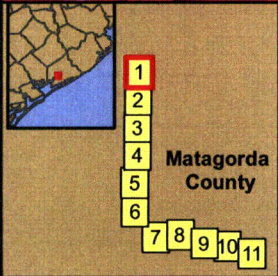
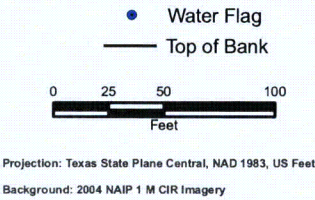


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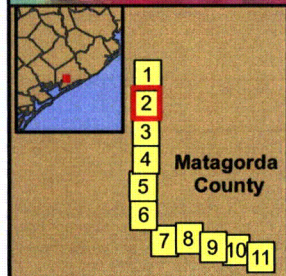
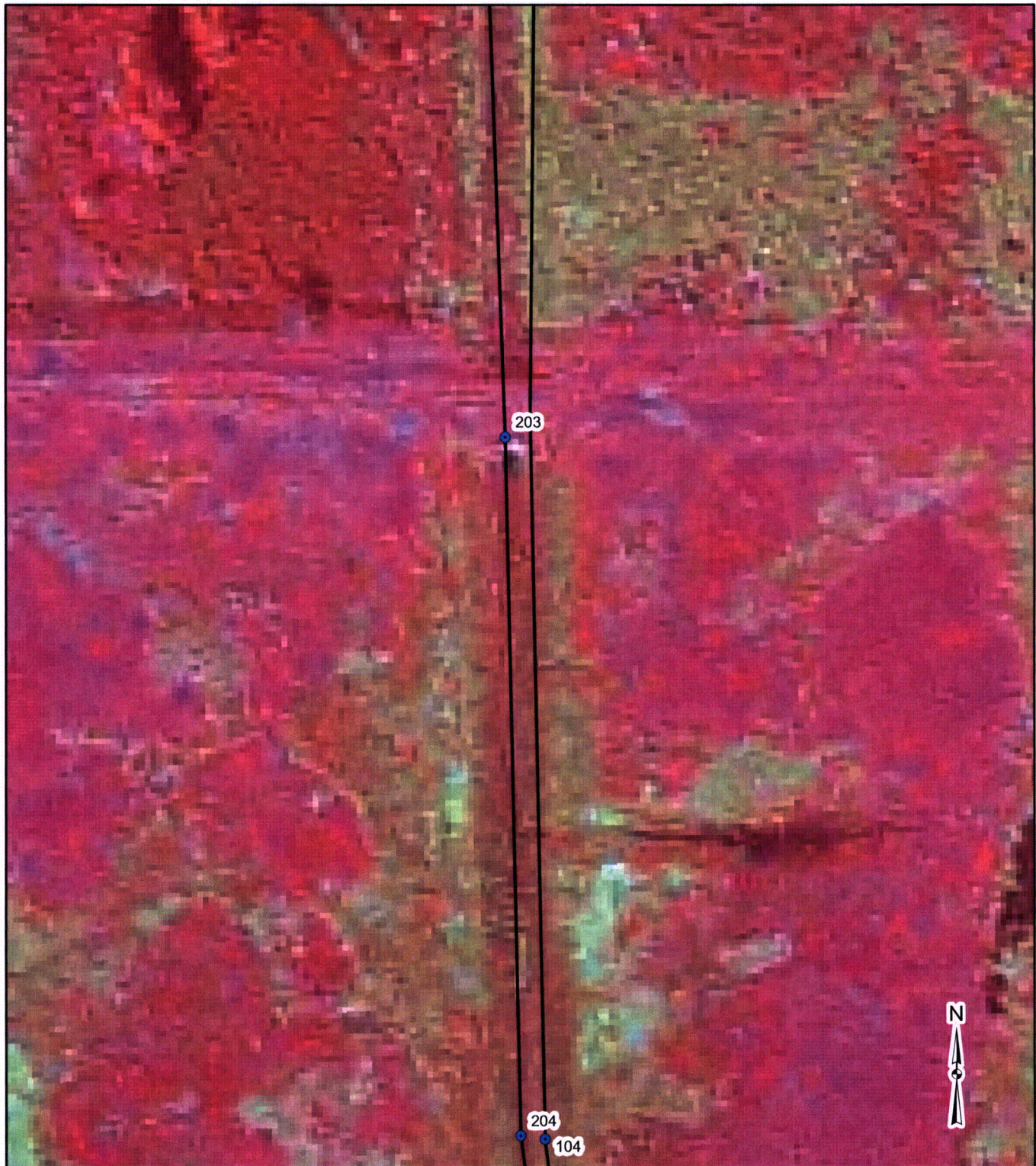
Stream S017
South Texas Project Units 3 & 4
Matagorda County, TX

Page 1 of 11



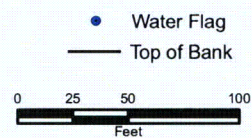
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ENSR	AECOM
Date: September 10, 2008	
Project No.: 10720-008	
By: CJ Bowes	

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Stream S017
South Texas Project Units 3 & 4
Matagorda County, TX

Page 2 of 11



Projection: Texas State Plane Central, NAD 1983, US Feet
Background: 2004 NAIP 1 M CIR Imagery

STPNOC

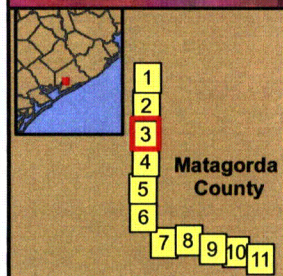
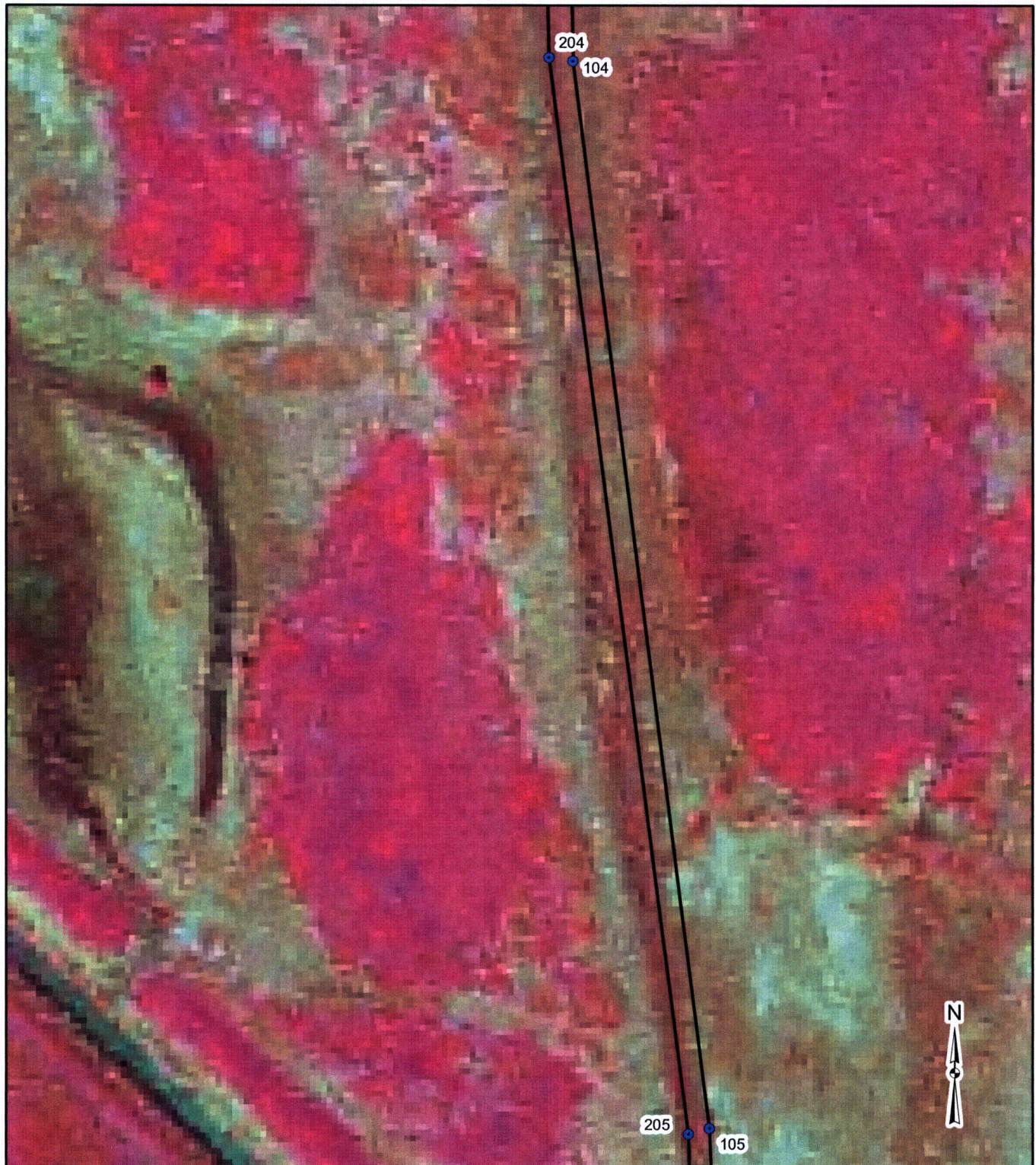
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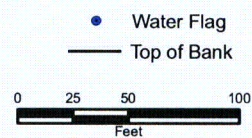
By: CJ Bowes

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Stream S017
South Texas Project Units 3 & 4
Matagorda County, TX

Page 3 of 11



Projection: Texas State Plane Central, NAD 1983, US Feet
Background: 2004 NAIP 1 M CIR Imagery

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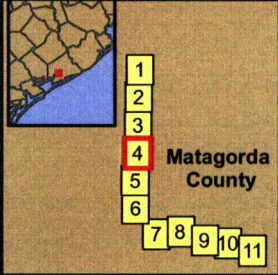
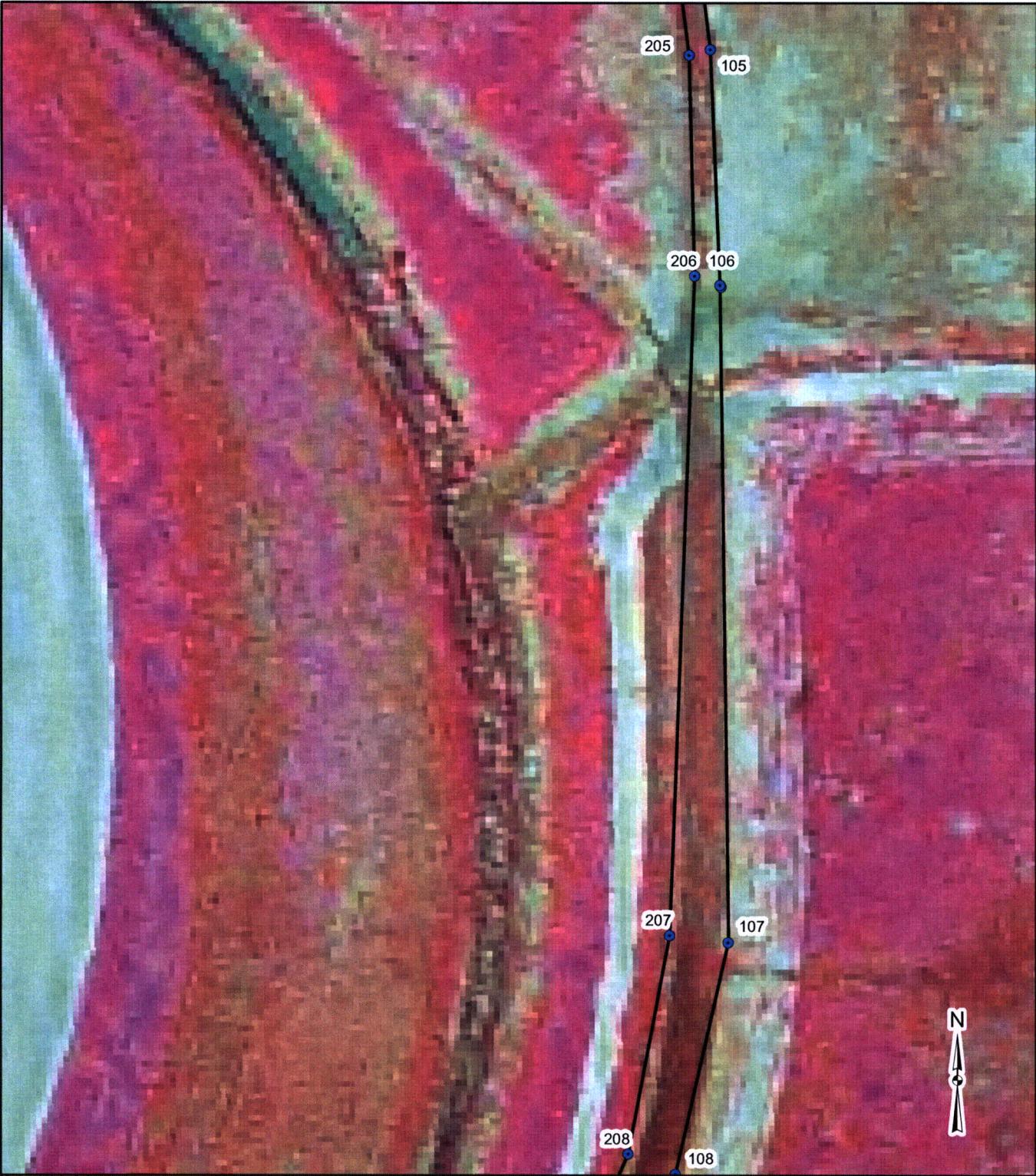
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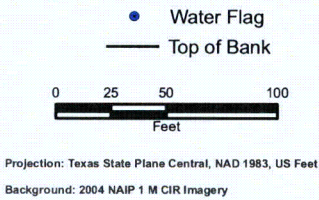
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Stream S017
South Texas Project Units 3 & 4
Matagorda County, TX

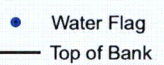
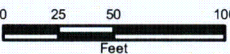
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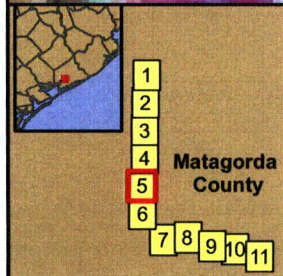
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By: CJ Bowes	

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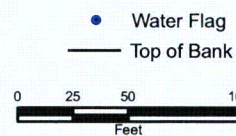
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	Page 5 of 11		ENSR AECOM
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		By: CJ Bowes	

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Stream S017
South Texas Project Units 3 & 4
Matagorda County, TX

Page 6 of 11



Projection: Texas State Plane Central, NAD 1983, US Feet
Background: 2004 NAIP 1 M CIR Imagery

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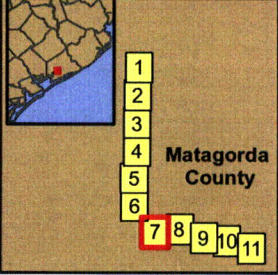
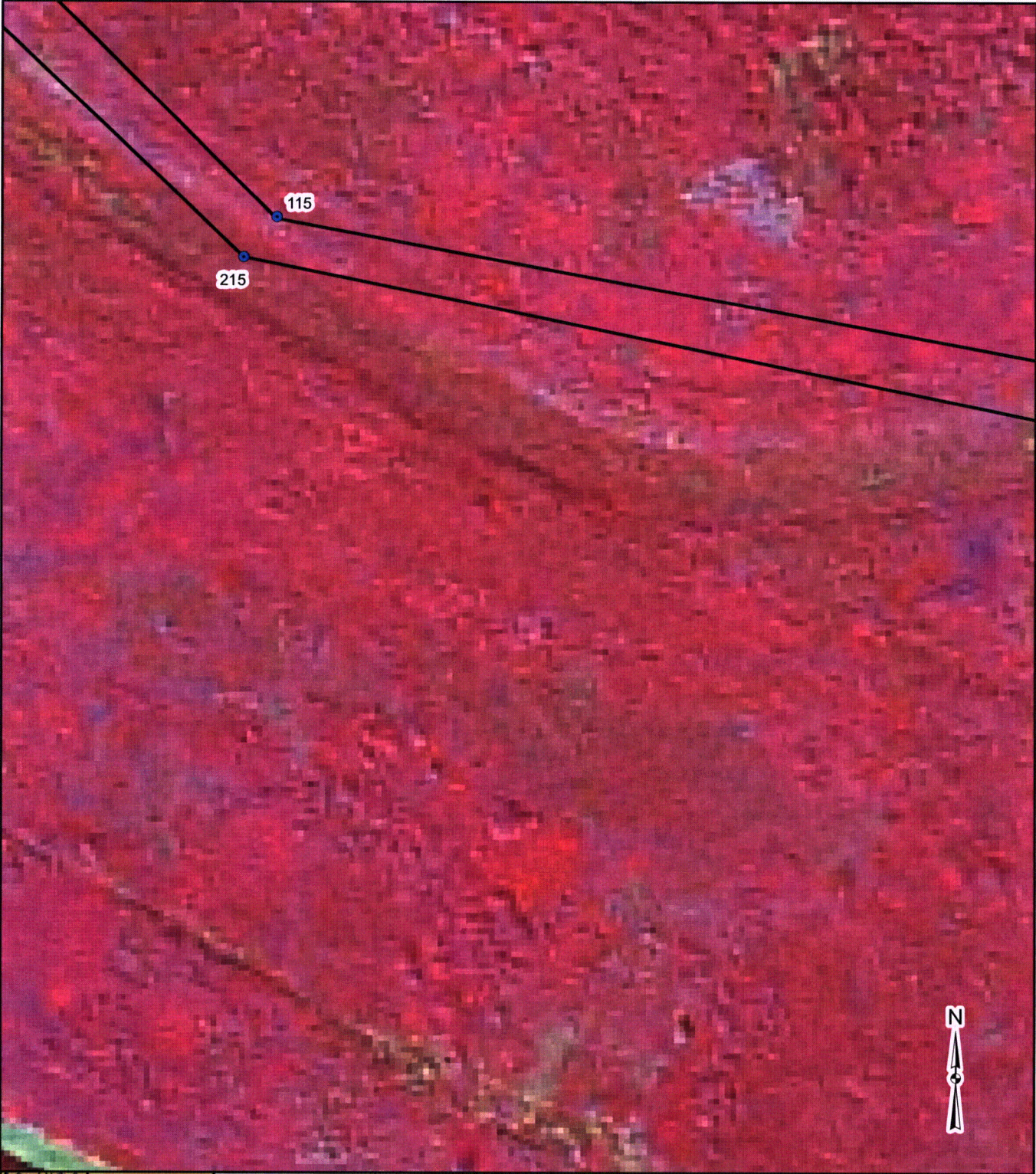
ENSR | AECOM

Date: September 10, 2008

Project No.: 10720-008

By: CJ Bowes

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Stream S017
South Texas Project Units 3 & 4
Matagorda County, TX

Page 7 of 11

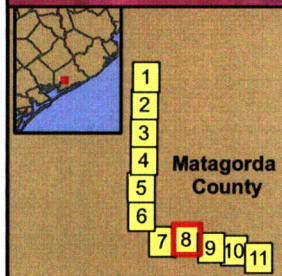
• Water Flag
— Top of Bank

0 25 50 100
Feet

Projection: Texas State Plane Central, NAD 1983, US Feet
Background: 2004 NAIP 1 M CIR Imagery

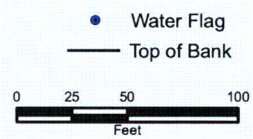
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By: CJ Bowes	

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Stream S017
South Texas Project Units 3 & 4
Matagorda County, TX

Page 8 of 11



Projection: Texas State Plane Central, NAD 1983, US Feet
Background: 2004 NAIP 1 M CIR Imagery

STPNOC

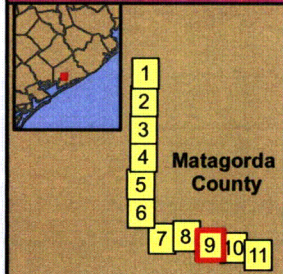
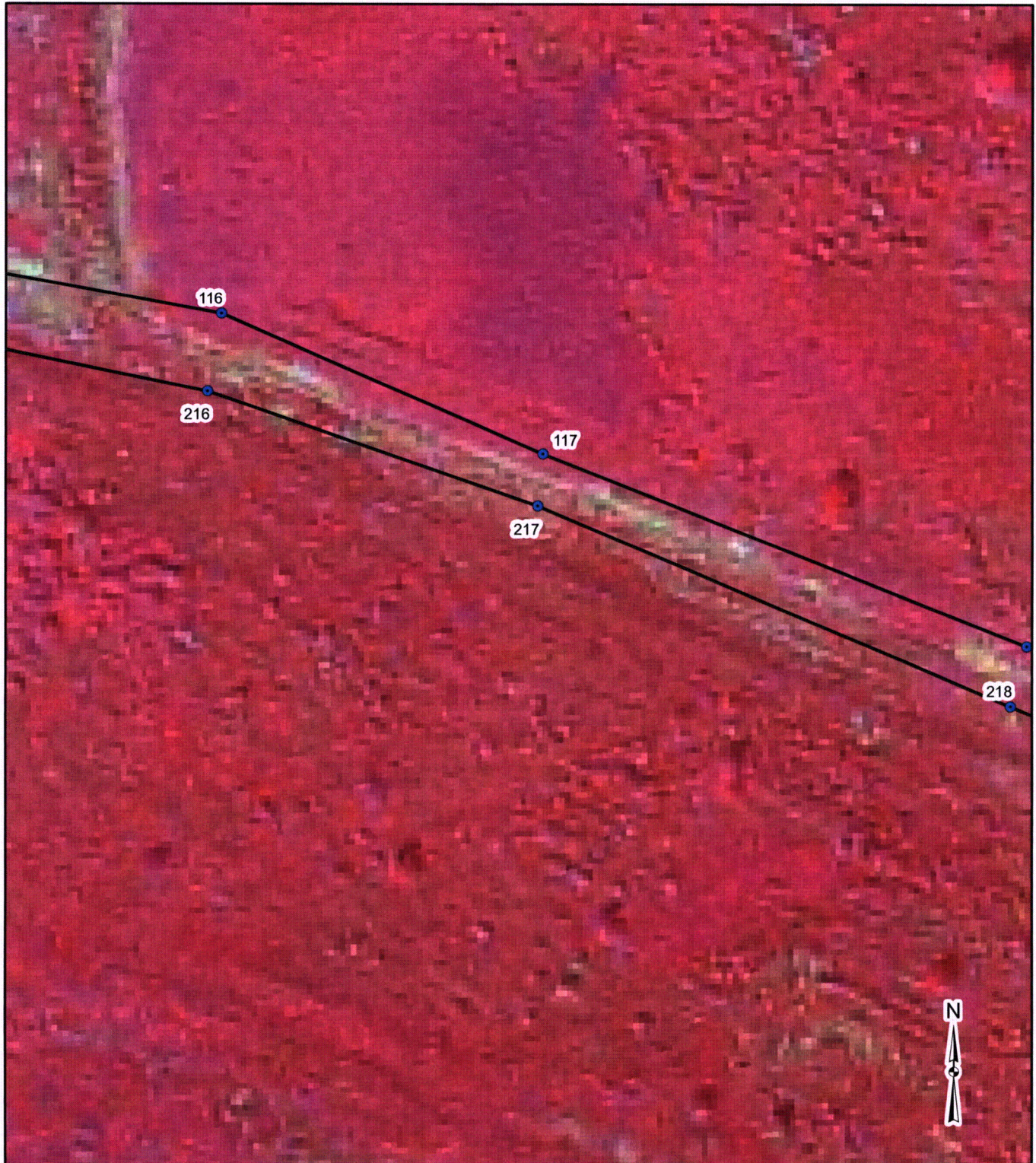
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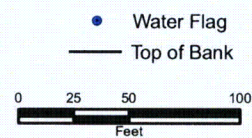
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Stream S017
South Texas Project Units 3 & 4
Matagorda County, TX

Page 9 of 11



Projection: Texas State Plane Central, NAD 1983, US Feet
Background: 2004 NAIP 1 M CIR Imagery

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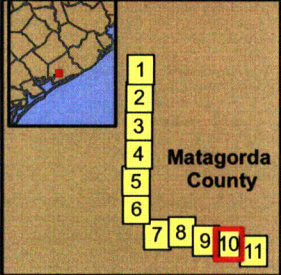
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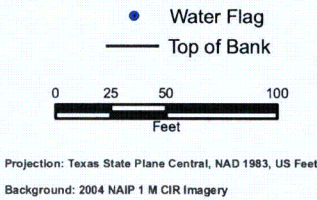
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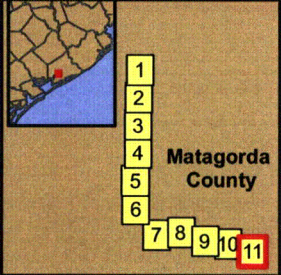
Stream S017
South Texas Project Units 3 & 4
Matagorda County, TX

Page 10 of 11



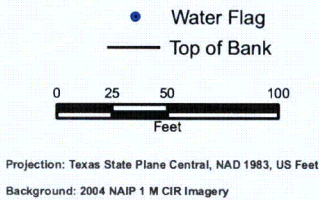
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Stream S017
South Texas Project Units 3 & 4
Matagorda County, TX

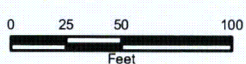
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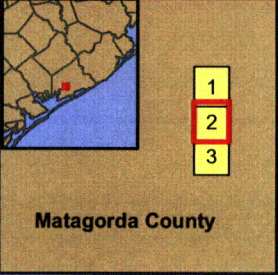
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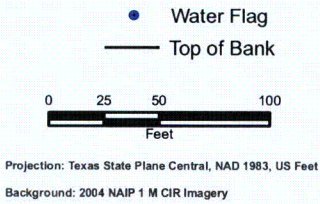
 1 2 3 Matagorda County	Stream S018 South Texas Project Units 3 & 4 Matagorda County, TX Page 1 of 3 • Water Flag Top of Bank  0 25 50 100 Feet Projection: Texas State Plane Central, NAD 1983, US Feet Background: 2004 NAIP 1 M CIR Imagery	STPNOC ENSR AECOM Date: September 10, 2008 Project No.: 10720-008 By: CJ Bowes

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Stream S018
South Texas Project Units 3 & 4
Matagorda County, TX

Page 2 of 3



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Project No.: 10720-008	
By: CJ Bowes	

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Matagorda County

1
2
3

Stream S018
South Texas Project Units 3 & 4
Matagorda County, TX

Page 3 of 3

• Water Flag
— Top of Bank

0 25 50 100
Feet

Projection: Texas State Plane Central, NAD 1983, US Feet
Background: 2004 NAIP 1 M CIR Imagery

STPNOC

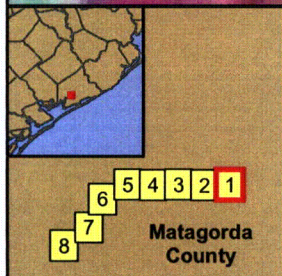
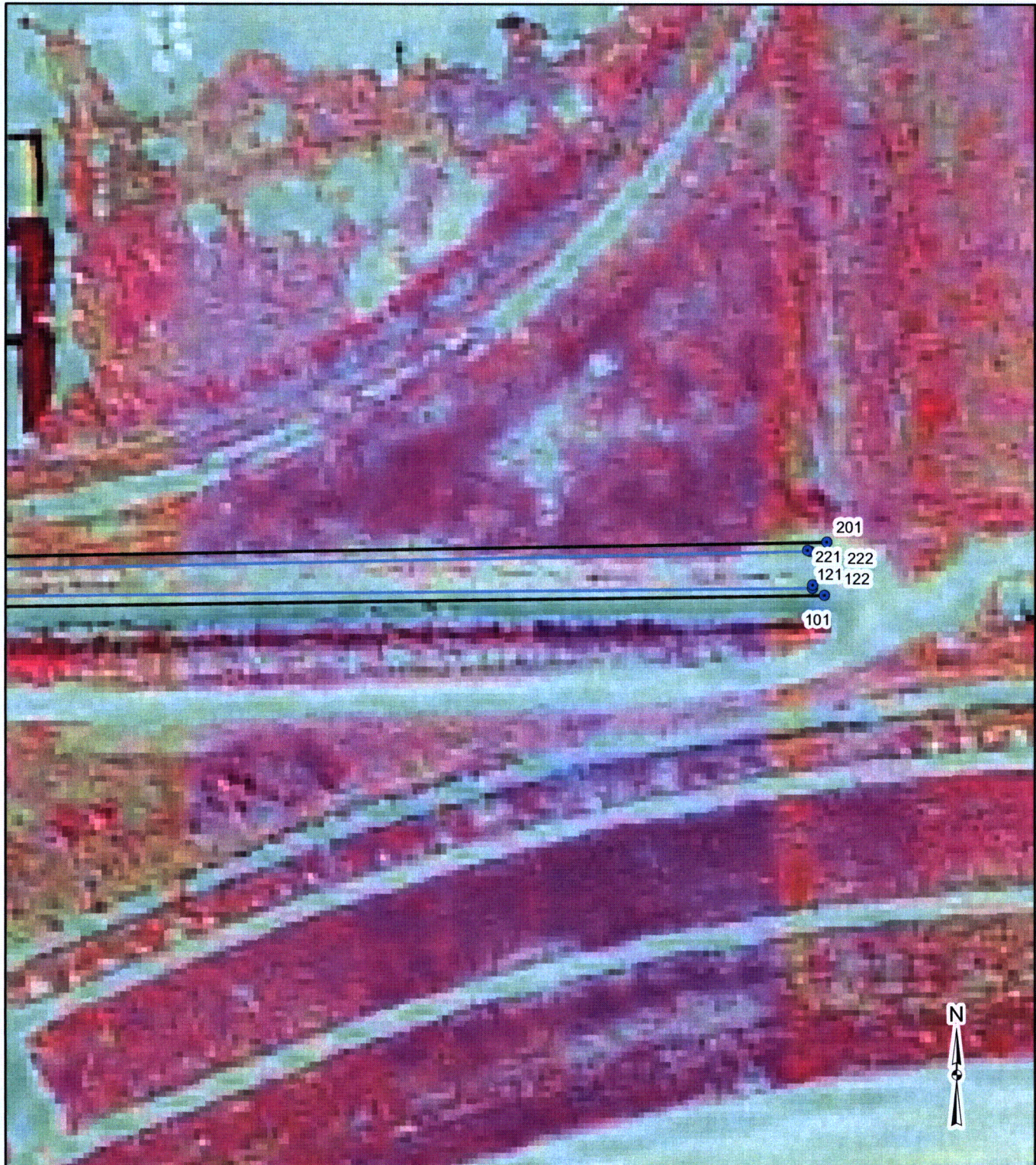
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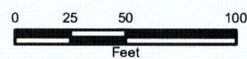
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Stream S020
South Texas Project Units 3 & 4
Matagorda County, TX

Page 1 of 8

- Water Flag
- Top of Bank
- Waterlines



Projection: Texas State Plane Central, NAD 1983, US Feet
Background: 2004 NAIP 1 M CIR Imagery

STPNOC

ENSR | AECOM

Date: September 10, 2008

Project No.: 10720-008

By: CJ Bowes

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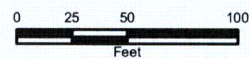


Matagorda
County

Stream S020
South Texas Project Units 3 & 4
Matagorda County, TX

Page 2 of 8

- Water Flag
- Top of Bank
- Waterlines



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Background: 2004 NAIP 1 M CIR Imagery

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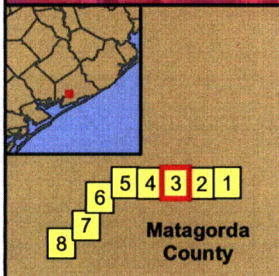
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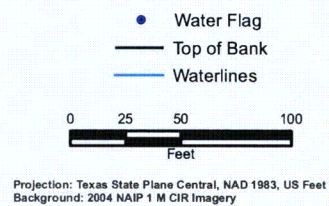
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Stream S020
South Texas Project Units 3 & 4
Matagorda County, TX

Page 3 of 8



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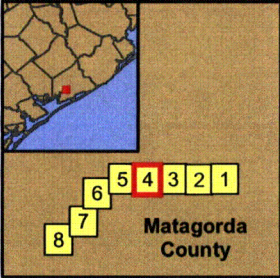
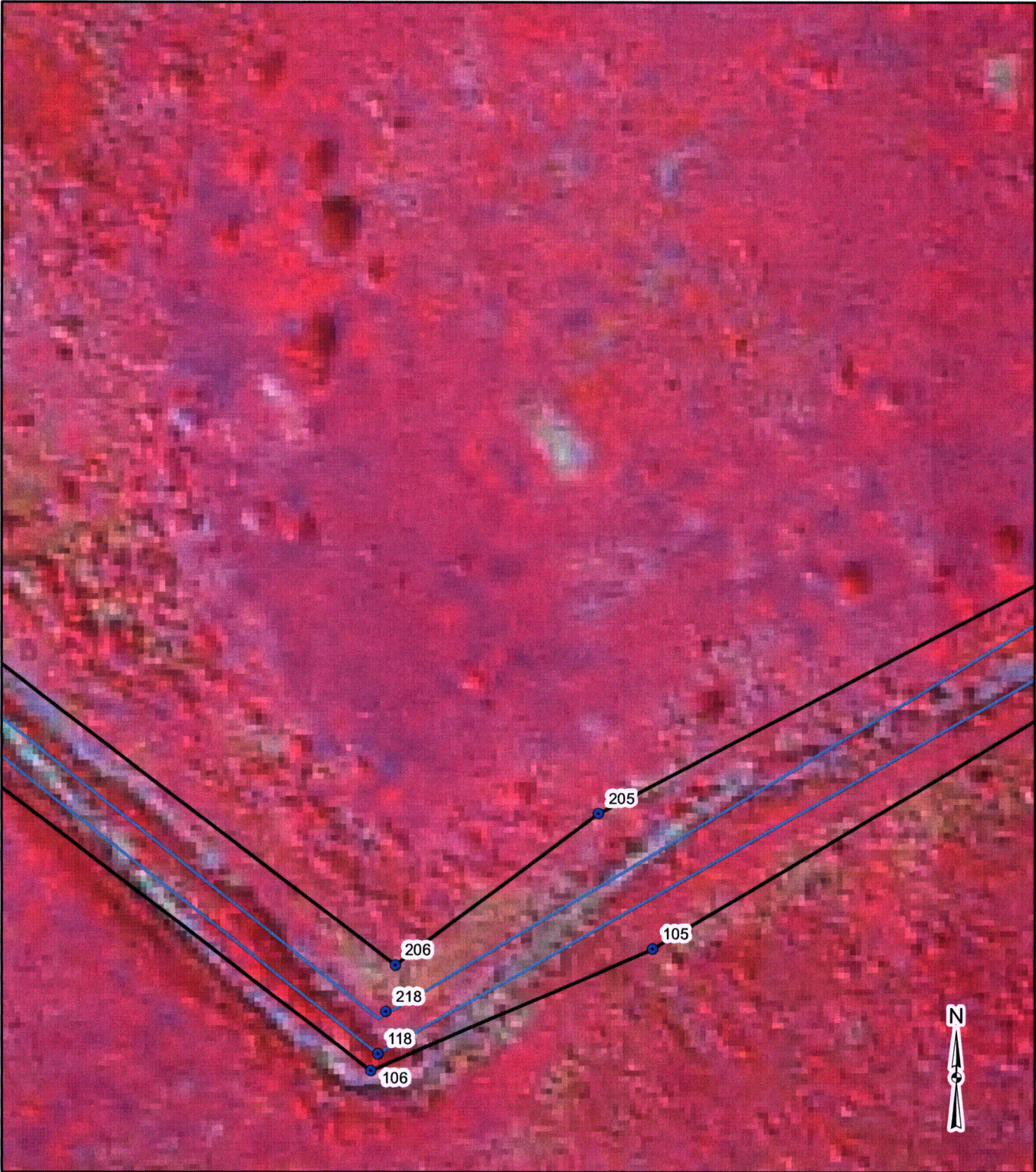
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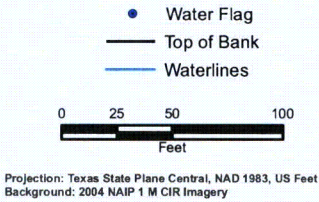
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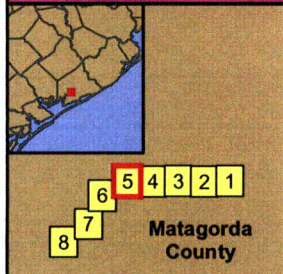
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South Texas Project Units 3 & 4
Matagorda County, TX

Page 4 of 8



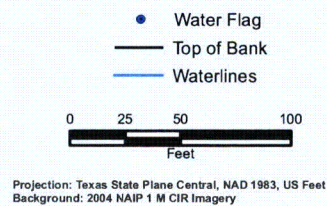
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Stream S020
South Texas Project Units 3 & 4
Matagorda County, TX

Page 5 of 8



STPNOC

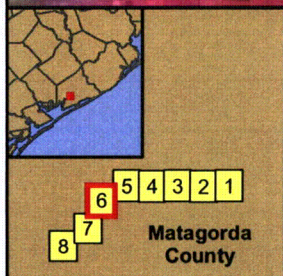
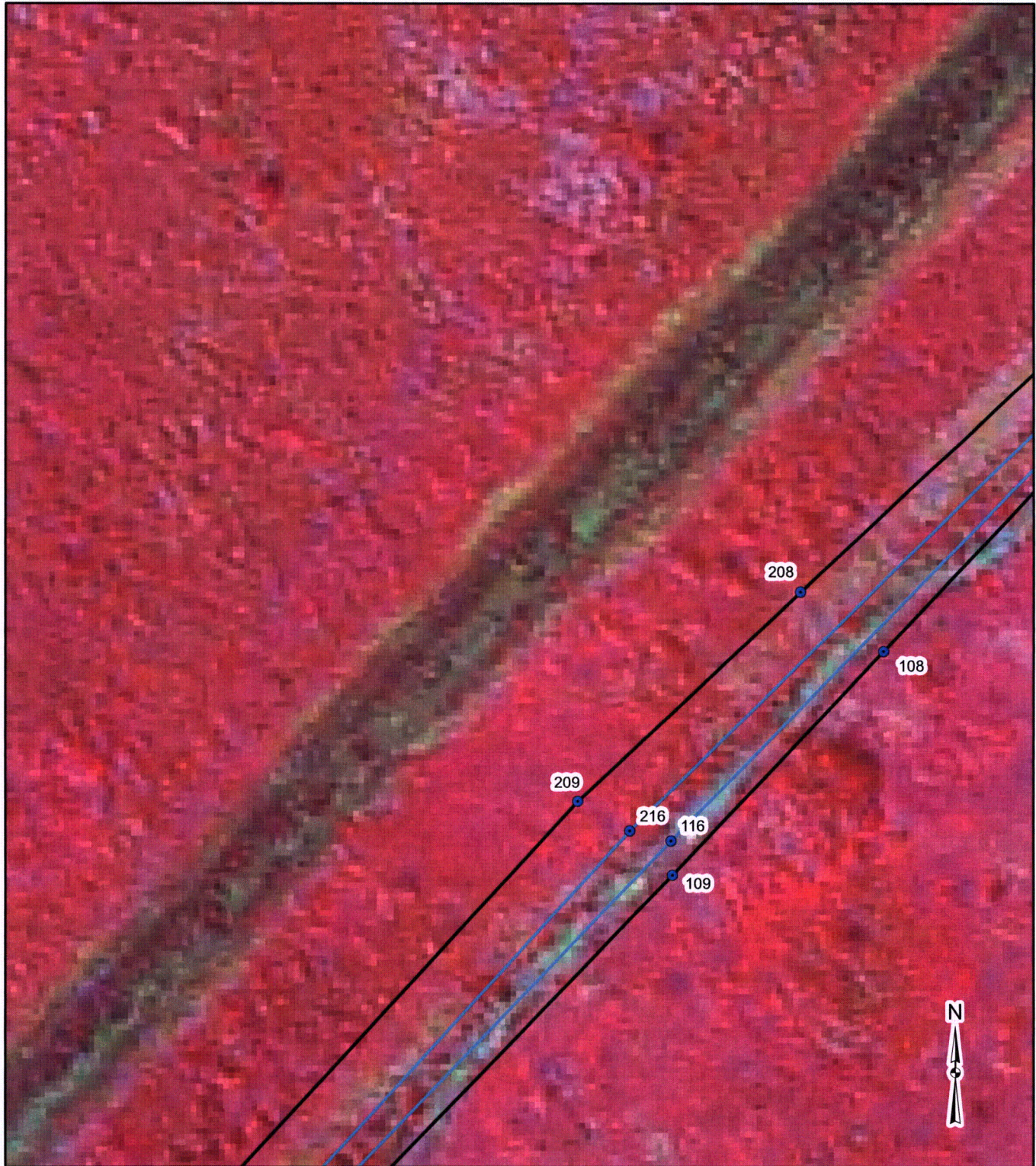
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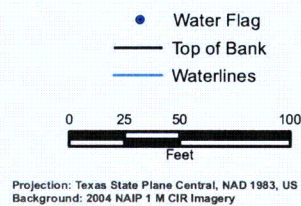
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Stream S020
South Texas Project Units 3 & 4
Matagorda County, TX

Page 6 of 8



STPNOC

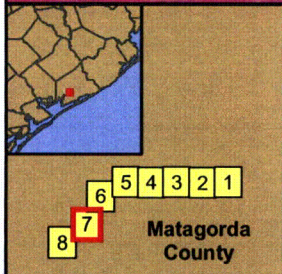
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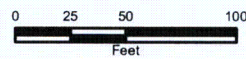
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Stream S020
South Texas Project Units 3 & 4
Matagorda County, TX

Page 7 of 8

- Water Flag
- Top of Bank
- Waterlines



Projection: Texas State Plane Central, NAD 1983, US Feet
Background: 2004 NAIP 1 M CIR Imagery

STPNOC

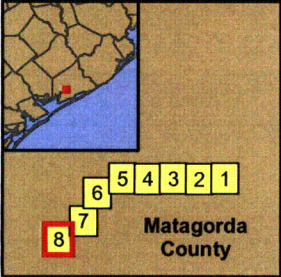
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Project No.: 10720-008

By: CJ Bowes

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Stream S020
South Texas Project Units 3 & 4
Matagorda County, TX

Page 8 of 8

• Water Flag
— Top of Bank
— Waterlines

0 25 50 100
Feet

Projection: Texas State Plane Central, NAD 1983, US Feet
Background: 2004 NAIP 1 M CIR Imagery

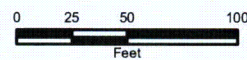
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Project No.: 10720-008	
By: CJ Bowes	

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Stream S022
South Texas Project Units 3 & 4
Matagorda County, TX

- Water Flag
- Top of Bank



Projection: Texas State Plane Central, NAD 1983, US Feet
Background: 2004 NAIP 1 M CIR Imagery

STPNOC

ENSR | AECOM

Date: September 10, 2008

Project No.: 10720-008

By: CJ Bowes

WATERBODY

U7-C-STP-NRC-090019
Attachment 2 (Page 40 of 65)

ENSR/AECOM
4888 Loop Central Dr. Suite 600
Houston, TX. 77081
(713) 807-6503

Waterbody Name:

Waterbody ID No.:

5001

Centerline Re-Route Access Road Warehouse Site Other:

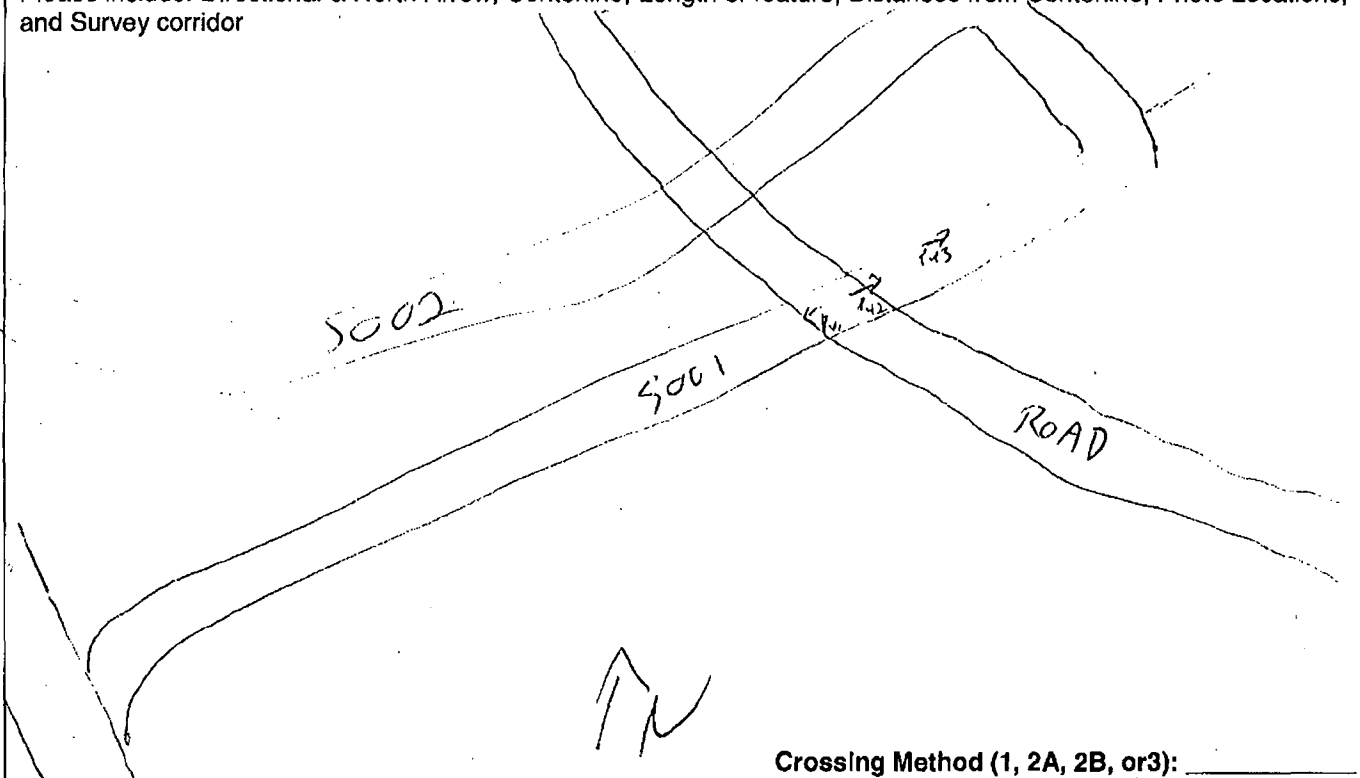
Associated Wetland No.:

Date: 8/26/08	Client/Project Name & No.: STPNOC 10730-008	Milepost:
Investigators: T. WYCOFF S. GRIFFITH	State/County/Municipality: TX/MATAGORDA	Quad Name:
Logbook No.:	Logbook Page No.:	Block/Lot/Tract No.:
Photo Roll:	Picture No.: 41, 42, 43	

PHYSICAL ATTRIBUTES

Waterbody Sketch Plan

Please include: Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor



Crossing Method (1, 2A, 2B, or 3):

Waterbody Type	Lake	Pond	Borrow Pit	River	Stream	Ag. Ditch	Other: MANMADE DRAINAGE
Stream Flow	Fast	Moderate	Slow	Very Slow	None		
Flow type	Perennial	Intermittent	Direction: NE & SW				
Stream Depth (in.)	0-3	3-6	6-12	12-18	18-24	24-36	36-48
Stream Width (ft.)	Top of Bank (at crossing location): 69 ft			Water Surface (at crossing location): 24 ft			
Bank Height (ft.) (looking downstream else give direction you are facing here:)	Left	0-2	2-4	4-6	6-8	8+	
	Right	0-2	2-4	4-6	6-8	8+	
Bank Slope (°) (looking downstream else give direction you are facing here:)	Left	0-20	20-40	40-60	60-80	80+	
	Right	0-20	20-40	40-60	60-80	80+	

WATERBODY

Waterbody ID No.: 5001

Date: 8/20/08	Client/Project Name & No.: STPNRC 10720 - 008	Milepost:
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QUALITATIVE ATTRIBUTES

Water Appearance	Clear	Slightly Turbid	Turbid	Very Turbid	Color:
	Floating algal mats	Obvious surface scum	Sheen on surface	Dry	Other:
Stream Substrate %	Bedrock	Gravel	Sand	Silt/Clay 100%	Organic
Aquatic Habitats	Sand Bar	Gravel Bar	Mud Bar	Pools	Undercut Banks
	Overhanging trees/shrubs	In-stream emergent plants	In-stream submerged plants	Bank root systems	Fringing Wetlands
Aquatic Organisms Observed	Waterfowl	Fish (adult)	Fish (juvenile)	Frogs	Turtles
	Snakes	Wading Birds	Other:		
	Invertebrates:	Intolerant	Facultative	Tolerant	None
Riparian Zone	Width of natural vegetation zone from edge of active channel out onto flood plain: 20 (ft)				
	Circle vegetative layers: trees shrubs herbs Comments:				
	☐ Significant bare areas within riparian zone ☐ Evidence of non-buffered concentrated flows Other:				
Channel Condition	Channelization/Braiding	Unnatural straitening	Downcutting	Dikes/Berms	Excessive bank erosion
Disturbances	☐ Livestock access to riparian zone ☐ Waste discharge pipes present		☐ Manure in stream or on banks ☐ Other:		

T/E SPECIES / SUITABLE HABITAT	Habitat ID No.:
NONE OBSERVED	

Comments (e.g. pipeline crossing angle, construction constraints, erosion potential, existing disturbances, and meanders)		
STREAM QUALITY (Indicate)	☐ High	☐ Moderate ☐ Low
High Quality: Natural channel (no structures or dikes; no evidence of downcutting or excessive lateral cutting); evidence of past channel alteration with significant recovery; any dikes/levees are set back to provide access to adequate flood plain; natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots that extend to the base-flow elevation; water clear to tea-colored; no barriers to fish movement (seasonal water withdrawals prevent movement); many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man; intolerant microinvertebrates present. Moderate Quality: Altered channel evidenced by rip rap and/or channelization; dikes/levees restrict flood plain width; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function of riparian vegetation only moderately compromised; banks moderately unstable (outside bends actively eroding with few fallen trees); considerable water cloudiness, submerged objects covered with green film; moderate odor; minor barriers to fish movement; 4-3 fish cover types available; fair aquatic habitat; minimum disturbance by livestock or man; Facultative microinvertebrates present. Low Quality: Channel is actively downcutting or widening; rip rap and channelization excessive; flood plain restricted by dikes/levees; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; Banks unstable (inside and outside bends actively eroding with numerous fallen trees); water very turbid to muddy; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; green color to water; severe barriers to fish movement; 2-0 fish cover types available; little to no aquatic habitat; severe disturbance by livestock or man; tolerant or no microinvertebrates present.		

WATERBODY

U7-C-STP-NRC-090019
Attachment 2 (Page 42 of 65)

ENSR/AECOM
4888 Loop Central Dr. Suite 600
Houston, TX. 77081
(713) 807-6503

Waterbody Name:

Waterbody ID No.:

SC02

Centerline Re-Route Access Road Warehouse Site Other:

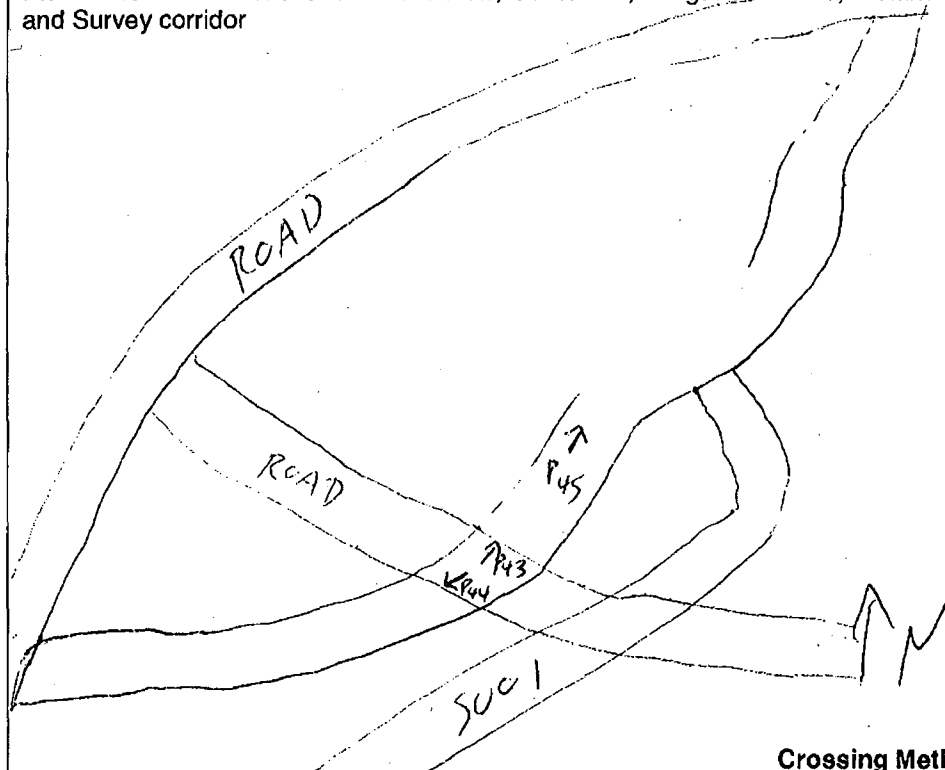
Associated Wetland No.:

Date: 8/27/08	Client/Project Name & No.: STPNOC 10720-008	Milepost:
Investigators: T. WYCOFF S. GRIFFITH	State/County/Municipality: TX/MARAGORDA	Quad Name:
Logbook No.:	Logbook Page No.:	Block/Lot/Tract No.:
Photo Roll:	Picture No.: 43, 44, 45	

PHYSICAL ATTRIBUTES

Waterbody Sketch Plan

Please include: Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor



Crossing Method (1, 2A, 2B, or 3):

Waterbody Type	Lake	Pond	Borrow Pit	River	Stream	Ag. Ditch	Other:		
Stream Flow	Fast	Moderate	Slow	Very Slow	None				
Flow type	Perennial	Intermittent	Direction: _____						
Stream Depth (in.)	0-3	3-6	6-12	12-18	18-24	24-36	36-48	48-60	60+
Stream Width (ft.)	Top of Bank (at crossing location): 87 ft				Water Surface (at crossing location): 15 ft				
Bank Height (ft.) (looking downstream else give direction you are facing here: _____)	Left	0-2	2-4	4-6	6-8	8+			
	Right	0-2	2-4	4-6	6-8	8+			
Bank Slope (°) (looking downstream else give direction you are facing here: _____)	Left	0-20	20-40	40-60	60-80	80+			
	Right	0-20	20-40	40-60	60-80	80+			

WATERBODY

Waterbody ID No.: 5002

Date: 8/27/08	Client/Project Name & No.: STP NUC 16720-008	Milepost:
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QUALITATIVE ATTRIBUTES

Water Appearance	Clear	Slightly Turbid	Turbid	Very Turbid	Color:
	Floating algal mats	Obvious surface scum	Sheen on surface	Dry	Other:
Stream Substrate %	Bedrock	Gravel	Sand	Silt/Clay 100%	Organic
Aquatic Habitats	Sand Bar	Gravel Bar	Mud Bar	Pools	Undercut Banks
	Overhanging trees/shrubs	In-stream emergent plants	In-stream submerged plants	Bank root systems	Fringing Wetlands
Aquatic Organisms Observed	Waterfowl	Fish (adult)	Fish (juvenile)	Frogs	Turtles
	Snakes	Wading Birds	Other COYOTE		
	Invertebrates:	Intolerant	Facultative	Tolerant	None
Riparian Zone	Width of natural vegetation zone from edge of active channel out onto flood plan: (ft)				
	Circle vegetative layers: trees shrubs herbs Comments:				
	☐ Significant bare areas within riparian zone ☐ Evidence of non-buffered concentrated flows Other:				
Channel Condition	Channelization/Braiding	Unnatural straitening	Downcutting	Dikes/Berms	Excessive bank erosion
Disturbances	☐ Livestock access to riparian zone ☐ Waste discharge pipes present		☐ Manure in stream or on banks ☐ Other:		

T/E SPECIES / SUITABLE HABITAT	Habitat ID No.:
NONE OBSERVED	

Comments (e.g. pipeline crossing angle, construction constraints, erosion potential, existing disturbances, and meanders)		
SLOW FLOW ABOVE CONNECTION TO 5001, LITTLE TO NO FLOW DOWNSTREAM		
STREAM QUALITY (Indicate)	☐ High	☐ Moderate ☐ Low
High Quality: Natural channel (no structures or dikes; no evidence of downcutting or excessive lateral cutting); evidence of past channel alteration with significant recovery; any dikes/levees are set back to provide access to adequate flood plain; natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots that extend to the base-flow elevation; water clear to tea-colored; no barriers to fish movement (seasonal water withdrawals prevent movement); many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man; intolerant microinvertebrates present. Moderate Quality: Altered channel evidenced by rip rap and/or channelization; dikes/levees restrict flood plain width; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function of riparian vegetation only moderately compromised; banks moderately unstable (outside bends actively eroding with few fallen trees); considerable water cloudiness, submerged objects covered with green film; moderate odor; minor barriers to fish movement; 4-3 fish cover types available; fair aquatic habitat; minimum disturbance by livestock or man; Facultative microinvertebrates present. Low Quality: Channel is actively downcutting or widening; rip rap and channelization excessive; flood plain restricted by dikes/levees; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; Banks unstable (inside and outside bends actively eroding with numerous fallen trees); water very turbid to muddy; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; green color to water; severe barriers to fish movement; 2-0 fish cover types available; little to no aquatic habitat; severe disturbance by livestock or man; tolerant or no microinvertebrates present.		

WATERBODY

Waterbody Name:

Waterbody ID No.: 5017

Centerline Re-Route Access Road Warehouse Site Other:

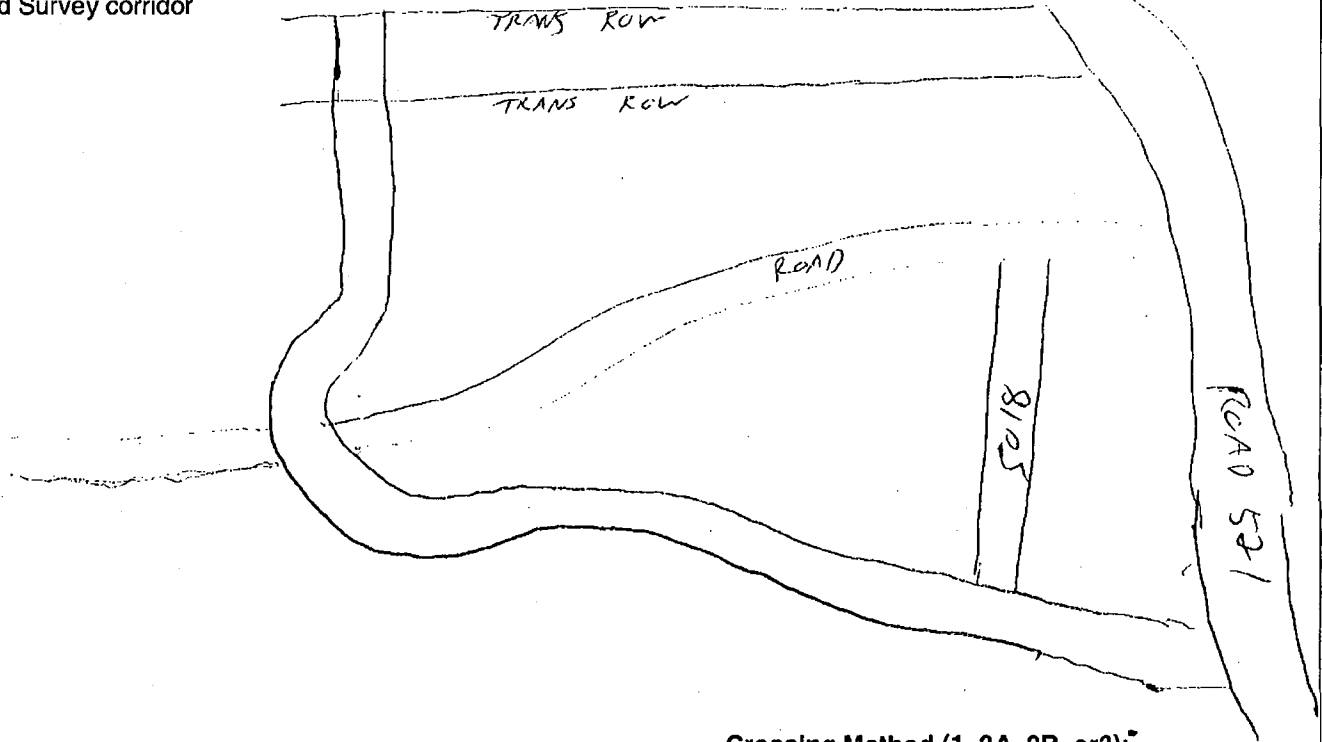
Associated Wetland No.:

Date: <u>8/27/08</u>	Client/Project Name & No.: <u>STP NUC 1072-008</u>	Milepost:
Investigators: <u>T. WYCOFF</u> <u>S. GRIFFITH</u>	State/County/Municipality: <u>TX / MATAGORDA</u>	Quad Name:
Logbook No.:	Logbook Page No.:	Block/Lot/Tract No.:
Photo Roll:	Picture No.:	

PHYSICAL ATTRIBUTES

Waterbody Sketch Plan

Please include: Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor



Crossing Method (1, 2A, 2B, or 3):

Waterbody Type	Lake	Pond	Borrow Pit	River	Stream	Ag. Ditch	<u>Other</u> <u>MANNMADE DITCH</u>			
Stream Flow	Fast	Moderate			Slow	Very Slow			<u>None</u>	
Flow type	Perennial	<u>Intermittent</u>			Direction: <u>N to S then NW to SE</u>					
Stream Depth (In.)	<u>0-3</u>	3-6	6-12	12-18	18-24	24-36	36-48	48-60	60+	
Stream Width (ft.)	Top of Bank (at crossing location):				Water Surface (at crossing location):					
Bank Height (ft.) (looking downstream else give direction you are facing here:)	Left	<u>0-2</u>	2-4		4-6		6-8		8+	
	Right	<u>0-2</u>	2-4		4-6		6-8		8+	
Bank Slope (°) (looking downstream else give direction you are facing here:)	Left	<u>0-20</u>	20-40		40-60		60-80		80+	
	Right	<u>0-20</u>	20-40		40-60		60-80		80+	

WATERBODY

U7-C-STP-NRC-090019
Attachment 2 (Page 45 of 65)

ENSR/AECOM
4885 Loop Central Dr. Suite 600
Houston, TX. 77081
(713) 807-6503

Waterbody ID No.: 5017

Date: 8/12/08	Client/Project Name & No.: STP NRC 10700-008	Milepost:
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QUALITATIVE ATTRIBUTES

Water Appearance	Clear	Slightly Turbid	Turbid	Very Turbid	Color:
	Floating algal mats	Obvious surface scum	Sheen on surface	Dry	Other:
Stream Substrate %	Bedrock	Gravel	Sand	Silt/Clay 20	Organic 80
Aquatic Habitats	Sand Bar	Gravel Bar	Mud Bar	Pools	Undercut Banks
	Overhanging trees/shrubs	In-stream emergent plants	In-stream submerged plants	Bank root systems	Fringing Wetlands
Aquatic Organisms Observed	Waterfowl	Fish (adult)	Fish (juvenile)	Frogs	Turtles
	Snakes	Wading Birds	Other:		
	Invertebrates:	Intolerant	Facultative	Tolerant	None
Riparian Zone	Width of natural vegetation zone from edge of active channel out onto flood plain: _____ (ft) Circle vegetative layers: trees shrubs herbs <u>Comments:</u> ☐ Significant bare areas within riparian zone ☐ Evidence of non-buffered concentrated flows <u>Other:</u>				
Channel Condition	Channelization/Braiding	Unnatural straitening	Downcutting	Dikes/Berns	Excessive bank erosion
Disturbances	☐ Livestock access to riparian zone ☐ Waste discharge pipes present		☐ Manure in stream or on banks ☐ Other: _____		

T/E SPECIES / SUITABLE HABITAT	Habitat ID No.:
NONE OBSERVED	

Comments (e.g. pipeline crossing angle, construction constraints, erosion potential, existing disturbances, and meanders)		
STREAM QUALITY (indicate)	☐ High	☐ Moderate ☐ Low
High Quality: Natural channel (no structures or dikes; no evidence of downcutting or excessive lateral cutting); evidence of past channel alteration with significant recovery; any dikes/levies are set back to provide access to adequate flood plain; natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots that extend to the base-flow elevation; water clear to tea-colored; no barriers to fish movement (seasonal water withdrawals prevent movement); many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man; intolerant microinvertebrates present. Moderate Quality: Altered channel evidenced by rip rap and/or channelization; dikes/levees restrict flood plain width; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function of riparian vegetation only moderately compromised; banks moderately unstable (outside bends actively eroding with few fallen trees); considerable water cloudiness, submerged objects covered with green film; moderate odor; minor barriers to fish movement; 4-3 fish cover types available; fair aquatic habitat; minimum disturbance by livestock or man; Facultative microinvertebrates present. Low Quality: Channel is actively downcutting or widening; rip rap and channelization excessive; flood plain restricted by dikes/levees; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; Banks unstable (inside and outside bends actively eroding with numerous fallen trees); water very turbid to muddy; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; green color to water; severe barriers to fish movement; 2-0 fish cover types available; little to no aquatic habitat; severe disturbance by livestock or man; tolerant or no microinvertebrates present.		

WATERBODY

U7-C-STP-NRC-090019
Attachment 2 (Page 46 of 65)

ENSR/AECOM
4800 Loop Central Dr. Suite 600
Houston, TX. 77091
(713) 807-6503

Waterbody Name:

Waterbody ID No.:

5018

Centerline Re-Route Access Road Warehouse Site Other:

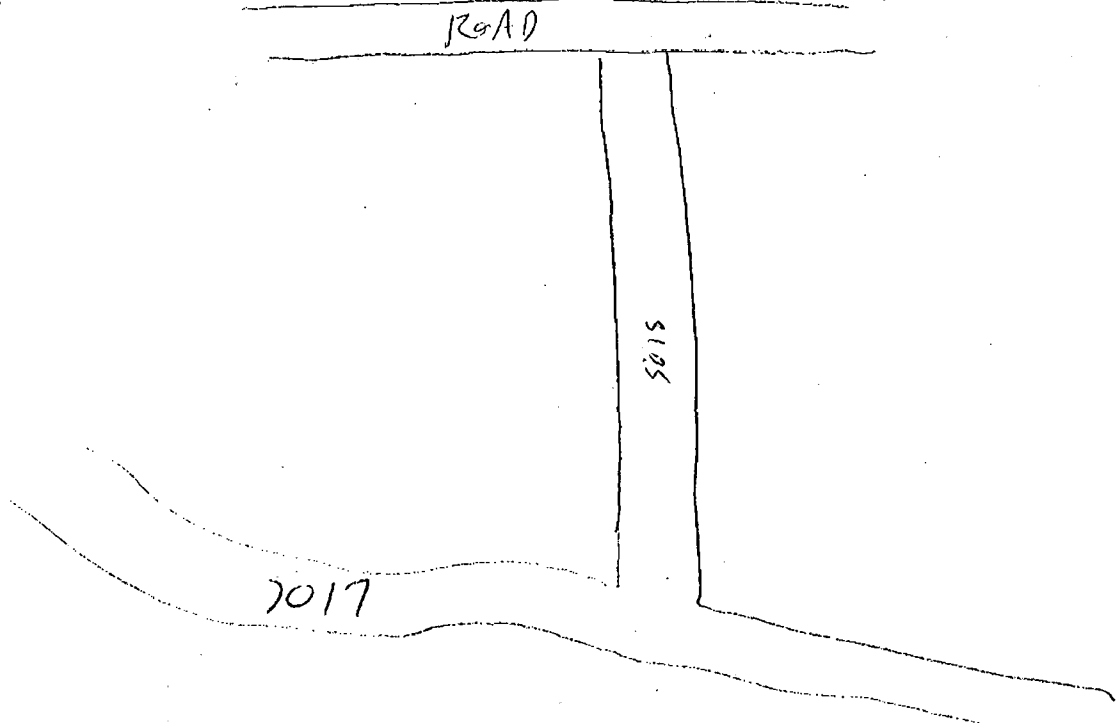
Associated Wetland No.:

Date: 8/27/08	Client/Project Name & No.: STPNOC 10730-008	Milepost:
Investigators: T. WYCOFF S. GRIFFITH	State/County/Municipality: TX / MATAGORDA	Quad Name:
Logbook No.:	Logbook Page No.:	Block/Lot/Tract No.:
		Photo Roll:
		Picture No.: 46

PHYSICAL ATTRIBUTES

Waterbody Sketch Plan

Please include: Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor



Crossing Method (1, 2A, 2B, or 3):

Waterbody Type	Lake	Pond	Borrow Pit	River	Stream	Ag. Ditch	Other: MANMADE DITCH		
Stream Flow	Fast	Moderate			Slow	Very Slow			None
Flow type	Perennial	Intermittent			Direction: N to S				
Stream Depth (in.)	0-3	3-6	6-12	12-18	18-24	24-36	36-48	48-60	60+
Stream Width (ft.)	Top of Bank (at crossing location):				Water Surface (at crossing location):				
Bank Height (ft.) (looking downstream else give direction you are facing here:)	Left	0-2	2-4		4-6		6-8		8+
	Right	0-2	2-4		4-6		6-8		8+
Bank Slope (°) (looking downstream else give direction you are facing here:)	Left	0-20	20-40		40-60		60-80		80+
	Right	0-20	20-40		40-60		60-80		80+

WATERBODY

U7-C-STP-NRC-090019
Attachment 2 (Page 47 of 65)

ENSR/AECOM
4888 Loop Central Dr. Suite 600
Houston, TX. 77081
(713) 807-6503

Waterbody ID No.: 5018

Date: 8/21/08	Client/Project Name & No.: STPNOC 10720-008	Milepost:
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QUALITATIVE ATTRIBUTES

Water Appearance	Clear	Slightly Turbid	Turbid	Very Turbid	Color:
	Floating algal mats	Obvious surface scum	Sheen on surface	Dry	Other:
Stream Substrate %	Bedrock	Gravel	Sand	Silt/Clay	Organic 100
Aquatic Habitat	Sand Bar	Gravel Bar	Mud Bar	Pools	Undercut Banks
	Overhanging trees/shrubs	In-stream emergent plants	In-stream submerged plants	Bank root systems	Fringing Wetlands
Aquatic Organisms Observed	Waterfowl	Fish (adult)	Fish (juvenile)	Frogs	Turtles
	Snakes	Wading Birds	Other:		
	Invertebrates:	Intolerant	Facultative	Tolerant	None
Riparian Zone	Width of natural vegetation zone from edge of active channel out onto flood plain: _____ (ft) Circle vegetative layers: trees shrubs herbs <u>Comments:</u> ☐ Significant bare areas within riparian zone ☐ Evidence of non-buffered concentrated flows <u>Other:</u>				
Channel Condition	Channelization/Braiding	Unnatural straitening	Downcutting	Dikes/Berms	Excessive bank erosion
Disturbances	☐ Livestock access to riparian zone ☐ Waste discharge pipes present		☐ Manure in stream or on banks ☐ Other: _____		

T/E SPECIES / SUITABLE HABITAT	Habitat ID No.:
NONE OBSERVED	

Comments (e.g. pipeline crossing angle, construction constraints, erosion potential, existing disturbances, and meanders)	
STREAM QUALITY (Indicate)	☐ High ☐ Moderate ☐ Low
High Quality: Natural channel (no structures or dikes; no evidence of downcutting or excessive lateral cutting); evidence of past channel alteration with significant recovery; any dikes/levees are set back to provide access to adequate flood plain; natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots that extend to the base-flow elevation; water clear to tea-colored; no barriers to fish movement (seasonal water withdrawals prevent movement); many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man; intolerant microinvertebrates present. Moderate Quality: Altered channel evidenced by rip rap and/or channelization; dikes/levees restrict flood plain width; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function of riparian vegetation only moderately compromised; banks moderately unstable (outside bends actively eroding with few fallen trees); considerable water cloudiness, submerged objects covered with green film; moderate odor; minor barriers to fish movement; 4-3 fish cover types available; fair aquatic habitat; minimum disturbance by livestock or man; Facultative microinvertebrates present. Low Quality: Channel is actively downcutting or widening; rip rap and channelization excessive; flood plain restricted by dikes/levees; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; Banks unstable (inside and outside bends actively eroding with numerous fallen trees); water very turbid to muddy; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; green color to water; severe barriers to fish movement; 2-0 fish cover types available; little to no aquatic habitat; severe disturbance by livestock or man; tolerant or no microinvertebrates present.	

WATERBODY

U7-C-STP-NRC-090019
Attachment 2 (Page 48 of 65)

ENSR/AECOM
4800 Loop Central Dr. Suite 600
Houston, TX. 77081
(713) 807-6503

Waterbody Name:

Waterbody ID No.: 5020

Centerline Re-Route Access Road Warehouse Site Other:

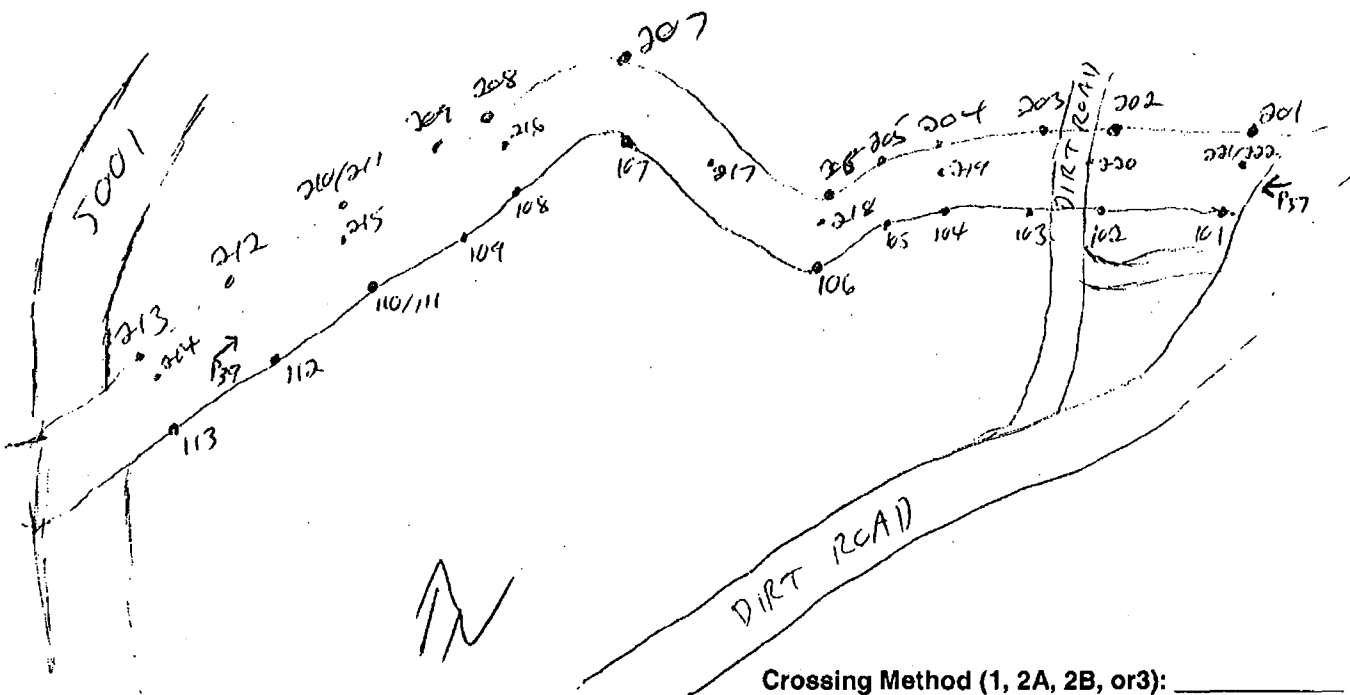
Associated Wetland No.:

Date: <u>8/26/08</u>	Client/Project Name & No.: <u>STPNOC 10720-008</u>	Milepost:
Investigators: <u>T. WYCOFF</u> <u>S. GRIFFITH</u>	State/County/Municipality: <u>TX/ MATAGORDA</u>	Quad Name:
Logbook No.:	Logbook Page No.:	Block/Lot/Tract No.:
Photo Roll:	Picture No.: <u>37, 38, 39</u>	

PHYSICAL ATTRIBUTES

Waterbody Sketch Plan

Please include: Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor



Crossing Method (1, 2A, 2B, or 3):

Waterbody Type	Lake	Pond	Borrow Pit	River	Stream	Ag. Ditch	Other: <u>MANMADE DRAINAGE</u>			
Stream Flow	Fast		Moderate		Slow		Very Slow		None	
Flow type	Perennial		Intermittent		Direction: <u>E to W</u>					
Stream Depth (in.)	0-3	3-6	6-12	12-18	18-24	24-36	36-48	48-60	60+	
Stream Width (ft.)	Top of Bank (at crossing location): <u>200 ft</u>					Water Surface (at crossing location): <u>12 ft</u>				
Bank Height (ft.) (looking downstream else give direction you are facing here:)	Left	0-2	2-4		4-6		6-8		8+	
	Right	0-2	2-4		4-6		6-8		8+	
Bank Slope (°) (looking downstream else give direction you are facing here:)	Left	0-20	20-40		40-60		60-80		80+	
	Right	0-20	20-40		40-60		60-80		80+	

WATERBODY

U7-C-STP-NRC-090019
Attachment 2 (Page 49 of 65)

ENSR/AECOM
14881 Katy Central Dr. Suite 600
Houston, TX. 77081
(713) 807-6503

Waterbody ID No.: 5020

Date: 8/26/08	Client/Project Name & No.: STP NRC 10790-008	Milepost:
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QUALITATIVE ATTRIBUTES

Water Appearance	Clear	Slightly Turbid	Turbid	Very Turbid	Color:
	Floating algal mats	Obvious surface scum	Sheen on surface	Dry	Other:
Stream Substrate %	Bedrock	Gravel	Sand	Silt/Clay 100	Organic
Aquatic Habitats	Sand Bar	Gravel Bar	Mud Bar	Pools	Undercut Banks
	Overhanging trees/shrubs	In-stream emergent plants	In-stream submerged plants	Bank root systems	Fringing Wetlands
Aquatic Organisms Observed	Waterfowl	Fish (adult) GAR	Fish (juvenile) Minnows	Frogs	Turtles
	Snakes	Wading Birds	Other: Alligator		
	Invertebrates:	Intolerant	Facultative	Tolerant	None
Riparian Zone	Width of natural vegetation zone from edge of active channel out onto flood plan: 15 (ft)				
	Circle vegetative layers: trees shrubs herbs Comments:				
	☐ Significant bare areas within riparian zone ☐ Evidence of non-buffered concentrated flows Other:				
Channel Condition	Channelization/Braiding	Unnatural straitening	Downcutting	Dikes/Berms	Excessive bank erosion
Disturbances	☐ Livestock access to riparian zone ☐ Waste discharge pipes present		☐ Manure in stream or on banks ☐ Other:		

T/E SPECIES / SUITABLE HABITAT

Habitat ID No.:

None observed

Comments (e.g. pipeline crossing angle, construction constraints, erosion potential, existing disturbances, and meanders)

STREAM QUALITY (Indicate)

☐ High

☐ Moderate

☐ Low

High Quality: Natural channel (no structures or dikes; no evidence of downcutting or excessive lateral cutting); evidence of past channel alteration with significant recovery; any dikes/levies are set back to provide access to adequate flood plain; natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots that extend to the base-flow elevation; water clear to tea-colored; no barriers to fish movement (seasonal water withdrawals prevent movement); many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man; intolerant microinvertebrates present.

Moderate Quality: Altered channel evidenced by rip rap and/or channelization; dikes/levees restrict flood plain width; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function of riparian vegetation only moderately compromised; banks moderately unstable (outside bends actively eroding with few fallen trees); considerable water cloudiness, submerged objects covered with green film; moderate odor; minor barriers to fish movement; 4-3 fish cover types available; fair aquatic habitat; minimum disturbance by livestock or man; Facultative microinvertebrates present.

Low Quality: Channel is actively downcutting or widening; rip rap and channelization excessive; flood plain restricted by dikes/levees; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; Banks unstable (inside and outside bends actively eroding with numerous fallen trees); water very turbid to muddy; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; green color to water; severe barriers to fish movement; 2-0 fish cover types available; little to no aquatic habitat; severe disturbance by livestock or man; tolerant or no microinvertebrates present.

WETLAND DELINEATION DATA FORM (1987 COE METHODOLOGY)

Centerline Re-Route Access Road Warehouse Site Other: **Wetland ID No.: WYAMA001**

Date: **8/28/08** Client/Project Name & No.: **STINOC 10720-008** Point ID: Wetland Pt. **X** Upland Pt. _____

Investigators: **T. WYKOFF, S. GRIFFITH** State/County/Municipality: **TX/MATAGORDA**

Logbook No.: _____ Logbook Page No.: _____ Picture No.: **47, 48** Picture No: _____ Milepost: _____

Wetland Quality: High Moderate Low			Wetland Type (circle one): PFO PEM PSS Other:		
DOMINANT PLANT SPECIES		Stratum	Indicator	NON-DOMINANT PLANT SPECIES	
1.	<i>Eleocharis palustris</i>	H	OBL	1.	
2.	<i>Sagittaria</i> sp.	H	FAC/FACW	2.	
3.	<i>Cardiospermum halimifolium</i>	V	FAC	3.	
4.	<i>Trindleria Seabornii</i>	H/S	FACU+	4.	
5.				5.	
6.				6.	
7.				7.	
8.				8.	

Per Cent of Dominant Species that are OBL, FACW, or FAC (excluding FAC): **75%**

REMARKS:

HYDROLOGY

Recorded Data?	Describe:	No Recorded Data?
Depth of Surface Water: _____ (in.)		
Depth to Free Water in Pit: _____ (in.)		
Depth to Saturated Soil: 0 (in.)		
Primary Wetland Indicators (circle those that apply): Inundated _____ Sediment Deposits _____ Saturated in Upper 12 Inches _____ Water Marks _____ Drift Lines _____ Drainage Patterns in Wetlands _____		Secondary Wetland Indicators (2 or more required) (circle those that apply): Oxidized Root Channels in Upper 12 _____ FAC-Neutral Test _____ Water-Stained Leaves _____ Other (Explain in Remarks) _____ Local Soil Survey Data _____

Remarks:

SOILS

Map Unit Name (Series and Phase):	Drainage Class:
Taxonomy (Subgroup):	Field Observations Confirm Mapped Type?

Profile Description:

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle (Abundance/Contrast)	Texture, Concretions, Structure, etc.
0-18	A	10YR 3/1	MA	Clay

Circle those that Apply:

Histosol	Sulfidic Odor	Organic Streaking in Sandy Soils	Oxidized Rhizospheres	Concretions
Histic Epipedon	Aquic Moisture Regime	Organic Pans in Sandy Soils	Listed on Local Hydric Soils List	Gleyed Soil
High Organic Content	Other:			

REMARKS:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes No	Is This Sampling Point Within a Wetland?	YES NO
Wetland Hydrology Present?	Yes No	Is This An Isolated Wetland?	YES NO
Hydric Soils Present?	Yes No		
Normal Circumstances?	Significantly Disturbed:	Potential Problem Area?	

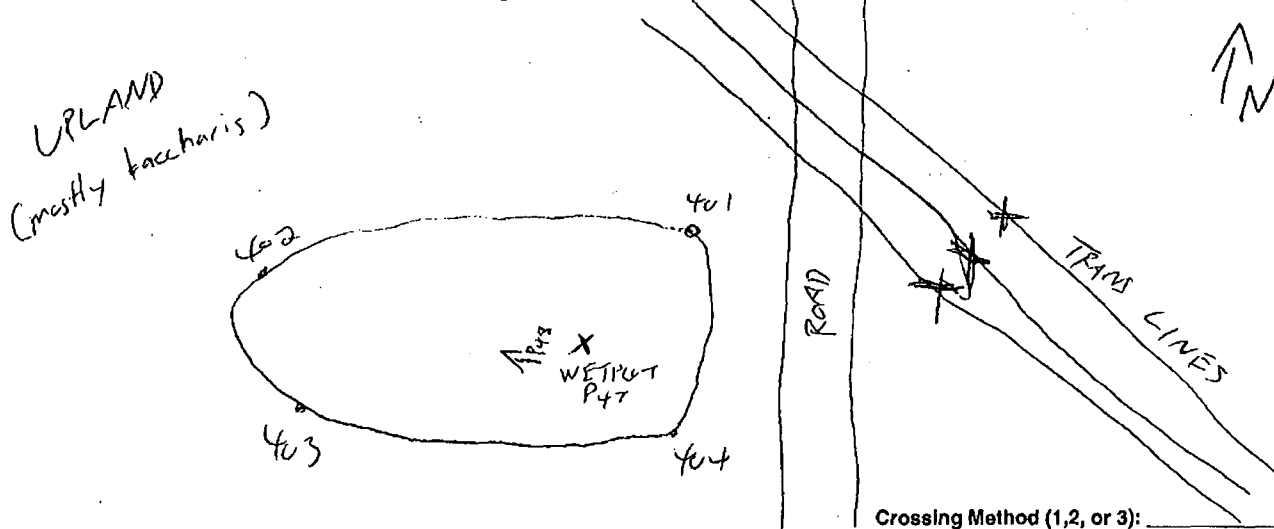
WETLAND DELINEATION DATA FORM (1987 COE METHODOLOGY)

Wetland ID No.: WYAMA0021

Date: 8/28/08	Client/Project Name & No.: STPNOL - 10730 - 008	Point ID: Wetland Pt. X Upland Pt.
		Milepost:

Drawing

Please include: Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor



Description of Wetland (include overall characteristics and provide unique descriptors):

LOW AREA BORDERED BY ROAD EASEMENT TO EAST AND BACCHARIS TO N, W, AND S.

T/E Species/Suitable Habitat:

NONE OBSERVED

Comments (i.e., angle at pipeline crossing, construction constraints, erosion potential, existing disturbances, and meanders):

RECENT RAINFALL

Crossing Methods and Wetland Quality Criteria:

(Circle the wetland quality characteristics observed)

Method 1: Wetland Method 1 can be used in wetlands where soils are dry enough at the time of construction to support equipment. This crossing method requires topsoil segregation, and requires no special stabilization techniques.

Wetland Method 2: Conventional Wetland Construction will be used for crossing wetlands with saturated soils or soils otherwise unable to support mainline construction equipment. Because the soils are saturated, there is a need to stabilize the ROW during construction.

Wetland Method 3: Push/Pull Wetland Construction will be used in large wetland areas where sufficient hydrology is present for floating the pipeline in the trench, and grade elevation over the length of the push/pull area will not require damming to maintain adequate water levels for floatation of the pipe.

HIGH QUALITY WETLAND: no indication of stress or disturbance in wetland or adjacent area – diverse and mature vegetation types – hydrologic and soil indicators are characteristic of the specific community type – provides suitable habitat for wildlife – high quality perennial streams are often observed

MODERATE QUALITY WETLAND: mild to moderate disturbances have caused alterations in immediately adjacent areas – slightly altered natural vegetation, hydrology and/or soil characteristics – provides suitable habitat for wildlife and vegetation – associated perennial or intermittent streams are of relatively good quality and aren't significantly disturbed

LOW QUALITY WETLAND: severe disturbances have caused significant changes to vegetation, soils, or hydrology – hydroperiod alterations, if present, have directly affected plant species – community composition has changed – noticeable stress or death of plant species – soil subsidence may have occurred in areas with decreased hydroperiod – mechanical alteration of plant species or soils – grazing from livestock – channelization of stream courses or ditching – little suitable habitat for wildlife and vegetation – associated perennial or intermittent streams significantly disturbed

WETLAND DELINEATION DATA FORM (1987 COE METHODOLOGY)

Centerline Re-Route Access Road Warehouse Site Other: **Wetland ID No.: W1A1MA092**

Date: **8/28/08** Client/Project Name & No.: **STP NOL 10720-008** Point ID: Wetland Pt **X** Upland Pt _____

Investigators: **T. WYCOFF, S. GRIFFITH** State/County/Municipality: **TX / MATAGORDA**

Logbook No.: _____ Logbook Page No.: _____ Picture No.: **50** Picture No: _____ Milepost: _____

Wetland Quality: High Moderate Low			Wetland Type (circle one):		PFO	PEM	PSS	Other:
DOMINANT PLANT SPECIES			Stratum	Indicator	NON-DOMINANT PLANT SPECIES			Stratum Indicator
1.	<i>Rosa bracteata</i>		V/B	FACU *	1.			
2.	<i>Baccharis halimifolia</i>		S	FACW-	2.			
3.	<i>Andropogon glomeratus</i>		H	FACW+	3.			
4.	<i>Eleocharis palustris</i>		H	OBL	4.			
5.					5.			
6.					6.			
7.					7.			
8.					8.			

Per Cent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): **75%**

REMARKS:

HYDROLOGY

Recorded Data?	Describe:	No Recorded Data?
Depth of Surface Water: _____ (in.)		
Depth to Free Water in Pit: _____ (in.)		
Depth to Saturated Soil: 0 (in.)		
Primary Wetland Indicators (circle those that apply): Inundated _____ Sediment Deposits _____ Saturated in Upper 12 Inches _____ Water Marks _____ Drift Lines _____ Drainage Patterns in Wetlands _____		Secondary Wetland Indicators (2 or more required) (circle those that apply): Oxidized Root Channels in Upper 12" _____ FAC-Neutral Test _____ Water-Stained Leaves _____ Other (Explain in Remarks) _____ Local Soil Survey Data _____
Remarks:		

SOILS

Map Unit Name (Series and Phase):	Drainage Class:
Taxonomy (Subgroup):	Field Observations Confirm Mapped Type?

Profile Description:

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle (Abundance/Contrast)	Texture, Concretions, Structure, etc.
0-18	A	10YR 7/1	N/A	CLAY

Circle those that Apply:

Histosol	Sulfidic Odor	Organic Streaking in Sandy Soils	Oxidized Rhizospheres	Concretions
Histic Epipedon	Aquic Moisture Regime	Organic Pans in Sandy Soils	Listed on Local Hydric Soils List	Gleyed Soil
High Organic Content	Other:			

REMARKS:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes No	Is This Sampling Point Within a Wetland?	YES NO
Wetland Hydrology Present?	Yes No	Is This An Isolated Wetland?	YES NO
Hydric Soils Present?	Yes No		
Normal Circumstances?	Significantly Disturbed:	Potential Problem Area?	

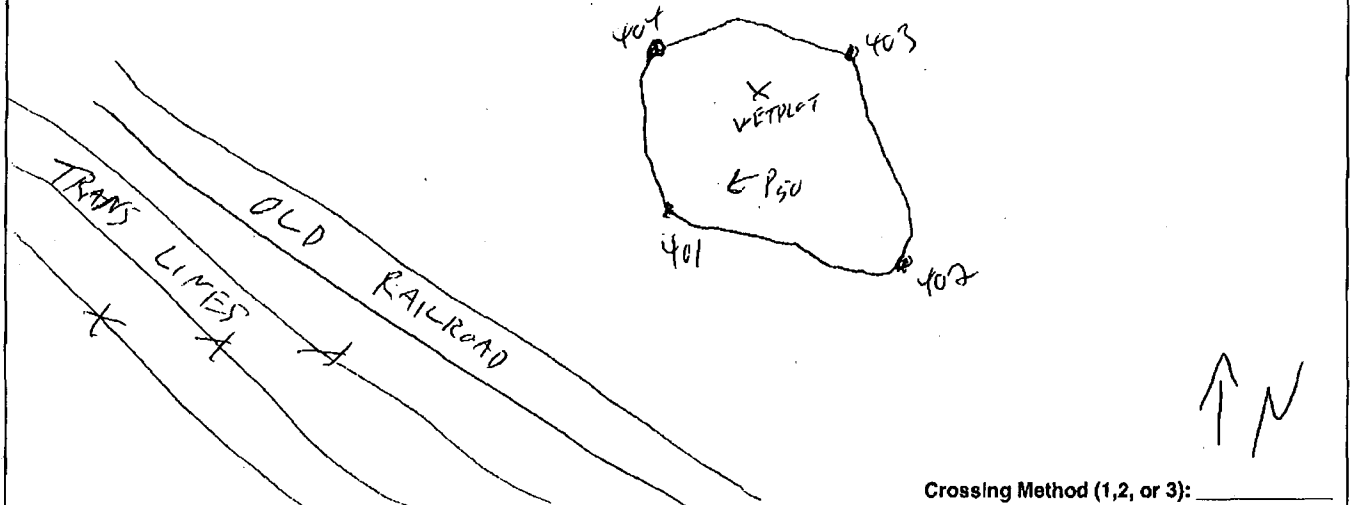
WETLAND DELINEATION DATA FORM (1987 COE METHODOLOGY)

Wetland ID No.: W4AMA022

Date: <u>8/28/08</u>	Client/Project Name & No.: <u>STP/NOC 10720-008</u>	Point ID: Wetland Pt. <u>✓</u> Upland Pt. <u> </u>
		Milepost: <u> </u>

Drawing

Please include: Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor



Description of Wetland (Include overall characteristics and provide unique descriptors):

T/E Species/Suitable Habitat:

NONE OBSERVED

Comments (i.e., angle at pipeline crossing, construction constraints, erosion potential, existing disturbances, and meanders):

Crossing Methods and Wetland Quality Criteria:

(Circle the wetland quality characteristics observed)

Method 1: Wetland Method 1 can be used in wetlands where soils are dry enough at the time of construction to support equipment. This crossing method requires topsoil segregation, and requires no special stabilization techniques.
Wetland Method 2: Conventional Wetland Construction will be used for crossing wetlands with saturated soils or soils otherwise unable to support mainline construction equipment. Because the soils are saturated, there is a need to stabilize the ROW during construction.
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LOW QUALITY WETLAND: severe disturbances have caused significant changes to vegetation, soils, or hydrology – hydroperiod alterations, if present, have directly affected plant species – community composition has changed – noticeable stress or death of plant species – soil subsidence may have occurred in areas with decreased hydroperiod – mechanical alteration of plant species or soils – grazing from livestock – channelization of stream courses or ditching – little suitable habitat for wildlife and vegetation – associated perennial or intermittent streams significantly disturbed

WETLAND DELINEATION DATA FORM (1987 COE METHODOLOGY)

Centerline Re-Route Access Road Warehouse Site Other: **Wetland ID No.: WMA003**
Date: 8/28/08 Client/Project Name & No.: STP NRC 10700-008 Point ID: Wetland Pt. X Upland Pt. _____

Investigators: T. WYCOFF, S. GRIFFITH State/County/Municipality: _____

Logbook No.: _____ Logbook Page No.: _____ Picture No.: 51 Picture No: _____ Milepost: _____

Wetland Quality: High Moderate Low	Wetland Type (circle one):		PFO	PEM	PSS	Other:	
DOMINANT PLANT SPECIES	Stratum	Indicator	NON-DOMINANT PLANT SPECIES		Stratum	Indicator	
1. <u>Typha domingensis</u>	<u>11</u>	<u>OBL</u>	1.				
2. <u>Cardiispermum halicacabum</u>	<u>✓</u>	<u>FAC</u>	2.				
3. <u>Salix nigra</u>	<u>T</u>	<u>FACW+</u>	3.				
4.			4.				
5.			5.				
6.			6.				
7.			7.				
8.			8.				

Per Cent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100%

REMARKS:

HYDROLOGY

Recorded Data?	Describe:	No Recorded Data?
Depth of Surface Water: _____ (in.)		
Depth to Free Water in Pit: _____ (in.)		
Depth to Saturated Soil: <u>0</u> (in.)		
Primary Wetland Indicators (circle those that apply):		Secondary Wetland Indicators (2 or more required) (circle those that apply):
Inundated	Sediment Deposits	<u>Oxidized Root Channels in Upper 12</u>
<u>Saturated in Upper 12 Inches</u>	Water Marks	FAC-Neutral Test
Drift Lines	Drainage Patterns in Wetlands	Water-Stained Leaves
		Other (Explain in Remarks)
		Local Soil Survey Data
Remarks:		

SOILS

Map Unit Name (Series and Phase):	Drainage Class:
Taxonomy (Subgroup):	Field Observations Confirm Mapped Type?

Profile Description:

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle (Abundance/Contrast)	Texture, Concretions, Structure, etc.
<u>0-18</u>	<u>A</u>	<u>10YR 3/1</u>	<u>N/A</u>	<u>Clayey Clay</u>

Circle those that Apply:

Histosol	Sulfidic Odor	Organic Streaking in Sandy Soils	<u>Oxidized Rhizospheres</u>	Concretions
Histic Epipedon	Aquic Moisture Regime	Organic Pans in Sandy Soils	Listed on Local Hydric Soils List	Gleyed Soil
High Organic Content	Other:			

REMARKS:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<u>Yes</u> No	Is This Sampling Point Within a Wetland?	<u>YES</u> NO
Wetland Hydrology Present?	<u>Yes</u> No	Is This An Isolated Wetland?	YES NO
Hydric Soils Present?	<u>Yes</u> No		
Normal Circumstances?	Significantly Disturbed:	Potential Problem Area?	

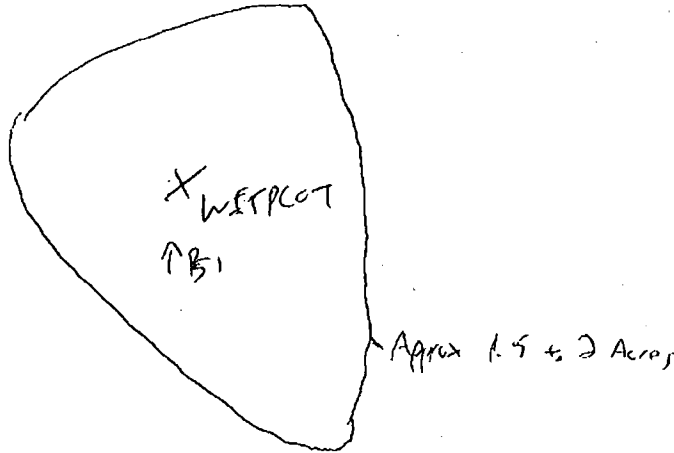
WETLAND DELINEATION DATA FORM (1987 COE METHODOLOGY)

Wetland ID No.: **WTAMA003**

Date: 8/28/08	Client/Project Name & No.: STP NRC 1020-0008	Point ID: Wetland Pt. X Upland Pt. _____
		Milepost: _____

Drawing

Please include: Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor



Crossing Method (1,2, or 3): _____

Description of Wetland (Include overall characteristics and provide unique descriptors):

T/E Species/Suitable Habitat:

Comments (i.e., angle at pipeline crossing, construction constraints, erosion potential, existing disturbances, and meanders):

Crossing Methods and Wetland Quality Criteria:

(Circle the wetland quality characteristics observed)

Method 1: Wetland Method 1 can be used in wetlands where soils are dry enough at the time of construction to support equipment. This crossing method requires topsoil segregation, and requires no special stabilization techniques.

Wetland Method 2: Conventional Wetland Construction will be used for crossing wetlands with saturated soils or soils otherwise unable to support mainline construction equipment. Because the soils are saturated, there is a need to stabilize the ROW during construction.

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WETLAND DELINEATION DATA FORM (1987 COE METHODOLOGY)

Centerline Re-Route Access Road Warehouse Site Other: **Wetland ID No.: WYAM002**
Date: 8/28/08 Client/Project Name & No.: STP NRC 10700-208 Point ID: Wetland Pt. X Upland Pt.
Investigators: T. WYCOFF, S. GRIFFITH State/County/Municipality: TX / MATAGORDA
Logbook No.: Logbook Page No.: Picture No.: 52 Picture No.: Milepost:

Wetland Quality: High Moderate Low	Wetland Type (circle one): PFO (PEM) PSS Other:	
DOMINANT PLANT SPECIES	Stratum	Indicator
1. <i>Eleocharis palustris</i>	H	OBL
2. <i>Typha domingensis</i>	H	OBL
3. <i>Triadica sebifera</i>	S/T	FACW+
4. <i>Salix nigra</i>	S	FACW+
5. <i>Pluchea camphorata</i>	H	FACW-
6. <i> </i>		
7. <i> </i>		
8. <i> </i>		

Per Cent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100%

REMARKS:

HYDROLOGY

Recorded Data?	Describe:	No Recorded Data?
Depth of Surface Water: <u> </u> (in.)		
Depth to Free Water in Pit: <u> </u> (in.)		
Depth to Saturated Soil: <u> </u> (in.)		
Primary Wetland Indicators (circle those that apply): Inundated ☐ Sediment Deposits ☐ <u>Saturated in Upper 12 Inches</u> ☒ Water Marks ☐ Drift Lines ☐ Drainage Patterns in Wetlands ☐		Secondary Wetland Indicators (2 or more required) (circle those that apply): <u>Oxidized Root Channels in Upper 12"</u> ☒ FAC-Neutral Test ☐ Water-Stained Leaves ☐ Other (Explain in Remarks) ☐ Local Soil Survey Data ☐
Remarks:		

SOILS

Map Unit Name (Series and Phase):	Drainage Class:			
Taxonomy (Subgroup):	Field Observations Confirm Mapped Type?			
Profile Description:				
Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle (Abundance/Contrast)	Texture, Concretions, Structure, etc.
0-18	A	10YR 6/6		CLAY
0-18	A	10YR 4/2		CLAY
Circle those that Apply: Histosol ☐ Sulfidic Odor ☐ Organic Streaking in Sandy Soils ☐ <u>Oxidized Rhizospheres</u> ☒ Concretions ☐ Histic Epipedon ☐ Aquic Moisture Regime ☐ Organic Pans in Sandy Soils ☐ Listed on Local Hydric Soils List ☐ Gleyed Soil ☐ High Organic Content ☐ Other: ☐				

REMARKS: Mix of two different clay soils

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<u>Yes</u> No	Is This Sampling Point Within a Wetland?	<u>YES</u> NO
Wetland Hydrology Present?	<u>Yes</u> No	Is This An Isolated Wetland?	YES NO
Hydric Soils Present?	Yes No		
Normal Circumstances?	Significantly Disturbed:	Potential Problem Area?	

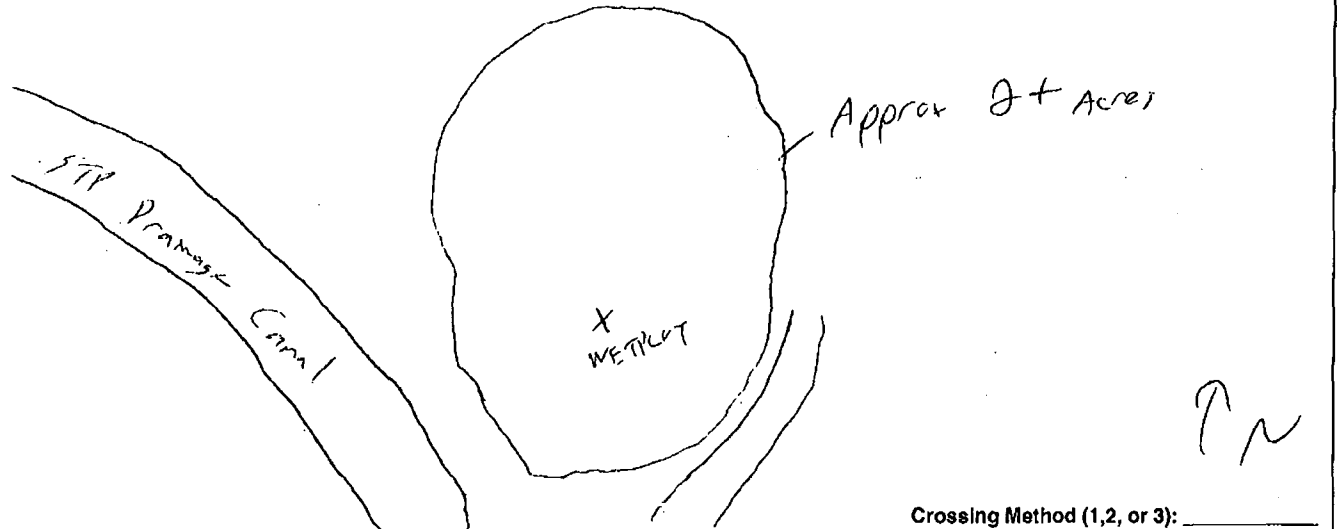
WETLAND DELINEATION DATA FORM (1987 COE METHODOLOGY)

Wetland ID No.: **WYAMA024**

Date: 8/28/08	Client/Project Name & No.: STPNOC 1720-000	Point ID: Wetland Pt ☒ Upland Pt ☐
		Milepost:

Drawing

Please include: Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor



Description of Wetland (Include overall characteristics and provide unique descriptors):

LARGE WETLAND HAD A CATTAIL PORTION, GRASSY PORTION, AND A LOW DEPRESSION THAT HAD EVIDENCE OF PONDING (CRACKED SOIL AND ALGAL CRUST)

T/E Species/Suitable Habitat:

NONE OBSERVED

Comments (i.e., angle at pipeline crossing, construction constraints, erosion potential, existing disturbances, and meanders):

Crossing Methods and Wetland Quality Criteria: (Circle the wetland quality characteristics observed)

Method 1: Wetland Method 1 can be used in wetlands where soils are dry enough at the time of construction to support equipment. This crossing method requires topsoil segregation, and requires no special stabilization techniques.
Wetland Method 2: Conventional Wetland Construction will be used for crossing wetlands with saturated soils or soils otherwise unable to support mainline construction equipment. Because the soils are saturated, there is a need to stabilize the ROW during construction.
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WETLAND DELINEATION DATA FORM (1987 COE METHODOLOGY)

Centerline Re-Route Access Road Warehouse Site Other:

Wetland ID No.: WYAMA005

Date: 8/10/08 Client/Project Name & No.: 10700-008 STP REC Point ID: Wetland Pt X Upland Pt

Investigators: T. WYCOFF, S. GRIFFITH State/County/Municipality: TX/TARRANT

Logbook No.: Logbook Page No.: Picture No.: 53 Picture No: Milepost:

Wetland Quality: High Moderate Low			Wetland Type (circle one):		PFO	PEM	PSS	Other:	
DOMINANT PLANT SPECIES			Stratum	Indicator	NON-DOMINANT PLANT SPECIES			Stratum	Indicator
1.	<u>Typha domingensis</u>		<u>H</u>	<u>OBL</u>	1.				
2.	<u>Salix nigra</u>		<u>T</u>	<u>FACW+</u>	2.				
3.	<u>Rhynchospora caduca</u>		<u>H</u>	<u>OBL</u>	3.				
4.	<u>Phytolacca odorata</u>		<u>H</u>	<u>NO</u>	4.				
5.	<u>Andropogon glomeratus</u>		<u>H</u>	<u>FACW+</u>	5.				
6.					6.				
7.					7.				
8.					8.				

Per Cent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 80%

REMARKS:

HYDROLOGY

Recorded Data?	Describe:	No Recorded Data?
Depth of Surface Water: <u>1</u> (in.)		
Depth to Free Water in Pit: <u>1</u> (in.)		
Depth to Saturated Soil: <u>0</u> (in.)		
Primary Wetland Indicators (circle those that apply): Inundated ☐ Sediment Deposits ☐ ☒ Saturated in Upper 12 Inches ☐ Water Marks ☐ Drift Lines ☐ Drainage Patterns in Wetlands ☐		Secondary Wetland Indicators (2 or more required) (circle those that apply): ☒ Oxidized Root Channels in Upper 12 ☐ FAC-Neutral Test Water-Stained Leaves ☐ Other (Explain in Remarks) Local Soil Survey Data ☐
Remarks:		

SOILS

Map Unit Name (Series and Phase):	Drainage Class:			
Taxonomy (Subgroup):	Field Observations Confirm Mapped Type?			
Profile Description:				
Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle (Abundance/Contrast)	Texture, Concretions, Structure, etc.
<u>1-18</u>	<u>A</u>	<u>10YR 5/2</u>	<u>10YR 5/6 CCD</u>	<u>CONCRETIONS PRESENT</u>
Circle those that Apply: Histosol ☐ Sulfidic Odor ☐ Organic Streaking in Sandy Soils ☐ ☒ Oxidized Rhizospheres ☐ ☒ Concretions Histic Epipedon ☐ Aquic Moisture Regime ☐ Organic Pans in Sandy Soils ☐ Listed on Local Hydric Soils List ☐ Gleyed Soil High Organic Content ☐ Other:				
REMARKS:				

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	☒ Yes ☐ No	Is This Sampling Point Within a Wetland?	☒ YES ☐ NO
Wetland Hydrology Present?	☒ Yes ☐ No	Is This An Isolated Wetland?	☐ YES ☐ NO
Hydric Soils Present?	☒ Yes ☐ No		
Normal Circumstances?	Significantly Disturbed:	Potential Problem Area?	

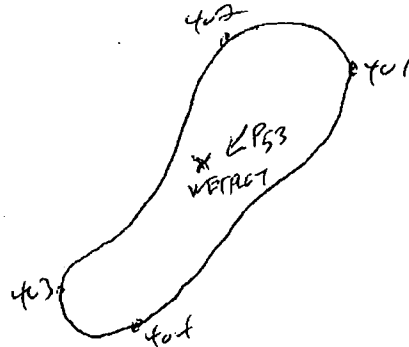
WETLAND DELINEATION DATA FORM (1987 COE METHODOLOGY)

Wetland ID No.: W4MA005

Date: <u>8/28/08</u>	Client/Project Name & No.: <u>STP NRC RT20-008</u>	Point ID: Wetland Pt. ☒ Upland Pt. ☐
		Milepost: _____

Drawing

Please include: Directional & North Arrow, Centerline, Length of feature, Distances from Centerline, Photo Locations, and Survey corridor



Crossing Method (1,2, or 3): _____

Description of Wetland (Include overall characteristics and provide unique descriptors):

LOW PONDED AREA WITH CRACKED SOIL AND ALGAL CRUST
NEAR A TRANSMISSION ROW.

T/E Species/Suitable Habitat:

NONE OBSERVED

Comments (i.e., angle at pipeline crossing, construction constraints, erosion potential, existing disturbances, and meanders):

Crossing Methods and Wetland Quality Criteria:

(Circle the wetland quality characteristics observed)

Method 1: Wetland Method 1 can be used in wetlands where soils are dry enough at the time of construction to support equipment. This crossing method requires topsoil segregation, and requires no special stabilization techniques.
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USACE Meeting Minutes Re: SWG-2007-786

Attendees:

Nicholas A. Laskowski – USACE Galveston District
Sam A. Damico – STPNOC
Kurtis K. Schlicht – ENSR
Travis A. Wycoff – ENSR

Topics addressed:

1. Per our conversation yesterday I have listed the necessary actions needed to assist in verifying the project. I have attached a map in an effort to clarify areas that require the necessary work. Below are listed the necessary actions. NOTE: All of jurisdictional features will need to be either surveyed or collected via GPS per the Galveston District GPS Protocol.
2. Little Robbins Slough will be jurisdictional (an RPW) Please instruct your consultants (ENSR) to delineate the extent of waters of the Slough (including either the ordinary high water mark and/or the abutting wetlands.) **STPNOC concurs and instructs ENSR to delineate Little Robbins Slough and two associated drainages using OHWM.**
3. Delineate the extents of the tributary (and all abutting wetlands) that flow into Kelly Lake. These waters may be jurisdictional. **Per discussion between STPNOC and USACE the tributary will be delineated until leaving STPNOC property boundary. Kelly Lake will not be delineated.**
4. Delineate the concrete pilot channels accept the water from the seep well along the MCR. And if there are areas that meet the three criteria to be a wetland per the 1987 Corps of Engineers Wetland Delineation Manual have the consultant delineate those portions separately. **STPNOC inquired if this action would be necessary if the proposed project area and associated construction impacts were located north of the channels. USACE stipulated that if project site did not encompass these areas that delineation would be unnecessary.**
5. Determine the water mark of the MCR at normal pool elevation (pool elevation) and use it to determine the MCR water line and acreage. **STPNOC provided documentation that normal pool elevation is considered 49' MSL on the inside edge of the berm surrounding the MCR, which corresponds to an area of 7000 acres. USACE accepted the documentation as valid.**
6. Identify "ALL" of the wetlands not abutting or neighboring a water of the U.S. on the tract and note the location (center point) and the approximate size (acres) of each wetland. **USACE identified possible wetland areas from 1995 TNRIS aerial maps that were not delineated. STPNOC instructed ENSR to survey and document the presence/absence of wetlands in the suspect areas. ENSR agreed and will survey using GPS and field documentation at a date yet to be determined.**

Other Topics Addressed:

- STPNOC will provide a revised project boundary.

- After the ENSR survey, USACE will provide jurisdictional determination verification on the project site and MCR, excluding the area including the channels along the northern border of the MCR.
- ENSR will delineate drainages using lines, and wetlands using a center point and acreage estimate, and place pin flags.
- ENSR will overlay wetlands and drainage features onto a 2004 aerial map for final jurisdictional verification upon recommendation by USACE.
- ENSR will complete Jurisdictional Determination Forms for each identified feature.
- The proposed project site will be known and demarcated as "Tract A", and the MCR will be "Tract B".
- USACE indicated that they would be available to assist the field investigation and subsequent figure generation via telephone.

3.0 Survey Results

The results of the wetland determination and delineation surveys for the Project area are presented in the following sections. Figures 4-1 to 4-6 (Attachment A) illustrate each of the wetland polygons identified. General description of the soils, hydrology, and vegetation are discussed within this section. Field data sheets completed during the surveys are presented in Attachment B and a photographic log is presented in Attachment C.

3.1 Wetlands

Based on the field surveys conducted in December 2006, February 2007, April 2008, and August 2008, 26 wetlands totaling 19.81 acres were identified in the survey areas for the proposed Project. Identified wetlands were identified as palustrine emergent (PEM), palustrine scrub shrub (PSS), or palustrine open water (POW) wetlands. Table 3.1 provides a summary of wetlands identified. Data supporting each of the identified wetland areas observed is discussed in the following sections.

Table 3.1. Summary of Wetlands Identified in the STPEGS Project.					
Wetland Number	Wetland Feature GPS ID	Wetland Classification	Acreage	Impacts to Wetlands (No Impacts, Temporary, and Permanent)	Jurisdictional Status
Wet 001	W1AMA001	PEM	0.17	Permanent	Non-Jurisdictional
Wet 002	W1AMA004	PEM	0.39	No Impacts	Non-Jurisdictional
Wet 003	W1AMA007	PEM	0.29	No Impacts	Non-Jurisdictional
Wet 004	W2AMA001	PSS/PEM	0.40	No Impacts	Non-Jurisdictional
Wet 005	W1AMA003	PEM	0.23	No Impacts	Non-Jurisdictional
Wet 006	W2AMA005	PSS/PEM	0.23	No Impacts	Non-Jurisdictional
Wet 007	W1AMA004	PEM	0.63	No Impacts	Non-Jurisdictional
Wet 008	W2AMA007	PEM	0.40	No Impacts	Non-Jurisdictional
Wet 009	W2AMA006	PEM	0.11	No Impacts	Non-Jurisdictional
Wet 010	W2AMA008	PEM	0.53	No Impacts	Non-Jurisdictional
Wet 011	W1AMA006	PEM	0.42	No Impacts	Non-Jurisdictional
Wet 012	W1AMA007	PEM/POW	0.13	No Impacts	Non-Jurisdictional
Wet 013	W4AMA001	PSS	0.09	No Impacts	Non-Jurisdictional
Wet 014	W4AMA002	PEM	0.05	No Impacts	Non-Jurisdictional
Wet 015	W4AMA003	PSS/PEM	0.24	No Impacts	Non-Jurisdictional

Table 3.1. Summary of Wetlands Identified in the STPEGS Project (continued).					
Wet 016	W4AMA004	PSS	0.13	No Impacts	Non-Jurisdictional
Wet 017	W4AMA005	PSS/PEM	3.78	No Impacts	Non-Jurisdictional
Wet 018	W4AMA006	PSS/PEM	1.48	No Impacts	Non-Jurisdictional
Wet 019	W4AMA007	PEM	0.09	No Impacts	Non-Jurisdictional
Wet 020	W4AMA008	PEM	0.90	No Impacts	Non-Jurisdictional
Wet 021	W4AMA021	PEM	0.88	No Impacts	Non-Jurisdictional
Wet 022	W4AMA022	PEM/PSS	0.11	No Impacts	Non-Jurisdictional
Wet 023	W4AMA023	PEM/PSS	1.36	No Impacts	Non-Jurisdictional
Wet 024	W4AMA024	PEM	5.21	No Impacts	Non-Jurisdictional
Wet 025	W4AMA025	PEM	0.09	No Impacts	Non-Jurisdictional
Wet 026	W4AMA026	PEM/PSS	1.47	No Impacts	Non-Jurisdictional
TOTAL			19.81		

3.1.1 Wetland Vegetation

Twenty plant communities identified during the wetland surveys for the Project areas supported the criteria listed by USACE for hydrophytic vegetation and are associated with palustrine emergent and palustrine scrub shrub wetlands. The observed wetland vegetation was similar for each identified wetland with the dominant species being comprised of spike rush species (*Eleocharis tuberculosa*, *E. palustris*, and *E. montevidensis*), cattail (*Typha latifolia*), sea myrtle (*Baccharis halimifolia*), golden rod (*Solidago sp.*), knotgrass (*Paspalum distichum*), sedge species (*Carex sp.*), rush species (*Juncus sp.*) and bushy bluestem (*Andropogon glomeratus*). Refer to the USACE wetland field data sheets in Attachment B for more detail.

3.1.2 Hydrology

Topography in the Project site is generally flat with elevations near 30-ft above mean sea level (MSL) (Figure 5). Hydrology in the Project area is associated with soils of low permeability and slow water runoff attributed to gentle slopes from higher elevation to lower elevation moving south and east toward the Colorado River. There are numerous large and small man-made drainage features located through out the entire Property. Each of the small drainage ditches are located adjacent to existing plant buildings and parking areas and drain to the larger ditches that carry the water from the Project area. The larger drainage ditches act as major water conveyances that carry water over two miles to the Colorado River. Each of these drainage ditches are routinely maintained (mowed/cleared).

The wetland survey completed in February 2007 was conducted shortly (within 5 days) after a significant rainfall event. Therefore, each of the wetlands identified during these surveys were documented having saturated and inundated conditions.

FEMA Flood Hazard maps were reviewed to evaluate the location of the Project area within the 100-year floodplain. The entire Project area is considered to be outside the 100-year and 500-year zones (Figure 6). U.S. Fish and Wildlife Service NWI maps indicate that seven mapped wetlands are located within the Project area (Figure 7) and only one of the mapped wetlands is associated with the delineated wetlands, WET008.

