

Dredge/Structures

- Disposal Sites Current
 Disposal Sites -Approved but Inactive
 Disposal Sites - Proposed
 Dredge Area - Current (Area routinely dredged - 1995 to 2003)
 Dredge Area - Proposed
- Structures Current
- Structures Proposed
- Proposed Tern Islands

Gravel Bed Survey Total acreage = 165 acres

Gravel Beds

Mussel Survey (live - sum)

Mitigation Sites CoverType

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Map Sheet 51



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Alternate disposal site for AR248.0R-D, move revetment out and dispose inside

Avoid disposal

NM 249

100



Legend Dredge/Structures Z Disposal Sites - Current Disposal Sites -Approved but Inactive Disposal Sites - Proposed Dredge Area - Current (Area routinely dredged - 1995 to 2003) Dredge Area - Proposed Structures Current ---- Structures Proposed Proposed Tern Islands Gravel Bed Survey Total acreage = 165 acres Gravel Beds Mussel Survey (live - sum) 0 9 1 - 4 9 - 10 • 11 - 20 21 - 30 9 31 - 50 • 51 - 100 **Mitigation Sites** CoverType AG BLH MARSH

Arkansas River Navigation Study JUNE 2005







Dredge/Structures

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Gravel Bed Survey Total acreage = 165 acres Gravel Beds

Mussel Survey (live - sum)

Mitigation Sites CoverType

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Arkansas River Navigation Study JUNE 2005

Map Sheet 54



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Legend Dredge/Structures Z Disposal Sites - Current Disposal Sites -Approved but Inactive Disposal Sites - Proposed Dredge Area - Current (Area routinely dredged - 1995 to 2003) Dredge Area - Proposed Structures Current ---- Structures Proposed Proposed Tern Islands Gravel Bed Survey Total acreage = 165 acres Gravel Beds Mussel Survey (live - sum) 0 9 1 - 4 9 - 10 • 11 - 20 21 - 30 9 31 - 50 • 51 - 100 **Mitigation Sites** CoverType AG BLH MARSH Arkansas River **Navigation Study JUNE 2005** Map Sheet 55 $\overline{\mathbf{N}}$ 1:24,000





Legend Dredge/Structures Z Disposal Sites - Current Disposal Sites -Approved but Inactive Disposal Sites - Proposed Dredge Area - Current (Area routinely dredged - 1995 to 2003) Dredge Area - Proposed Structures Current ---- Structures Proposed Proposed Tern Islands Gravel Bed Survey Total acreage = 165 acres Gravel Beds Mussel Survey (live - sum) \bigcirc 0 9 1 - 4 9 - 10 • 11 - 20 21 - 30 9 31 - 50 • 51 - 100 **Mitigation Sites** CoverType AG BLH MARSH Arkansas River **Navigation Study JUNE 2005** Map Sheet 56 $\overline{\mathbf{N}}$

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Recommend disposal site along RB Avoid disposal in mouth of Mulberry

NM 273

Avoid disposal in AR274.0L-D and AR275.0L-D, alternatively use RB disposal to create or enlarge islands, NOTE: Avoid disposal on forested island that is a rookery

LNM 274

NM 275

Maintain entrance to Courthouse Slough by periodically dredging

Sec. Non Sec.

Notch modified dikes (3)



Legend

Dredge/Structures

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Mitigation Sites CoverType

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Map Sheet 57



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Avoid backwater disposal in 277.0R-D, place disposal on land and d/s along bottom end to extend island

Notch modified revetment at 279L and 280.2L to maintain high value for backwater area

At AR279.5L-D, avoid disposal in aquatic areas, utilize land within disposal area and AR280.0R-D

Utilize AR280.0R-D for disposal and construction of string of slands, notch modified dikes (4) to create and maintain backwater channel



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Legend

Dredge/Structures

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Mussel Survey (live - sum)

Mitigation Sites CoverType

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notch modified dikes (4) to create and maintain backwater channel

280.8L - Notch modified dikes (3)

Place disposal on lower end of disposal area on existing sand bars, construct islands where feasible, avoid disposal from 283.2-283.5L

283.9L - Notch modified revetment in upper cell (High priority)

NM 284

11/1/11/10

*Existing tern island, avoid disposal in AR282.7R-D, utilize LB and create/enlarge islands for terns

NM 281

Recommend constructing new disposal at 284R

JM 283



Legend

Dredge/Structures

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	Proposed Tern Islands
	vel Bed Survey acreage = 165 acres

Total acreage = 165 acre

Mussel Survey (live - sum)

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Mitigation Sites CoverType

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Extend disposal area to 286.2L dike, place disposal behind dikes on LB from 286.2-285.6L to create islands and maintain gravel instream, notch modified (2) and existing (2) dikes

Avoid disposal in AR289.0L-D and place dredged gravel along right bank downstream and extend downstream gravel bar at 289.7R

MET

Utilize disposal behind dikes on LB first to create islands and maintain any gravel in-stream, use exposed sand areas on RB for disposal if needed.

Distant and

Recommended alternate disposal site

14.

Utilize dry cells in this disposal area



Legend

Dredge/Structures

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Mitigation Sites CoverType

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	Proposed Tern Islands
Grav	vel Bed Survey

Total acreage = 165 acres Gravel Beds

Mussel Survey (live - sum)

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Mitigation Sites CoverType

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Dredge/Structures

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	Proposed Tern Islands	
Gravel Bed Survey		

Total acreage = 165 acres

Mussel Survey (live - sum)

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Mitigation Sites CoverType

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Arkansas River Navigation Study JUNE 2005

Map Sheet 63





USACE LITTLE ROCK DISTRICT TULSA DISTRICT



Dredge/Structures

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Prop	osed Tern Islands
Gravel Bed Survey	

Total acreage = 165 acres

Mussel Survey (live - sum)

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Mitigation Sites CoverType

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Dredge/Structures

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- Dredge Area Current (Area routinely dredged - 1995 to 2003) Dredge Area - Proposed
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Gravel Bed Survey Total acreage = 165 acres

Gravel Beds

Mussel Survey (live - sum)

Mitigation Sites CoverType

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Dredge/Structures

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	Structures Current	
	Structures Proposed	
	Proposed Tern Islands	
Gravel Bed Survey		

Total acreage = 165 acres

Mussel Survey (live - sum)

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Mitigation Sites CoverType

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Dredge/Structures

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- Proposed Tern Islands

Gravel Bed Survey Total acreage = 165 acres Gravel Beds

Mussel Survey (live - sum)

Mitigation Sites CoverType

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Arkansas River **Navigation Study JUNE 2005**

Map Sheet 67





USACE LITTLE ROCK DISTRICT TULSA DISTRICT



- Disposal Sites -Approved but Inactive Disposal Sites - Proposed
- ---- Structures Proposed
- Proposed Tern Islands

Mussel Survey (live - sum)

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Dredge/Structures

- Disposal Sites Current
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 Dredge Area - Current (Area routinely dredged - 1995 to 2003)
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- ---- Structures Proposed
- Proposed Tern Islands

Gravel Bed Survey Total acreage = 165 acres

Gravel Beds

Mussel Survey (live - sum)

Mitigation Sites CoverType

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Arkansas River Navigation Study JUNE 2005







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- Disposal Sites Current
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- Proposed Tern Islands

Gravel Bed Survey Total acreage = 165 acres

Gravel Beds

Mussel Survey (live - sum)

Mitigation Sites CoverType

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Map Sheet 70



USACE LITTLE ROCK DISTRICT TULSA DISTRICT

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Legend Dredge/Structures Z Disposal Sites - Current Disposal Sites -Approved but Inactive Disposal Sites - Proposed Dredge Area - Current (Area routinely dredged - 1995 to 2003) Dredge Area - Proposed --- Structures Current ---- Structures Proposed Proposed Tern Islands Gravel Bed Survey Total acreage = 165 acres Gravel Beds Mussel Survey (live - sum) 0 9 1 - 4 9 - 10 • 11 - 20 21 - 30 9 31 - 50 • 51 - 100 **Mitigation Sites** CoverType AG BLH MARSH Arkansas River **Navigation Study JUNE 2005** Map Sheet 71 $\widehat{\mathbf{N}}$ 1:24,000



NOTE: site will be redesigned to preserve mussel patch. Aquatic disposal will only occur if mussels won't be impacted; create HQ marsh; variable depth 1 - 2 ft.

OKSBC4.8L-DI

expand island, design to avoid impacts to mussels; height of disposal will be 1 - 2 ft below water surface



Legend

Dredge/Structures

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 Proposed Tern Islands

Gravel Bed Survey Total acreage = 165 acres Gravel Beds

Mussel Survey (live - sum)

Mitigation Sites CoverType

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Dredge/Structures

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 Proposed Tern Islands

Gravel Bed Survey Total acreage = 165 acres Gravel Beds

Mussel Survey (live - sum)

Mitigation Sites CoverType

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Dredge/Structures

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Pro	oposed Tern Islands
Gravel	Bed Survey

Total acreage = 165 acres

Mussel Survey (live - sum)

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Mitigation Sites CoverType

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Legend Dredge/Structures Z Disposal Sites - Current Disposal Sites -Approved but Inactive Disposal Sites - Proposed Dredge Area - Current (Area routinely dredged - 1995 to 2003) Dredge Area - Proposed Structures Current ---- Structures Proposed Proposed Tern Islands Gravel Bed Survey Total acreage = 165 acres Gravel Beds Mussel Survey (live - sum) 0 9 1 - 4 9 - 10 • 11 - 20 21 - 30 9 31 - 50 • 51 - 100 Mitigation Sites CoverType AG BLH MARSH Arkansas River **Navigation Study JUNE 2005** Map Sheet 75 $\Delta_{\mathbf{N}}$ 1:24,000 ĬHĬ USACE LITTLE ROCK DISTRICT TULSA DISTRICT



Legend Dredge/Structures **Z Disposal Sites - Current** Disposal Sites -Approved but Inactive Disposal Sites - Proposed Dredge Area - Current (Area routinely dredged - 1995 to 2003) Dredge Area - Proposed Structures Current ---- Structures Proposed Proposed Tern Islands Gravel Bed Survey Total acreage = 165 acres Gravel Beds Mussel Survey (live - sum) 0 9 1 - 4 9 - 10 • 11 - 20 21 - 30 9 31 - 50 • 51 - 100

Mitigation Sites CoverType

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Dredge/Structures

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<u>7</u>	Disposal Sites - Current
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Grav	vel Bed Survey

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Mitigation Sites CoverType

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Map Sheet 77





USACE LITTLE ROCK DISTRICT TULSA DISTRICT



Dredge/Structures

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Mussel Survey (live - sum)

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Mitigation Sites CoverType

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alternative disposal site for 367.5 - create tern island/w riprap

ALT OK367.25

NM 368



Legend Dredge/Structures Z Disposal Sites - Current Disposal Sites -Approved but Inactive Disposal Sites - Proposed Dredge Area - Current (Area routinely dredged - 1995 to 2003) Dredge Area - Proposed Structures Current ---- Structures Proposed Proposed Tern Islands Gravel Bed Survey Total acreage = 165 acres Gravel Beds Mussel Survey (live - sum) 0 - 1-4 9 - 10 • 11 - 20 21 - 30 9 31 - 50 • 51 - 100 **Mitigation Sites** CoverType AG BLH MARSH

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Mussel Survey (live - sum)

Mitigation Sites CoverType

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Mussel Survey (live - sum)

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Mitigation Sites CoverType

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	Proposed Tern Islands
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Mussel Survey (live - sum)

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Mitigation Sites CoverType

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Dredge/Structures

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	Structures Current
	Dredge Area - Current (Area routinely dredged - 1995 to 2003) Dredge Area - Proposed
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<u>77</u>	Disposal Sites - Current

Gravel Beds

Mussel Survey (live - sum)

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Mitigation Sites CoverType

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1st priority dispose in terrestrial cell,notch internal & lower end dikes;2nd priority dispose in dike cell above and below bridge.

Relocate gravel to dike fields created on Right descending banck at rm 392.1-393.0; monitor & adapt as needed

Notch dikes, create tern island in middle cell

CK392

NM 391

NM 390



Legend Dredge/Structures **Z Disposal Sites - Current** Disposal Sites -Approved but Inactive Disposal Sites - Proposed Dredge Area - Current (Area routinely dredged - 1995 to 2003) Dredge Area - Proposed Structures Current ---- Structures Proposed Proposed Tern Islands Gravel Bed Survey Total acreage = 165 acres Gravel Beds Mussel Survey (live - sum) 0 - 1-4 9 - 10 • 11 - 20 21 - 30 9 31 - 50 • 51 - 100 **Mitigation Sites** CoverType AG BLH MARSH Arkansas River **Navigation Study JUNE 2005** Map Sheet 84 $\widehat{\mathbf{N}}$ 1:24,000





Dredge/Structures

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Z Disposal Sites - Current		
Disposal Sites - Approved but Inactive		
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Dredge Area - Current (Area routinely dredged - 1995 to 2003)		
Dredge Area - Proposed		
 Structures Current 		
Structures Proposed		
Proposed Tern Islands		
Gravel Bed Survey		

Gravel Bed Survey Total acreage = 165 acres Gravel Beds

Mussel Survey (live - sum)

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Mitigation Sites CoverType

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Mitigation Sites CoverType

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Legend Dredge/Structures Z Disposal Sites - Current Disposal Sites -Approved but Inactive Disposal Sites - Proposed Dredge Area - Current (Area routinely dredged - 1995 to 2003) Dredge Area - Proposed Structures Current ---- Structures Proposed Proposed Tern Islands Gravel Bed Survey Total acreage = 165 acres Gravel Beds Mussel Survey (live - sum) 0 - 1-4 9 - 10 • 11 - 20 21 - 30 9 31 - 50 • 51 - 100 **Mitigation Sites** CoverType AG BLH MARSH Arkansas River **Navigation Study JUNE 2005** Map Sheet 89 $\widehat{\mathbf{N}}$ 1:24,000





Dredge/Structures

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 Proposed Tern Islands

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Gravel Bed Survey Total acreage = 165 acres

Gravel Beds

Mussel Survey (live - sum)

Mitigation Sites CoverType

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Dredge/Structures

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Grav	el Bed Survey

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Mussel Survey (live - sum)

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Mitigation Sites CoverType

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Dredge/Structures

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	Disposal Sites - Approved but Inactive Disposal Sites - Proposed
	Dredge Area - Current (Area routinely dredged - 1995 to 2003
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	Structures Current
	Structures Proposed
	Proposed Tern Islands
Grav	vel Bed Survev

Gravel Bed Survey Total acreage = 165 acres Gravel Beds

Mussel Survey (live - sum)

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Mitigation Sites CoverType

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Dredge/Structures

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<u>7</u>	Disposal Sites - Current
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	Dredge Area - Current (Area routinely dredged - 1995 to 2003)
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	Structures Current
	Structures Proposed
	Proposed Tern Islands
Grav	/el Bed Survey

Total acreage = 165 acres

Mussel Survey (live - sum)

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Mitigation Sites CoverType

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