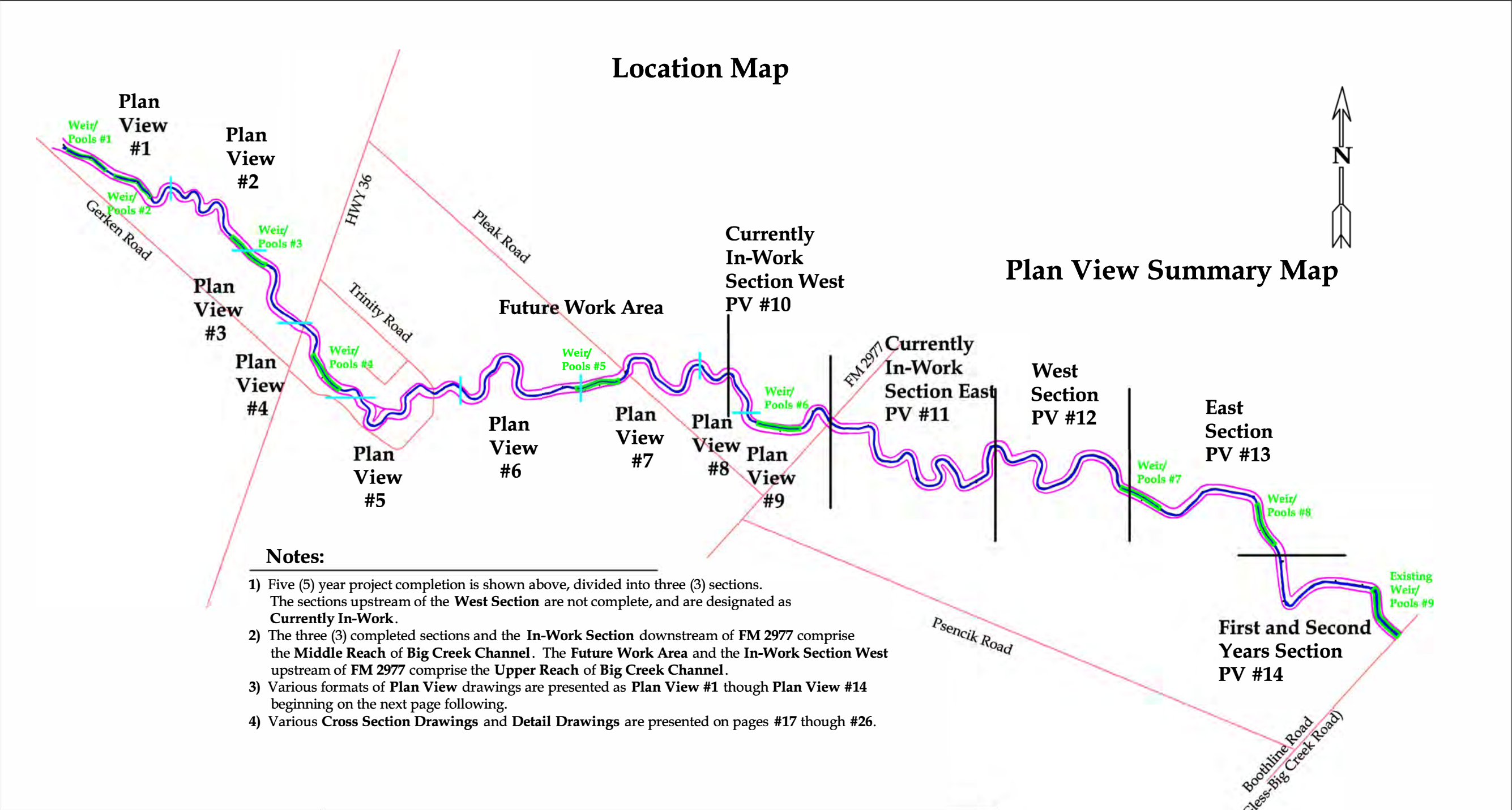


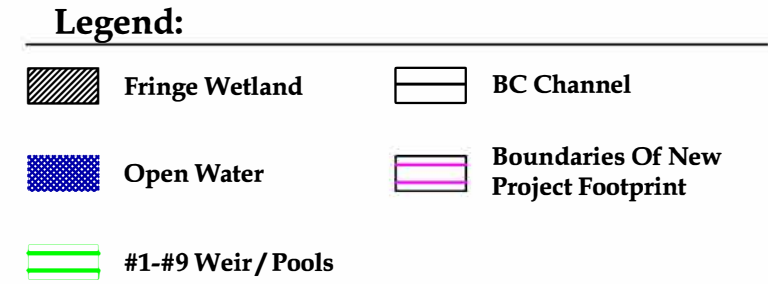
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<p>Date: 3 Aug 2020</p>	<p>Upper and Middle Reach of the: Big Creek New Floodplain Creation Project H. U. C.: 12070104</p>	<p>Revised Corps Report 2019 - 2020 #3 Vicinity Map</p>
<p>By: Wet Tech 1831 Pinewood Ct. Sugar Land, Tx 77498 ph: 281-242-8734 glenn@wet-tech.net</p>	<p>For: Fort Bend County Drainage District P.O. Box 1028 Rosenberg, Tx 77471</p>	<p>Fort Bend County Drainage District Big Creek New Floodplain Creation Project Corps Permit # SWG-2007-00913 Page: 1 of 26</p>

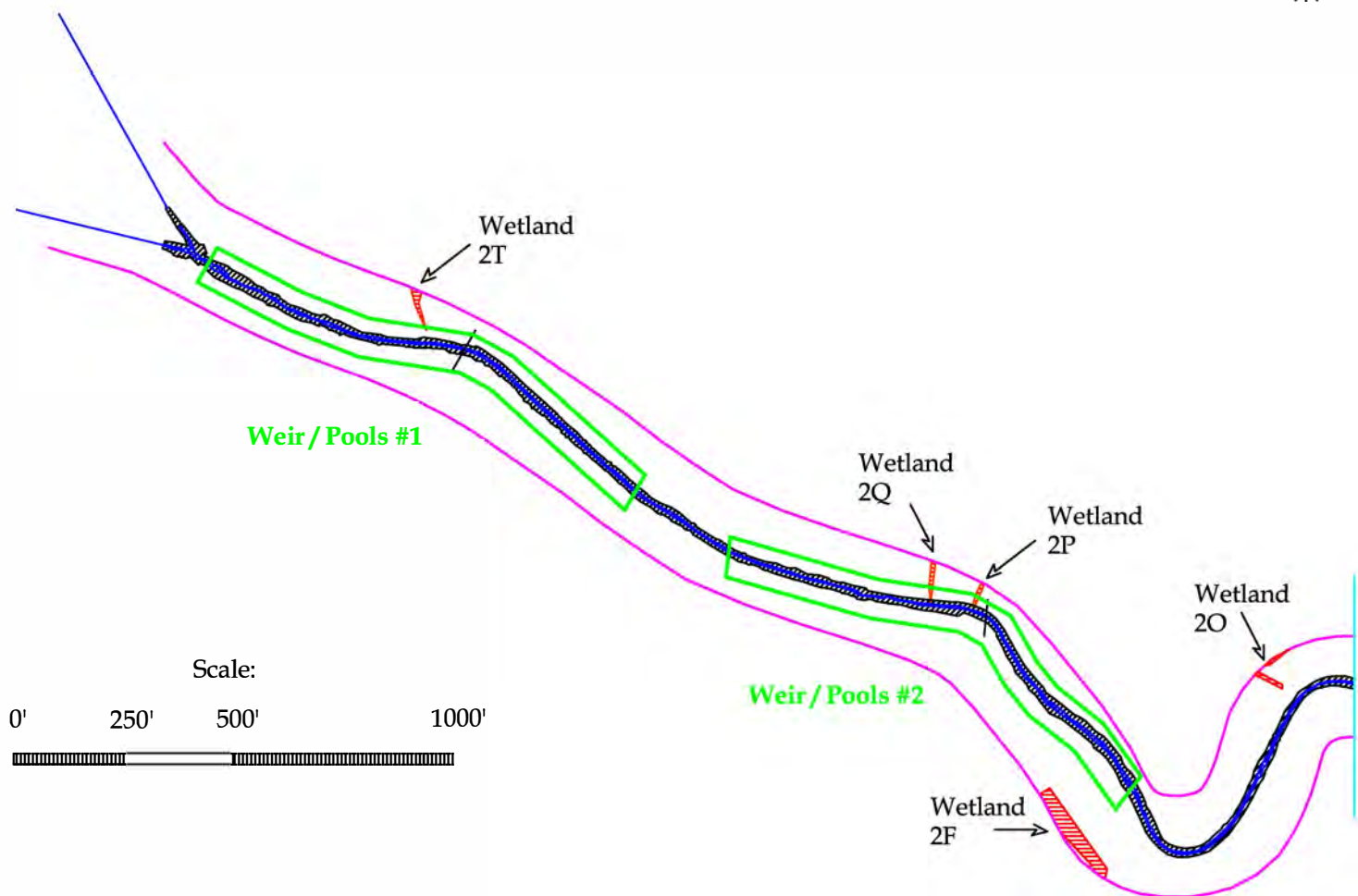


Middle Reach of Big Creek H. U. C.: 12070104	Revised Corps Report 2019 - 2020 #3 Location Map and Plan View Summary Map
	Big Creek New Floodplain Creation Project Fort Bend County Drainage District SWG-2007-00913

Sheet: 2 of 26	By: Wet Tech 1831 Pinewood Ct. Sugar Land, Tx 77498 ph: 281-242-8734 glenn@wet-tech.net	For: Fort Bend County Drainage District P.O. Box 1028 Rosenberg, Tx 77471
Date: 3 Aug 2020		



2 Tributaries, both
without a weir.



Legend:

	BC Channel Fringe Wetland		BC Channel Jurisdictional Line		Weir / Pools #1 and #2
	BC Channel Open Water		Boundaries Of New Project Footprint		Buffer Jurisdictional Area

Revised Corps Report 2019 - 2020 #3

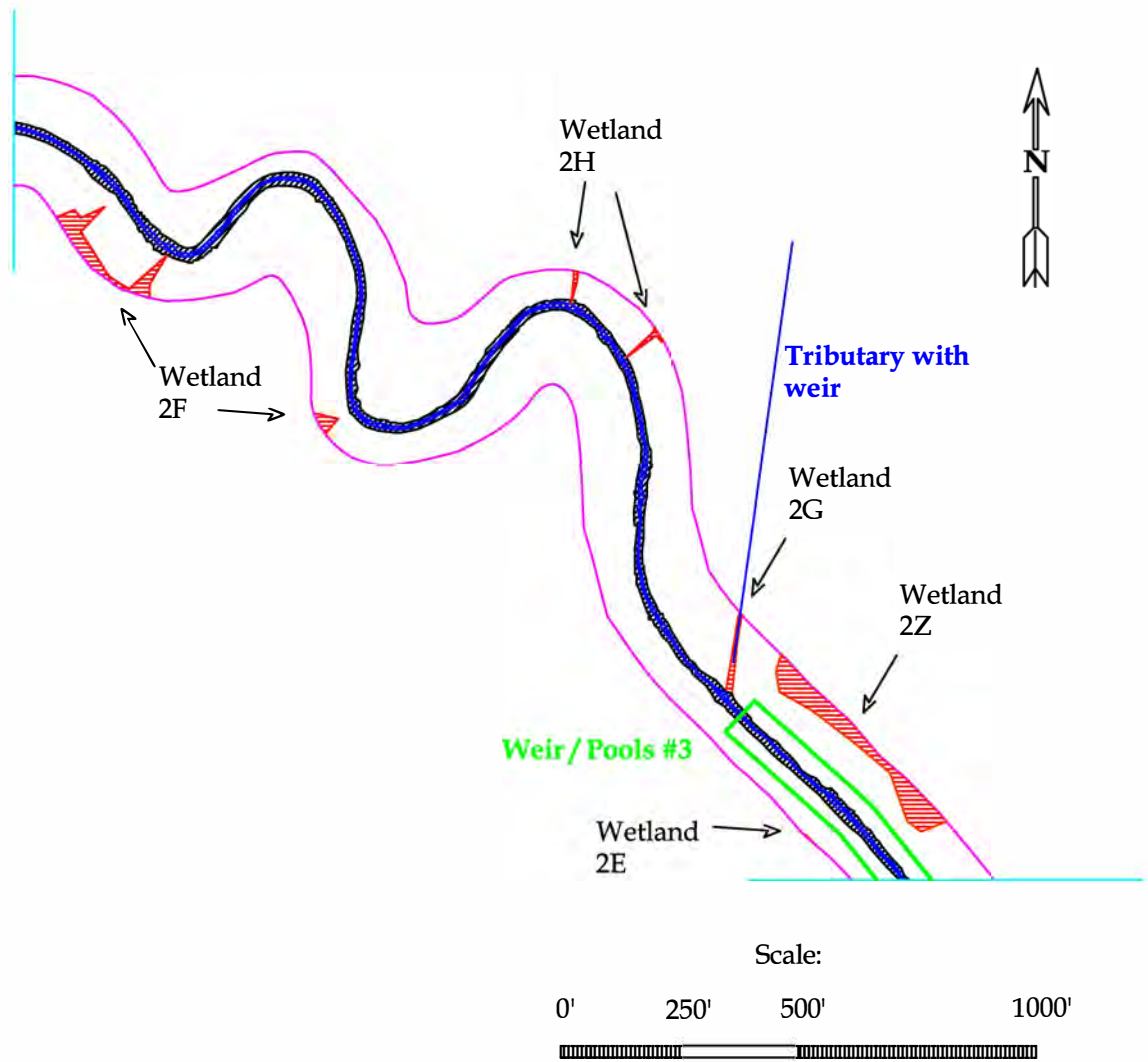
Plan View #1

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glenn@wet-tech.net







Upper and Middle Reach of the:
Big Creek New Floodplain
Creation Project
H. U. C.: 12070104

For: Fort Bend County Drainage District
P.O. Box 1028
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Fort Bend County Drainage District
SWG-2007-00913 Reauthorization
Big Creek New Floodplain
Creation Project
Date: 3 Aug 2020
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Legend:

	BC Channel Fringe Wetland		BC Channel Jurisdictional Line		Weir / Pools #3
	BC Channel Open Water		Boundaries Of New Project Footprint		Buffer Jurisdictional Area

Revised Corps Report 2019 - 2020 #3

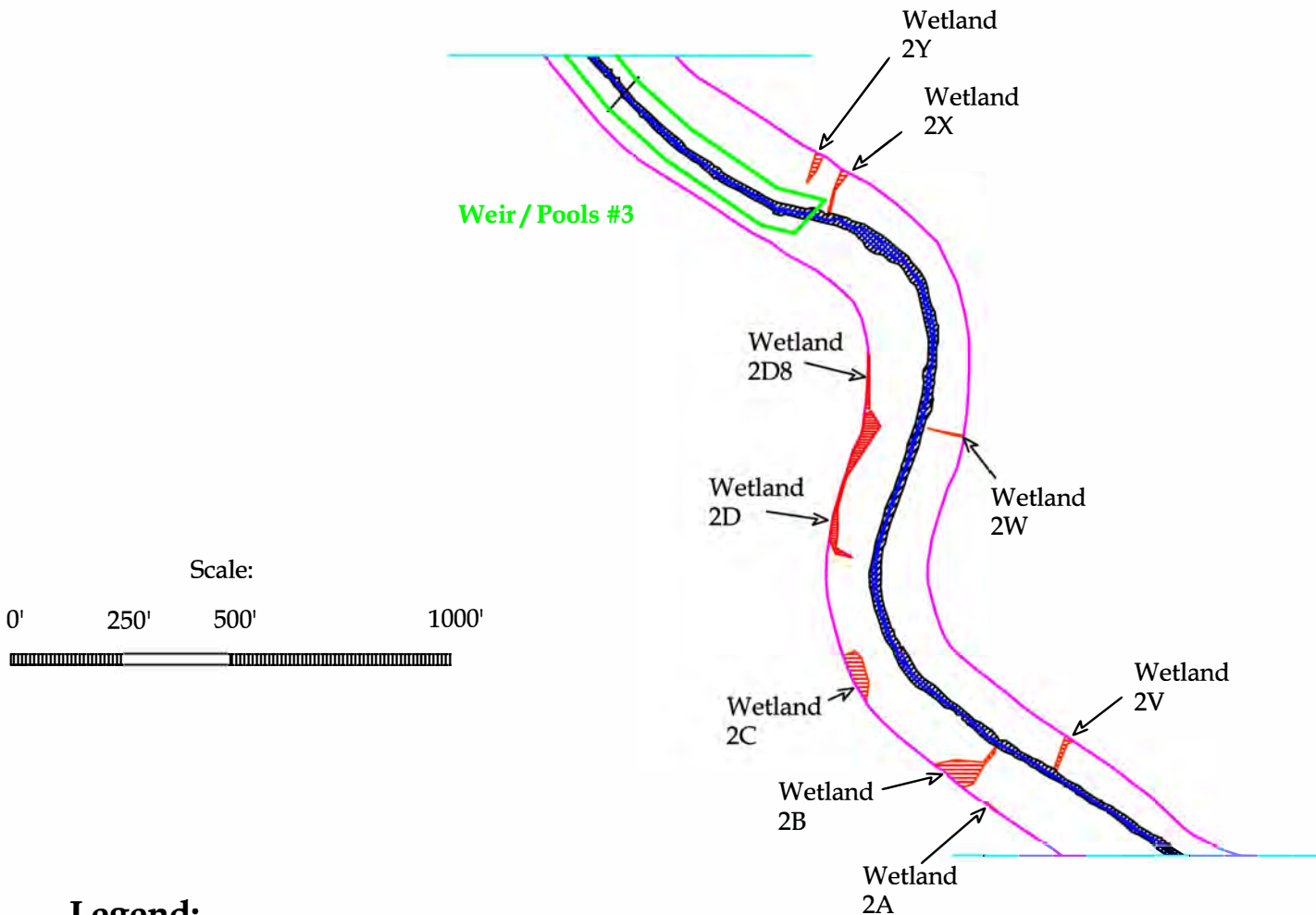
Plan View #2

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





Upper and Middle Reach of the:
Big Creek New Floodplain
Creation Project
H. U. C.: 12070104

For: Fort Bend County Drainage District
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Fort Bend County Drainage District
SWG-2007-00913 Reauthorization
Big Creek New Floodplain
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Date: 3 Aug 2020
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Legend:

 BC Channel Fringe Wetland	 BC Channel Jurisdictional Line	 Weir / Pools #3
 BC Channel Open Water	 Boundaries Of New Project Footprint	 Buffer Jurisdictional Area

Revised Corps Report 2019 - 2020 #3

Plan View #3







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Upper and Middle Reach of the:
Big Creek New Floodplain
Creation Project
H. U. C.: 12070104

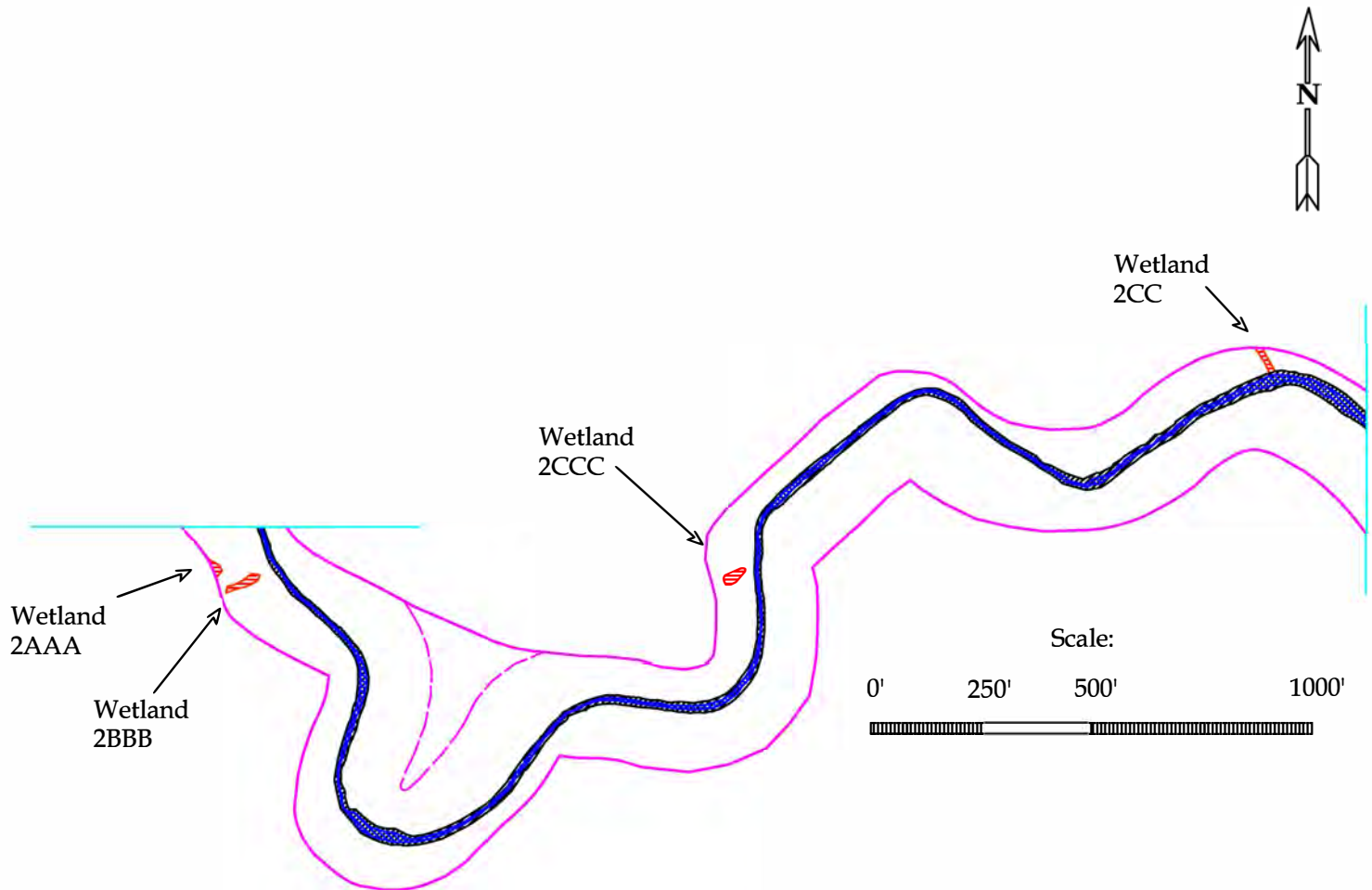
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Fort Bend County Drainage District
SWG-2007-00913 Reauthorization
Big Creek New Floodplain
Creation Project
Date: 3 Aug 2020
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





- | | | | | | |
|--|--------------------------------------|---|--|---|---------------------------------------|
|  | BC Channel
Fringe Wetland |  | BC Channel
Jurisdictional Line |  | Weir / Pools #4 |
|  | BC Channel
Open Water |  | Boundaries Of New
Project Footprint |  | Buffer
Jurisdictional Area |

Revised Corps Report 2019 - 2020 #3		Plan View #4
<p>By: Wet Tech 1831 Pinewood Ct. Sugar Land, Tx 77498 ph: 281-242-8734 glenn@wet-tech.net</p>	<p>Upper and Middle Reach of the: Big Creek New Floodplain Creation Project H. U. C.: 12070104</p> <hr/> <p>For: Fort Bend County Drainage District P.O. Box 1028 Rosenberg, Tx 77471</p>	



Legend:

	BC Channel Fringe Wetland		BC Channel Jurisdictional Line
	BC Channel Open Water		Boundaries Of New Project Footprint
			Buffer Jurisdictional Area

Revised Corps Report 2019 - 2020 #3

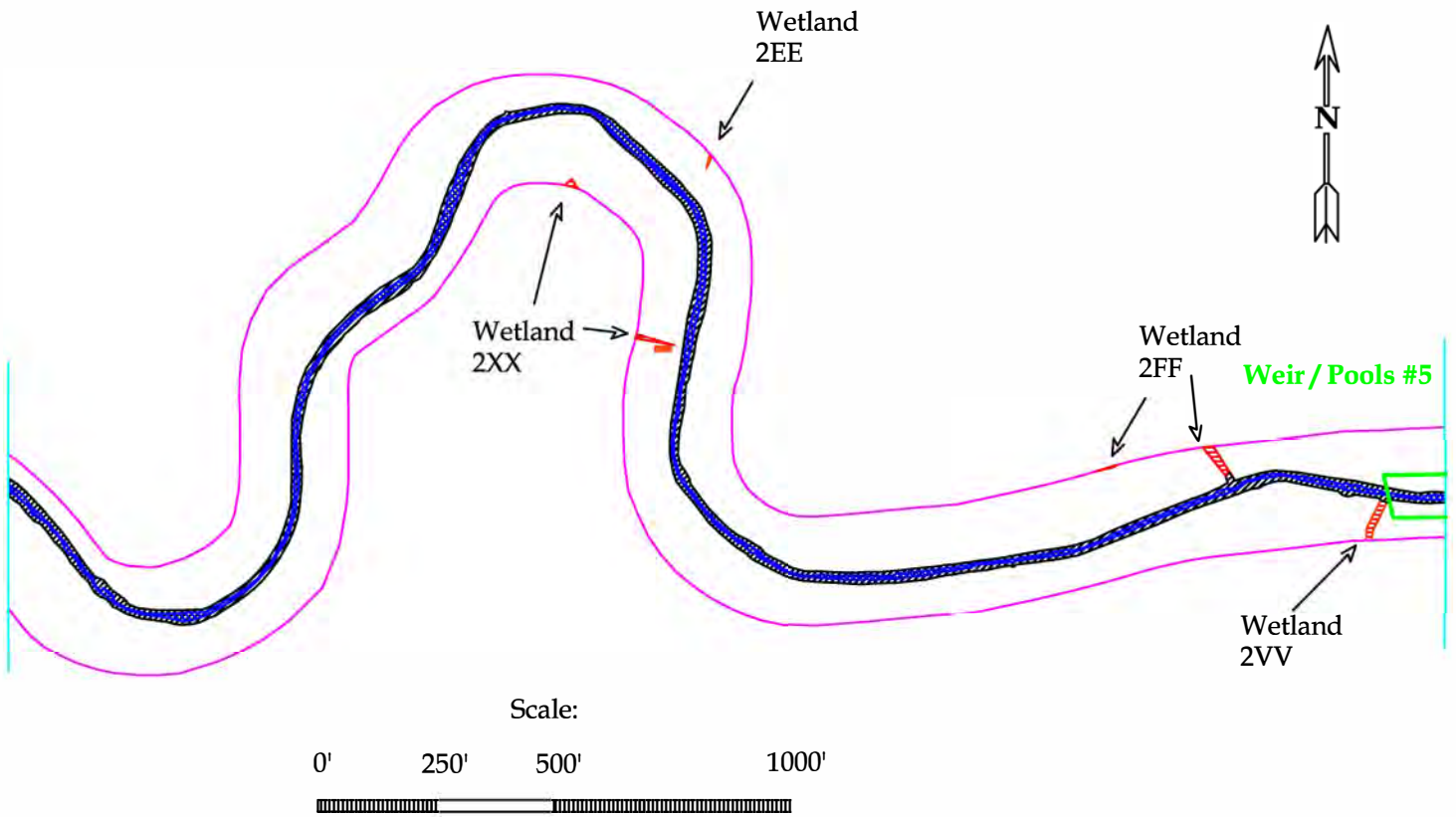
Plan View #5

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





Upper and Middle Reach of the:
Big Creek New Floodplain
Creation Project
H. U. C.: 12070104

For: Fort Bend County Drainage District
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Fort Bend County Drainage District
SWG-2007-00913 Reauthorization
Big Creek New Floodplain
Creation Project
Date: 3 Aug 2020
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Legend:

 BC Channel Fringe Wetland	 BC Channel Jurisdictional Line	 Weir / Pools #5
 BC Channel Open Water	 Boundaries Of New Project Footprint	 Buffer Jurisdictional Area

Revised Corps Report 2019 - 2020 #3

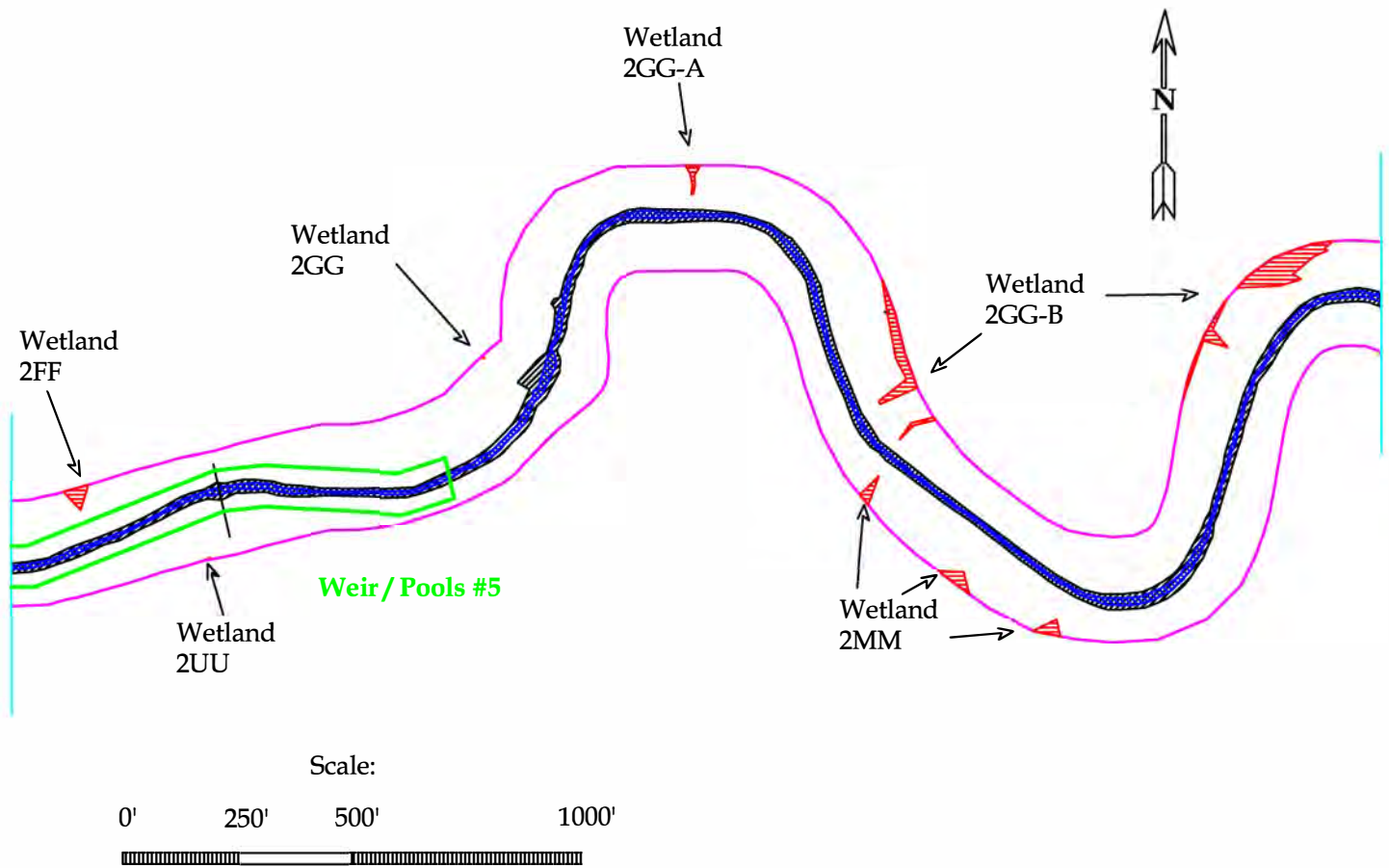
Plan View #6

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




Upper and Middle Reach of the:
Big Creek New Floodplain
Creation Project
H. U. C.: 12070104

For: Fort Bend County Drainage District
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Fort Bend County Drainage District
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Big Creek New Floodplain
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Legend:

	BC Channel Fringe Wetland		BC Channel Jurisdictional Line		Weir / Pools #5
	BC Channel Open Water		Boundaries Of New Project Footprint		Buffer Jurisdictional Area

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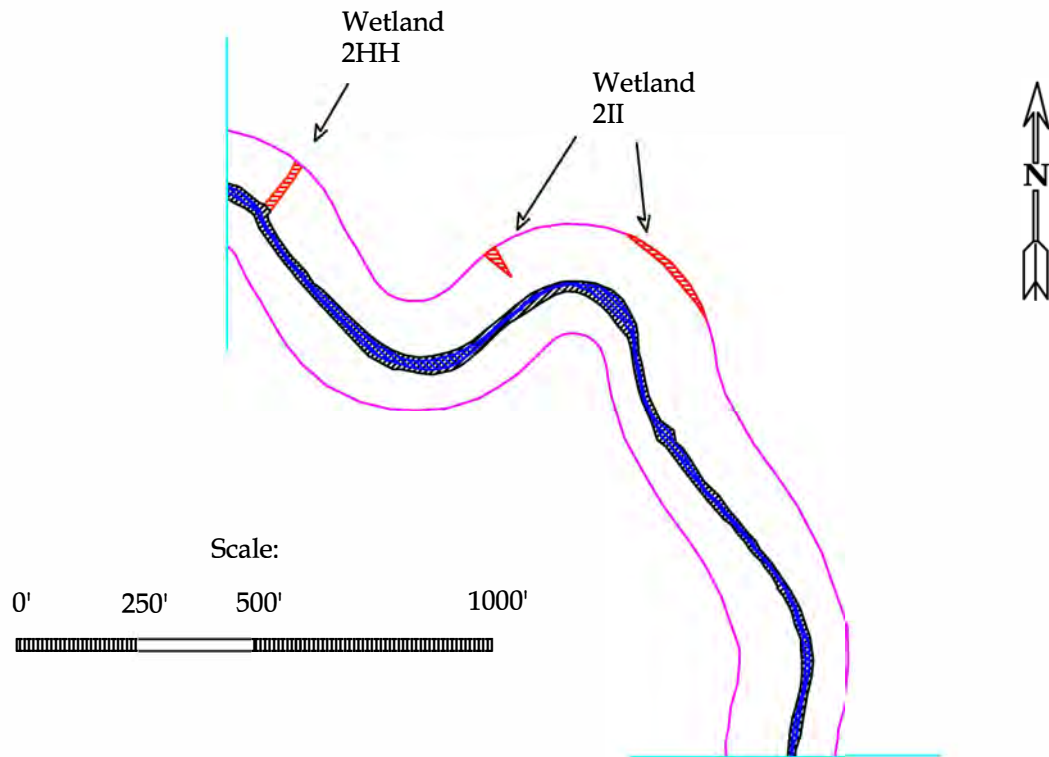
Plan View #7

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



Upper and Middle Reach of the:
Big Creek New Floodplain
Creation Project
H. U. C.: 12070104

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Fort Bend County Drainage District
SWG-2007-00913 Reauthorization
Big Creek New Floodplain
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Legend:

	BC Channel Fringe Wetland		BC Channel Jurisdictional Line		
	BC Channel Open Water		Boundaries Of New Project Footprint		Buffer Jurisdictional Area

Revised Corps Report 2019 - 2020 #3

Plan View #8

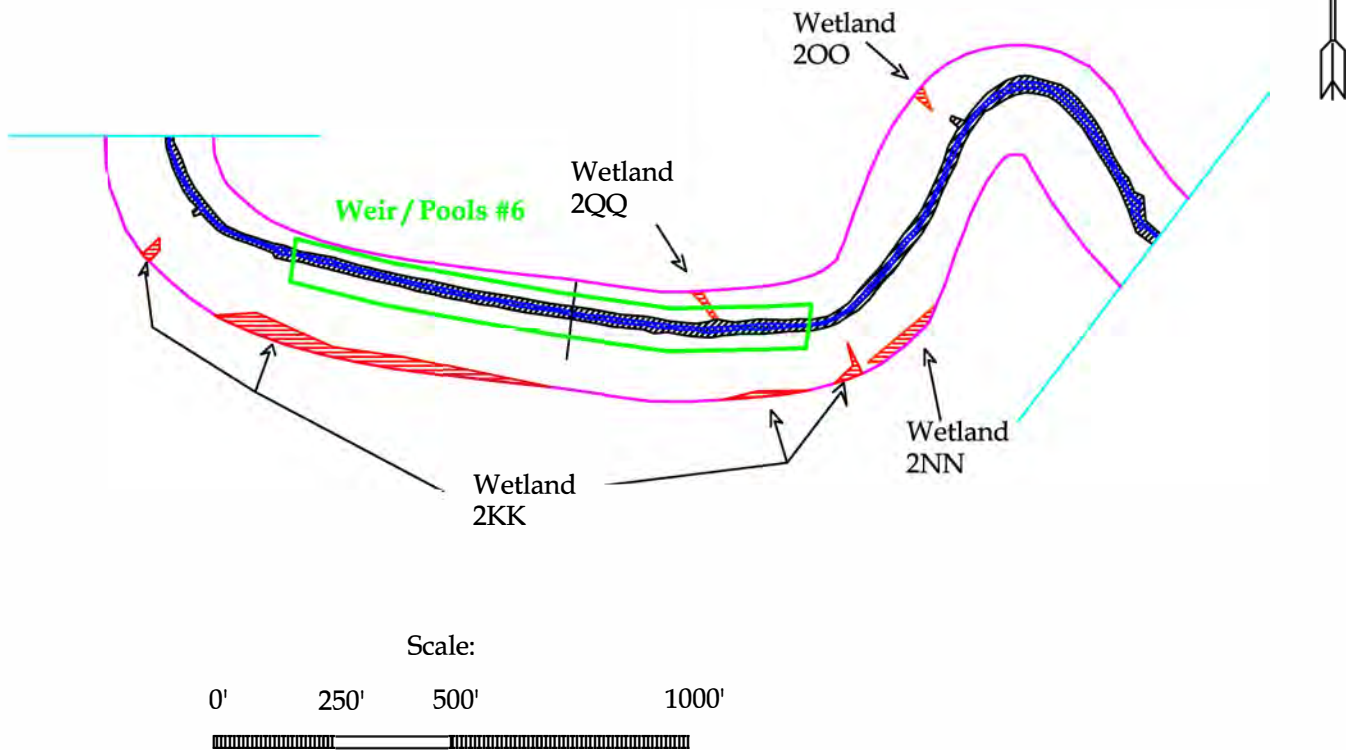
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Upper and Middle Reach of the:
Big Creek New Floodplain
Creation Project
H. U. C.: 12070104







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Fort Bend County Drainage District
SWG-2007-00913 Reauthorization
Big Creek New Floodplain
Creation Project
Date: 3 Aug 2020
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Currently In-Work Section West



Legend:

	BC Channel Fringe Wetland		BC Channel Jurisdictional Line		Weir / Pools #6
	BC Channel Open Water		Boundaries Of New Project Footprint		Buffer Jurisdictional Area

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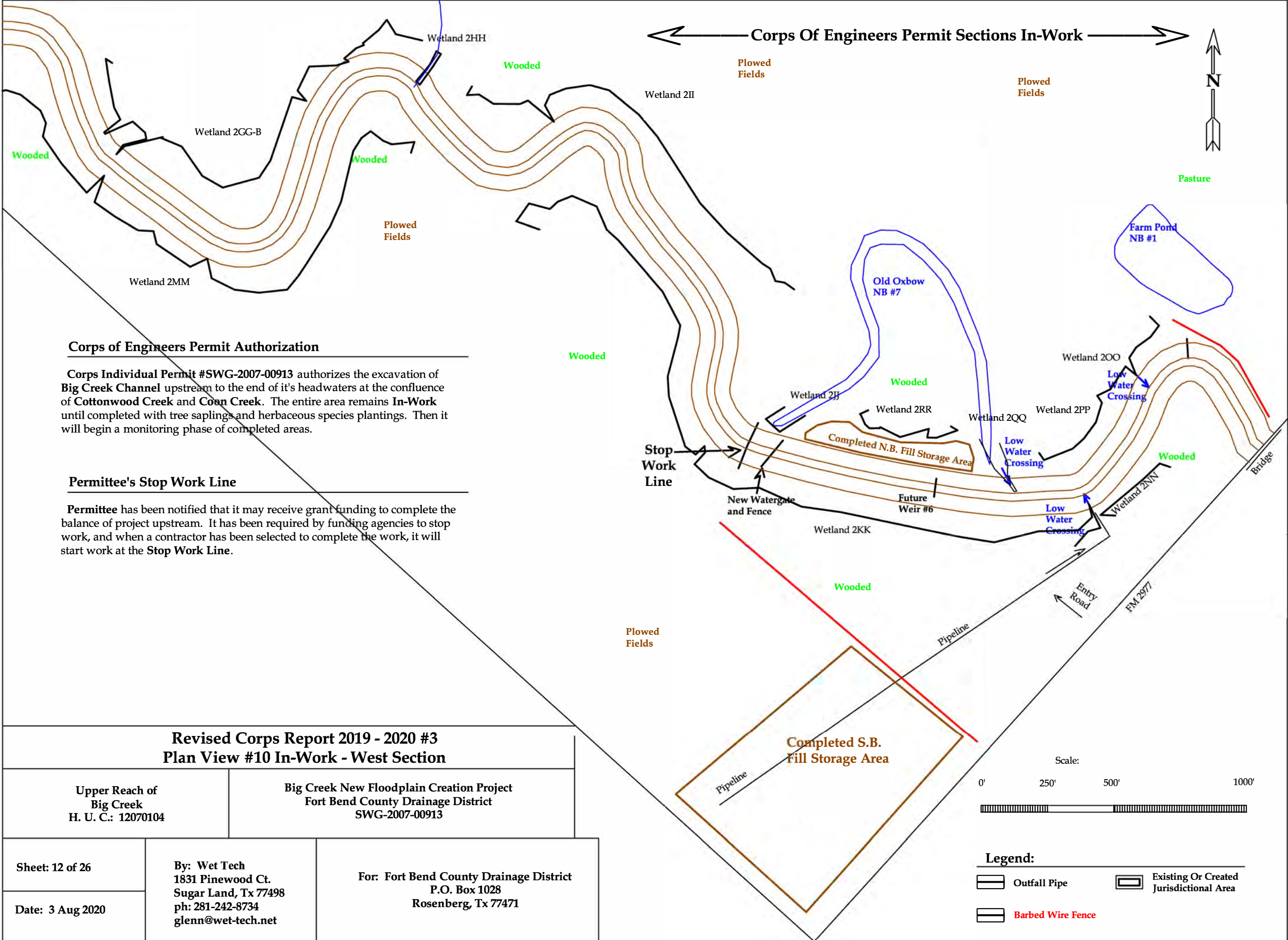
Plan View #9

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Upper and Middle Reach of the:
Big Creek New Floodplain
Creation Project
H. U. C.: 12070104

For: Fort Bend County Drainage District
P.O. Box 1028
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Fort Bend County Drainage District
SWG-2007-00913 Reauthorization
Big Creek New Floodplain
Creation Project
Date: 3 Aug 2020
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Corps of Engineers Permit Authorization

Corps Individual Permit #SWG-2007-00913 authorizes the excavation of Big Creek Channel upstream to the end of it's headwaters at the confluence of Cottonwood Creek and Coon Creek. The entire area remains In-Work until completed with tree saplings and herbaceous species plantings. Then it will begin a monitoring phase of completed areas.

Permittee's Stop Work Line

Permittee has been notified that it may receive grant funding to complete the balance of project upstream. It has been required by funding agencies to stop work, and when a contractor has been selected to complete the work, it will start work at the Stop Work Line.

Revised Corps Report 2019 - 2020 #3
Plan View #10 In-Work - West Section

Upper Reach of
Big Creek
H. U. C.: 12070104

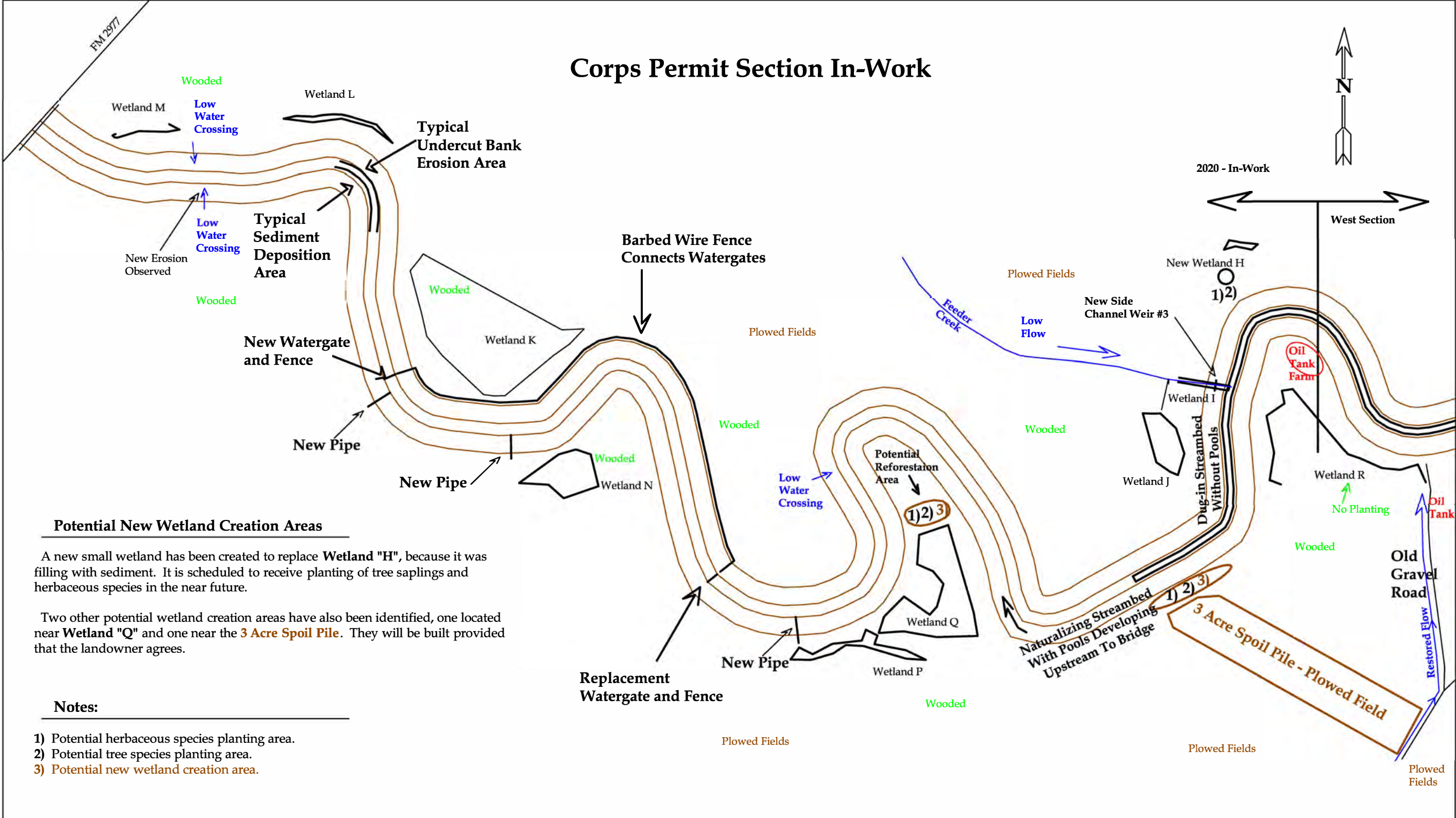
Big Creek New Floodplain Creation Project
Fort Bend County Drainage District
SWG-2007-00913

Sheet: 12 of 26

Date: 3 Aug 2020

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For: Fort Bend County Drainage District
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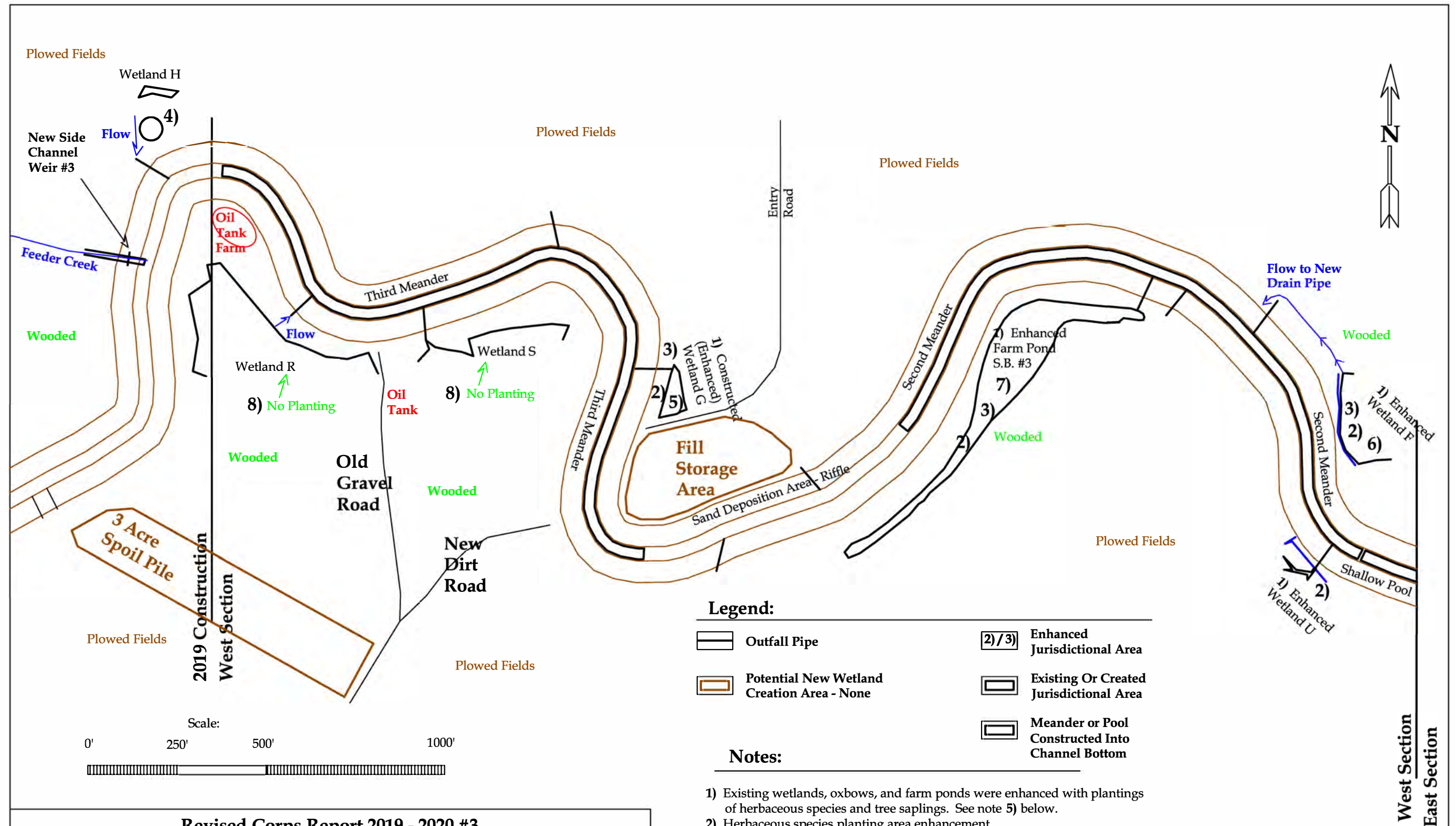


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Plan View #11 In-Work - East Section

Upper Reach of Big Creek H. U. C.: 12070104	Big Creek New Floodplain Creation Project Fort Bend County Drainage District SWG-2007-00913
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Date: 3 Aug 2020		



**Revised Corps Report 2019 - 2020 #3
Plan View #12 Monitoring - West Section**

Middle Reach of
Big Creek
H. U. C.: 12070104

Big Creek New Floodplain Creation Project
Fort Bend County Drainage District
SWG-2007-00913

Sheet: 14 of 26

Date: 3 Aug 2020

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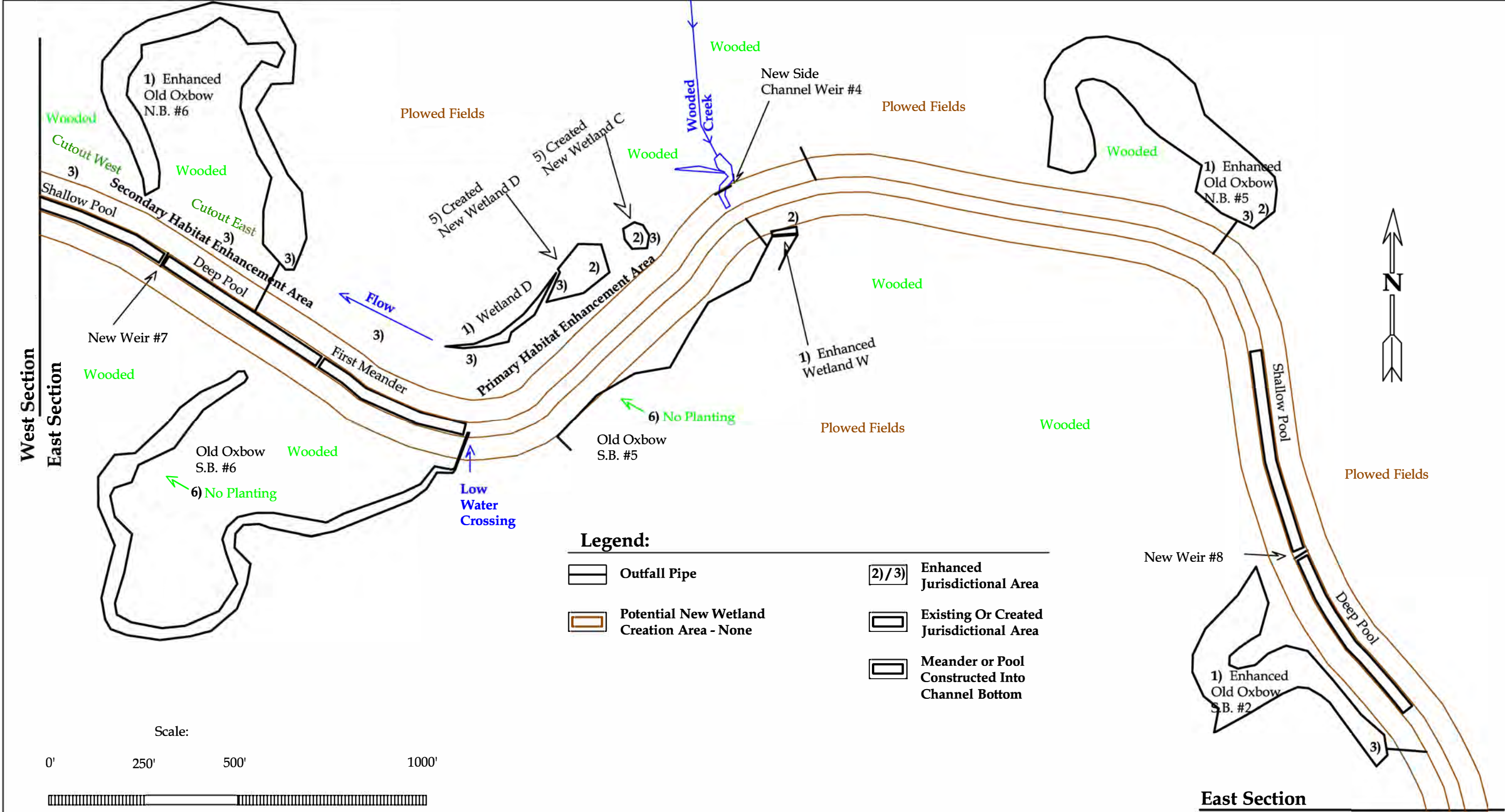
For: Fort Bend County Drainage District
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Legend:

- | | | | |
|--|--|--|---|
| | Outfall Pipe | | Enhanced Jurisdictional Area (2/3) |
| | Potential New Wetland Creation Area - None | | Existing Or Created Jurisdictional Area |
| | | | Meander or Pool Constructed Into Channel Bottom |

Notes:

- Existing wetlands, oxbows, and farm ponds were enhanced with plantings of herbaceous species and tree saplings. See note 5) below.
- Herbaceous species planting area enhancement.
- Tree species planting area enhancement.
- New wetland creation area.
- Previously existing **Wetland "G"** was degraded by a vine jungle that was covering it's surface. It was excavated into a shallow (water) edge wetland, along with a pooled deep water center. It was then planted with many tree saplings and wet herbaceous species.
- Previously existing **Wetland "F"** was degraded by a stand of large Chinese tallows. They were marked by **Wet Tech** staff and injected with herbicide by **District** crew. There appears to be a 100% mortality rate of treated tallows.
- S.B. Farm Pond #3** was enhanced by two (2) years of planting both tree saplings and herbaceous species. Due to mortality caused by trampling and grazing of cows pastured on-site, all herbaceous species have expired, and only about 50 % of planted saplings continue to survive. It will not be replanted.
- Existing wetlands that were NOT enhanced with plantings due to their excellent pre-existing condition.



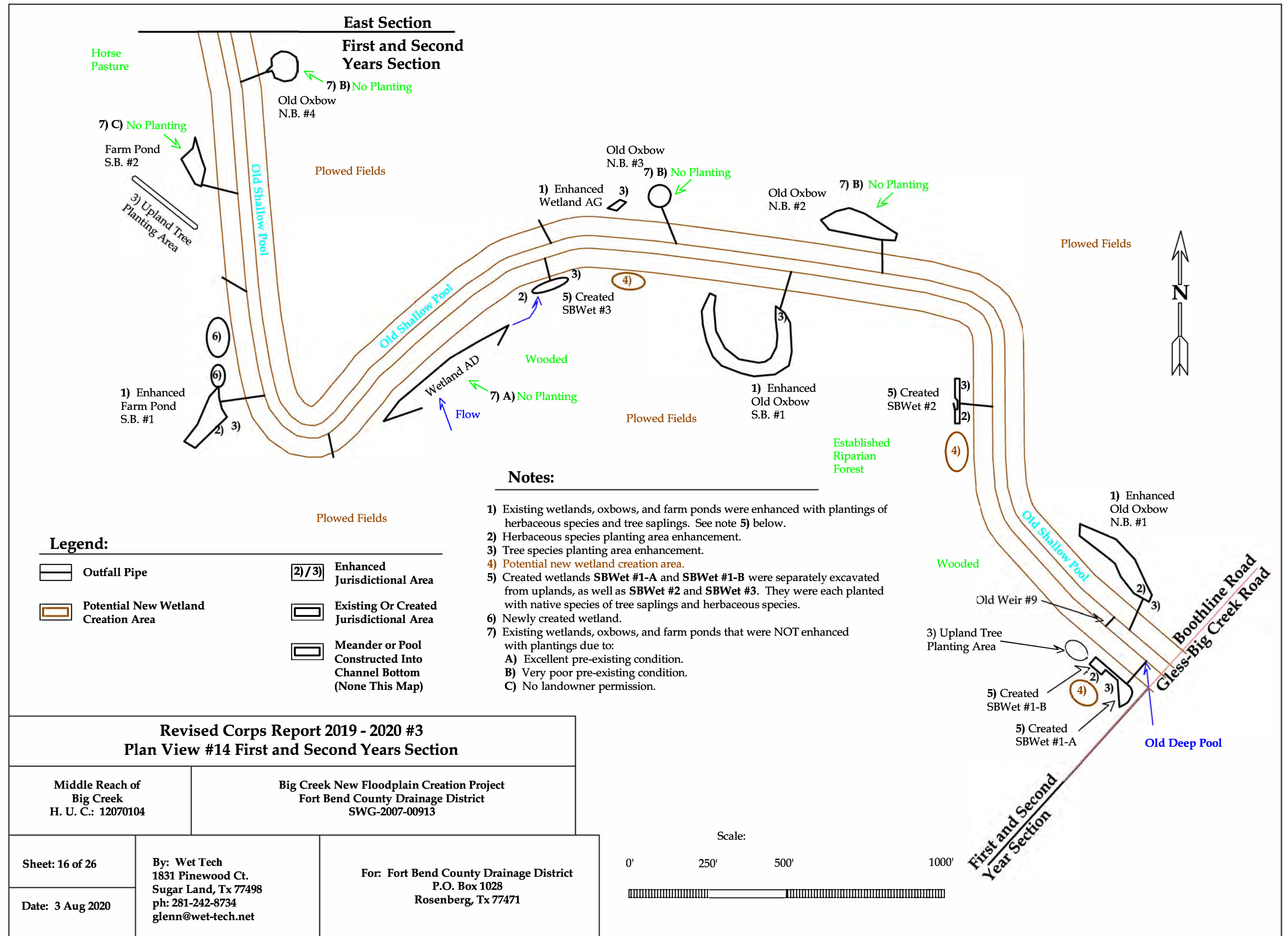
Revised Corps Report 2019 - 2020 #3
Plan View #13 Monitoring - East Section

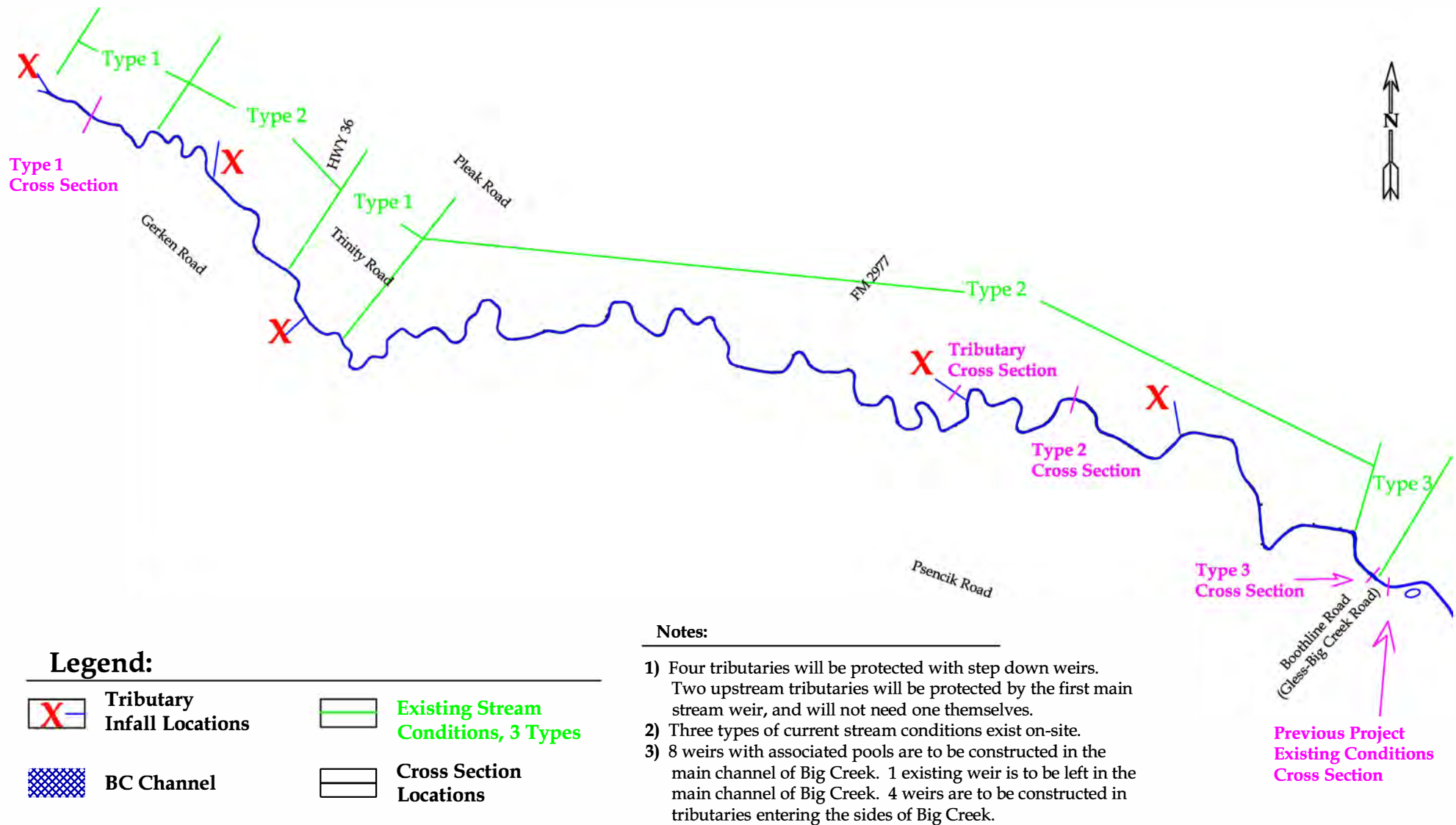
Middle Reach of Big Creek H. U. C.: 12070104	Big Creek New Floodplain Creation Project Fort Bend County Drainage District SWG-2007-00913
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Sheet: 15 of 26	By: Wet Tech 1831 Pinewood Ct. Sugar Land, Tx 77498 ph: 281-242-8734 glenn@wet-tech.net	For: Fort Bend County Drainage District P.O. Box 1028 Rosenberg, Tx 77471
Date: 3 Aug 2020		

Notes:

- Existing wetlands, and oxbows were enhanced with plantings of herbaceous species and/or tree saplings. See note 5) below.
- Herbaceous species planting area enhancement.
- Tree species planting area enhancement.
- There are NO potential new wetland creation areas in this section.
- Created New Wetland "D" and New Wetland "C" were excavated from uplands directly adjacent to previously existing Wetland "D" and Wetland "C". They were both planted with native species of tree saplings and herbaceous species. They, and the avoided woods between them, are designated as the Primary Habitat Enhancement Area.
- Existing oxbows that were NOT enhanced with plantings due to their excellent pre-existing condition.





Upper and Middle Reach of the:
Big Creek New Floodplain
Creation Project
H. U. C.: 12070104

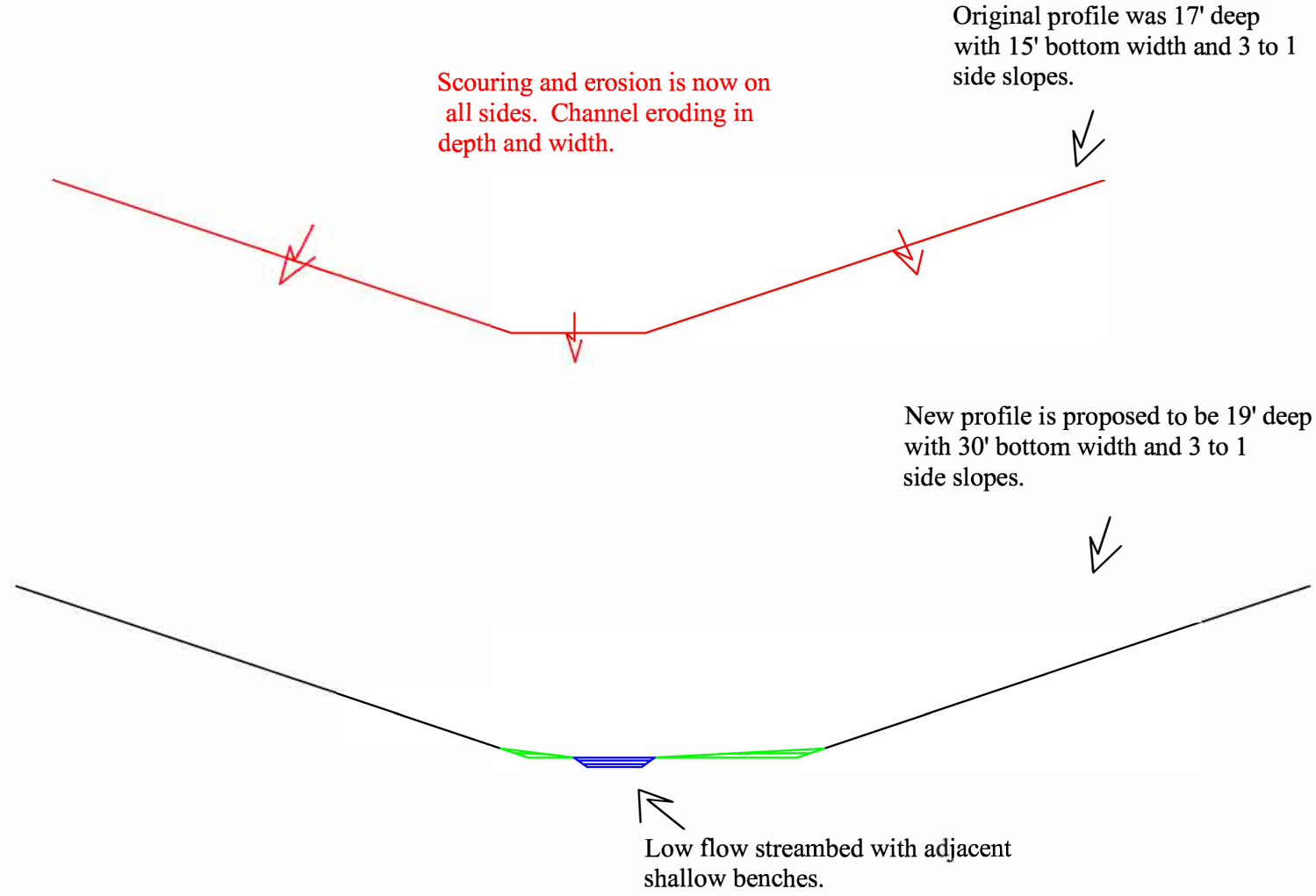
**Revised Corps Report 2019 - 2020 #3
Existing Conditions and Cross-Sections Summary Map**

**For: Fort Bend County Drainage District
P.O. Box 1028
Rosenberg, Tx 77471**

**By: Wet Tech
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ph: 281-242-8734
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**Fort Bend County Drainage District
SWG-2007-00913 Reauthorization
Big Creek New Floodplain
Creation Project
Date: 3 Aug 2020
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Big Creek Type 1



Upper and Middle Reach of the:
Big Creek New Floodplain
Creation Project
H. U. C.: 12070104

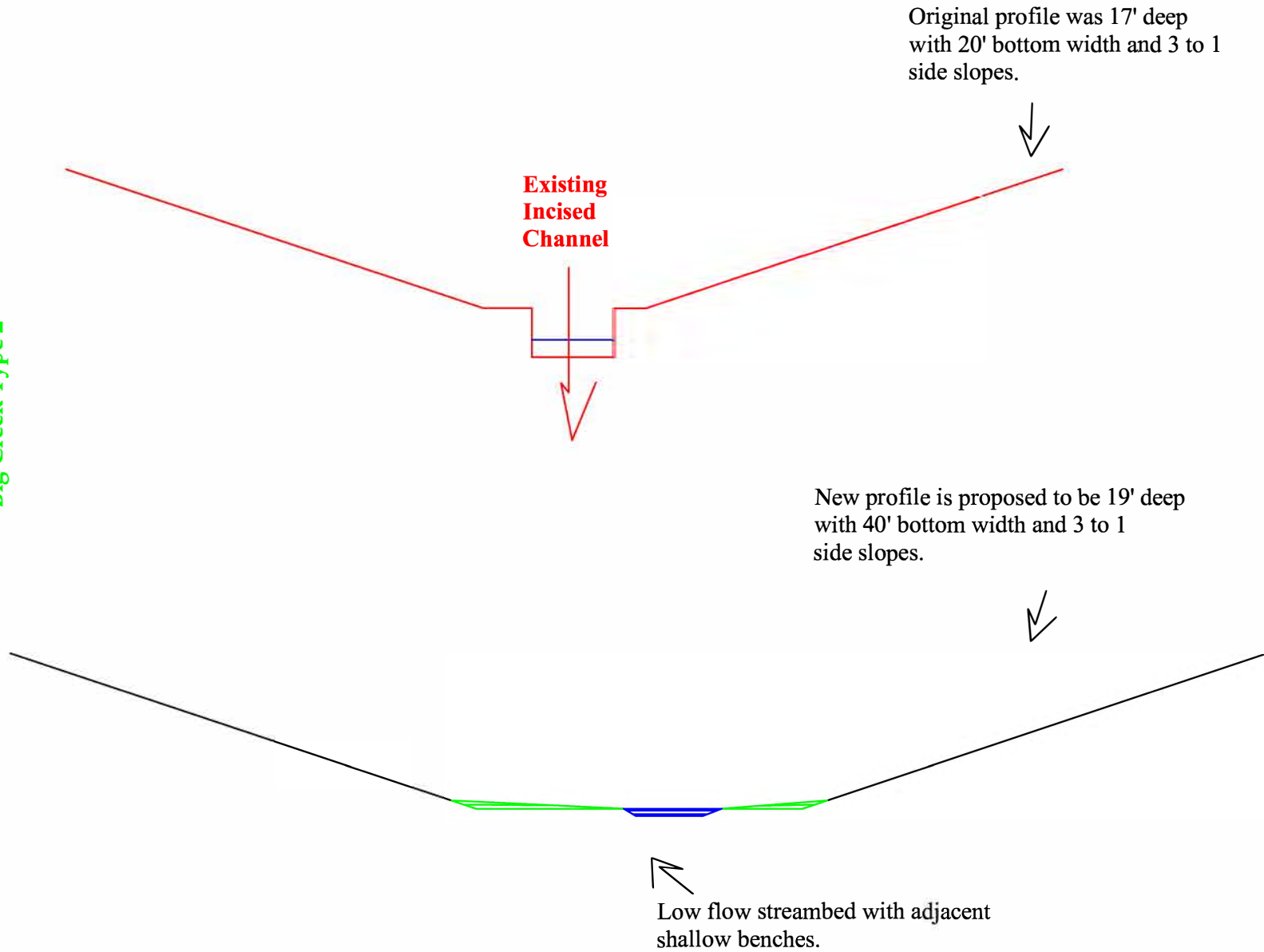
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Revised Corps Report 2019 -2020 #3
Type 1 Big Creek

For: Fort Bend County Drainage District
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Fort Bend County Drainage District
SWG-2007-00913 Reauthorization
Big Creek New Floodplain
Creation Project
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Big Creek Type 2



Upper and Middle Reach of the:
Big Creek New Floodplain
Creation Project
H. U. C.: 12070104

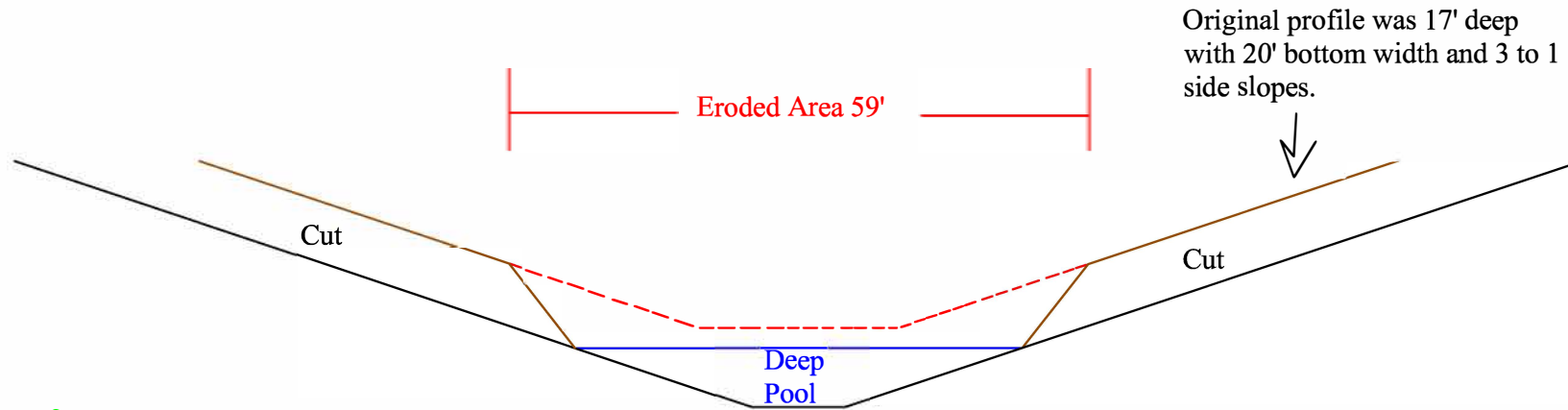
By: Wet Tech
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Type 2 Big Creek

For: Fort Bend County Drainage District
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Fort Bend County Drainage District
SWG-2007-00913 Reauthorization
Big Creek New Floodplain
Creation Project
Date: 3 Aug 2020
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Big Creek Type 3



Legend:

- Pre-Erosion Profile
- Existing Profile
- Target Profile

Notes:

- 1.) Toe of existing slope was caving into the deep scour pool
- 2.) Lower part of existing slope will slump into channel if not cut back to the minimum sustainable clay slope (3 to 1).
- 3.) Once pool slopes are established to a stable profile, the deep pool will be left for habitat and water quality.

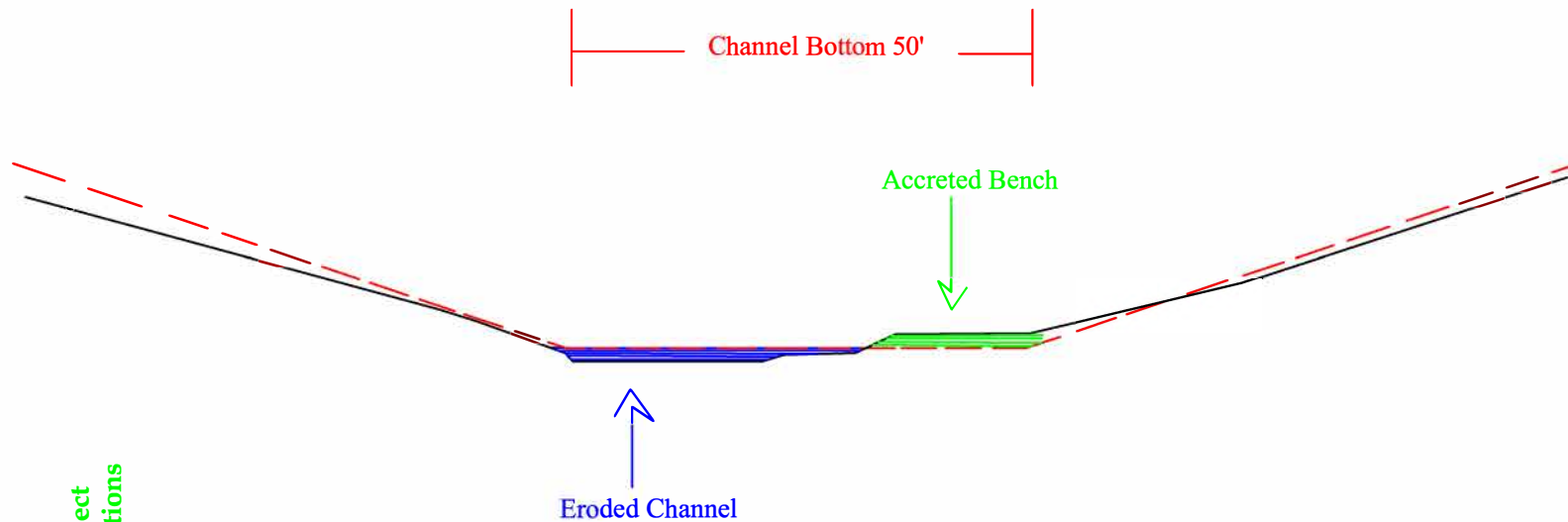
Revised Corps Report 2019 - 2020 #3
Type 3 Big Creek

Fort Bend County Drainage District
SWG-2007-00913 Reauthorization
Big Creek New Floodplain
Creation Project
Date: 3 Aug 2020
Page: 20 of 26

For: Fort Bend County Drainage District
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Upper and Middle Reach of the:
Big Creek New Floodplain
Creation Project
H. U. C.: 12070104

By: Wet Tech
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glenn@wet-tech.net



Big Creek
Previous Project
Existing Conditions

Legend:

--- Constructed Profile
— Naturalized Profile

Notes:

- 1.) Previously constructed segment did not include a sinuous stream bed.
- 2.) In less than 10 years natural stream building processes have begun to naturalize a sinuous bed into the bottom though erosion and accretion.

Upper and Middle Reach of the:
Big Creek New Floodplain
Creation Project
H. U. C.: 12070104

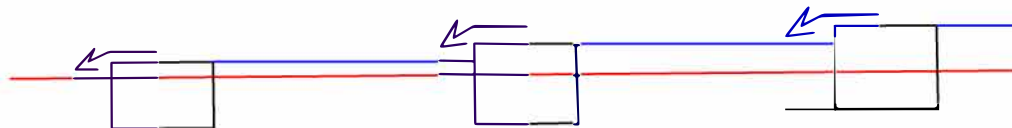
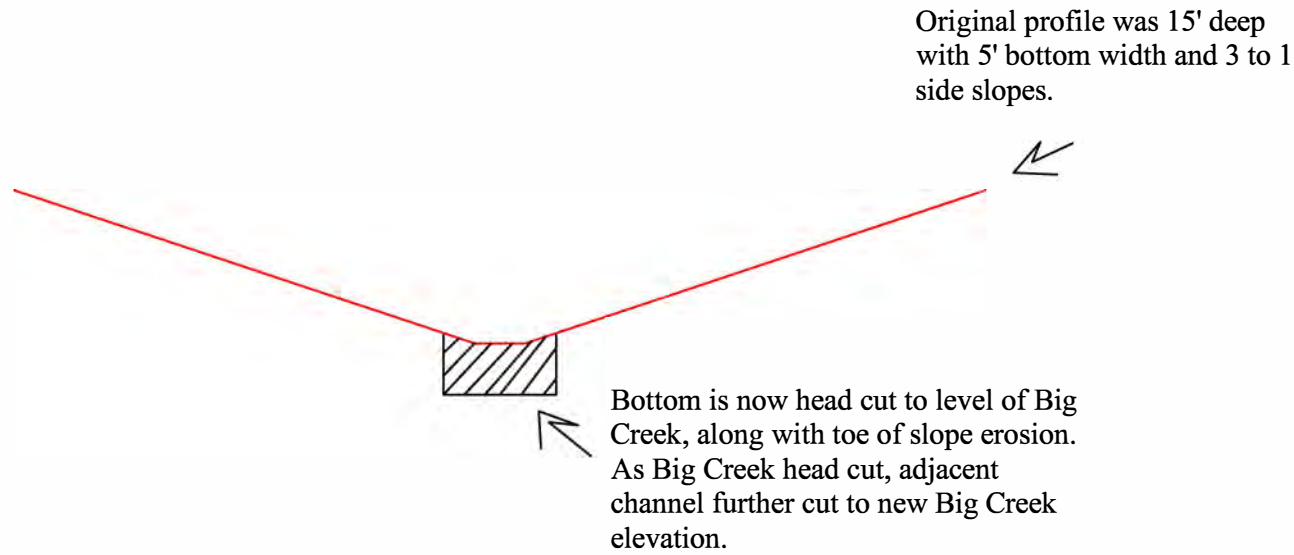
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Revised Corps Report 2019 -2020 #3
Previous Project Existing Condition

For: Fort Bend County Drainage District
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Fort Bend County Drainage District
SWG-2007-00913 Reauthorization
Big Creek New Floodplain
Creation Project
Date: 3 Aug 2020
Page: 21 of 26

Existing Tributary Conditions



Weirs will be used at four tributary infall locations to stabilize them. All tributary locations except the infalls of 2 creeks at northwest boundary of project, are currently head cut. These 2 creeks are stabilized by the first weir proposed to be installed at the head waters of Big Creek.

Revised Corps Report 2019 - 2020 #3
Existing Tributary Conditions

Fort Bend County Drainage District
SWG-2007-00913 Reauthorization
Big Creek New Floodplain
Creation Project
Date: 3 Aug 2020
Page: 22 of 26

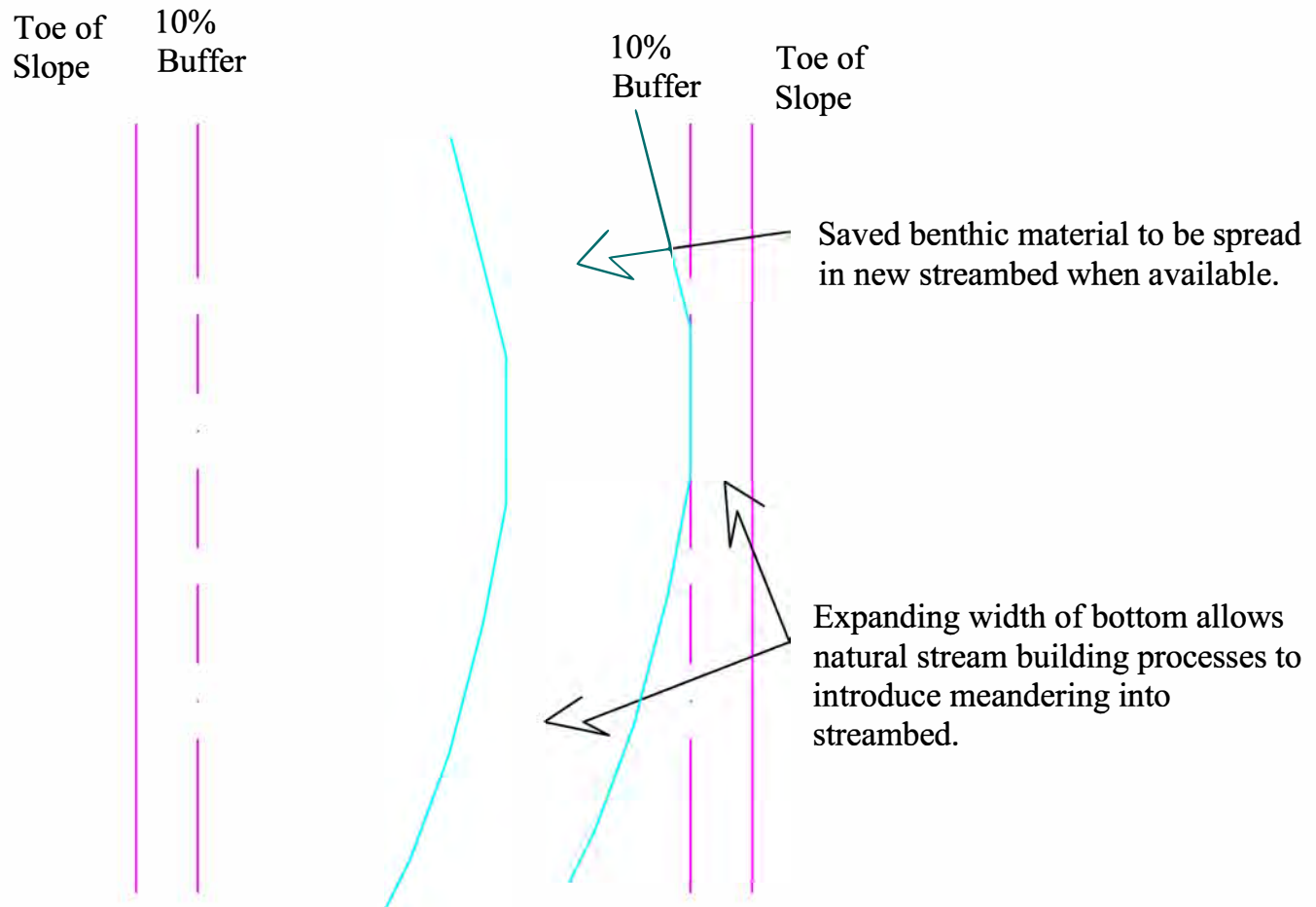
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Upper and Middle Reach of the:
Big Creek New Floodplain
Creation Project
H. U. C.: 12070104

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Stream Detail

40' Bottom Width, Appx. 8' Wide Streambed



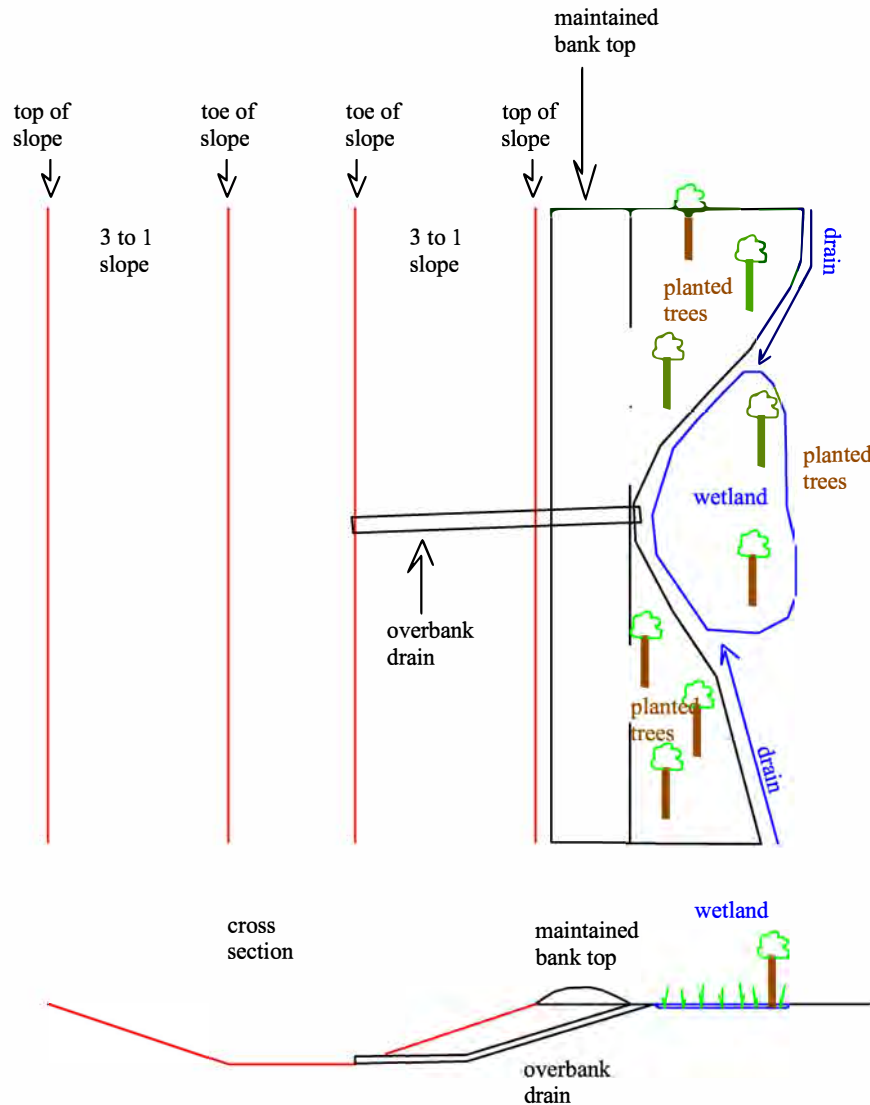
Notes:

- 1) Proposed streambed in new Big Creek bottom to produce approx. 105% stream length relative to main channel path.
- 2) Streambed avoids outside 10% of bottom width to avoid toe of slope erosion.
- 3) Streambed is 20% of bottom (width) wide, and meanders somewhat in channel bottom due to natural stream building processes.
- 4) Streambed is 1' deep, graded from toe to channel.
- 5) Conserved benthic organisms are to be placed into new streambed when available. Benthic organisms are to be avoided by leaving existing streambed in place when flowline is acceptable.

Upper and Middle Reach of the: Big Creek New Floodplain Creation Project H. U. C.: 12070104	Revised Corps Report 2019 - 2020 #3 Plan View of Proposed New Big Creek Bottom	
	For: Fort Bend County Drainage District P.O. Box 1028 Rosenberg, Tx 77471	Fort Bend County Drainage District SWG-2007-00913 Reauthorization Big Creek New Floodplain Creation Project Date: 3 Aug 2020 Page: 23 of 26

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Proposed Buffer Habitat Detail



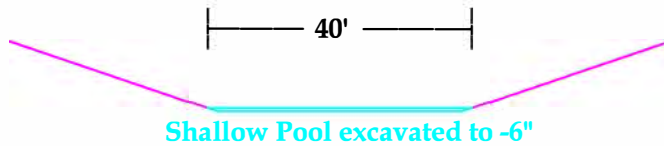
Notes:

- 1) Some overbank drains are to have small water quality wetlands created in front of them (with landowner permission). Some larger habitat wetlands are to be created (with landowner permission) that are not associated with an overbank drain.
- 2) Outfall pipes that control established water levels of newly constructed wetlands, or pre-existing wet areas such as oxbows or other wet areas, will have the flowline elevation surveyed and recorded in order to be protected from future development impacts. Surveyed elevations shown on As-Built drawings alongside each drain pipe upslope location are to be permanently recorded as the **"Water Level Setting Elevation"** for wet areas directly adjacent.
- 3) All created wetlands (and many existing wetlands) are to have tree saplings planted in and around them.
- 4) Permittee and Wet Tech staff will educate each landowner regarding benefits of creating wetlands on their property.

Upper and Middle Reach of the: Big Creek New Floodplain Creation Project H. U. C.: 12070104	Revised Corps Report 2019 - 2020 #3 Proposed Buffer Habitat Creation Detail	
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Weir / Pools #1 - #8 Detail

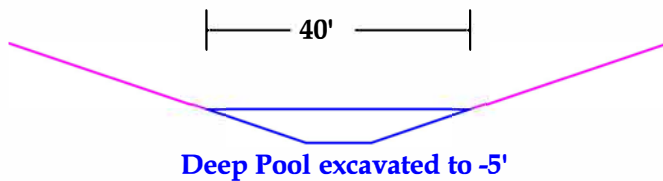
Shallow Pool Cross Section



Notes: Shallow Pool

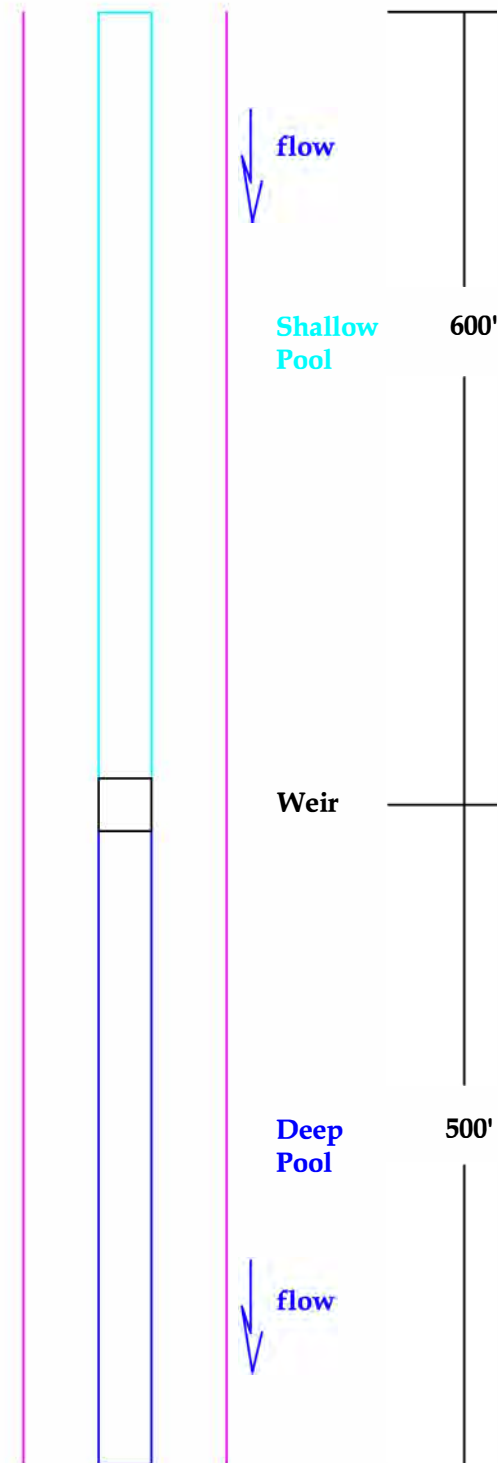
- 1) Shallow Pools are excavated 6" deep, and provide shallow water habitat.
- 2) Increases water quality through shallow water treatment of nitrogen and other pollutants.

Deep Pool Cross Section



Notes: Deep Pool

- 1) Deep Pools are excavated 5' deep, and provide open water / finfish habitat.
- 2) Deep pools provide additional sedimentation capacity.
- 3) Increases water quality through open water treatment of nitrogen and other pollutants.



Upper and Middle Reach of the:
Big Creek New Floodplain
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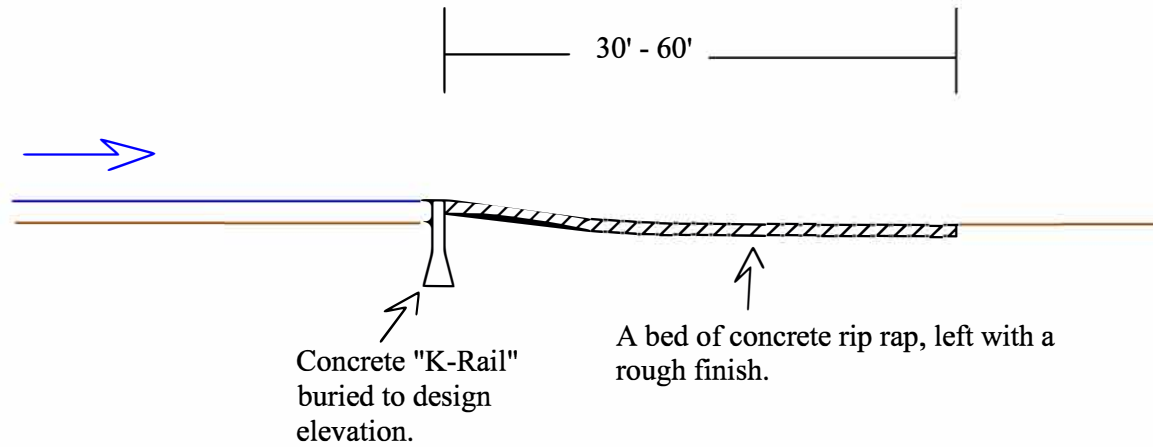
Revised Corps Report 2019 - 2020 #3
Weir / Pools #1 - #8 Detail

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Weir Detail



Small / Tributary Weir

(1) K-Rail	5cy
Rip Rap	130cy
Total Concrete	135cy

Large / Main Channel Weir

(2) K-Rails	10cy
Rip Rap	200cy
Total Concrete	210cy

Notes:

- 1) "K-Rail" : A large standard size concrete highway lane divider.
- 2) Weirs in main channel will be at, or near target bottom elevation. Pools above and below weirs are to be dug into bottom.
- 3) Head cut tributaries will have taller weirs to stabilize existing streams, and allow sedimentation to re-establish stream bottoms.
- 4) Cubic Yardage totals are approximations and vary at each location.
- 5) Flowable concrete fill may (or may not) be poured over weirs to lock in rip rap and fill voids.

Revised Corps Report 2019 - 2020 #3
Weir Detail

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