

Commercial/Industrial Floodplain Development Stop Work Order

Doddridge County, WV Floodplain Management

This **Stop Work Order** has been issued to **HEP SHALEWATER SOLUTIONS, LLC**, and is for the commercial and/or industrial development project associated with this permit that impacts the FEMA-designated floodplain and/or floodway of Doddridge County, WV. All work in the floodplain and/or floodway must cease and desist until this **Stop Work Order** is lifted in accordance with the Doddridge County Floodplain Ordinance. This permit must be posted at the site of work as to be clearly visible, and must remain posted while the **Stop Work Order** is in effect.

Permit #16-415

Date Issued: 2 MARCH, 2016

Issued to: HEP Shalewater Solutions, LLC

**POC: Tony Gutta - 304-529-2794 or
Chris Stanton - 304-709-4520**

Company Address: 1660 17th Street, Suite 350, Denver CO, 80220

Project Address: Central Station Rd

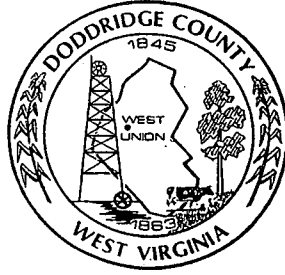
Firm: Lat/Long: 39.28074N, 80.81264W

Purpose of development: Water Treatment Facility

Issued by: George Edel, Doddridge County FPM (or designee)

Date: 03/02/2016

For additional information regarding this Stop Work Order, please contact Doddridge County Floodplain Manager at 304.873.2631, or via email at doddridgecountyfpm@gmail.com
118 East Court Street; West Union, WV 26456



Floodplain Development Permit

Doddridge County, WV Floodplain Management

This permit gives approval for the development/ project listed that impacts the FEMA-designated floodplain and/or floodway of Doddridge County, WV, pursuant to the rules and regulations established by all applicable Federal, State and local laws and ordinances, including the Doddridge County Floodplain Ordinance. This permit must be posted at the site of work as to be clearly visible, and must remain posted during entirety of development.

Permit #: 16-415

Date Approved: April 14, 2016

Expires: April 14, 2017

Issued to: HEP Shalewater Solutions LLC

POC: Anthony Gutta/Chris Stanton

Company Address: 1660 17th St suite 350, Denver CO 80202

Project Address: 263 Central Station Rd.

Firm: 54017C0115C/54017C0120C

Lat/Long: 39.28074N, 80.81264W

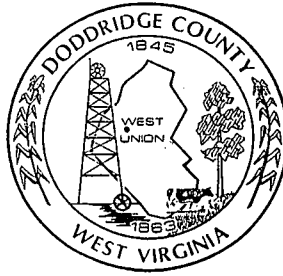
Purpose of development: Waste Water Treatment Unit Facility

Issued by: George C. Eidel, Doddridge County FPM (or designee)

Date:

4-14-16

For additional information regarding this permit, please contact
Doddridge County Floodplain Manager at 304.873.2631, or via email at
doddridgecountyfpm@gmail.com
118 East Court Street; West Union, WV 26456



Commercial/Industrial Floodplain Development Stop Work Order

Doddridge County, WV Floodplain Management

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For additional information regarding this Stop Work Order, please contact Doddridge County Floodplain Manager at 304.873.2631, or via email at doddridgecountyfpm@gmail.com
118 East Court Street; West Union, WV 26456

CHECKSAFE

Citizens Bank
3-7615/360

004994

Shalewater Solutions
37 Grande Meadows Dr Ste 201
Bridgeport, WV 26330-9035
3045922794

4/1/2016

PAY TO THE ORDER OF **DODDRIDGE COUNTY COMMISSION**

\$ **3,050.00

Three Thousand Fifty and 00/100***** DOLLARS

DODDRIDGE COUNTY COMMISSION
108 EAST COURT STREET
SUITE 1
WEST UNION, WV 26456



AUTHORIZED SIGNATURE



MEMO FLOODPLAIN APPLICATION PERMIT FEES

⑈004994⑈ ⑆036076150⑆ 6231009800⑈

Shalewater Solutions

DODDRIDGE COUNTY COMMISSION

4/1/2016

004994

Date	Type	Reference	Original Amt.	Balance Due	Discount	Payment
4/1/2016	Bill	4/1/16-3,050.00	3,050.00	3,050.00		3,050.00
					Check Amount	3,050.00

COPY

Citizens Bank FLOODPLAIN APPLICATION PERMIT FEES 3,050.00

Details on Back Security Features Included

SECURITY FEATURES INCLUDE TRUE WATERMARK PAPER, HEAT SENSITIVE ICON AND FOIL HOLOGRAM.

001138

Wells Fargo Bank, N.A.
11-24/1210

HEP SHALEWATER SOLUTIONS, LLC
1660 17th Street, Suite 350
Denver, CO 80202

3/25/2016

PAY TO THE
ORDER OF

DODDRIDGE COUNTY COMMISSION

\$ **3,050.00

Three Thousand Fifty and 00/100 ***** DOLLARS

DODDRIDGE COUNTY COMMISSION
108 EAST COURT STREET
SUITE 1
WEST UNION, WV 26456

MEMO

FLOODPLAIN APPLICATION PERMIT FEES



AUTHORIZED SIGNATURE

⑈001138⑈ ⑆121000248⑆ 4129195789⑈

HEP SHALEWATER SOLUTIONS, LLC/1660 17th Street, Suite 350

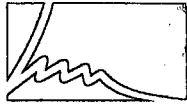
DODDRIDGE COUNTY COMMISSION

3/25/2016

001138

Date	Type	Reference	Original Amt.	Balance Due	Discount	Payment
3/25/2016	Bill	3/25/16-3,050.00	3,050.00	3,050.00		3,050.00
					Check Amount	3,050.00

#16-415



Hatch Mott
MacDonald

Summit Corporate Center
1001 Corporate Drive, Suite 100
Canonsburg PA 15317
T 724 514 5330
www.hatchmott.com

February 26, 2016

Doddridge County Commission
108 Court Street, Suite 1
West Union, WV 26456-2095

Attention: Mr. George C. Eidel
OEM Director/Floodplain Manager

**RE: HEP Shalewater Solutions, LLC
Floodplain Development Permit Application
Central Station Road Site, West Union, WV 26456**

Dear Mr. Eidel:

Hatch Mott MacDonald has prepared the attached floodplain development permit application for your review and approval. As discussed, HMM calculated a 100 year flood elevation which differs from the FEMA Zone A flood boundary. Details of our calculation methodology are presented in the application form. The following documents are attached, in addition to the completed permit application form:

1. Site Grading and Stormwater Collection System Plan showing existing and proposed contours, wetlands and waterbodies as well as the HMM calculated 100 year flood plain boundary. Note that all stormwater collected from the site will be kept on-site with the exception of flow from Catch Basin No. 1 and 2.
2. Proposed Lease Area drawing indicating property boundaries and ownership.
3. FEMA National Flood Hazard Layer Mapping indicating the location of the subject site.
4. FEMA Flood Insurance Rate Maps (Panels 115 and 120) indicating the location of the subject site.

Hatch Mott MacDonald has signed the application on behalf of HEP Shalewater Solutions, LLC. As discussed the application fee will be submitted under separate cover.

Please contact me if you have any questions, or require any additional information.

Sincerely,
Hatch Mott MacDonald

A handwritten signature in black ink, appearing to read "Ricardo Chambers".

Ricardo Chambers
Project Manager
T 304.212.4382 C 304.612.1535
Ricardo.Chambers@hatchmott.com

Attachments

CC: Tony Gutta, HEP Shalewater Solutions
Chris Stanton, HEP Shalewater Solutions
Ryan Hall, HEP Shalewater Solutions
Doug Amos, Hatch Mott MacDonald
John Quinlisk, Hatch Mott MacDonald



Permit# 16-415
Project Name: _____
Permittees Name: _____

Doddridge County, WV

Floodplain Development Permit Application

This document is to be used for projects that impact/potentially impact the FEMA---designated floodplain and/or floodway of Doddridge County, WV pursuant to the rules and regulations established by all applicable Federal, State and local laws and ordinances, including the Doddridge County Floodplain Ordinance.

SECTION 1: GENERAL PROVISIONS (APPLICANT TO READ AND SIGN)

1. No work may start until a permit is issued.
2. The permit may be revoked if any false statements are made herein.
3. If revoked, all work must cease until permit is re-issued.
4. Development shall not be used or occupied until a Certificate of Compliance is issued.
5. The permit will expire if no work is commenced within six months of issuance.
6. Applicant is hereby informed that other permits may be required to fulfill local, state, and federal requirements.
7. Applicant hereby gives consent to the Floodplain Administrator/Manager or his/her representative to make inspections to verify compliance.
8. I THE APPLICANT CERTIFY THAT ALL STATEMENTS HEREIN AND IN ATTACHMENTS TO THIS APPLICATION ARE, TO THE BEST OF MY KNOWLEDGE, TRUE AND ACCURATE.

APPLICANT'S SIGNATURE _____

Rob A. L.

DATE _____

2/26/16

Doddridge County Commercial/Industrial
Floodplain Development Permit Application

Applicant Information:

Please provide all pertinent data.

Applicant Information		
Responsible Company Name: HEP Shalewater Solutions, LLC		
Corporate Mailing Address: 1660 17 th Street, Suite 350		
City: Denver	State: CO	Zip: 80220
Corporate Point of Contact (POC): Tony Gutta		
Corporate POC Title: President		
Corporate POC Primary Phone: 304-529-2794		
Corporate POC Primary Email: tgutta@shalewater.com		
Corporate FEIN: 45-3269957	Corporate DUNS: 06-349-0634	
Corporate Website: https://shalewater.com/		
Local Mailing Address: 37 Grand Meadows Drive, Suite 201		
City: Bridgeport	State: WV	Zip: 26330
Local Project Manager (PM): Chris Stanton		
Local PM Primary Phone: 304-709-4520		
Local PM Secondary Phone: 304-592-2794		
Local PM Primary Email: cstanton@shalewater.com		
Person Filing Application: Ricardo Chambers		
Applicant Title: Project Manager		
Applicant Primary Phone: 304-612-1535		
Applicant Secondary Phone: 304-212-4382		
Applicant Primary Email: ricardo.chambers@hatchmott.com		

Doddridge County Commercial/Industrial
Floodplain Development Permit Application

Proposed Development:

Please check all elements of the proposed project that apply.

DESCRIPTION OF WORK (CHECK ALL APPLICABLE BOXES)

A. STRUCTURAL DEVELOPMENT

<u>ACTIVITY</u>		<u>STRUCTURAL TYPE</u>	
<input checked="" type="checkbox"/>	New Structure	<input type="checkbox"/>	Residential (1 – 4 Family)
<input type="checkbox"/>	Addition	<input type="checkbox"/>	Residential (more than 4 Family)
<input type="checkbox"/>	Alteration	<input type="checkbox"/>	Non-residential (floodproofing)
<input type="checkbox"/>	Relocation	<input type="checkbox"/>	Combined Use (res. & com.)
<input type="checkbox"/>	Demolition	<input type="checkbox"/>	Replacement
<input type="checkbox"/>	Manufactured/Mobil Home		

B. OTHER DEVELOPMENT ACTIVITIES:

- Fill Mining Drilling Pipelining
- Grading
- Excavation (except for STRUCTURAL DEVELOPMENT checked above)
- Watercourse Alteration (including dredging and channel modification)
- Drainage Improvements (including culvert work)
- Road, Street, or Bridge Construction
- Subdivision (including new expansion)
- Individual Water or Sewer System
- Other (please specify)

Doddridge County Commercial/Industrial
Floodplain Development Permit Application

Development Site/Property Information:

Please provide physical description of the site/property, along with pertinent ownership (surface and mineral rights) data as applicable. Attach appropriate maps from the WV Flood Tool showing location of proposed development. Use additional copies of this page if development spans multiple property boundaries. Designate each property by number (i.e. Property 1 of 1, Property 2 of 7, etc.)

Property Designation: 1 of 1

Site/Property Information:

Legal Description:

Lessor: Shalewater Solutions
Lessee: Anthony Mancuso, liber 226/folio 643

Description for Proposed Lease Area

Beginning at the northeastern corner of the lessee's lands at a point in the western limits of the Central Station Road which is also the end of the fourth line and the southeastern corner of the Ralph J. and Judith G. Valentine property as described in liber 161, folio 287, one of the Doddridge County, West Virginia land records; thence from said beginning and with the aforesaid road limits and also reversing the ninth line of the lessee's lands as described in liber 226, folio 643 of said land records, S 10°00'00" W a distance of 412.5 feet to a point in the west limits of the road; Thence further with the road and a portion of the eighth line of the grantor's lands; S 30°00'00" W a distance of 200 feet to a point in the road limits, thence leaving said road limits and through the lands of the grantor; S 83°00'00" W a distance of 250 feet to a point on the north bank of Arnold Creek; thence along Arnold Creek, N 16°00'00" W a distance of 175 feet; thence N 46°00'00" W a distance of 175 feet to the area near the confluence of Claylick Run; thence further down along the eastern edge of Arnold Creek, N 50°00'00" E a distance of 110 feet; thence N 35°00'00" E a distance of 140 feet; thence N 43°00'00" E a distance of 165.32 feet to a point in the tenth line of the grantor's property and also the aforesaid fourth line of Valentine; thence with said line and an old barbed wire fenceline and treeline (erroneous Mancuso deed bearing of S 37°30'00" W has been corrected here to coincide with Valentine), N 87°30'00" E a distance of 316.87 feet to the point of beginning.

The leased area described being 234,700 square feet, or 5.388 acres in area.

Being the northeasterly portion of the Anthony Mancuso property as described in a deed found recorded in liber 226, folio 643 of the Doddridge County, West Virginia land records.

It is to be noted that all exceptions to the Mancuso deed have not been examined, however; as this same area has been under lease with Antero for several years, it is with a high degree of certainty that there are no encroachments or property line issues present on the leased property herein described.

Physical Address/911 Address: Central Station Road, West Union, WV 26456

Decimal Latitude/Longitude: N 39.28074, W 80.81264

**Doddridge County Commercial/Industrial
Floodplain Development Permit Application**

DMS Latitude/Longitude: N 39 16' 50", W 80 48' 45"		
District: Central	Map: 10	Parcel: 03
Land Book Description: Unknown		
Deed Book Reference: 226 / 643		
Tax Map Reference: Unknown		
Existing Buildings/Use of Property: The property is currently used as a pipe yard.		

Floodplain Location Data: (to be completed by Floodplain Manager or designee)

Community: Doddridge County, WV	Number: 540024	Panel: 0115 & 0120	Suffix: C
Location (Lat/Long): -80.81264, 39.28074		Approximate Elevation: 810	
		Estimated BFE: 802.52 (see notes below)	
Is the development in the floodway? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> Floodway is not designated		Is the development in the floodplain? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Zone: A	

Notes:

Hatch Mott MacDonald obtained Doddridge County HEC-RAS Model Data from the WV GIS Technical Data Center Local/Advisory Flood Height Data Site (<http://wvgis.wvu.edu/data/dataset.php?ID=414>) for the streams near the subject site. The FEMA HEC-RAS Model, which is based on a USGS 10 meter DEM, contains cross sections upstream and downstream of the subject site. This data included a table specifying target elevation values at each provided HEC-RAS cross section line. The 100 year flood elevations at the cross sections were based on the steady flow simulation results in this model. The streamline and cross sections from the HEC-RAS model were imported as shapefiles into ArcMap. Two foot contours were developed from the original surface DEM layer. Using the target 100 year flood elevation values at each HEC-RAS cross section, a new 100 year flood polygon was digitized based off the cross section elevation values over a higher resolution DEM (10 feet versus the original 10 meter cell size) than was used for the original FEMA 100 year flood extent estimate.

Doddridge County Commercial/Industrial
Floodplain Development Permit Application

Property Owner Data:

Please provide data on current site/property landowner(s), both surface and mineral rights (as applicable). Use additional copies of this page as needed. Designate each page in relation to each property listed above.

Property Designation: 1 of 1

Property Owner Data:		
Name of Primary Owner (PO): Anthony J. Mancuso		
Physical Address: 365 Dye Drive		
City: Bridgeport	State: WV	Zip: 26330
PO Primary Phone: 304-641-2149		
PO Secondary Phone:		
PO Primary Email:		

Surface Rights Owner Data:		
Name of Primary Owner (PO): Anthony J. Mancuso		
City: Bridgeport	State: WV	Zip: 26330
PO Primary Phone: 304-641-2149		
PO Secondary Phone:		
PO Primary Email:		

Mineral Rights Owner Data: (As Applicable)		
Name of Primary Owner (PO): Minerals were reserved; however, the owner is unknown.		
PO Address:		
City:	State:	Zip:
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

Doddridge County Commercial/Industrial
Floodplain Development Permit Application

Contractor Data:

Please provide all pertinent data for contractors and sub---contractors that may be participating in this project. Use additional copies of this page as needed. Designate each page in relation to each property listed above.

Property Designation: 1 of 1

Contractor/Sub-Contractor (C/SC) Information:		
C/SC Company Name: Hall Drilling		
C/SC WV License Number:		
C/SC FEIN:	C/SC DUNS:	
Local C/SC Point of Contact (POC): Mike Hall		
Local C/SC POC Title: Owner		
C/SC Mailing Address: 981 E. Washington Avenue, PO Box 249		
City: Ellenboro	State: WV	Zip-Code: 26246
Local C/SC Office Phone: 304-869-3404		
Local C/SC POC Phone: 304-869-3404		
Local C/SC POC E-Mail: Mikehall@halldrilling.com		

Engineer Firm Information:		
Engineer Firm Name: Hatch Mott MacDonald, LLC		
Engineer WV License Number: C02536-00		
Engineer Firm FEIN: 16-1006700	Engineer Firm DUNS: 141629753	
Engineer Firm Primary Point of Contact (POC): Ricardo Chambers		
Engineer Firm Primary POC Title: Project Manager		
Engineer Firm Mailing Address: 1001 Corporate Drive, Suite 100		
City: Canonsburg	State: PA	Zip-Code: 15317
Engineer Firm Office Phone: 304-212-4382		
Engineer Firm Primary POC Phone: 304-212-4382		
Engineer Firm Primary POC E-Mail: Ricardo.Chambers@hatchmott.com		

Adjacent and/or Affected Landowners Data

Please provide data for all adjacent and/or affected surface owners (both up and down stream) whose property may be impacted by proposed development as demonstrated by a floodplain study or survey. Use additional copies of this page as needed.

Adjacent Property Owner Data: Upstream		
Name of Primary Owner (PO): Anthony J. Mancuso		
Physical Address: 365 Dye Drive		
City: Bridgeport	State: WV	Zip: 26330
PO Primary Phone: 304-641-2149		
PO Secondary Phone:		
PO Primary Email:		

Adjacent Property Owner Data: Upstream		
Name of Primary Owner (PO): West Virginia Department of Transportation		
Physical Address: I-79 & Meadowbrook Road		
City: Clarksburg	State: WV	Zip: 26302-2570
PO Primary Phone: (304) 842-1500		
PO Secondary Phone:		
PO Primary Email:		

Adjacent Property Owner Data: Downstream		
Name of Primary Owner (PO): Ralph & Judith Valentine		
Physical Address:		
City: Wet Union	State: WV	Zip: 26456
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

Adjacent Property Owner Data: Downstream		
Name of Primary Owner (PO): Alice Elizabeth Myer		
Physical Address:		
City: Wet Union	State: WV	Zip: 26456
PO Primary Phone:		
PO Secondary Phone:		
PO Primary Email:		

Site Plan

A Site Plan is an accurate and detailed map of the proposed development for this project. It shows the size, shape, location and special features of the project property, and the size and location of any development planned to the property, especially as that development will impact the floodplain and/or floodway. Site plans show what currently exists on the project property, and any changes or improvements you are proposing to make. **A certified and licensed engineering firm should complete site plans.**

A SITE PLAN MUST CONTAIN THE FOLLOWING INFORMATION:

1. Legal description of the parcel, north arrow and scale
2. All property lines and their dimensions
3. Names of adjacent roads, location of driveways
4. Location of sloughs, tributaries, streams, rivers, wetlands, ponds, and lakes, with setbacks indicated, and including FEMA floodplain data based on most updated FIRM.
5. Location, size, shape of all buildings, existing and proposed, with elevation of lowest floor indicated.
6. Location and dimensions of existing or proposed on-site sewage systems.
7. Location of all propane tanks, fuel tanks or other liquid storage tanks whether above ground or below ground level.
8. Location and dimensions of any proposed pipeline placement(s) into floodplain/floodway.
9. Location and dimensions of any roadway development into floodplain/floodway. *(Includes initial development access roads)*
10. Location and dimensions of any bridge and/or culvert development into floodplain/floodway.
11. Location and dimensions of any storage yard or facility into the floodplain/floodway.
12. Location of any existing utilities and/or proposed utility placement and/or displacement.
13. Location, dimensions and depth of any existing or proposed fill on site.
14. A survey showing the **existing ground elevations** of at least location on the building site. **ELEVATION NOTE:** All vertical datum will reference either NGVD 29 or NAVD 88. Assumed datum will not be acceptable unless the property is located in an area where vertical datum has not been published. For those areas where vertical datum has not been established, a site plan with contours, elevations using assumed datum, high water marks and existing water levels of sloughs, rivers, lakes or streams and proposed lowest floor elevation.

Applicant

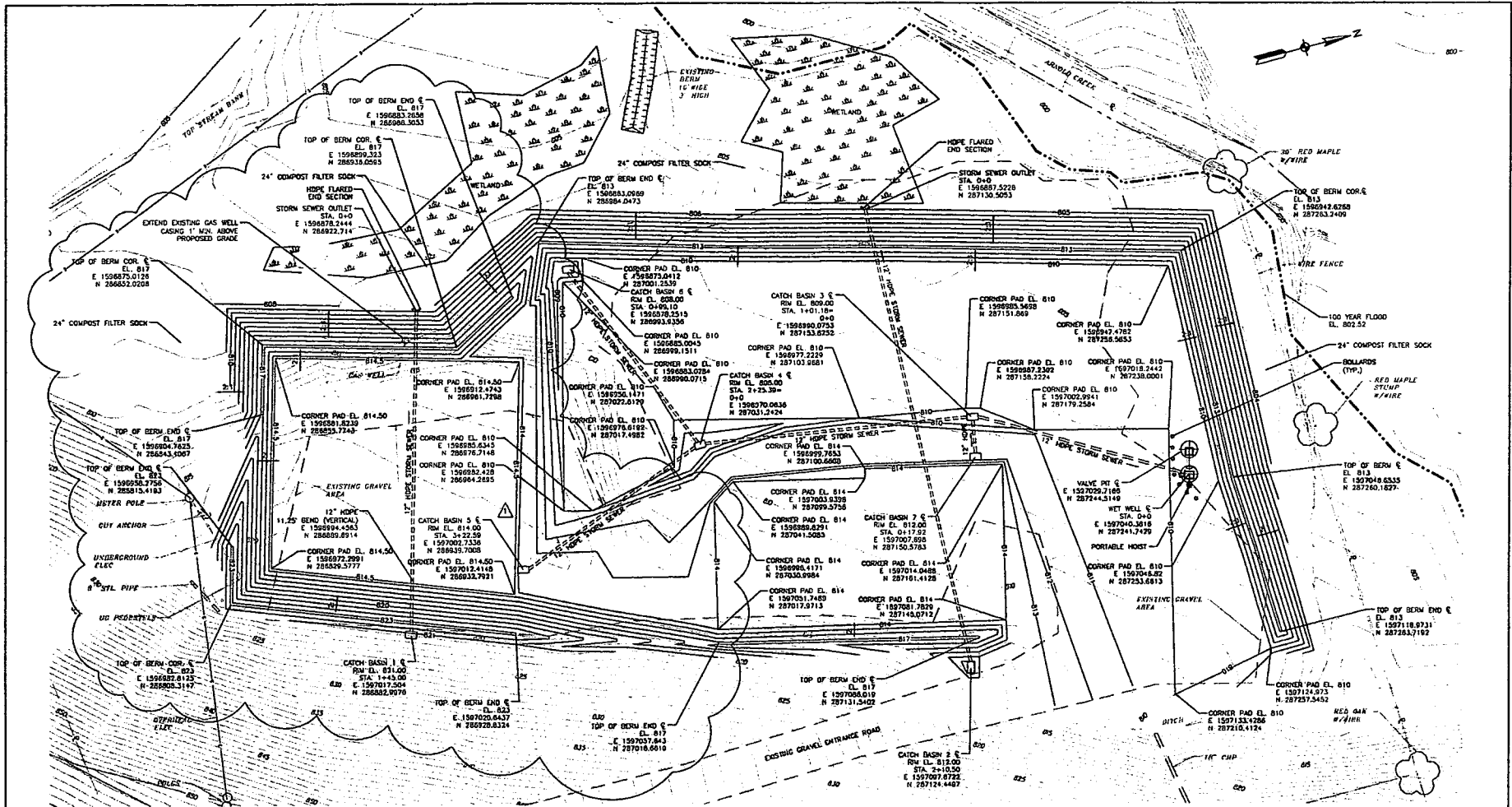
Please read print name, sign and date below:

- I certify that I am authorized to submit this application for the primary project developer.
- I certify that the information included in this application is to the best of my knowledge true and complete.
- I certify that all required Federal, State, and local permits required by law and/or ordinance for the above described development of this project have been properly attained, are current and valid, and must be presented with this application before a Doddridge County Floodplain Permit may be issued.
- I understand that if in the course of the development project additional permits become required that were not needed during the initial proposal, the primary developer must notify the Doddridge County Floodplain Manager within 48 hours of such need, and that a "Stop Work" order may be issued for all project work directly impacting the floodplain or floodway, until such time the required additional permits are acquired.
- I understand that once the floodplain permit is submitted, the application will be entered into official public record at the next regularly scheduled Doddridge County Commission meeting after the date of submittal.
- I understand that from the date of submittal of the fully completed permit application, the Doddridge County Floodplain Manager has ninety (90) days to make a determination to either grant or deny said permit application. During this approval period, the Doddridge County Floodplain Manager may, at his or her discretion, conduct a review and/or additional study of provided documentation by means of an independent engineering firm. All costs associated with said review and/or study must be reimbursed to the County before issuance of approved permit.
- I understand that during the approval period, the Doddridge County Floodplain Manager or designee may at his or her discretion conduct site visits and document conditions of proposed development pursuant to the permit application.
- I understand that once the Floodplain Permit is granted, the permit will be entered into official public record at the next scheduled Doddridge County Commission meeting after the date of issuance. Appeals to the permit may be made no later than twenty (20) days after said issuance. If a valid appeal is submitted, as determined by the Doddridge County Floodplain Manager, a "Stop Work" order will be issued for all project development directly involving the floodplain or floodway. A public hearing by the Doddridge County Appeals Board will be scheduled no less than ten (10) days after the next regularly scheduled Doddridge County Commission meeting.
- I understand that all decisions of the Doddridge County Appeals Board shall be final.
- **I understand issuance of a Floodplain Permit authorizes me to proceed with construction as proposed. A Certificate of Compliance is required upon substantial completion of the project.**
- In signing this application, the primary developer hereby grants the Doddridge County Floodplain Manager or designee the right to enter onto the above---described location to inspect the development work proposed, in progress, and/or completed.
- I understand that if I do not follow exactly the site---plan submitted and approved by this permit that a "Stop Work" order may be issued by the Wirt County Floodplain Manager and that I must stop all construction immediately until discrepancies of actual work vs. proposed work is resolved.

Applicant Signature: _____

Date: _____

Applicant Printed Name: _____

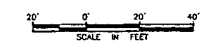


- LEGEND (EXISTING)**
- E — OVERHEAD ELECTRIC
 - UC — UNDERGROUND ELECTRIC
 - 875 — CONTOUR
 - X — X — GUY ANCHOR
 - ○ — UTILITY POLE
 - ○ — GUY POLE

- LEGEND (PROPOSED)**
- 100 YEAR FLOOD
 - COMPOST FILTER SOCK
 - 811 — PROPOSED CONTOURS
 - PROPOSED STORM SEWER
 - PROPOSED CATCH BASIN
 - BOLLARDS

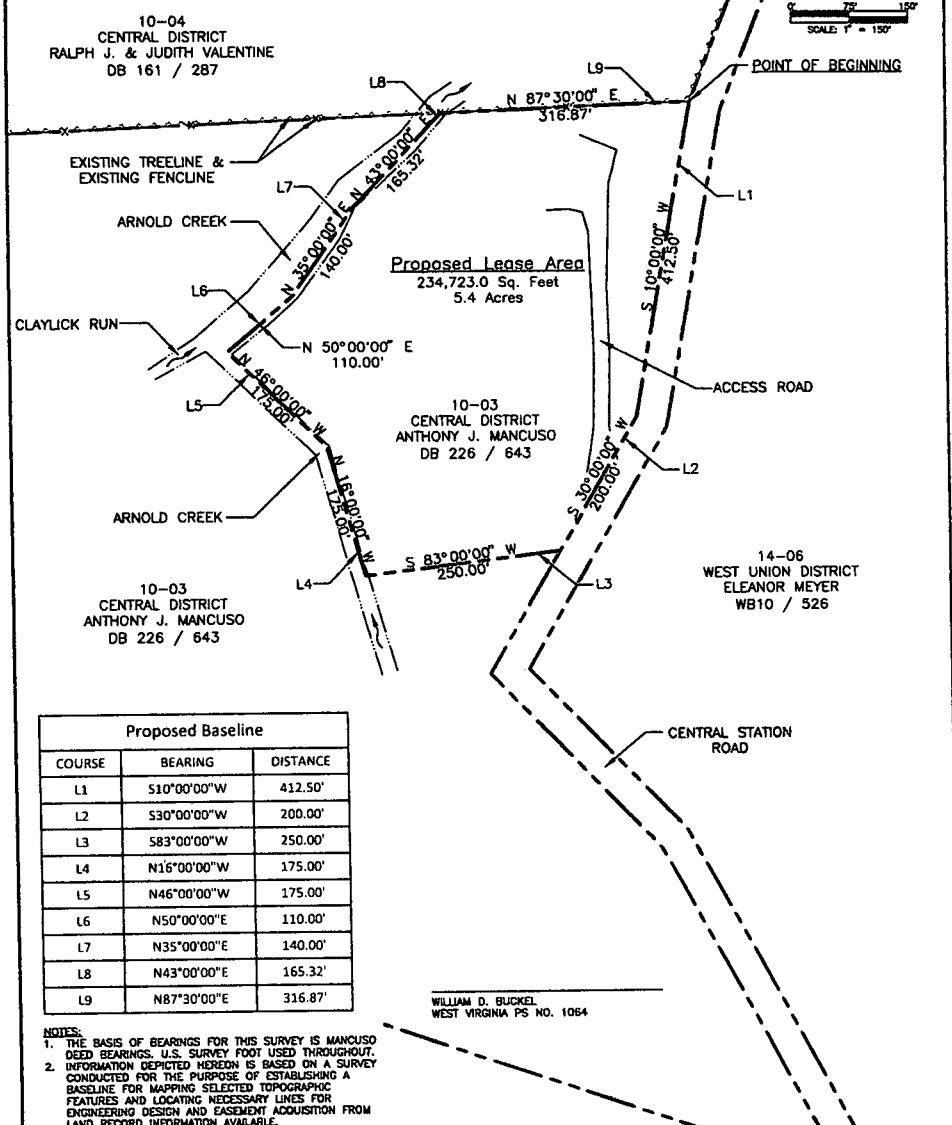
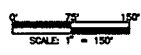
SITE GRADING AND STORMWATER COLLECTION SYSTEM PLAN
SCALE: 1" = 20'

90% COMPLETE D.E.S.G.N.



 1600 West Carson Street Pittsburgh, Pennsylvania 15219	Shalewater Solutions Central Station Proposed Site SITE GRADING AND STORMWATER COLLECTION SYSTEM PLAN	 37 GRAND MEADOWS DR STE 201 BRIDGEPORT, WV 26335 PH 304.592.2704 WWW.SHALEWATER.COM	SHEET NO. 384111 No. C-2 9/0 Total 3 9																																								
SEAL	Revision <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>1</td><td></td><td></td><td></td></tr> <tr><td>2</td><td></td><td></td><td></td></tr> <tr><td>3</td><td></td><td></td><td></td></tr> <tr><td>4</td><td></td><td></td><td></td></tr> <tr><td>5</td><td></td><td></td><td></td></tr> <tr><td>6</td><td></td><td></td><td></td></tr> <tr><td>7</td><td></td><td></td><td></td></tr> <tr><td>8</td><td></td><td></td><td></td></tr> <tr><td>9</td><td></td><td></td><td></td></tr> <tr><td>10</td><td></td><td></td><td></td></tr> </table>	1				2				3				4				5				6				7				8				9				10				SCALE: 1" = 20' DESIGNED BY: DMS DRAWN BY: PJE CHK BY: BJK APPROV. BY:	SCALE: 1" = 20' PLOT DATE: 1/21/2018 1:55 PM FILE NAME: P:\384111-Shalewater Solutions-Central Station\CAD\CAD_384111-SITE GRADING.dwg
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EXHIBIT "A"
PROPOSED LEASE AREA
 LYING WITHIN AND BEING A PART OF
 CENTRAL DISTRICT
 DODDRIDGE COUNTY, WEST VIRGINIA



Proposed Baseline		
COURSE	BEARING	DISTANCE
L1	S10°00'00"W	412.50'
L2	S30°00'00"W	200.00'
L3	S83°00'00"W	250.00'
L4	N16°00'00"W	175.00'
L5	N46°00'00"W	175.00'
L6	N50°00'00"E	110.00'
L7	N35°00'00"E	140.00'
L8	N43°00'00"E	165.32'
L9	N87°30'00"E	316.87'

- NOTES:**
1. THE BASIS OF BEARINGS FOR THIS SURVEY IS MANCUSO DEED BEARINGS. U.S. SURVEY FOOT USED THROUGHOUT.
 2. INFORMATION DEPICTED HEREON IS BASED ON A SURVEY CONDUCTED FOR THE PURPOSE OF ESTABLISHING A BASELINE FOR MAPPING SELECTED TOPOGRAPHIC FEATURES AND LOCATING NECESSARY LINES FOR ENGINEERING DESIGN AND EASEMENT ACQUISITION FROM LAND RECORD INFORMATION AVAILABLE.
 3. THIS IS AN EASEMENT DRAWING AND IS NOT INTENDED TO REPRESENT A BOUNDARY SURVEY PURSUANT TO WV CODE 30-13A.
 4. ALL EXCEPTIONS TO THE MANCUSO DEED HAVE NOT BEEN EXAMINED. THIS AREA HAS BEEN UNDER LEASE WITH ANTERO FOR SEVERAL YEARS. THEREFORE, IT IS WITH A HIGH DEGREE OF CERTAINTY THAT THERE ARE NO ENCROACHMENTS OR PROPERTY LINE ISSUES PRESENT ON THE LEASED PROPERTY HEREIN DESCRIBED.

LEGEND	
	EXISTING PROPERTY LINE
	PROPOSED LEASE AREA
	EXISTING STREAM
	EXISTING FENCE
	EXISTING TREELINE
	ACCESS ROAD

CLIENT:

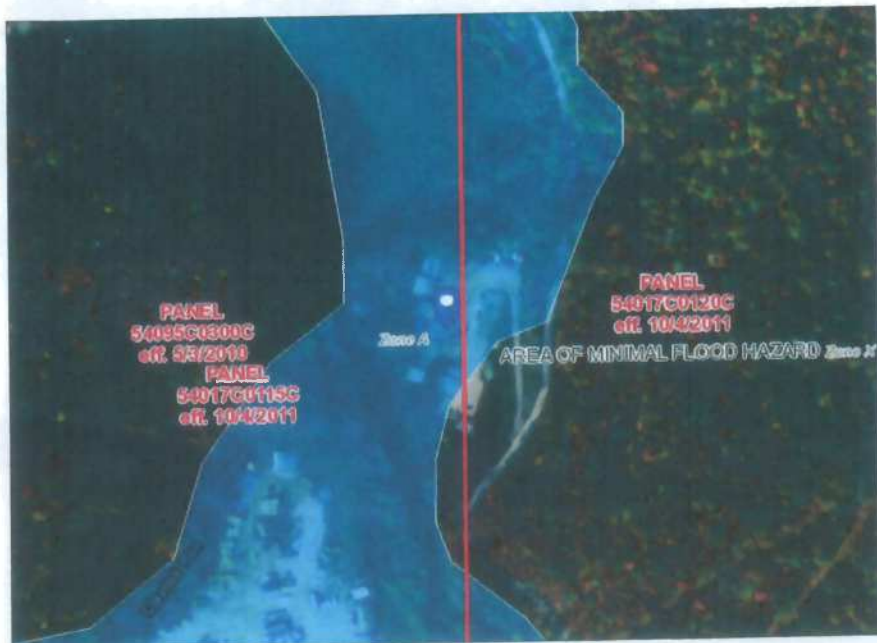
SHALEWATER SOLUTIONS
 PROPOSED LEASE AREA
 PART OF ANTHONY J. MANCUSO PROPERTY
 DODDRIDGE COUNTY, WEST VIRGINIA



DATE: 11/24/2015	DRAWN: CMM	CHECKED: RAC	APPROVED: WDB	SCALE: 1"=150'	DWG No: PROPOSED LEASE AREA	SHT No 001	REV No 0
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FEMA's National Flood Hazard Layer (Official)

Data from Flood Insurance Rate Maps (FIRMs) where available digitally. Try <http://bit.ly/1bPpUjq> (Unofficial) if this map is down



National Geospatial-Intelligence Agency (NGA); Delta State University; Esri | scott.mcafee@fema.dhs.gov | Microsoft | VITA, Esri, HERE, DeLorme, iPC, NGA, USGS

BOO

TODD VALETINE
304-494-6177

WATER TREATMENT

PLANT

ARND CREEK

**For Info on NPDES
Stormwater Permit WV0115924
To comment on Sediment Control Plan:
Call: 800-654-5227**

**or
DEP.Plan@wv.gov**

**2031 Pleasant Valley Rd., Ste.#1
Fairmont, WV 26554-9295**

Application Date: 01/11/2016

Project: Shalewater Solutions Central Station Site

**Project Description: Clear, level and bring site to grade.
Construct a water treatment unit to treat wastewater
from the oil and gas well production facilities.**

**SHALEWATER SOLUTIONS, LLC
(304) 592-2794**

Talked to ✓

Joseph ANgotti

will Email someone to

contact our office 2/22/16
@ 3:05pm

Talked w/ Chris Stanton
@ Shalewater, 304-709-4525

He will call the engineering firm
working on the project & they
will contact us

**For Info on NPDES
Stormwater Permit WV0115924
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 **Site Plan.pdf**
1036K

 **Central_Station_Figure_2_20151123.pdf**
4393K

 **Central_Station_LOD_20160107.pdf**
2926K

March 20, 2016

Clerk of the County Court and

Doddridge County Flood Plain Manager

118 E. Court Street

West Union, WV 26456

RE: 16-415 Floodplain permit application

Dear Mr. Eidel & Ms. Rogers,

We are writing to you in reference to Floodplain Permit application 16-415.

Please do NOT issue this permit. We live approximate 0.2 miles upstream of this location. We feel that we will be impacted by waters backing up.

Our property is adjacent to the property that this is on. We have NOT received a certified letter informing us of this "planned" construction in the floodplain.

Water backing up will cause flooding on our property. We have witnessed Rt. 50 with at least one foot of water in both the east and west bound lanes as recently as last year...

Since we do NOT subscribe to the Doddridge Independent and we do not attend Doddridge County Commission meeting on a regular basis, we had no clue that this was happening. Why aren't these also placed in the Herald Record? The Herald record has a larger circulation and has been the newspaper in this County for over eighty years.

We also feel that issuing a floodplain permit for this site will harm us and others in our area.

Please include this letter in the legal file for this permit application.

*Anthony A. Ervolina
Lyndia F. Ervolina*

Anthony & Lyndia Ervolina

47 Arnold Creek Rd.

West Union, WV 26456

304-873-2601

DODDRIDGE COUNTY, WV
COUNTY CLERK
BETH A. ROGERS

2016 MAR 21 AM 11:10

FILED



George Eidel <doddridgecountyfpm@gmail.com>

Re: Doddridge County Floodplain Issues

CHRISTINA WOODS <MCHRISW40@outlook.com>

Mon, Mar 21, 2016 at 1:29 PM

To: "ralphsandora@gmail.com" <ralphsandora@gmail.com>, "ronleetravis@gmail.com" <ronleetravis@gmail.com>, "bshaw@court.state.wv.us" <bshaw@court.state.wv.us>, "doddridgecountyfpm@gmail.com" <doddridgecountyfpm@gmail.com>, "wvrobby@hugesnet.com" <wvrobby@hugesnet.com>
 Cc: "edwill.aquino@fema.dhs.gov" <edwill.aquino@fema.dhs.gov>, "jeff.kessler@wvsenate.gov" <jeff.kessler@wvsenate.gov>, "roger.romine@wvhouse.gov" <roger.romine@wvhouse.gov>

From: CHRISTINA WOODS <MCHRISW40@outlook.com>
Sent: Monday, March 21, 2016 1:27 PM**To:** ralphsandora@gmail.com; ronleetravis@gmail.com; bshaw@court.state.wv.us; doddridridgecountyfpm@gmail.com; wvrobby@hugesnet.com**Cc:** edwill.aquino@fema.dhs.gov; jeff.kessler@wvsenate.gov; roger.romine@wvhouse.gov**Subject:** Doddridge County Floodplain Issues

Floodplain Manager & Commission:

First of all - I would like confirmation that this was received by Commissioners & Floodplain Manager.

After reading about and researching issues surrounding the Floodplain Permit issues with the temporary frack water recycling site in the floodplain along Arnold's Creek, I have many questions:

- How is it - that the company did NOT have a Floodplain Permit & the site is in the floodplain - yet they managed begin construction and put approximately 8 feet of fill in the floodplain? What is the excuse for this?
- How is it that the legal ad was placed in the paper stating that it was not in the floodplain when it IS in the floodplain?
 - Who decided it was not in the floodplain - the company or did the Floodplain Manager actually check the FEMA floodplain maps?
 - If the Floodplain Manager did not check -- why? That is his job as per the Ordinance. If it was decided - incorrectly - that it was not in the floodplain, were fees returned to the company per the Ordinance?
 - *7.3 D8. If after a properly filed Floodplain Permit Application and payment of the Floodplain Application Fee the Floodplain Administrator shall determine within 14 days if any part of the development is in the Floodplain Area. If the Floodplain Administrator*

- Does Mr. Eidel have the qualifications per the Ordinance to be the Floodplain Manager? (The previous Floodplain Manager, Mr. Wriston, did not).
 - *The Floodplain Administrator shall be a competent adult who is a resident of West Virginia and a certified Land Surveyor and/ or an educated or Licensed Engineer and/ or a person who has completed within one year of his appointment the State/ FEMA sponsored NFIP Class 273 entitled "Managing Floodplain Development" and remain current with State required continuing education training pursuant to W.Va. Code § 15-5- 20(a).*
 - If he is in fact still working on passing the test -- why does it seem fair for the county to have a Floodplain Manager who, in reality, is not qualified for up to a year -- this was the same issue with the last floodplain manager -- mistakes were made by him as well - the county paid for a floodplain manager without proper training. The current floodplain manager is following the direction of the previous floodplain who was not qualified for the job. This makes absolutely no sense. Why not actually hire someone who has the knowledge and skills to do the job correctly from day one?
- Why is it that all three of the Floodplain Managers have NOT upheld the Floodplain Ordinance?
 - Were/ are they qualified for the position?
 - Do/did they understand the entire Ordinance including all the technical aspects of hydrology and hydraulics?
 - Can/ could they read and understand maps, hydrology & hydraulic studies, etc.
 - Does the Commission intend to demand the Floodplain Managers uphold the Ordinance?
 - Does the Commission understand the technical components of the Ordinance enough to comply with it?
 - If the Commission or Floodplain Manager cannot understand hydrology & hydraulic studies or any other topics in the Ordinance --- does the Commission intend to have a professional, WV licensed, third party, engineer consult with them, explain issues, and dispute, if needed, the studies paid for by the party applying for the permit?
- How is it that approximately 8 feet of fill has been placed in the floodplain without a permit?
 - Will the County be demanding it be removed?
 - Why did it take a private citizen to discover that the site was practically completed?
 - Is the County fining the company for failing to get a permit before construction?
 - *7.9C. When any work for which a Floodplain Permit is required by this Ordinance is started or proceeded with prior to obtaining a Floodplain Permit; the Permit Application Fee and Deposit for Expenses stated in this Ordinance shall be doubled. Fees and Deposit for Expenses as stated above shall be tripled for every subsequent occurrence by the same Applicant. Payment of the fees, costs and expenses shall not relieve any Applicant from complying fully with the requirements of this Ordinance in the execution of the work or from other penalties prescribed herein.*
 - *Section 8.4 Penalties Any person who fails to comply with any or all of the requirements or provisions of this Ordinance or direction or Order of the Floodplain Administrator, shall be unlawful and shall be referred to the Prosecuting Attorney who shall expeditiously prosecute all such violators. All violations shall be a misdemeanor. A violator shall, upon conviction, pay a fine to the Doddridge County Commission of not less than fifty dollars (\$50.00) or more than five thousand dollars (\$5,000.00) plus cost of prosecution and/ or such person shall be incarcerated in the County Jail for a period not to exceed 10 days. Each day during which any violation of this Ordinance continues shall constitute a separate offense. In addition to the above penalties, all other actions are hereby reserved including an action in equity for the proper enforcement of this Ordinance. The imposition of a fine or penalty for any violation of, or non-compliance with, this Ordinance shall not excuse the violation or non-compliance with the Ordinance or permit it to continue; and all such persons shall be required to correct or remedy such violations or non-compliance within a reasonable time. Any structure constructed, reconstructed, enlarged, altered or relocated in non-compliance with this*

Ordinance may be declared by the Doddridge County Commission to be a public nuisance and abated as such subject to other applicable laws and exhaustion of appellate rights.

- Did the company reveal in the floodplain permit application (as the did in their DEP NPDES permit application) the fact that toxic chemicals will be placed in the floodplain - such as benzene, toluene, octane, heptane, n-hexane, n-butane, propane, ethane, xylene, etc. Many of these flammable, many carcinogenic, many endocrine disruptors, or a combination thereof.
 - Have they revealed that flowback water from the Marcellus Shale contains radioactive isotopes from the TENORM (Technologically Enhanced Naturally Occurring Radioactive Materials) brought up to the surface during the hydrofracking process?
<https://www.epa.gov/radiation/tenorm-oil-and-gas-production-wastes> The wastewater can contain radioactive isotopes - one of which is radium 226 with a half-life of 1,600 years, or the time it takes for half its radioactivity to decay. Recycling frack wastewater further concentrates the amount of TENORM. TENORM is to be regulated by the WV DHHHR via Section 16 of 64CSR23 laying out the responsibility of the DHHHR in regards to TENORM /starting on pg 302:
<http://apps.sos.wv.gov/adlaw/csr/readfile.aspx?DocId=8399&Format=PDF>
- Have they been contacted about this site? This is not the type of operations one should have in a floodplain -- it is too dangerous to public health as well as plant and wildlife if a flooding episode or spill should occur at the site. Per the Ordinance -- this should not be allowed in the floodplain. (Makes one wonder why it was listed as not being in the floodplain -- sure would be a lot easier for the company.....)
- *Article VI, 6.11.1 No materials that are buoyant, flammable, explosive, or in times of flooding could be injurious to human, animal or plant life, shall be stored below Base Flood Elevation except for mineral storage properly and wholly within the ground in compliance with other State environmental agency(ies) requirements..*
 - If the Floodplain Manager is not asking these questions or he is not aware of these potential problems --- is he doing enough to protect the citizens of Doddridge County?

When will the Commission take seriously the job of the Floodplain Manager and hire a person qualified for the job from day one, and make sure the Ordinance is followed? In a county so prone to flooding, this is quite possibly one of the most important jobs in the county as it relates to public safety, given the amount of industrial development happening with the oil and gas industry. It is just a matter of time before the Commission and the Floodplain Manager get sued for not upholding the Ordinance resulting in the death of county residents, if this is not taken seriously.

I want these questions answered - for real - I am tired of citizens asking REAL questions being treated with disrespect. I am tired of hearing about the permits not being available for review and the office of Floodplain Manager deciding that the permits are NOT the business of the public -- unprofessional behavior. If mistakes are being made - those records should be looked at by someone other than those that are making the mistakes. Residents of this county deserve an explanation as to how this happened and why similar incidents, all at oil and gas sites, keep happening when it comes to upholding the Ordinance. One would like to believe they were just mistakes, but at what point do "mistakes" made over and over again, for the same industry, by three different floodplain managers and associated county workers, become deliberate acts ?

I look forward to your answers to these extensive questions.

3/21/2016

Gmail - Re: Doddridge County Floodplain Issues

* Thank you,
Christina Woods
Informed & Concerned Doddridge County, WV Resident



George Eidel <doddridgecountyfpm@gmail.com>

Central Station Project

4 messages

George Eidel <doddridgecountyfpm@gmail.com>

Tue, Apr 12, 2016 at 2:36 PM

To: Sarah Wolfe <sarah.wolfe@fema.dhs.gov>

Sarah,

Good afternoon, sorry to bother you with more stuff. The project that our office sent over a couple of weeks ago, the company was wanting to know if your office or the contractor had a chance to look over the information. They are wanting to get back to work and were wondering if everything looked good from your end. Once our office has that information we will issue a permit and lift the stop work order. Thank you again for help in this matter.

George

-

George C. Eidel, OEM Director/Floodplain Manager
Doddridge County Commission
108 Court Street Suite 1
West Union, WV 26456-2095
Work Phone: 1-304-873-1343
Mobile Phone: 1-304-281-7407
Fax: 1-304-873-1840
doddridgecountyfpm@gmail.com
www.doddridgecounty.wv.gov

-

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Wolfe, Sarah <Sarah.Wolfe@fema.dhs.gov>
To: George Eidel <doddridgecountyfpm@gmail.com>

Tue, Apr 12, 2016 at 2:51 PM

George,

I have in my notes that we discussed this project on 3/28:

Coordination with George (local FPM) regarding permitting of WWTP in SFHA. Coordinated with RA Branch to review HEC-RAS data. The site is located within the regulatory SFHA Zone A, and is also in the model backed data. Technical data provided by the applicant demonstrate more accurate site elevations, showing the site is out. Since fill was placed on the site, a LOMR-F will be required by the community ordinance

The technical data looked sufficient to document the site as out of the SFHA, but they should submit a LOMR-F before the completion of the project.

Sarah E. Wolfe

Floodplain Management and Insurance

Mitigation Division

DHS/FEMA Region III

One Independence Mall

615 Chestnut Street

Philadelphia PA 19106-4404

Ph: (215) 931-5532

Cell: (312) 590-1739

sarah.wolfe@fema.dhs.gov

From: George Eidel [mailto:doddridgecountyfpm@gmail.com]

Sent: Tuesday, April 12, 2016 2:37 PM

To: Wolfe, Sarah

Subject: Central Station Project

[Quoted text hidden]

George Eidel <doddridgecountyfpm@gmail.com>

To: "Wolfe, Sarah" <Sarah.Wolfe@fema.dhs.gov>

Tue, Apr 12, 2016 at 3:05 PM

Sarah,

The LOMR-F was submitted on March 29th, below is the return email the firm received. Plus the confirmation of receipt of payment. If this is all that is required and we are pretty sure there would be no issues then I should be safe to lift the stop work order and allow them to get back to business.

We have received your request that the Department of Homeland Security's Federal Emergency Management Agency (FEMA) determine if the requested property is located within an identified Special Flood Hazard Area on the applicable National Flood Insurance Program (NFIP) map for: WEST UNION, TOWN OF, Doddridge County, WV.

The Case Number assigned to your request is 16-03-1393A, and the Project ID is 263 Central Station Road. Your Online LOMC Application ID was 1501992490851.

We are reviewing your submitted data and will contact you if additional information is required to process your request.

If additional information is not required, we will issue a final determination letter within 30-60 days.

You may obtain project status information from MIP via the Online LOMC homepage. To return to your application, click on the following link or copy and paste the link into the address bar of your browser:

<https://hazards.fema.gov/femaportal/onlinelomc>

Inquiries concerning the status of your request should be made by calling the FEMA Map Information eXchange (FMIX) toll free at (877) 336-2627 (877-FEMA-MAP) or by letter addressed to the Federal Emergency Management Agency, LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304-04605, Attn: LOMA Manager.

This is in response to your recent payment received, regarding Online LOMC Amendment application 1501992490851, FEMA Case Number 16-03-1393A.

Your payment of \$425.00 has been approved.

Transaction ID: OL_20160329162309

[Quoted text hidden]

Wolfe, Sarah <Sarah.Wolfe@fema.dhs.gov>
To: George Eidel <doddridgecountyfpm@gmail.com>

Tue, Apr 12, 2016 at 3:10 PM

George, I would see no concerns with lifting the stop-work order, should you chose. I would make it clear to the applicant that is the LOMC is denied, you will need to have another conversation with them about what needs to happen (such as removing the fill from the site).

- *Sarah*

From: George Eidel [mailto:doddridgecountyfpm@gmail.com]
Sent: Tuesday, April 12, 2016 3:06 PM
To: Wolfe, Sarah
Subject: Re: Central Station Project

[Quoted text hidden]

Call Chis Stanton,
Draw up Papers stating
if the LOMR-F is
Refused then fill will
Have to be removed.

Have them Sign it.

Make them aware of
this before lifting the
Stop work order

1-304-709-4520

April 23, 2016

George Eidel, Doddridge County, Flood Plain Manager
Beth A. Rogers, Doddridge County Clerk
Clerk of the County Court
118 East Court Street
West Union, WV 26456

Re: Floodplain Permit Application 16-415
HEP Shalewater Solutions – Temporary Water Treatment/Recycling Facility

Dear Mr. Eidel:

As a resident of Doddridge County I am expressing my concern about the above-referenced application.

This facility will be handling large volumes of materials which are known to be toxic to human health. To protect the health and welfare of our citizens, this type of facility should ideally not be allowed in the county at all. You, as Floodplain Administrator, are specifically charged with minimizing danger to public health and safety posed by development in the floodplain. Please take seriously your responsibility to the citizens upstream and downstream from this proposed site.

HEP Shalewater Solutions states that the facility will accept up to 1,500 barrels per day of brine containing benzene, ethylbenzene, cyclohexane, toluene, and xylenes—all known toxins. This is according to the company. Studies have shown that brine from gas and oil wells can contain many additional hazardous materials including radioactive materials. To protect the health and welfare of our citizens, no materials that in times of flooding could be injurious to human, animal, or plant life, should be stored in the floodplain.

As you know, the Floodplain Ordinance states that “the County Commission of Doddridge County Officially recognizes the beneficial functions the Floodplain Area serves in storage and transportation of water during floods. Placement of fill in the Floodplain Area is discouraged and should be minimized.” I don’t understand how the extensive fill of the proposed project can be considered “minimized”. I also don’t understand how anyone can assert that it will not adversely affect those upstream or downstream in times of flooding.

For the health and welfare of our citizens, particularly in times of flooding, please deny this application and require the applicants to return the property to its original contours. Please make my comments part of the application record. Thank you for your consideration.

Sincerely,



Linda Ireland

993 Black Lick Road
Salem, WV 26426
irelandlinda@yahoo.com
(304) 641-3689

File in
Shalewater
FILE
16-415



Doddridge County Office of Emergency Management

Floodplain Administrator

To: HEP Shalewater Solutions LLC

1660 17th St suite 350.

Denver CO 80202

From: George Eidel, Floodplain Administrator

Ref: HEP Shalewater Solutions LLC Central Station Waste Water Treatment Project Permit # 16-415

This project has had a stop work order placed on it since March 2, 2016. After meeting with company officials and requiring them to obtain permits and/or documentation from various local, state and federal agencies on the project (See Doddridge County Floodplain Permit #16-) in order to show that there will be no adverse effects to the surrounding area due to the development at this site. The company has complied with this office and showed that, through a detailed study, there will be no adverse effects. The company is awaiting a Letter of Map Revision based on Fill (LOMR-F) from the Federal Emergency Management Agency (FEMA), in Washington DC, to be approved. This is the final step needed to lift the stop work order. This office and FEMA region 3 office feel that the company may restart operations, at this time, at the Central Station site based on their documentation. **The stipulation will be that, if when reviewed by FEMA headquarters it is found that there are issues and the LOMR-F is denied, the company will have to remove all equipment and the fill (Dirt) that has been placed at the site will need to be removed.** If the company agrees to these terms the stop work order will be removed and work may continue at the site.

George Eidel,

Doddridge County Emergency Manager/Floodplain Administrator

Date: April 14, 2016

Anthony Gutta

President

HEP Shalewater Solutions LLC

Christ Stanton

Director of Residual Waste

HEP Shalewater Solutions LLC



George Eidel <doddridgecountyfpm@gmail.com>

Central Station Project

4 messages

George Eidel <doddridgecountyfpm@gmail.com>

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George

—
George C. Eidel, OEM Director/Floodplain Manager
Doddridge County Commission
108 Court Street Suite 1
West Union, WV 26456-2095
Work Phone: 1-304-873-1343
Mobile Phone: 1-304-281-7407
Fax: 1-304-873-1840
doddridgecountyfpm@gmail.com
www.doddridgecounty.wv.gov

—
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Wolfe, Sarah <Sarah.Wolfe@fema.dhs.gov>

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[Quoted text hidden]

George Eidel <doddridgecountyfpm@gmail.com>
To: "Wolfe, Sarah" <Sarah.Wolfe@fema.dhs.gov>

Tue, Apr 12, 2016 at 3:05 PM

Sarah,

The LOMR-F was submitted on March 29th, below is the return email the firm received. Plus the confirmation of receipt of payment. If this is all that is required and we are pretty sure there would be no issues then I should be safe to lift the stop work order and allow them to get back to business.

We have received your request that the Department of Homeland Security's Federal Emergency Management Agency (FEMA) determine if the requested property is located within an identified Special Flood Hazard Area on the applicable National Flood Insurance Program (NFIP) map for: WEST UNION, TOWN OF, Doddridge County, WV.

The Case Number assigned to your request is 16-03-1393A, and the Project ID is 263 Central Station Road. Your Online LOMC Application ID was 1501992490851.

We are reviewing your submitted data and will contact you if additional information is required to process your request.

If additional information is not required, we will issue a final determination letter within 30-60 days.

You may obtain project status information from MIP via the Online LOMC homepage. To return to your application, click on the following link or copy and paste the link into the address bar of your browser:

<https://hazards.fema.gov/femaportal/onlinelomc>

Inquiries concerning the status of your request should be made by calling the FEMA Map Information eXchange (FMIX) toll free at (877) 336-2627 (877-FEMA-MAP) or by letter addressed to the Federal Emergency Management Agency, LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304-04605, Attn: LOMA Manager.

This is in response to your recent payment received, regarding Online LOMC Amendment application 1501992490851, FEMA Case Number 16-03-1393A.

Your payment of \$425.00 has been approved.

Transaction ID: OL_20160329162309

[Quoted text hidden]

Wolfe, Sarah <Sarah.Wolfe@fema.dhs.gov>
To: George Eidel <doddridgecountyfpm@gmail.com>

Tue, Apr 12, 2016 at 3:10 PM

George, I would see no concerns with lifting the stop-work order, should you chose. I would make it clear to the applicant that is the LOMC is denied, you will need to have another conversation with them about what needs to happen (such as removing the fill from the site).

- *Sarah*

From: George Eidel [mailto:doddridgecountyfpm@gmail.com]
Sent: Tuesday, April 12, 2016 3:06 PM
To: Wolfe, Sarah
Subject: Re: Central Station Project

[Quoted text hidden]

**DEPARTMENT OF HOMELAND SECURITY - FEDERAL EMERGENCY MANAGEMENT AGENCY
COMMUNITY ACKNOWLEDGMENT FORM**

O.M.B. NO. 1660-0015
Expires February 28, 2014

PAPERWORK BURDEN DISCLOSURE NOTICE

Public reporting burden for this data collection is estimated to average 1.38 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and submitting the form. This collection is required to obtain or retain benefits. You are not required to respond to this collection of information unless a valid OMB control number is displayed on this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Department of Homeland Security, Federal Emergency Management Agency, 1800 South Bell Street, Arlington, VA 20598-3005, Paperwork Reduction Project (1660-0015). NOTE: Do not send your completed form to this address.

This form must be completed for requests involving the existing or proposed placement of fill (complete Section A) **OR** to provide acknowledgment of this request to remove a property from the SFHA which was previously located within the regulatory floodway (complete Section B).

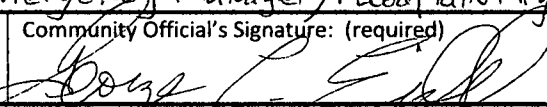
This form must be completed and signed by the official responsible for floodplain management in the community. **The six digit NFIP community number and the subject property address must appear in the spaces provided below. Incomplete submissions will result in processing delays.** Please refer to the MT-1 instructions for additional information about this form.

Community Number: 540025 Property Name or Address: 263 Central Station Road, West Union, WV 26456

A. REQUESTS INVOLVING THE PLACEMENT OF FILL

As the community official responsible for floodplain management, I hereby acknowledge that we have received and reviewed this Letter of Map Revision Based on Fill (LOMR-F) or Conditional LOMR-F request. Based upon the community's review, we find the completed or proposed project meets or is designed to meet all of the community floodplain management requirements, including the requirement that no fill be placed in the regulatory floodway, and that all necessary Federal, State, and local permits have been, or in the case of a Conditional LOMR-F, will be obtained. For Conditional LOMR-F requests, the applicant has or will document Endangered Species Act (ESA) compliance to FEMA prior to issuance of the Conditional LOMR-F determination. For LOMR-F requests, I acknowledge that compliance with Sections 9 and 10 of the ESA has been achieved independently of FEMA's process. Section 9 of the ESA prohibits anyone from "taking" or harming an endangered species. If an action might harm an endangered species, a permit is required from U.S. Fish and Wildlife Service or National Marine Fisheries Service under Section 10 of the ESA. For actions authorized, funded, or being carried out by Federal or State agencies, documentation from the agency showing its compliance with Section 7(a)(2) of the ESA will be submitted. In addition, we have determined that the land and any existing or proposed structures to be removed from the SFHA are or will be reasonably safe from flooding as defined in 44CFR 65.2(c), and that we have available upon request by DHS-FEMA, all analyses and documentation used to make this determination. For LOMR-F requests, we understand that this request is being forwarded to DHS-FEMA for a possible map revision.

Community Comments:

Community Official's Name and Title: <i>(Please Print or Type)</i> <u>George C. Eidel Emergency Manager/Flood Plain Mnggr</u>		Telephone No.: <u>304-873-1343</u>
Community Name: <u>Doddridge County, WV.</u>	Community Official's Signature: (required) 	Date: <u>March 29, 2016</u>

B. PROPERTY LOCATED WITHIN THE REGULATORY FLOODWAY

As the community official responsible for floodplain management, I hereby acknowledge that we have received and reviewed this request for a LOMA. We understand that this request is being forwarded to DHS-FEMA to determine if this property has been inadvertently included in the regulatory floodway. We acknowledge that no fill on this property has been or will be placed within the designated regulatory floodway. We find that the completed or proposed project meets or is designed to meet all of the community floodplain management requirements.

Community Comments:

Community Official's Name and Title: <i>(Please Print or Type)</i>		Telephone No.:
Community Name:	Community Official's Signature (required):	Date:





10-04
Central District
Ralph J. & Judith Valentini

10-03
Central District
Anthony J. Mancuso


Old US Hwy 50

Memorandum for Record

Date: 22 March 2016

Subject: Shalewater Solutions - Central Station Project

1. On 9 March 2016, Hatch Mott MacDonald (agent), on behalf of HEP-Shalewater Solutions LLC (applicant), contacted this office regarding their proposed Central Station Project. The project will consist of the construction of a temporary water treatment/recycling facility located near West Union, Doddridge County, West Virginia. Via an email on 9 March 2016, the agent provided a wetland delineation report to this office. Further, the agent indicated that the original footprint of the fill material would result in the discharge of fill material into two wetlands, W-1 and W-2. To avoid discharges into the wetlands, the applicant reduced the footprint of the fill area. The agent provided aerial photography depicting the original footprint of the facility and the modified footprint of the facility.
2. On 17 March 2016, I contacted the agent to discuss the proposal. Mr. John Quinlisk, the agent for the applicant, stated that they had the site delineated and found that the original footprint of the fill encompassed the eastern section of W-1 and a small section of W-2. He indicated that on order to avoid discharges into fill material into the wetlands, the footprint of the fill was reduced to avoid the wetlands. Based on the new footprint, work at the site was initiated. Mr. Quinlisk explained the he was contacted by the floodplain administrator for Doddridge County who directed him to this office to determine if a permit would be required for the proposal. Mr. Quinlisk indicated work at the site has stopped and they are waiting for the Corps determination regarding wetlands at the site.
3. I explained that based on the information provided, it appeared that no fill was located in the wetland areas. However, I inquired as to how they were going to keep reduce secondary impacts, such as run-off, sedimentation, into the remaining wetlands as the construction activity is very close to the wetlands in question. In an email dated 21 March 2016, Mr. Quinslick responded to my concerns and provided pictures of the best management practices which are being implemented at the site to protect the wetlands. (See attached email)
4. Based on the information and review of the photographs provided by the applicant, it is the Corps determination that there has not been and will not be a discharge of dredged and/or fill material into W-1 and W-2 as a result of the proposal. The applicant will be notified via letter that no permit will be required for this proposal.



Kimberly Courts-Brown
Regulatory Project Manager
South/Transportation Branch

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PRELIMINARY JURISDICTIONAL DETERMINATION (JD): March 22, 2016

B. NAME AND ADDRESS OF PERSON REQUESTING PRELIMINARY JD:

Anthony Gutta
HEP Shalewater Solutions, LLC
1660 17th Street, Suite 350
Denver, CO 80220

C. DISTRICT OFFICE, FILE NAME, AND NUMBER:
LRH-2016-281-OHR-Arnold Creek-Central Station Project

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION:

State: West Virginia
County: Doddridge
City: West Union
Coordinates of site: The center of the project is located at 39.280556°North, 80.8125°West.

Name of nearest waterbody: Arnold Creek

Identify (estimate) amount of waters in the review area:

Non-wetland waters:
Cowardin Class:
Stream Flow:
Wetlands: Two (2) wetlands totaling 0.05 acre
Cowardin Class: PEM

Name of any water bodies on the site that have been identified as Section 10 waters:
None.

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

Office (Desk) Determination. Date: March 22, 2016
 Field Determination. Date(s):

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable.

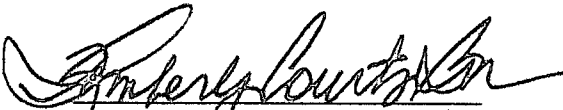
This preliminary JD finds that there "may be" waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA. Data reviewed for preliminary JD (check all that apply - checked items should be included in case file and, where checked and requested, appropriately reference sources below):

- Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: In report entitled: "Shalewater Solutions – Central Station, Wetland Delineation Report – November 11, 2015"
- Data sheets prepared/submitted by or on behalf of the applicant/consultant.
 - Office concurs with data sheets/delineation report.
 - Office does not concur with data sheets/delineation report.
- Data sheets prepared by the Corps:
- Corps navigable waters' study:

- U.S. Geological Survey Hydrologic Atlas:
 - USGS NHD data. USACE ORM NHD dataset
 - USGS 8 and 12 digit HUC maps.
- U.S. Geological Survey map(s). USGS WV-West Union Quad.
- USDA Natural Resources Conservation Service Soil Survey.
- National wetlands inventory map(s). USACE ORM NWI dataset, accessed March 22, 2016.
- State/Local wetland inventory map(s):
- FEMA/FIRM maps:
- 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
- Photographs: (Shalewater Solutions – Central Station, Wetland Delineation Report – November 11, 2015).
- Other Previous determination(s). File no. and date of response letter:
- Other information (please specify): Aerial Photography submitted on March 21, 2016.

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.


 Signature and date of 3/25/16
 Regulatory Project Manager

 Signature and date of
 Person requesting preliminary JD

**Table 1 – Aquatic Resources in Limits of Disturbance (LOD)
 Shalewater Solutions – Central Station Project
 LRH-2016-281-OHR-Arnold Creek**

Water ID	Waterway name	Latitude & Longitude		Flow Regime or Wetland Classification	Acreage of Aquatic Resource in LOD
W-1	Wetland 1	39.280769	-80.813043	PEM	0.0496 acre
W-2	Wetland 2	39.280574	-80.813118	PEM	0.0034 acre



George Eidel <doddridgecountyfpm@gmail.com>

Central Station - Online LOMC Payment Approved (Payment Receipt)

Chambers, Ricardo A <Ricardo.Chambers@mottmacna.com>
To: "doddridgecountyfpm@gmail.com" <doddridgecountyfpm@gmail.com>

Wed, Mar 30, 2016 at 8:39 AM

George:

Please see below the payment receipt for the LOMR-F.

Thank you,

Ricardo

—Original Message—

From: Moore, Brian K
Sent: Tuesday, March 29, 2016 5:32 PM
To: Chambers, Ricardo A
Subject: FW: Online LOMC Payment Approved

Ricardo,

Here is the payment receipt.

—Original Message—

From: no-reply@riskmapcnds.com [mailto:no-reply@riskmapcnds.com]
Sent: Tuesday, March 29, 2016 4:23 PM
To: brian.moore@hatchmott.com
Subject: Online LOMC Payment Approved

Dear Brian Moore,

This is in response to your recent payment received, regarding Online LOMC Amendment application 1501992490851, FEMA Case Number 16-03-1393A.

Your payment of \$425.00 has been approved.

Transaction ID: OL_20160329162309

This message has been generated automatically. Please do not reply to this message.



George Eidel <doddridgecountyfpm@gmail.com>

Central Station - LOMR - Amendment Project is Created with Project Number = 16-03-1393A

Chambers, Ricardo A <Ricardo.Chambers@mottmacna.com>

Tue, Mar 29, 2016 at 4:42 PM

To: "doddridgecountyfpm@gmail.com" <doddridgecountyfpm@gmail.com>

Cc: Tony Gutta <tgutta@shalewater.com>, "Chris Stanton (cstanton@shalewater.com)" <cstanton@shalewater.com>, "Ryan Hall (rhall@shalewater.com)" <rhall@shalewater.com>, "Alana Mendoza (amendoza@rgpanama.com)" <amendoza@rgpanama.com>, "Amos, Douglas R" <Douglas.Amos@mottmacna.com>, "Quinlisk, John M" <John.Quinlisk@mottmacna.com>, "Moore, Brian K" <Brian.Moore@mottmacna.com>

George:

Please see below the email confirming the submission of the LOMR-F application. Let us know if you have any questions.

Sincerely,

Ricardo

—Original Message—

From: Moore, Brian K

Sent: Tuesday, March 29, 2016 4:33 PM

To: Chambers, Ricardo A

Subject: FW: Amendment Project is Created with Project Number = 16-03-1393A

Ricardo,

Below is the submission confirmation.

—Original Message—

From: no-reply@riskmapcnds.com [mailto:no-reply@riskmapcnds.com]

Sent: Tuesday, March 29, 2016 4:23 PM

To: brian.moore@hatchmott.com

Subject: Amendment Project is Created with Project Number = 16-03-1393A

We have received your request that the Department of Homeland Security's Federal Emergency Management Agency (FEMA) determine if the requested property is located within an identified Special Flood Hazard Area on the applicable National Flood Insurance Program (NFIP) map for: WEST UNION, TOWN OF, Doddridge County, WV.

The Case Number assigned to your request is 16-03-1393A, and the Project ID is 263 Central Station Road. Your Online LOMC Application ID was 1501992490851.

We are reviewing your submitted data and will contact you if additional information is required to process your request.

If additional information is not required, we will issue a final determination letter within 30-60 days.

You may obtain project status information from MIP via the Online LOMC homepage. To return to your application, click on the following link or copy and paste the link into the address bar of your browser:

<https://hazards.fema.gov/femaportal/onlinelomc>

Inquiries concerning the status of your request should be made by calling the FEMA Map Information eXchange (FMIX) toll free at (877) 336-2627 (877-FEMA-MAP) or by letter addressed to the Federal Emergency Management Agency, LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304-04605, Attn: LOMA Manager.

Please be assured we will do our best to respond to all inquiries in a timely manner.

This message has been generated automatically. Please do not reply to this message.



George Eidel <doddridgecountyfpm@gmail.com>

FW:

Courts-Brown, Kimberly <Kimberly.D.Courtsbrown@usace.army.mil>
To: "doddridgecountyfpm@gmail.com" <doddridgecountyfpm@gmail.com>

Mon, Mar 28, 2016 at 9:46 AM

George,

Attached please find the no permit required letter for the HEP Shalewater Solutions Project. Please feel free to call if you have any questions.

Have a great day,

Kimberly Courts-Brown

Regulatory Project Manager

South/Transportation Branch

U.S. Army Corps of Engineers – Huntington District

502 8th Street

Huntington, WV 25705

304-399-6906

Kimberly.d.courtsbrown@usace.army.mil

 **[Untitled].pdf**
680K



DEPARTMENT OF THE ARMY
HUNTINGTON DISTRICT, CORPS OF ENGINEERS
502 EIGHTH STREET
HUNTINGTON, WEST VIRGINIA 25701-2070

REPLY TO
ATTENTION OF

Regulatory Division
Energy Resource Branch
LRH-2016-281-Arnold Creek-OHR

MAR 25 2016

Mr. Anthony Gutta
HEP Shalewater Solutions, LLC
1660 17th Street, Suite 350
Denver, CO 80220

Dear Mr. Gutta:

I refer to a letter provided to this office on your behalf by Hatch Mott MacDonald, received in this office on March 9, 2016 and additional information received on March 21, 2016. You have requested information as to whether the proposal, which consists of the construction of a temporary water treatment/water recycling facility, would require a Corps permit. The project is located near West Union, Doddridge County, West Virginia. This project has been assigned the following file number: LRH-2016-281-OHR. Please reference this file number on all future correspondence related to this project.

The United States Army Corps of Engineers' (Corps) authority to regulate waters of the United States (U.S.) is based on the definitions and limits of jurisdiction contained in 33 CFR 328 and 33 CFR 329. Section 404 of the Clean Water Act (CWA) requires that a Department of the Army (DA) permit be obtained prior the discharge of dredged or fill material into waters of the U.S., including wetlands. Section 10 of the Rivers and Harbors Act of 1899 (Section 10) requires a DA permit be obtained for any work in, on, over or under a navigable water.

Based on the information you have provided, this office has determined that two (2) wetlands (W-1 and W-2) totaling 0.05 acre are located within the project area and may be waters of the U.S. in accordance with the Regulatory Guidance Letter for Jurisdictional Determinations (JDs) issued by the Corps on June 26, 2008 (Regulatory Guidance Letter No. 08-02). As indicated in the guidance, this Preliminary JD is non-binding and cannot be appealed (33 C.F.R. 331.2) and only provides a written indication that waters of the U.S., including wetlands, may be present on-site.

You have declined to exercise the option of obtain an approved JD in this instance and at this time. However, for the purposes of the determination of impacts, compensatory mitigation,

CERLH-OR-RD

COURTS-BROWN/6906

-2-

*Kcdds
3/25/14*

and other resource protection measures for the activities which require authorization from this office, the wetlands referenced above will be evaluated as if they are waters of the U.S.

Enclosed please find two (2) copies of the preliminary JD form. If you agree with the findings of this preliminary JD and understand your options regarding the same, please sign and date one (1) copy of the form and return it to this office within thirty (30) days of receipt of this letter. You should submit the signed copy to the following address:

U.S. Army Corps of Engineers
Huntington District
Attn: South/Transportation Branch
502 Eighth Street
Huntington, West Virginia 25701

The proposed project, as described in the submitted information, has been reviewed in accordance with the CWA and Section 10. Based on your description of the proposed work, it has been determined this project will not involve activities subject to the requirements of the CWA or Section 10. This office has determined that the proposed construction of the facility will not result in the discharge of dredged and/or fill material into waters of the U.S., including wetlands. Therefore a Department of the Army (DA) permit is not required for the proposal. However, if it becomes necessary to discharge dredged and/or fill material into waters of the U.S., including wetlands W-1 and W-2, you must contact this office regarding permitting requirements.

If you have any questions concerning the above, please contact Kimberly Courts-Brown at (304) 399-6906 or by email at Kimberly.d.courtsbrown@usace.army.mil.

Sincerely, Workman RD-S/T


Sarah Workman
Regulatory Project Manager
South/Transportation Branch

*SMW
3/25/14*

cc:
John Quinlisk
Hatch Mott MacDonald
1001 Corporate Drive, Suite 100
Cannonsburg, PA 15317

Subject: Shalewater Solutions - Central Station Project

1. On 9 March 2016, Hatch Mott MacDonald (agent), on behalf of HEP-Shalewater Solutions LLC (applicant), contacted this office regarding their proposed Central Station Project. The project will consist of the construction of a temporary water treatment/recycling facility located near West Union, Doddridge County, West Virginia. Via an email on 9 March 2016, the agent provided a wetland delineation report to this office. Further, the agent indicated that the original footprint of the fill material would result in the discharge of fill material into two wetlands, W-1 and W-2. To avoid discharges into the wetlands, the applicant reduced the footprint of the fill area. The agent provided aerial photography depicting the original footprint of the facility and the modified footprint of the facility.
2. On 17 March 2016, I contacted the agent to discuss the proposal. Mr. John Quinlisk, the agent for the applicant, stated that they had the site delineated and found that the original footprint of the fill encompassed the eastern section of W-1 and a small section of W-2. He indicated that on order to avoid discharges into fill material into the wetlands, the footprint of the fill was reduced to avoid the wetlands. Based on the new footprint, work at the site was initiated. Mr. Quinlisk explained the he was contacted by the floodplain administrator for Doddridge County who directed him to this office to determine if a permit would be required for the proposal. Mr. Quinlisk indicated work at the site has stopped and they are waiting for the Corps determination regarding wetlands at the site.
3. I explained that based on the information provided, it appeared that no fill was located in the wetland areas. However, I inquired as to how they were going to keep reduce secondary impacts, such as run-off, sedimentation, into the remaining wetlands as the construction activity is very close to the wetlands in question. In an email dated 21 March 2016, Mr. Quinslick responded to my concerns and provided pictures of the best management practices which are being implemented at the site to protect the wetlands. (See attached email)
4. Based on the information and review of the photographs provided by the applicant, it is the Corps determination that there has been and will not be a discharge of dredged and/or fill material into W-1 and W-2 as a result of the proposal. The applicant will be notified via letter that no permit will be required for this proposal.


Kimberly Courts-Brown
Regulatory Project Manager
South/Transportation Branch



George Eidel <doddridgecountyfpm@gmail.com>

FW: FIRM Mapping Errors

McCann, Gregory L <Gregory.L.Mccann@wv.gov>

Fri, Mar 11, 2016 at 10:42 AM

To: "George Eidel Doddridge County FPM (doddridgecountyfpm@gmail.com)" <doddridgecountyfpm@gmail.com>

George,

From what I am reading, you are being backed up by State, Fed, and AMEC that done the HEC-RAS.

Great job on this.

Gregory L. McCann CFM
State Capitol Complex
1900 Kanawha Blvd. East
Building 1 Room EB-80
Charleston WV 25305-0630
(304)957-2571 Work
(304)382-8138 Cell



CONFIDENTIALITY NOTE: This e-mail message is for the sole use of the intended recipient(s) and may contain confidential privileged or law enforcement sensitive information. Do not forward this e-mail to another person without the approval of the original sender. Any unauthorized review, use, disclosure or distribution is strictly prohibited and may be legally accountable. If you are not the intended recipient, please contact the sender by reply e-mail and destroy all copies of the original message.

From: Clevenger, Tucker [mailto:tucker.clevenger@amecfw.com]
Sent: Thursday, March 10, 2016 12:12 PM
To: Mccann, Gregory L <Gregory.L.Mccann@wv.gov>; Carte, Richard L <Richard.L.Carte@wv.gov>
Cc: Breen, Matt <matt.breen@amecfw.com>; Sneed, Kevin L <Kevin.L.Sneed@wv.gov>; McConihay, Megan L <Megan.L.McConihay@wv.gov>; Wolfe, Sarah (Sarah.Wolfe@fema.dhs.gov) <Sarah.Wolfe@fema.dhs.gov>
Subject: RE: FIRM Mapping Errors

All,

I spoke with Megan this morning, but below is the response that I sent to HMM.

Tucker

John,

After I have had a chance to further evaluate the information that you have provided, I would have to agree with the FPA that a more detailed H&H study is warranted on this site. Here is my rationale for coming to that conclusion:

- Prior to reviewing your site plans, I was not completely clear on the volume or location of the fill being placed or the type of facility being constructed. Based on a very cursory review of the plans, it certainly appears that fill associated with this project is very close to, if not within the floodplain associated with the updated AFH analysis. In this scenario alone, the FPA is well within his rights to request a more detailed analysis.
- The updated floodplain analysis that was performed at a county level is considered an H&H study, but is only meant to more broadly and accurately define flood hazards. This information was derived from a 3M DEM flooding source and in cases where significant development is proposed in or near an approximate floodplain, it is recommended to enhance the baseline hydraulic models with more detailed, site specific, topographic information.
- For a project where significant fill is being proposed within or near the identified approximate floodplain boundary, it is not appropriate to only redelineate the AFH WSEL on the new or proposed topographic data. This information should be utilized to further enhance the existing AFH HEC-RAS model and evaluate whether any changes in WSELs result from the proposed project.

From a floodplain management and best practices perspective, my recommendation would be to go ahead and update the existing HEC-RAS hydraulic model with the new site specific topographic data, evaluate the impacts of your proposed project, and demonstrate that the fill you are placing is not adversely impacting any adjacent property owners. In addition, this would enable you to confirm with more confidence that your site is elevated above the 100-year WSEL.

I realize that this isn't the answer you were hoping for, but I can answer any additional questions you might have.

Tucker

Tucker Clevenger, PE, CFM

Water Resources Branch Manager, Amec Foster Wheeler
14424 Albemarle Point Place, Suite 115, Chantilly, VA 20151
T 703 209 6394 F 703 488 3701 VOIP 28-3783

tucker.clevenger@amecfw.com amecfw.com

From: Mccann, Gregory L [mailto:Gregory.L.Mccann@wv.gov]
Sent: Wednesday, March 09, 2016 12:08 PM
To: Clevenger, Tucker <tucker.clevenger@amec.com>; Carte, Richard L <Richard.L.Carte@wv.gov>
Cc: Breen, Matt <matt.breen@amec.com>; Sneed, Kevin L <Kevin.L.Sneed@wv.gov>; McConihay, Megan L <Megan.L.McConihay@wv.gov>; Wolfe, Sarah (Sarah.Wolfe@fema.dhs.gov) <Sarah.Wolfe@fema.dhs.gov>
Subject: RE: FIRM Mapping Errors

Tucker,

Please see the attached emails concerning the proposed development in the "A" Zone in Doddridge County. The only permit obtained at this point is from DEP (included in attachments). Mr. Eidel from Doddridge County has asked for an H&H study to be done because of the size of the project and the amount of fill that has been placed on the property (which is within the FPA's rights to ask for the H&H). At this point, the project is almost complete and (as Mr. Eidel put it) ready to start production.

This company is telling Doddridge county that the HEC-RAS model done to develop the AFH's for Doddridge County is the same as the H&H (I can't really say if this is fact) and even though the WV Flood Tool has the disclaimers that say reference the FIRMs they want to use the WV Flood Tool as the official word .

Also, can you please replace Robyn Mumphard with Megan McConihay. She took his place when he left, and is Doddridge County's State Contact.

From: Clevenger, Tucker [mailto:tucker.clevenger@amecfw.com]
Sent: Wednesday, March 09, 2016 11:28 AM
To: Carte, Richard L <Richard.L.Carte@wv.gov>
Cc: Breen, Matt <matt.breen@amecfw.com>; Sneed, Kevin L <Kevin.L.Sneed@wv.gov>; Mccann, Gregory L <Gregory.L.Mccann@wv.gov>
Subject: RE: FIRM Mapping Errors

Guys,

On another topic, I got a call (several actually) and the email below from a gentleman with Hatch Mott MacDonald on a project in Doddridge. I spoke with him on the phone about his potential development near a Zone A floodplain and believe they are proceeding appropriately, but they are asking if I will serve as a third party reviewer at the request of the county. I still owe him a call back and am currently undecided as to whether we want to be involved in this capacity, but wanted to also run it by you guys to see if it posed any potential conflict of interest since we developed the AFHs.

Just let me know what you think. I believed he mentioned speaking with Greg and Megan.

Thanks,
Tucker

Tucker,

Since I have not been able to reach you by telephone, I am sending this email.

Hatch Mott MacDonald has prepared an interpolation of the 100 Year Flood Plain for a project specific site using the model that AMEC developed for the State of West Virginia. The Doddridge County Flood Plain Manager has requested that we obtain a third party review of our delineation. The County has requested WV PE seals from HMM and the third party reviewer.

During our discussion last week, you offered to review our project site plan and evaluate our delineation of the 100 Year flood Plain for our project in Doddridge County, WV. I am transmitting project data via this email consisting of the following:

1. A ZIP file containing GIS data used to create our 100 year boundary, the original stream and cross section polylines from the WV Flood data site along with the surface DEM (3 meter DEM) from the WV data site and the 100 year polyline we created.
2. Project Site Plan.

Please contact me to discuss.

Thank you,

John M. Quinlisk, PE



Senior Project Manager

Hatch Mott MacDonald | hatchmott.com

Midwest Environment & Water

Environment & Natural Resources

1001 Corporate Drive, Suite 100

Canonsburg, PA 15317

D 724.514.5356 C 412.638.0561 F 724.873.9116

john.quinlisk@hatchmott.com

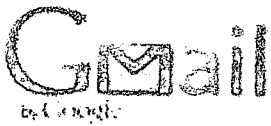
Follow HMM on Twitter | Facebook | LinkedIn | hatchmott.com

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George Eidel <doddridgecountyfpm@gmail.com>

Shalewater Solutions - Central Station Facility Information

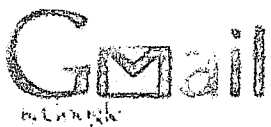
George Eidel <doddridgecountyfpm@gmail.com>

Fri, Feb 26, 2016 at 7:07 AM

To: "Chambers, Ricardo A" <Ricardo.Chambers@hatchmott.com>

You can sign, make sure you have their contact information as well as yours.

[Quoted text hidden]



George Eidel <doddridgecountyfpm@gmail.com>

Shalewater Solutions - Central Station Facility Information

Chambers, Ricardo A <Ricardo.Chambers@hatchmott.com>
To: George Eidel <doddridgecountyfpm@gmail.com>

Fri, Feb 26, 2016 at 6:23 AM

George:

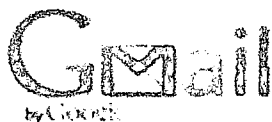
Does the application form have to be signed by Shalewater, or can I sign it?

From: George Eidel [mailto:doddridgecountyfpm@gmail.com]
Sent: Thursday, February 25, 2016 3:15 PM

[Quoted text hidden]

[Quoted text hidden]

[Quoted text hidden]



George Eidel <doddridgecountyfpm@gmail.com>

Shalewater Solutions Central Station Site

George Eidel <doddridgecountyfpm@gmail.com>
To: john.quinlisk@hatchmott.com

Thu, Feb 25, 2016 at 3:31 PM

Mr. Quinlisk,

Thank you for reaching out to us hopefully we can get this issue resolved. In talking with the State Flood Insurance Program personnel with the State Homeland Security and Emergency Management Office I gave them an assessment of your situation. They stated that everything that I have asked of you in terms of permits is right on track. They stated that you should also fill out a Conditional Letter of Map Revision (CLOMR) through FEMA, see this site for information on the CLOMR, <https://www.fema.gov/conditional-letter-map-revision> . If you have any questions please do not hesitate in contacting either our office or you can contact the State FIP Office at 304-957-2571.

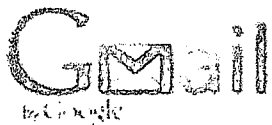
Thank You,

George Eidel

—
George C. Eidel, OEM Director/Floodplain Manager
Doddridge County Commission
108 Court Street Suite 1
West Union, WV 26456-2095
Work Phone: 1-304-873-1343
Mobile Phone: 1-304-281-7407
Fax: 1-304-873-1840
doddridgecountyfpm@gmail.com
www.doddridgecounty.wv.gov
—

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3 attachments **Floodplain Permit Fees.docx**
15K **NEW FLOODPLAIN APPLICATION.pdf**
2901K **DC-Floodplain Ordinance.pdf**
219K



George Eidel <doddridgecountyfpm@gmail.com>

Shalewater Solutions - Central Station Facility Information

George Eidel <doddridgecountyfpm@gmail.com>

Thu, Feb 25, 2016 at 3:14 PM

To: "Chambers, Ricardo A" <Ricardo.Chambers@hatchmott.com>

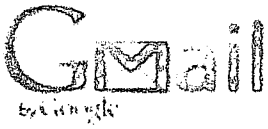
Mr.Chambers,

In talking with the State Flood Insurance Program personnel with the State Homeland Security and Emergency Management Office I gave them an assessment of your situation. They stated that everything that I have asked of you in terms of permits is right on track. They stated that you should also fill out a Conditional Letter of Map Revision (CLOMR) through FEMA, see this site for information on the CLOMR, <https://www.fema.gov/conditional-letter-map-revision> . If you have any questions please do not hesitate in contacting either our office or you can contact the State FIP Office at 304-957-2571.

Thank You,

George Eidel

[Quoted text hidden]



George Eidel <doddridgecountyfpm@gmail.com>

Shalewater Solutions - Central Station Facility Information

Chambers, Ricardo A <Ricardo.Chambers@hatchmott.com>
To: George Eidel <doddridgecountyfpm@gmail.com>
Cc: "Amos, Douglas R" <Douglas.Amos@hatchmott.com>

Thu, Feb 25, 2016 at 8:31 AM

Mr. Eidel:

The site plan attached has the surveyed and dialed in elevations by our surveyor. This plan shows the 100 year flood elevation at 802.52' and our lowest point within the LOD at 809.0'. Let me know if you would have time for a quick call, so I can answer any additional questions, you may have.

Sincerely,

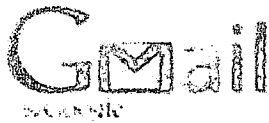
Ricardo

From: George Eidel [mailto:doddridgecountyfpm@gmail.com]
Sent: Thursday, February 25, 2016 8:26 AM
To: Chambers, Ricardo A
Subject: Re: Shalewater Solutions - Central Station Facility Information

[Quoted text hidden]

[Quoted text hidden]

 **Site Plan.pdf**
1036K



George Eidel <doddridgecountyfpm@gmail.com>

Shalewater Solutions - Central Station Facility Information

George Eidel <doddridgecountyfpm@gmail.com>

Thu, Feb 25, 2016 at 8:25 AM

To: "Chambers, Ricardo A" <Ricardo.Chambers@hatchmott.com>

Mr. Chambers,

Thank you for sending your information. Upon examining your plan it is shown that your project does in fact fall into the 100 year flood zone. This will require a floodplain application through our office and applicable fees. From your information it is noted that you will be elevating the site four (4) feet, has this elevation been approved by FEMA through a Letter Of Map Revision (LOMR) or a LOMR-F for fill. This will need to be completed, along with a Hydrologic and Hydraulic study of the area showing potential rise in elevation (the rise can not be more than a cumulative total of 12 inches). You will also need approval from the Army Corp of Engineers, as well as a Mussel study through the WV Department of Natural Resources. If you have any questions please do not hesitate to contact our office.

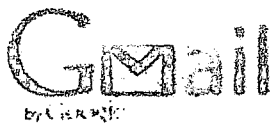
Thank You,

George Eidel

[Quoted text hidden]

—
George C. Eidel, OEM Director/Floodplain Manager
Doddridge County Commission
108 Court Street Suite 1
West Union, WV 26456-2095
Work Phone: 1-304-873-1343
Mobile Phone: 1-304-281-7407
Fax: 1-304-873-1840
doddridgecountyfpm@gmail.com
www.doddridgecounty.wv.gov

—
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George Eidel <doddridgecountyfpm@gmail.com>

Shalewater Solutions - Central Station Facility Information

Chambers, Ricardo A <Ricardo.Chambers@hatchmott.com>

Thu, Feb 25, 2016 at 9:27 AM

To: George Eidel <doddridgecountyfpm@gmail.com>

Cc: "Amos, Douglas R" <Douglas.Amos@hatchmott.com>

Mr. Eidel:

Thank you George. Looking forward to speaking with you.

From: George Eidel [mailto:doddridgecountyfpm@gmail.com]

Sent: Thursday, February 25, 2016 9:27 AM

[Quoted text hidden]

[Quoted text hidden]

[Quoted text hidden]



George Eidel <doddridgecountyfpm@gmail.com>

Shalewater Solutions - Central Station Facility Information

George Eidel <doddridgecountyfpm@gmail.com>

Thu, Feb 25, 2016 at 9:26 AM

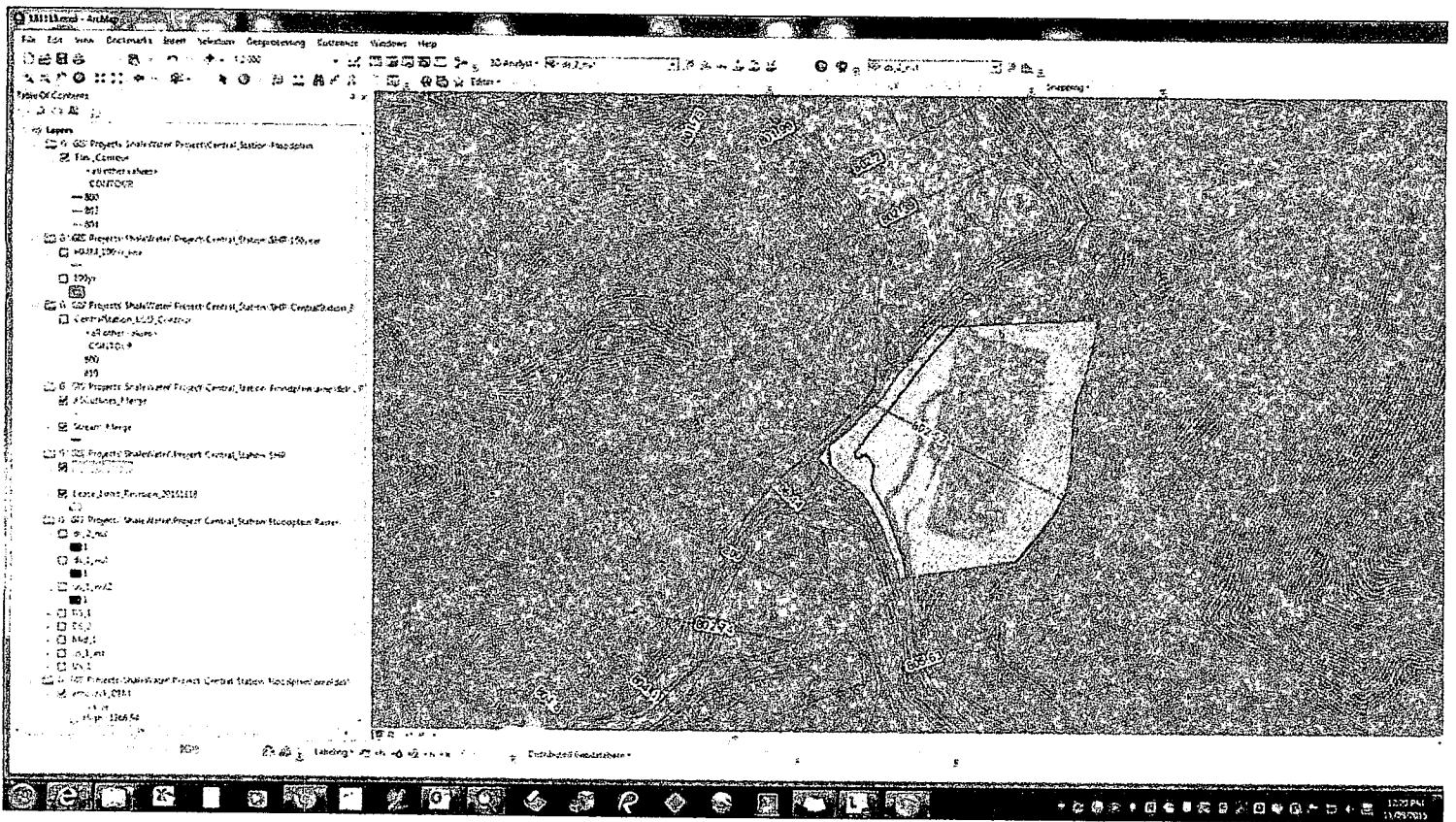
To: "Chambers, Ricardo A" <Ricardo.Chambers@hatchmott.com>

Mr. Chambers,

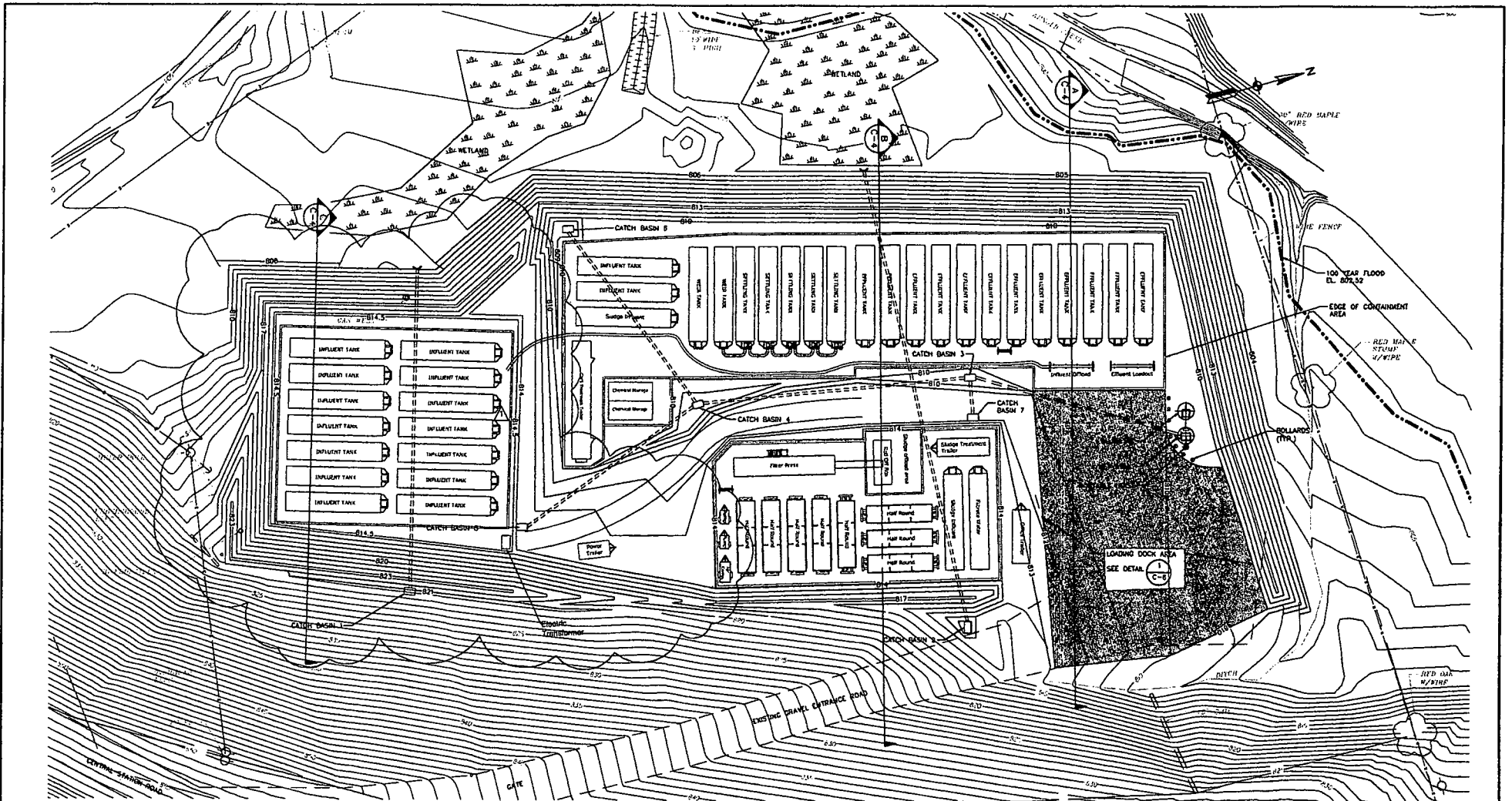
Will try and call later in the morning. Just to give you more information we go by the WV Flood Tool that I sent you. The area in question shows your project to be within the limits of the flood plain and 100 year flood zone. Based on this information we have to require the documentation that I specified in my previous email, the WV Flood Tool is what we go by when determining whether a property is in the floodplain.

George Eidel

[Quoted text hidden]







GENERAL LAYOUT PLAN

SCALE: 1" = 20'

- | LEGEND (EXISTING) | | LEGEND (PROPOSED) | |
|-------------------|----------------------|-------------------|-------------------------|
| — E — | OVERHEAD ELECTRIC | --- 811 --- | 100 YEAR FLOOD CONTOURS |
| — UC — | UNDERGROUND ELECTRIC | ===== | STORM SEWER CONTOUR |
| — X — | FENCE | □ | CATCH BASIN |
| ⊗ | WETLANDS | • | BOLLARDS |
| ○ | UTILITY POLE | ■ | LOADING DOCK AREA |
| ⤴ | GUY POLE | | |

- NOTES:**
1. CONFIGURATION OF EQUIPMENT PROVIDED BY SHALEWATER SOLUTIONS FOR REFERENCE PURPOSES ONLY.
 2. LOADING DOCK AREA SURFACE COMPOSITION AS PER DETAIL 1 ON SHEET C-6. REMAINDER OF LEVEL SURFACES SHALL RECEIVE 4" OF AASHTO NO. 57 LIMESTONE GRAVEL PAVEMENT.

90% COMPLETE DESIGN



<p>Hatch Mott MacDonald 1800 West Carson Street Pittsburgh, Pennsylvania 15219</p>	<table border="1"> <tr><td>1</td><td></td><td></td><td></td></tr> <tr><td>2</td><td></td><td></td><td></td></tr> <tr><td>3</td><td></td><td></td><td></td></tr> <tr><td>4</td><td></td><td></td><td></td></tr> <tr><td>5</td><td></td><td></td><td></td></tr> <tr><td>6</td><td></td><td></td><td></td></tr> <tr><td>7</td><td></td><td></td><td></td></tr> <tr><td>8</td><td></td><td></td><td></td></tr> <tr><td>9</td><td></td><td></td><td></td></tr> <tr><td>10</td><td></td><td></td><td></td></tr> <tr><td>11</td><td></td><td></td><td></td></tr> <tr><td>12</td><td></td><td></td><td></td></tr> <tr><td>13</td><td></td><td></td><td></td></tr> <tr><td>14</td><td></td><td></td><td></td></tr> <tr><td>15</td><td></td><td></td><td></td></tr> <tr><td>16</td><td></td><td></td><td></td></tr> <tr><td>17</td><td></td><td></td><td></td></tr> <tr><td>18</td><td></td><td></td><td></td></tr> <tr><td>19</td><td></td><td></td><td></td></tr> <tr><td>20</td><td></td><td></td><td></td></tr> <tr><td>21</td><td></td><td></td><td></td></tr> <tr><td>22</td><td></td><td></td><td></td></tr> <tr><td>23</td><td></td><td></td><td></td></tr> <tr><td>24</td><td></td><td></td><td></td></tr> <tr><td>25</td><td></td><td></td><td></td></tr> <tr><td>26</td><td></td><td></td><td></td></tr> <tr><td>27</td><td></td><td></td><td></td></tr> <tr><td>28</td><td></td><td></td><td></td></tr> <tr><td>29</td><td></td><td></td><td></td></tr> <tr><td>30</td><td></td><td></td><td></td></tr> <tr><td>31</td><td></td><td></td><td></td></tr> <tr><td>32</td><td></td><td></td><td></td></tr> <tr><td>33</td><td></td><td></td><td></td></tr> <tr><td>34</td><td></td><td></td><td></td></tr> <tr><td>35</td><td></td><td></td><td></td></tr> <tr><td>36</td><td></td><td></td><td></td></tr> <tr><td>37</td><td></td><td></td><td></td></tr> <tr><td>38</td><td></td><td></td><td></td></tr> <tr><td>39</td><td></td><td></td><td></td></tr> <tr><td>40</td><td></td><td></td><td></td></tr> <tr><td>41</td><td></td><td></td><td></td></tr> <tr><td>42</td><td></td><td></td><td></td></tr> <tr><td>43</td><td></td><td></td><td></td></tr> <tr><td>44</td><td></td><td></td><td></td></tr> <tr><td>45</td><td></td><td></td><td></td></tr> <tr><td>46</td><td></td><td></td><td></td></tr> <tr><td>47</td><td></td><td></td><td></td></tr> <tr><td>48</td><td></td><td></td><td></td></tr> <tr><td>49</td><td></td><td></td><td></td></tr> <tr><td>50</td><td></td><td></td><td></td></tr> </table>	1				2				3				4				5				6				7				8				9				10				11				12				13				14				15				16				17				18				19				20				21				22				23				24				25				26				27				28				29				30				31				32				33				34				35				36				37				38				39				40				41				42				43				44				45				46				47				48				49				50				<p>Shalewater Solutions Central Station Proposed Site GENERAL LAYOUT PLAN</p>	<p>31 GRAND MEADOWS DR. SUE 201 GREENSBORO, WV 26030 PH: 204.583.9794 WWW.SHALEWATER.COM</p>
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<p>SCALE: 1" = 20'</p> <p>DESIGNED BY: OAH</p> <p>FILE NAME: P:\384111-Shalewater Solutions-Central Station\CAD\384111-GENERAL_LAYOUT.dwg</p>	<p>DRAWN BY: PDE</p> <p>CHK BY: BKJ</p> <p>APPRVD BY:</p>	<p>DATE: 1/21/2016 1:57 PM</p> <p>REVISION:</p>	<p>31 GRAND MEADOWS DR. SUE 201 GREENSBORO, WV 26030 PH: 204.583.9794 WWW.SHALEWATER.COM</p>																																																																																																																																																																																																								

* Hillside east of Central Station Road shows flooded, which is very steep and is very unlikely as well

Sincerely,

[hmm signature 5425 small.png]

Ricardo A. Chambers, EIT | Project Manager
Hatch Mott MacDonald | hatchmott.com<<http://www.hatchmott.com/>>
Southpointe Office - Summit Corporate Center
1001 Corporate Drive, Suite 100 | Canonsburg, PA 15317
O 304.212.4382 C 304.612.1535 F 724.873.9116

Delivering Project Solutions

Attention: This e-mail and any files transmitted with it from Hatch Mott MacDonald are confidential and intended solely for use of the individual or entity to whom they are addressed. If you have received this e-mail in error please immediately notify the sender. This email has been scanned by the Microsoft Forefront Online Protection for Exchange service. For more information please visit <http://messaging.microsoft.com>

6 attachments



image001.jpg
2K

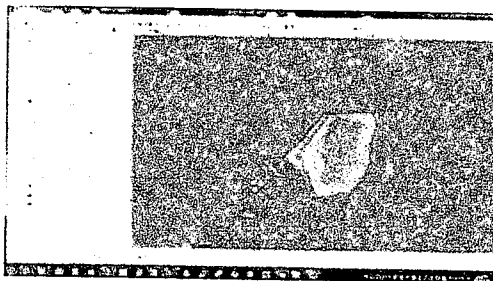


image004.jpg
139K

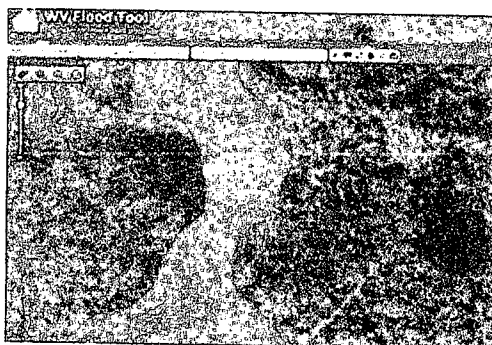


image006.jpg
145K



George Eidel <doddridgecountyfpm@gmail.com>

Shalewater Solutions - Central Station Facility Information

Chambers, Ricardo A <Ricardo.Chambers@hatchmott.com>
 To: "doddridgecountyfpm@gmail.com" <doddridgecountyfpm@gmail.com>
 Cc: "Amos, Douglas R" <Douglas.Amos@hatchmott.com>

Wed, Feb 24, 2016 at 4:25 PM

Mr. Eidel:

Per our phone conversation, I am including in this e-mail information supporting information that we did our due-diligence in determining if the Shalewater facility was going to be above the 100 year flood elevation of Arnold Creek in Doddridge County, WV. In addition, I am attaching facility plans showing elevations, etc. If you have any questions, or require additional information, please feel free to contact me at any time.

* The data was obtained from the WV GIS Technical data center site (<http://wvgis.wvu.edu/data/data.php>). Specifically, from the Local/Advisory Flood Height Data site (<http://wvgis.wvu.edu/data/dataset.php?ID=414>). Through this site, we were able to obtain specific HEC-RAS Model Data for Doddridge County and the streams near our site. The FEMA HEC-RAS Model, which is based on a USGS 10 meter DEM contains cross sections (see screen shot below) upstream and downstream of our facility area of interest. In addition, included in this data was a table specifying target elevation values at each provided HEC-RAS cross section line

* The 100 year flood elevations at the cross sections were based on the steady flow simulation results in this model

* The streamline and cross sections from the HEC-RAS model were imported as shapefiles into ArcMap

* Our GIS team created two foot countours from the original surface DEM layer. Using the target 100 year flood elevation values at each HEC-RAS cross section, our team was able to digitize a new 100 year flood polygon based off the cross section elevation values over a higher resolution DEM (10 feet versus the original 10 meter cell size) than was used for the original FEMA 100 year flood extent estimate.

Below is a screen shot showing cross sections illustrating HEC-RAS model 100- year flood elevations at various cross sections

[cid:image004.jpg@01D16F1F.D1E9E110]

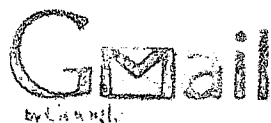
In addition, after our surveyor dialed in the elevations after our site survey for the grading plan, the elevation at 802.52' showed to be below our lowest elevation at the facility (see site plan attached)

Below is a screen shot of the WV Flood Tool (link provided on your email yesterday)

[cid:image006.jpg@01D16F1F.D1E9E110]

Furthermore, the reason we looked for a less coarse data source for the 100 year flood plain elevations was because you see on the picture above the following:

* Central Station Rd shows flooded just northeast of the site, which is very unlikely



George Eidel <doddridgecountyfpm@gmail.com>

Shalewater Solutions - Central Station Facility

George Eidel <doddridgecountyfpm@gmail.com>
To: "Chambers, Ricardo A" <Ricardo.Chambers@hatchmott.com>

Tue, Feb 23, 2016 at 3:40 PM

Mr. Chambers,

Thank you so much for contacting our office in regards to your project here in Doddridge County. Attached you will find the county's floodplain ordinance as well as an application and fees schedule. Should you require assistance with any portion of the application please do not hesitate to contact our office. This link will take you to the West Virginia Flood Tool <http://www.mapwv.gov/flood/> , here you will be able to determine whether your project falls within the floodplain or not.

Thank You,

George Eidel

[Quoted text hidden]

George C. Eidel, OEM Director/Floodplain Manager
Doddridge County Commission
108 Court Street Suite 1
West Union, WV 26456-2095
Work Phone: 1-304-873-1343
Mobile Phone: 1-304-281-7407
Fax: 1-304-873-1840
doddridgecountyfpm@gmail.com
www.doddridgecounty.wv.gov

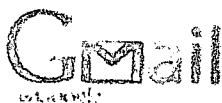
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3 attachments

Floodplain Permit Fees.docx
15K

NEW FLOODPLAIN APPLICATION.pdf
2901K

DC-Floodplain Ordinance.pdf
219K



George Eidel <doddridgecountyfpm@gmail.com>

Shalewater Solutions - Central Station Facility

Chambers, Ricardo A <Ricardo.Chambers@hatchmott.com>

Tue, Feb 23, 2016 at 9:58 AM

To: "doddridgecountyfpm@gmail.com" <doddridgecountyfpm@gmail.com>

Cc: "Chris Stanton (cstanton@shalewater.com)" <cstanton@shalewater.com>, "Amos, Douglas R" <Douglas.Amos@hatchmott.com>

Mr. Eidel:

We are serving as the project engineer for Shalewater Solutions at the Central Station facility in Doddridge county. Below is my contact information. Please feel free to contact me for information regarding floodplain, plans, etc.

Sincerely,

Ricardo A. Chambers, EIT | Project Manager

**Hatch Mott MacDonald** | hatchmott.com

Southpointe Office – Summit Corporate Center

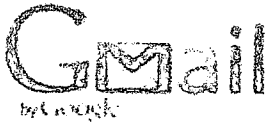
1001 Corporate Drive, Suite 100 | Canonsburg, PA 15317

O 304.212.4382 C 304.612.1535 F 724.873.9116

Delivering Project Solutions

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George Eidel <doddridgecountyfpm@gmail.com>

Waste Water Treatment Unit

George Eidel <doddridgecountyfpm@gmail.com>
To: services@shalewater.com

Wed, Feb 17, 2016 at 2:45 PM

To Whom it May Concern,

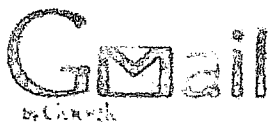
My name is George Eidel, I am the Emergency Manager/Floodplain Manager for Doddridge County, WV. Our office was recently contacted by a citizen as well as a county commissioner in reference to a sign that had been erected in the Central Station area of our county. It is for a stormwater permit #WV0115924. The sign also states that this is to clear, level and bring site to grade and to construct a water treatment unit on site. Could your office send us some information on the project. EWe also wanted to inform your staff that Doddridge County has a Floodplain Ordinance and procedure that must be followed when doing any work in the floodplain. If you have any questions please contact our office at the number below.

Thank You,

George Eidel

—
George C. Eidel, OEM Director/Floodplain Manager
Doddridge County Commission
108 Court Street Suite 1
West Union, WV 26456-2095
Work Phone: 1-304-873-1343
Mobile Phone: 1-304-281-7407
Fax: 1-304-873-1840
doddridgecountyfpm@gmail.com
www.doddridgecounty.wv.gov

—
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George Eidel <doddridgecountyfpm@gmail.com>

Water Treatment Plant in Doddridge County

George Eidel <doddridgecountyfpm@gmail.com>
To: Tonya Mathers <tonya.a.mather@wv.gov>

Tue, Feb 16, 2016 at 10:30 AM

Good Morning,

I have been asked by one of our county commissioners to look into the possible construction of another water treatment facility here in Doddridge County in the Central Station Area. A resident took a picture of the sign (see attached), my question is, is this a new project or is this related to the Antero project now being worked on here in the county? Any Help would be greatly appreciated.

George

—
George C. Eidel, OEM Director/Floodplain Manager
Doddridge County Commission
108 Court Street Suite 1
West Union, WV 26456-2095
Work Phone: 1-304-873-1343
Mobile Phone: 1-304-281-7407
Fax: 1-304-873-1840
doddridgecountyfpm@gmail.com
www.doddridgecounty.wv.gov

—
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 **Water Treatment Facility Notice.pdf**
375K

Shalewater Solutions Central Station Project

Monday February 15, 2016 I was approached by Commissioner Ronnie Travis while at the court house, he gave me a paper with a picture on it and told me that a resident had taken it and wanted to know what was going on. I told Commissioner Travis that I would look into the situation and get back to him. The picture was of a sign (see attached) with an empty lot and creek behind it (this was taken the day before Feb. 14th), the sign said "For info on NPDES Stormwater Permit WV0115925 To comment on Sediment Control Plan: Call 800-654-5227 or DEP.Plan@wv.gov, 2031 Pleasant Valley Rd. Ste.#1 Fairmont, WV 26554-9295 Application Date:01/11/2016, Project: Shalewater Solutions Central Station Site, Project Description: Clear, Level and bring site to grade. Construct a water treatment unit to treat wastewater from the oil and gas well production facilities. SHALEWATER SOLUTIONS, LLC (304)592-2794". I am familiar with this area as I had driven Central Station Road in December and that same lot was at grade at just above the creek level, it had some old pipe and equipment on it that time.

On Tuesday, February 16, 2016 at 10:30am (See copy) I emailed a Tonya Mathers who is with the WV Department of Environmental Protection Agency (EPA) to see what was going on at the Central Station site, attached was the picture I was given. She never returned my inquiry, Wednesday, February 17, 2016 at 2:45 pm I got an email address for Shalewater Solutions and sent a them a letter asking for information from them on this project. I had also called the number on the sign and left a message for them to contact my office. On Monday February 22, 2016 at 3:05 pm I was contacted by a Joseph Angotti who took my information and told me someone would be in contact with my office. A little while later a Chris Stanton called and told me that he would call the engineering firm working on the project and they would contact me. See the attached emails for a continuation of what transpired.

**For Info on NPDES
Stormwater Permit WV0115924
To comment on Sediment Control Plan:
Call: 800-654-5227**

**or
DEP.Plan@wv.gov**

**2031 Pleasant Valley Rd., Ste.#1
Fairmont, WV 26554-9295**

Application Date: 01/11/2016

Project: Shalewater Solutions Central Station Site

**Project Description: Clear, level and bring site to grade.
Construct a water treatment unit to treat wastewater
from the oil and gas well production facilities.**

**SHALEWATER SOLUTIONS, LLC
(304) 592-2794**

Talked to 2

Joseph ANgotti

Will Email someone to

Contact our office 2/22/16
@ 3:05pm

Talked w/ Chris Stanton
@ Shalewater, 304-709-456

He will call the engineering firm
working on the project & they
will contact us

March 20, 2016

Clerk of the County Court and

Doddridge County Flood Plain Manager

118 E. Court Street

West Union, WV 26456

RE: 16-415 Floodplain permit application

Dear Mr. Eidel & Ms. Rogers,

We are writing to you in reference to Floodplain Permit application 16-415.

Please do NOT issue this permit. We live approximate 0.2 miles upstream of this location. We feel that we will be impacted by waters backing up.

Our property is adjacent to the property that this is on. We have NOT received a certified letter informing us of this "planned" construction in the floodplain.

Water backing up will cause flooding on our property. We have witnessed Rt. 50 with at least one foot of water in both the east and west bound lanes as recently as last year...

Since we do NOT subscribe to the Doddridge Independent and we do not attend Doddridge County Commission meeting on a regular basis, we had no clue that this was happening. Why aren't these also placed in the Herald Record? The Herald record has a larger circulation and has been the newspaper in this County for over eighty years.

We also feel that issuing a floodplain permit for this site will harm us and others in our area.

Please include this letter in the legal file for this permit application.

*Anthony A. Ervolina
Lyndia F. Ervolina*

Anthony & Lyndia Ervolina

47 Arnold Creek Rd.

West Union, WV 26456

304-873-2601

DODDRIDGE COUNTY, WV
COUNTY CLERK
BETH A. ROGERS

2016 MAR 21 AM 11:10

FILED



George Eidel <doddridgecountyfpm@gmail.com>

Shalewater Solutions - Corps of Engineers

Quinlisk, John M <John.Quinlisk@mottmac.com>

Tue, Mar 22, 2016 at 10:52 AM

To: "George Eidel (doddridgecountyfpm@gmail.com)" <doddridgecountyfpm@gmail.com>

Cc: "kimberly.d.courtsbrown@usace.army.mil" <kimberly.d.courtsbrown@usace.army.mil>, "Chambers, Ricardo A" <Ricardo.Chambers@mottmac.com>, "Amos, Douglas R" <Douglas.Amos@mottmac.com>

Hello George,

I am writing to let you know that I have discussed this project with Kimberly Courts-Brown of the US Army Corps of Engineers (cc'd above, 304-399-6906). Ms. Courts-Brown advised me that no Army Corps permit is required for this project since we are not placing fill in the wetlands, and from the Corps perspective, construction can proceed. She told me that she left you a voice mail stating the same and that she plans to issue a "No Permit Required" letter this week. We will forward a copy of that letter to you upon our receipt.

Given the verbal approval from the Corps, with a letter to follow, we are requesting your approval to proceed with construction.

Please contact me if you have any questions.

Thank you,



John M. Quinlisk, PE

Senior Project Manager

Hatch Mott MacDonald | hatchmott.com

Midwest Environment & Water

Environment & Natural Resources

1001 Corporate Drive, Suite 100

Canonsburg, PA 15317

D 724.514.5356 C 412.638.0561 F 724.873.9116

john.quinlisk@hatchmott.com

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3/24/2016

Gmail - Shalewater Solutions - Corps of Engineers

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George Eidel <doddridgecountyfpm@gmail.com>

FW: Mussel Survey Clarification

Quinlisk, John M <John.Quinlisk@mottmac.com>

Thu, Mar 17, 2016 at 10:26 AM

To: "George Eidel (doddridgecountyfpm@gmail.com)" <doddridgecountyfpm@gmail.com>

Cc: Tony Gutta <tgutta@shalewater.com>, "Chris Stanton (cstanton@shalewater.com)" <cstanton@shalewater.com>, "Ryan Hall (rhall@shalewater.com)" <rhall@shalewater.com>, "Amos, Douglas R" <Douglas.Amos@mottmac.com>, "Chambers, Ricardo A" <Ricardo.Chambers@mottmac.com>

Mr. Eidel,

Based on discussions with the West Virginia Department of Natural Resources (see below), a mussel survey is not required for the Shalewater Solutions site in Doddridge County.

Please contact me if you have any questions.

Thank you,



John M. Quinlisk, PE

Senior Project Manager

Hatch Mott MacDonald | hatchmott.com

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john.quinlisk@hatchmott.com

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From: Quinlisk, John M
Sent: Tuesday, March 08, 2016 10:17 AM
To: Amos, Douglas R; Chambers, Ricardo A
Subject: FW: Mussel Survey Clarification

Gentlemen,

See WVDNR response below.

1. Arnold Creek IS listed in Appendix A (attached), however, based on the site plan, Shalewater is not placing fill in the creek.
2. Arnold Creek IS listed in Appendix A (attached) as a Group 2(1/2) stream. Arnold Creek flows into Middle Island Creek (Group 2), however, the project site is 4.5 miles (straight line) from the confluence of Arnold Creek and Middle Island Creek, so the site is well beyond the ½ mile constraint.

Given this information, a mussel survey would not be required from the WVDNR or the USFWS.

Let me know if you need additional information.

John Quinlisk

Hatch Mott MacDonald
John.Quinlisk@hatchmott.com

T 724.514.5356 C 412.638.0561

From: Clayton, Janet L [mailto:Janet.L.Clayton@wv.gov]
Sent: Tuesday, March 08, 2016 9:33 AM
To: Quinlisk, John M
Subject: RE: Mussel Survey Clarification

See below

Other than the two additions, I think you have it correctly.

<http://www.wvdnr.gov/Mussels/Main.shtm>

Janet L. Clayton

Wildlife Diversity Biologist
Mussel Program Leader
WV Division of Natural Resources
Wildlife Resources Section
PO Box 67
Elkins, WV 26241
voice 304-637-0245
fax 304-637-0250

From: Quinlisk, John M [mailto:John.Quinlisk@hatchmott.com]
Sent: Wednesday, March 02, 2016 2:55 PM
To: Clayton, Janet L
Cc: Chambers, Ricardo A; Amos, Douglas R
Subject: Mussel Survey Clarification

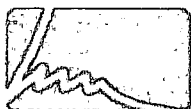
Janet,

Thank you for discussing the triggers for mussel surveys with me yesterday and today. To recap our conversations, WVDNR would require a mussel survey if a development will place fill within the ordinary high water mark of any waterbody listed in Appendix A of the WV Mussel Survey Protocols.

Additionally you advised that the USFWS (but not WVDNR) would become involved if the waterbody is a Group 2 or 4 stream, or if a Group 1 stream is within 1/2 mile of a Group 2 or 4 stream, and fill will be placed in a floodplain. Part underlined refers to streams listed as Group 2(1/2) in Appendix A.

Please advise if you have any revisions to my understanding of our conversations.

Thank you,



John M. Quinlisk, PE

Senior Project Manager

Hatch Mott MacDonald | hatchmott.com

Midwest Environment & Water

Environment & Natural Resources


1001 Corporate Drive, Suite 100

Canonsburg, PA 15317

D 724.514.5356 C 412.638.0561 F 724.873.9116

john.quinlisk@hatchmott.com

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 **Appendix_A WV Mussel Stream List.pdf**
264K

Appendix A

WV Mussel Stream List

Stream Group 2(1/2) indicates that only the downstream most 1/2 mile of the stream is considered a Group 2 and must be surveyed no matter what the watershed size. If it is listed as Group 1, 2(1/2) then the rest of the stream is considered as Group 1.

County	Stream	Stream Group
Barbour	Pleasants Creek	1
Barbour	Sandy Creek	1
Barbour	Teter Creek	1
Barbour	Laurel Creek	1
Barbour	Sugar Creek	1
Barbour	Laurel Run	1
Barbour	Buckhannon River	1
Barbour	Elk Creek	1
Berkeley	Potomac River	1
Berkeley	Mill Creek	1
Berkeley	Harland Run	1
Berkeley	Back Creek	1
Berkeley	Tilhance Creek	1
Berkeley	Mill Run	1
Boone	Coal River	1
Boone	Little Coal River	1
Boone	Mud River	1
Braxton	Elk River	2
Braxton	Strange Creek	1
Braxton	Birch River	1, 2(1/2)
Braxton	Little Birch River	1
Braxton	Rockcamp Run	1
Braxton	Wolf Creek	1
Braxton	Holly River	1
Braxton	Little Kanawha River	2
Braxton	Knawls Creek	1
Braxton	Cedar Creek	2
Braxton	Oil Creek	1
Braxton	Saltlick Creek	1
Braxton	Tom Hughes Fork	1
Braxton	Left Fork Steer Creek	1
Braxton	Right Fork Steer Creek	1
Brooke	Ohio River	3
Brooke	Buffalo Creek	1
Brooke	Castleman Run	1
Brooke	Cross Creek	1
Brooke	Kings Creek	1
Cabell	Ohio River	4
Cabell	Beech Fork	1
Cabell	Guyan Creek	1

Survey Type

1,2(1/2) = Stream is in Group 1 except for the lower 1/2 mile which is Group 2.

Appendix A

WV Mussel Stream List

County	Stream	Stream Group
Cabell	Guyandotte River	1
Cabell	Barboursville Lake	1
Cabell	Charley's Creek	1
Cabell	Mud River	1
Cabell	Indian Fork	1
Cabell	Kilgore Creek	1
Calhoun	Little Kanawha River	2
Calhoun	Leading Creek	1, 2(1/2)
Calhoun	Yellow Creek	1
Calhoun	Pine Creek	1, 2(1/2)
Calhoun	Steer Creek	2
Calhoun	West Fork Little Kanawha River	2
Calhoun	Beech Fork	1
Calhoun	Left Fork West Fork Little Kanawha River	1
Clay	Elk River	2
Clay	Laurel Creek	1, 2(1/2)
Clay	Sycamore Creek	1
Clay	Leatherwood Creek	1
Clay	Lilly Fork	1
Clay	Beech Fork	1
Clay	Sand Fork	1
Clay	Flat Fork	1
Clay	Robinson Fork	1
Clay	Otter Creek	1
Clay	Grove Creek	1
Clay	Strange Creek	1
Doddridge	South Fork Hughes River	2
Doddridge	Middle Fork South Fork Hughes River	1
Doddridge	Middle Island Creek	2
Doddridge	McElroy Creek	2
Doddridge	Flint Run	1
Doddridge	Talkington Fork	1
Doddridge	Arnold Creek	1, 2(1/2)
Doddridge	Bluestone Creek	1, 2(1/2)
Doddridge	Meathouse Fork	2
Doddridge	Toms Fork	1, 2(1/2)
Doddridge	Indian Fork	1
Doddridge	Buckeye Creek	1, 2 (1/2)
Fayette	Kanawha River	2
Fayette	Gauley River	1
Fayette	Meadow River	1
Fayette	Dogwood Creek	1
Fayette	Twentymile Creek	1
Fayette	New River	1
Gilmer	Little Kanawha River	2

Survey Type

1,2(1/2) = Stream is in Group 1 except for the lower 1/2 mile which is Group 2.

Appendix A

WV Mussel Stream List

County	Stream	Stream Group
Gilmer	Tanner Creek	1, 2(1/2)
Gilmer	Cedar Creek	2
Gilmer	Leading Creek	2
Gilmer	Cove Creek	1
Gilmer	Fink Creek	1, 2 (1/2)
Gilmer	Sand Fork	1, 2(1/2)
Gilmer	Steer Creek	2
Gilmer	Left Fork Steer Creek	1
Gilmer	Bear Fork	1
Gilmer	Right Fork Steer Creek	1
Grant	Mill Run	1
Grant	Patterson Creek	1
Grant	Rosser Run	1
Grant	Thorn Run	1
Grant	North Fork Patterson Creek, below dam	1
Grant	Middle Fork Patterson Creek	1
Grant	South Branch Potomac River	1
Grant	Brushy Run	1
Grant	Spring Run	1
Grant	South Fork Lunice Creek	1
Grant	Big Star Run	1
Grant	Little Star Run	1
Grant	North Fork Lunice Creek	1
Grant	Shell Run	1
Grant	Saltblock Run	1
Grant	North Fork South Branch	1
Grant	Jordan Run	1
Grant	Samuel Run	1
Grant	Broad Run North Fork	1
Grant	Moyer Run	1
Grant	High ridge Run	1
Greenbrier	Meadow River	1
Greenbrier	Laurel Creek	1
Greenbrier	Little Clear Creek	1
Greenbrier	Greenbrier River	1
Greenbrier	Muddy Creek	1
Greenbrier	Mill Creek	1
Greenbrier	Second Creek	1
Greenbrier	Howard Creek	1
Greenbrier	Anthony Creek	1
Greenbrier	Laurel Run	1
Greenbrier	Spring Creek	1
Hampshire	Potomac River	1
Hampshire	Little Cacapon River	1
Hampshire	Cacapon River	1

Survey Type

1,2(1/2) = Stream is in Group 1 except for the lower 1/2 mile which is Group 2.

Appendix A

WV Mussel Stream List

County	Stream	Stream Group
Hampshire	Edwards Run	1
Hampshire	Dillons Run	1
Hampshire	Hawk Run	1
Hampshire	Hiatt Run	1
Hampshire	North River	1
Hampshire	Tearcoat Run	1
Hampshire	Cold Stream	1
Hampshire	South Branch Potomac River	1
Hampshire	Mill Run	1
Hampshire	Mill Creek	1
Hancock	Ohio River	3
Hancock	Tomlinson Run	1
Hancock	Kings Creek	1
Hancock	North Fork Kings Creek	1
Hardy	Potomac River	1
Hardy	Cacapon River	1
Hardy	Deep Gutter Run	1
Hardy	Moores Run	1
Hardy	Waites Run	1
Hardy	Trout Run	1
Hardy	Lost River	1
Hardy	Dutch Hollow Run (Sauerkraut Run)	1
Hardy	Brushy Hollow Run	1
Hardy	Three Springs Run	1
Hardy	Baker Run	1
Hardy	Mill Gap Run	1
Hardy	Lower Cove Run	1
Hardy	Upper Cove Run	1
Hardy	North River	1
Hardy	South Branch Potomac River	1
Hardy	South Fork South Branch	1
Hardy	Dumpling Run	1
Harrison	West Fork River	2
Harrison	Tenmile Creek upstream of Little Tenmile	1
Harrison	Jones Creek	1
Harrison	Rockcamp Run	1
Harrison	Jacob's Fork	1
Harrison	Salem Fork	1
Harrison	Elk Creek	1
Harrison	Brushy Fork of Elk Creek	1
Harrison	Gnatty Creek	1
Harrison	Lost Creek	1
Harrison	Isaacs Creek	1
Harrison	Corbin Branch	1
Harrison	Hackers Creek	2

Survey Type

1,2(1/2) = Stream is in Group 1 except for the lower 1/2 mile which is Group 2.

Appendix A

WV Mussel Stream List

County	Stream	Stream Group
Harrison	Kincheloe Creek	1
Harrison	Bingamon Creek	1
Harrison	Simpson Creek	1
Jackson	Pocatalico Creek (Left Fork)	1
Jackson	Middle Fork Pocatalico Creek	1
Jackson	Ohio River	4
Jackson	Little Mill Creek	1
Jackson	Mill Creek	1
Jackson	Cow run	1
Jackson	Parchment Creek	1
Jackson	Tug Fork	1
Jackson	Grasslick Creek	1
Jackson	Bear Fork	1
Jackson	Elk Fork	1
Jackson	Little Mill Creek	1
Jackson	Sandy Creek	1
Jackson	Crooked Fork	1
Jackson	Left Fork Sandy Creek	1
Jackson	Nesselroad Run	1
Jackson	Little Sandy Creek	1
Jackson	Little Pond Creek	1
Jefferson	Potomac River	1
Jefferson	Elks Run	1
Jefferson	Town Run	1
Jefferson	Shenandoah	1
Jefferson	Flowing Springs Run	1
Jefferson	Cattail Run	1
Jefferson	Evitts Run	1
Jefferson	Bullskin Run	1
Jefferson	Long Marsh Run	1
Kanawha	Kanawha River	4
Kanawha	Coal River	1
Kanawha	Little Coal River	1
Kanawha	Elk River	2
Kanawha	Blue Creek	2(1/2)
Kanawha	Big Sandy Creek	2
Kanawha	King Shoals Run	1
Kanawha	Little Sandy Creek	1
Kanawha	Pocatalico River	1
Kanawha	Pocatalico Creek (=Left Fork)	1
Lewis	Sand Fork	1
Lewis	Right Fork Little Kanawha	1
Lewis	Leading Creek	2
Lewis	Fink Creek	1
Lewis	West Fork River	2

Survey Type

1,2(1/2) = Stream is in Group 1 except for the lower 1/2 mile which is Group 2.

Appendix A

WV Mussel Stream List

County	Stream	Stream Group
Lewis	Hackers Creek	2
Lewis	Jesse Run	1
Lewis	Kincheloe Creek	1
Lewis	Freemans Creek	1
Lewis	Right Fork Freemans Creek	1
Lewis	Stonecoal Creek	1
Lewis	Right Fork Stonecoal Creek	1
Lewis	Right Fork West Fork River	1
Lincoln	Coal River	1
Lincoln	Little Coal River	1
Lincoln	Guyandotte River	1
Lincoln	Twomile Creek	1
Lincoln	Tenmile Creek	1
Lincoln	Fourteenmile Creek	1
Lincoln	Big Ugly Creek	1
Lincoln	Hart Creek	1
Lincoln	Mud River	1
Lincoln	Trace Fork	1
Lincoln	Buffalo Creek	1
Lincoln	Middle Fork Mud River	1
Lincoln	Big Laurel Creek	1
Logan	Guyandotte River	1
Logan	Big Creek	1
Logan	Big Huff Creek	1
Marion	Monongahela River	3
Marion	Prickett Creek	1
Marion	Whiteday Creek	1
Marion	Little Paw Paw Creek	1
Marion	Paw Paw Creek	1
Marion	Tygart Valley River	1
Marion	Laurel Run	1
Marion	Wickwire Run	1
Marion	West Fork River	2
Marion	Booths Creek	1
Marion	Corbin Branch	1
Marion	Hustead Fork	1
Marshall	Ohio River	3
Marshall	Fish Creek	2
Marshall	Whetsone Creek	1
Marshall	Valley Run	1
Marshall	WV Fk Fish Creek	1
Marshall	PA Fk Fish Creek	1
Marshall	Grave Creek	1
Marshall	Middle Grave Creek	1
Marshall	Wheeling Creek	1

Survey Type

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Appendix A

WV Mussel Stream List

County	Stream	Stream Group
Marshall	Turkey Run	1
Marshall	Enlow Fork	1
Marshall	Dunkard Fork	1
Mason	Kanawha River	4
Mason	Crooked Creek	1
Mason	Tenmile Creek	1
Mason	Thirteenmile Creek	1
Mason	Mudlick Fork	1
Mason	Sixteenmile Creek	1
Mason	Threemile Creek	1
Mason	Fivemile Creek	1
Mason	Ohio River	4
Mason	Eighteenmile Creek	1
Mason	Sixteenmile Creek	1
Mason	Flatfoot Creek	1
Mason	Crab Creek	1
Mason	Oldtown Creek	1
Mason	Tombleson Run embayment	1
Mason	Guyan Creek	1
McDowell	Tug Fork River	1
McDowell	Panther Creek	1
McDowell	Dry Fork	1
McDowell	Jacob Fork	1
McDowell	Clear Fork	1
Mercer	New River	1
Mercer	East River	1
Mercer	Pigeon Creek	1
Mercer	Bluestone River	1
Mercer	Camp Creek	1
Mineral	Patterson Creek	1
Mineral	Mill Run	1
Mineral	New Creek	1
Mingo	Tug Fork River	1
Mingo	Pigeon Creek	1
Mingo	West Fork Twelvepole Creek	1
Monongalia	Monongahela River	3
Monongalia	Dunkard Creek	2
Monongalia	Blacks Run	1
Monongalia	Whiteday Creek	1
Monongalia	Indian Creek	1
Monongalia	Days Run	1
Monongalia	Miracle Run	1
Monongalia	Right Branch Miracle Run	1
Monongalia	WV Fk Dunkard	1
Monongalia	North Fork WV Fork Dunkard Creek	1

Survey Type

1,2(1/2) = Stream is in Group 1 except for the lower 1/2 mile which is Group 2.

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WV Mussel Stream List

County	Stream	Stream Group
Monongalia	Camp Run	1
Monongalia	South Fork WV Fork Dunkard Creek	1
Monongalia	Cobun Creek	1
Monroe	Potts Creek	2
Monroe	South Fork Potts Creek	2
Monroe	Cove Creek	2
Monroe	Indian Creek	1
Monroe	Greenbrier River	1
Monroe	Wolf Creek	1
Monroe	Second Creek	1
Morgan	Potomac River	1
Morgan	Sleepy Creek	1
Morgan	Meadow Branch	1
Morgan	Cacapon River	1
Nicholas	Strange Creek	1
Nicholas	Birch River	1
Nicholas	Anthony Creek	1
Nicholas	Gauley River	1
Nicholas	Meadow River	1
Nicholas	Anglins Creek	1
Nicholas	Collison Creek	1
Nicholas	Hominy Creek	1
Nicholas	Deer Creek	1
Nicholas	Muddlety Creek	1
Nicholas	Panther Creek	1
Nicholas	Taylor Run	1
Nicholas	Cherry River	1
Nicholas	Twentymile Creek	1
Ohio	Ohio River	3
Ohio	Wheeling Creek	1
Ohio	Little Wheeling Creek	1
Ohio	Middle Wheeling Creek	1
Pendleton	Little Fork	1
Pendleton	Long Run Blackthorn Creek	1
Pendleton	South Branch Potomac River	1
Pendleton	South Fork South Branch	1
Pendleton	Kettle Creek	1
Pendleton	North Mill Creek	1
Pendleton	Stony Creek	1
Pendleton	Kessner Run	1
Pendleton	South Mill Creek	1
Pendleton	North Fork South Branch	1
Pendleton	Shuckle Ford Run North Fork	1
Pendleton	Mill Run North Fork South Branch	1
Pendleton	Zeke Run	1

Survey Type

1,2(1/2) = Stream is in Group 1 except for the lower 1/2 mile which is Group 2.

Appendix A

WV Mussel Stream List

County	Stream	Stream Group
Pendleton	Sawmill Run North Fork	1
Pendleton	Brushy Run	1
Pendleton	Horsecamp Run	1
Pendleton	McIntosh Run	1
Pendleton	Gulf Run	1
Pendleton	Whites Run	1
Pendleton	Lower Gulf Run Whites Run	1
Pendleton	Upper Gulf Run Whites Run	1
Pendleton	Tanyard Gap Run	1
Pendleton	Redman Run	1
Pendleton	Dry Hollow	1
Pendleton	Briggs Run	1
Pendleton	Twin Run Briggs Run	1
Pendleton	Reeds Creek	1
Pendleton	Dry Run Reeds Creek	1
Pendleton	Long Hollow	1
Pendleton	Mill Run South Branch	1
Pendleton	Thorn Creek	1
Pendleton	Dry Run Thorn Creek	1
Pendleton	Whitethorn Creek	1
Pendleton	Moyer Run	1
Pleasants	Ohio River	4
Pleasants	Bull Creek	1
Pleasants	Cow Creek	1
Pleasants	French Creek	1
Pleasants	Middle Island Creek	2
Pleasants	McKim Creek	1,2(1/2)
Pleasants	Sugar Creek	1, 2(1/2)
Pocahontas	Williams River	1
Pocahontas	Greenbrier River	1
Pocahontas	Locust Creek	1
Pocahontas	Knapp Creek	1
Pocahontas	Brown Creek	1
Pocahontas	Clover Creek (Cloverlick Creek)	1
Pocahontas	Sitlington Creek	1
Pocahontas	Deer Creek	1
Pocahontas	North Fork Deer Creek	1
Pocahontas	West Fork Greenbrier River	1
Preston	Big Sandy Creek	1
Preston	Laurel Run	1
Preston	Little Sandy Creek	1
Preston	Saltlick Creek	1
Preston	Spruce Run	1
Preston	Buffalo Creek	1
Preston	Little Buffalo Creek	1

Survey Type

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WV Mussel Stream List

County	Stream	Stream Group
Preston	Wolf Creek	1
Putnam	Kanawha River	4
Putnam	Eighteenmile Creek	1
Putnam	Five and Twentymile Creek	1
Putnam	Buffalo Creek	1
Putnam	Hurricane Creek	1
Putnam	Mill Creek (Tackett Branch ?)	1
Putnam	Little Hurricane Creek	1
Putnam	Guano Creek	1
Putnam	Pocatalico River	1
Putnam	Charley's Creek	1
Putnam	Indian Fork	1
Putnam	Trace Fork	1
Raleigh	Marsh Fork	1
Raleigh	New River	1
Raleigh	Piney Creek	1
Randolph	Elk River	4
Randolph	Glady Fork	1
Randolph	West Fork Glady	1
Randolph	East Fork Glady	1
Randolph	Big RUn	1
Randolph	Horsecamp Run	1
Randolph	Gandy Creek	1
Randolph	Taylor Run	1
Randolph	Upper Pond Lick	1
Randolph	Tygart Valley River	1
Randolph	Becky Creek	1
Randolph	Laurel Run	1
Randolph	Little Laurel Run	1
Randolph	Leading Creek	1
Randolph	Chenoweth Creek	1
Randolph	Beaver Creek	1
Randolph	Mill Creek	1
Randolph	Riffle Creek	1
Randolph	Elkwater Fork	1
Randolph	Windy Run	1
Randolph	Right Fork Buckhannon River	1
Randolph	Left Fork Buckhannon River	1
Ritchie	Hughes River	2
Ritchie	Addis Run	2(1/2)
Ritchie	Gillespie Run	2(1/2)
Ritchie	North Fork Hughes River	2
Ritchie	Devilhole Creek	1,2(1/2)
Ritchie	Bonds Creek	1,2(1/2)
Ritchie	Hushers Run	1

Survey Type

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Appendix A

WV Mussel Stream List

County	Stream	Stream Group
Ritchie	Goose Creek	1
Ritchie	South Fork Hughes River	2
Ritchie	Middle Fork South Fork Hughes River	1
Ritchie	Indian Creek	1,2(1/2)
Ritchie	Leatherbark Creek	1,2(1/2)
Ritchie	Spruce Creek	1, 2(1/2)
Ritchie	Slab Creek	1,2(1/2)
Ritchie	Bone Creek	1,2(1/2)
Ritchie	Otterslide Creek	2(1/2)
Roane	Big Sandy Creek	1
Roane	Left Hand Creek	1
Roane	Pigeon Run	1
Roane	Granny Creek	1
Roane	Middle Fork Big Sandy Creek	1
Roane	Hollywood Trace Fork	1
Roane	Pocatalico River	1
Roane	Flat Fork	1
Roane	Cox Fork	1
Roane	Big Lick	1
Roane	Rush Creek	1
Roane	Cranes Nest Run	1
Roane	Reedy Creek	2
Roane	Left Fork Reedy Creek	1
Roane	Middle Fork Reedy Creek	1
Roane	Spring Creek	2
Roane	Right Fork Spring Creek	1
Roane	Left Fork Spring Creek	1
Roane	West Fork Little Kanawha River	2
Roane	Henry Fork	2
Roane	Laurel Run	1
Roane	Beech Fork	1
Summers	New River	1
Summers	Indian Creek	1
Summers	Bluestone River	1
Summers	Little Bluestone River	1
Summers	Greenbrier River	1
Summers	Wolf Creek	1
Taylor	Tygart Valley River	1
Taylor	Pleasants Creek	1
Taylor	Corbin Branch	1
Taylor	Hustead Fork	1
Tucker	Clover Run	1
Tucker	Minear Run	1
Tucker	Horeseshoe Run	1
Tucker	Elklick Run	1

Survey Type

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WV Mussel Stream List

County	Stream	Stream Group
Tucker	Blackwater River	1
Tucker	Sand Run	1
Tucker	Freeland Run	1
Tucker	Club Run	1
Tucker	Glade Run	1
Tucker	Glady Fork	1
Tucker	Big Run	1
Tyler	Ohio River	4
Tyler	Middle Island Creek	2
Tyler	Sancho Creek	1,2(1/2)
Tyler	Point Pleasant Creek	1,2(1/2)
Tyler	Pursley Creek	1
Tyler	Elk Fork	1
Tyler	Indian Creek	1,2(1/2)
Tyler	McElroy Creek	2
Tyler	Sugar Creek	1
Upshur	Little Kanawha River	1
Upshur	Right Fork Little Kanawha	1
Upshur	Buckhannon River	1
Upshur	French Creek	1
Upshur	Right Fork Buckhannon River	1
Upshur	Left Fork Buckhannon River	1
Upshur	Sand Run	1
Upshur	Hackers Creek	1
Upshur	Right Fork West Fork River	1
Wayne	Big Sandy River	1
Wayne	Tug Fork River	1
Wayne	Mill Creek	1
Wayne	Ohio River	4
Wayne	Twelvepole Creek	1
Wayne	Beech Fork	1
Wayne	West Fork Twelvepole Creek	1
Wayne	East Fork Twelvepole Creek	1
Webster	Elk River	1
Webster	Laurel Creek	1
Webster	Back Fork Elk River	1
Webster	Sugar Creek	1
Webster	Big Run	1
Webster	Laurel Run	1
Webster	Birch River	1
Webster	Gauley River	1
Webster	Williams River	1
Webster	Right Fork Little Kanawha	1
Wetzel	Ohio River (ES downstream of Hannibal Dam)	4
Wetzel	Fishing Creek	2

Survey Type

1,2(1/2) = Stream is in Group 1 except for the lower 1/2 mile which is Group 2.

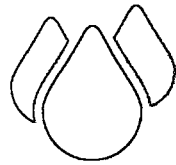
Appendix A

WV Mussel Stream List

County	Stream	Stream Group
Wetzel	Little Fishing Creek	1
Wetzel	South Fork Fishing Creek	1
Wetzel	North Fork Fishing Creek	1
Wetzel	Proctor Creek	1
Wetzel	WV Fork Fish Creek	1
Wetzel	Sugar Run	1
Wetzel	Long Drain Creek	1
Wirt	Little Kanawha River	2
Wirt	Standingstone Creek	1
Wirt	Tucker Creek	1,2(1/2)
Wirt	Reedy Creek	2
Wirt	Right Reedy Creek	1
Wirt	Spring Creek	2
Wirt	Straight Creek	1,2(1/2)
Wirt	Hughes River	2
Wirt	North Fork Hughes River	2
Wirt	Goose Creek	1,2(1/2)
Wirt	West Fork Little Kanawha River	2
Wood	Little Kanawha River	2 (4 mouth)
Wood	Walker Creek	1, 2(1/2)
Wood	Slate Creek	2(1/2)
Wood	Worthington Creek	1
Wood	Tygart Creek	1
Wood	Stillwell Creek	1
Wood	Ohio River	4
Wood	Little Sandy Creek	1
Wood	Little Pond Creek	1
Wood	Pond Creek	1
Wood	Lee Creek	1
Wood	Middle Fork Lee Creek	1
Wood	South Fork Lee Creek	1
Wood	North Fork Lee Creek	1
Wood	Bull Creek	1
Wyoming	Guyandotte	1
Wyoming	Indian Creek	1
Wyoming	Big Huff Creek	1
Wyoming	Clear Fork	1
Wyoming	Laurel Fork	1

Survey Type

1,2(1/2) = Stream is in Group 1 except for the lower 1/2 mile which is Group 2.



HILLSTONE ENVIRONMENTAL

Central Station Treatment Facility Emergency Action and Response Plan

Purpose

The management of Hillstone Environmental is committed to the safety of all employees. In a continuing effort to protect employees from the various emergencies that may be encountered while working at Hillstone Environmental, the Management of Hillstone Environmental has developed and implemented a comprehensive written emergency action and response plan (EAP/ERP).

The purpose of the Written Emergency Action and Response Plan is to communicate to employees the policies and procedures to follow during any and all types of emergencies.

Administrative Duties

The Safety Department shall serve as the administrator of the Hillstone Environmental emergency action and response plan. The Safety Department has overall responsibility for the plan. This responsibility includes but is not limited to the following:

- Developing and maintaining a written Emergency Action and Response Plan;
- Notifying the local fire or police departments,
- Taking security measures to protect employees;
- Distributing procedures for reporting emergencies;
- Identifying the locations of emergency exits and evacuation routes;
- Conducting drills to acquaint employees with emergency procedures;
- Training designated employees in emergency response (i.e.... fire extinguisher use, first aid);
- Deciding which emergency response to initiate (evacuate or not);
- Maintaining records, and
- Ensuring that Hillstone Environmental meets all local fire codes, building codes, and regulations.

The Safety Department is responsible for reviewing and updating the written emergency action and response plan, as necessary. Copies of the written emergency response plan may be obtained from the Safety Department.



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Central Station Treatment Facility Emergency Action and Response Plan

Any employee has full authority to activate the emergency action and response plan if they believe there is an imminent danger to life and health. The following potential emergencies might reasonably be encountered while working for Hillstone Environmental:

- Fire emergencies (equipment, tanks, structures, and electrical fires)
- Toxic gas releases (hydrogen sulfide, H₂S)
- Flammable gas releases (natural gas, methane gas, or hydrogen sulfide gas)
- Hazardous liquid spills (oil/gasoline)
- Severe weather
- Earthquakes/Tremors
- Bomb Threats
- First-Aid/medical emergencies

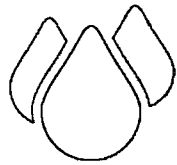
The Safety Department can be contacted regarding further information about duties under this written emergency action and response plan

An emergency contact list (names and telephone numbers) has been compiled for reference in the event of an emergency. The list comprises of key management contact information as well as customer contact information and contact information for local emergency response providers, hospitals, police, etc... The emergency contact list shall be kept in highly visible areas (typically near a phone) and made readily available at ALL times. Supervisors and employees shall receive instruction on how to utilize the emergency contact list. Depending on the type of emergency encountered, supervisors and employees shall follow specific company protocol for using the emergency contact list. See Appendix A for the Hillstone Environmental emergency contact list.

The Safety Department shall be responsible for maintaining and updating the Hillstone Environmental emergency contact list.

Alarms

Different emergencies call for different emergency alarms to be used to indicate what actions employees should take. Alarms can be communicated in person,



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Central Station Treatment Facility Emergency Action and Response Plan

with a fixed horn, whistle, or by other means. The management of Hillstone Environmental has established and maintains an employee emergency alarm system that complies with OSHA regulations. Different employee alarm systems

are utilized for different types of emergencies. For ANY emergency for this operation, the evacuation alarm will be three consecutive long horn blasts from a vehicle on site. When three consecutive long horn blast are heard, workers will report to the designated muster point.

Emergency Reporting Procedure

Employees must be familiar with the type of emergencies that they are likely to experience while working at Hillstone Environmental. Likewise, employees must know what to do when they experience an emergency in the workplace.

When employees detect/observe an emergency employee shall: 1.) Communicate emergency to a supervisor in the area, and 2.) Activate the appropriate alarm for the type of emergency experienced.

Employees and supervisors shall then follow established emergency response protocol for the specific type of emergency.

Emergency Evacuation Procedures

Some emergencies may require immediate evacuation, while some emergencies require employees to stay indoors, or in a safe area. Our emergency escape procedures are designed to respond to many potential emergencies, depending on the degree of seriousness of the emergency.

The Safety Department shall designate and train employees to assist in the safe and orderly evacuation of other employees.

Procedures for evacuation must include type of evacuation and exit route assignments. Hillstone Environmental emergency evacuation procedures are designed to respond to many potential emergencies such as: fires, tornados, bomb threats, and chemical releases/spills.



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Central Station Treatment Facility Emergency Action and Response Plan

Employees need to know what their responsibilities are when alerted to a specific emergency. After an alarm is sounded to evacuate, employees should take the following steps:

- Remain calm
- Cease work immediately and proceed to the nearest available exit,
- Go to designated evacuation point for a headcount and further instructions.

Procedures to Account for Employees

Trained emergency response personnel shall assist in the safe and orderly evacuation of all employees for all types of emergencies that require evacuation. Emergency response personnel are trained in workplace layout and are aware of various alternative escape routes from the workplace. All trained emergency response personnel shall be made aware of employees with disabilities who may need extra assistance. Emergency response personnel shall check all areas and spaces in the workplace for employees who may be trapped or otherwise unable to evacuate the area. All employees shall evacuate to the established evacuation points.

Once evacuation is complete, supervisors shall conduct employee headcounts. Prior to any emergency, supervisors shall always be aware of the location of all employees working under their supervision at any given time. Supervisors shall also be aware of who is absent or otherwise away from the work site. An accurate headcount, after an emergency evacuation will greatly aid local responding fire/rescue departments in determining whether rescue efforts are necessary or not.

Once each evacuated group of employees has reached their evacuation destination, Supervisors shall:

- Takes roll,
- Makes sure all employees are accounted for, and
- Reports headcount to a central checkpoint managed by safety personnel.

No employees shall remain in affected area(s). The Safety department shall provide headcount results to local emergency responders. Local emergency responders shall perform rescue, if necessary.



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Central Station Treatment Facility Emergency Action and Response Plan

No employees shall return to their work area after an evacuation until advised by Safety personnel and only after determination has been made that such re-entry is safe.

Fire

Should an employee discover a fire, he/she shall notify the Supervisor in that area. The Supervisor shall: 1.) Direct designated company emergency response personnel in the use of fire extinguishers against the fire (incipient fires only) and activate the fire alarm to evacuate when he/she deems it necessary.

Upon hearing a fire alarm, all employees shall evacuate the work area via the most direct exit route. Exit routes are depicted on workplace maps (EAP/ERP diagram) posted on bulletin boards and other areas throughout the work site.

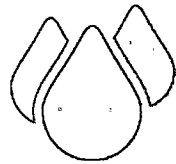
Prior to exiting, trained emergency response personnel may stay behind to fight incipient fires and/or turn off equipment or machinery such as: oxygen/acetylene equipment, drilling rig, generators, etc....

All employees shall evacuate the work area to designated evacuation points. Primary and secondary evacuation points shall be discussed before each shift begins or while conducting a JHA/JSA prior to performing a task. Employees shall report to their respective Supervisor while at the evacuation point for a headcount.

Supervisors shall report headcount information to Safety personnel. In the event that an employee is unaccounted for, Safety personnel shall communicate missing employee's name and last whereabouts to local emergency responders.

No employees shall return to their work area after an evacuation until advised by Safety personnel, and only after determination has been made that such re-entry is safe.

Any fire fighting, rescue, or other medical duties beyond First Aid/CPR shall be performed by local emergency responders. At no time shall any Hillstone Environmental employee attempt to rescue missing employees. The only



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Central Station Treatment Facility Emergency Action and Response Plan

firefighting attempted by Hillstone Environmental trained emergency response personnel will be fires that are in their incipient stage only.

Safety Personnel shall be responsible for furnishing any further information to Hillstone Environmental employees concerning this plan.

Tornado

The Management of Hillstone Environmental utilizes televisions, radios and the internet to keep abreast of weather conditions that may impact work or the safety of employees. Upon learning of the distinct possibility that a tornado may strike any of our work areas, an emergency alarm shall be activated. All employees

shall seek shelter in designated shelters. If possible, employees shall attempt to shut off power to machines and equipment.

Supervisors shall take a headcount of all employees in the shelter area.

Because many of our employees may be driving or operating heavy equipment, radios will be used to communicate the tornado emergency to these employees. If employees are in areas where shelters are not available, employees shall seek shelter in or next to a building or lie in a low-lying ditch.

In the event that a tornado strikes any Hillstone Environmental work area or work site, a second headcount may be necessary.

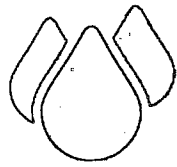
In the event that an employee is unaccounted for, Safety personnel shall communicate missing employee's name and last whereabouts to local emergency responders.

All firefighting, rescue and medical duties shall be performed by local emergency responders.

Once the tornado passes or is confirmed not to be a threat to any Hillstone Environmental work area, and work areas have been assessed for damage, a verbal "all clear" signal shall be made by Safety personnel.

Safety personnel shall be responsible for furnishing any further information to Hillstone Environmental employees concerning this plan.

Earthquake or Tremors



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Although the notion of an earthquake ever occurring in our work area is low, they do exist. Because there is no warning, employees must know what to do when an earthquake occurs.

When an earthquake occurs and you are indoors, employees shall take immediate cover under sturdy equipment (desk, table, etc...) or near an interior wall to protect one from falling objects. If you are outdoors, move to an open area where falling objects are unlikely to strike you. Move away from buildings, power lines and trees. If you are driving, slow down and stop on the side of the road. Avoid stopping on or under bridges and overpasses, or under power lines, trees and large signs. Stay in your car.

After earthquake, all employees shall evacuate buildings by the most direct exit. Exit routes are shown on workplace maps posted throughout the work site. Prior to exiting the building employees shall attempt to turn off power to the building and shut down sensitive equipment in their respective work areas. Employees shall also attempt to help injured employees evacuate the building.

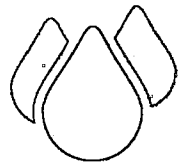
All employees shall evacuate their work areas to designated evacuation points. Primary and secondary evacuation points shall be discussed before each shift begins or while conducting a JHA/JSA prior to performing a task. Employees shall report to their respective Supervisor for a headcount while at the evacuation point. In the event that an employee is unaccounted for, Safety personnel shall communicate missing employee's name and last whereabouts to local emergency responders.

Any firefighting, rescue, or other medical duties beyond First Aid/CPR shall be performed by local emergency responders. At no time shall any Hillstone Environmental employee attempt to rescue missing employees.

Terrorist Bomb Threat

In the event that a bomb threat is called in to one of our work areas, an alarm will be sounded (or verbally communicated). Local authorities shall be notified that a bomb threat has been received.

All Hillstone Environmental employees shall immediately evacuate the work area to the designated primary evacuation point. Supervisors shall take a headcount of all employees and make reports to Safety personnel.



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Central Station Treatment Facility Emergency Action and Response Plan

In the event that an employee is unaccounted for, Safety personnel shall communicate missing employee's name and last whereabouts to local emergency responders.

The proper authorities shall be notified that a bomb threat has been made. The responding authorities, typically state police or local sheriff's department, shall perform a search of all affected work areas. Authorities may also use K-9 units to search the premises as well.

No Hillstone Environmental employee shall attempt to search for a bomb in any of our work areas.

Hazardous Chemical Release/Spill

All hazardous chemicals shall be properly stored in approved containers, cans, and drums.

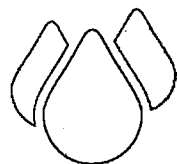
In the event of an accidental release/spill of a hazardous chemical occurs, an evacuation may be required if the release/spill is in a significant amount to cause or have potential to cause harm to employees.

After it is determined that there is a hazardous chemical emergency, Management shall be notified and make the decision whether to evacuate any areas. An alarm will be activated (or verbally communicated) to evacuate the area. Employees must evacuate to the designated evacuation point.

All employees shall remain clear of any spill or release of any hazardous material.

Depending on the magnitude of the spill, designated Hillstone Environmental emergency response personnel may attempt to contain the spill. Trained Hillstone Environmental emergency response personnel are familiar with the various hazardous chemicals used by the company and know what measures/precautions to take to contain a spill. Spill kits shall be located at different locations to help aid in the cleanup of the chemical spill/release.

Safety personnel shall notify the appropriate state and/or federal environmental authorities, if required to do so.



HILLSTONE ENVIRONMENTAL

Central Station Treatment Facility Emergency Action and Response Plan

Medical Emergencies

Employees should inform the company of any medical conditions that they may have that may warrant a medical emergency in the foreseeable future.

In the unlikely event that a medical emergency occurs, trained Hillstone Environmental emergency response personnel, those trained in First Aid/CPR, shall respond to all such emergencies.

Beyond First Aid/CPR, local emergency responders (fire department/ambulatory services) shall respond to medical emergencies.

Rescue or Medical Duties

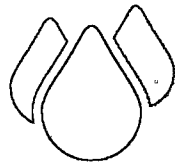
Hillstone Environmental employees are prohibited from engaging in rescue and/or medical duties beyond First Aid/CPR. Local emergency responders (fire

department/ambulatory services) shall respond to all rescue and medical issues during any emergency.

Safety Department (Administrator) Duties

During an emergency, the Safety Department will do the following:

- Take all necessary measures to contain the hazard and prevent its spread to other nearby areas, with the assistance of trained emergency response personnel.
- If the emergency is a hazardous material spill, ensure that the hazardous material and any material with which it came into contact (gravel, soil, etc.), will be scraped up using shovels and/or brooms. All this combined material will be considered hazardous waste unless analysis shows otherwise.
- Provide for collection, treatment, and disposal of the waste and contaminated material by the emergency crew or outside contractor, as appropriate.



HILLSTONE ENVIRONMENTAL

Central Station Treatment Facility Emergency Action and Response Plan

- Ensure that contaminated soil, liquids, or other material is placed in drums and handled as a hazardous waste.
- Ensure that the emergency crew restores all emergency equipment to full operational status.
- Assisted by other qualified persons, begin to investigate the cause of the emergency and take steps to prevent a recurrence of such or similar incidents.
- Ensure that the cause of the emergency has been eliminated and that cleanup and restoration have progressed at least to the point of not jeopardizing the health and safety of the employees, and that EPA, state, and local authorities have been notified, if required.
- Ensure that for spills or releases involving a hazardous substance at or above its reportable quantity, the following necessary information is recorded and reported: name of chemical(s) involved, whether the substance is listed under 40 CFR 302—extremely hazardous substances, estimated quantity of the released substance, time of the release and duration, medium into which the substance was released, health risks associated with the release, precautions taken to respond to the release, name and telephone numbers of persons who can be contacted for further information.

Employees should contact the Hillstone Environmental Safety Department for more specific information about the EAP/ERP or to gain a better explanation of their duties under the plan.

Training

The Safety Department shall train all Hillstone Environmental employees about the specifics of the Hillstone Environmental Emergency Action and Response Plan Plan. Training shall include:

- Purpose and scope of EAP/ERP
- Types of emergencies
- Types of alarms
- Duties and responsibilities during each type of emergency
- Trained emergency response personnel



HILLSTONE ENVIRONMENTAL

Central Station Treatment Facility Emergency Action and Response Plan

- Primary/secondary evacuation points
- Emergency contact list

EAP/ERP training shall be implemented:

- Initially when the EAP/ERP is developed or when an employee is initially assigned to a job,
- Whenever an employee's responsibilities or designated actions under the EAP/ERP change, and
- Whenever the EAP/ERP is changed.

EAP/ERP training shall be documented and kept on file in the Safety Department.

Drills

Emergency drills shall be conducted at least annually. Emergency drills shall be coordinated by the Safety Department. After an emergency drill is completed, the Safety Department shall judge the effectiveness of the EAP/ERP. The goal of the emergency drill is to see if the company is prepared for the different types of emergencies that may be encountered. The drill helps to identify deficiencies in how the employer, employees, and emergency responders respond during an emergency. Deficiencies are noted and corrected.

Emergency Action and Response Plan Diagram

An EAP/ERP Diagram shall depict the following information:

- Exit Locations
- Fire Extinguisher Locations
- Storage Locations for Hazardous/Flammable Materials
- Storage Area for Spill Response Supplies and Personal Protective Equipment
- Tornado Shelters

Copies of EAP/ERP diagrams shall be posted at or near each exit.



HILLSTONE ENVIRONMENTAL

Central Station Treatment Facility Emergency Action and Response Plan

Hillstone Environmental Emergency Contact List

Hospitals

United Hospital Center
327 Medical Park Drive
Bridgeport, WV 26330
(681) 342-1000

Bridgeport Express Care
1370 Johnson Ave.
Bridgeport, WV 26330
(304) 842-3330
Open 8AM-8PM

Poison Control Center

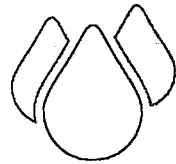
American Association of Poison Control Centers

1 (800) 222-1222

Doddridge County Emergency Management

Agency

Central Communications, Inc
Pennsboro, WV 26415
(304) 873-3253
(304) 659-3772 Fax



HILLSTONE ENVIRONMENTAL

Central Station Treatment Facility Emergency Action and Response Plan

Police Departments

West Union Police Dept.

135 E. Court St
West Union, WV 26456
(304) 873-1107

Doddridge County Sheriffs Dept.

Emergency Dial 911
Non-Emergency 304- 873-1000
Fax 304-873-1001

West Virginia State Police – Doddridge County Attachment

#3 Lois Lane
Greenwood, WV 26415
Phone: 304-873-2101
Fax: 304-873-2129

Fire Department and EMS

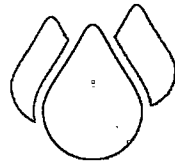
West Union Volunteer Fire Department

Fire Chief: Pat Heaster
93 Marie St
West Union, WV 26456
Phone:(304) 873-1391

Greenwood Volunteer Fire Department

Fire Chief: Thomas Robinson
391 Long Run Rd.
Greenwood WV, 26415
Phone: 304-873-2440
Cell Phone: 304-904-1386

Smithburg Volunteer Fire Department



HILLSTONE ENVIRONMENTAL

Central Station Treatment Facility Emergency Action and Response Plan

Fire Chief: Sam Sponaugle
P.O. Box 22
Smithburg, WV 26436
Phone: 304-873-1493
Cell Phone: 304-838-3387

**Doddridge County
Ambulance Authority**
PO Box 363
118 East Court St.
West Union, WV 26456
Director: Cole Crimm
Phone: 304-838-5718
Cell: 304-641-1194
info@doddridgeambulanceauthority.org
<http://doddridgeambulanceauthority.org/>

Doddridge County Health Department

Phone: (304) 873-1531
Address: Route 2, Box 54, West Union, WV 26456

West Virginia Department of Environmental Protection

Address: 2031 Pleasant Valley Rd. #1, Fairmont, WV 26554
Phone: (304) 368-3910

WV DEP Spill Hotline
1-800-642-3074



HILLSTONE ENVIRONMENTAL

Central Station Treatment Facility Emergency Action and Response Plan

Hillstone Environmental Doddridge County Emergency Contacts

Position	Name	Cell Number
EH&S Manager	Brett Gump	304-476-7432
Executive Director of Solid Waste	Rockee Freeman	681-443-0024
Site Manager	Craig Casto	304-709-4645
Technical Director	Ryan Hall	724-289-7475
Director of Residual Waste	Chris Stanton	304-709-4520

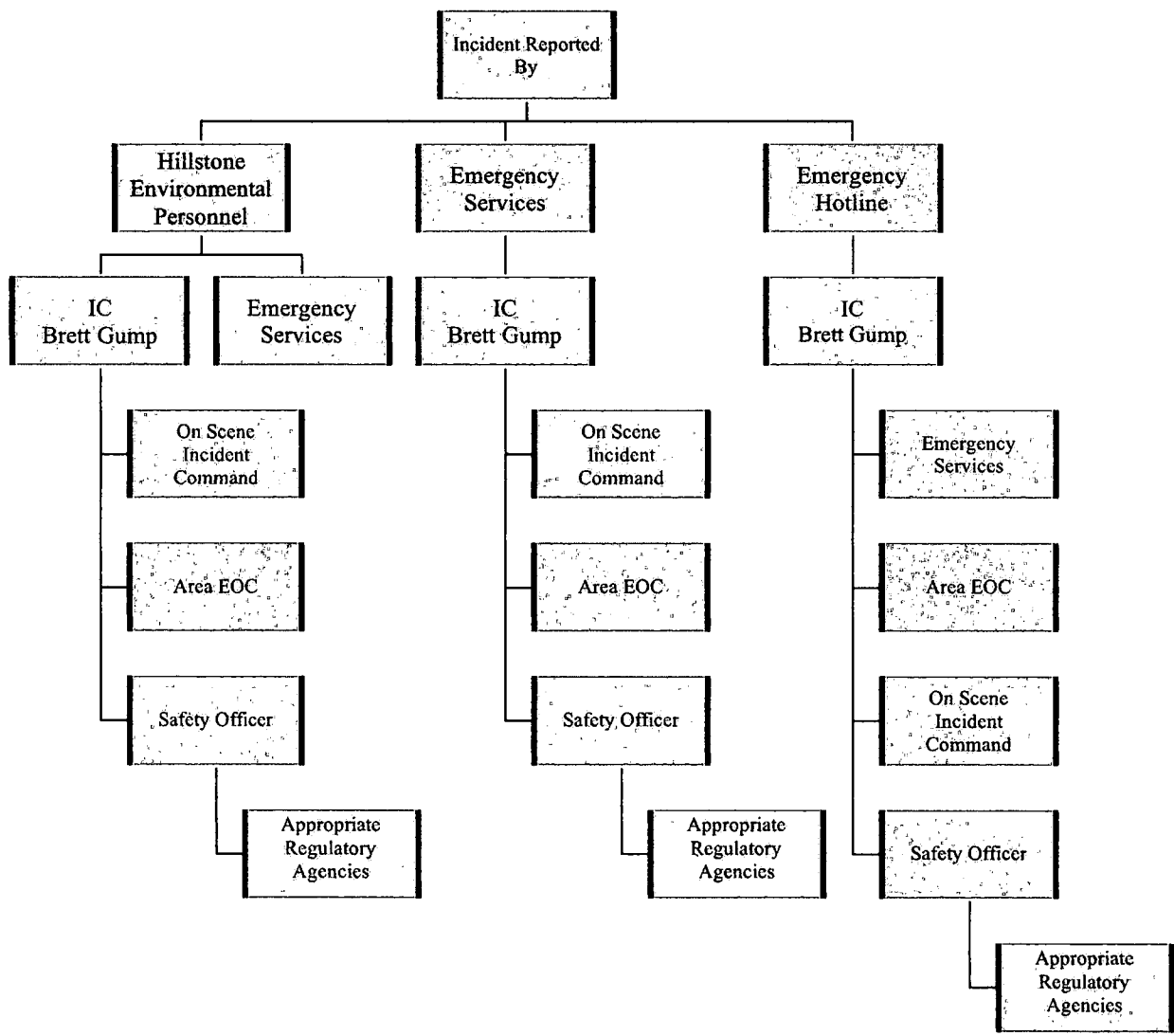
Incident Command Structure

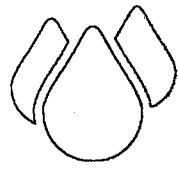
Response Position	Name	Office Number	Cell Number	Home Number
Incident Commander/ Public Information Officer	Brett Gump	N/A	304-476-7432	N/A
Alternate IC	Rockee Freeman	N/A	681-443-0024	N/A
IC Assistant	Ryan Hall	N/A	724-289-7475	N/A
Safety Officer	Brett Gump	N/A	304-476-7432	N/A



HILLSTONE ENVIRONMENTAL

Central Station Treatment Facility Emergency Action and Response Plan





HILLSTONE ENVIRONMENTAL

Central Station Treatment Facility Emergency Action and Response Plan

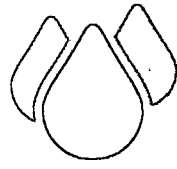
Doddridge County Project Specific Emergency Plan

Personal Protective Equipment (PPE) Requirements

- Eye & Face Protection devices – Eye protection will be worn on site in accordance with ANSI Z87.1-1989 "American National Standard Practice for Occupational and Educational Eye and Face Protection"
- Head Protection devices – Head protection (Hard Hat) will be worn on site in accordance ANSI Z89.1-1986 "American National Standard for Personal Protection - Protective Headwear for Industrial Workers"
- Foot Protection devices –Foot protection will be worn on site in accordance ANSI Z41-1991 "American National Standard for Personal Protection - Protective Footwear"
- Hand Protection - No national standard available - Selection will be based on task performed, conditions present, duration of use, and the hazards and potential hazards identified.
- The outer most layer of clothing will be FR, while working on site.

Emergency Evacuation

At the sound of three long horn blasts from a vehicle, all personnel will report to the muster point indicated on the site plan. This muster point is located at the base of the lease road as a primary muster point. If this muster point becomes unsafe at any time, all personnel are to report to a second muster area at the top of the hill in the wide spot located by the entrance sign. All personnel will remain at the sight until the all clear is given by site safety personnel.



HILLSTONE ENVIRONMENTAL

Central Station Treatment Facility Emergency Action and Response Plan

3rd Party Emergency Response

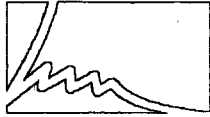
In the event hazardous release is beyond Hillstone Environmental capacity, we have made arrangements for 24/7 response and clean-up with companies listed below.

Contact Numbers for 24-hour Emergency Response:

- 1) Energy Transportation, LLC (**Primary**)
 - (304) 641-7230

- 2) Ryan's Environmental Transportation
 - (304) 641-9291

- 3) Waste Management Energy Services
 - (681) 456-6971



**Hatch Mott
MacDonald**

12 Rousch Drive
Morgantown, WV 26501
T 304.212.4390
F 724.873.9116
www.hatchmott.com

March 16, 2016

Mr. George C. Eidel
OEM Director / Floodplain Manager
Doddridge County Commission
108 Court Street, Suite # 1
West Union, WV 26456-2095

Subject: Hydrology & Hydrologic Study for Shalewater Solutions – Central Station facility
near Arnold Creek in Doddridge County, West Virginia

Dear Mr. Eidel:

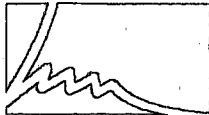
Hatch Mott MacDonald (HMM) is pleased to submit the Hydrology and Hydrologic study used to determine that the Shalewater Solutions facility and its Limits of Disturbance (LOD) is above Arnold Creek's 100 year flood elevations. The site in question illustrated on Figure 1 (attached) is located along Arnold Creek in Doddridge County, WV.

On the FEMA Flood Insurance Rate Maps (FIRM), Arnold Creek is shown as Zone "A", approximate flood hazard area and the site is within the Zone "A" boundary. As part of a project to replace Zone "A" flood hazards throughout the State with much more accurate detailed study areas, FEMA and the WV National Flood Insurance Program (NFIP) state coordinator hired the consulting firm AMEC to initially perform a detailed study existing Zone "A" areas in 16 counties across West Virginia. Doddridge County is one of those selected counties. In addition, the results of AMEC's work for Doddridge County were posted to the WV GIS Technical Center website (www.wvgis.wvu.edu) in February 2013. The data is also currently posted to the West Virginia Flood Tool website (www.mapwv.gov/flood/map/).

The HEC-RAS model that AMEC developed for Arnold Creek is available for download from both sites. Although this data is more accurate than the existing Zone "A" flood zone shown on the effective FIRM maps, it has not been officially incorporated into FIRM maps. Instead it is available as "best available data" awaiting official incorporation into revised Doddridge County maps by FEMA. This is the HEC-RAS model that HMM has used for this flood study.

The AMEC HEC-RAS model has an existing cross section that cuts through the proposed site (cross section 44619.6). However, to ensure the fill placed at the site does not impact the floodplain, HMM added an additional cross section (cross section 44356.6) in the HEC-RAS model where the site Limits of Disturbance is closest to Arnold Creek. To construct new cross sections and to define the floodplain boundaries, HMM used a more accurate Digital Elevation Model (DEM) than the one used by AMEC, although the two are very close.

The flows used in the HEC-RAS model are calculated from USGS regression equations for ungagged streams and HMM did not change any of the flows from the original AMEC HEC-RAS model. After the model was run, the computed water surface elevations (WSELs) were compared to the lowest



Hatch Mott
MacDonald

12 Rousch Drive
Morgantown, WV 26501
T 304.212.4390
F 724.873.9116
www.hatchmott.com

adjacent grade (LAG) that will be disturbed as part of the fill placed on the site. At the HMM added cross section, the computed WSEL is 802.44 feet and the LAG elevation is approximately 803.2 feet. Therefore, at this closest point, the site is approximately 0.85 feet above the 100-year WSEL. At the cross section from the original AMEC model, the computed WSEL is 803.39 feet and the LAG is 806.4 feet indicating that the site is well above the 100-year WSEL and is also out of the floodplain.

In conclusion, HMM is submitting to have the floodplain revised to reflect the results HEC-RAS developed by AMEC and enhanced by HMM which demonstrates that the proposed site does not impact the properly defined floodplain.

Sincerely,

Brian K. Moore, PE
Hatch Mott MacDonald
T: 304.212.4392 C: 216.337.8275

Jeremiah C. Cline, PE
Hatch Mott MacDonald
T: 304.212.4384 C: 304.290.6870

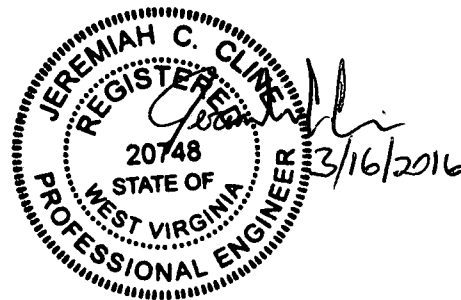




FIGURE 1
U.S.G.S. SITE LOCATION
CENTRAL STATION FACILITY

WEST UNION QUADRANGLE 1987, WEST VIRGINIA
 DODDRIDGE COUNTY, WEST VIRGINIA








Hatch Mott MacDonald
 1001 Corporate Drive, Suite 100
 Canonsburg, PA 15317
 Ph: (724) 514-5300 | Fax: (724) 873-9116



DRAWN BY:	BP
APPROVED BY:	RAC
DATE:	11/12/2015
PAGE:	1 of 1



-  Stream
-  Road
-  Contour
-  Proposed LOD (Total Area - 1.6 Acres / Vegetated - 0.45 Acres)
-  Wetland

LOD UPDATE

CENTRAL STATION FACILITY

DODDRIDGE COUNTY, WEST VIRGINIA



Hatch Mott MacDonald 1001 Corporate Drive, Suite 100
 Canonsburg, PA 15317
 Ph: (724) 514-5330
 Fax: (724) 873-9116



ABSOLUTE SCALE:
 1 INCH = 100 FEET
 REFERENCE SCALE:
 1:1,200

DRAWN BY:	D.JL
APPROVED BY:	RAC
DATE:	01/07/2016
PAGE:	1 of 1



March 15, 2016

Douglas R. Amos
Hatch Mott MacDonald
1001 Corporate Drive, Suite 100
Canonsburg, PA 15317

Dear Mr. Amos:

Subject: Shalewater Solutions, LLC
Central Station
Arnold Creek Floodplain Model
Doddridge County, West Virginia
CEC Project 161-244

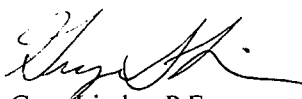
Civil & Environmental Consultants, Inc. greatly appreciates the opportunity to perform third party review of the above referenced floodplain model in support of the Doddridge County Floodplain Development Permit Application. The project site is situated along Arnold Creek in Doddridge County, WV and is located within a Zone A approximate flood hazard boundary as depicted on the effective Flood Insurance Rate Maps. As such, hydrologic and hydraulic analyses are required to establish the base flood elevation and determine the potential affect the project may have on the base flood elevation and adjacent property owners. The National Flood Insurance Program uses the one percent annual chance storm as the base flood for the purposes of regulating new development.

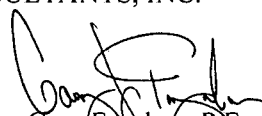
The proposed HEC-RAS model analyzes two hydraulic cross sections (Station 44619.6 and Station 44356.6) through the project site at critical locations. Based on the hydraulic model results, the base flood elevation at Station 44619.6 is 803.39. The corresponding lowest adjacent grade of the proposed work has an elevation of 806.4. The base flood elevation at Station 44356.6 is 802.44. The corresponding lowest adjacent grade of the proposed work has an elevation of 803.3. Therefore, based on the site plan provided by Hatch Mott MacDonald and the HEC-RAS model, the proposed work is situated above the base flood elevation and will not result in encroachment within the existing floodplain. As a result, adverse affects to the existing base flood elevation or adjacent property owners is not anticipated.

Please feel free to contact me at 304-933-3119 or via e-mail at glinder@cecinc.com if you have questions or need additional information.

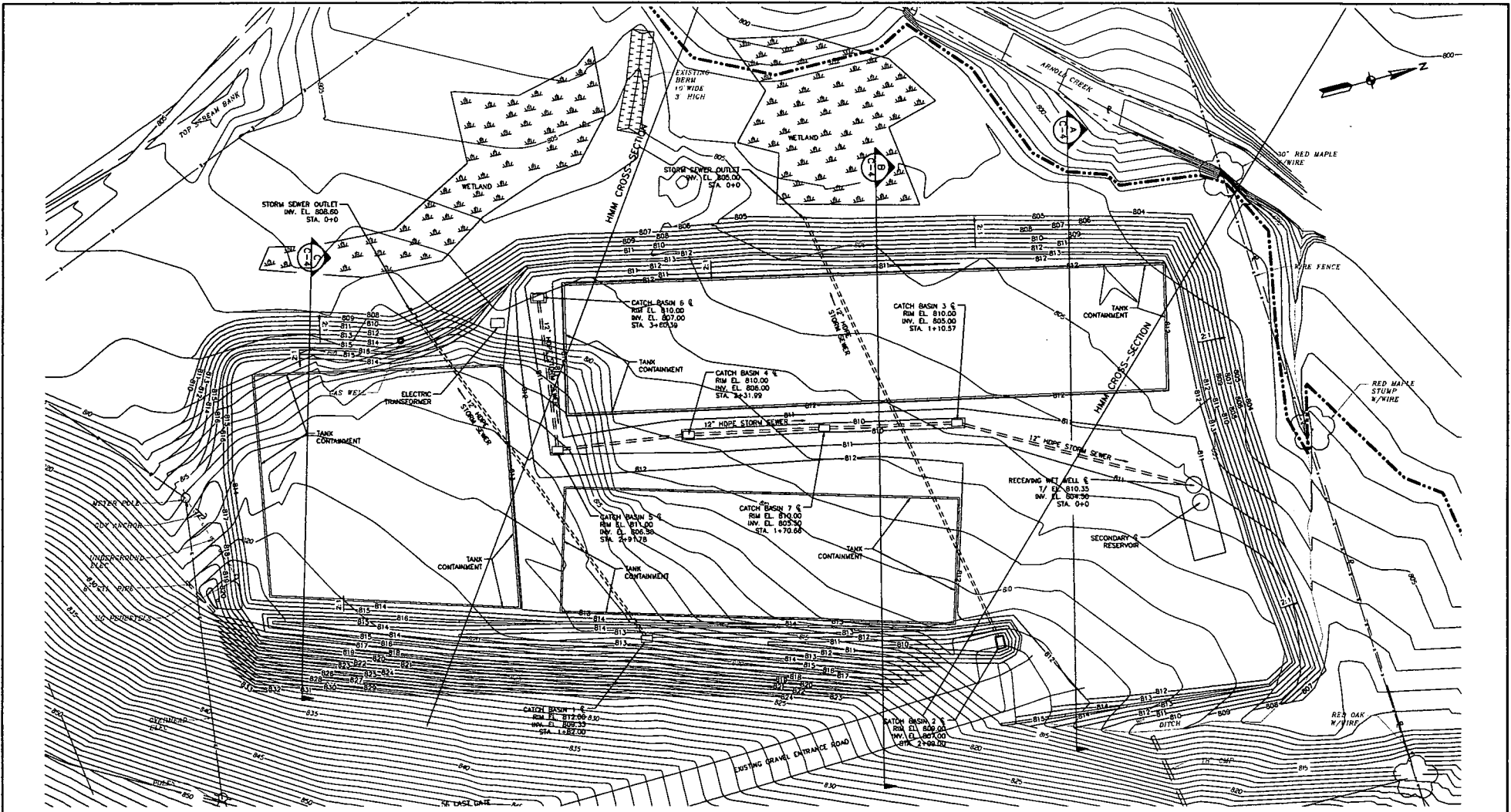
Respectfully submitted,

CIVIL & ENVIRONMENTAL CONSULTANTS, INC.


Greg Linder, P.E.
Project Manager

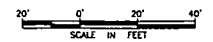

Gary Faxalare, P.E.
Vice-President





- LEGEND (EXISTING)**
- E OVERHEAD ELECTRIC
 - UC UNDERGROUND ELECTRIC
 - 8/5 CONTOUR
 - X-X FENCE
 - WETLANDS
 - UTILITY POLE
 - GUY POLE
- LEGEND (PROPOSED)**
- 100 YEAR FLOOD EL. B02.44
 - FS COMPOST FILTER SOCK
 - B11 PROPOSED CONTOURS
 - PROPOSED STORM SEWER
 - PROPOSED CATCH BASIN
 - BOLLARDS

SITE GRADING AND STORMWATER COLLECTION SYSTEM PLAN
SCALE: 1" = 20'



PROPRIETARY AND CONFIDENTIAL INFORMATION
OF SHALEWATER SOLUTIONS, L.L.C.

 1500 West Carson Street Pittsburgh, Pennsylvania 15219	Shalewater Solutions Central Station Proposed Site SITE GRADING AND STORMWATER COLLECTION SYSTEM PLAN	 37 GRAND MEADOWS DR. SUITE 201 BRIDGEPORT, WV 26330 PH: 304-582-3734 WWW.SHALEWATER.COM	No. 384111 C-2 Date: 3/18/2018 8:44 AM File Name: P:\384111-Shalewater Solutions-Central Station\CAD\CIVIL\AS_BUILTS\384111-SITE GRADING AS_BUILT.dwg
SEAL	Revision	SCALE: 1" = 20' DESIGNED BY: DMH DRAWN BY: PCE CHK BY: BKK APPRVD BY:	PLOT DATE: 3/18/2018 8:44 AM





George Eidel <doddridgecountyfpm@gmail.com>

Shalewater Project - Printable Deliverables

Chambers, Ricardo A <Ricardo.Chambers@mottmac.com>

Fri, Mar 18, 2016 at 11:02 AM

To: George Eidel <doddridgecountyfpm@gmail.com>

Cc: "Quinlisk, John M" <John.Quinlisk@mottmac.com>, "Moore, Brian K" <Brian.Moore@mottmac.com>, "Amos, Douglas R" <Douglas.Amos@hatchmott.com>, "Chris Stanton (cstanton@shalewater.com)" <cstanton@shalewater.com>, "Cline, Jeremiah C (jeremiah.cline@hatchmott.com)" <jeremiah.cline@hatchmott.com>, Tony Gutta <tgutta@shalewater.com>, "Ryan Hall (rhall@shalewater.com)" <rhall@shalewater.com>

George:

Please find attached the GIS printable (PDF) version of what was in the GIS zipped folder within the Hydrology and Hydrologic study packet. We are still working on making the HEC-RAS analysis results into printable deliverables.

Sincerely,

Ricardo

From: George Eidel [mailto:doddridgecountyfpm@gmail.com]**Sent:** Thursday, March 17, 2016 10:04 AM**To:** Chambers, Ricardo A**Subject:** Shalewater Project

Ricardo,

We tried to open the ZIP file and it wouldn't open. Would it be possible to resend it on PDF. I can load it onto the disk you sent as well as print out hard copies for the file.

Thanks,

George

-

George C. Eidel, OEM Director/Floodplain Manager

Doddridge County Commission

108 Court Street Suite 1

West Union, WV 26456-2095

Work Phone: 1-304-873-1343

Mobile Phone: 1-304-281-7407

Fax: 1-304-873-1840

doddridgecountyfpm@gmail.com

www.doddridgecounty.wv.gov

-

CONFIDENTIALITY NOTE: This email message is for the sole use of the intended recipient(s) and may contain confidential, privileged, or sensitive information. Any unauthorized review, use, disclosure, or distribution is strictly prohibited and may be legally accountable.

 **Central_Station_HMM_Hydro_Study_20160318.pdf**
1146K

The Doddridge Independent

The Doddridge Independent PUBLISHER'S CERTIFICATE

I, Michael D. Zorn, Publisher of The Doddridge Independent, A newspaper of general circulation published in the town of West Union, Doddridge County, West Virginia, do hereby certify that:

Floodplain Permit Application # 16-415

Please take notice that on the 26th day of February, 2016

HEP Shalewater Solutions, LLC

filed an application for a Floodplain Permit to develop land located at or about:

Central Station Road - 39.28074N, 80.81264W

Description - Temporary Water Treatment/Recycling

was published in The Doddridge Independent 2 times commencing on Friday, March 4, 2016 and Ending on Friday, March 11, 2016 at the request of:

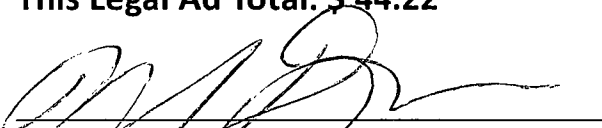
George Eidel, Doddridge County Floodplain Manager & Doddridge County Commission

Given under my hand this Friday, March 11, 2016

The publisher's fee for said publication is:

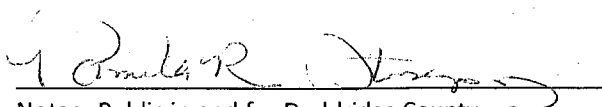
\$ 25.27 1st Run/\$ 18.95 Subsequent Runs

This Legal Ad Total: \$ 44.22

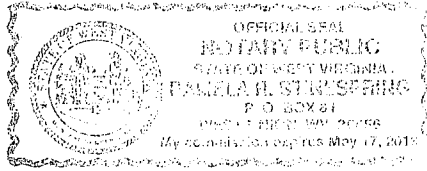

Michael D. Zorn
Publisher of The Doddridge Independent

Subscribed to and sworn to before me on

this date: 3 / 11 / 16


Notary Public in and for Doddridge County
My Commission expires on
The 17th day of May 2019

Public Notice • Legal Notice
Doddridge County
Floodplain Permit Application # 16-415
Please take notice that on the 26th day of February, 2016
HEP Shalewater Solutions, LLC
filed an application for a Floodplain Permit to develop land located at or about:
Central Station Road - 39.28074N, 80.81264W
Description - Temporary Water Treatment/Recycling Facility
Date Received - 2/26/2016
Date Announced to Commission - 3/1/2016
Publication Date - Week of 3/1/2016
20 Day Comment Period (from Commission Meeting Date)
The Application is on file with the Clerk of the County Court and may be inspected or copied during regular business hours. As this project is outside the FEMA identified floodplain of Doddridge County, Doddridge County Floodplain Management has no regulatory authority. Any interested persons who desire to comment shall present the same in writing by March 21, 2016, delivered to:
Clerk of the County Court
118 E. Court Street, West Union, WV 26456
Beth A Rogers, Doddridge County Clerk
George Eidel, Doddridge County Flood Plain Manager
3/04 - 3/11





Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION BASED ON FILL DETERMINATION DOCUMENT (REMOVAL)

COMMUNITY AND MAP PANEL INFORMATION		LEGAL PROPERTY DESCRIPTION
COMMUNITY	DODDRIDGE COUNTY, WEST VIRGINIA (Unincorporated Areas)	A portion of a parcel of land, as described in the Deed recorded as Instrument No. 204145, in Book 331, Page 100, in the Office of the Recorder, Doddridge County, West Virginia The portion of property is more particularly described by the following metes and bounds:
	COMMUNITY NO.: 540024	
AFFECTED MAP PANEL	NUMBER: 54017C0115C; 54017C0120C DATE: 10/4/2011; 10/4/2011	
FLOODING SOURCE: ARNOLD CREEK		APPROXIMATE LATITUDE & LONGITUDE OF PROPERTY: 39.280536, -80.812553 SOURCE OF LAT & LONG: LOMA LOGIC DATUM: NAD 83

AUG 15 16 3:39 PM

DETERMINATION

LOT	BLOCK/ SECTION	SUBDIVISION	STREET	OUTCOME WHAT IS REMOVED FROM THE SFHA	FLOOD ZONE	1% ANNUAL CHANCE FLOOD ELEVATION (NAVD 88)	LOWEST ADJACENT GRADE ELEVATION (NAVD 88)	LOWEST LOT ELEVATION (NAVD 88)
--	--	--	263 Central Station Road	Portion of Property	X (unshaded)	--	--	803.2 feet

Special Flood Hazard Area (SFHA) - The SFHA is an area that would be inundated by the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood).

ADDITIONAL CONSIDERATIONS (Please refer to the appropriate section on Attachment 1 for the additional considerations listed below.)

LEGAL PROPERTY DESCRIPTION
PORTIONS REMAIN IN THE SFHA
ZONE A

SUPERSEDES PREVIOUS DETERMINATION

This document provides the Federal Emergency Management Agency's determination regarding a request for a Letter of Map Revision based on Fill for the property described above. Using the information submitted and the effective National Flood Insurance Program (NFIP) map, we have determined that the described portion(s) of the property(ies) is/are not located in the SFHA, an area inundated by the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood). This document revises the effective NFIP map to remove the subject property from the SFHA located on the effective NFIP map; therefore, the Federal mandatory flood insurance requirement does not apply. However, the lender has the option to continue the flood insurance requirement to protect its financial risk on the loan. A Preferred Risk Policy (PRP) is available for buildings located outside the SFHA. Information about the PRP and how one can apply is enclosed.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at (877) 336-2627 (877-FEMA MAP) or by letter addressed to the Federal Emergency Management Agency, LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304-4605.

Luis V. Rodriguez, P.E., Director
Engineering and Modeling Division
Federal Insurance and Mitigation Administration



Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION BASED ON FILL DETERMINATION DOCUMENT (REMOVAL)

ATTACHMENT 1 (ADDITIONAL CONSIDERATIONS)

LEGAL PROPERTY DESCRIPTION (CONTINUED)

Beginning at the northeastern toe corner of the recently placed fill material which bears S 71°07' W a distance of 83.7' from the northeasterly corner of the lessee's lands at a point in the western limits of the Central Station Road which is also the southeastern corner of the Ralph J. and Judith G. Valentine property as described in liber 161, folio 287, one of the Doddridge County, West Virginia land records. Thence from said beginning point and with the edge of the fill area; S 08°42'43" W a distance of 108.58' to the edge of the fill; thence continuing with said fill limits for the next seven courses and distances; S 17°18'56" W a distance of 388.96'; thence S 84°23'20" W a distance of 107.58'; thence N 59°55'01" W a distance of 75.08'; thence N 15°12'02" E a distance of 93.82'; thence N 17°38'27" W a distance of 76.21'; thence N 14°13'46" E a distance of 295.52'; thence N 89°31'14" E a distance of 230.11'; which is the point of beginning.

PORTIONS OF THE PROPERTY REMAIN IN THE SFHA (This Additional Consideration applies to the preceding 1 Property.)

Portions of this property, but not the subject of the Determination/Comment document, may remain in the Special Flood Hazard Area. Therefore, any future construction or substantial improvement on the property remains subject to Federal, State/Commonwealth, and local regulations for floodplain management.

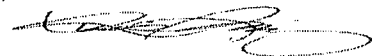
ZONE A (This Additional Consideration applies to the preceding 1 Property.)

The National Flood Insurance Program map affecting this property depicts a Special Flood Hazard Area that was determined using the best flood hazard data available to FEMA, but without performing a detailed engineering analysis. The flood elevation used to make this determination is based on approximate methods and has not been formalized through the standard process for establishing base flood elevations published in the Flood Insurance Study. This flood elevation is subject to change.

SUPERSEDES OUR PREVIOUS DETERMINATION (This Additional Consideration applies to all properties in the LOMR-F DETERMINATION DOCUMENT (REMOVAL))

This Determination Document supersedes our previous determination dated 6/28/2016, for the subject property.

This attachment provides additional information regarding this request. If you have any questions about this attachment, please contact the FEMA Map Assistance Center toll free at (877) 336-2627 (877-FEMA MAP) or by letter addressed to the Federal Emergency Management Agency, LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304-4605.



Luis V. Rodriguez, P.E., Director
Engineering and Modeling Division
Federal Insurance and Mitigation Administration



Federal Emergency Management Agency

Washington, D.C. 20472

August 10, 2016

THE HONORABLE GREG ROBINSON
PRESIDENT, DODDRIDGE COUNTY
118 EAST COURT STREET
WEST UNION, WV 26456

CASE NO.: 16-03-2458A
COMMUNITY: DODDRIDGE COUNTY, WEST
VIRGINIA
(UNINCORPORATED AREAS)
COMMUNITY NO.: 540024

DEAR MR. ROBINSON:

This is in reference to a request that the Federal Emergency Management Agency (FEMA) determine if the property described in the enclosed document is located within an identified Special Flood Hazard Area, the area that would be inundated by the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood), on the effective National Flood Insurance Program (NFIP) map. Using the information submitted and the effective NFIP map, our determination is shown on the attached Letter of Map Revision based on Fill (LOMR-F) Determination Document. This determination document provides additional information regarding the effective NFIP map, the legal description of the property and our determination.

Additional documents are enclosed which provide information regarding the subject property and LOMR-Fs. Please see the List of Enclosures below to determine which documents are enclosed. Other attachments specific to this request may be included as referenced in the Determination/Comment document. If you have any questions about this letter or any of the enclosures, please contact the FEMA Map Assistance Center toll free at (877) 336-2627 (877-FEMA MAP) or by letter addressed to the Federal Emergency Management Agency, LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304-4605.

Sincerely,

Luis V. Rodriguez, P.E., Director
Engineering and Modeling Division
Federal Insurance and Mitigation Administration

LIST OF ENCLOSURES:

LOMR-F DETERMINATION DOCUMENT (REMOVAL)

cc: State/Commonwealth NFIP Coordinator
Community Map Repository
Region
Mr. Brian Moore

Meeting with Shalewater Solutions

- ❖ Need H&H Study Completed
- ❖ LOMR- F Completed
- ❖ Need to include Base Flood Elevation as well as the Final Elevation
- ❖ Need to show a rise of no more than cumulative 12 inches
- ❖ All tanks will be anchored and made water Tight
- ❖ Since this project will be temporary and limited to 3 years as a condition of the permit, once completed all property must be returned to its original condition and elevation removing all fill.

EMERGENCY RESPONSE PLAN



George Eidel <doddridgecountyfpm@gmail.com>

FW: FIRM Mapping Errors

Mccann, Gregory L <Gregory.L.Mccann@wv.gov>

Fri, Mar 11, 2016 at 10:42 AM

To: "George Eidel Doddridge County FPM (doddridgecountyfpm@gmail.com)" <doddridgecountyfpm@gmail.com>

George,

From what I am reading, you are being backed up by State, Fed, and AMEC that done the HEC-RAS.

Great job on this.

Gregory L. McCann CFM
State Capitol Complex
1900 Kanawha Blvd. East
Building 1 Room EB-80
Charleston WV 25305-0630
(304)957-2571 Work
(304)382-8138 Cell



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From: Clevenger, Tucker [mailto:tucker.clevenger@amecfw.com]
Sent: Thursday, March 10, 2016 12:12 PM
To: Mccann, Gregory L <Gregory.L.Mccann@wv.gov>; Carte, Richard L <Richard.L.Carte@wv.gov>
Cc: Breen, Matt <matt.breen@amecfw.com>; Sneed, Kevin L <Kevin.L.Sneed@wv.gov>; McConihay, Megan L <Megan.L.McConihay@wv.gov>; Wolfe, Sarah (Sarah.Wolfe@fema.dhs.gov) <Sarah.Wolfe@fema.dhs.gov>
Subject: RE: FIRM Mapping Errors

All,

I spoke with Megan this morning, but below is the response that I sent to HMM.

Tucker

John,

After I have had a chance to further evaluate the information that you have provided, I would have to agree with the FPA that a more detailed H&H study is warranted on this site. Here is my rationale for coming to that conclusion:

- Prior to reviewing your site plans, I was not completely clear on the volume or location of the fill being placed or the type of facility being constructed. Based on a very cursory review of the plans, it certainly appears that fill associated with this project is very close to, if not within the floodplain associated with the updated AFH analysis. In this scenario alone, the FPA is well within his rights to request a more detailed analysis.
- The updated floodplain analysis that was performed at a county level is considered an H&H study, but is only meant to more broadly and accurately define flood hazards. This information was derived from a 3M DEM flooding source and in cases where significant development is proposed in or near an approximate floodplain, it is recommended to enhance the baseline hydraulic models with more detailed, site specific, topographic information.
- For a project where significant fill is being proposed within or near the identified approximate floodplain boundary, it is not appropriate to only redelineate the AFH WSEL on the new or proposed topographic data. This information should be utilized to further enhance the existing AFH HEC-RAS model and evaluate whether any changes in WSELs result from the proposed project.

From a floodplain management and best practices perspective, my recommendation would be to go ahead and update the existing HEC-RAS hydraulic model with the new site specific topographic data, evaluate the impacts of your proposed project, and demonstrate that the fill you are placing is not adversely impacting any adjacent property owners. In addition, this would enable you to confirm with more confidence that your site is elevated above the 100-year WSEL.

I realize that this isn't the answer you were hoping for, but I can answer any additional questions you might have.

Tucker

Tucker Clevenger, PE, CFM

Water Resources Branch Manager, Amec Foster Wheeler
14424 Albemarle Point Place, Suite 115, Chantilly, VA 20151
T 703 209 6394 F 703 488 3701 VOIP 28-3783

tucker.clevenger@amecfw.com amecfw.com

From: Mccann, Gregory L [mailto:Gregory.L.Mccann@wv.gov]

Sent: Wednesday, March 09, 2016 12:08 PM

To: Clevenger, Tucker <tucker.clevenger@amec.com>; Carte, Richard L <Richard.L.Carte@wv.gov>

Cc: Breen, Matt <matt.breen@amec.com>; Sneed, Kevin L <Kevin.L.Sneed@wv.gov>; McConihay, Megan L <Megan.L.McConihay@wv.gov>; Wolfe, Sarah (Sarah.Wolfe@fema.dhs.gov) <Sarah.Wolfe@fema.dhs.gov>

Subject: RE: FIRM Mapping Errors

Tucker,

Please see the attached emails concerning the proposed development in the "A" Zone in Doddridge County. The only permit obtained at this point is from DEP (included in attachments). Mr. Eidel from Doddridge County has asked for an H&H study to be done because of the size of the project and the amount of fill that has been placed on the property (which is within the FPA's rights to ask for the H&H). At this point, the project is almost complete and (as Mr. Eidel put it) ready to start production.

This company is telling Doddridge county that the HEC-RAS model done to develop the AFH's for Doddridge County is the same as the H&H (I can't really say if this is fact) and even though the WV Flood Tool has the disclaimers that say reference the FIRMs they want to use the WV Flood Tool as the official word .

Also, can you please replace Robyn Mumphard with Megan McConihay. She took his place when he left, and is Doddridge County's State Contact.

From: Clevenger, Tucker [mailto:tucker.clevenger@amecfw.com]

Sent: Wednesday, March 09, 2016 11:28 AM

To: Carte, Richard L <Richard.L.Carte@wv.gov>

Cc: Breen, Matt <matt.breen@amecfw.com>; Sneed, Kevin L <Kevin.L.Sneed@wv.gov>; Mccann, Gregory L <Gregory.L.Mccann@wv.gov>

Subject: RE: FIRM Mapping Errors

Guys,

On another topic, I got a call (several actually) and the email below from a gentleman with Hatch Mott MacDonald on a project in Doddridge. I spoke with him on the phone about his potential development near a Zone A floodplain and believe they are proceeding appropriately, but they are asking if I will serve as a third party reviewer at the request of the county. I still owe him a call back and am currently undecided as to whether we want to be involved in this capacity, but wanted to also run it by you guys to see if it posed any potential conflict of interest since we developed the AFHs.

Just let me know what you think. I believed he mentioned speaking with Greg and Megan.

Thanks,
Tucker

Tucker,

Since I have not been able to reach you by telephone, I am sending this email.

Hatch Mott MacDonald has prepared an interpolation of the 100 Year Flood Plain for a project specific site using the model that AMEC developed for the State of West Virginia. The Doddridge County Flood Plain Manager has requested that we obtain a third party review of our delineation. The County has requested WV PE seals from HMM and the third party reviewer.

During our discussion last week, you offered to review our project site plan and evaluate our delineation of the 100 Year flood Plain for our project in Doddridge County, WV. I am transmitting project data via this email consisting of the following:

1. A ZIP file containing GIS data used to create our 100 year boundary, the original stream and cross section polylines from the WV Flood data site along with the surface DEM (3 meter DEM) from the WV data site and the 100 year polyline we created.
2. Project Site Plan.

Please contact me to discuss.

Thank you,

John M. Quinlisk, PE



Senior Project Manager

Hatch Mott MacDonald | hatchmott.com

Midwest Environment & Water

Environment & Natural Resources

1001 Corporate Drive, Suite 100

Canonsburg, PA 15317

D 724.514.5356 C 412.638.0561 F 724.873.9116

john.quinlisk@hatchmott.com

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Shalewater Solutions Central Station Project

Monday February 15, 2016 I was approached by Commissioner Ronnie Travis while at the court house, he gave me a paper with a picture on it and told me that a resident had taken it and wanted to know what was going on. I told Commissioner Travis that I would look into the situation and get back to him. The picture was of a sign (see attached) with an empty lot and creek behind it (this was taken the day before Feb. 14th), the sign said "For info on NPDES Stormwater Permit WV0115925 To comment on Sediment Control Plan: Call 800-654-5227 or DEP.Plan@wv.gov, 2031 Pleasant Valley Rd. Ste.#1 Fairmont, WV 26554-9295 Application Date:01/11/2016, Project: Shalewater Solutions Central Station Site, Project Description: Clear, Level and bring site to grade. Construct a water treatment unit to treat wastewater from the oil and gas well production facilities. SHALEWATER SOLUTIONS, LLC (304)592-2794". I am familiar with this area as I had driven Central Station Road in December and that same lot was at grade at just above the creek level, it had some old pipe and equipment on it that time.

On Tuesday, February 16, 2016 at 10:30am (See copy) I emailed a Tonya Mathers who is with the WV Department of Environmental Protection Agency (EPA) to see what was going on at the Central Station site, attached was the picture I was given. She never returned my inquiry, Wednesday, February 17, 2016 at 2:45 pm I got an email address for Shalewater Solutions and sent a them a letter asking for information from them on this project. I had also called the number on the sign and left a message for them to contact my office. On Monday February 22, 2016 at 3:05 pm I was contacted by a Joseph Angotti who took my information and told me someone would be in contact with my office. A little while later a Chris Stanton called and told me that he would call the engineering firm working on the project and they would contact me. See the attached emails for a continuation of what transpired.



George Eidel <doddridgecountyfpm@gmail.com>

Water Treatment Plant in Doddridge County

George Eidel <doddridgecountyfpm@gmail.com>

Tue, Feb 16, 2016 at 10:30 AM

To: Tonya Mathers <tonya.a.mather@wv.gov>

Good Morning,

I have been asked by one of our county commissioners to look into the possible construction of another water treatment facility here in Doddridge County in the Central Station Area. A resident took a picture of the sign (see attached), my question is, is this a new project or is this related to the Antero project now being worked on here in the county? Any Help would be greatly appreciated.

George

—
George C. Eidel, OEM Director/Floodplain Manager
Doddridge County Commission
108 Court Street Suite 1
West Union, WV 26456-2095
Work Phone: 1-304-873-1343
Mobile Phone: 1-304-281-7407
Fax: 1-304-873-1840
doddridgecountyfpm@gmail.com
www.doddridgecounty.wv.gov

—
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 **Water Treatment Facility Notice.pdf**
375K



George Eidel <doddridgecountyfpm@gmail.com>

Waste Water Treatment Unit

George Eidel <doddridgecountyfpm@gmail.com>

Wed, Feb 17, 2016 at 2:45 PM

To: services@shalewater.com

To Whom it May Concern,

My name is George Eidel, I am the Emergency Manager/Floodplain Manager for Doddridge County, WV. Our office was recently contacted by a citizen as well as a county commissioner in reference to a sign that had been erected in the Central Station area of our county. It is for a stormwater permit #WV0115924. The sign also states that this is to clear, level and bring site to grade and to construct a water treatment unit on site. Could your office send us some information on the project. EWe also wanted to inform your staff that Doddridge County has a Floodplain Ordinance and procedure that must be followed when doing any work in the floodplain. If you have any questions please contact our office at the number below.

Thank You,

George Eidel

—
George C. Eidel, OEM Director/Floodplain Manager
Doddridge County Commission
108 Court Street Suite 1
West Union, WV 26456-2095
Work Phone: 1-304-873-1343
Mobile Phone: 1-304-281-7407
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—

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George Eidel <doddridgecountyfpm@gmail.com>

Shalewater Solutions - Central Station Facility

Chambers, Ricardo A <Ricardo.Chambers@hatchmott.com>

Tue, Feb 23, 2016 at 9:58 AM

To: "doddridgecountyfpm@gmail.com" <doddridgecountyfpm@gmail.com>

Cc: "Chris Stanton (cstanton@shalewater.com)" <cstanton@shalewater.com>, "Amos, Douglas R" <Douglas.Amos@hatchmott.com>

Mr. Eidel:

We are serving as the project engineer for Shalewater Solutions at the Central Station facility in Doddridge county. Below is my contact information. Please feel free to contact me for information regarding floodplain, plans, etc.

Sincerely,

Ricardo A. Chambers, EIT | Project Manager



Hatch Mott MacDonald | hatchmott.com

Southpointe Office – Summit Corporate Center

1001 Corporate Drive, Suite 100 | Canonsburg, PA 15317

O 304.212.4382 C 304.612.1535 F 724.873.9116

Delivering Project Solutions

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George Eidel <doddridgecountyfpm@gmail.com>

Shalewater Solutions - Central Station Facility

George Eidel <doddridgecountyfpm@gmail.com>

Tue, Feb 23, 2016 at 3:40 PM

To: "Chambers, Ricardo A" <Ricardo.Chambers@hatchmott.com>

Mr. Chambers,

Thank you so much for contacting our office in regards to your project here in Doddridge County. Attached you will find the county's floodplain ordinance as well as an application and fees schedule. Should you require assistance with any portion of the application please do not hesitate to contact our office. This link will take you to the West Virginia Flood Tool <http://www.mapwv.gov/flood/> , here you will be able to determine whether your project falls within the floodplain or not.

Thank You,

George Eidel

[Quoted text hidden]

—
George C. Eidel, OEM Director/Floodplain Manager
Doddridge County Commission
108 Court Street Suite 1
West Union, WV 26456-2095
Work Phone: 1-304-873-1343
Mobile Phone: 1-304-281-7407
Fax: 1-304-873-1840
doddridgecountyfpm@gmail.com
www.doddridgecounty.wv.gov
—

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3 attachments**Floodplain Permit Fees.docx**

15K

**NEW FLOODPLAIN APPLICATION.pdf**

2901K

**DC-Floodplain Ordinance.pdf**

219K



George Eidel <doddridgecountyfpm@gmail.com>

Shalewater Solutions - Central Station Facility Information

Chambers, Ricardo A <Ricardo.Chambers@hatchmott.com>

Wed, Feb 24, 2016 at 4:25 PM

To: "doddridgecountyfpm@gmail.com" <doddridgecountyfpm@gmail.com>

Cc: "Amos, Douglas R" <Douglas.Amos@hatchmott.com>

Mr. Eidel:

Per our phone conversation, I am including in this e-mail information supporting information that we did our due-diligence in determining if the Shalewater facility was going to be above the 100 year flood elevation of Arnold Creek in Doddridge County, WV. In addition, I am attaching facility plans showing elevations, etc. If you have any questions, or require additional information, please feel free to contact me at any time.

* The data was obtained from the WV GIS Technical data center site (<http://wvgis.wvu.edu/data/data.php>). Specifically, from the Local/Advisory Flood Height Data site (<http://wvgis.wvu.edu/data/dataset.php?ID=414>). Through this site, we were able to obtain specific HEC-RAS Model Data for Doddridge County and the streams near our site. The FEMA HEC-RAS Model, which is based on a USGS 10 meter DEM contains cross sections (see screen shot below) upstream and downstream of our facility area of interest. In addition, included in this data was a table specifying target elevation values at each provided HEC-RAS cross section line

* The 100 year flood elevations at the cross sections were based on the steady flow simulation results in this model

* The streamline and cross sections from the HEC-RAS model were imported as shapefiles into ArcMap

* Our GIS team created two foot countours from the original surface DEM layer. Using the target 100 year flood elevation values at each HEC-RAS cross section, our team was able to digitize a new 100 year flood polygon based off the cross section elevation values over a higher resolution DEM (10 feet versus the original 10 meter cell size) than was used for the original FEMA 100 year flood extent estimate.

Below is a screen shot showing cross sections illustrating HEC-RAS model 100- year flood elevations at various cross sections

[cid:image004.jpg@01D16F1F.D1E9E110]

In addition, after our surveyor dialed in the elevations after our site survey for the grading plan, the elevation at 802.52' showed to be below our lowest elevation at the facility (see site plan attached)

Below is a screen shot of the WV Flood Tool (link provided on your email yesterday)

[cid:image006.jpg@01D16F1F.D1E9E110]

Furthermore, the reason we looked for a less coarse data source for the 100 year flood plain elevations was because you see on the picture above the following:

* Central Station Rd shows flooded just northeast of the site, which is very unlikely

* Hillside east of Central Station Road shows flooded, which is very steep and is very unlikely as well

Sincerely,

[hmm signature 5425 small.png]

Ricardo A. Chambers, EIT | Project Manager
Hatch Mott MacDonald | [hatchmott.com](http://www.hatchmott.com)<<http://www.hatchmott.com/>>
Southpointe Office - Summit Corporate Center
1001 Corporate Drive, Suite 100 | Canonsburg, PA 15317
O 304.212.4382 C 304.612.1535 F 724.873.9116

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6 attachments



image001.jpg
2K

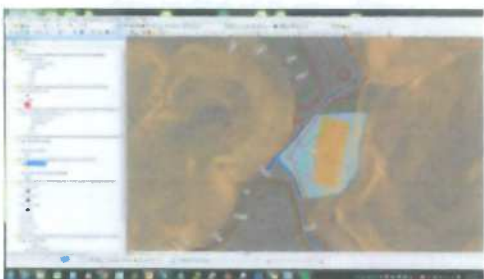
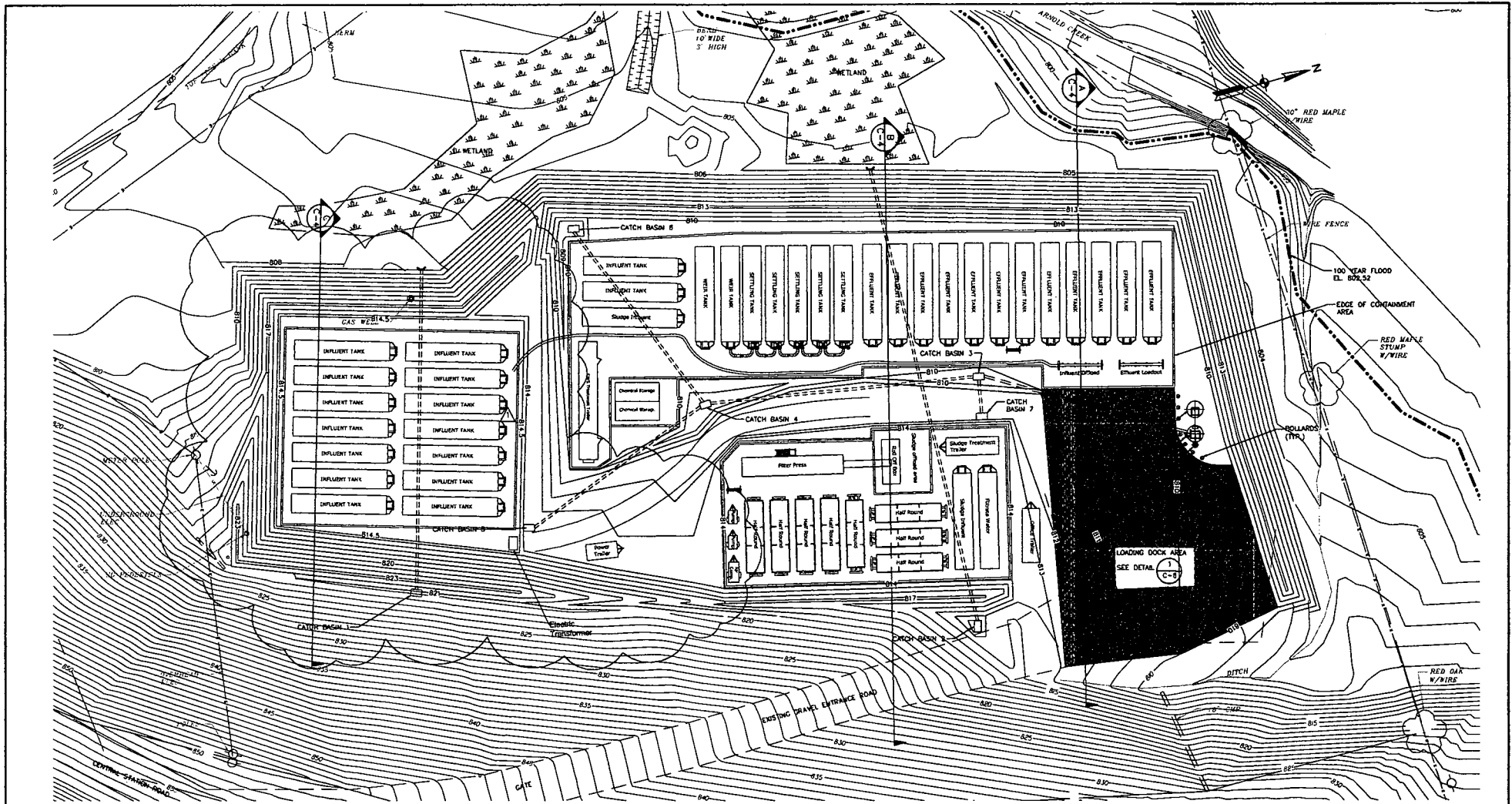


image004.jpg
139K



image006.jpg
145K



LEGEND (EXISTING)

- E — OVERHEAD ELECTRIC
- UC — UNDERGROUND ELECTRIC
- 3/5 — CONTOUR
- X — FENCE
- WETLANDS
- UTILITY POLE
- ⤴ GUY POLE

LEGEND (PROPOSED)

- 81 — 100 YEAR FLOOD CONTOURS
- — — — — STORM SEWER
- CATCH BASIN
- BOLLARDS
- LOADING DOCK AREA

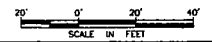
GENERAL LAYOUT PLAN

SCALE: 1" = 20'

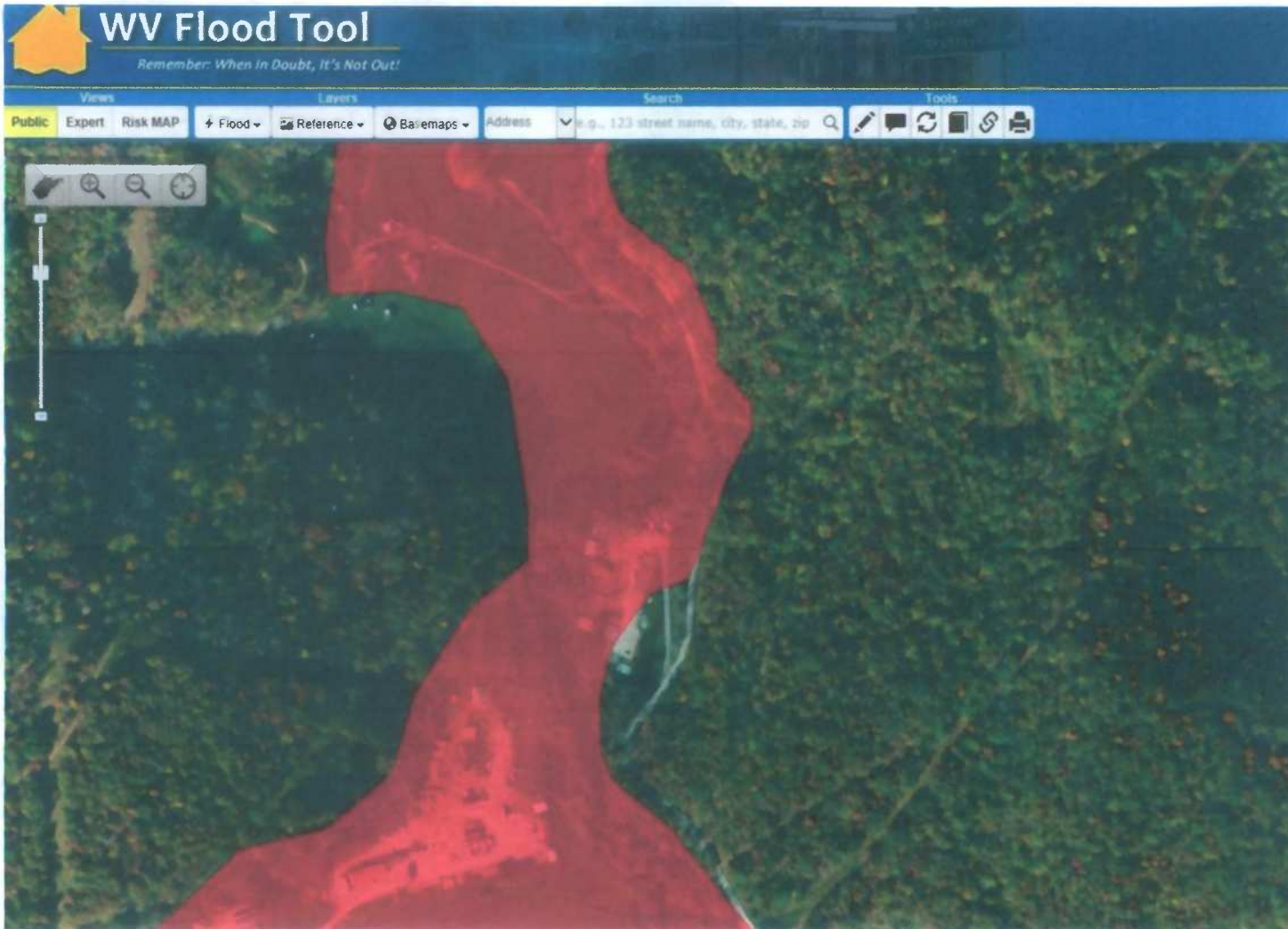
NOTES:

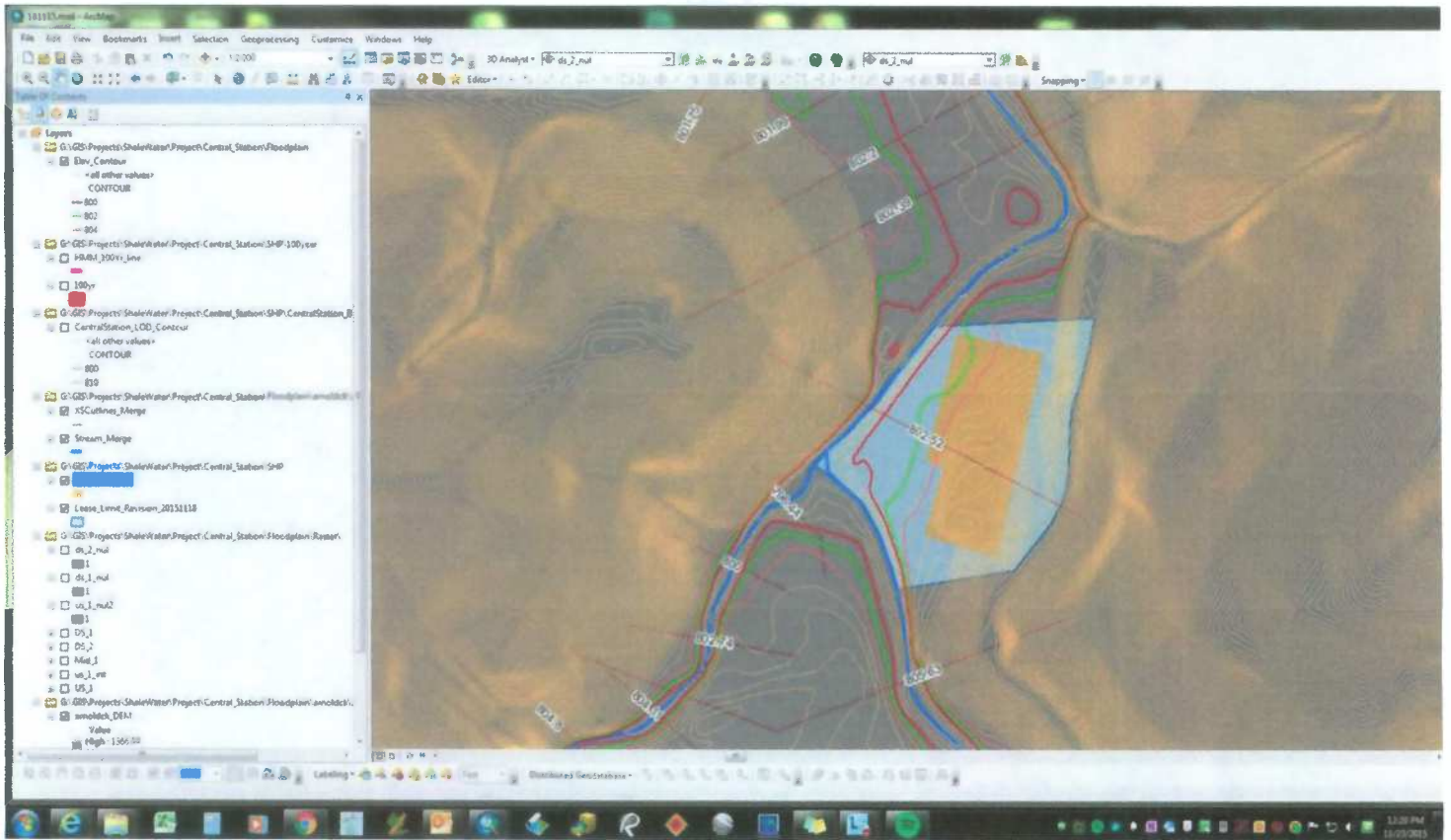
1. CONFIGURATION OF EQUIPMENT PROVIDED BY SHALEWATER SOLUTIONS FOR REFERENCE PURPOSES ONLY.
2. LOADING DOCK AREA SURFACE COMPOSITION AS PER DETAIL 1 ON SHEET C-8. REMAINDER OF LEVEL SURFACES SHALL RECEIVE 4" OF AASHTO NO. 57 LIMESTONE GRAVEL PAVEMENT.

90% COMPLETE DESIGN



<p>Hatch Mott MacDonald 1800 West Carson Street Pittsburgh, Pennsylvania 15219</p>	<p>Shalewater Solutions Central Station Proposed Site GENERAL LAYOUT PLAN</p>	<p>SHALEWATER SOLUTIONS</p> <p>37 GRAND MEADOWS DR. STE 201 BRIDGEPORT, WV 26330 PH: 800-562-5734 WWW.SHALEWATER.COM</p>	<p>Job No. 364111 No. C-1 0/0 Total 2 9</p>
SEAL	<p>SCALE: 1" = 20'</p> <p>DESIGNED BY: DMH DRAWN BY: PGE CHK BY: DMH APPRVD BY:</p> <p>FILE NAME: P:\354111-Shalewater Solutions-Central Station\CAD\CML\354111-GENERAL_LAYOUT.dwg</p> <p>PLLOT DATE: 1/21/2018 1:57 PM</p>		







George Eidel <doddridgecountyfpm@gmail.com>

Shalewater Solutions - Central Station Facility Information

George Eidel <doddridgecountyfpm@gmail.com>

Thu, Feb 25, 2016 at 9:26 AM

To: "Chambers, Ricardo A" <Ricardo.Chambers@hatchmott.com>

Mr. Chambers,

Will try and call later in the morning. Just to give you more information we go by the WV Flood Tool that I sent you. The area in question shows your project to be within the limits of the flood plain and 100 year flood zone. Based on this information we have to require the documentation that I specified in my previous email, the WV Flood Tool is what we go by when determining whether a property is in the floodplain.

George Eidel

[Quoted text hidden]



George Eidel <doddridgecountyfpm@gmail.com>

Shalewater Solutions - Central Station Facility Information

Chambers, Ricardo A <Ricardo.Chambers@hatchmott.com>

Thu, Feb 25, 2016 at 9:27 AM

To: George Eidel <doddridgecountyfpm@gmail.com>

Cc: "Amos, Douglas R" <Douglas.Amos@hatchmott.com>

Mr. Eidel:

Thank you George. Looking forward to speaking with you.

From: George Eidel [mailto:doddridgecountyfpm@gmail.com]

Sent: Thursday, February 25, 2016 9:27 AM

[Quoted text hidden]

[Quoted text hidden]

[Quoted text hidden]



George Eidel <doddridgecountyfpm@gmail.com>

Shalewater Solutions - Central Station Facility Information

George Eidel <doddridgecountyfpm@gmail.com>

Thu, Feb 25, 2016 at 8:25 AM

To: "Chambers, Ricardo A" <Ricardo.Chambers@hatchmott.com>

Mr. Chambers,

Thank you for sending your information. Upon examining your plan it is shown that your project does in fact fall into the 100 year flood zone. This will require a floodplain application through our office and applicable fees. From your information it is noted that you will be elevating the site four (4) feet, has this elevation been approved by FEMA through a Letter Of Map Revision (LOMR) or a LOMR-F for fill. This will need to be completed, along with a Hydrologic and Hydraulic study of the area showing potential rise in elevation (the rise can not be more than a cumulative total of 12 inches). You will also need approval from the Army Corp of Engineers, as well as a Mussel study through the WV Department of Natural Resources. If you have any questions please do not hesitate to contact our office.

Thank You,

George Eidel

[Quoted text hidden]

—
George C. Eidel, OEM Director/Floodplain Manager
Doddridge County Commission
108 Court Street Suite 1
West Union, WV 26456-2095
Work Phone: 1-304-873-1343
Mobile Phone: 1-304-281-7407
Fax: 1-304-873-1840
doddridgecountyfpm@gmail.com
www.doddridgecounty.wv.gov
—

CONFIDENTIALITY NOTE: This email message is for the sole use of the intended recipient(s) and may contain confidential, privileged, or sensitive information. Any unauthorized review, use, disclosure, or distribution is strictly prohibited and may be legally accountable.



George Eidel <doddridgecountyfpm@gmail.com>

Shalewater Solutions - Central Station Facility Information

Chambers, Ricardo A <Ricardo.Chambers@hatchmott.com>

Thu, Feb 25, 2016 at 8:31 AM

To: George Eidel <doddridgecountyfpm@gmail.com>

Cc: "Amos, Douglas R" <Douglas.Amos@hatchmott.com>

Mr. Eidel:

The site plan attached has the surveyed and dialed in elevations by our surveyor. This plan shows the 100 year flood elevation at 802.52' and our lowest point within the LOD at 809.0'. Let me know if you would have time for a quick call, so I can answer any additional questions, you may have.

Sincerely,

Ricardo

From: George Eidel [mailto:doddridgecountyfpm@gmail.com]**Sent:** Thursday, February 25, 2016 8:26 AM**To:** Chambers, Ricardo A**Subject:** Re: Shalewater Solutions - Central Station Facility Information

[Quoted text hidden]

[Quoted text hidden]

**Site Plan.pdf**

1036K



George Eidel <doddridgecountyfpm@gmail.com>

Shalewater Solutions - Central Station Facility Information

George Eidel <doddridgecountyfpm@gmail.com>

Thu, Feb 25, 2016 at 3:14 PM

To: "Chambers, Ricardo A" <Ricardo.Chambers@hatchmott.com>

Mr. Chambers,

In talking with the State Flood Insurance Program personnel with the State Homeland Security and Emergency Management Office I gave them an assessment of your situation. They stated that everything that I have asked of you in terms of permits is right on track. They stated that you should also fill out a Conditional Letter of Map Revision (CLOMR) through FEMA, see this site for information on the CLOMR, <https://www.fema.gov/conditional-letter-map-revision> . If you have any questions please do not hesitate in contacting either our office or you can contact the State FIP Office at 304-957-2571.

Thank You,

George Eidel

[Quoted text hidden]



George Eidel <doddridgecountyfpm@gmail.com>

Shalewater Solutions Central Station Site

George Eidel <doddridgecountyfpm@gmail.com>

Thu, Feb 25, 2016 at 3:31 PM

To: john.quinlisk@hatchmott.com

Mr. Quinlisk,

Thank you for reaching out to us hopefully we can get this issue resolved. In talking with the State Flood Insurance Program personnel with the State Homeland Security and Emergency Management Office I gave them an assessment of your situation. They stated that everything that I have asked of you in terms of permits is right on track. They stated that you should also fill out a Conditional Letter of Map Revision (CLOMR) through FEMA, see this site for information on the CLOMR, <https://www.fema.gov/conditional-letter-map-revision> . If you have any questions please do not hesitate in contacting either our office or you can contact the State FIP Office at 304-957-2571.

Thank You,

George Eidel

—
George C. Eidel, OEM Director/Floodplain Manager
Doddridge County Commission
108 Court Street Suite 1
West Union, WV 26456-2095
Work Phone: 1-304-873-1343
Mobile Phone: 1-304-281-7407
Fax: 1-304-873-1840
doddridgecountyfpm@gmail.com
www.doddridgecounty.wv.gov
—

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3 attachments **Floodplain Permit Fees.docx**
15K **NEW FLOODPLAIN APPLICATION.pdf**
2901K **DC-Floodplain Ordinance.pdf**
219K



George Eidel <doddridgecountyfpm@gmail.com>

Shalewater Solutions - Central Station Facility Information

Chambers, Ricardo A <Ricardo.Chambers@hatchmott.com>
To: George Eidel <doddridgecountyfpm@gmail.com>

Fri, Feb 26, 2016 at 6:23 AM

George:

Does the application form have to be signed by Shalewater, or can I sign it?

From: George Eidel [mailto:doddridgecountyfpm@gmail.com]
Sent: Thursday, February 25, 2016 3:15 PM

[Quoted text hidden]

[Quoted text hidden]

[Quoted text hidden]



George Eidel <doddridgecountyfpm@gmail.com>

Shalewater Solutions - Central Station Facility Information

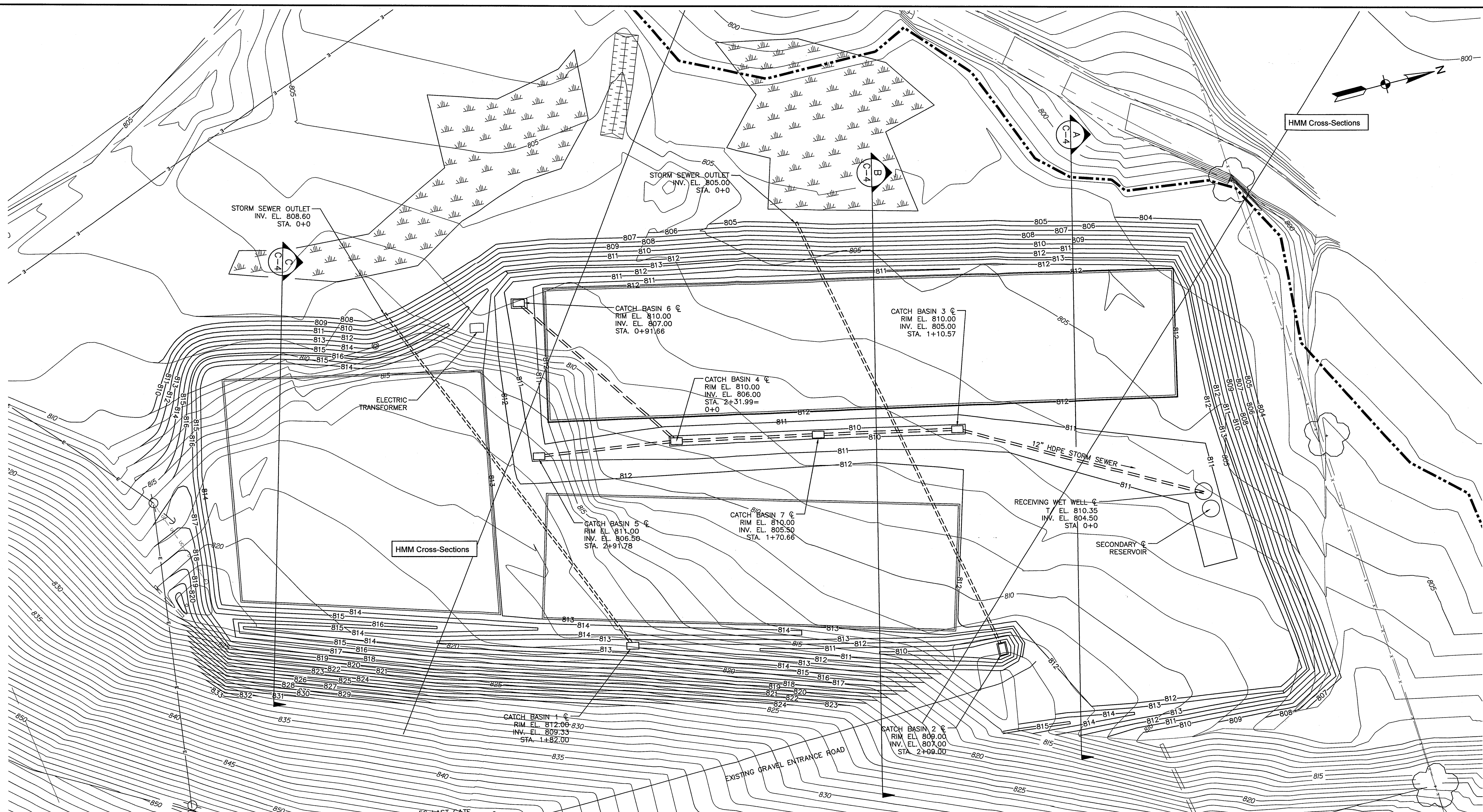
George Eidel <doddridgecountyfpm@gmail.com>

Fri, Feb 26, 2016 at 7:07 AM

To: "Chambers, Ricardo A" <Ricardo.Chambers@hatchmott.com>

You can sign, make sure you have their contact information as well as yours.

[Quoted text hidden]



HMM Cross-Sections

HMM Cross-Sections

LEGEND (EXISTING)

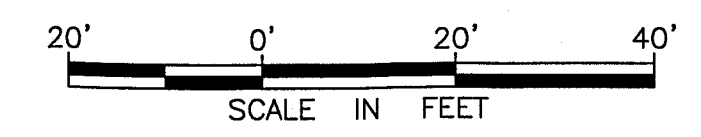
- E — OVERHEAD ELECTRIC
- UC — UNDERGROUND ELECTRIC
- 875 — CONTOUR
- X X FENCE
- WETLANDS
- UTILITY POLE
- GUY POLE

LEGEND (PROPOSED)

- 100 YEAR FLOOD
- FS — COMPOST FILTER SOCK
- 811 — PROPOSED CONTOURS
- PROPOSED STORM SEWER
- PROPOSED CATCH BASIN
- BOLLARDS

SITE GRADING AND STORMWATER COLLECTION SYSTEM PLAN
SCALE: 1" = 20'

PROPRIETARY AND CONFIDENTIAL INFORMATION OF SHALEWATER SOLUTIONS, LLC.,



1600 West Carson Street
Pittsburgh, Pennsylvania 15219

SEAL

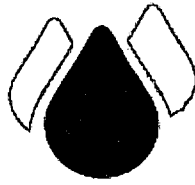
No.	Description	Date	By
8			
7			
6			
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3			
2			
1	REVISED PAD EL. FROM 820 TO 814.50	1/20/16	DMH
	Revision		

Shalewater Solutions Central Station Proposed Site SITE GRADING AND STORMWATER COLLECTION SYSTEM PLAN				
SCALE: 1" = 20'	DESIGNED BY: DMH	DRAWN BY: PGE	CHK BY: BKK	APPRVD. BY: —
PLOT DATE: 3/14/2016 2:12 PM	FILE NAME: P:\364111-Shalewater Solutions-Central Station\CAD\CIVIL\AS_BUILTS\364111-SITE GRADING AS_BUILT.rwg			

SHALEWATER SOLUTIONS
37 GRAND MEADOWS DR.
STE 201
BRIDGEPORT, WV 26330
PH: 304.592.2794 WWW.SHALEWATER.COM

Job	HMM 364111
No.	C-2
B/O	3
Total	9

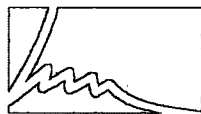
Hydrology & Hydrologic Study
For HEP Shalewater Solutions, LLC – Central Station Facility
Near Arnold Creek in
Doddridge County, West Virginia



SHALEWATER
SOLUTIONS

Prepared for:
OEM Director / Floodplain Manager
Doddridge County Commission

Prepared by:



**Hatch Mott
MacDonald**

March 23, 2016

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Item No.	Topic/Subject	Comments
1	Background and Methodology	
2	Hatch Mott MacDonald Analysis & Conclusions Letter– March 16, 2016	Sealed by West Virginia Registered Professional Engineer.
3	Civil & Environmental Consultants Peer Review Letter – March 15, 2016	Sealed by West Virginia Registered Professional Engineer.
4	Figure 1 - Central Station Facility Location Map	
5	FEMA Flood Insurance Rate Maps (FIRM) with Site Indicated	Two FIRM Panels with the Subject Site indicated.
6	U.S Geologic Survey (USGS) Procedures for Estimating Flood Frequency Discharges at Ungauged Locations	This document explains the methodology used for calculating flows for this model.
7	Map Showing the USGS Gaging Station nearest to the Subject Site	The Gauging Station is located on Middle Island Creek. Arnold Creek is a tributary to Middle Island Creek.
8	USGS Gauging Station 03114500 Middle Island vs. Central Station Facility Location Map	
9	USGS Gauging Station 03114500 – Middle Island Creek Gage Information	
10	USGS Gauging Station 03114500 – Middle Island Creek Historical Hydrograph	
11	FEMA/WVNFIP Model Data Source Information	
12	Readme file for the FEMA/WVNFIP Model	
13	HEC-RAS Model – 100 Year Flood Elevation Results Spreadsheet	Highlighted River Stations are in the vicinity of the Subject Site.
14	HEC-RAS Model – Arnold Creek Final Geometric Data Output	Cross Section 45334.5 (near the Subject Site) is visible near the center of the stream alignment.
15	HEC-RAS – Model – Arnold Creek Profile Plot	The Subject Site is situated in the vicinity of elevation 804 Ft. MSL.
16	HMM Hydrology & Hydrologic Study – Calculated 100 Year Flood Elevations and Cross Sections	Flood Plain elevations and Lowest Adjacent Grade elevations of the fill are indicated.
17	HMM Final HEC-RAS Model Data Stream Cross Section 44356.6	Graphical representation of this cross section.
18	HMM Final HEC-RAS Model Data Stream Cross Section 44619.6	Graphical representation of this cross section.
19	HMM Final HEC-RAS Model Data Stream Cross Section 45334.5	Graphical representation of this cross section.
20	Site Plan with Surveyed Elevations	The calculated 100 Year Flood Boundary is indicated.

Hydrology & Hydrologic Study
For HEP Shalewater Solutions, LLC – Central Station Facility
Near Arnold Creek in
Doddridge County, West Virginia
March 23, 2016

Background & Methodology

Shalewater Solutions, LLC is constructing a temporary water treatment/water recycling facility, known as the Central Station Facility, in Doddridge County, WV. The site is situated in FEMA Zone A near Arnold Creek (See Item No. 4, Figure 1). Zone A is designated as having no detailed hydraulic analyses performed and therefore Base Flood Elevations (BFE) and flood depths are not shown on FEMA's Flood Insurance Rate Map.

Fill is needed to create a level surface of sufficient area for the treatment facility. Since no BFE was available, Hatch Mott MacDonald (HMM) calculated a BFE so that impact from the fill to the 100 Year Flood could be avoided. The BFE was developed using a HEC-RAS model prepared for FEMA and the West Virginia National Flood Insurance Program. This model is posted on the West Virginia Flood Tool website (www.mapwv.gov/flood/map/). The conclusions of this analysis demonstrated that the fill at the subject site is above the BFE and therefore will have no impact on the 100 Year Flood elevation. This document presents the approach and methodology that HMM used to arrive at their conclusions.

The Doddridge County Floodplain Manager requested a third party review of HMM's analysis. Civil & Environmental Consultants (CEC) was engaged to perform this third party review. CEC agreed with HMM's conclusions (See Item No. 3, CEC letter dated March 15, 2016).



**Hatch Mott
MacDonald**

12 Rousch Drive
Morgantown, WV 26501
T 304.212.4390
F 724.873.9116
www.hatchmott.com

March 16, 2016

Mr. George C. Eidel
OEM Director / Floodplain Manager
Doddridge County Commission
108 Court Street, Suite # 1
West Union, WV 26456-2095

Subject: Hydrology & Hydrologic Study for Shalewater Solutions – Central Station facility
near Arnold Creek in Doddridge County, West Virginia

Dear Mr. Eidel:

Hatch Mott MacDonald (HMM) is pleased to submit the Hydrology and Hydrologic study used to determine that the Shalewater Solutions facility and its Limits of Disturbance (LOD) is above Arnold Creek's 100 year flood elevations. The site in question illustrated on Figure 1 (attached) is located along Arnold Creek in Doddridge County, WV.

On the FEMA Flood Insurance Rate Maps (FIRM), Arnold Creek is shown as Zone "A", approximate flood hazard area and the site is within the Zone "A" boundary. As part of a project to replace Zone "A" flood hazards throughout the State with much more accurate detailed study areas, FEMA and the WV National Flood Insurance Program (NFIP) state coordinator hired the consulting firm AMEC to initially perform a detailed study existing Zone "A" areas in 16 counties across West Virginia. Doddridge County is one of those selected counties. In addition, the results of AMEC's work for Doddridge County were posted to the WV GIS Technical Center website (www.wvgis.wvu.edu) in February 2013. The data is also currently posted to the West Virginia Flood Tool website (www.mapwv.gov/flood/map/).

The HEC-RAS model that AMEC developed for Arnold Creek is available for download from both sites. Although this data is more accurate than the existing Zone "A" flood zone shown on the effective FIRM maps, it has not been officially incorporated into FIRM maps. Instead it is available as "best available data" awaiting official incorporation into revised Doddridge County maps by FEMA. This is the HEC-RAS model that HMM has used for this flood study.

The AMEC HEC-RAS model has an existing cross section that cuts through the proposed site (cross section 44619.6). However, to ensure the fill placed at the site does not impact the floodplain, HMM added an additional cross section (cross section 44356.6) in the HEC-RAS model where the site Limits of Disturbance is closest to Arnold Creek. To construct new cross sections and to define the floodplain boundaries, HMM used a more accurate Digital Elevation Model (DEM) than the one used by AMEC, although the two are very close.

The flows used in the HEC-RAS model are calculated from USGS regression equations for ungaged streams and HMM did not change any of the flows from the original AMEC HEC-RAS model. After the model was run, the computed water surface elevations (WSELs) were compared to the lowest



Hatch Mott
MacDonald

12 Rousch Drive
Morgantown, WV 26501
T 304.212.4390
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www.hatchmott.com

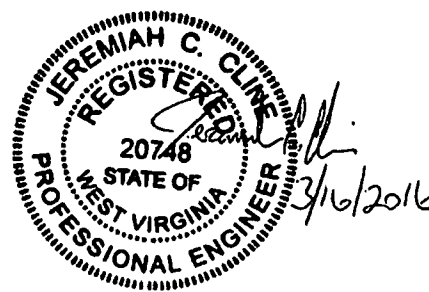
adjacent grade (LAG) that will be disturbed as part of the fill placed on the site. At the HMM added cross section, the computed WSEL is 802.44 feet and the LAG elevation is approximately 803.2 feet. Therefore, at this closest point, the site is approximately 0.85 feet above the 100-year WSEL. At the cross section from the original AMEC model, the computed WSEL is 803.39 feet and the LAG is 806.4 feet indicating that the site is well above the 100-year WSEL and is also out of the floodplain.

In conclusion, HMM is submitting to have the floodplain revised to reflect the results HEC-RAS developed by AMEC and enhanced by HMM which demonstrates that the proposed site does not impact the properly defined floodplain.

Sincerely,

Brian K. Moore, PE
Hatch Mott MacDonald
T: 304.212.4392 C: 216.337.8275

Jeremiah C. Cline, PE
Hatch Mott MacDonald
T: 304.212.4384 C: 304.290.6870





March 15, 2016

Douglas R. Amos
Hatch Mott MacDonald
1001 Corporate Drive, Suite 100
Canonsburg, PA 15317

Dear Mr. Amos:

Subject: Shalewater Solutions, LLC
Central Station
Arnold Creek Floodplain Model
Doddridge County, West Virginia
CEC Project 161-244

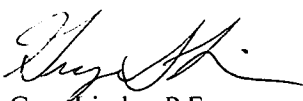
Civil & Environmental Consultants, Inc. greatly appreciates the opportunity to perform third party review of the above referenced floodplain model in support of the Doddridge County Floodplain Development Permit Application. The project site is situated along Arnold Creek in Doddridge County, WV and is located within a Zone A approximate flood hazard boundary as depicted on the effective Flood Insurance Rate Maps. As such, hydrologic and hydraulic analyses are required to establish the base flood elevation and determine the potential affect the project may have on the base flood elevation and adjacent property owners. The National Flood Insurance Program uses the one percent annual chance storm as the base flood for the purposes of regulating new development.

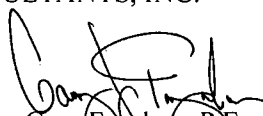
The proposed HEC-RAS model analyzes two hydraulic cross sections (Station 44619.6 and Station 44356.6) through the project site at critical locations. Based on the hydraulic model results, the base flood elevation at Station 44619.6 is 803.39. The corresponding lowest adjacent grade of the proposed work has an elevation of 806.4. The base flood elevation at Station 44356.6 is 802.44. The corresponding lowest adjacent grade of the proposed work has an elevation of 803.3. Therefore, based on the site plan provided by Hatch Mott MacDonald and the HEC-RAS model, the proposed work is situated above the base flood elevation and will not result in encroachment within the existing floodplain. As a result, adverse affects to the existing base flood elevation or adjacent property owners is not anticipated.

Please feel free to contact me at 304-933-3119 or via e-mail at glinder@cecinc.com if you have questions or need additional information.

Respectfully submitted,

CIVIL & ENVIRONMENTAL CONSULTANTS, INC.


Greg Linder, P.E.
Project Manager


Gary Fagalare, P.E.
Vice-President



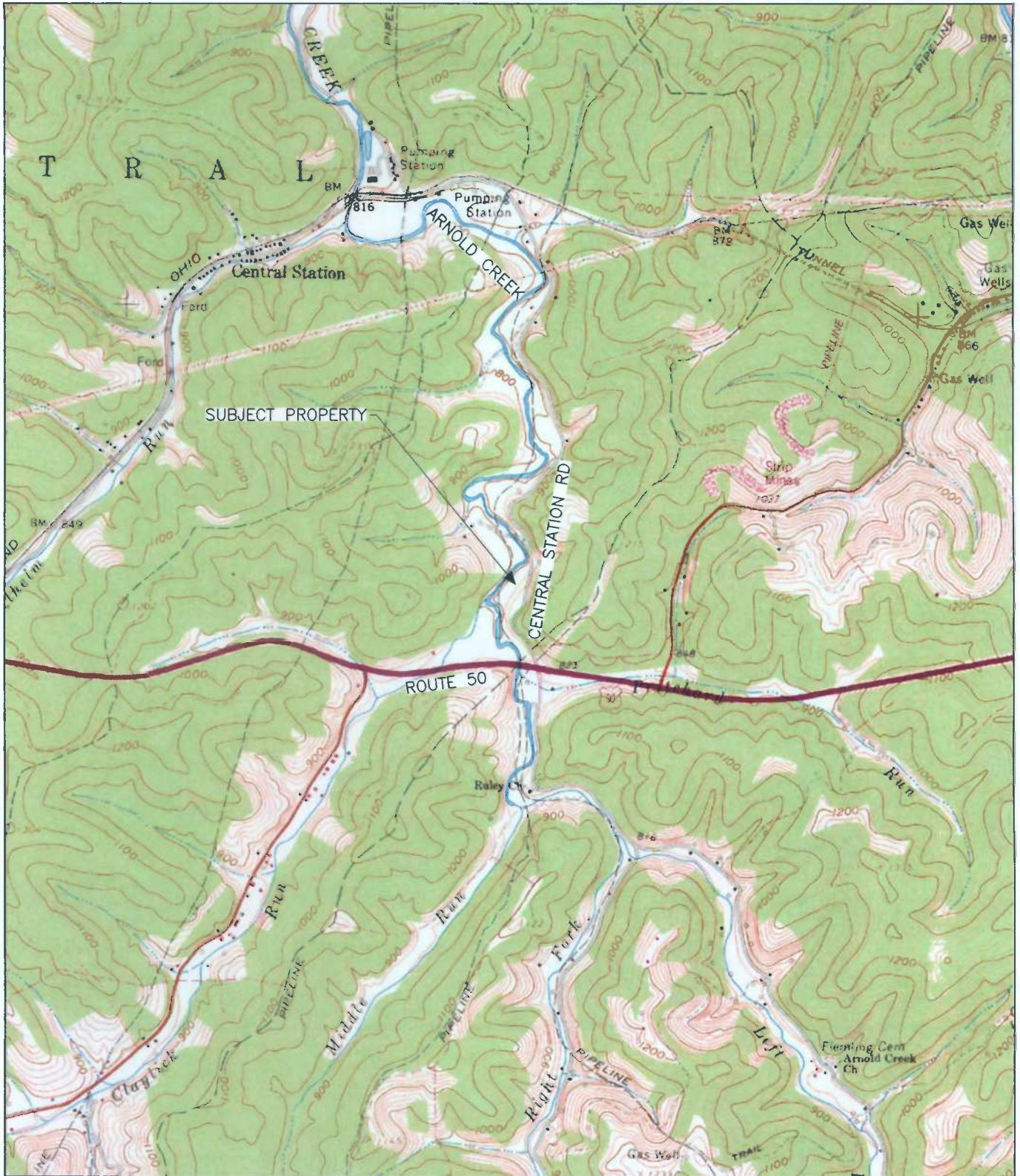


FIGURE 1
U.S.G.S. SITE LOCATION
CENTRAL STATION FACILITY
 WEST UNION QUADRANGLE 1987, WEST VIRGINIA
 DODDRIDGE COUNTY, WEST VIRGINIA



Hatch Mott MacDonald
 1001 Corporate Drive, Suite 100
 Canonsburg, PA 15317
 Ph: (724) 514-5300 | Fax: (724) 873-9116



DRAWN BY:	BP
APPROVED BY:	RAC
DATE:	11/12/2015
PAGE:	1 of 1

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where Base Flood Elevations (BFEs) and/or floodways have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) Report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS Report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only to landward of 9.0' North American Vertical Datum of 1988 (NAVD 88). Users of the FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study Report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study Report for information on flood control structures for this jurisdiction.

The projection used in the preparation of this map was Universal Transverse Mercator (UTM) zone 17. The horizontal datum was NAD 83, GRS 1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov> or contact the National Geodetic Survey at the following address:

NGS Information Services
 NOAA, NNGS12
 National Geodetic Survey
 SSMC-3, #9202
 1315 East-West Highway
 Silver Spring, Maryland 20910-3282
 (301) 713-3242

To obtain current elevation, description, and/or location information for bench marks shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (801) 713-3242, or visit its website at <http://www.ngs.noaa.gov>.

Base map created by the WV Statewide Addressing and Mapping Board (SAMB). Imagery was captured at a scale of 1:24000 in the spring of 2003 for the purpose of producing natural color digital orthophotos at a 2' pixel resolution.

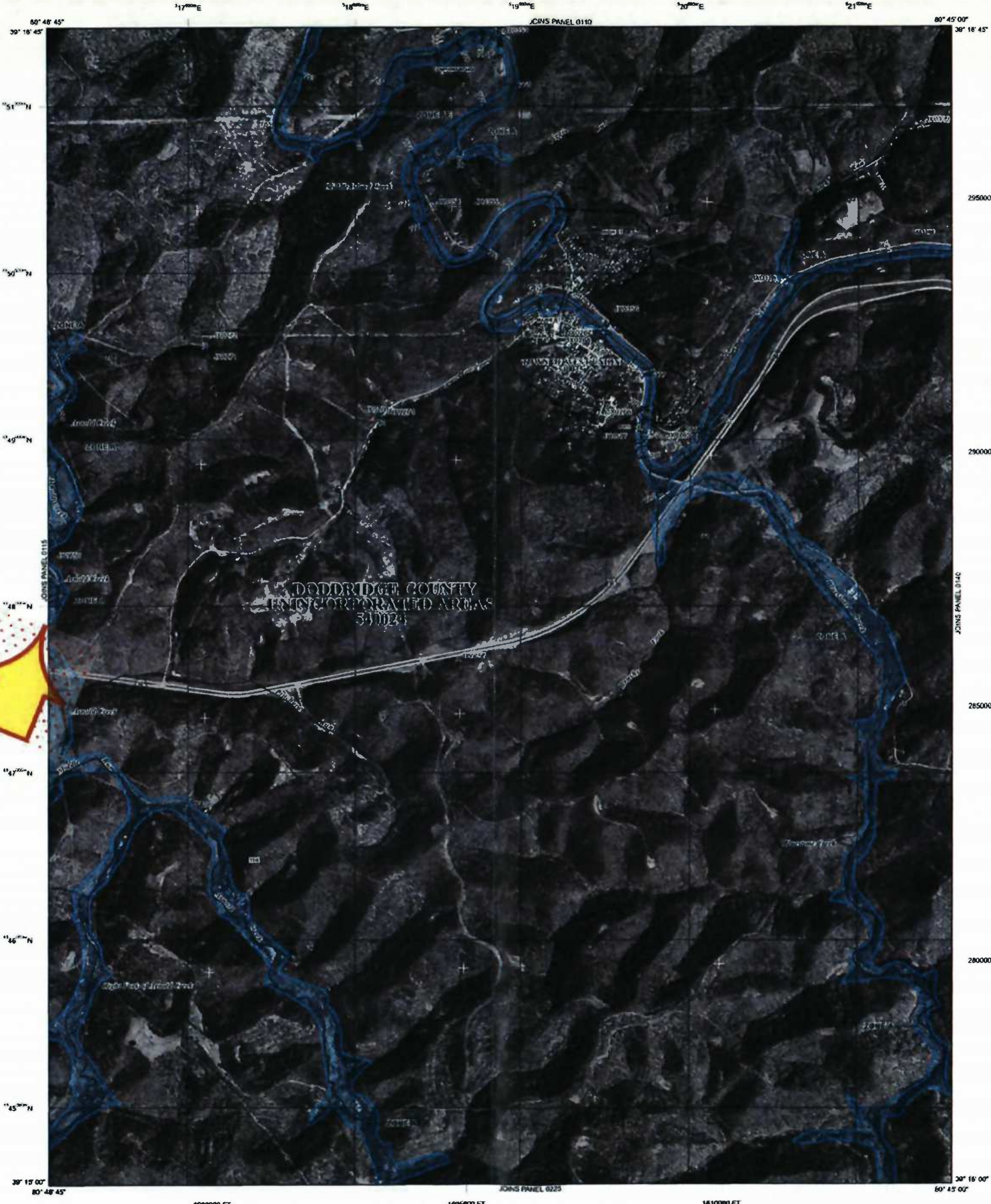
This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables for multiple streams in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed Map Index for an overview map of the county showing the layout of map panels; community map repository addresses; and a listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

For information on available products associated with this FIRM visit the Map Service Center (MSC) website at <http://msc.fema.gov>. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the MSC website.

If you have questions about this map, how to order products, or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange (FMIX) at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov>.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD
 The 1% annual chance flood (100-year flood) area shown on this map is the area that has a 1% chance of being equalled or exceeded in any given year. The Special Flood Hazard Areas on this map are subject to flooding from the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water surface elevation of the 1% annual chance flood.

- ZONE A** No Base Flood Elevations determined.
- ZONE AE** Base Flood Elevations determined.
- ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponds); Base Flood Elevations determined.
- ZONE AO** Flood depths of 1 to 3 feet (usually areas on sloping terrain); average depth determined; the areas of shallow flooding, subject to other project.
- ZONE AR** Special Flood Hazard Areas formerly produced from the 1% annual chance flood by a flood control system that was subsequently destroyed. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance flood; no Base Flood Elevations determined.
- ZONE A99** Areas to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE
 The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot in width (average areas less than 1 square mile); and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE D Areas determined to be outside the 0.2% annual chance floodplain.

ZONE B Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

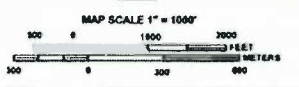
- CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.
- 1% Annual Chance Floodplain Boundary
- 0.2% Annual Chance Floodplain Boundary
- Floodway boundary
- Zone D boundary
- Zone B boundary
- CBRS and OPA boundary
- Boundary defining Special Flood Hazard Area Zones and boundary defining Special Flood Hazard Areas of different Base Flood Elevations, Flood depths, or flood return periods.
- Base Flood Elevation Date and value; elevation in feet
- Base Flood Elevation value where uniform within panel; elevation in feet

- Referenced to the North American Vertical Datum of 1988
- Cross section line
- Transect line
- Geographic coordinates (referenced to the North American Datum of 1983 (NAD 83)) Western Hemisphere
- 5000-foot datum; West Virginia State Plane North Zone (FIPS Zone 4703), Lambert Conformal Conic projection
- 1000-meter Universal Transverse Mercator grid values; zone 17
- North mark (see explanation in notes to Users section of this FIRM panel)
- Water mark
- Map scale
- Map scale
- Refer to Map Repository for Map Index
- EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
- March 18, 2001

EFFECTIVE DATES OF REVISIONS TO THIS PANEL
 October 4, 2011: Update corporate limits to increase Base Flood Elevations to change Special Flood Hazard Areas; to update map format; and to add roads and road names.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study Report for this jurisdiction.

To determine if flood insurance is available in this community contact your insurance agent or call the National Flood Insurance Program at 1-800-532-6628.



NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0120C

FIRM

FLOOD INSURANCE RATE MAP

DODDRIDGE COUNTY, WEST VIRGINIA AND INCORPORATED AREAS

PANEL 120 OF 325
 (SEE MAP INDEX FOR FIRM PANEL LAYOUT)

COMMUNITY	MEMBER	PANEL	STATUS
DODDRIDGE COUNTY	44024	0120	C
WEST VIRGINIA TERRITORY	34024	0120	C

Notice to User: The Map Number shown below should be used when placing map orders; the Community Member shown above should be used on insurance applications for the subject community.

MAP NUMBER
 54017C0120C

MAP REVISED
 OCTOBER 4, 2011

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where Base Flood Elevations (BFEs) and/or Floodways have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) Report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS Report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study Report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study Report for information on flood control structures for this jurisdiction.

The projection used in the preparation of this map was Universal Transverse Mercator (UTM) zone 17. The horizontal datum was NAD 83, GRS 1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov> or contact the National Geodetic Survey at the following address:

NGS Information Services
NCAA, NWC512
National Geodetic Survey
SSM-C-3, #8202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for bench marks shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3342, or visit its website at <http://www.ngs.noaa.gov>.

This map was created by the WV Statewide Addressing and Mapping Board (SAMB). Imagery was captured at a scale of 1:24,000 in the spring of 2003 for the purpose of producing natural color digital orthophotos at a 2' pixel resolution.

This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables for multiple streams in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred since this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed Map Index for an overview map of the county showing the layout of map panels, community map repository addresses, and a listing of Communities tables containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

For information on available products associated with this FIRM visit the Map Service Center (MSC) website at <http://www.fema.gov>. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the MSC website.

If you have questions about this map, how to order products, or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange (FMIX) at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov>.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO ELEVATION BY THE 1% ANNUAL CHANCE FLOOD
The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, AX, V, and VE. The Base Flood Elevation is the vertical surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevation determined.

ZONE AE Base Flood Elevation determined.

ZONE AH Flood depths of 1 to 3 feet (width areas of ponds); Base Flood Elevation determined.

ZONE AO Flood depths of 1 to 3 feet (width areas of ponds); average depth determined; for areas of shallow flooding, velocities also determined.

ZONE AR Special Flood Hazard Areas currently protected from the 1% annual chance flood by a flood control system that was subsequently determined. Zone AR includes the former flood control system being restored to provide protection from the 1% annual chance or greater flood.

ZONE AX Area to be protected from 1% annual chance flood by a Federal Flood protection system under construction; no Base Flood Elevation determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); no Base Flood Elevation determined.

ZONE VZ Coastal flood zone with velocity hazard (wave action); Base Flood Elevation determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of one foot or with damage areas less than 1 square mile, and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE D Areas determined to be outside the 0.2% annual chance floodplain areas in which flood heights are not determined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% Annual Chance Floodplain Boundary
- 0.2% Annual Chance Floodplain Boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary defining Special Flood Hazard Area zones and boundary defining Special Flood Hazard Areas of different Base Flood Elevation, Flood depths, or Flood velocities
- Base Flood Elevation line and value; elevation in feet
- Base Flood Elevation value where uniform within zone; elevation in feet

NAVD 88 = North American Vertical Datum of 1988

Circle section line

Turned line

Geographic coordinates referenced to the North American Datum of 1983 (NAD 83) Western Hemisphere

contour line; base height State Plane North Zone (SPS Zone 1761); Lambert Conformal Conic projection

1000-meter Universal Transverse Mercator grid values, zone 17

Bench mark (see explanation in Notes to Users section of this FIRM panel)

4115 Inter-FIRM

MAP PREPARED BY: MAP REVISIONS INC. ON MAP INDEX

After 3: Map Reproduction Fee on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
March 16, 2001

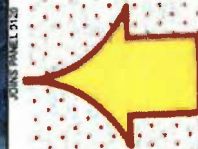
EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
October 4, 2011: to update corporate limits, to decrease Base Flood Elevation in change Special Flood Hazard Areas, to update map format and to add roads and road names.

For community map relation history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in the community, contact your insurance agent or call the National Flood Insurance Program at 1-800-636-6020.

MAP SCALE 1" = 1000'

300 0 1000 2000 FEET
300 0 1000 2000 METERS



NFIP PANEL 0115C

FIRM
FLOOD INSURANCE RATE MAP
DODDRIDGE COUNTY,
WEST VIRGINIA
AND INCORPORATED AREAS

PANEL 115 OF 325
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

COUNTY	NUMBER	PANEL	SHEET
DODDRIDGE COUNTY	54011	0115	C

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
54017C0115C
MAP REVISED
OCTOBER 4, 2011

Federal Emergency Management Agency

USGS Procedures for Estimating Flood Frequency Discharges at Ungauged Locations

There are four different procedures used to determine a flood-frequency discharge at an ungauged location (1) when the ungauged location is upstream from a stream gauge station, (2) when the ungauged location is downstream from a stream gauge location, (3) when the ungauged location is between two stream gauge stations on the same stream, and (4) when the ungauged location is not on the same stream as a stream gauge station.

In this case, the ungauged location (Arnold Creek adjacent to Central Station Road) is (1) an ungauged location is upstream from the stream gauge station. The hydrologic assumption for this circumstance is that the conditions affecting flood-frequency discharges are those represented by the regional equation. The USGS regional equation used to estimate flood-frequency discharges in the model is as follows:

$$Q_u = Q_k (R_{u/k})^{EX}$$

Where,

Q_u is the unknown flood-frequency discharge, in cfs

Q_k is the known flood-frequency discharge in cfs

$R_{u/k}$ is the ratio of the drainage area at the location of the unknown flood-frequency discharge (A_k), unit less

EX is the exponent for the particular flood-frequency discharge, unit less

See below Table 6 from the USGS, 2010, Estimation of Flood-Frequency Discharges for Rural, Unregulated Streams in West Virginia.

Table 6. Values of the exponent, and upstream and downstream limits of the drainage-area ratios used to quantify the definition of "near" for estimating selected flood-frequency discharges for ungauged locations in West Virginia.

[EX, exponent; R_{us} , upstream limit of the drainage-area ratio; R_{ds} , downstream limit of the drainage-area ratio; PK(n,n), peak discharge in cubic feet per second for the (n,n)-year recurrence interval; PK(n), peak discharge in cubic feet per second for the (n)-year recurrence interval; %, percent; AOP, annual-occurrence probability]

Statistic	EX	R_{us}	R_{ds}
PK1_1(90%AOP)	0.79	0.40	26.4
PK1_5(67%AOP)	.76	.40	26.4
PK2(50%AOP)	.75	.40	26.4
PK5(20%AOP)	.73	.40	26.4
PK10(10%AOP)	.72	.40	26.4
PK25(4%AOP)	.71	.40	26.4
PK50(2%AOP)	.70	.40	26.4
PK100(1%AOP)	.70	.40	26.4
PK200(0.5%AOP)	.69	.40	26.4
PK500(0.2%AOP)	.68	.40	26.4

Map of real-time streamflow compared to historical streamflow for the day of the year (West Virginia)

West Virginia ▼ or Water-Resources Regions ▼

Tuesday, March 22, 2016 11:30ET



Choose a data retrieval option and select a location on the map

List of all stations Single station Nearest stations Peak flow

Explanation - Percentile classes							
Low	<10 Much below normal	10-24 Below normal	25-75 Normal	76-90 Above normal	>90 Much above normal	High	Not-ranked



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Legend

- Central Station
- Hydrologic Unit 05030201
- Stream

**HYDROLOGIC UNIT 05030201
&
CENTRAL STATION
LOCATION REFERENCE**

WEST VIRGINIA

10,000 5,000 0 10,000 20,000
FEET

SHALEWATER SOLUTIONS

Hatch Mott MacDonald

1001 Corporate Drive, Suite 100
Canton, PA 15217
Ph: (724) 774-2332
Fax: (724) 775-9116

DRAWN BY: DJL

APPROVED BY: RAC


DATE: 03/18/2016

PAGE: 1 of 1

ABSOLUTE SCALE:
1 INCH = 10,000 FEET
REFERENCE SCALE:
1:100,000

National Water Information System: Web Interface

[USGS Water Resources](#)

- [Click to hide News Bulletins](#)
 - Try our new [Mobile-friendly water data site](#) from your mobile device!
 - New improved user interface.
 - [Full News](#) 
- [Click to hide state-specific text](#)
 - Additional information:
 - Annual Water Data Reports: [Water Years 2006-14](#)
 - Historical instantaneous flow data for West Virginia: [Instantaneous Data Archive - IDA](#)
 - USGS-Threatened and Endangered Stations: [By State](#)
 - National Weather Service Advanced Hydrologic Prediction Service: [River forecasts](#)



During cold weather, ice effects on stage and discharge determinations at some stream-gaging stations require a detailed analysis. Users are encouraged to contact this office for more information on specific sites.

USGS 03114500 MIDDLE ISLAND CREEK AT LITTLE, WV

Stream Site

DESCRIPTION:

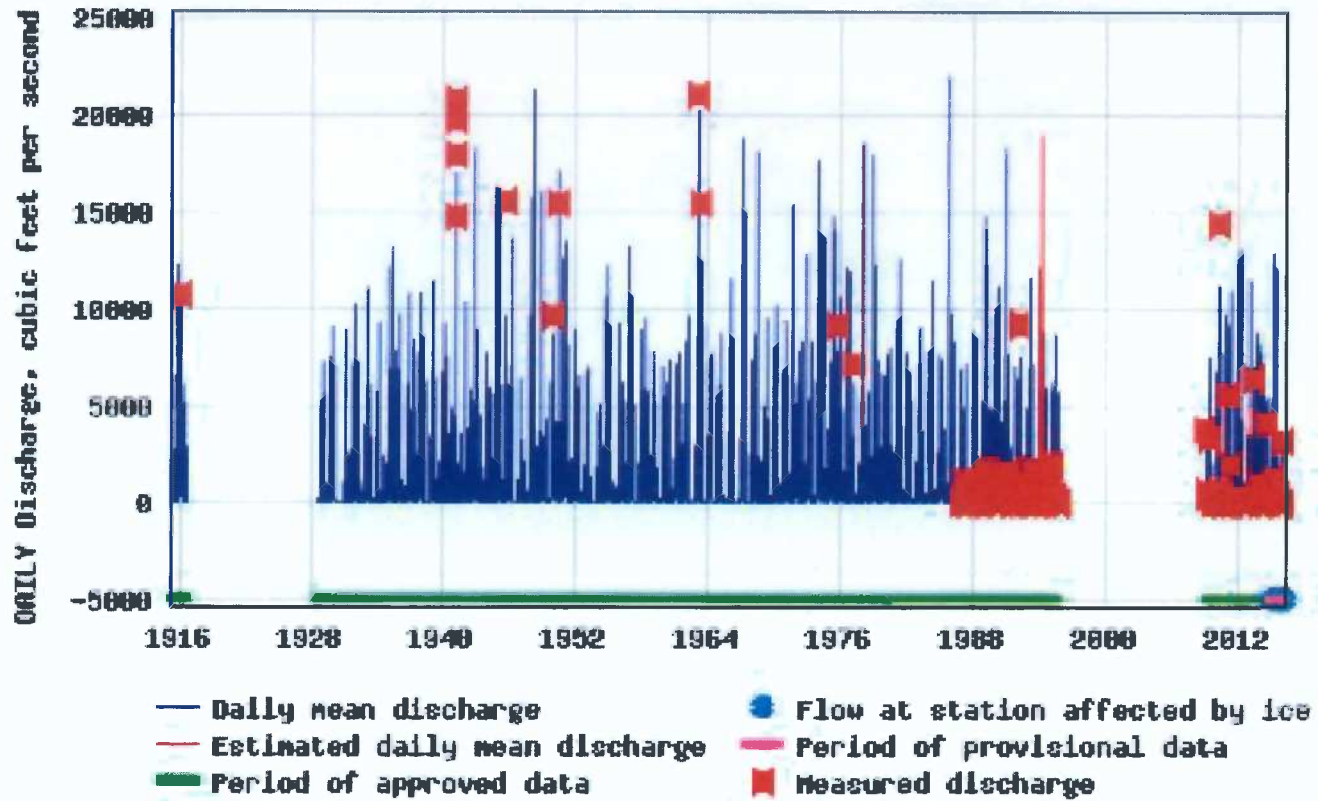
Latitude 39°28'30", Longitude 80°59'50" NAD27
Tyler County, West Virginia, Hydrologic Unit 05030201
Drainage area: 458 square miles
Datum of gage: 631.32 feet above COE1912.

AVAILABLE DATA:

Data Type	Begin Date	End Date	Count
Current / Historical Observations (availability statement)	2009-04-03	2016-03-22	
Daily Data			
Discharge, cubic feet per second	1915-05-07	2016-03-21	27531
Daily Statistics			
Discharge, cubic feet per second	1915-05-07	2014-12-03	27057
Monthly Statistics			
Discharge, cubic feet per second	1915-05	2014-12	
Annual Statistics			
Discharge, cubic feet per second	1915	2015	
Peak streamflow	1875-08	2013-12-06	85
Field measurements	1916-02-25	2016-02-01	115
Field/Lab water-quality samples	1945-09-25	1983-03-15	293
Water-Year Summary	2009	2014	6



USGS 03114500 MIDDLE ISLAND CREEK AT LITTLE, WV



FEMA-WVNFIP Flood Model Metadata

Identification_Information

Citation

Citation_Information

Originator

AMEC Earth and Environmental, Inc.

Title

West Virginia Approximate Zone A Re-Study Flood Model Download Packages

Publication_Information

Publisher

West Virginia GIS Technical Center

Publication_Place

Morgantown, WV

Publication_Date

20130228

Description

The files downloaded used to prepare this package contained raster digital elevation models (DEM) for Approximate Zone A streams, buffer polygons of stream DEM's, stream HEC-RAS models, and shapefiles of cutlines and county-wide streams, where available, in select West Virginia counties. The stream DEM's were extracted by AMEC from a countywide subset of the USGS National Elevation Dataset (NED). This download package was compiled by the WVGISTC.

Abstract

This data package may be useful to surveyors and/or engineers seeking to create local base flood elevations (BFE). BFEs so created may be a valuable contribution to Letters of Map Change (LOMC), including Letters of Map Amendment (LOMA) and Letters of Map Revision (LOMR). Some advanced knowledge, expertise and specialized software applications are required in order to use the included data.

Purpose

Time_Period_of_Content

Time_Period_Information

Range_of_Dates/Times:

Beginning_Date

20100416

Ending_Date

20130208

Currentness_Reference

Publication date

Status

Progress

Complete

Maintenance_and_Update_Frequency

As needed

Spatial_Domain

Bounding_Coordinates

West_Bounding_Coordinate

-82.703386

East_Bounding_Coordinate

-77.657685

North_Bounding_Coordinate

40.63987

South_Bounding_Coordinate

37.160858

Keywords

Theme

Theme_Keyword_Thesaurus

ISO 19115 Topic Category

Theme_Keyword

elevation

Theme_Keyword

environment

Theme_Keyword

inlandWaters

Theme

Theme_Keyword_Thesaurus

None

Theme_Keyword

floodplain model

Theme_Keyword

digital floodplain

Theme_Keyword

flood depth model

Theme_Keyword

flood water surface elevation

Theme_Keyword

advisory flood height

Place

Place_Keyword_Thesaurus

None

Place_Keyword

West Virginia

Access_Constraints

Public, No Restrictions

Use_Constraints

No Restrictions

Point_of_Contact

Contact_Information

Contact_Organization_Primary

Contact_Organization

West Virginia GIS Technical Center

Contact_Person

Eric Hopkins

Contact_Position

GIS Specialist

Contact_Address

Address_Type

mailing and physical address

Address

West Virginia University

Address

Department of Geology and Geography

Address

PO Box 6300

Address

Brooks Hall Rm. 330

Address

98 Beechurst ave.

FEMA-WVNFIP Flood Model Metadata

City	Morgantown
State_or_Province	WV
Postal_Code	26501
Contact_Voice_Telephone	(304) 293-0557
Contact_Electronic_Mail_Address	eric.hopkins@mail.wvu.edu
Contact_Hours_of_Service	9 AM to 5 PM
Data_Quality_Information	
Logical_Consistency_Report	Tests for integrity have not been performed.
Completeness_Report	Features represented have not been tested for completeness
Positional_Accuracy	
Horizontal_Positional_Accuracy	
Horizontal_Positional_Accuracy_Report	Data were collected using methods that have unknown accuracy (EPA National Geospatial Data Policy [NGDP] Accuracy Tier 10). For more information, please see EPA's NGDP at http://epa.gov/geospatial/policies.html
Lineage	
Process_Step	
Process_Date	unknown
Process_Description	The planimetric (x, y) spacing of elevation postings within the source DEM is 1/9 arc-second. The DEM data was downloaded from the USGS National Elevation Dataset (NED) seamless server. The data obtained was subsequently mosaicked and reprojected to the project area's State Plane Coordinate System (SPCS) using the North American Datum of 1983 (NAD83). A conversion was performed to convert from units of meters to units of feet. [Source: AMEC]
Process_Contact	
Contact_Information	
Contact_Organization_Primary	AMEC Environment and Infrastructure (AMEC)
Contact_Organization	
Contact_Address	
Address_Type	mailing and physical
Address	14424 Albemarle Point Place, Suite 115
City	Chantilly
State_or_Province	VA
Postal_Code	20151
Contact_Voice_Telephone	(703) 488-3738
Process_Step	
Process_Date	unknown
Process_Description	For each stream a geodatabase containing the stream centerline, bank stations, flow path locations and cross sections is created and the data is imported into a HECRAS model. Cross-sections were automatically placed and then modified based on the terrain and orthophotos. Digital geo-referenced hydraulic modeling elements in the form of cross sections attributed with water-surface elevations were provided at the countywide level. Elevations are given in the North American Vertical Datum of 1988 (NAVD88), units feet. [Source: AMEC]
Process_Contact	
Contact_Information	
Contact_Organization_Primary	AMEC Environment and Infrastructure (AMEC)
Contact_Organization	
Contact_Address	
Address_Type	mailing and physical
Address	14424 Albemarle Point Place, Suite 115
City	Chantilly
State_or_Province	VA
Postal_Code	20151
Contact_Voice_Telephone	(703) 488-3738
Process_Step	
Process_Date	unknown
Process_Description	The stream centerlines provided by the county were ortho-rectified and aligned with the contours where orthophotos were inconclusive. Streams were ortho-rectified at a reasonable scale (approximately 1=2000). The stream centerlines were merged to create a countywide stream centerline feature. [Source: AMEC]
Process_Contact	
Contact_Information	
Contact_Organization_Primary	AMEC Environment and Infrastructure (AMEC)
Contact_Organization	
Contact_Address	
Address_Type	mailing and physical
Address	14424 Albemarle Point Place, Suite 115
City	Chantilly
State_or_Province	VA

FEMA-WVNFIP Flood Model Metadata

Postal_Code	20151
Contact_Voice_Telephone	(703) 488-3738
Process_Step	
Process_Date	20130220
Process_Description	HEC-RAS model and associated data were organized by county and stream name, and packaged for download via the WVGISTC WV Flood Tool (http://MapWV.gov/flood).
Process_Contact	
Contact_Information	
Contact_Organization_Primary	
Contact_Organization	West Virginia GIS Technical Center
Contact_Address	
Address_Type	mailing and physical
Address	West Virginia University
Address	Department of Geology and Geography
Address	PO Box 6300
Address	Brooks Hall Rm. 330
Address	98 Beechurst Ave
City	Morgantown
State_or_Province	WV
Postal_Code	26506-6300
Contact_Voice_Telephone	(703) 488-3738
Spatial_Reference_Information	
Horizontal_Coordinate_System_Definition	
Planar	
Grid_Coordinate_System	
Grid_Coordinate_System_Name	State Plane Coordinate System 1983
State_Plane_Coordinate_System	
SPCS_Zone_Identifier	4701, 4702
Lambert_Conformal_Conic	
Standard_Parallel	37.49371181
Standard_Parallel	38.88333333
Longitude_of_Central_Meridian	-81
Latitude_of_Projection_Origin	37
False_Easting	1968503.94
False_Northing	0
Planar_Coordinate_Information	
Planar_Coordinate_Encoding_Method	coordinate pair
Coordinate_Representation	
Abscissa_Resolution	0.00001
Ordinate_Resolution	0.00001
Planar_Distance_Units	feet
Geodetic_Model	
Horizontal_Datum_Name	North American Datum of 1983
Ellipsoid_Name	Geodetic Reference System 1980
Semi-major_Axis	6378137
Denominator_of_Flattening_Ratio	298.257222
Distribution_Information	
Resource_Description	Downloadable Data
Distribution_Liability	Although these data have been processed successfully on a computer system in a multi-agency effort to distribute data, no warranty expressed or implied is made regarding the accuracy or utility of the data on any other system or for general or scientific purposes, nor shall the act of distribution constitute any such warranty. It is also strongly recommended that careful attention be paid to the contents of the metadata file associated with these data to evaluate data set limitations, restrictions or intended use. No agencies involved with the packaging and distribution of this data shall not be held liable for improper or incorrect use of the data described and/or contained herein.
Distributor	
Contact_Information	
Contact_Organization_Primary	
Contact_Organization	West Virginia GIS Technical Center
Contact_Person	Eric Hopkins
Contact_Position	GIS Specialist
Contact_Address	
Address_Type	mailing and physical address

FEMA-WVNFIP Flood Model Metadata

Address	PO Box 6300
Address	330 Brooks Hall
City	Morgantown
State_or_Province	WV
Postal_Code	26506-6300
Contact_Voice_Telephone	(304) 293-9463
Contact_Electronic_Mail_Address	Eric(dot)Hopkins(at)mail.wvu.edu
Metadata_Reference_Information	
Metadata_Date	20130206
Metadata_Future_Review_Date	20170206
Metadata_Standard_Name	FGDC Content Standard for Digital Geospatial Metadata
Metadata_Standard_Version	FGDC-STD-001-1998
Metadata_Contact	
Contact_Information	
Contact_Organization_Primary	
Contact_Organization	West Virginia GIS Technical Center
Contact_Person	Eric Hopkins
Contact_Position	GIS Specialist
Contact_Address	
Address_Type	mailing and physical address
Address	PO Box 6300
Address	330 Brooks Hall
City	Morgantown
State_or_Province	WV
Postal_Code	26506-6300
Contact_Voice_Telephone	(304) 293-9463
Contact_Electronic_Mail_Address	Eric.Hopkins@mail.wvu.edu

ReadMe.txt

West Virginia Approximate Zone A HEC-RAS Model Data Download Data files created by AMEC Earth and Environmental (AMEC)

ReadMe and metadata created by the West Virginia GIS Technical Center (WVGISTC)

Description

The files in this download package contain raster digital elevation models (DEM) for Approximate Zone A streams, buffer polygons of stream DEM's, stream HEC-RAS models, and shapefiles of cutlines and county-wide streams, where available, in select West Virginia counties. The stream DEM's were extracted by AMEC from a countywide subset of the USGS National Elevation Dataset (NED). This download package was compiled by the WVGISTC.

Purpose

This data package may be useful to surveyors and/or engineers seeking to create local base flood elevations (BFE). BFEs so created may be a valuable contribution to Letters of Map Change (LOMC), including Letters of Map Amendment (LOMA) and Letters of Map Revision (LOMR). Some advanced knowledge, expertise and specialized software applications are required in order to use the included data.

Flood Tool Model data download package:

Folders File Name

Path & File Type

Data included & Description

1. Stream_DEM

CountyName\Stream_DEM\ (Raster)

Digital elevation model for a particular stream, including a buffer area of approximately 2000 feet out from the stream line, labled and stored by stream name.

2. Stream_DEM_Buffer (Vector)

CountyName\Stream_DEM_Buffer\StreamName_Buf.shp (shapefile)

Stream DEM with a buffer of approx. 2000 feet applied to it, stored as a polygon vector feature. The outline or boundary of the stream DEM.

3. Stream_HEC_RAS_Model

CountyName\Stream_HEC_RAS_Model\StreamName

HEC-RAS Project (.prj Careful! This is not a projection file)

includes:

- Unit system (SI/US customary)
- Geometry (XS, bridges, weirs, etc.) (.g file)
- Flow Data (steady, unsteady) (.f file)
- Plan data (what combination of flow/geometry to use for the analysis) (.p file)

This data is compatible with and meant for use in
HEC-RAS 4.1.0.

4. Other_Data

4a. Streams

CountyName\Other_Data\Stream_mmddyy.shp (Shapefile)

Countywide vector polyline representations of stream features.

4b. XSCutlines

CountyName\Other_Data\XSCutlines_Model_ddmmyy.shp (Shapefile)

Polyline representations of cutlines, or cross section lines,.

5. Metadata

CountyName\Metadata.xml (XML)

This has information and attributes about the data, how it is collected, processed, and distributed, as well as contact information.

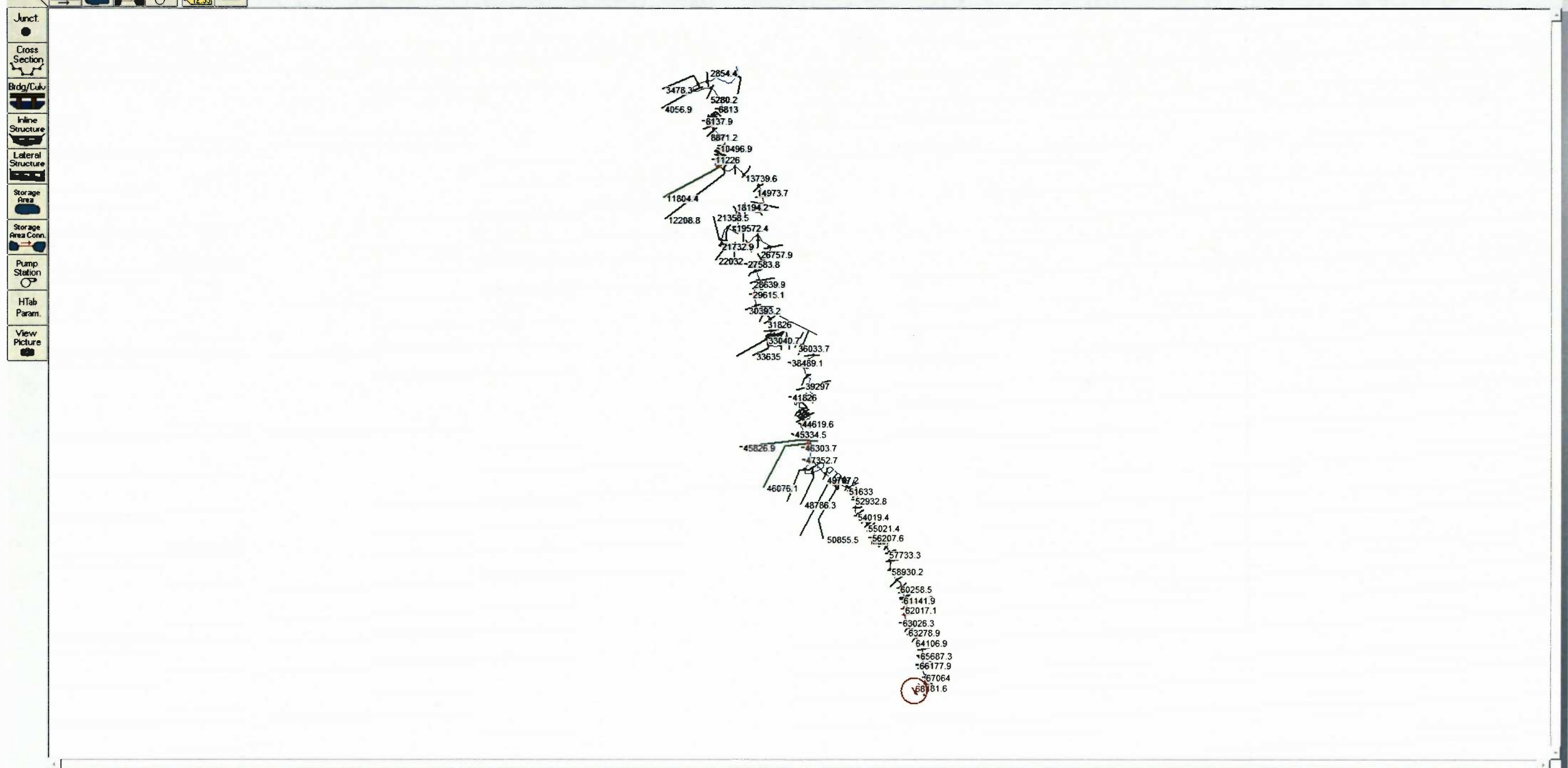
6. Read Me

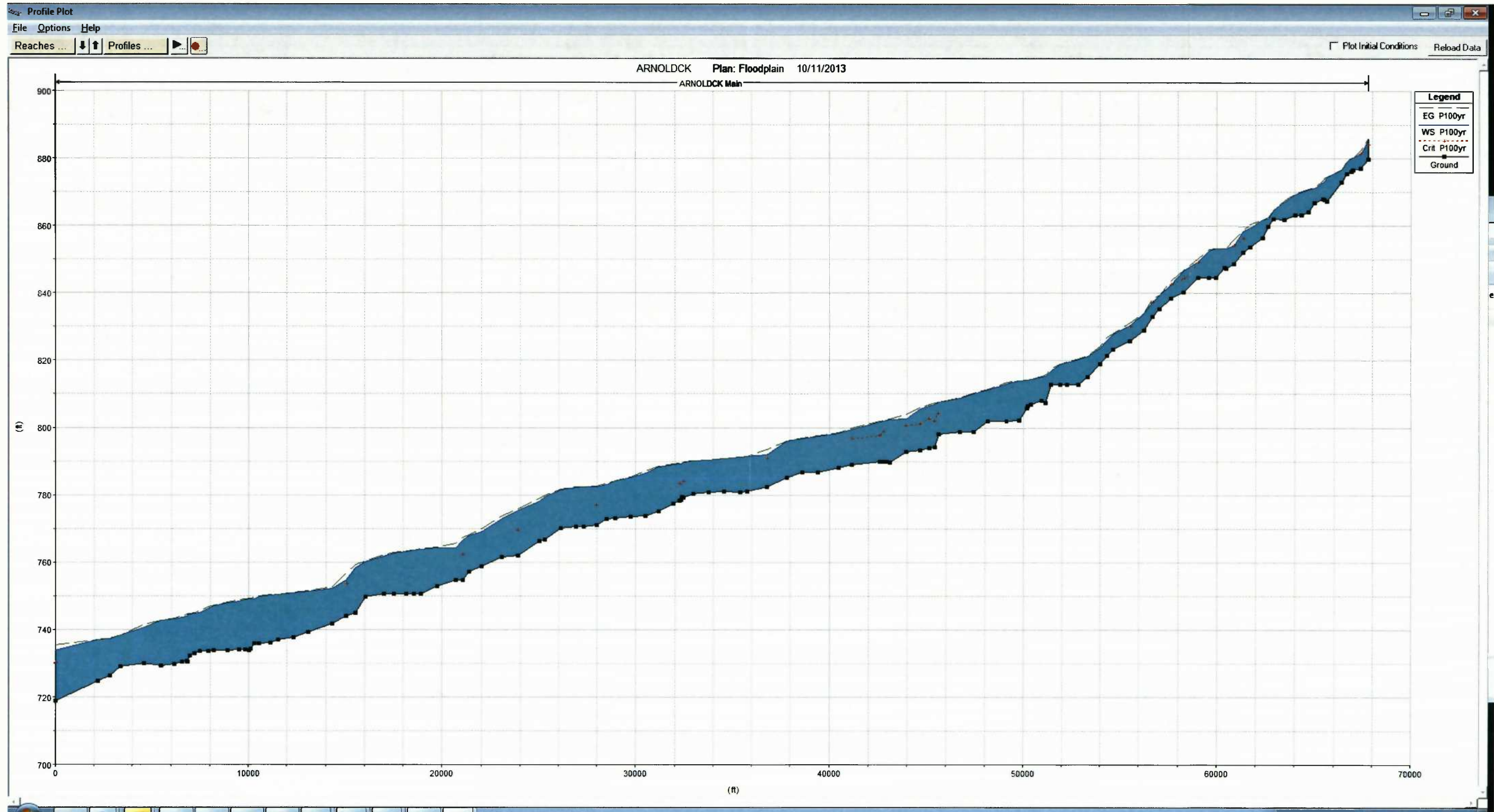
CountyName\ReadMe.txt (TXT)

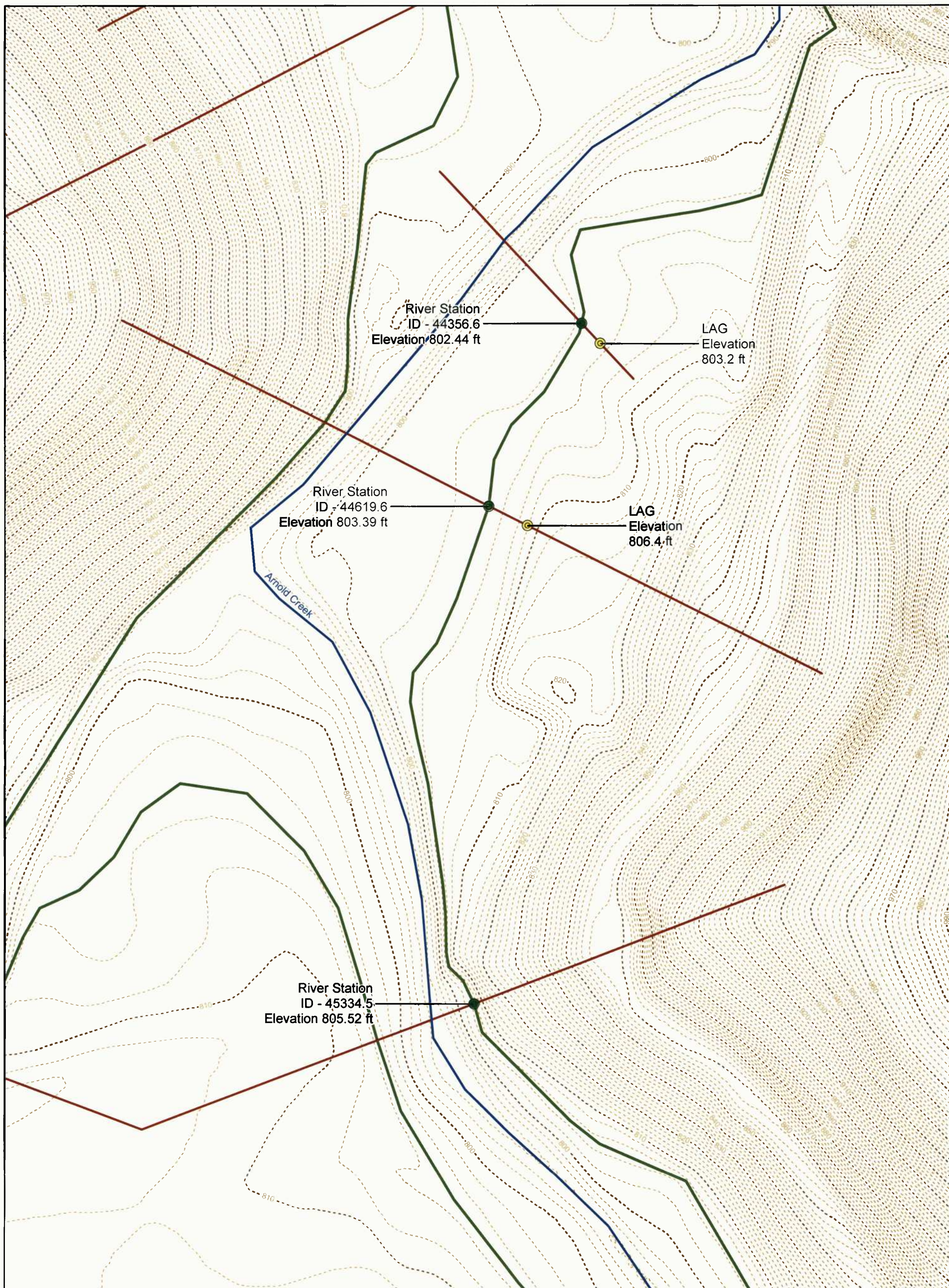
This is a text file summary of all data in package.

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Main	68481.6	P100yr	901.79	879.89	885.71	884.19	886.1	0.004176	6.34	237.21	89.81	0.49
Main	68050.5	P100yr	934.77	877.17	881.48	881.48	882.61	0.019283	10.42	135.22	66.32	0.98
Main	67651.4	P100yr	934.77	876.61	880.3		880.33	0.000816	2.24	750.89	348.68	0.21
Main	67597.8	P100yr	934.77	876.21	880.21		880.27	0.001575	3.16	562	292.39	0.29
Main	67334.5	P100yr	1061.8	875.55	879.06		879.42	0.008849	6.67	254.79	121.41	0.66
Main	67064	P100yr	1061.8	873.04	876.5		876.92	0.009632	7.22	249.23	119.65	0.7
Main	66317.3	P100yr	1061.8	867.35	874.53		874.68	0.001363	4.34	458.66	134.46	0.29
Main	66177.9	P100yr	1061.8	867.75	873.48		874.24	0.008318	8.67	223.42	96.9	0.69
Main	66116.4	P100yr	1061.8	868	873		873.7	0.008466	8.37	197.86	79.52	0.69
Main	65687.3	P100yr	1061.8	866.75	871.26		871.44	0.003215	5.08	449.58	188.58	0.42
Main	65374.7	P100yr	1061.8	864.2	870.77		870.87	0.001078	3.76	560.48	158.46	0.26
Main	64998.9	P100yr	1061.8	863.15	870.09		870.33	0.001898	5.11	361.43	92.19	0.35
Main	64681.2	P100yr	1167.66	863.21	869.27		869.57	0.002971	5.87	352.99	103.06	0.43
Main	64106.9	P100yr	1167.66	861.95	867.09		867.45	0.004668	6.47	303.07	102.21	0.52
Main	63571.1	P100yr	1167.66	862.16	864.75		864.91	0.004541	4.04	379.01	159.7	0.45
Main	63278.9	P100yr	1167.66	859.81	861.99		862.52	0.018017	7.35	211.15	114.32	0.89
Main	63026.3	P100yr	1167.66	856.37	861.81		861.86	0.000721	2.7	690.59	184.47	0.21
Main	62390.7	P100yr	1167.66	853.76	859.42		860.6	0.010622	10.08	160.63	45.76	0.78
Main	62017.1	P100yr	1167.66	852.04	858.37	856.26	858.61	0.002536	5.45	392.86	133.83	0.39
Main	61543.8	P100yr	1167.66	848.7	854.07	854.07	855.94	0.01712	12.24	130.97	40.79	0.98
Main	61141.9	P100yr	1445.38	847.44	853.33		853.37	0.000523	2.45	1029.81	284.77	0.18
Main	61055.2	P100yr	1445.38	847.54	853.28		853.32	0.000622	2.59	961.67	283.3	0.19
Main	60632.3	P100yr	1445.38	844.5	853.15		853.18	0.000214	2.03	1138.6	187.4	0.12
Main	60258.5	P100yr	1445.38	844.72	852.55		852.94	0.002692	6.44	353.93	80.99	0.42
Main	59722.3	P100yr	1445.38	844.62	849.41	849.2	850.22	0.012053	9.83	272.89	126.56	0.82
Main	58930.2	P100yr	1445.38	840.32	846.71	844.49	846.83	0.002017	4.49	664.5	192.3	0.34
Main	58306.1	P100yr	1445.38	838.44	842.63	842.63	843.78	0.021371	11.35	199.77	88.26	1.05
Main	57733.3	P100yr	1445.38	835.41	839.37		839.42	0.000648	1.57	814.58	177.27	0.17
Main	57355	P100yr	1445.38	833.13	837.35	837.35	838.57	0.02177	11.58	194.35	84.22	1.06
Main	56902.2	P100yr	1603.16	828.93	834.07		834.17	0.001893	3.62	694.98	236.24	0.31
Main	56207.6	P100yr	1603.16	825.8	830.24	830	831.24	0.015558	10.89	261.19	105.1	0.93
Main	55312.1	P100yr	1603.16	823.17	827.87		827.97	0.001403	3.03	652.91	164.71	0.27
Main	55021.4	P100yr	1603.16	821.37	826.09		826.98	0.012586	10.22	273.99	104.47	0.84
Main	54664.8	P100yr	1603.16	818.96	823.77		824.11	0.005077	6.6	385.33	122.36	0.54
Main	54019.4	P100yr	1603.16	815.11	821.2		821.5	0.003266	6.25	428.72	120.24	0.45
Main	53534.5	P100yr	1603.16	812.9	820.4		820.54	0.001254	4.44	637.93	145.69	0.29
Main	52932.8	P100yr	1603.16	812.91	819.42		819.61	0.001915	4.99	633.33	123.88	0.35
Main	52569.1	P100yr	1603.16	812.9	818.97		819.04	0.00119	3.79	960.08	208.11	0.27
Main	52082.9	P100yr	1603.16	812.9	816.87		817.6	0.013882	9.68	287.16	114.11	0.86
Main	51812.8	P100yr	1603.16	807.44	815.35		815.85	0.00347	7.47	429.39	154.46	0.48
Main	51633	P100yr	1603.16	807.97	814.99		815.25	0.002491	5.78	490.5	131.39	0.4
Main	51077.4	P100yr	1603.16	806.87	814.31		814.42	0.0009	3.54	663.89	135.47	0.24
Main	50921.8	P100yr	1747.91	806.5	814.21		814.29	0.000708	3.26	838.23	168.65	0.21
Main	50855.5	P100yr	1747.91	805.75	814.18		814.25	0.000511	3.04	975.17	209.39	0.19
Main	50450.7	P100yr	2642.53	802.25	813.97		814.06	0.000412	3.32	1245.25	170.48	0.18
Main	49787.2	P100yr	2642.53	801.9	813.03		813.5	0.002108	7.54	709	105.91	0.4
Main	48786.3	P100yr	2642.53	801.91	811.26		811.51	0.001756	6.12	943.63	155.94	0.35
Main	48061.1	P100yr	2917.06	798.74	809.99		810.31	0.001585	5.72	861.81	193.21	0.33
Main	47352.7	P100yr	2917.06	798.66	808.66		809.01	0.002137	6.63	813.54	182	0.38
Main	46303.7	P100yr	2917.06	798.03	807.53	804.17	807.62	0.000815	3.94	1374.6	342.26	0.23
Main	46076.1	P100yr	2917.06	794.14	806.78	801.94	807.31	0.001811	7.32	753.56	224.67	0.37
Main	45826.9	P100yr	2917.06	793.93	806.46	802.62	806.84	0.001659	6.96	862.49	246.23	0.35
Main	45334.5	P100yr	2917.06	793.27	805.52	800.98	806.01	0.001671	6.84	740.69	200.96	0.36
Main	44619.6	P100yr	3562.82	792.81	803.39		804.25	0.003429	8.47	698.84	202.74	0.49
Main	44356.6	P100yr	3562.82	791.73	802.44		803.96	0.003342	8.38	728.7	246.52	0.48
Main	43781	P100yr	3562.82	789.69	802.39		802.5	0.000523	3.97	1810.18	342.2	0.2
Main	43634.4	P100yr	3562.82	789.93	802.2		802.4	0.000882	4.83	1492.11	345.72	0.25
Main	43468.7	P100yr	3562.82	789.87	801.99	798.75	802.22	0.001321	6.1	1260.06	292.96	0.31
Main	43269.2	P100yr	3562.82	789.8	801.75	797.68	801.97	0.001121	5.61	1331.29	258.27	0.29
Main	41826	P100yr	3562.82	788.96	799.5	796.72	799.89	0.001857	6.54	983.94	425.93	0.37
Main	41155.3	P100yr	3562.82	788.04	798.33		798.63	0.001817	6.5	1077.64	221.58	0.36

Main	40080	P100yr	3562.82	786.72	797.5		797.58	0.00055	3.51	1963.56	422.87	0.2
Main	39297	P100yr	3562.82	786.77	796.73		796.97	0.001148	4.99	1210.31	239.42	0.29
Main	38489.1	P100yr	3562.82	785.1	795.91		796.06	0.001045	5.19	1600.47	361.3	0.28
Main	37429.6	P100yr	3562.82	782.42	791.83	790.88	793.46	0.008721	13.61	617.2	137.81	0.79
Main	36429.5	P100yr	3562.82	781.05	791.5		791.59	0.000554	3.45	1600.28	240.5	0.2
Main	36033.7	P100yr	3562.82	780.92	791.2		791.32	0.000826	4.41	1447.45	254.6	0.25
Main	35214.1	P100yr	3562.82	780.99	790.82		790.87	0.000367	2.81	2283.52	428.64	0.16
Main	34417.3	P100yr	3562.82	780.8	790.36		790.45	0.000815	4.24	1775.27	383.73	0.24
Main	33635	P100yr	3562.82	780.41	790.16		790.18	0.000175	1.96	3722.54	778.09	0.11
Main	33123.6	P100yr	4272.07	779.2	789.63	784.08	789.93	0.001531	6.13	1095.67	488.41	0.34
Main	33040.7	P100yr	4272.07	779.51	789.42		789.78	0.001986	6.5	1048.21	182.46	0.38
Main	32980.2	P100yr	4272.07	778.61	789.1		789.66	0.001745	6.39	791.26	98.93	0.36
Main	32893.7	P100yr	4272.07	778.38	789.17	783.39	789.46	0.001021	5.08	1447.7	265.17	0.28
Main	32582.4	P100yr	4272.07	777.4	789.1		789.17	0.00054	3.93	2361.48	435.48	0.2
Main	31826	P100yr	4272.07	775.23	788.31		788.56	0.001272	6.51	1644.98	199.54	0.32
Main	31142.6	P100yr	4272.07	773.83	786.46		787.25	0.002863	9.44	1038.56	160.96	0.47
Main	30393.2	P100yr	4272.07	773.66	785.11		785.39	0.001871	7.07	1460.14	194.37	0.38
Main	29615.1	P100yr	4272.07	773	784.14		784.28	0.001043	5.27	2121.76	319.46	0.28
Main	29148.4	P100yr	4272.07	772.78	783.14		783.57	0.00221	7.35	1073.96	168	0.4
Main	28639.9	P100yr	4272.07	771.09	782.35	776.99	782.68	0.001334	5.91	1739.19	389.64	0.32
Main	27970.4	P100yr	4272.07	770.5	782.35		782.38	0.000139	2.02	3390.56	391.76	0.1
Main	27583.8	P100yr	4272.07	770.5	782.26		782.3	0.000289	2.9	3419.16	386.63	0.15
Main	26757.9	P100yr	4272.07	770.13	781.52		781.79	0.001765	6.95	1451.66	183.45	0.37
Main	25950.3	P100yr	4272.07	766.8	779.37		780	0.002749	9.35	1139.93	166.53	0.47
Main	25670.4	P100yr	4272.07	766.19	778.09		779.04	0.004077	10.93	840.12	103.71	0.56
Main	24564	P100yr	4272.07	761.87	775.46	769.51	775.92	0.001917	8.15	1250.7	150.47	0.39
Main	23710.2	P100yr	4272.07	761.47	772.91		773.73	0.003506	9.54	1147.12	263.75	0.51
Main	22670.8	P100yr	4272.07	758.83	769.12		769.86	0.003907	9.69	984.51	154.18	0.54
Main	22032	P100yr	4272.07	757.3	767.93		768.14	0.001667	6.52	1699.13	253.98	0.35
Main	21732.9	P100yr	4272.07	754.72	766.41	762.13	767.31	0.004338	10.91	866.52	238.03	0.57
Main	21358.5	P100yr	4272.07	754.69	764.28		765.52	0.005234	10.63	752.38	141.12	0.61
Main	20406.7	P100yr	4272.07	752.93	764.31		764.36	0.000332	2.98	3396.13	476.57	0.16
Main	19572.4	P100yr	4272.07	750.6	763.83		763.95	0.000785	5.16	2523.25	389.79	0.25
Main	19223	P100yr	4272.07	750.6	763.53		763.67	0.000837	5.26	1999.93	283.88	0.26
Main	18822.5	P100yr	4272.07	750.6	763.18		763.33	0.000858	5.23	1768.43	186.28	0.26
Main	18194.2	P100yr	4272.07	750.6	762.68		762.8	0.000805	4.89	2226.18	284.22	0.25
Main	17651.2	P100yr	4272.07	750.6	761.81		762.17	0.001176	6.93	1456.45	221.06	0.37
Main	16719	P100yr	4272.07	749.7	760.18		760.43	0.001904	6.84	1499.89	259.12	0.37
Main	16189.7	P100yr	4272.07	744.93	758.38		759.15	0.002981	9.89	983.68	158.9	0.48
Main	15726	P100yr	4272.07	744.08	754.61	753.62	756.75	0.009452	15.16	548.19	93.86	0.83
Main	14973.7	P100yr	4272.07	741.74	752.15		752.75	0.002826	8.06	987.31	231.67	0.45
Main	13739.6	P100yr	4272.07	739.24	751.41		751.49	0.000431	3.44	2207.5	326.27	0.18
Main	12980.1	P100yr	4272.07	737.59	750.82		751.01	0.000974	5.58	2113.89	324.02	0.28
Main	12208.8	P100yr	4272.07	736.9	750.36		750.48	0.000475	4.02	2045.25	261.77	0.19
Main	11804.4	P100yr	4697.72	736.12	750.24		750.31	0.000317	3.33	2740.09	425.34	0.16
Main	11226	P100yr	5531.1	735.86	749.7		749.98	0.001028	5.61	1878.77	355.14	0.28
Main	10952.6	P100yr	5531.1	735.87	749.12		749.6	0.001692	7	1551.61	374.12	0.36
Main	10756.4	P100yr	5531.1	734.22	748.92		749.27	0.001355	7.02	1736.16	357.86	0.33
Main	10705.3	P100yr	5531.1	733.75	749.01		749.16	0.000665	5.16	2458.41	453.71	0.24
Main	10496.9	P100yr	5531.1	733.95	748.84		749.02	0.000664	5	2119.23	320.97	0.23
Main	10191.2	P100yr	5531.1	734.04	748.41		748.74	0.001198	6.24	1534.05	221.21	0.3
Main	9586.9	P100yr	5531.1	733.79	747.91		748.08	0.000886	5.68	2251.92	337.19	0.27
Main	8871.2	P100yr	5531.1	733.77	746.9		747.2	0.001173	7.57	1947.36	327.56	0.37
Main	8568.4	P100yr	5531.1	733.7	746.41		746.68	0.001632	7.26	2051.29	278.34	0.36
Main	8137.9	P100yr	5531.1	733.6	745.02		745.7	0.003123	8.86	1300.55	351.12	0.48
Main	7845.3	P100yr	5531.1	732.97	744.74		745.01	0.001136	5.75	1735.38	342.16	0.31
Main	7612.3	P100yr	5531.1	732.17	744.47		744.73	0.001079	5.24	1782.39	302.83	0.28
Main	7492.2	P100yr	5531.1	730.42	744.39		744.62	0.000662	4.74	1816.63	247.37	0.23
Main	7450.5	P100yr	5531.1	730.6	743.79		744.52	0.002324	8.47	1105.11	200.53	0.42
Main	7232.2	P100yr	5531.1	730.42	743.67		744.01	0.001446	6.93	1639.52	240.04	0.34
Main	6813	P100yr	5531.1	729.66	743.1		743.43	0.001374	6.74	1504.23	208.63	0.33
Main	6167.3	P100yr	5531.1	729.23	742.62		742.77	0.000677	4.82	2089.85	244.82	0.23
Main	5280.2	P100yr	5531.1	729.95	740.56		741.46	0.004442	9.84	925.35	171.88	0.56
Main	4056.9	P100yr	5531.1	729.14	738.28		738.46	0.001384	5.15	1973.31	407.8	0.31
Main	3478.3	P100yr	5531.1	726.28	737.17		737.51	0.001952	6.92	1658.49	414.21	0.38
Main	2854.4	P100yr	5531.1	724.78	736.99		737.04	0.000295	2.95	3441.23	515.76	0.15
Main	655.3	P100yr	5531.1	718.93	733.92	730.08	735.37	0.003335	10.74	889.96	131.56	0.51









● LAG
 ● River Station
 — Stream
 — XSCutlines Merge
 — HMM Delineated 100 Year Floodplain
Elevation Contour
 - - - Index
 - - - Intermediate

 *** Contour elevations shown are not representative of existing and surveyed site contours. Please refer to the site plan for surveyed contour elevations


**HMM HYDROLOGY
&
HYDROLOGIC STUDY**
CENTRAL STATION FACILITY
 DODDRIDGE COUNTY, WEST VIRGINIA

100 50 0 100 200
 FEET


SHALEWATER SOLUTIONS


Hatch Mott MacDonald

1001 Corporate Drive, Suite 100
 Canonsburg, PA 15317
 Ph: (724) 514-5330
 Fax: (724) 873-9116

	DRAWN BY: DJL APPROVED BY: RAC DATE: 03/18/2016 PAGE: 1 of 1
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ABSOLUTE SCALE:
 1 INCH = 100 FEET
 REFERENCE SCALE:
 1:1,200

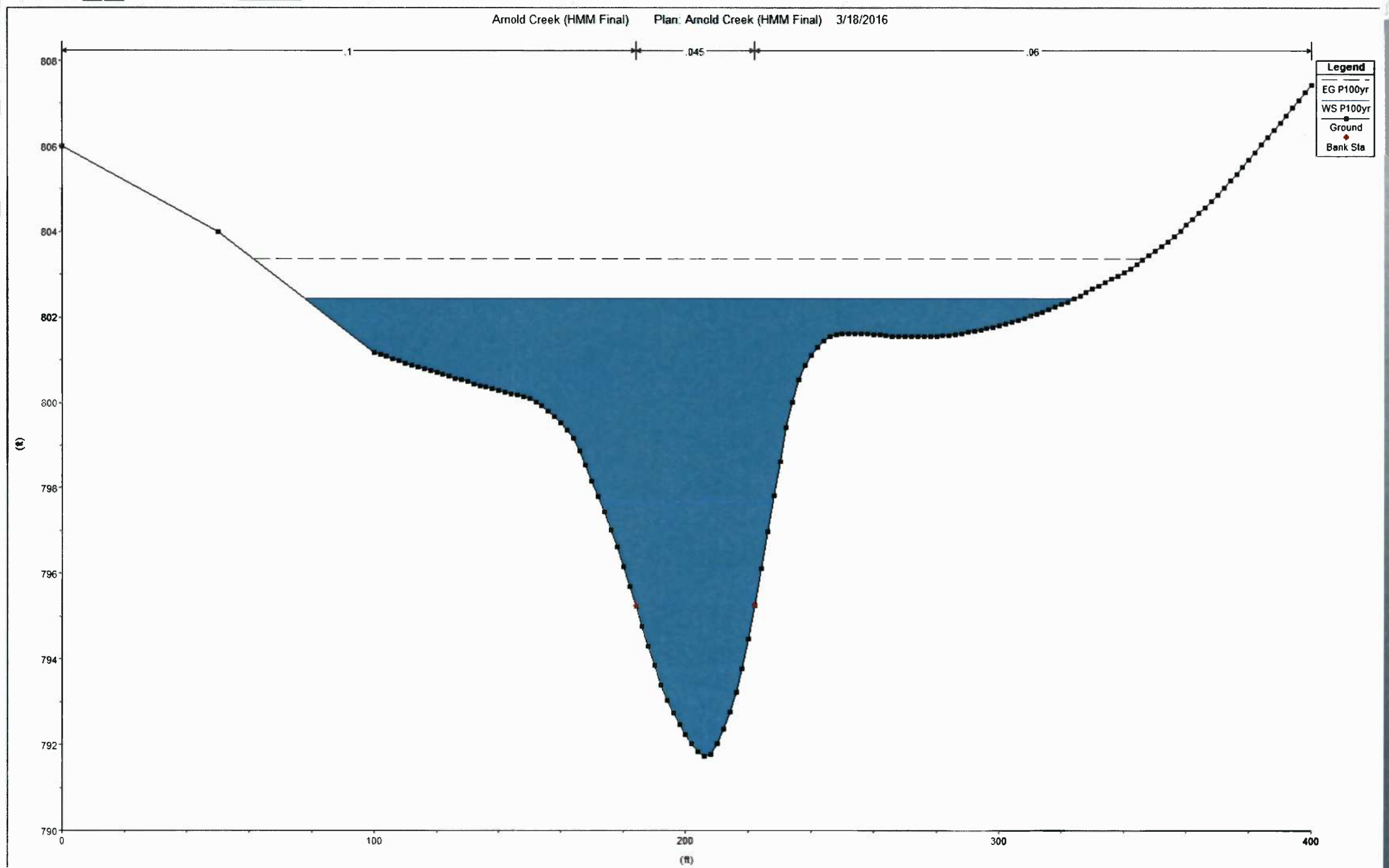
Del Row	Ins Row	Station	Elevation
		0	806
		50	804
		100	801.18
		102	801.13
		104	801.08
		106	801.03
		108	800.98
		110	800.92
		112	800.88
		114	800.83
		116	800.79
		118	800.75
		120	800.7
		122	800.66
		124	800.62
		126	800.57
		128	800.53
		130	800.49
		132	800.44
		134	800.4
		136	800.36
		138	800.32
		140	800.28
		142	800.24
		144	800.2
		146	800.17
		148	800.13
		150	800.09
		152	800.02
		154	799.93
		156	799.81
		158	799.68
		160	799.53
		162	799.36
		164	799.17
		166	798.88
		168	798.53
		170	798.16
		172	797.79
		174	797.45
		176	797.01
		178	796.61
		180	796.16
		182	795.69
		184	795.23
		186	794.77
		188	794.31
		190	793.85
		192	793.4
		194	793.03
		196	792.73

Downstream Reach Lengths		
LOB	Channel	ROB
553.3	575.6	597

Manning's n Values		
LOB	Channel	ROB
0.1	0.045	0.06

Main Channel Bank Stations	
Left Bank	Right Bank
184	222

Cont/Exp Coefficient (Steady Flow)	
Contraction	Expansion
0.1	0.3



River: ARNOLDCK

Reach: Main River Sta.: 44519.6

Description

Del Row	Ins Row	Station	Elevation
1	0	937.42	
2	9.8	931.58	
3	19.5	925.67	
4	29.2	919.71	
5	39	913.6	
6	48.8	907.53	
7	58.5	901.54	
8	68.3	895.76	
9	78	890.19	
10	87.8	885.04	
11	97.5	880.72	
12	107.3	877.11	
13	117	871.9	
14	126.8	864.54	
15	136.5	857.37	
16	146.3	850.96	
17	156	844.9	
18	165.8	839.03	
19	175.5	833.39	
20	185.3	828.01	
21	195	822.95	
22	204.8	818.23	
23	214.5	813.86	
24	224.3	809.64	
25	234	805.59	
26	243.8	801.42	
27	253.5	797.17	
28	258.5	795.49	
29	263.3	793.88	
30	273	792.81	
31	273.5	792.85	
32	282.8	793.65	
33	292.5	796.59	
34	302.3	799.43	
35	312	800.63	
36	321.8	800.9	
37	331.5	800.97	
38	341.3	801.07	
39	351	801.19	
40	360.8	801.35	
41	370.5	801.55	
42	380.3	801.73	
43	390	801.91	
44	399.8	802.07	
45	409.5	802.22	
46	419.3	802.43	
47	429	802.76	
48	438.8	803.19	
49	448.6	803.82	
50	458.3	804.62	
51	468	805.68	

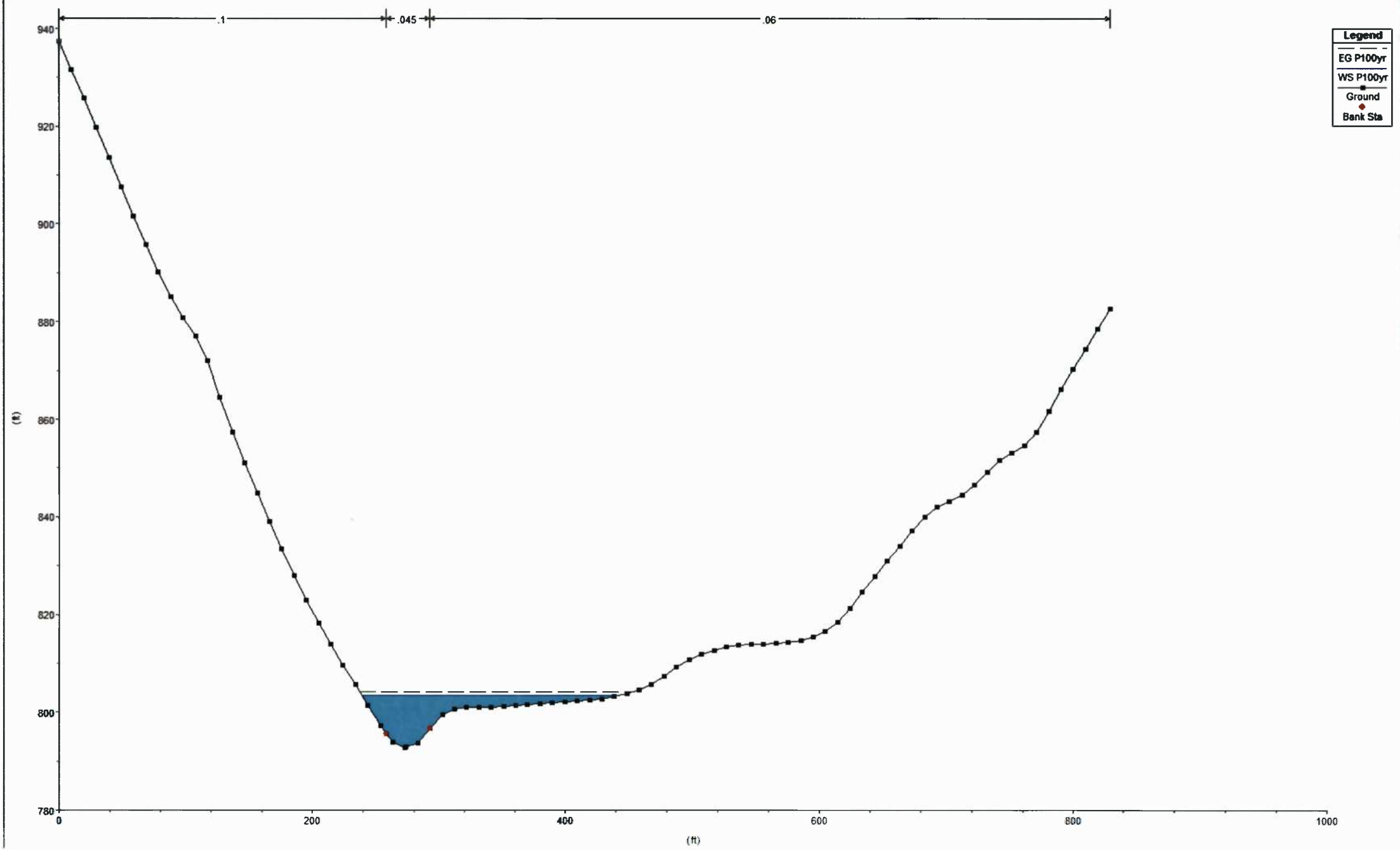
Downstream Reach Lengths		
LOB	Channel	ROB
263	263	263

Manning's n Values		
LOB	Channel	ROB
0.1	0.045	0.06

Main Channel Bank Stations	
Left Bank	Right Bank
258.5	292.5

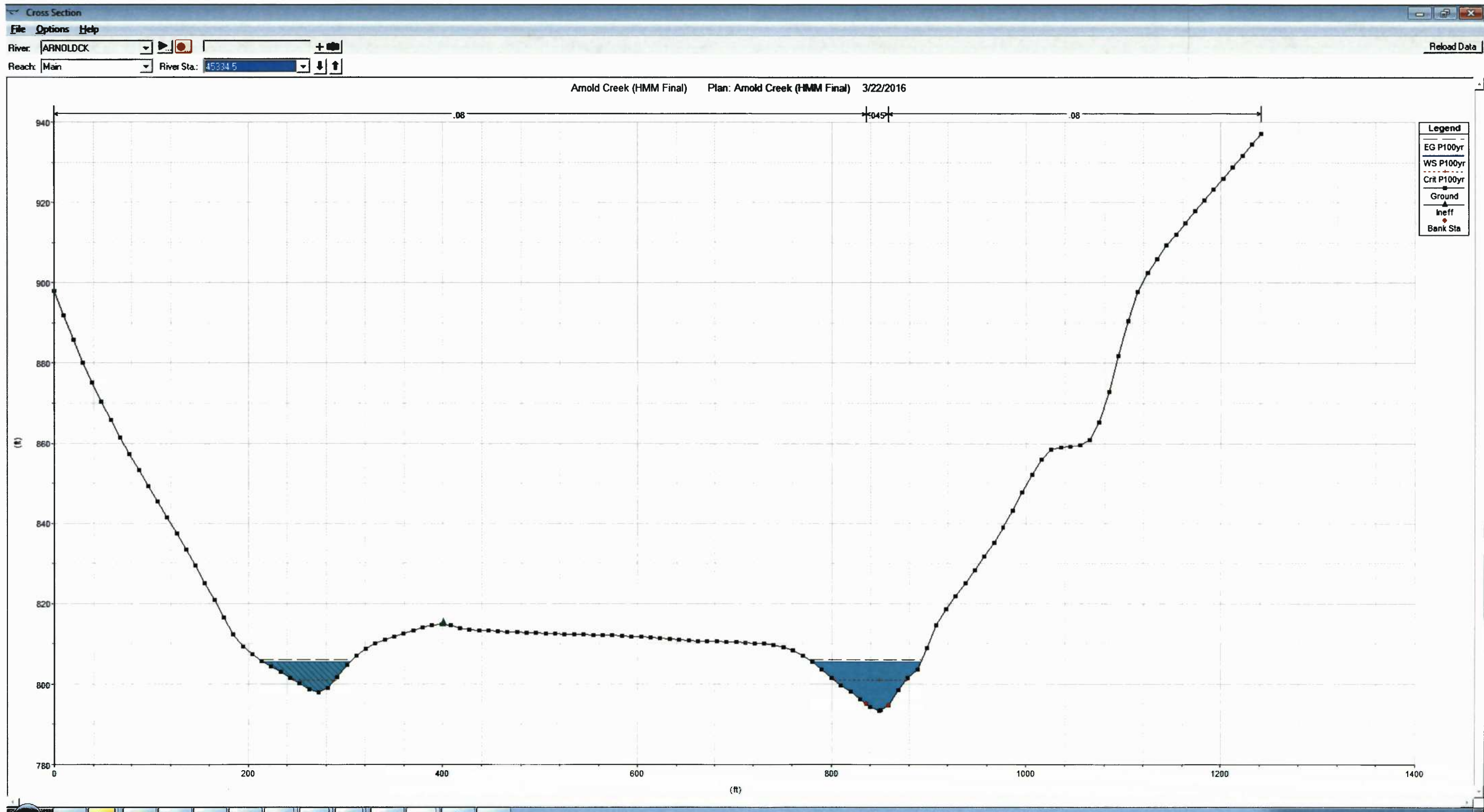
Cont. Exp. Coefficient (Steady Flow)	
Contraction	Expansion
0.1	0.3

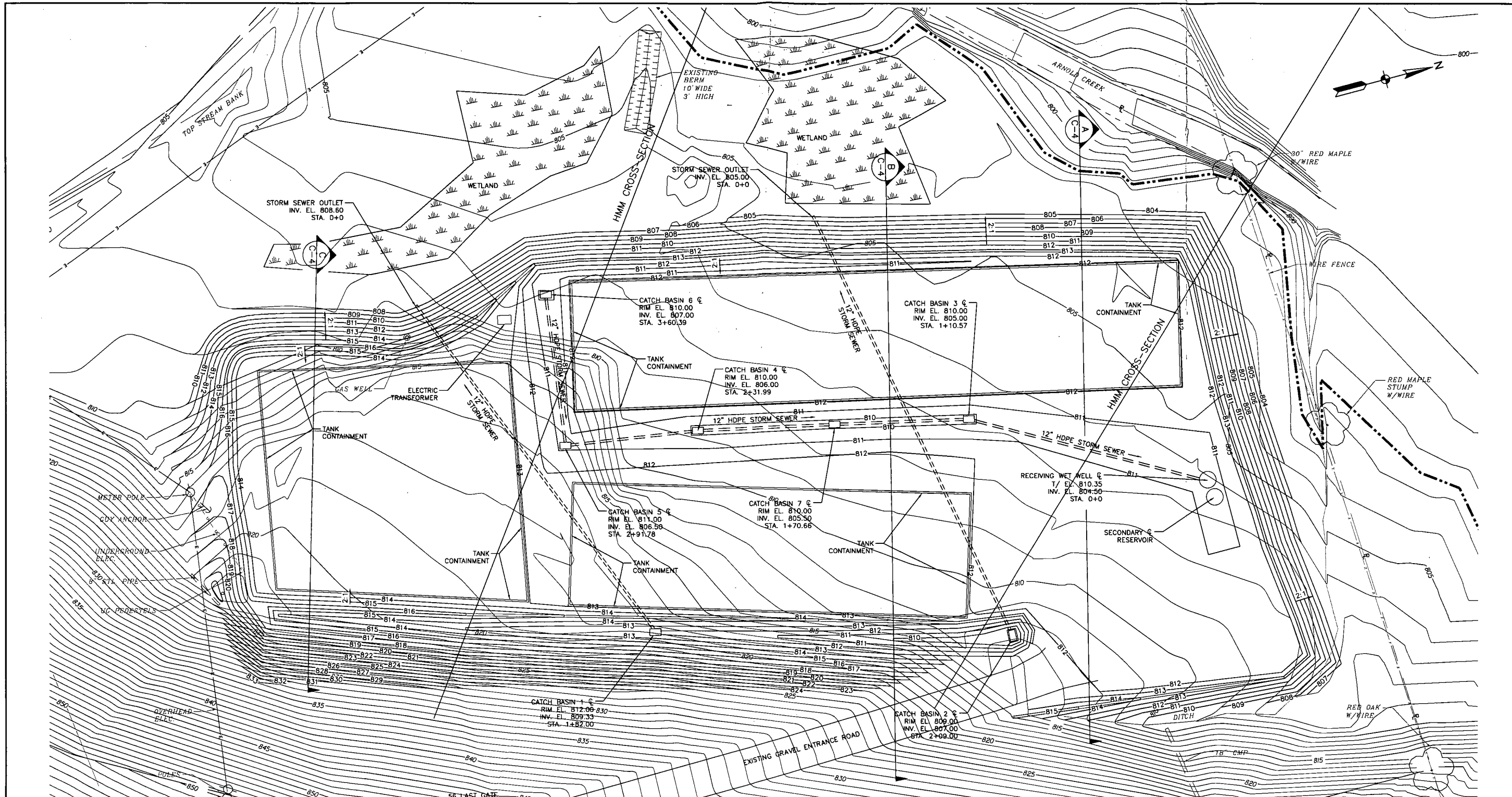
Arnold Creek (HMM Final) Plan: Arnold Creek (HMM Final) 3/18/2016



Legend	
—	EG P100yr
—	WS P100yr
—	Ground
—	Bank Sta

Select river station for cross section editing.



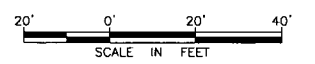




- LEGEND (EXISTING)**
- E — OVERHEAD ELECTRIC
 - UC — UNDERGROUND ELECTRIC
 - 875 — CONTOUR
 - X — X — FENCE
 - WETLANDS
 - — UTILITY POLE
 - ← — GUY POLE

- LEGEND (PROPOSED)**
- 100 YEAR FLOOD (CALCULATED)
 - FS — COMPOST FILTER SOCK
 - 811 — PROPOSED CONTOURS
 - PROPOSED STORM SEWER
 - — PROPOSED CATCH BASIN
 - — BOLLARDS

SITE GRADING AND STORMWATER COLLECTION SYSTEM PLAN
SCALE: 1" = 20'

PROPRIETARY AND CONFIDENTIAL INFORMATION OF SHALEWATER SOLUTIONS, LLC.



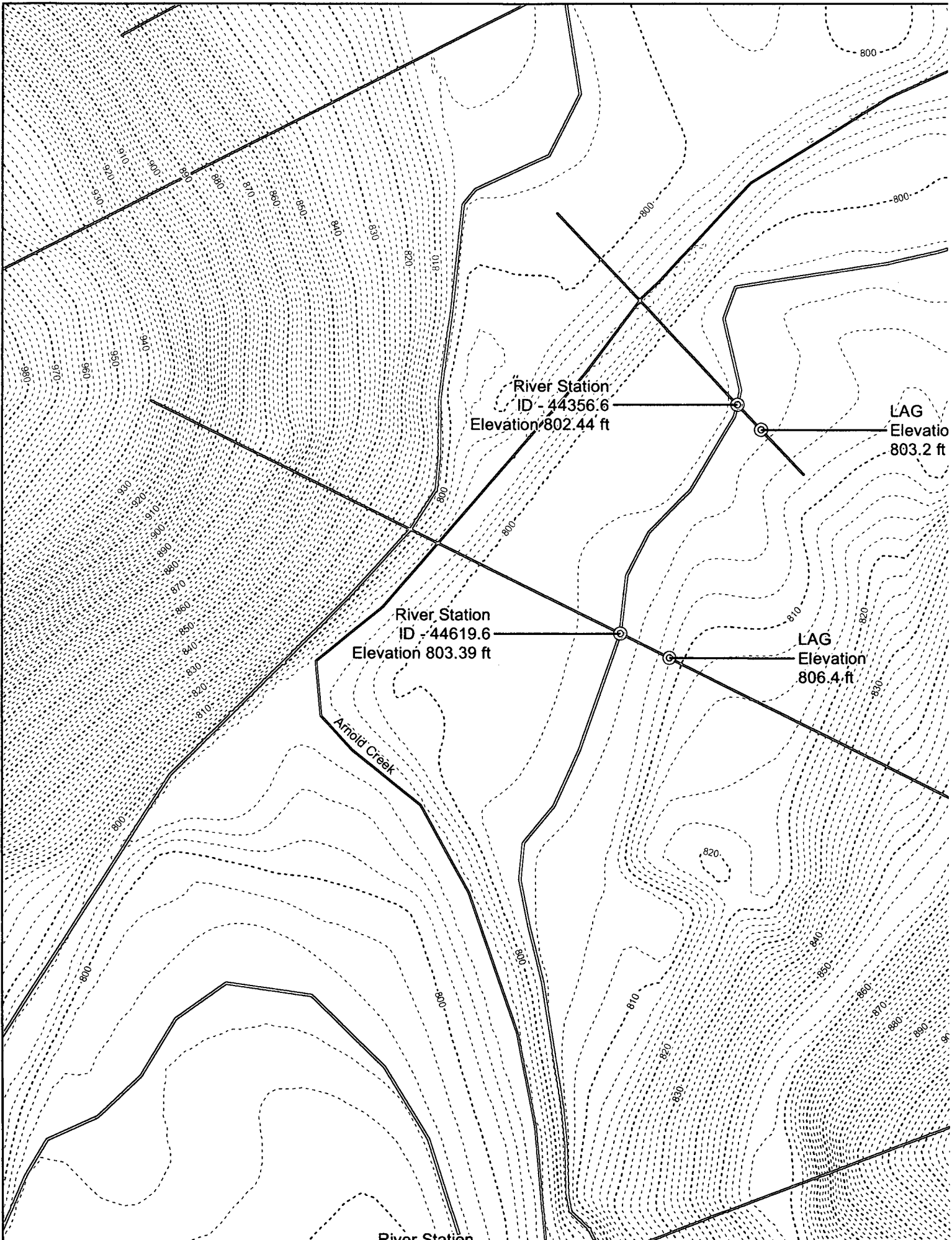
 1600 West Carson Street Pittsburgh, Pennsylvania 15219	Shalewater Solutions Central Station Proposed Site SITE GRADING AND STORMWATER COLLECTION SYSTEM PLAN	 37 GRAND MEADOWS DR. BRIDGEPORT, WV 26330 PH: 304.592.2794 WWW.SHALEWATER.COM	Job No. HMM 364111 No. C-2 B/O Total 3 9												
REVISION TABLE: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>No.</th> <th>Description</th> <th>Date</th> <th>By</th> </tr> </thead> <tbody> <tr> <td>2</td> <td>RECORD SET</td> <td>3/15/16</td> <td>DMH</td> </tr> <tr> <td>3</td> <td>REVISED PAD EL. FROM 820 TO 814.50</td> <td>1/29/16</td> <td>DMH</td> </tr> </tbody> </table>	No.	Description	Date	By	2	RECORD SET	3/15/16	DMH	3	REVISED PAD EL. FROM 820 TO 814.50	1/29/16	DMH	SCALE: 1" = 20' DESIGNED BY: DMH DRAWN BY: PGE CHK BY: BKK APPRVD. BY: —	PLOT DATE: 3/23/2016 10:24 AM FILE NAME: P:\364111-Shalewater Solutions-Central Station\CAD\CIVIL\AS BUILT\364111-SITE GRADING AS BUILT.dwg	
No.	Description	Date	By												
2	RECORD SET	3/15/16	DMH												
3	REVISED PAD EL. FROM 820 TO 814.50	1/29/16	DMH												

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Main	68481.6	P100yr	901.79	879.89	885.71	884.19	886.1	0.004176	6.34	237.21	89.81	0.49
Main	68050.5	P100yr	934.77	877.17	881.48	881.48	882.61	0.019283	10.42	135.22	66.32	0.98
Main	67651.4	P100yr	934.77	876.61	880.3		880.33	0.000816	2.24	750.89	348.68	0.21
Main	67597.8	P100yr	934.77	876.21	880.21		880.27	0.001575	3.16	562	292.39	0.29
Main	67334.5	P100yr	1061.8	875.55	879.06		879.42	0.008849	6.67	254.79	121.41	0.66
Main	67064	P100yr	1061.8	873.04	876.5		876.92	0.009632	7.22	249.23	119.65	0.7
Main	66317.3	P100yr	1061.8	867.35	874.53		874.68	0.001363	4.34	458.66	134.46	0.29
Main	66177.9	P100yr	1061.8	867.75	873.48		874.24	0.008318	8.67	223.42	96.9	0.69
Main	66116.4	P100yr	1061.8	868	873		873.7	0.008466	8.37	197.86	79.52	0.69
Main	65687.3	P100yr	1061.8	866.75	871.26		871.44	0.003215	5.08	449.58	188.58	0.42
Main	65374.7	P100yr	1061.8	864.2	870.77		870.87	0.001078	3.76	560.48	158.46	0.26
Main	64998.9	P100yr	1061.8	863.15	870.09		870.33	0.001898	5.11	361.43	92.19	0.35
Main	64681.2	P100yr	1167.66	863.21	869.27		869.57	0.002971	5.87	352.99	103.06	0.43
Main	64106.9	P100yr	1167.66	861.95	867.09		867.45	0.004668	6.47	303.07	102.21	0.52
Main	63571.1	P100yr	1167.66	862.16	864.75		864.91	0.004541	4.04	379.01	159.7	0.45
Main	63278.9	P100yr	1167.66	859.81	861.99		862.52	0.018017	7.35	211.15	114.32	0.89
Main	63026.3	P100yr	1167.66	856.37	861.81		861.86	0.000721	2.7	690.59	184.47	0.21
Main	62390.7	P100yr	1167.66	853.76	859.42		860.6	0.010622	10.08	160.63	45.76	0.78
Main	62017.1	P100yr	1167.66	852.04	858.37	856.26	858.61	0.002536	5.45	392.86	133.83	0.39
Main	61543.8	P100yr	1167.66	848.7	854.07	854.07	855.94	0.01712	12.24	130.97	40.79	0.98
Main	61141.9	P100yr	1445.38	847.44	853.33		853.37	0.000523	2.45	1029.81	284.77	0.18
Main	61055.2	P100yr	1445.38	847.54	853.28		853.32	0.000622	2.59	961.67	283.3	0.19
Main	60632.3	P100yr	1445.38	844.5	853.15		853.18	0.000214	2.03	1138.6	187.4	0.12
Main	60258.5	P100yr	1445.38	844.72	852.55		852.94	0.002692	6.44	353.93	80.99	0.42
Main	59722.3	P100yr	1445.38	844.62	849.41	849.2	850.22	0.012053	9.83	272.89	126.56	0.82
Main	58930.2	P100yr	1445.38	840.32	846.71	844.49	846.83	0.002017	4.49	664.5	192.3	0.34
Main	58306.1	P100yr	1445.38	838.44	842.63	842.63	843.78	0.021371	11.35	199.77	88.26	1.05
Main	57733.3	P100yr	1445.38	835.41	839.37		839.42	0.000648	1.57	814.58	177.27	0.17
Main	57355	P100yr	1445.38	833.13	837.35	837.35	838.57	0.02177	11.58	194.35	84.22	1.06
Main	56902.2	P100yr	1603.16	828.93	834.07		834.17	0.001893	3.62	694.98	236.24	0.31
Main	56207.6	P100yr	1603.16	825.8	830.24	830	831.24	0.015558	10.89	261.19	105.1	0.93

Main	55312.1	P100yr	1603.16	823.17	827.87		827.97	0.001403	3.03	652.91	164.71	0.27
Main	55021.4	P100yr	1603.16	821.37	826.09		826.98	0.012586	10.22	273.99	104.47	0.84
Main	54664.8	P100yr	1603.16	818.96	823.77		824.11	0.005077	6.6	385.33	122.36	0.54
Main	54019.4	P100yr	1603.16	815.11	821.2		821.5	0.003266	6.25	428.72	120.24	0.45
Main	53534.5	P100yr	1603.16	812.9	820.4		820.54	0.001254	4.44	637.93	145.69	0.29
Main	52932.8	P100yr	1603.16	812.91	819.42		819.61	0.001915	4.99	633.33	123.88	0.35
Main	52569.1	P100yr	1603.16	812.9	818.97		819.04	0.00119	3.79	960.08	208.11	0.27
Main	52082.9	P100yr	1603.16	812.9	816.87		817.6	0.013882	9.68	287.16	114.11	0.86
Main	51812.8	P100yr	1603.16	807.44	815.35		815.85	0.00347	7.47	429.39	154.46	0.48
Main	51633	P100yr	1603.16	807.97	814.99		815.25	0.002491	5.78	490.5	131.39	0.4
Main	51077.4	P100yr	1603.16	806.87	814.31		814.42	0.0009	3.54	663.89	135.47	0.24
Main	50921.8	P100yr	1747.91	806.5	814.21		814.29	0.000708	3.26	838.23	168.65	0.21
Main	50855.5	P100yr	1747.91	805.75	814.18		814.25	0.000511	3.04	975.17	209.39	0.19
Main	50450.7	P100yr	2642.53	802.25	813.97		814.06	0.000412	3.32	1245.25	170.48	0.18
Main	49787.2	P100yr	2642.53	801.9	813.03		813.5	0.002108	7.54	709	105.91	0.4
Main	48786.3	P100yr	2642.53	801.91	811.26		811.51	0.001756	6.12	943.63	155.94	0.35
Main	48061.1	P100yr	2917.06	798.74	809.99		810.31	0.001585	5.72	861.81	193.21	0.33
Main	47352.7	P100yr	2917.06	798.66	808.66		809.01	0.002137	6.63	813.54	182	0.38
Main	46303.7	P100yr	2917.06	798.03	807.53	804.17	807.62	0.000815	3.94	1374.6	342.26	0.23
Main	46076.1	P100yr	2917.06	794.14	806.78	801.94	807.31	0.001811	7.32	753.56	224.67	0.37
Main	45826.9	P100yr	2917.06	793.93	806.46	802.62	806.84	0.001659	6.96	862.49	246.23	0.35
Main	45334.5	P100yr	2917.06	793.27	805.52	800.98	806.01	0.001671	6.84	740.69	200.96	0.36
Main	44619.6	P100yr	3562.82	792.81	803.39		804.25	0.003429	8.47	698.84	202.74	0.49
Main	44356.6	P100yr	3562.82	791.73	802.44		803.36	0.003342	8.38	728.7	246.52	0.48
Main	43781	P100yr	3562.82	789.69	802.39		802.5	0.000523	3.97	1810.18	342.2	0.2
Main	43634.4	P100yr	3562.82	789.93	802.2		802.4	0.000882	4.83	1492.11	345.72	0.25
Main	43468.7	P100yr	3562.82	789.87	801.99	798.75	802.22	0.001321	6.1	1260.06	292.96	0.31
Main	43269.2	P100yr	3562.82	789.8	801.75	797.68	801.97	0.001121	5.61	1331.29	258.27	0.29
Main	41826	P100yr	3562.82	788.96	799.5	796.72	799.89	0.001857	6.54	983.94	425.93	0.37
Main	41155.3	P100yr	3562.82	788.04	798.33		798.63	0.001817	6.5	1077.64	221.58	0.36
Main	40080	P100yr	3562.82	786.72	797.5		797.58	0.00055	3.51	1963.56	422.87	0.2
Main	39297	P100yr	3562.82	786.77	796.73		796.97	0.001148	4.99	1210.31	239.42	0.29
Main	38489.1	P100yr	3562.82	785.1	795.91		796.06	0.001045	5.19	1600.47	361.3	0.28

Main	37429.6	P100yr	3562.82	782.42	791.83	790.88	793.46	0.008721	13.61	617.2	137.81	0.79
Main	36429.5	P100yr	3562.82	781.05	791.5		791.59	0.000554	3.45	1600.28	240.5	0.2
Main	36033.7	P100yr	3562.82	780.92	791.2		791.32	0.000826	4.41	1447.45	254.6	0.25
Main	35214.1	P100yr	3562.82	780.99	790.82		790.87	0.000367	2.81	2283.52	428.64	0.16
Main	34417.3	P100yr	3562.82	780.8	790.36		790.45	0.000815	4.24	1775.27	383.73	0.24
Main	33635	P100yr	3562.82	780.41	790.16		790.18	0.000175	1.96	3722.54	778.09	0.11
Main	33123.6	P100yr	4272.07	779.2	789.63	784.08	789.93	0.001531	6.13	1095.67	488.41	0.34
Main	33040.7	P100yr	4272.07	779.51	789.42		789.78	0.001986	6.5	1048.21	182.46	0.38
Main	32980.2	P100yr	4272.07	778.61	789.1		789.66	0.001745	6.39	791.26	98.93	0.36
Main	32893.7	P100yr	4272.07	778.38	789.17	783.39	789.46	0.001021	5.08	1447.7	265.17	0.28
Main	32582.4	P100yr	4272.07	777.4	789.1		789.17	0.00054	3.93	2361.48	435.48	0.2
Main	31826	P100yr	4272.07	775.23	788.31		788.56	0.001272	6.51	1644.98	199.54	0.32
Main	31142.6	P100yr	4272.07	773.83	786.46		787.25	0.002863	9.44	1038.56	160.96	0.47
Main	30393.2	P100yr	4272.07	773.66	785.11		785.39	0.001871	7.07	1460.14	194.37	0.38
Main	29615.1	P100yr	4272.07	773	784.14		784.28	0.001043	5.27	2121.76	319.46	0.28
Main	29148.4	P100yr	4272.07	772.78	783.14		783.57	0.00221	7.35	1073.96	168	0.4
Main	28639.9	P100yr	4272.07	771.09	782.35	776.99	782.68	0.001334	5.91	1739.19	389.64	0.32
Main	27970.4	P100yr	4272.07	770.5	782.35		782.38	0.000139	2.02	3390.56	391.76	0.1
Main	27583.8	P100yr	4272.07	770.5	782.26		782.3	0.000289	2.9	3419.16	386.63	0.15
Main	26757.9	P100yr	4272.07	770.13	781.52		781.79	0.001765	6.95	1451.66	183.45	0.37
Main	25950.3	P100yr	4272.07	766.8	779.37		780	0.002749	9.35	1139.93	166.53	0.47
Main	25670.4	P100yr	4272.07	766.19	778.09		779.04	0.004077	10.93	840.12	103.71	0.56
Main	24564	P100yr	4272.07	761.87	775.46	769.51	775.92	0.001917	8.15	1250.7	150.47	0.39
Main	23710.2	P100yr	4272.07	761.47	772.91		773.73	0.003506	9.54	1147.12	263.75	0.51
Main	22670.8	P100yr	4272.07	758.83	769.12		769.86	0.003907	9.69	984.51	154.18	0.54
Main	22032	P100yr	4272.07	757.3	767.93		768.14	0.001667	6.52	1699.13	253.98	0.35
Main	21732.9	P100yr	4272.07	754.72	766.41	762.13	767.31	0.004338	10.91	866.52	238.03	0.57
Main	21358.5	P100yr	4272.07	754.69	764.28		765.52	0.005234	10.63	752.38	141.12	0.61
Main	20406.7	P100yr	4272.07	752.93	764.31		764.36	0.000332	2.98	3396.13	476.57	0.16
Main	19572.4	P100yr	4272.07	750.6	763.83		763.95	0.000785	5.16	2523.25	389.79	0.25
Main	19223	P100yr	4272.07	750.6	763.53		763.67	0.000837	5.26	1999.93	283.88	0.26
Main	18822.5	P100yr	4272.07	750.6	763.18		763.33	0.000858	5.23	1768.43	186.28	0.26
Main	18194.2	P100yr	4272.07	750.6	762.68		762.8	0.000805	4.89	2226.18	284.22	0.25

Main	17651.2	P100yr	4272.07	750.6	761.81		762.17	0.00176	6.93	1456.45	221.06	0.37
Main	16719	P100yr	4272.07	749.7	760.18		760.43	0.001904	6.84	1499.89	259.12	0.37
Main	16189.7	P100yr	4272.07	744.93	758.38		759.15	0.002981	9.89	983.68	158.9	0.48
Main	15726	P100yr	4272.07	744.08	754.61	753.62	756.75	0.009452	15.16	548.19	93.86	0.83
Main	14973.7	P100yr	4272.07	741.74	752.15		752.75	0.002826	8.06	987.31	231.67	0.45
Main	13739.6	P100yr	4272.07	739.24	751.41		751.49	0.000431	3.44	2207.5	326.27	0.18
Main	12980.1	P100yr	4272.07	737.59	750.82		751.01	0.000974	5.58	2113.89	324.02	0.28
Main	12208.8	P100yr	4272.07	736.9	750.36		750.48	0.000475	4.02	2045.25	261.77	0.19
Main	11804.4	P100yr	4697.72	736.12	750.24		750.31	0.000317	3.33	2740.09	425.34	0.16
Main	11226	P100yr	5531.1	735.86	749.7		749.98	0.001028	5.61	1878.77	355.14	0.28
Main	10952.6	P100yr	5531.1	735.87	749.12		749.6	0.001692	7	1551.61	374.12	0.36
Main	10756.4	P100yr	5531.1	734.22	748.92		749.27	0.001355	7.02	1736.16	357.86	0.33
Main	10705.3	P100yr	5531.1	733.75	749.01		749.16	0.000665	5.16	2458.41	453.71	0.24
Main	10496.9	P100yr	5531.1	733.95	748.84		749.02	0.000664	5	2119.23	320.97	0.23
Main	10191.2	P100yr	5531.1	734.04	748.41		748.74	0.001198	6.24	1534.05	221.21	0.3
Main	9586.9	P100yr	5531.1	733.79	747.91		748.08	0.000886	5.68	2251.92	337.19	0.27
Main	8871.2	P100yr	5531.1	733.77	746.9		747.2	0.00173	7.57	1947.36	327.56	0.37
Main	8568.4	P100yr	5531.1	733.7	746.41		746.68	0.001632	7.26	2051.29	278.34	0.36
Main	8137.9	P100yr	5531.1	733.6	745.02		745.7	0.003123	8.86	1300.55	351.12	0.48
Main	7845.3	P100yr	5531.1	732.97	744.74		745.01	0.00136	5.75	1735.38	342.16	0.31
Main	7612.3	P100yr	5531.1	732.17	744.47		744.73	0.001079	5.24	1782.39	302.83	0.28
Main	7492.2	P100yr	5531.1	730.42	744.39		744.62	0.000662	4.74	1816.63	247.37	0.23
Main	7450.5	P100yr	5531.1	730.6	743.79		744.52	0.002324	8.47	1105.11	200.53	0.42
Main	7232.2	P100yr	5531.1	730.42	743.67		744.01	0.001446	6.93	1639.52	240.04	0.34
Main	6813	P100yr	5531.1	729.66	743.1		743.43	0.001374	6.74	1504.23	208.63	0.33
Main	6167.3	P100yr	5531.1	729.23	742.62		742.77	0.000677	4.82	2089.85	244.82	0.23
Main	5280.2	P100yr	5531.1	729.95	740.56		741.46	0.004442	9.84	925.35	171.88	0.56
Main	4056.9	P100yr	5531.1	729.14	738.28		738.46	0.001384	5.15	1973.31	407.8	0.31
Main	3478.3	P100yr	5531.1	726.28	737.17		737.51	0.001952	6.92	1658.49	414.21	0.38
Main	2854.4	P100yr	5531.1	724.78	736.99		737.04	0.000295	2.95	3441.23	515.76	0.15
Main	655.3	P100yr	5531.1	718.93	733.92	730.08	735.37	0.003335	10.74	889.96	131.56	0.51



River Station
ID - 44356.6
Elevation 802.44 ft

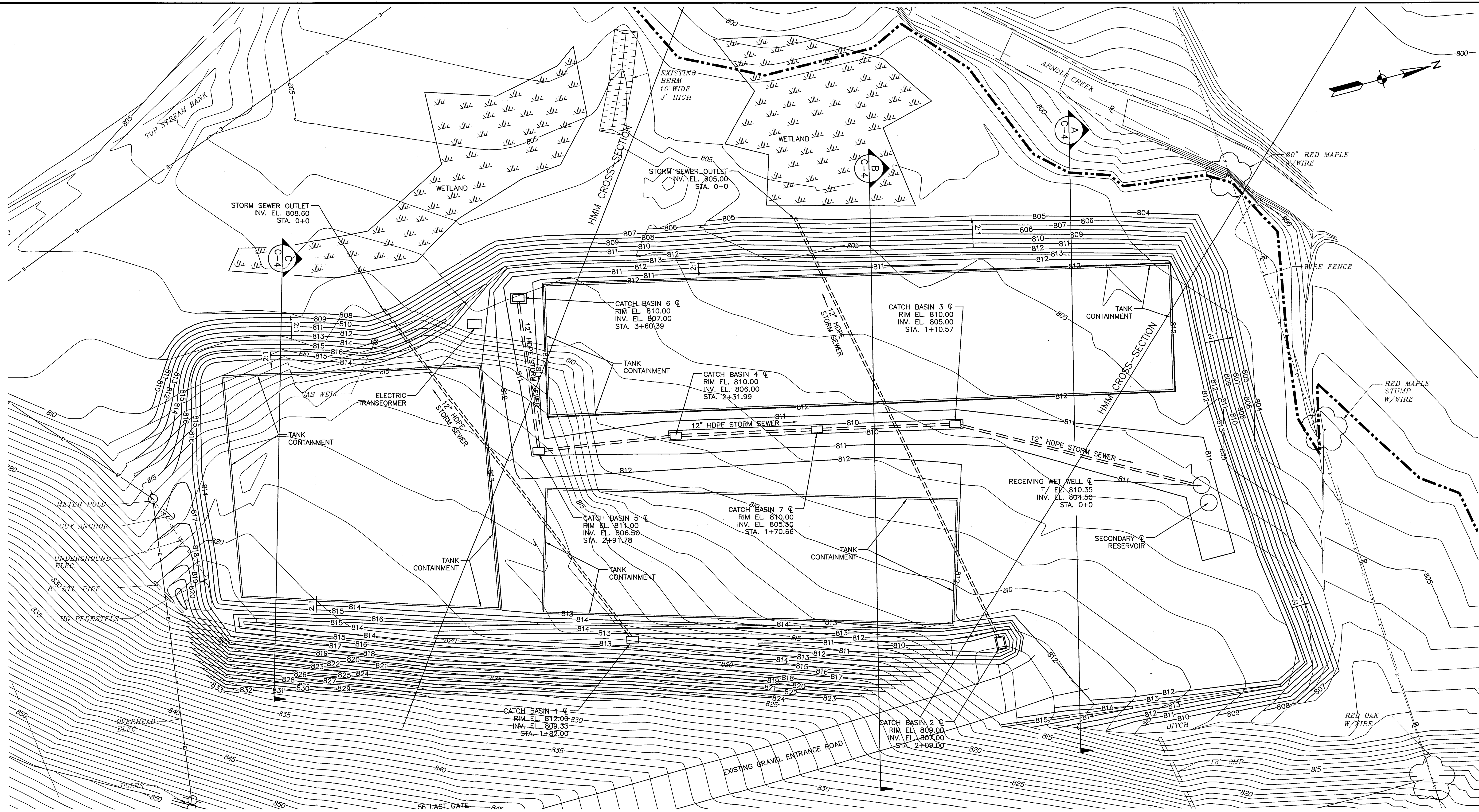
LAG
Elevatio
803.2 ft

River Station
ID - 44619.6
Elevation 803.39 ft

LAG
Elevation
806.4 ft

Arnold Creek

River Station



LEGEND (EXISTING)

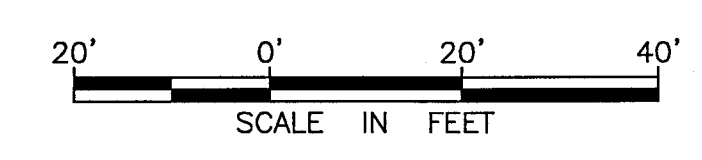
- OVERHEAD ELECTRIC
- UNDERGROUND ELECTRIC
- CONTOUR
- FENCE
- WETLANDS
- UTILITY POLE
- GUY POLE

LEGEND (PROPOSED)

- 100 YEAR FLOOD (CALCULATED)
- COMPOST FILTER SOCK
- PROPOSED CONTOURS
- PROPOSED STORM SEWER
- PROPOSED CATCH BASIN
- BOLLARDS

SITE GRADING AND STORMWATER COLLECTION SYSTEM PLAN
SCALE: 1" = 20'

PROPRIETARY AND CONFIDENTIAL INFORMATION OF SHALEWATER SOLUTIONS, LLC.



Hatch Mott MacDonald
1600 West Carson Street
Pittsburgh, Pennsylvania 15219

No.	Description	Date	By
1	RECORD SET	3/15/16	DMH
2	REVISED PAD EL. FROM 820 TO 814.50	1/20/16	DMH
3			
4			
5			
6			
7			
8			

Shalewater Solutions
Central Station Proposed Site
SITE GRADING AND STORMWATER COLLECTION SYSTEM PLAN

SCALE: 1" = 20'
PLOT DATE: 3/23/2016 10:24 AM

DESIGNED BY: DMH
FILE NAME: P:\364111-Shalewater Solutions-Central Station\CAD\CIVIL\AS_BUILTS\364111-SITE GRADING AS_BUILT.dwg

DRAWN BY: PGE
CHK BY: BKK
APPRVD. BY: -

SHALEWATER SOLUTIONS
37 GRAND MEADOWS DR.
STE 201
BRIDGEPORT, WV 26330
PH: 304.592.2794 WWW.SHALEWATER.COM

Job	HMM 364111
No.	C-2
B/O	3
Total	9