



# MISSOURI RIVER RECOVERY OPERATION AND MAINTENANCE NORTH FY 23

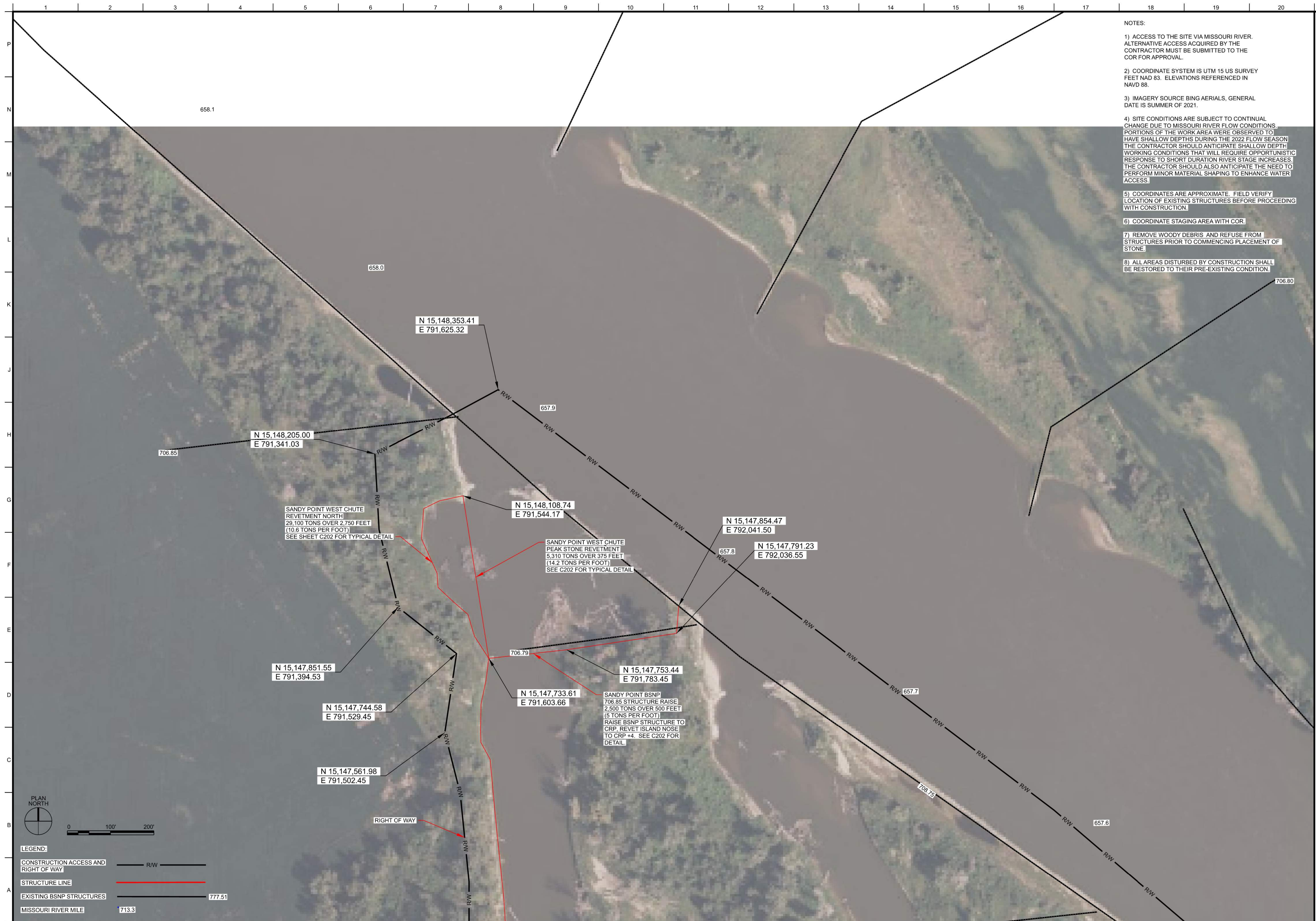
SOLICITATION NO.: W9128-F23-R-0023  
CONTRACT NO.: WXXXXXX-XX-X-XXX  
ISSUE DATE: MARCH 2023  
SOLICITATION SET

THIS PROJECT WAS DESIGNED BY THE OMAHA DISTRICT OF THE US ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY ER 1110-1-8152

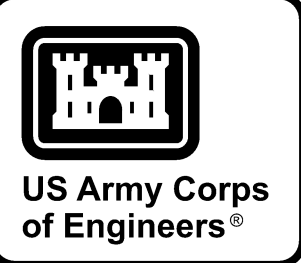
SIGNATURES AFFIXED BELOW INDICATE OFFICIAL RECOMMENDATION AND APPROVAL OF DRAWINGS IN THIS SET.

BERGMAN, KELLIE KAY.1287371825	Digitally signed by BERGMAN, KELLIE.KAY.1287371825 Date: 2023.02.13 12:49:57 -0700	SUBMITTED PRIDAL, DANIEL BY: B.1231204730	Digitally signed by PETER, L. STURDIVANT Date: 2023.02.13 09:51:56 -0700
CHIEF, KELLIE K. BERGMAN HYDROLOGIC ENGINEERING	CHIEF: CFNWO-EDH-F SUBMITTED BY:	CHIEF: SUBMITTED BY:	P.E.
	CHIEF: SUBMITTED BY:	CHIEF: SUBMITTED BY:	
	CHIEF: SUBMITTED BY:	CHIEF: SUBMITTED BY:	
	CHIEF: SUBMITTED BY:	CHIEF: SUBMITTED BY:	
STURDIVANT, PETER L. LAURENCE.1154669589 2023.02.24 07:18:23 -07'00"	CHIEF: SUBMITTED BY:	CHIEF: SUBMITTED BY:	
24-Feb-2023	CHIEF: SUBMITTED BY:	CHIEF: SUBMITTED BY:	
CHIEF, ENGINEERING DIVISION, P.E.	CAD PROJECT COORDINATOR		





- 1) ACCESS TO THE SITE VIA MISSOURI RIVER. ALTERNATIVE ACCESS ACQUIRED BY THE CONTRACTOR MUST BE SUBMITTED TO THE COR FOR APPROVAL.
- 2) COORDINATE SYSTEM IS UTM 15 US SURVEY FEET NAD 83. ELEVATIONS REFERENCED IN NAVD 88.
- 3) IMAGERY SOURCE BING AERIALS, GENERAL DATE IS SUMMER OF 2021.
- 4) SITE CONDITIONS ARE SUBJECT TO CONTINUAL CHANGE DUE TO MISSOURI RIVER FLOW CONDITIONS. PORTIONS OF THE WORK AREA WERE OBSERVED TO HAVE SHALLOW DEPTHS DURING THE 2022 FLOW SEASON. THE CONTRACTOR SHOULD ANTICIPATE SHALLOW DEPTH WORKING CONDITIONS THAT WILL REQUIRE OPPORTUNISTIC RESPONSE TO SHORT DURATION RIVER STAGE INCREASES. THE CONTRACTOR SHOULD ALSO ANTICIPATE THE NEED TO PERFORM MINOR MATERIAL SHAPING TO ENHANCE WATER ACCESS.
- 5) COORDINATES ARE APPROXIMATE. FIELD VERIFY LOCATION OF EXISTING STRUCTURES BEFORE PROCEEDING WITH CONSTRUCTION.
- 6) COORDINATE STAGING AREA WITH COR.
- 7) REMOVE WOODY DEBRIS AND REFUSE FROM STRUCTURES PRIOR TO COMMENCING PLACEMENT OF STONE.
- 8) ALL AREAS DISTURBED BY CONSTRUCTION SHALL BE RESTORED TO THEIR PRE-EXISTING CONDITION.

[illegible]

U.S. ARMY CORPS OF ENGINEERS OMAHA DISTRICT 1616 CAPITOL AVE OMAHA, NE 68102	DESIGNED BY: CJS	ISSUE DATE: W9128-F23-0023
	DRAWN BY: CJS	SOLICITATION NO.:
	CHECKED BY: RGP	CONTRACT NO.:
	SUBMITTED BY:	FILE NUMBER:
	SIZE:	FILENAME:
	ANSI D	MR00105C102.DGN

MISSOURI RIVER RECOVERY O & M  
NORTH FY 23  
MISSOURI RIVER, NEBRASKA

SANDY POINT  
SITE PLAN AND RIGHT OF WAY (1 OF 4)

SHEET ID  
C102

## SOLICITATION SET

[illegible]

U.S. ARMY CORPS OF ENGINEERS OMAHA DISTRICT 1816 CAPITOL AVE OMAHA, NE 68102	DESIGNED BY:	CJS	ISSUE DATE:	MARCH 2023
	DRAWN BY:	CJS	SOLICITATION NO.:	W9128-F23-R-0023
	CHECKED BY:	RGP	CONTRACT NO.:	W9128F23C00XX
	SUBMITTED BY:		FILE NUMBER:	
	DATE:		SIZE:	
	FILENAME:			
	ANSID:			MR00106C.003.DGN

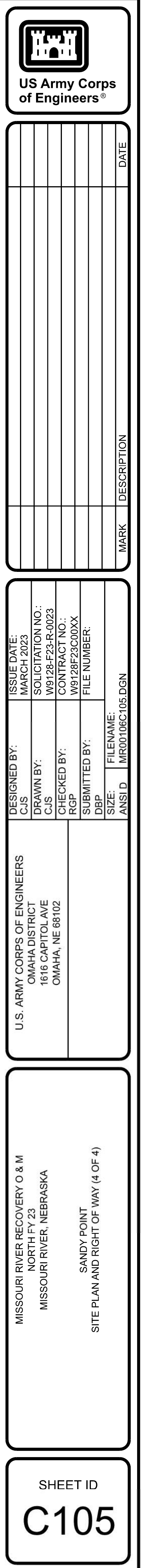
MISSOURI RIVER RECOVERY O & M  
NORTH FY 23  
MISSOURI RIVER, NEBRASKA

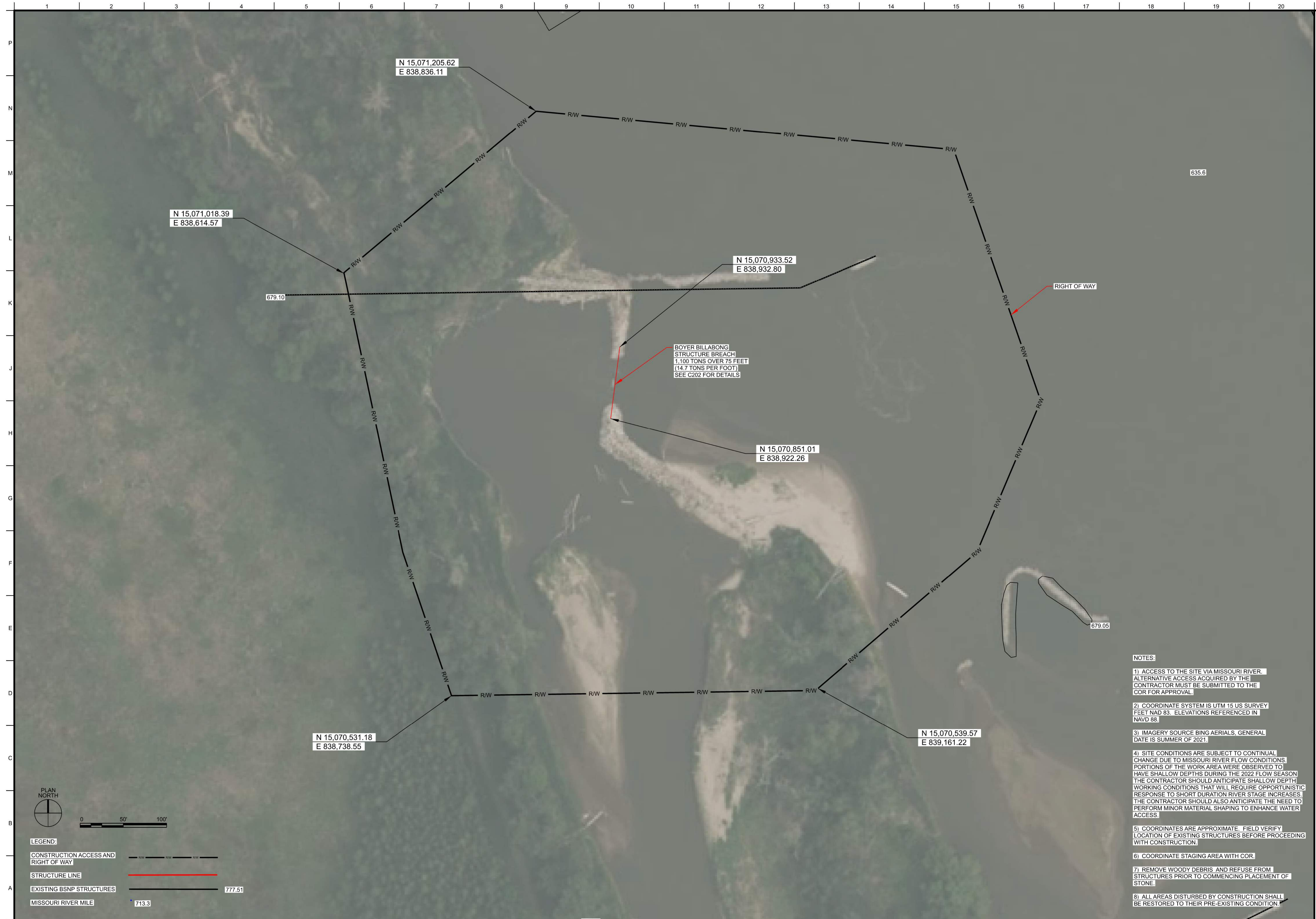
SANDY POINT  
SITE PLAN AND RIGHT OF WAY (2 OF 4)

SHEET ID  
**C103**

## SOLICITATION SET







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Engineers®**

[illegible]

U.S. ARMY CORPS OF ENGINEERS	CJS	DRAWN BY:	SOLICITATION NO.:
1616 CAPITOL AVE	RJS	C/S	W9728-F23-R-0023
OMAHA, NE 68102	CJS	CHECKED BY:	W9728F23CDDXX
	DJP	SUBMITTED BY:	FILE NUMBER:
		SIZE:	FILENAME:
	ANSI D		MAR0110561106.DGN

MISSOURI RIVER RECOVERY O & M  
NORTH FY 23  
MISSOURI RIVER, NEBRASKA

BOYER BILLABONG  
SITE PLAN AND RIGHT OF WAY

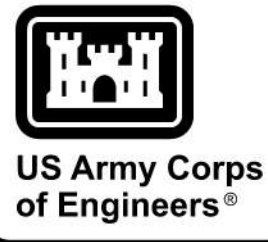
SHEET ID  
C106

SOLICITATION SET



NOTES:

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[illegible]

U.S. ARMY CORPS OF ENGINEERS	DESIGNED BY:	CJS	MARCH 2023
OMAHA DISTRICT	DRAWN BY:	CJS	SOLICITATION NO.:
1616 CAPITOL AVE			W9128-23-R-0023
OMAHA, NE 68102	CHECKED BY:	RGF	CONTRACT NO.:
			W9128-23C00XX
	SUBMITTED BY:		FILE NUMBER:
	DBP		
	SIZE:		FILENAME:

MISSOURI RIVER RECOVERY O & M  
NORTH FY 23  
MISSOURI RIVER, NEBRASKA

TOBACCO  
SITE PLAN AND RIGHT OF WAY

SHEET ID  
C107



NOTES:

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FEET NAD 83. ELEVATIONS REFERENCED IN  
NAVD 88.

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DATE IS SUMMER OF 2021.

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[illegible]

U.S. ARMY CORPS OF ENGINEERS OMAHA DISTRICT 1616 CAPITOL AVE OMAHA, NE 68102	DESIGNED BY: CJS	ISSUE DATE: MARCH 2023
	DRAWN BY: CJS	PROJECT NO.: W9128-F2-R-0023
	CHECKED BY: RGP	CONTRACT NO.: W9128F23C00XX
	SUBMITTED BY:	FILE NUMBER:
	ANSI D	FILE NAME- SIZE: MR00105C108.DGN

MISSOURI RIVER RECOVERY O & M  
NORTH FY 23  
MISSOURI RIVER, NEBRASKA

TOBACCO (2 OF 4)  
SITE PLAN AND RIGHT OF WAY

SHEET ID

C108

## SOLICITATION SET



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of Engineers®**

[illegible]

U.S. ARMY CORPS OF ENGINEERS OMAHA DISTRICT 1616 CAPITOL AVE OMAHA, NE 68102	DESIGNED BY:	ISSUE DATE:
	ENGINEERED BY:	MARCH 2023
	APPROVED BY:	CJS
	CJS	W9129-F23R-0023
	CHECKED BY:	CONTRACT NO.:
	RGP	W9129F23D00XX
	SUBMITTED BY:	FILE NUMBER:
	FILE NAME:	
	SIZE:	
	ANSI: D	MR00105C:09.DGN

MISSOURI RIVER RECOVERY O & M  
NORTHLEY 22

NORTH FY 23  
MISSOURI RIVER, NEBRASKA

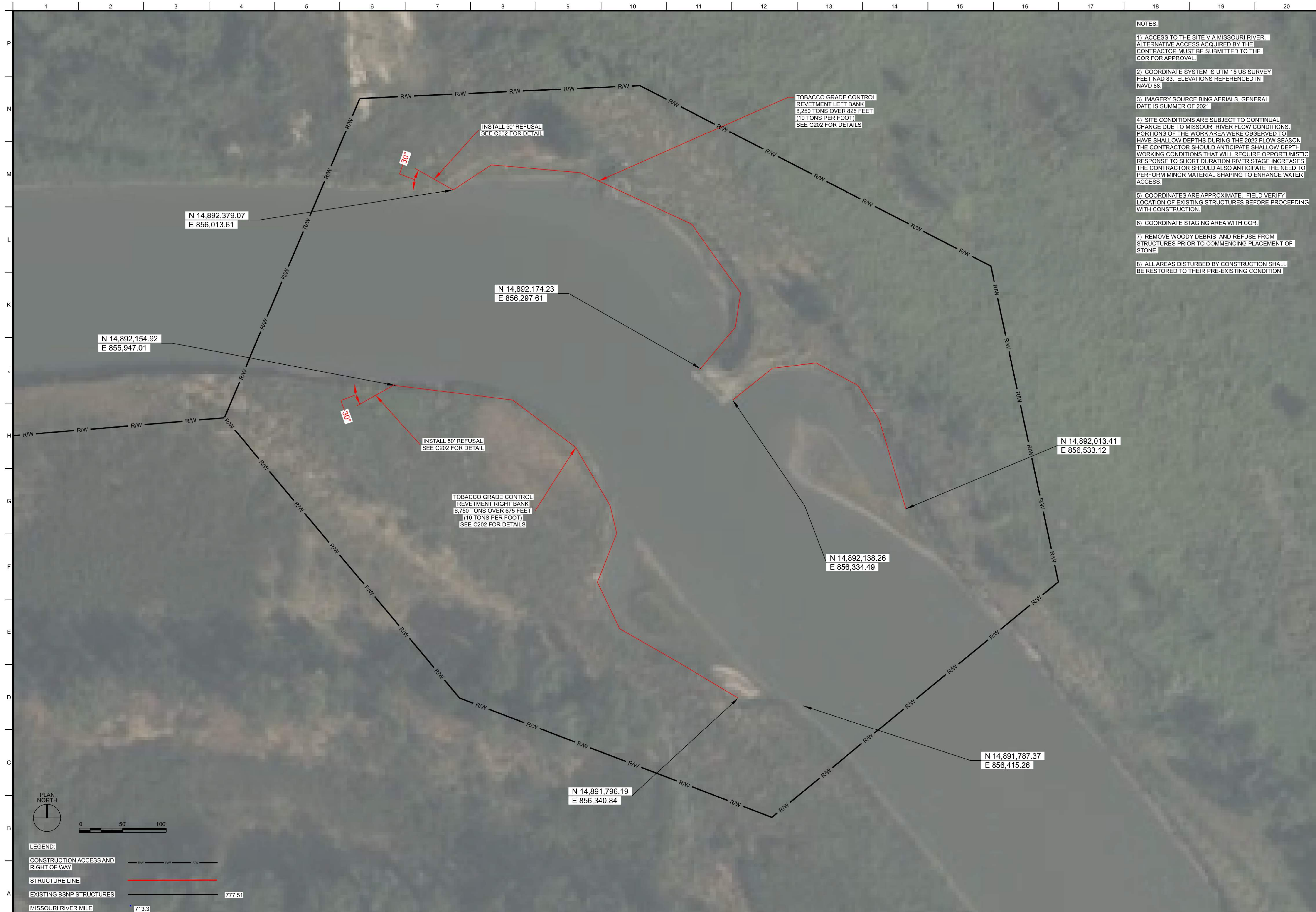
MISSOURI RIVER, NEBRASKA

TOBACCO (3 OF 4)  
SITE PLAN AND RIGHT OF WAY

SHEET ID

C109

## SOLICITATION SET



NOTES:

1) ACCESS TO THE SITE VIA MISSOURI RIVER. ALTERNATIVE ACCESS ACQUIRED BY THE CONTRACTOR MUST BE SUBMITTED TO THE COR FOR APPROVAL.

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FEET NAD 83. ELEVATIONS REFERENCED IN  
NAVD 88.

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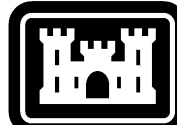
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[illegible]

U.S. ARMY CORPS OF ENGINEERS OMAHA DISTRICT 1616 CAPITOL AVE OMAHA, NE 68102	DESIGNED BY:	CJS	ISSUE DATE:	MARCH 2023
	APPROVED BY:	CJS	PROJECT NO.:	W112823C00XX
	CHECKED BY:	RGF	CONTRACT NO.:	W112823C00XX
	SUBMITTED BY:		FILE NUMBER:	
	FILE NAME:	MS00105C110.DGN		

MISSOURI RIVER RECOVERY O & M  
NORTH FY 23  
MISSOURI RIVER, NEBRASKA

TOBACCO (4 OF 4)  
SITE PLAN AND RIGHT OF WAY

TOBACCO (4 OF 4)

SITE

SHEET ID

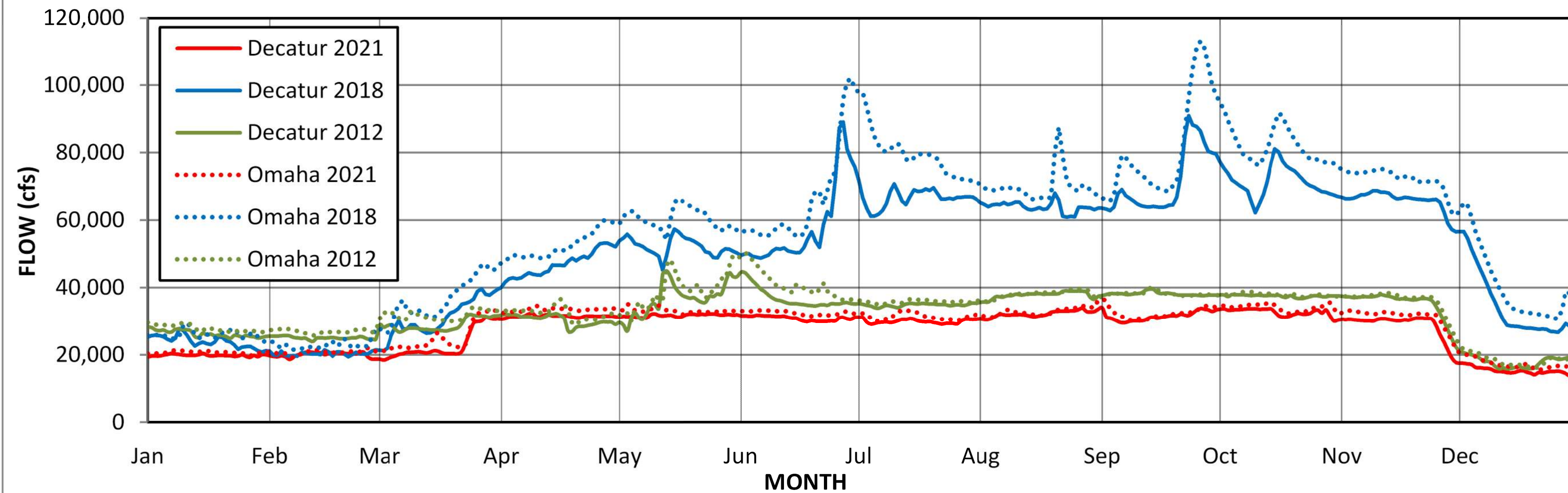
# C110

## SOLICITATION SET





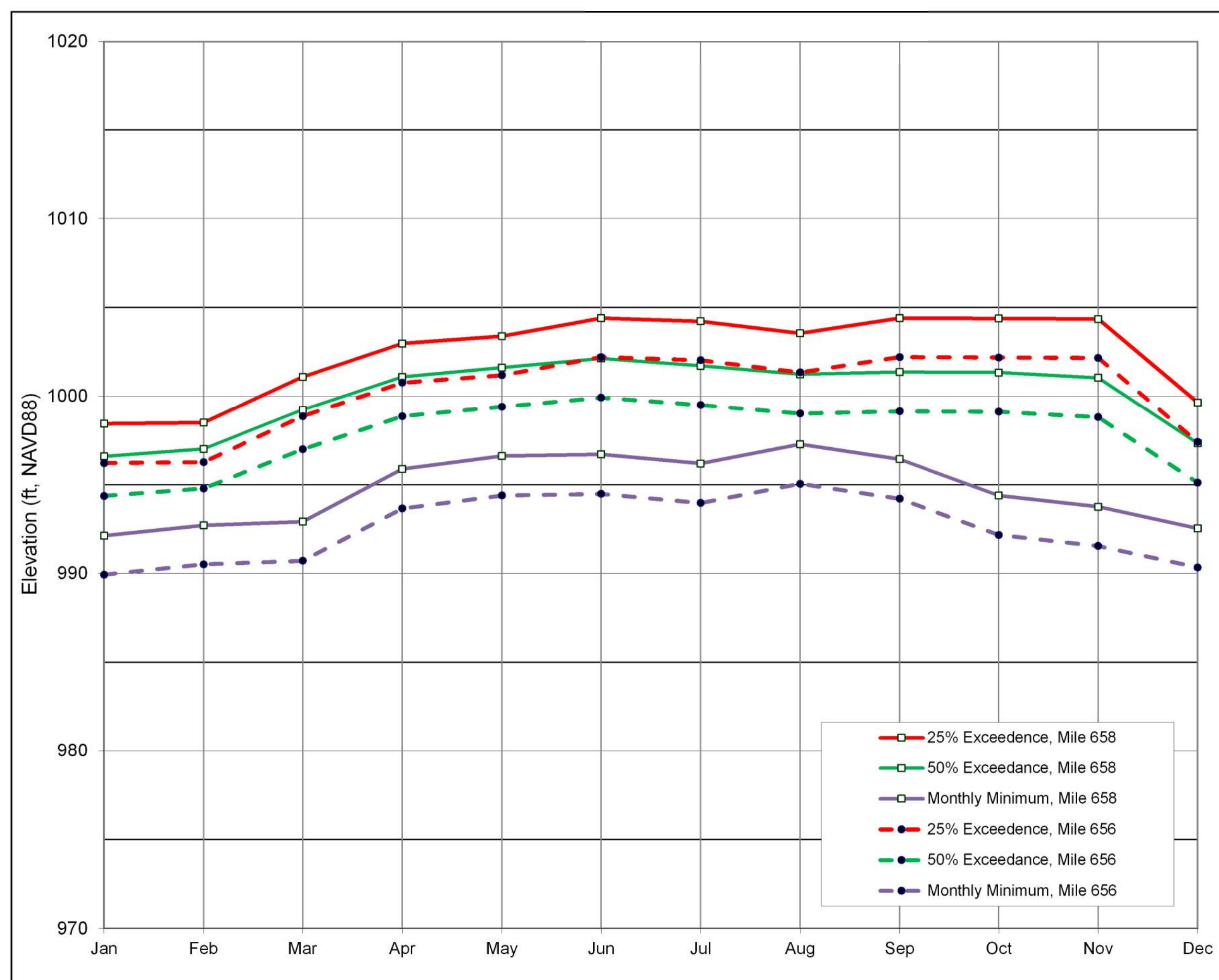
## Missouri River Daily Flow (cfs) at Decatur and Omaha



MISSOURI RIVER SEASONAL FLOW LEVEL NOTES:

1. ALL MISSOURI RIVER DATA IS PROVIDED FOR INFORMATION ONLY. THE MISSOURI RIVER CONSISTENTLY EXPERIENCES WIDE FLOW LEVEL VARIATIONS THAT SHOULD BE EXPECTED DURING THE PROJECT CONSTRUCTION PERIOD. UPDATED RESERVOIR RELEASE FORECASTS ARE AVAILABLE AT:  
[https://water.weather.gov/ahps/region\\_forecast.php?rfcm=brfrc](https://water.weather.gov/ahps/region_forecast.php?rfcm=brfrc).
2. TRIBUTARY INFLOW AND OTHER FACTORS WILL SIGNIFICANTLY AFFECT SITE FLOW CONDITIONS IN ADDITION TO RESERVOIR RELEASES. NATIONAL WEATHER SERVICE FORECASTS FOR GAGE STATIONS ARE AVAILABLE AT:  
[https://water.weather.gov/ahps/region\\_forecast.php?rfcm=brfrc](https://water.weather.gov/ahps/region_forecast.php?rfcm=brfrc).
3. THE CONTRACTOR SHALL CONSULT THE CURRENT RIVER FLOW AND STAGE INFORMATION ON <http://www.nwd-mr.usace.army.mil/rcc> OR CALL 402-996-3870. THE CONTRACTOR SHALL ALSO CONSULT WITH THE COAST GUARD REGARDING POSSIBLE RIVER CLOSURES OR OPERATION RESTRICTIONS DUE TO RIVER CONDITIONS. CONTRACTOR OPERATIONS DURING THE CONSTRUCTION PERIOD MAY BE IMPACTED BY EXTREME HIGH OR LOW RIVER LEVELS DUE TO FLOODING, DROUGHT, OPERATION OF GAVINS POINT DAM, AND/OR HIGH TRIBUTARY INFLOW.
4. THE DRAFT ANNUAL OPERATING PLAN (MRBWMD-USACE) STATES THAT BEGINNING IN MID-MARCH, GAVINS POINT RELEASES WILL BE GRADUALLY INCREASED TO PROVIDE NAVIGATION FLOW SUPPORT AT THE MOUTH OF THE MISSOURI NEAR ST. LOUIS, MISSOURI BY APRIL 1. THE NORMAL NAVIGATION SEASON OPENING DATE. THE CORRESPONDING DATES AT UPSTREAM LOCATIONS ARE SIOUX CITY, MARCH 23; OMAHA, MARCH 25; NEBRASKA CITY, MARCH 26; AND KANSAS CITY, MARCH 28. NAVIGATION FLOW SUPPORT FOR EACH SEASON WILL BE DETERMINED BY ACTUAL SYSTEMS OPERATION DURING MARCH AND APRIL. RUNOFF SCENARIOS INDICATE MINIMUM SERVICE FLOW SUPPORT AT THE START OF THE NAVIGATION SEASON FOR THE MEDIUM AND LOWER RUNOFF CONDITIONS. NAVIGATION TARGET LOCATIONS AND MINIMUM NAVIGATION SUPPORT FLOWS ARE: SIOUX CITY AND OMAHA (25,000 CFS), NEBRASKA CITY (31,000 CFS), AND KANSAS CITY (35,000 CFS). FLOW SUPPORT FOR THE TYPICAL NAVIGATION SEASON ENDS ON 1 DECEMBER AT THE MOUTH ALTHOUGH NAVIGATION SEASON LENGTH MAY BE SHORTENED OR NAVIGATION FLOWS ELIMINATED IF NECESSARY.
5. NAVIGATION SUPPORT FLOW RELEASES FROM GAVINS POINT DAM HAVE BECOME DISCRETIONARY WHEN COMMERCIAL BARGE TRAFFIC IS NOT PRESENT AS PART OF NORMAL RESERVOIR OPERATIONS AND DROUGHT CONSERVATION MEASURES. AS A RESULT, THE MISSOURI RIVER HAS FLOWED AT LESS THAN 25,000 CFS FOR PROLONGED DURATIONS IN THE PERIOD APRIL THROUGH OCTOBER. RIVER FLOWS AT ANY TIME CAN BE SIGNIFICANTLY ALTERED TO MEET RESERVOIR POOL TARGETS OR DOWNSTREAM FLOOD CONTROL OBJECTIVES DURING PERIODS WITH VARIABLE TRIBUTARY INFLOWS INCLUDING THE UNCONTROLLED INFLOWS BELOW GAVINS POINT DAM. FLOWS CAN REMAIN AT ALTERED LEVELS FOR A SIGNIFICANT PERIOD. ONCE THE FLOW SUPPORT SEASON ENDS, FLOW WILL DROP OFF SIGNIFICANTLY AND GAVINS RELEASES MAY BE AS LOW AS 9,000 CFS FOR AN EXTENDED PERIOD.
6. DUE TO RIVER CHANNEL CHANGES SINCE THE 2017 CRP ANALYSIS, THE CURRENT CONDITION STAGE-FLOW RELATIONSHIPS THAT ARE USED TO CREATE THE VARIOUS TABLES AND PLOTS AND THE VARIATION FROM CRP WILL VARY THROUGH TIME AND LOCATION.

### MISSOURI RIVER RECENT DAILY FLOW (CFS)



MISSOURI RIVER WATER SURFACE ELEVATION AT RM 658 TO RM 656  
(Elevations based on monthly average flows.)

GENERAL NOTES:

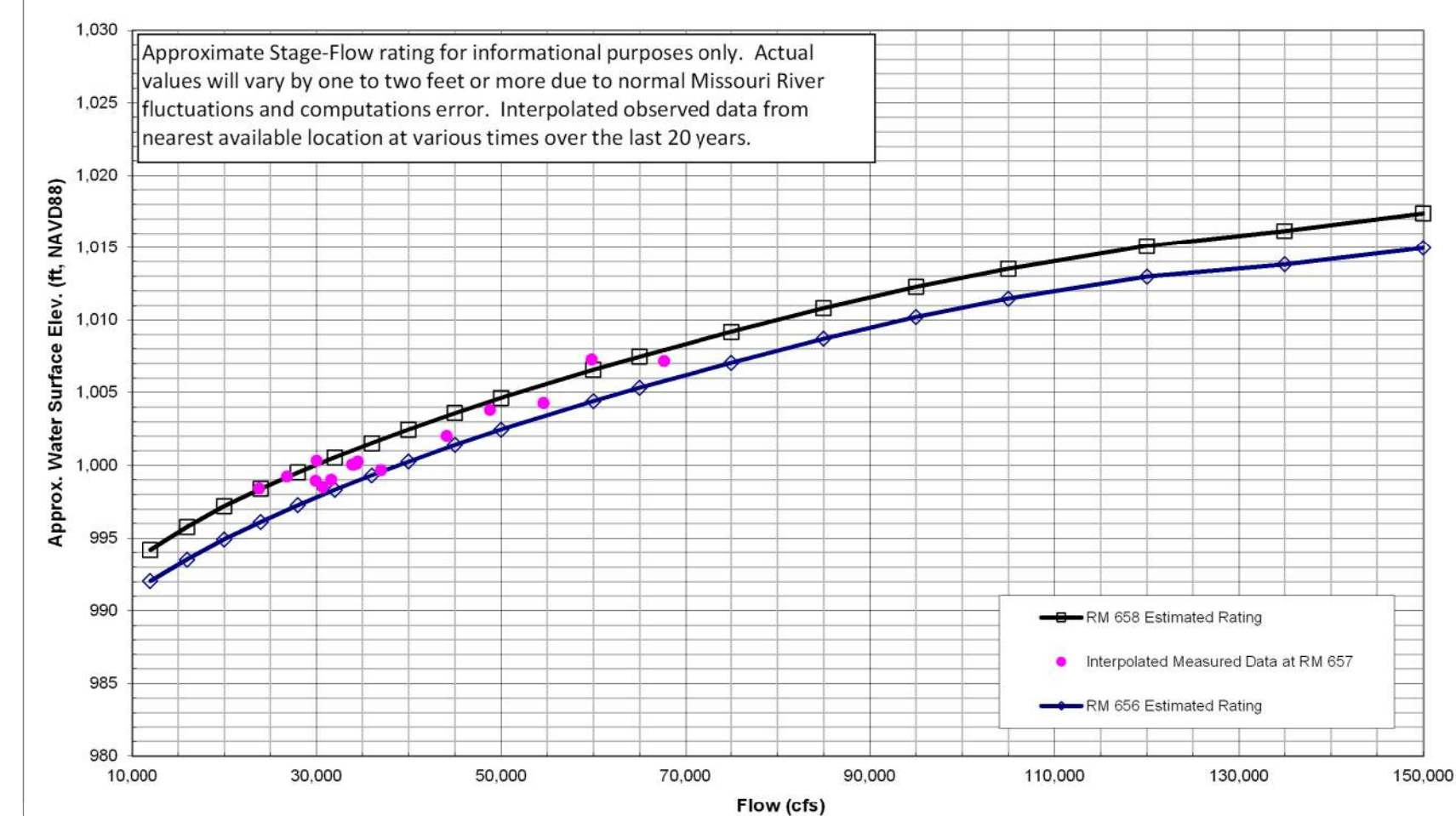
1. CURRENT INFORMATION FOR THE MISSOURI RIVER CAN BE OBTAINED FROM THE US GEOLOGICAL SURVEY AS WELL AS FROM THE CORPS' RESERVOIR CONTROL CENTER (RCC). WEBSITES ARE:  
<http://waterdata.usgs.gov/nwis/rt>  
<http://www.nwd-mr.usace.army.mil/rcc>

2. APPROXIMATE STAGE-FLOW RATING FOR INFORMATIONAL PURPOSES ONLY. ACTUAL VALUES WILL VARY BY ONE OR TWO FEET OR MORE DUE TO NORMAL MISSOURI RIVER FLUCTUATIONS AND COMPUTATION ERROR. THE CONTRACTOR SHOULD EVALUATE SITE WATER LEVELS COMPARED TO NEARBY GAGE STATION FLOWS TO DEVELOP A RIVER FLOW LEVEL ESTIMATION FOR USE DURING THE CONSTRUCTION PERIOD.

MONTHLY AVG MISSOURI R. FLOWS (cfs) AT PROJECT SITE			
	25% EXCEED	50% EXCEED	75% EXCEED
JAN	24800	18500	16000
FEB	25000	19900	16500
MAR	34600	27600	19400
APR	42300	34600	30400
MAY	44100	36700	32200
JUN	48600	38800	33400
JUL	47800	37100	32700
AUG	44800	35200	31700
SEP	48600	35700	32200
OCT	48500	35600	31000
NOV	48400	34400	25600
DEC	29100	21000	16800

<u>MINIMUM DAILY FLOWS (cfs) AT</u>	
<u>PROJECT SITE</u>	
JAN	4800
FEB	6500
MAR	7100
APR	16200
MAY	18600
JUN	18900
JUL	17200
AUG	20800
SEP	18000
OCT	115 00
NOV	9600
DEC	6000

- FLOW VALUES FOR THIS RIVER BEND WERE DERIVED FROM DATA PUBLISHED FOR THE NEARBY MISSOURI RIVER GAGES. APPROXIMATING FLOW BETWEEN THOSE GAGES WAS BASED ON THE AMOUNT OF DRAINAGE AREA CONTRIBUTING BETWEEN GAGES.
- THE TWO TABLES ABOVE PROVIDE THE HISTORIC MONTHLY EXCEEDANCE FLOWS AT THE PROJECT SITE. ACTUAL FLOWS WILL VARY AND SHOULD BE ASSESSED BY THE CONTRACTOR.



Approximate Stage-Flow Rating -- Missouri River  
River Miles 658.0 to 656.0

THIS DRAWING INCLUDED FOR INFORMATION ONLY

**Missouri River Daily Flow (cfs) at Decatur and Omaha**

The graph displays the daily flow of the Missouri River at Decatur and Omaha for the years 2012, 2018, and 2021. The y-axis represents the flow in cubic feet per second (cfs), ranging from 0 to 120,000. The x-axis represents the month, from January to December. The legend indicates that solid lines represent Decatur and dotted lines represent Omaha, with colors corresponding to the year: red for 2021, blue for 2018, and green for 2012. The 2018 data shows the highest flow peaks, particularly in July and October, while the 2021 data shows the lowest flow levels throughout the year.

Month	Decatur 2021 (cfs)	Decatur 2018 (cfs)	Decatur 2012 (cfs)	Omaha 2021 (cfs)	Omaha 2018 (cfs)	Omaha 2012 (cfs)
Jan	20,000	25,000	25,000	20,000	25,000	25,000
Feb	20,000	25,000	25,000	20,000	25,000	25,000
Mar	20,000	25,000	25,000	20,000	25,000	25,000
Apr	30,000	40,000	30,000	30,000	40,000	30,000
May	30,000	50,000	30,000	30,000	50,000	30,000
Jun	30,000	50,000	30,000	30,000	50,000	30,000
Jul	30,000	80,000	30,000	30,000	100,000	30,000
Aug	30,000	60,000	30,000	30,000	60,000	30,000
Sep	30,000	60,000	30,000	30,000	60,000	30,000
Oct	30,000	80,000	30,000	30,000	110,000	30,000
Nov	30,000	60,000	30,000	30,000	60,000	30,000
Dec	20,000	25,000	25,000	20,000	25,000	25,000

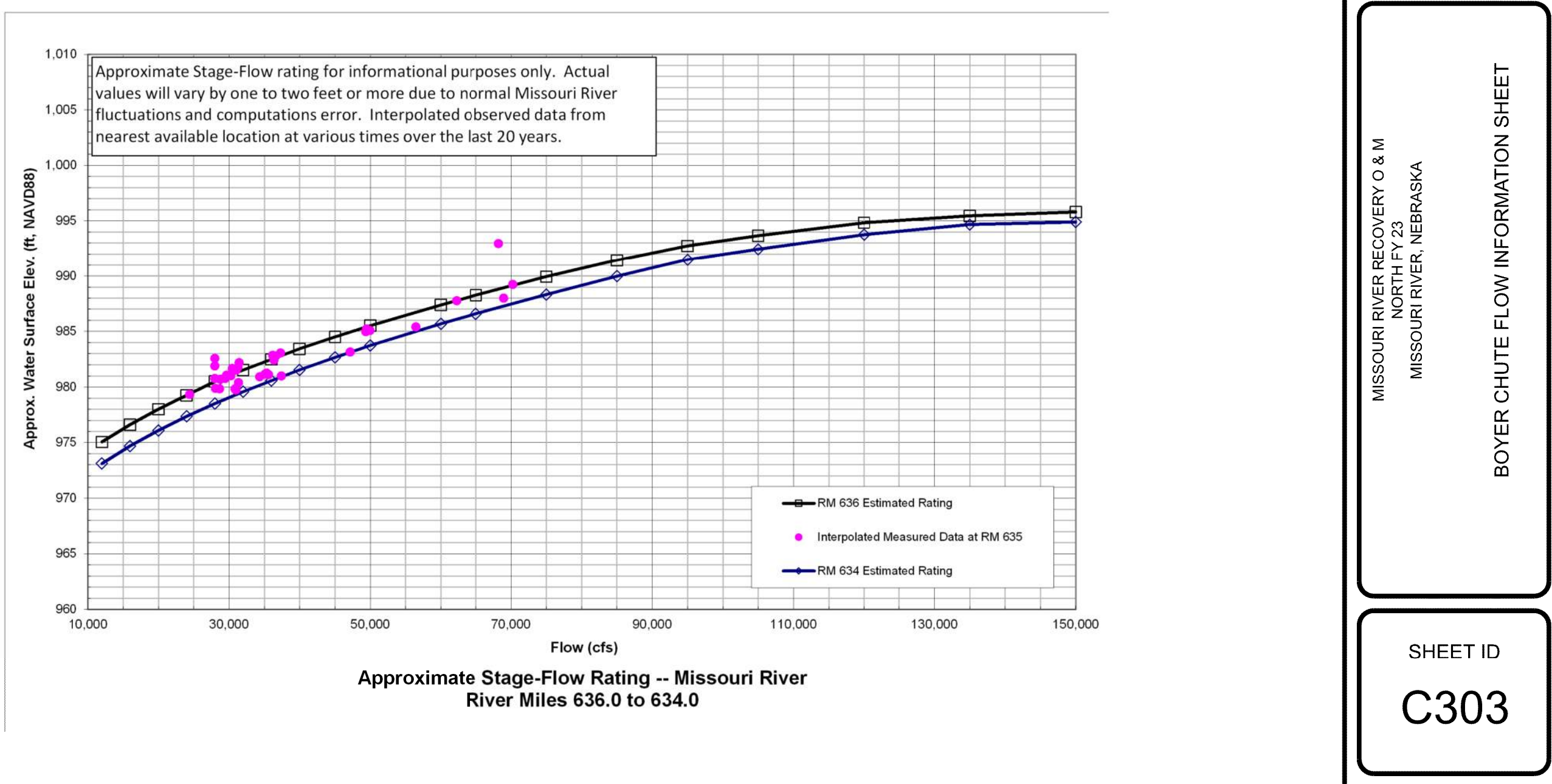
[illegible]

**MISSOURI RIVER RECENT DAILY FLOW (CFS)**

The graph displays the elevation (ft, NAVD88) of the Missouri River from January to December for two locations, Mile 636 and Mile 634. The y-axis ranges from 960 to 990 ft. The x-axis shows the months from Jan to Dec. The legend identifies six data series: 25% Exceedance, 50% Exceedance, and Monthly Minimum for both Mile 636 and Mile 634.

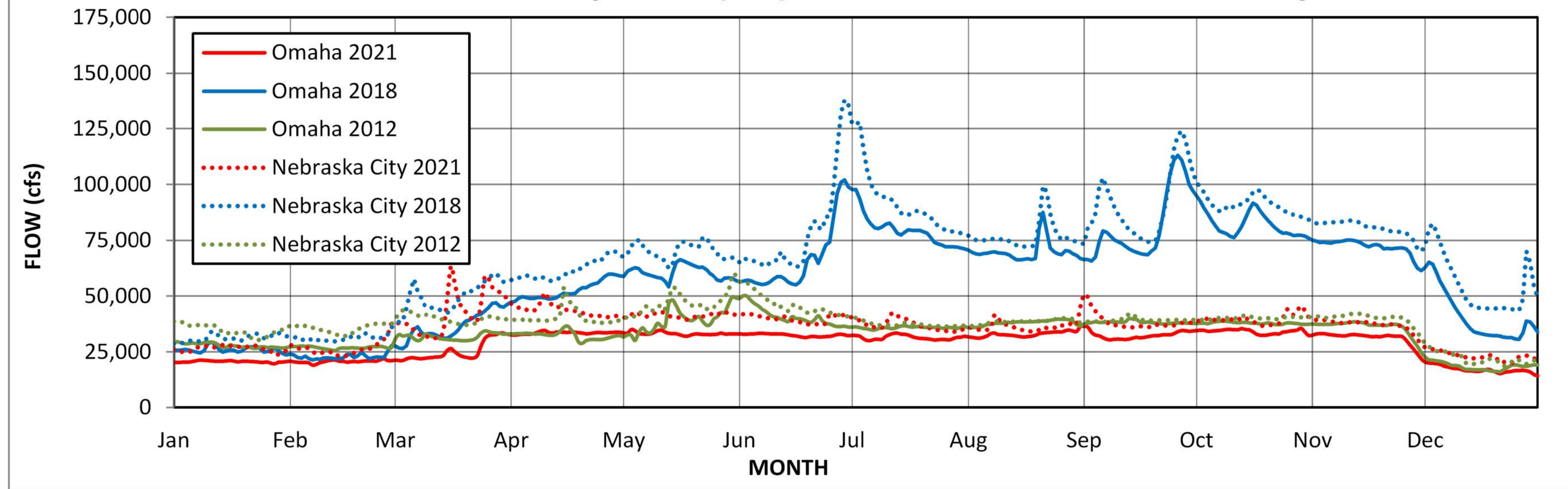
Month	25% Exceedance, Mile 636	50% Exceedance, Mile 636	Monthly Minimum, Mile 636	25% Exceedance, Mile 634	50% Exceedance, Mile 634	Monthly Minimum, Mile 634
Jan	979.5	977.5	973.5	977.5	976.5	971.5
Feb	979.5	978.0	973.5	978.0	977.0	972.0
Mar	982.0	980.0	973.5	980.5	979.0	972.5
Apr	984.0	982.5	976.5	982.5	980.5	975.0
May	984.5	983.0	977.0	983.0	981.0	975.5
Jun	985.5	983.5	977.5	984.0	981.5	975.5
Jul	985.0	983.0	977.0	983.5	981.0	975.0
Aug	984.5	982.5	978.0	983.0	980.5	976.0
Sep	985.5	982.5	977.0	984.0	980.5	975.5
Oct	985.5	982.5	975.0	984.0	980.5	973.5
Nov	985.5	982.0	974.5	984.0	980.5	973.0
Dec	980.5	978.0	973.0	979.0	976.5	971.5

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- THE TWO TABLES ABOVE PROVIDE THE HISTORIC MONTHLY EXCEEDANCE FLOWS AT THE PROJECT SITE. ACTUAL FLOWS WILL VARY AND SHOULD BE ASSESSED BY THE CONTRACTOR.



1. CURRENT INFORMATION FOR THE MISSOURI RIVER CAN BE OBTAINED FROM THE US GEOLOGICAL SURVEY AS WELL AS FROM THE CORPS' RESERVOIR CONTROL CENTER (RCC). WEBSITES ARE:  
<http://waterdata.usgs.gov/nwis/rt>  
<http://www.nwd-mr.usace.army.mil/rcc>

## A



1. ALL MISSOURI RIVER DATA IS PROVIDED FOR INFORMATION ONLY. THE MISSOURI RIVER CONSISTENTLY EXPERIENCES WIDE FLOW LEVEL VARIATIONS THAT SHOULD BE EXPECTED DURING THE PROJECT CONSTRUCTION PERIOD. UPDATED RESERVOIR RELEASE FORECASTS ARE AVAILABLE AT: [https://water.weather.gov/ahps/region\\_forecast.php?rfc=mrbc](https://water.weather.gov/ahps/region_forecast.php?rfc=mrbc).

2. TRIBUTARY INFLOW AND OTHER FACTORS WILL SIGNIFICANTLY AFFECT SITE FLOW CONDITIONS IN ADDITION TO RESERVOIR RELEASES. NATIONAL WEATHER SERVICE FORECASTS FOR GAGE STATIONS ARE AVAILABLE AT: [https://water.weather.gov/ahps/region\\_forecast.php?rfc=mrbc](https://water.weather.gov/ahps/region_forecast.php?rfc=mrbc).

3. THE CONTRACTOR SHALL CONSULT THE CURRENT RIVER FLOW AND STAGE INFORMATION ON <http://www.nwd-mr.usace.army.mil/rcc> OR CALL 402-996-3870. THE CONTRACTOR SHALL ALSO CONSULT WITH THE COAST GUARD REGARDING POSSIBLE RIVER CLOSURES OR OPERATION RESTRICTIONS DUE TO RIVER CONDITIONS. CONTRACTOR OPERATIONS DURING THE CONSTRUCTION PERIOD MAY BE IMPACTED BY EXTREME HIGH OR LOW RIVER LEVELS DUE TO FLOODING, DROUGHT, OPERATION OF GAVINS POINT DAM, AND/OR HIGH TRIBUTARY INFLOW.

4. THE DRAFT ANNUAL OPERATING PLAN (MRBWMD-USACE) STATES THAT BEGINNING IN MID-MARCH, GAVINS POINT RELEASES WILL BE GRADUALLY INCREASED TO PROVIDE NAVIGATION FLOW SUPPORT AT THE MOUTH OF THE MISSOURI NEAR ST. LOUIS, MISSOURI BY APRIL 1, THE NORMAL NAVIGATION SEASON OPENING DATE. THE CORRESPONDING DATES AT UPSTREAM LOCATIONS ARE SIOUX CITY, MARCH 23; OMAHA, MARCH 25; NEBRASKA CITY, MARCH 26; AND KANSAS CITY, MARCH 28. NAVIGATION FLOW SUPPORT FOR EACH SEASON WILL BE DETERMINED BY ACTUAL SYSTEM STORAGE ON MARCH 15 AND JULY 1. RUNOFF SCENARIOS INDICATE MINIMUM SERVICE FLOW SUPPORT AT THE START OF THE NAVIGATION SEASON FOR THE MEDIAN AND LOWER RUNOFF CONDITIONS. NAVIGATION TARGET LOCATIONS AND MINIMUM NAVIGATION SUPPORT FLOWS ARE: SIOUX CITY AND OMAHA (25,000 CFS), NEBRASKA CITY (31,000 CFS), AND KANSAS CITY (35,000 CFS). FLOW SUPPORT FOR THE TYPICAL NAVIGATION SEASON ENDS ON 1 DECEMBER AT THE MOUTH ALTHOUGH NAVIGATION SEASON LENGTH MAY BE SHORTENED OR NAVIGATION FLOWS ELIMINATED IF NECESSARY.

5. NAVIGATION SUPPORT FLOW RELEASES FROM GAVINS POINT DAM HAVE BECOME DISCRETIONARY WHEN COMMERCIAL BARGE TRAFFIC IS NOT PRESENT AS PART OF NORMAL RESERVOIR OPERATIONS AND DROUGHT CONSERVATION MEASURES. AS A RESULT, THE MISSOURI RIVER HAS FLOWED AT LESS THAN 25,000 CFS FOR PROLONGED DURATIONS IN THE PERIOD APRIL THROUGH OCTOBER. RIVER FLOWS AT ANY TIME CAN BE SIGNIFICANTLY ALTERED TO MEET RESERVOIR POOL TARGETS OR DOWNSTREAM FLOOD CONTROL OBJECTIVES DURING PERIODS WITH VARIABLE TRIBUTARY INFLOWS INCLUDING THE UNCONTROLLED INFLOWS BELOW GAVINS POINT DAM. FLOWS CAN REMAIN AT ALTERED LEVELS FOR A SIGNIFICANT PERIOD. ONCE THE FLOW SUPPORT SEASON ENDS, FLOW WILL DROP OFF SIGNIFICANTLY AND GAVINS RELEASES MAY BE AS LOW AS 9,000 CFS FOR AN EXTENDED PERIOD.

6. DUE TO RIVER CHANNEL CHANGES SINCE THE 2017 CRP ANALYSIS, THE CURRENT CONDITION STAGE-FLOW RELATIONSHIPS THAT ARE USED TO CREATE THE VARIOUS TABLES AND PLOTS AND THE VARIATION FROM CRP WILL VARY THROUGH TIME AND LOCATION.



2. APPROXIMATE STAGE-FLOW RATING FOR INFORMATIONAL PURPOSES ONLY. ACTUAL VALUES WILL VARY BY ONE OR TWO FEET OR MORE DUE TO NORMAL MISSOURI RIVER FLUCTUATIONS AND COMPUTATION ERROR. THE CONTRACTOR SHOULD EVALUATE SITE WATER LEVELS COMPARED TO NEARBY GAGE STATION FLOWS TO DEVELOP A RIVER FLOW LEVEL ESTIMATION FOR USE DURING THE CONSTRUCTION PERIOD.

MINIMUM DAILY FLOWS (cfs) AT	
PROJECT SITE	
JAN	4800
FEB	6500
MAR	11100
APR	20600
MAY	23000
JUN	27700
JUL	22800
AUG	23100
SEP	20000
OCT	12500
NOV	11500
DEC	5200

Approximate Stage-Flow rating for informational purposes only. Actual values will vary by one to two feet or more due to normal Missouri River fluctuations and computations error. Interpolated observed data from nearest available location at various times over the last 20 years.

Flow (cfs)	RM 636 Estimated Rating (ft. NAVD88)	Interpolated Measured Data at RM 635 (ft. NAVD88)	RM 634 Estimated Rating (ft. NAVD88)
10,000	975.0		973.5
15,000	976.5		975.0
20,000	978.0		976.5
25,000	979.5	979.0, 980.0, 981.0, 982.0	978.0
30,000	981.0	980.0, 981.0, 982.0, 983.0	979.5
35,000	982.5	981.0, 982.0, 983.0, 984.0	981.0
40,000	984.0	982.0, 983.0, 984.0, 985.0	982.5
45,000	985.5	983.0, 984.0, 985.0, 986.0	984.0
50,000	987.0	984.0, 985.0, 986.0, 987.0	985.5
55,000	988.5	985.0, 986.0, 987.0, 988.0	987.0
60,000	989.5	986.0, 987.0, 988.0, 989.0	988.5
65,000	990.5	987.0, 988.0, 989.0, 990.0	990.0
70,000	991.5	988.0, 989.0, 990.0, 992.0	991.5
75,000	992.5	989.0, 990.0, 991.0, 993.0	993.0
80,000	993.5	990.0, 991.0, 992.0, 994.0	994.5
85,000	994.5	991.0, 992.0, 993.0, 995.0	996.0
90,000	995.5	992.0, 993.0, 994.0, 996.0	997.5
95,000	996.5	993.0, 994.0, 995.0, 997.0	999.0
100,000	997.5	994.0, 995.0, 996.0, 998.0	1000.5
105,000	998.5	995.0, 996.0, 997.0, 999.0	1002.0
110,000	999.5	996.0, 997.0, 998.0, 1000.0	1003.5
115,000	1000.5	997.0, 998.0, 999.0, 1001.0	1005.0
120,000	1001.5	998.0, 999.0, 1000.0, 1002.0	1006.5
125,000	1002.5	999.0, 1000.0, 1001.0, 1003.0	1008.0
130,000	1003.5	1000.0, 1001.0, 1002.0, 1004.0	1009.5
135,000	1004.5	1001.0, 1002.0, 1003.0, 1005.0	1011.0
140,000	1005.5	1002.0, 1003.0, 1004.0, 1006.0	1012.5
145,000	1006.5	1003.0, 1004.0, 1005.0, 1007.0	1014.0
150,000	1007.5	1004.0, 1005.0, 1006.0, 1008.0	1015.5

P

## N

M

L



J

H

**G**

F

5

**D**

C

B

A