHMARK: 01-1	PID#	NORTHING	EASTING
ELEVATION: 3.87' NAVD 88		1,124,859.59	641003.46
STAMPED:			

STATE OF NEW YORK
RICHARD B. DAYBER
049350
LICENSED LAND SURVEYOR

SCALE 1" = 100'
0 100 200 300 400

US Army Corps of Engineers ®
New York District

MARK	DESCRIPTION	DATE	APPR.	MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY: DBA
DRAWN BY: MBH
CHKD BY: RBD
SUBMITTED BY: DLJ
PLOT SCALE: 1"=100'
PLOT DATE:
SIZE: ANSI F
ISSUE DATE: NOVEMBER, 2017
FILE NAME: VH101-056890043_HUDSON_MB.DGN

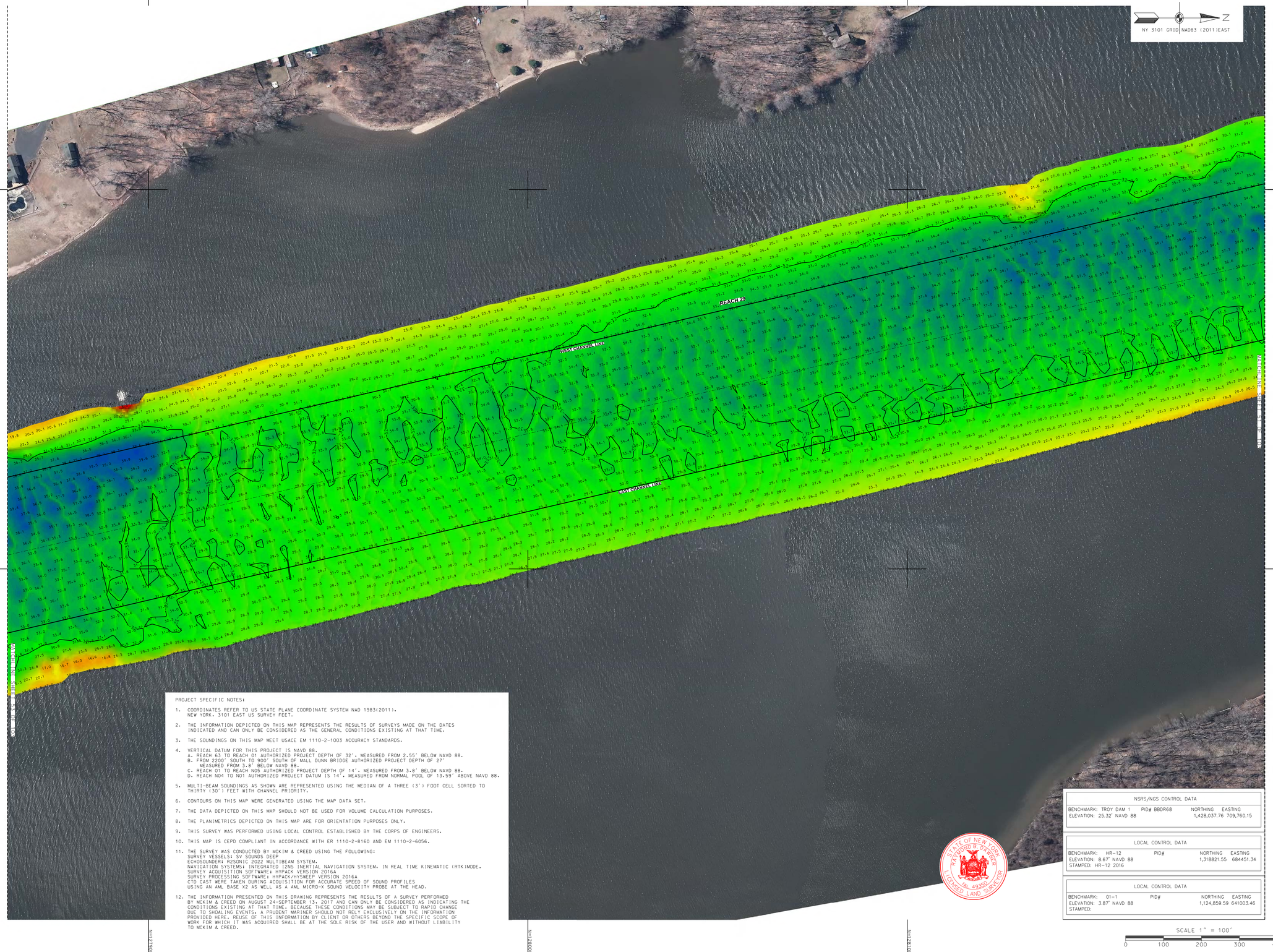
DATE: AUGUST-SEPTEMBER, 2017
SOLICITATION NO.:
CONTRACT NO.: W912DS-14-D-0004
FILE NUMBER:

U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

MCKIM&CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TELEPHONE: (910) 251-8848
FAX: (910) 251-8282

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL
REACH 28-29

SHEET IDENTIFICATION
VH-151
SHEET 51 OF 103



PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011). NEW YORK, 3101 EAST US SURVEY FEET.
2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.
3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.
4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32'. MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27'. MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH N05 AUTHORIZED PROJECT DEPTH OF 14'. MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH N04 TO N01 AUTHORIZED PROJECT DATUM IS 14'. MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.
5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.
6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.
7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.
8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.
9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.
10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.
11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: 5V SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED I2NS INERTIAL NAVIGATION SYSTEM. IN REAL TIME KINEMATIC (RTK)MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.
12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS, A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.

NSRS/NGS CONTROL DATA		
BENCHMARK: TROY DAM 1 PID# BBDR68	NORTHING	EASTING
ELEVATION: 25.32' NAVD 88	1,428,037.76	709,760.15

LOCAL CONTROL DATA		
BENCHMARK: HR-12 PID#	NORTHING	EASTING
ELEVATION: 8.67' NAVD 88	1,318821.55	684451.34
STAMPED: HR-12 2016		

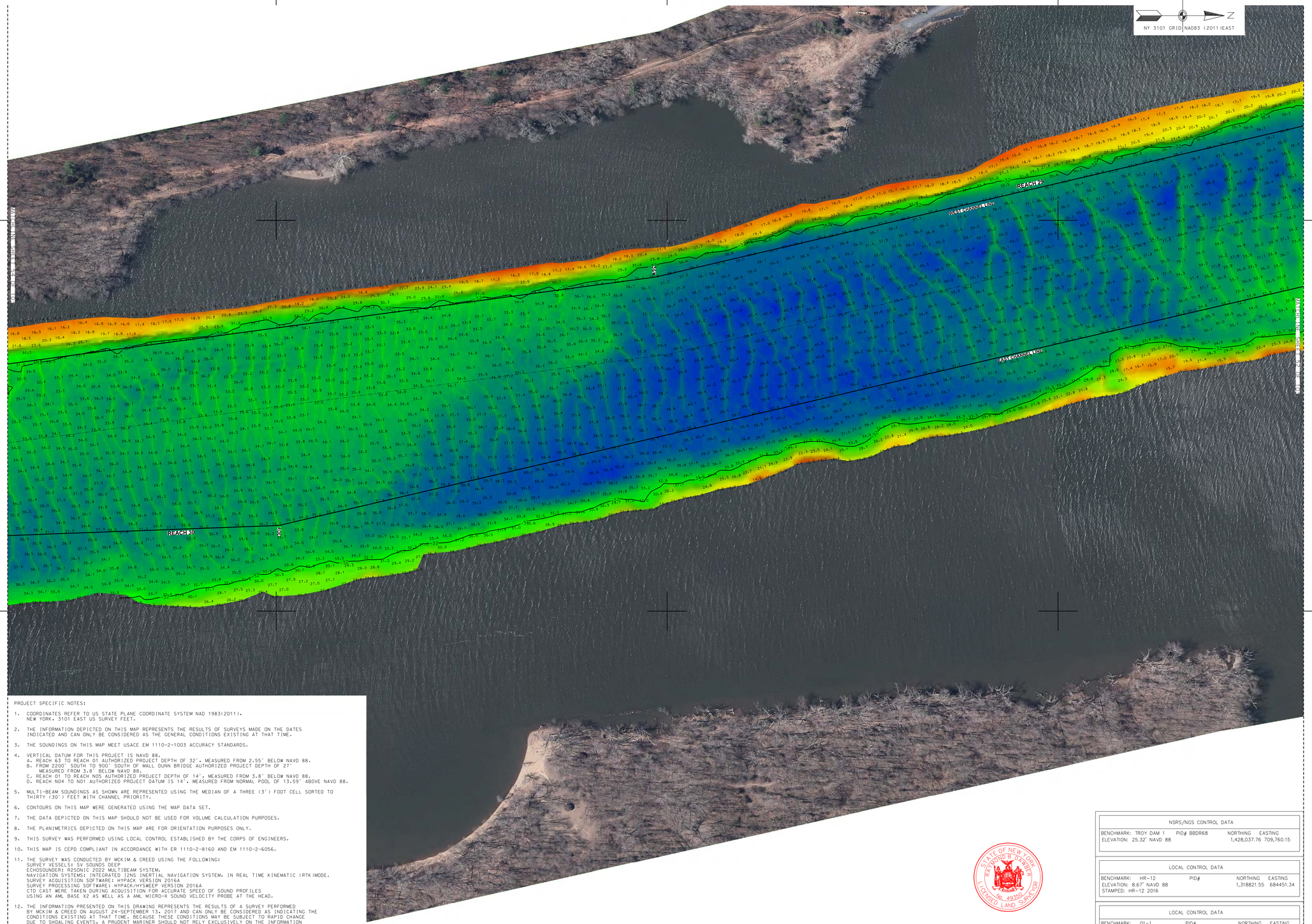
LOCAL CONTROL DATA		
BENCHMARK: 01-1 PID#	NORTHING	EASTING
ELEVATION: 3.87' NAVD 88	1,124,859.59	641003.46
STAMPED:		

STATE OF NEW YORK RICHARD B. BAKER LICENSED LAND SURVEYOR NO. 49359

SCALE 1" = 100'
0 100 200 300 400

US Army Corps of Engineers ®
New York District

MARK	DESCRIPTION	DATE	APPR.



PROJECT SPECIFIC NOTES:

1. COORDINATES REFER TO US STATE PLANE COORDINATE SYSTEM NAD 1983(2011). NEW YORK. 3101 EAST US SURVEY FEET.
2. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS THE GENERAL CONDITIONS EXISTING AT THAT TIME.
3. THE SOUNDINGS ON THIS MAP MEET USACE EM 1110-2-1003 ACCURACY STANDARDS.
4. VERTICAL DATUM FOR THIS PROJECT IS NAVD 88.
   A. REACH 63 TO REACH 01 AUTHORIZED PROJECT DEPTH OF 32'. MEASURED FROM 2.55' BELOW NAVD 88.
   B. FROM 2200' SOUTH TO 900' SOUTH OF MALL DUNN BRIDGE AUTHORIZED PROJECT DEPTH OF 27' MEASURED FROM 3.8' BELOW NAVD 88.
   C. REACH 01 TO REACH NO5 AUTHORIZED PROJECT DEPTH OF 14'. MEASURED FROM 3.8' BELOW NAVD 88.
   D. REACH NO4 TO NO1 AUTHORIZED PROJECT DATUM IS 14'. MEASURED FROM NORMAL POOL OF 13.59' ABOVE NAVD 88.
5. MULTI-BEAM SOUNDINGS AS SHOWN ARE REPRESENTED USING THE MEDIAN OF A THREE (3') FOOT CELL SORTED TO THIRTY (30') FEET WITH CHANNEL PRIORITY.
6. CONTOURS ON THIS MAP WERE GENERATED USING THE MAP DATA SET.
7. THE DATA DEPICTED ON THIS MAP SHOULD NOT BE USED FOR VOLUME CALCULATION PURPOSES.
8. THE PLANIMETRICS DEPICTED ON THIS MAP ARE FOR ORIENTATION PURPOSES ONLY.
9. THIS SURVEY WAS PERFORMED USING LOCAL CONTROL ESTABLISHED BY THE CORPS OF ENGINEERS.
10. THIS MAP IS CEPD COMPLIANT IN ACCORDANCE WITH ER 1110-2-8160 AND EM 1110-2-6056.
11. THE SURVEY WAS CONDUCTED BY MCKIM & CREED USING THE FOLLOWING:
    SURVEY VESSELS: SV SOUNDS DEEP
    ECHOSOUNDER: R2SONIC 2022 MULTIBEAM SYSTEM.
    NAVIGATION SYSTEMS: INTEGRATED I2NS INERTIAL NAVIGATION SYSTEM. IN REAL TIME KINEMATIC (RTK)MODE.
    SURVEY ACQUISITION SOFTWARE: HYPACK VERSION 2016A
    SURVEY PROCESSING SOFTWARE: HYPACK/HYSWEEP VERSION 2016A
    CTD CAST WERE TAKEN DURING ACQUISITION FOR ACCURATE SPEED OF SOUND PROFILES USING AN AML BASE X2 AS WELL AS A AML MICRO-X SOUND VELOCITY PROBE AT THE HEAD.
12. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF A SURVEY PERFORMED BY MCKIM & CREED ON AUGUST 24-SEPTEMBER 13, 2017 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. BECAUSE THESE CONDITIONS MAY BE SUBJECT TO RAPID CHANGE DUE TO SHOALING EVENTS, A PRUDENT MARINER SHOULD NOT RELY EXCLUSIVELY ON THE INFORMATION PROVIDED HERE. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO MCKIM & CREED.

STATE OF NEW YORK
RAYMOND P. DWYER
No. 49350
LICENSED LAND SURVEYOR

NSRS/NGS CONTROL DATA			
BENCHMARK: TROY DAM 1	PID# BBDR68	NORTHING	EASTING
ELEVATION: 25.32' NAVD 88		1,428,037.76	709,760.15

LOCAL CONTROL DATA			
BENCHMARK: HR-12	PID#	NORTHING	EASTING
ELEVATION: 8.67' NAVD 88		1,318821.55	684451.34
STAMPED: HR-12 2016			

LOCAL CONTROL DATA			
BENCHMARK: 01-1	PID#	NORTHING	EASTING
ELEVATION: 3.87' NAVD 88		1,124,859.59	641003.46
STAMPED:			

SCALE 1" = 100'
0 100 200 300 400

US Army Corps of Engineers ®
New York District

MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY: DGC
DWN BY: MBH
CKD BY: RBD
SUBMITTED BY: DLJ
PLOT SCALE: 1:100'
PLOT DATE: 12/5/2017
SIZE: ANSI F
DATE: AUGUST-SEPTEMBER 2017
SOLICITATION NO.:
CONTRACT NO.: W912DS-14-D-0004
FILE NUMBER:
ISSUE DATE: DECEMBER 2017
FILE NAME: VH101-DS880904_3_HUDSON_MB.DGN

U.S. ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT
NEW YORK, NY

MCKIM & CREED
243 NORTH FRONT STREET
WILMINGTON, NORTH CAROLINA 28401
TELEPHONE: (910) 251-8444
FAX: (910) 251-4262

HYDROGRAPHIC CONDITIONS SURVEY
HUDSON RIVER FEDERAL NAVIGATION CHANNEL
REACH 29-30

SHEET IDENTIFICATION
VH-153
SHEET 53 OF 103