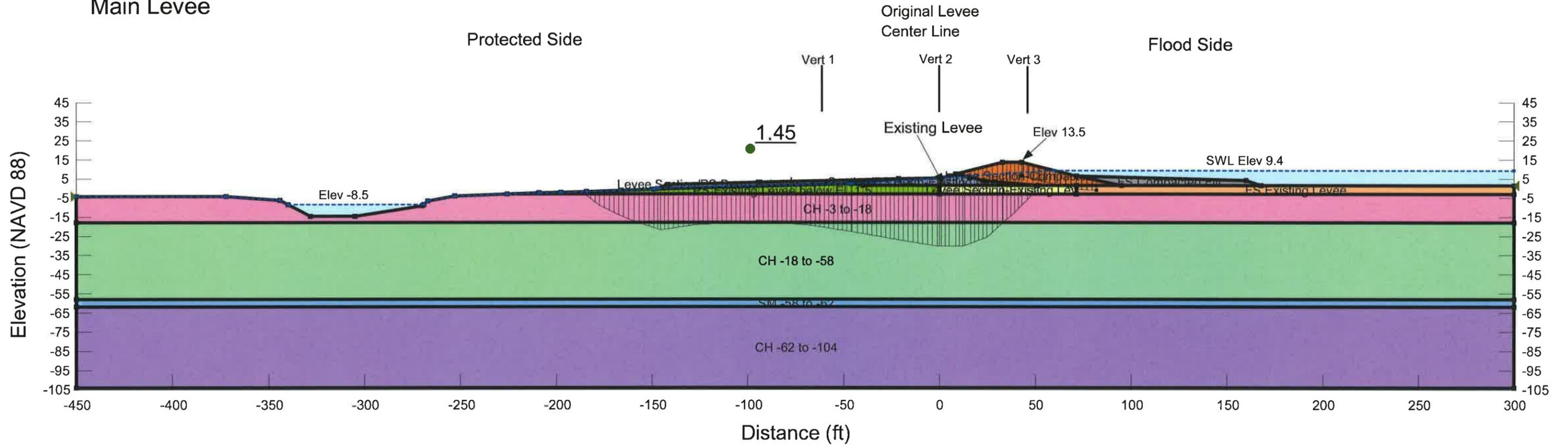


Westwego to Harvey Canal  
 New Westwego Pumping Station to Orleans Village  
 West Jefferson Parish, Louisiana  
 WBV-14c.2  
 Main Levee

Sensitivity analysis of levee

Regions used for fill in stability analyses

Westwego to Harvey Canal  
 New Westwego Pumping Station to Orleans Village  
 West Jefferson Parish, Louisiana  
 WBV-14c.2  
 Main Levee



Typical Section 1  
 Still Water Level Case

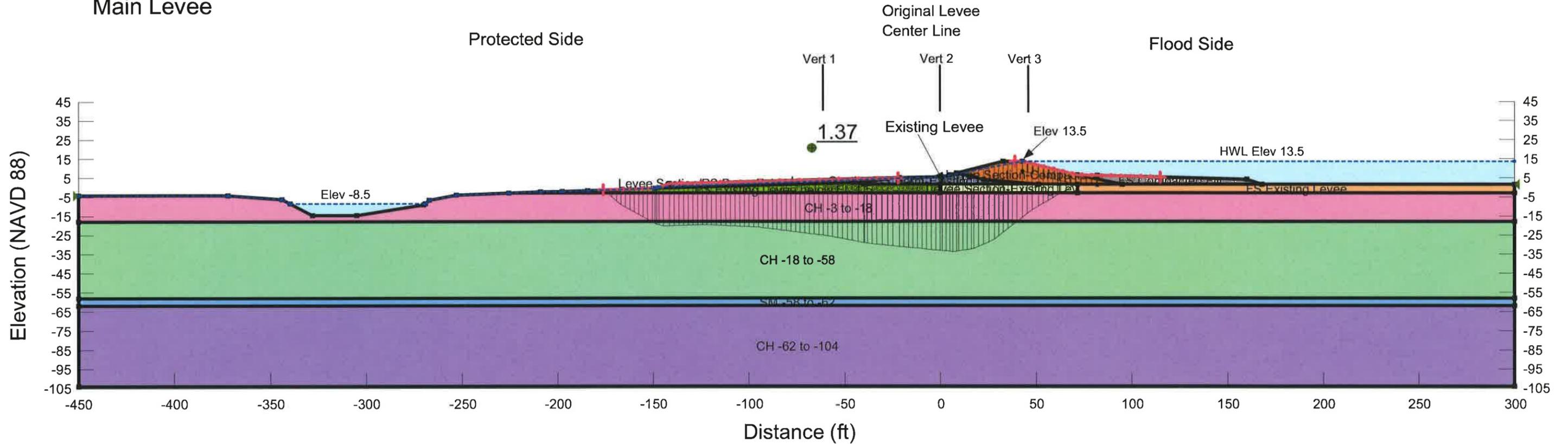
Name: Levee Section-Existing Levee Model: Mohr-Coulomb Unit Weight: 112 pcf Cohesion: 420 psf Phi: 0 °  
 Name: FS Compacted Fill Model: Mohr-Coulomb Unit Weight: 120 pcf Cohesion: 1150 psf Phi: 0 °  
 Name: CH -18 to -58 Model: Spatial Mohr-Coulomb Phi: 0 ° Weight Fn: CH -18 to -58 Cohesion Spatial Fn: CH -18 to -58  
 Name: CH -3 to -18 Model: Spatial Mohr-Coulomb Phi: 0 ° Weight Fn: CH -3 to -18 Cohesion Spatial Fn: CH -3 to -18  
 Name: SM -58 to -62 Model: Spatial Mohr-Coulomb Cohesion: 0 psf Phi: 25 ° Weight Fn: SM -58 to -62  
 Name: CH -62 to -104 Model: Spatial Mohr-Coulomb Phi: 0 ° Weight Fn: CH -62 to -104 Cohesion Spatial Fn: CH -62 to -104  
 Name: Levee Section-Compacted Fill Model: Mohr-Coulomb Unit Weight: 116 pcf Cohesion: 1150 psf Phi: 0 °  
 Name: Levee Section/PS Berm-Existing Levee above EL 1.5 Model: Mohr-Coulomb Unit Weight: 113 pcf Cohesion: 1000 psf Phi: 0 °  
 Name: PS Existing Levee below EL 1.5 Model: Mohr-Coulomb Unit Weight: 110 pcf Cohesion: 700 psf Phi: 0 °  
 Name: FS Existing Levee Model: Mohr-Coulomb Unit Weight: 112 pcf Cohesion: 420 psf Phi: 0 °

NOTES:

- 1) Strengths for New and Old Fill Materials from Verification Borings based on 1/3 - 2/3 criteria
- 2) Average Wet Density from Verification Borings for New and Old Fill Materials
- 3) Original Design Strengths and Wet Densities Used Below Elevation -3.0

Directory: E:\Personnel\Eddie T\Projects\NOD Levee Construction Issues\Sensitivity analyses\Design Section-1,Main Levee\one-third Strength\  
 File Name: WBV-14c.2 Reach I Main Levee SWL-one-third str-case-II.gsz

Westwego to Harvey Canal  
 New Westwego Pumping Station to Orleans Village  
 West Jefferson Parish, Louisiana  
 WBV-14c.2  
 Main Levee



Typical Section 1  
 Water at Project Grade

- Name: Levee Section-Existing Levee Model: Mohr-Coulomb Unit Weight: 112 pcf Cohesion: 420 psf Phi: 0 °
- Name: FS Compacted Fill Model: Mohr-Coulomb Unit Weight: 120 pcf Cohesion: 1150 psf Phi: 0 °
- Name: CH -18 to -58 Model: Spatial Mohr-Coulomb Phi: 0 ° Weight Fn: CH -18 to -58 Cohesion Spatial Fn: CH -18 to -58
- Name: CH -3 to -18 Model: Spatial Mohr-Coulomb Phi: 0 ° Weight Fn: CH -3 to -18 Cohesion Spatial Fn: CH -3 to -18
- Name: SM -58 to -62 Model: Spatial Mohr-Coulomb Cohesion: 0 psf Phi: 25 ° Weight Fn: SM -58 to -62
- Name: CH -62 to -104 Model: Spatial Mohr-Coulomb Phi: 0 ° Weight Fn: CH -62 to -104 Cohesion Spatial Fn: CH -62 to -104
- Name: Levee Section-Compacted Fill Model: Mohr-Coulomb Unit Weight: 116 pcf Cohesion: 1150 psf Phi: 0 °
- Name: Levee Section/PS Berm-Existing Levee above EL 1.5 Model: Mohr-Coulomb Unit Weight: 113 pcf Cohesion: 1000 psf Phi: 0 °
- Name: PS Existing Levee below EL 1.5 Model: Mohr-Coulomb Unit Weight: 110 pcf Cohesion: 700 psf Phi: 0 °
- Name: FS Existing Levee Model: Mohr-Coulomb Unit Weight: 112 pcf Cohesion: 420 psf Phi: 0 °

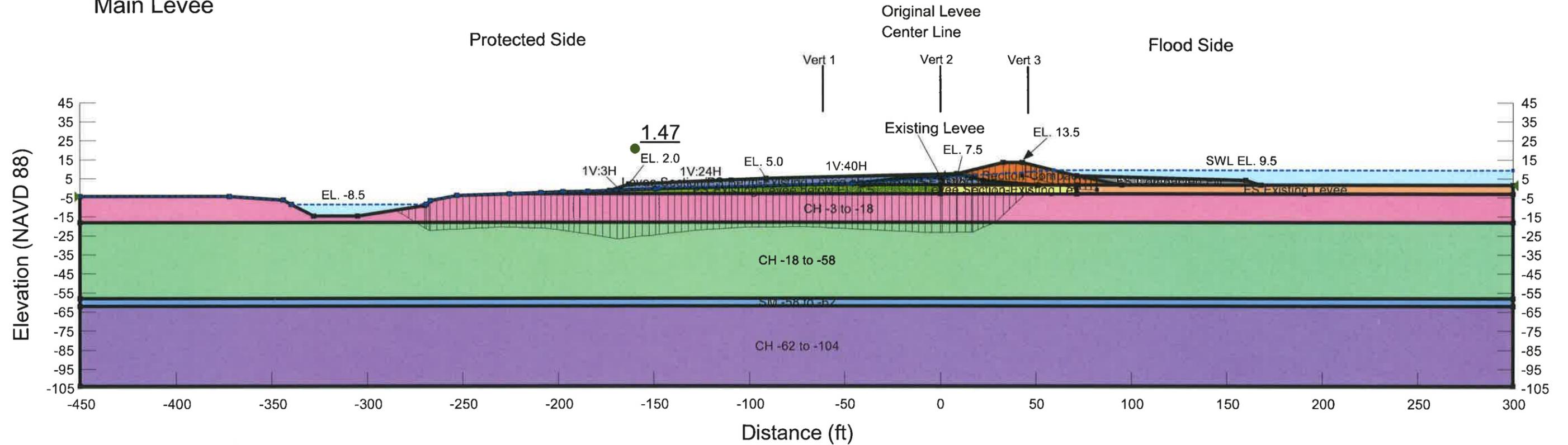
NOTES:

- 1) Strengths for New and Old Fill Materials from Verification Borings based on 1/3 - 2/3 criteria
- 2) Average Wet Density from Verification Borings for New and Old Fill Materials
- 3) Original Design Strengths and Wet Densities Used Below Elevation -3.0

Directory: E:\Personnel\Eddie T\Projects\NOD Levee Construction Issues\Sensitivity analyses\Design Section-1,Main Levee\one-third Strength\

File Name: WBV-14c.2 Reach I Main Levee HWL-one-third str-case-II.gsz

Westwego to Harvey Canal  
 New Westwego Pumping Station to Orleans Village  
 West Jefferson Parish, Louisiana  
 WBV-14c.2  
 Main Levee



- Name: Levee Section-Existing Levee Model: Mohr-Coulomb Unit Weight: 112 pcf Cohesion: 420 psf Phi: 0 °
- Name: FS Compacted Fill Model: Mohr-Coulomb Unit Weight: 120 pcf Cohesion: 1150 psf Phi: 0 °
- Name: CH -18 to -58 Model: Spatial Mohr-Coulomb Phi: 0 ° Weight Fn: CH -18 to -58 Cohesion Spatial Fn: CH -18 to -58
- Name: CH -3 to -18 Model: Spatial Mohr-Coulomb Phi: 0 ° Weight Fn: CH -3 to -18 Cohesion Spatial Fn: CH -3 to -18
- Name: SM -58 to -62 Model: Spatial Mohr-Coulomb Cohesion: 0 psf Phi: 25 ° Weight Fn: SM -58 to -62
- Name: CH -62 to -104 Model: Spatial Mohr-Coulomb Phi: 0 ° Weight Fn: CH -62 to -104 Cohesion Spatial Fn: CH -62 to -104
- Name: Levee Section-Compacted Fill Model: Mohr-Coulomb Unit Weight: 116 pcf Cohesion: 1150 psf Phi: 0 °
- Name: Levee Section/PS Berm-Existing Levee above EL 1.5 Model: Mohr-Coulomb Unit Weight: 113 pcf Cohesion: 1000 psf Phi: 0 °
- Name: PS Existing Levee below EL 1.5 Model: Mohr-Coulomb Unit Weight: 110 pcf Cohesion: 700 psf Phi: 0 °
- Name: FS Existing Levee Model: Mohr-Coulomb Unit Weight: 112 pcf Cohesion: 420 psf Phi: 0 °

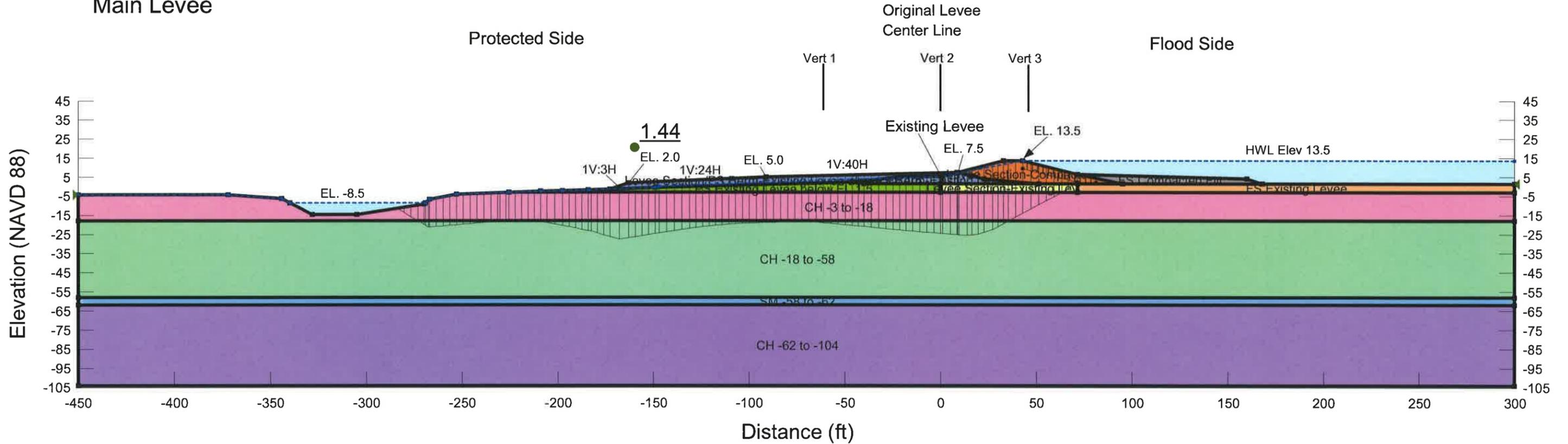
Directory: E:\Personnel\Eddie T\Projects\NOD Levee Construction Issues\Sensitivity analyses\Design Section-5\one-third strength\  
 File Name: WBV-14c.2 Reach I Main Levee SWL-one third Str-case-II.gsz

Typical Section 5  
 Still Water Level Case

NOTES:

- 1) Strengths for New and Old Fill Materials from Verification Borings based on 1/3 - 2/3 criteria
- 2) Average Wet Density from Verification Borings for New and Old Fill Materials
- 3) Original Design Strengths and Wet Densities Used Below Elevation -3.0

Westwego to Harvey Canal  
 New Westwego Pumping Station to Orleans Village  
 West Jefferson Parish, Louisiana  
 WBV-14c.2  
 Main Levee



Typical Section 5  
 Water at Project Grade

- Name: Levee Section-Existing Levee Model: Mohr-Coulomb Unit Weight: 112 pcf Cohesion: 420 psf Phi: 0 °
- Name: FS Compacted Fill Model: Mohr-Coulomb Unit Weight: 120 pcf Cohesion: 1150 psf Phi: 0 °
- Name: CH -18 to -58 Model: Spatial Mohr-Coulomb Phi: 0 ° Weight Fn: CH -18 to -58 Cohesion Spatial Fn: CH -18 to -58
- Name: CH -3 to -18 Model: Spatial Mohr-Coulomb Phi: 0 ° Weight Fn: CH -3 to -18 Cohesion Spatial Fn: CH -3 to -18
- Name: SM -58 to -62 Model: Spatial Mohr-Coulomb Cohesion: 0 psf Phi: 25 ° Weight Fn: SM -58 to -62
- Name: CH -62 to -104 Model: Spatial Mohr-Coulomb Phi: 0 ° Weight Fn: CH -62 to -104 Cohesion Spatial Fn: CH -62 to -104
- Name: Levee Section-Compacted Fill Model: Mohr-Coulomb Unit Weight: 116 pcf Cohesion: 1150 psf Phi: 0 °
- Name: Levee Section/PS Berm-Existing Levee above EL 1.5 Model: Mohr-Coulomb Unit Weight: 113 pcf Cohesion: 1000 psf Phi: 0 °
- Name: PS Existing Levee below EL 1.5 Model: Mohr-Coulomb Unit Weight: 110 pcf Cohesion: 700 psf Phi: 0 °
- Name: FS Existing Levee Model: Mohr-Coulomb Unit Weight: 112 pcf Cohesion: 420 psf Phi: 0 °

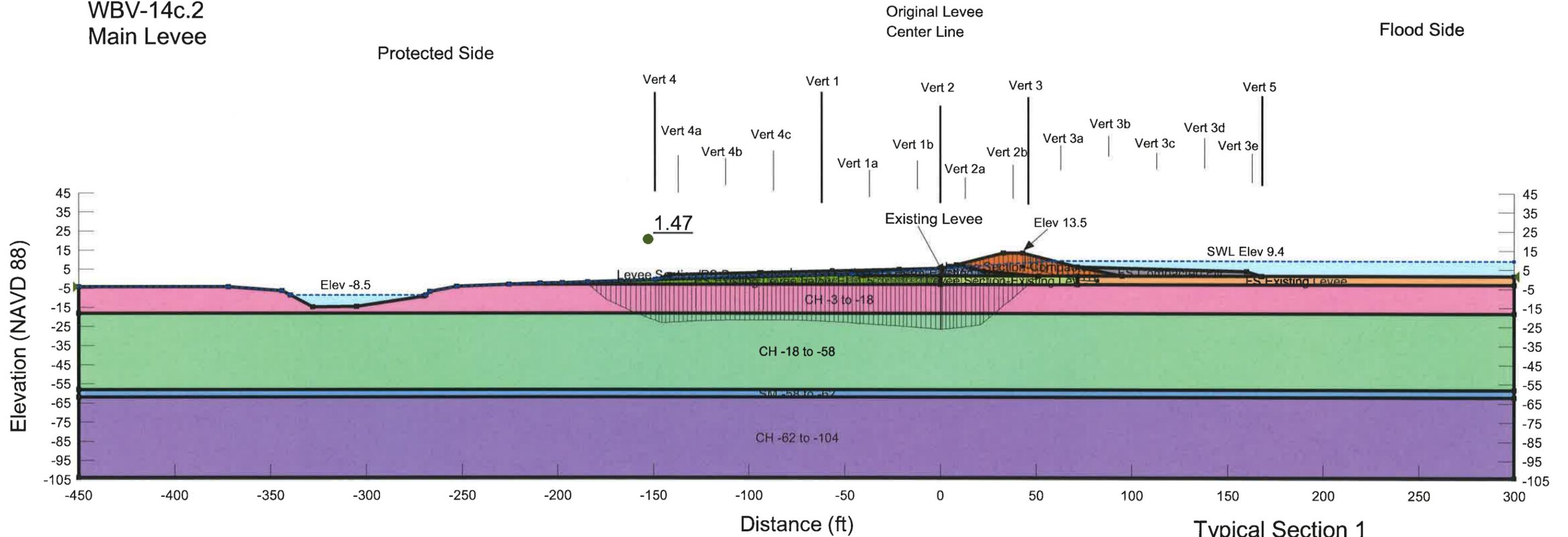
NOTES:

- 1) Strengths for New and Old Fill Materials from Verification Borings based on 1/3 - 2/3 criteria
- 2) Average Wet Density from Verification Borings for New and Old Fill Materials
- 3) Original Design Strengths and Wet Densities Used Below Elevation -3.0

Directory: E:\Personnel\Eddie T\Projects\NOD Levee Construction Issues\Sensitivity analyses\Design Section-5\one-third strength\

File Name: WBV-14c.2 Reach I Main Levee HWL-one third Str-case-II.gsz

Westwego to Harvey Canal  
 New Westwego Pumping Station to Orleans Village  
 West Jefferson Parish, Louisiana  
 WBV-14c.2  
 Main Levee



Typical Section 1  
 Still Water Level Case

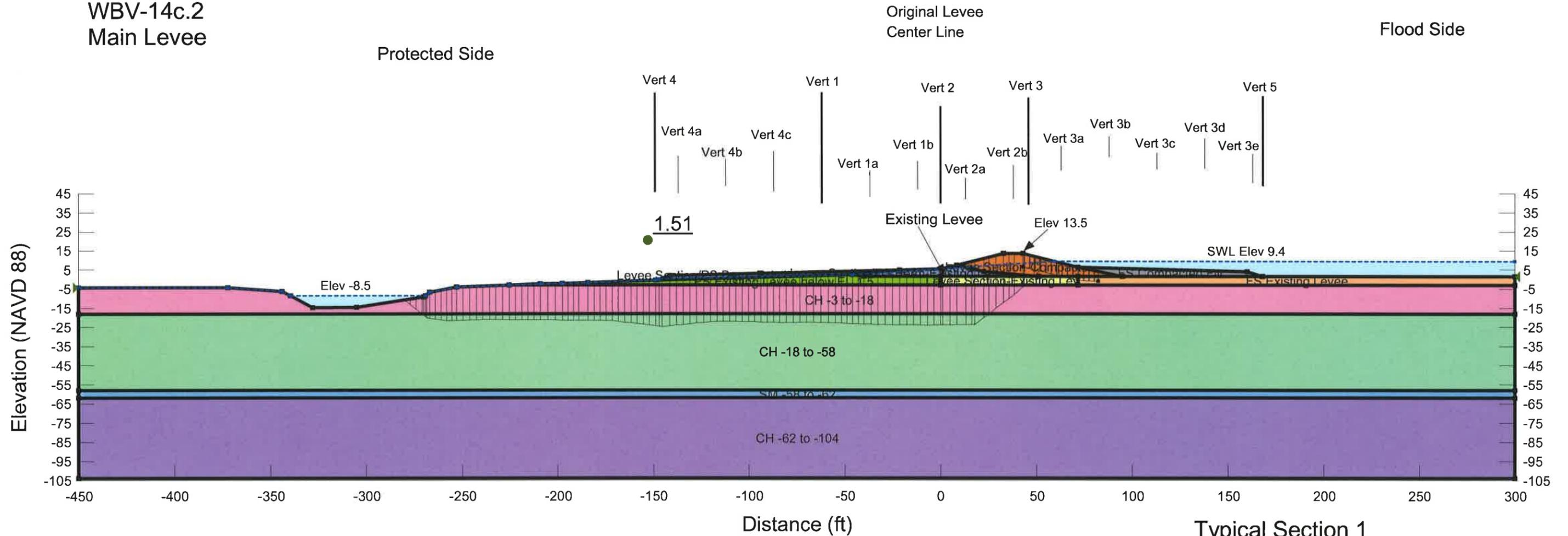
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 Name: FS Compacted Fill Model: Mohr-Coulomb Unit Weight: 120 pcf Cohesion: 1150 psf Phi: 0 °  
 Name: CH -18 to -58 Model: Spatial Mohr-Coulomb Phi: 0 ° Weight Fn: CH -18 to -58 Cohesion Spatial Fn: CH -18 to -58  
 Name: CH -3 to -18 Model: Spatial Mohr-Coulomb Phi: 0 ° Weight Fn: CH -3 to -18 Cohesion Spatial Fn: CH -3 to -18  
 Name: SM -58 to -62 Model: Spatial Mohr-Coulomb Cohesion: 0 psf Phi: 25 ° Weight Fn: SM -58 to -62  
 Name: CH -62 to -104 Model: Spatial Mohr-Coulomb Phi: 0 ° Weight Fn: CH -62 to -104 Cohesion Spatial Fn: CH -62 to -104  
 Name: Levee Section-Compacted Fill Model: Mohr-Coulomb Unit Weight: 116 pcf Cohesion: 1150 psf Phi: 0 °  
 Name: Levee Section/PS Berm-Existing Levee above EL 1.5 Model: Mohr-Coulomb Unit Weight: 113 pcf Cohesion: 1000 psf Phi: 0 °  
 Name: PS Existing Levee below EL 1.5 Model: Mohr-Coulomb Unit Weight: 110 pcf Cohesion: 700 psf Phi: 0 °  
 Name: FS Existing Levee Model: Mohr-Coulomb Unit Weight: 112 pcf Cohesion: 420 psf Phi: 0 °

NOTES:

- 1) Strengths for New and Old Fill Materials from Verification Borings based on 1/3 - 2/3 criteria
- 2) Average Wet Density from Verification Borings for New and Old Fill Materials
- 3) Original Design Strengths and Wet Densities Used Below Elevation -58.0
- 4) Strength Gain Incorporated from Elevation -3.0 to Elevation -58.0 Assuming U=20% and  $c/p' = 0.22$

Directory: E:\Personnel\Eddie T\Projects\NOD Levee Construction Issues\Sensitivity analyses\Design Section-1,Main Levee\one-third Strength\  
 File Name: WBV-14c.2 Reach I Main Levee SWL-20% Str-case-II-VerB.gsz

Westwego to Harvey Canal  
 New Westwego Pumping Station to Orleans Village  
 West Jefferson Parish, Louisiana  
 WBV-14c.2  
 Main Levee



Typical Section 1  
 Still Water Level Case

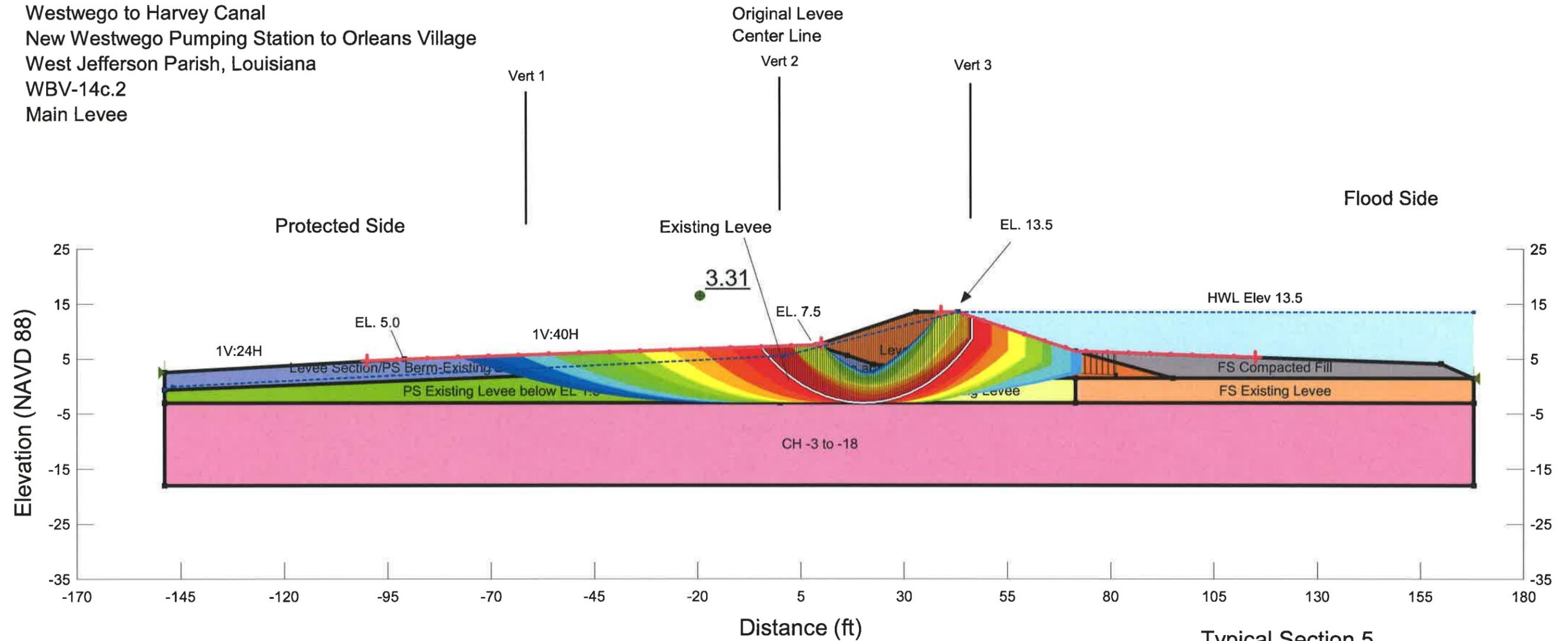
- Name: Levee Section-Existing Levee Model: Mohr-Coulomb Unit Weight: 112 pcf Cohesion: 420 psf Phi: 0 °
- Name: FS Compacted Fill Model: Mohr-Coulomb Unit Weight: 120 pcf Cohesion: 1150 psf Phi: 0 °
- Name: CH -18 to -58 Model: Spatial Mohr-Coulomb Phi: 0 ° Weight Fn: CH -18 to -58 Cohesion Spatial Fn: CH -18 to -58
- Name: CH -3 to -18 Model: Spatial Mohr-Coulomb Phi: 0 ° Weight Fn: CH -3 to -18 Cohesion Spatial Fn: CH -3 to -18
- Name: SM -58 to -62 Model: Spatial Mohr-Coulomb Cohesion: 0 psf Phi: 25 ° Weight Fn: SM -58 to -62
- Name: CH -62 to -104 Model: Spatial Mohr-Coulomb Phi: 0 ° Weight Fn: CH -62 to -104 Cohesion Spatial Fn: CH -62 to -104
- Name: Levee Section-Compacted Fill Model: Mohr-Coulomb Unit Weight: 116 pcf Cohesion: 1150 psf Phi: 0 °
- Name: Levee Section/PS Berm-Existing Levee above EL 1.5 Model: Mohr-Coulomb Unit Weight: 113 pcf Cohesion: 1000 psf Phi: 0 °
- Name: PS Existing Levee below EL 1.5 Model: Mohr-Coulomb Unit Weight: 110 pcf Cohesion: 700 psf Phi: 0 °
- Name: FS Existing Levee Model: Mohr-Coulomb Unit Weight: 112 pcf Cohesion: 420 psf Phi: 0 °

NOTES:

- 1) Strengths for New and Old Fill Materials from Verification Borings based on 1/3 - 2/3 criteria
- 2) Average Wet Density from Verification Borings for New and Old Fill Materials
- 3) Original Design Strengths and Wet Densities Used Below Elevation -58.0
- 4) Strength Gain Incorporated from Elevation -3.0 to Elevation -58.0 Assuming U=30% and c/p' = 0.22

Directory: E:\Personnel\Eddie T\Projects\NOD Levee Construction Issues\Sensitivity analyses\Design Section-1,Main Levee\one-third Strength\  
 File Name: WBV-14c.2 Reach I Main Levee SWL-30% Str-case-II-VerB.gsz

Westwego to Harvey Canal  
 New Westwego Pumping Station to Orleans Village  
 West Jefferson Parish, Louisiana  
 WBV-14c.2  
 Main Levee



Typical Section 5  
 Water at Project Grade

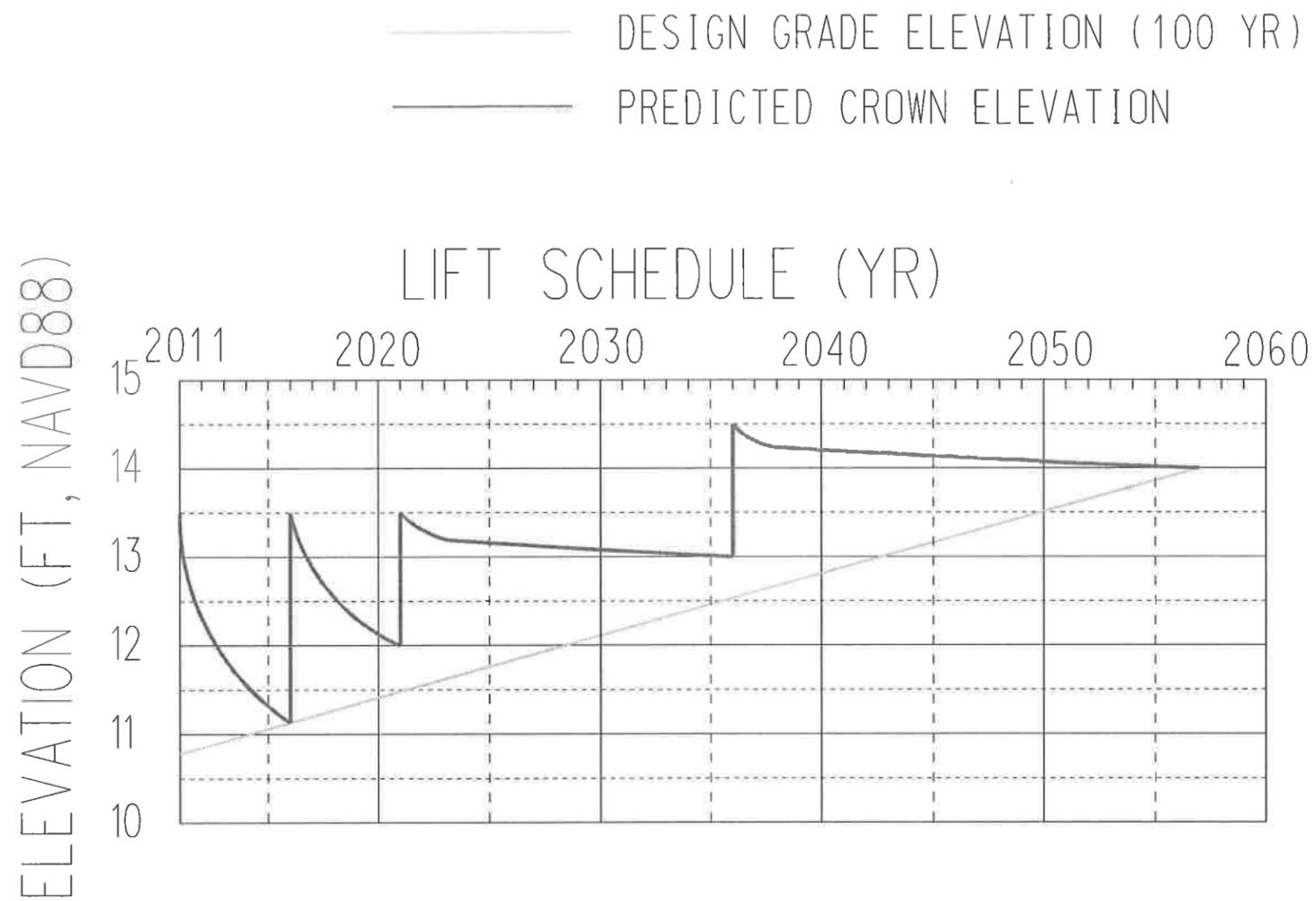
NOTES:

- 1) Strengths for New and Old Fill Materials from Verification Borings based on 1/3 - 2/3 criteria
- 2) Strength of Existing Levee and Protected Side Berm Reduced to 250 psf Based on Pocket Penetrometer Readings
- 3) Average Wet Density from Verification Borings for New and Old Fill Materials
- 4) Original Design Strengths and Wet Densities Used Below Elevation -3.0

Name: Levee Section-Existing Levee Model: Mohr-Coulomb Unit Weight: 112 pcf Cohesion: 250 psf Phi: 0 °  
 Name: FS Compacted Fill Model: Mohr-Coulomb Unit Weight: 120 pcf Cohesion: 1150 psf Phi: 0 °  
 Name: CH -3 to -18 Model: Spatial Mohr-Coulomb Phi: 0 ° Weight Fn: CH -3 to -18 Cohesion Spatial Fn: CH -3 to -18  
 Name: Levee Section-Compacted Fill Model: Mohr-Coulomb Unit Weight: 116 pcf Cohesion: 1150 psf Phi: 0 °  
 Name: Levee Section/PS Berm-Existing Levee above EL 1.5 Model: Mohr-Coulomb Unit Weight: 113 pcf Cohesion: 250 psf Phi: 0 °  
 Name: PS Existing Levee below EL 1.5 Model: Mohr-Coulomb Unit Weight: 110 pcf Cohesion: 250 psf Phi: 0 °  
 Name: FS Existing Levee Model: Mohr-Coulomb Unit Weight: 112 pcf Cohesion: 420 psf Phi: 0 °

File Name: WBV14C.2-Section-1-levee only-one third Str-pocket penetro-HWL.gsz

Directory: E:\Personnel\Eddie T\Projects\NOD Levee Construction Issues\Sensitivity analyses\Design Section-5, levee section with pocket penetro str\One-third strength\



WBV-14c

WESTWEGO TO HARVEY CANAL HURRICANE PROTECTION PROJECT  
 WESTWEGO TO HARVEY CANAL, LA  
 AUTHORIZED 205' HEIGHT  
 WEST JEFFERSON PARISH, LOUISIANA  
 Westwego/Westminster Levees  
 THEORETICAL SETTLEMENT ANALYSIS

 U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS  
 CORPS OF ENGINEERS  
 NEW ORLEANS, LOUISIANA

DESIGNED BY: A.W.	PLOT SCALE: 10	PLOT DATE: Sep 2011	CADD FILE:
DRAWN BY: K.J.T.	DATE: SEP 2011	FILE NO.	
CHECKED BY: K.J.T.			



**Project:** WBV-14c (Specifically, the Westminster East-West Levee)

**Issue:** Intermittent wet areas in natural berm between levee and drainage canal. SLFPA-W reported the wet areas in Dec 2010 and tasked the Corps to investigate the source of the wet spots. Local sponsor expressed concerns of possible underseepage from floodside.

**Investigation:** Several site visits were made to the Westminster East-West levee to view the wet spots. A few areas were verified initially, but additional areas of concern surfaced as work advanced. Over the roughly 1 mile stretch of levee, over a dozen wet areas have surfaced in the natural berm (past the levee berm toe). Three of the wet area sites were bored with geoprobes (20 ft deep). At the three sites, one geoprobe was taken, and a sister geoprobe taken about 30 ft closer to the levee (plots included in appendix). Lastly, previous levee construction lifts were examined.

**Information:** The geoprobes soils were classed at the NOD laboratory. In addition to standard testing, organic testing was performed on intermittent clay samples and many addition samples visually classed as high plasticity clays with organics. No peats were found. Organic content ranged from 5% to 35% for the clays. Test results are included in the appendix.

Drawings reveal a protected side natural "berm drainage blanket" constructed in the initial levee lift (1997-98) in the Westminster levee reach approx. 75 to 125 feet from levee C/L. The drainage blanket drained the old existing berm away from the levee towards the canal. A layer of sand was placed on the natural ground (low area) and was capped with a small clay cover (~1 ft). The wet surface area observed appears close to a straight line approximately 110 feet parallel to the existing levee crown.

**Conclusion:**

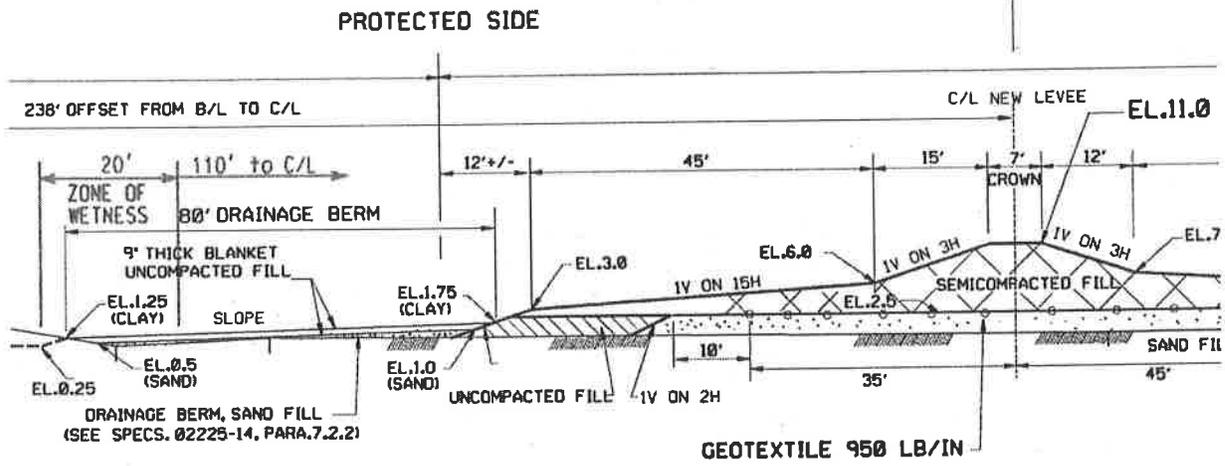
It is our belief that the wet areas are at or near the end of the drainage blanket and that the blanket water bleeds into areas of low relief adjacent to or just past the end of the drainage blanket. There is no evidence of underseepage from the flood side as the source of water at the wet areas. We also believe that ongoing construction and construction activities have exasperated the situation and wet areas have cropped up in more areas as the job has progressed. The adjacent haul road used for heavy construction equipment and loaded haul trucks has sustained heavy usage and likely caused a "pumping" effect in the drainage blanket that drives the blanket water towards the end of (or just past) the blanket into low lying areas.

The wet surface areas on the protected side are NOT in the levee design section, and are located well past the levee stability toe. The dark reddish-brown coloring is likely due to near surface woods (cypress and cedar) that the water has drained through.

***Recommendation:*** We recommend additional clay cover over the drainage blanket to thwart the exit of the water in the blanket. As the levee construction slows down and ceases, we believe the nuisance wet areas will subside.

## APPENDIX

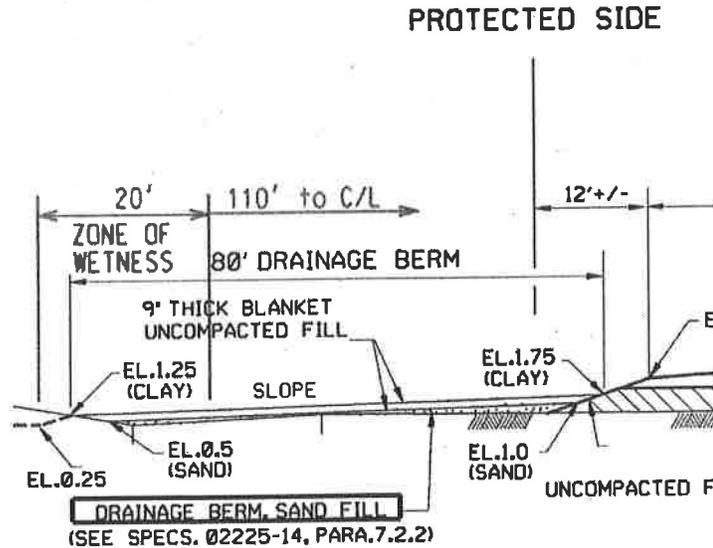
- Geoprobe Plot
- Organic Content Testing of Geoprobe Samples
- Typical Design Section 3 from First Lift Plans
- Pictures



**TYPICAL DESIGN SECTION 3**

APPROX. STA.191+17B/L TO APPROX. STA.260+18.59B/L  
(EXCLUDE LIMITS FOR CANAL CLOSURE AND FLOODWALL)

**WESTMINSTER East-West LEVEE – TYPICAL FROM 1<sup>st</sup> Lift Plans**



**DETAIL OF DRAINAGE BLANKET – WESTMINSTER LEVEE**

**ORGANIC CONTENT**

**ASTM D 2974, Method C**

PROJECT WBV-14 C2 WET SPOT (WM-WS2-GP 3)      JOB NO. 11-051B      DATE      30-Jan-11

**ASTM D 2974, Method C**

Boring/Sample No.	10.0 - 12.0	10.0 - 12.0	14.0 - 15.0	14.0 - 15.0	16.7 - 17.3	16.7 - 17.3		
Tare No.	H-12	H-1	F-1	F-2	F-3	F-4		
Tare + Dry Soil      g	54.46	59.39	66.96	63.25	59.83	62.58		
Tare Wt.              g	26.20	29.80	29.27	29.34	27.73	29.14		
Dry Soil              "B"	28.25	29.59	37.69	33.91	32.10	33.44	0.00	0.00
Tare + Ashed Soil    g	61.40	66.17	65.37	61.87	66.75	59.32		
Ashed Soil            "C"	25.20	26.37	36.10	32.53	29.02	30.18	0.00	0.00
Weight Lost	3.05	3.22	1.59	1.38	3.08	3.26	0.00	0.00
Percent Ash        "D"    %	89.2%	89.1%	95.8%	95.9%	90.4%	90.3%		
Organic Matter      %	10.8%	10.9%	4.2%	4.1%	9.6%	9.7%		
	10.8%		4.1%		9.7%		#DIV/0!	

**ORGANIC CONTENT**

**ASTM D 2974, Method C**

PROJECT WBV-14 C2 WET SPOT (WM-WS2-GP4)      JOB NO. 11-051B      DATE      30-Jan-11

**ASTM D 2974, Method C**

Boring/Sample No.	8.0 - 8.9	8.0 - 8.9	8.9 - 10.0	8.9 - 10.0	16.6 - 18.0	16.6 - 18.0	18.0 - 18.8	18.0 - 18.8
Tare No.	F-11	F-12	F-13	F-14	F-19	F-20	F-10	C-10
Tare + Dry Soil      g	41.83	43.11	43.22	43.78	60.10	69.52	53.21	63.08
Tare Wt.              g	26.40	27.37	26.78	28.06	27.23	28.01	29.10	25.42
Dry Soil              "B"	15.43	15.74	16.44	15.72	32.87	31.51	24.11	27.66
Tare + Ashed Soil    g	38.92	40.14	37.55	38.35	57.01	66.80	46.92	45.82
Ashed Soil            "C"	12.62	12.77	10.77	10.29	29.78	28.59	17.82	20.40
Weight Lost	2.91	2.97	5.67	5.43	3.09	2.92	6.29	7.26
Percent Ash        "D"    %	81.1%	81.1%	65.5%	65.5%	90.6%	90.7%	73.9%	73.8%
Organic Matter      %	18.9%	18.9%	34.5%	34.5%	9.4%	9.3%	26.1%	26.2%
	18.9%		34.5%		9.3%		26.2%	

**ORGANIC CONTENT**

**ASTM D 2974, Method C**

**PROJECT WBV-14 C2 WET SPOT (WM-WS3-GP5)**

**JOB NO. 11-051B**

**DATE**

**30-Jan-11**

**ASTM D 2974, Method C**

Boring/Sample No.	6.0 - 7.0	6.0 - 7.0	7.0 - 7.9	7.0 - 7.9	7.9 - 8.3	7.9 - 8.3	12.0 - 12.5	12.0 - 12.5
Tare No.	D-12	D-13	L-7	L-9	A-13	F-17	A-16	A-15
Tare + Dry Soil g	59.42	61.11	58.56	57.59	46.73	48.27	46.26	43.35
Tare Wt. g	25.53	25.80	26.89	27.42	28.84	27.36	26.77	26.15
Dry Soil "B"	33.89	35.31	32.67	30.17	17.89	20.91	19.49	17.20
Tare + Ashed Soil g	55.80	57.38	55.02	54.34	41.26	41.65	42.65	40.17
Ashed Soil "C"	30.27	31.58	29.13	26.92	12.42	14.49	15.88	14.02
Weight Lost	3.62	3.73	3.54	3.25	5.47	6.42	3.61	3.18
Percent Ash "D" %	89.3%	89.4%	89.2%	89.2%	69.4%	69.3%	81.5%	81.5%
Organic Matter %	10.7%	10.6%	10.8%	10.8%	30.6%	30.7%	18.5%	18.5%
	10.6%		10.8%		30.8%		18.5%	

**ORGANIC CONTENT**

**ASTM D 2974, Method C**

**PROJECT WBV-14 C2 WET SPOT (WM-WS3-GP 6)**

**JOB NO. 11-051B**

**DATE**

**30-Jan-11**

**ASTM D 2974, Method C**

Boring/Sample No.	8.9 - 10.0	8.9 - 10.0	10.0 - 11.0	10.0 - 11.0	17.0 - 18.0	17.0 - 18.0	18.0 - 19.1	18.0 - 19.1
Tare No.	F-16	F-16	A-7	C-15	A-17	A-19	A-21	A-22
Tare + Dry Soil g	47.41	48.25	46.38	50.82	39.95	51.77	46.62	45.14
Tare Wt. g	29.62	27.60	22.59	26.62	17.38	28.32	26.43	25.77
Dry Soil "B"	17.79	20.65	23.79	25.20	22.57	23.45	20.19	19.37
Tare + Ashed Soil g	44.92	45.35	41.15	45.25	36.31	48.00	42.00	40.71
Ashed Soil "C"	15.30	17.75	18.56	19.63	18.93	19.68	15.57	14.94
Weight Lost	2.49	2.90	5.23	5.57	3.64	3.77	4.62	4.43
Percent Ash "D" %	86.0%	86.0%	78.0%	77.9%	83.9%	83.9%	77.1%	77.1%
Organic Matter %	14.0%	14.0%	22.0%	22.1%	16.1%	16.1%	22.9%	22.9%
	14.0%		22.0%		16.1%		22.9%	

**ORGANIC CONTENT**

**ASTM D 2974, Method C**

PROJECT WBV-14 C2 WET SPOT (WM-WS1 GP 1)      JOB NO.(11-051B)      DATE      30-Jan-11

**ASTM D 2974, Method C**

Boring/Sample No.	2.1 - 3.0	2.1 - 3.0	3.0 - 3.8	3.0 - 3.8	5.0 - 6.0	5.0 - 6.0	8.0 - 9.3	8.0 - 9.3
Tare No.	P-2	P-3	P-4	P-6	P-10	P-14	P-13	P-12
Tare + Dry Soil      g	56.36	59.37	54.77	52.32	57.32	58.73	57.28	59.86
Tare Wt.              g	27.50	29.12	26.67	25.66	26.99	28.51	25.52	28.02
Dry Soil      "B"	28.86	30.25	28.10	26.76	30.33	30.22	31.76	31.84
Tare + Ashed Soil    g	53.00	55.83	50.40	48.11	54.22	55.61	55.38	57.95
Ashed Soil      "C"	25.50	26.71	23.73	22.55	27.23	27.10	29.86	29.93
Weight Lost	3.38	3.54	4.37	4.21	3.10	3.12	1.90	1.91
Percent Ash    "D"    %	88.4%	88.3%	84.4%	84.3%	89.8%	89.7%	94.0%	94.0%
Organic Matter    %	11.6%	11.7%	15.6%	15.7%	10.2%	10.3%	6.0%	6.0%
	11.7%		15.6%		10.3%		6.0%	

**ASTM D 2974, Method C**

Boring/Sample No.	10.0 - 11.3	10.0 - 11.3	15.5 - 16.4	15.5 - 16.4	17.3 - 17.8	17.3 - 17.8	18.6 - 19.5	18.6 - 19.5
Tare No.	P-15	P-16	D-2	D-3	D-4	D-5	D-7	D-9
Tare + Dry Soil      g	45.20	50.01	56.80	53.49	48.74	47.39	60.12	60.49
Tare Wt.              g	27.45	28.80	29.49	26.12	28.17	27.74	26.20	26.65
Dry Soil      "B"	17.75	21.21	27.31	27.37	20.57	19.65	33.92	33.84
Tare + Ashed Soil    g	43.05	47.43	53.44	50.10	43.38	42.25	57.54	57.94
Ashed Soil      "C"	15.60	18.63	23.95	23.98	15.21	14.51	31.34	31.29
Weight Lost	2.16	2.58	3.36	3.39	5.36	5.14	2.58	2.55
Percent Ash    "D"    %	87.9%	87.8%	87.7%	87.6%	73.9%	73.8%	92.4%	92.5%
Organic Matter    %	12.1%	12.2%	12.3%	12.4%	26.1%	26.2%	7.6%	7.5%
	12.1%		12.3%		26.1%		7.6%	

**ORGANIC CONTENT**

**ASTM D 2974, Method C**

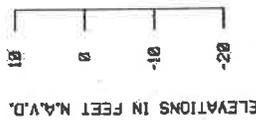
PROJECT WBV-14 C2 WET SPOT (WM-WS1-GP 2)      JOB NO. 11-051B      DATE      30-Jan-11

**ASTM D 2974, Method C**

Boring/Sample No.	1.0 - 2.4	1.0 - 2.4	10.0 - 12.0	10.0 - 12.0	18.5 - 19.2	18.5 - 19.2		
Tare No.	F-5	F-6	F-7	F-8	F-9	C-18		
Tare + Dry Soil      g	63.87	61.62	66.87	61.25	61.88	54.07		
Tare Wt.              g	29.57	28.46	29.55	27.21	28.46	29.68		
Dry Soil      "B"	34.30	33.16	37.12	34.04	23.42	24.39	0.00	0.00
Tare + Ashed Soil    g	62.50	60.28	64.70	69.42	45.95	47.92		
Ashed Soil      "C"	32.93	31.82	35.15	32.21	17.49	18.24	0.00	0.00
Weight Lost	1.37	1.34	1.97	1.83	5.93	6.15	0.00	0.00
Percent Ash    "D"    %	96.0%	96.0%	94.7%	94.6%	74.7%	74.8%		
Organic Matter    %	4.0%	4.0%	5.3%	5.4%	25.3%	25.2%		
	4.0%		5.3%		25.3%		#DIV/0!	

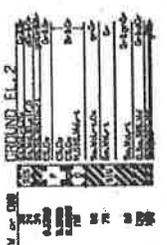
**BOR. WM-WS1-GP1**

LAT 29°52'18.48"  
 LON 98°07'19.58"  
 WATER TABLE 8.6 FT.  
 Dates 1/25/2011



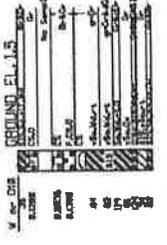
**BOR. WM-WS1-GP2**

LAT 29°52'18.88"  
 LON 98°07'19.28"  
 WATER TABLE 8.7 FT.  
 Dates 1/25/2011



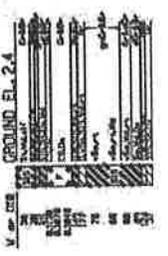
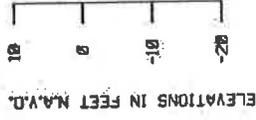
**BOR. WM-WS2-GP3**

LAT 29°52'18.98"  
 LON 98°07'24.98"  
 WATER TABLE 8.5 FT.  
 Dates 1/25/2011



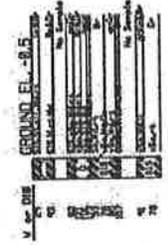
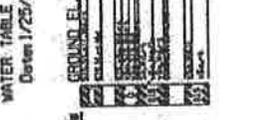
**BOR. WM-WS2-GP4**

LAT 29°52'18.28"  
 LON 98°07'24.58"  
 WATER TABLE 2.3 FT.  
 Dates 1/25/2011



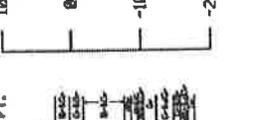
**BOR. WM-WS3-GP5**

LAT 29°52'19.38"  
 LON 98°07'25.98"  
 WATER TABLE 2.8 FT.  
 Dates 1/25/2011



**BOR. WM-WS3-GP6**

LAT 29°52'19.88"  
 LON 98°07'26.88"  
 WATER TABLE 2.5 FT.  
 Dates 1/25/2011



CL - Fine Clay  
 CL - Coarse Clay  
 GP - Silty Sand  
 SP - Sand, Mostly Gravel  
 M - Mud



29°52'19.3"  
90°07'35.9"

29°52'18.5"  
90°07'24.9"

29°52'18.4"  
90°07'19.5"

Wet Spot #WM-WS3-GP5

Wet Spot #WM-WS2-GP3

Wet Spot #WM-WS1-GP1

WM-WS3-GP6

WM-WS2-GP4

WM-WS1-GP2

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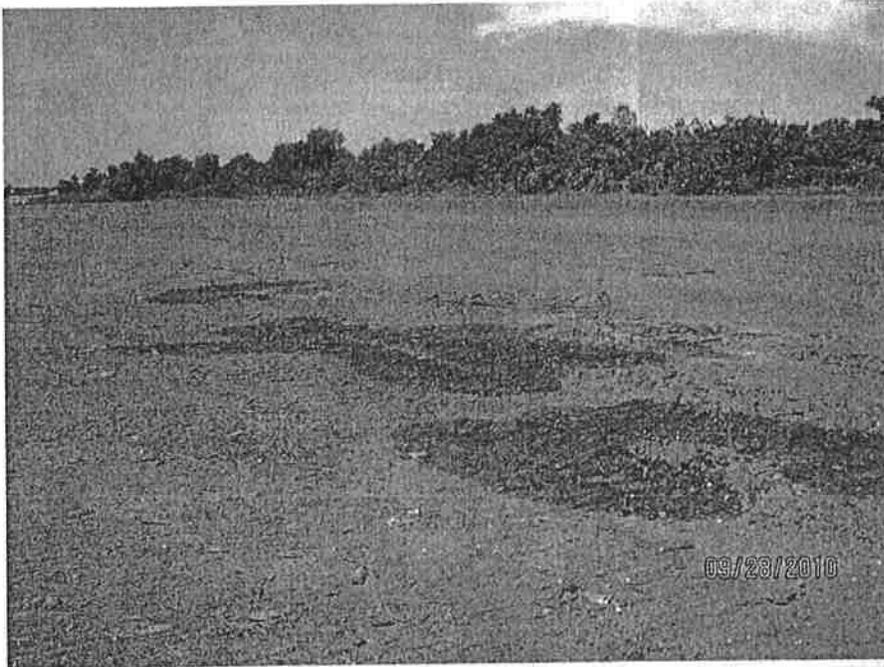
Point: 29°52'18.62" N 90°07'26.75" W

Streaming ||||| 100%

Eye alt: 1743 ft

9/28/10

holding water on protected side of levee. GPS Coord: 2952.308 N 09007.415 W



10/13/10

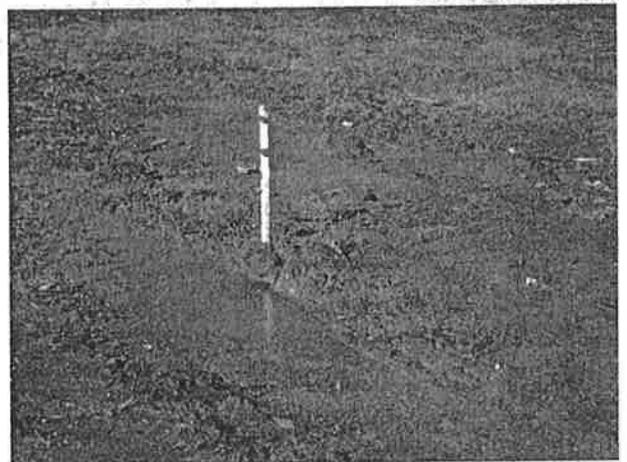
GPS Coord: 2952.308 N 09007.415 W



1/4/11



1/21/11



# Wet Spots run parallel to levee

