COMMONWEALTH of VIRGINIA

Marine Resources Commission
2600 Washington Avenue
Third Floor
Newport News, Virginia 23607

Molly Joseph Ward
Secretary of Natural Resources

John M.R. Bull
Commissioner

March 14, 2017

James River Water Authority
Attn: Steven Nichols, Fluvanna Co. Admin.
c/o Timmons Group
1001 Boulders Parkway, Suite 300
Richmond, VA 23225

Re: VMRC #2014-0343

Dear Mr. Nichols:

Enclosed is the Marine Resources Commission permit to install a 5.82 MGD raw water intake adjacent to the north bank of the James River, just upstream of the confluence with the Rivanna River near the Town of Columbia, and a submerged water line beneath approximately 150 linear feet of the Rivanna River in Fluvanna County, to meet the water demands of Fluvanna and Louisa County.

A yellow placard is also enclosed. This placard reflects the authorized activities for inspection purposes and must be conspicuously displayed at the work site throughout the construction phase. Failure to properly post the placard in a prominent location will be considered a violation of your permit conditions.

YOU ARE REMINDED THAT ANY DEVIATION FROM THE PERMIT OR ATTACHED DRAWINGS REQUIRES PRIOR AUTHORIZATION FROM THE MARINE RESOURCES COMMISSION. FAILURE TO OBTAIN THE NECESSARY MODIFICATION WILL BE CONSIDERED A VIOLATION AND COULD SUBJECT YOU TO CIVIL CHARGES IN AMOUNTS NOT TO EXCEED $10,000 PER VIOLATION.

The work authorized by this permit is to be completed by June 30, 2019. Please note that in conformance with Special Condition 17 of your permit you are to notify the Commission 15 days prior to commencement of your permitted project. The enclosed self-addressed, stamped, postcard is to be used for this purpose. All other conditions of the permit will remain in effect.

Please be advised that you may also require issuance of a U. S. Army Corps of Engineers permit before you begin work on this project. You may wish to contact them directly to verify any permitting requirements.

Sincerely,

Tony Watkinson
Chief, Habitat Management

TW/rdo:lra
HM
Enclosure
cc: Property Owner
Applicant

COMMONWEALTH OF VIRGINIA
MARINE RESOURCES COMMISSION
PERMIT

The Commonwealth of Virginia, Marine Resources Commission, hereinafter referred to as the Commission, on this 28th day of June 2016 hereby grants unto:

James River Water Authority
132 Main Street
Palmyra, VA 22963

hereinafter referred to as the Permittee, permission to:

X Encroach in, on, or over State-owned subaqueous bottoms pursuant to Chapter 12, Subtitle III, of Title 28.2 of the Code of Virginia.

___ Use or develop tidal wetlands pursuant to Chapter 13, Subtitle III, of Title 28.2 of the Code of Virginia.

Permittee is hereby authorized to install a 5.82 MGD raw water intake adjacent to the north bank of the James River, just upstream of the confluence with the Rivanna River near the Town of Columbia, and a submerged water line beneath approximately 150 linear feet of the Rivanna River in Fluvanna County, to meet the water demands of Fluvanna and Louisa County. All activities authorized herein shall be accomplished in conformance with the plans and revised drawings dated received June 27, 2016, and February 9, 2017, which are attached and made a part of this permit.

This permit is granted subject to the following conditions:

(1) The work authorized by this permit is to be completed by **June 30th, 2019.** The Permittee shall notify the Commission when the project is completed. The completion date may be extended by the Commission in its discretion. Any such application for extension of time shall be in writing prior to the above completion date and shall specify the reason for such extension and the expected date of completion of construction. All other conditions remain in effect until revoked by the Commission or the General Assembly.

(2) This permit grants no authority to the Permittee to encroach upon the property rights, including riparian rights, of others.

(3) The duly authorized agents of the Commission shall have the right to enter upon the premises at reasonable times, for the purpose of inspecting the work being done pursuant to this permit.

(4) The Permittee shall comply with the water quality standards as established by the Department of Environmental Quality, Water Division, and all other applicable laws, ordinances, rules and regulations affecting the conduct of the project. The granting of this permit shall not relieve the Permittee of the responsibility of obtaining any and all other permits or authority for the projects.

(5) This permit shall not be transferred without written consent of the Commissioner.

(6) This permit shall not affect or interfere with the right vouchsafed to the people of Virginia concerning fishing, fowling and the catching of and taking of oysters and other shellfish in and from the bottom of acres and waters not included within the terms of this permit.

(7) The Permittee shall, to the greatest extent practicable, minimize the adverse effects of the project upon adjacent properties and wetlands and upon the natural resources of the Commonwealth.

(8) This permit may be revoked at any time by the Commission upon the failure of the Permittee to comply with any of the terms and conditions hereof or at the will of the General Assembly of Virginia.

(9) There is expressly excluded from the permit any portion of the waters within the boundaries of the Baylor Survey.

(10) This permit is subject to any lease of oyster planting ground in effect on the date of this permit. Nothing in this permit shall be construed as allowing the Permittee to encroach on any lease without the consent of the leaseholder. The Permittee shall be liable for any damages to such lease.

(11) The issuance of this permit does not confer upon the Permittee any interest or title to the beds of the waters.

(12) All structures authorized by this permit, which are not maintained in good repair, shall be completely removed from State-owned bottom within three (3) months after notification by the Commission.

(13) The Permittee agrees to comply with all of the terms and conditions as set forth in this permit and that the project will be accomplished within the boundaries as outlined in the plans attached hereto. Any encroachment beyond the limits of this permit shall constitute a Class 1 misdemeanor.

(14) This permit authorizes no claim to archaeological artifacts that may be encountered during the course of construction. If, however, archaeological remains are encountered, the Permittee agrees to notify the Commission, who will, in turn notify the Department of Historic Resources. The Permittee further agrees to cooperate with agencies of the Commonwealth in the recovery of archaeological remains if deemed necessary.

(15) The Permittee agrees to indemnify and save harmless the Commonwealth of Virginia from any liability arising from the establishment, operation or maintenance of said project.

The following special conditions are imposed on this permit:

(16) The yellow placard accompanying this permit document must be conspicuously displayed at the work site.

(17) Permittee agrees to notify the Commission a minimum of 15 days prior to the start of the activities authorized by this permit.

(18) Permittee agrees that no instream construction shall be conducted between March 15 through June 30 of any year, to protect anadromous fishes and mussel species, and August 15 through September 30 of any year, to protect mussel species.

(19) The instream construction activities shall be accomplished during low flow periods and within cofferdams constructed of non-erodible materials in such a manner that no more than half the width of the waterway is obstructed at any point in time.

(20) All area of State-owned bottom and adjacent lands disturbed by this activity shall be restored to their original contours and natural conditions within thirty (30) days from the date of completion of the authorized work. All excess materials shall be removed to an upland site and contained in such a manner to prevent its reentry into State waters.

(21) Erosion and sediment control measures shall be in conformance with the 1992 Third Edition of the Virginia Erosion and Sediment Control Handbook and shall be employed throughout construction.

(22) If it is determined that blasting is necessary at any of the crossings, the Department of Game and Inland Fisheries shall be notified a minimum of 48 hours in advance of the blasting.

(23) The Permittee agrees to follow the attached contingency / clean-up plan to address potential frac-outs or related spills associated with any directional drilling activities.

(24) The Permittee agrees to conduct a mollusc survey and relocation effort, performed from 100 meters upstream through 400 meters downstream of the intake location and Rivanna River crossing, unless specifically waived or modified in writing by the Department of Game & Inland Fisheries. This survey should be performed by a qualified, permitted biologist. Any relocations should be coordinated with the Department of Game & Inland Fisheries and no federally listed species should be relocated without first coordinating with the USFWS.

Description of Fees	Amount	Unit of Measure	Rate	Total	Frequency	After-The-Fact
Permit Fee				$100.00	One-Time	
Total Permit Fees				**$100.00**		

This permit consists of 19 Pages

PERMITTEE

Permittee's signature is affixed hereto as evidence of acceptance of all of the terms and conditions herein.

In cases where the Permittee is a corporation, agency or political jurisdiction, please assure that the individual who signs for the Permittee has proper authorization to bind the organization to the financial and performance obligations which result from activity authorized by this permit.

PERMITTEE
Accepted for ~~James~~ River Water Authority

7th day of March , 2017

By _____ Chairman-
(Name) (Title)

State of Virginia
City (or County) of Louisa, to-wit:

I, Alexandra Dixon, a Notary Public in and for said City (or County) and State hereby certify that Goodman B. Dare, Permittee, whose name is signed to the foregoing, has acknowledged the same before me in my City (or County) and State aforesaid.

Given under my hand this 7th day of March , 2017
My Commission Expires: 02/28/18

ALEXANDRA DIXON
COMMONWEALTH OF VIRGINIA
REGISTRATION NO. 7360760
MY COMM. EXPIRES: 02/28/18
NOTARY PUBLIC

Notary Public _____

COMMISSION

IN WITNESS WHEREOF, the Commonwealth of Virginia, Marine Resources Commission has caused these presents to be executed in its behalf by Tony Watkinson, Chief, Habitat Management
(Name) (Title) Marine Resources Commission

14th day of March , 20 17

By _____

State of Virginia
City of Newport News, to-wit:

I, Louise R. Atkins, a Notary Public within and for said City, State of Virginia, hereby certify that Tony Watkinson, whose name is signed to the foregoing, bearing the 28th day of June 2016, has acknowledged the same before me in City aforesaid.

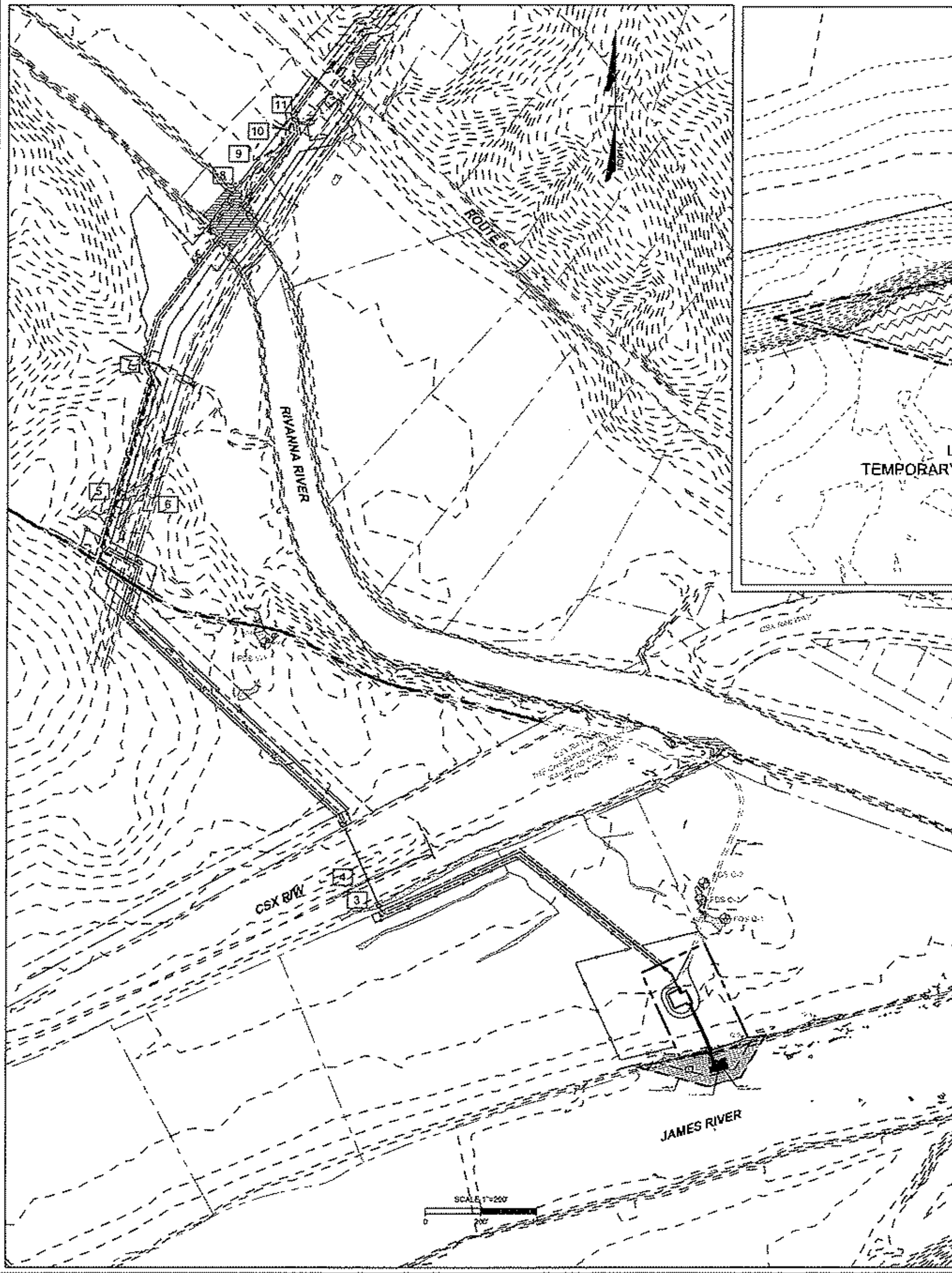
Given under my hand this 14th day of March , 2017
My Commission Expires: January 31, 2021

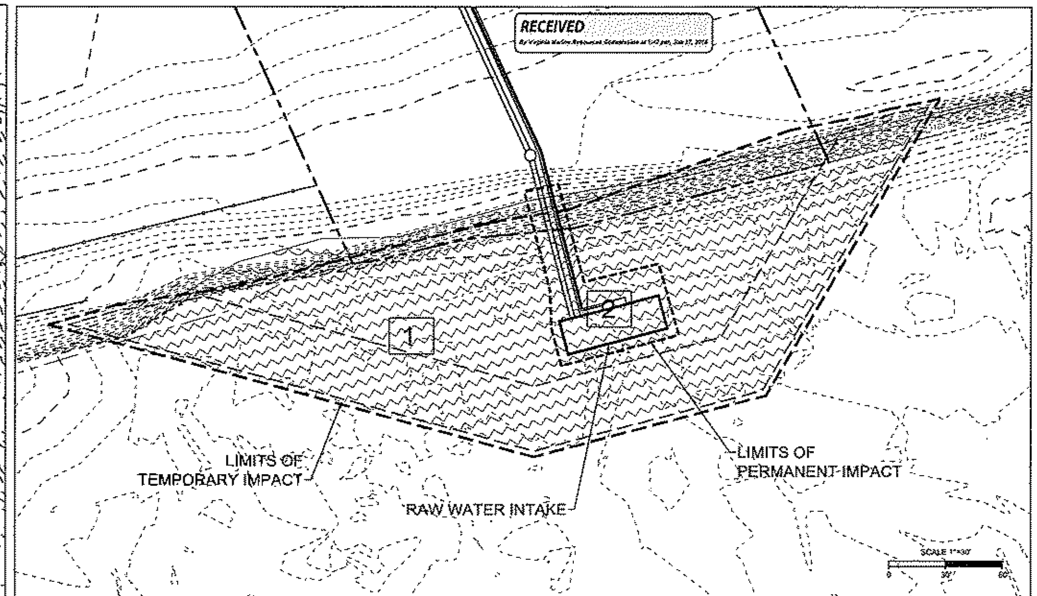
Notary Public _____

LOUISE R. ATKINS
Notary Public
Commonwealth of Virginia
365034

L:\2013\34967 – JRWA Joint Permit Application\DWG\Sheet\Exhibit\34967C-RWPS-SITE.dwg | Plotted on 6/27/2016 9:41 AM | by Bryce Stricklans

Additional Info/Revision





JAMES RIVER RAW WATER INTAKE IMPACT AREA DETAIL

WETLAND LEGEND

F.xx	WETLAND FLAG
xx	FIELD DATA STATION
SF	SQUARE FEET
LF	LINEAR FEET
AC	ACRES
[1]	IMPACT LOCATION

Environmental Impacts Table - James River Water Authority												
Project	Impact ID	Wetland (sq. ft)							Stream (lf and sq.ft.)			
		Impact							Impact			
		Construction Easement			15' Maintained Easement		Excavation/Fill		Temporary		Permanent	
		PEM	PSS	PFO	PSS	PFO	PEM	PFO	L.F.	Sq.Ft.	L.F.	Sq.Ft.
JRWA	1								485	39,000		
	2										64	3,470
	3					161						
	4					94						
	5								43	172		
	6	195										
	7								24	120		
	8								190	28,218		
	9								320	1,280		
	10								70	210		
	11								80	400		
	Sub-Total	195	0	0	0	255	0	0	1,212	69,400	64	3,470
	Total	195 sq ft			255 sq ft		0 sq ft		1,212 lf	69,400 sq ft	64 lf	3,470 sq ft
		0.004 ac			0.006 ac		0.000 ac			1.593 ac		0.080 ac
* PFO=Palustrine Forested Wetland; PSS=Palustrine Scrub-Shrub Wetland; PEM=Palustrine Emergent Wetland												

NOTE: REFER TO THE "PRELIMINARY JURISDICTIONAL WATERS OF THE U.S. MAP - DETAIL" SHEETS FOR ADDITIONAL INFORMATION OF EACH IMPACT AREA

RELOCATED INTAKE, PUMP STATION AND RAW WATER PIPELINE OWNED BY THE JRWA

NOTE: INTAKE STRUCTURE RELOCATED APPROX. 250 UPSTREAM

TIMMONS GROUP

YOUR VISION ACHIEVED THROUGH OURS.

THIS DRAWING PREPARED AT THE CORPORATE OFFICE
1001 BOULDERS PARKWAY, SUITE 300, RICHMOND, VA 23225
TEL 804.200.6500 FAX 804.560.1016 www.timmons.com

DATE	REVISION DESCRIPTION
5/14/2013	Update for final VMRC/DEQ submission
6/29/2016	Update for Relocated Intake, PS & Pipeline

DATE: JUNE 2016
DRAWN BY: J. CARTER
DESIGNED BY: D. SAUNDERS
CHECKED BY: D. SAUNDERS
SCALE: AS SHOWN

JRWA RAW WATER INTAKE, PUMP STATION AND FORCE MAIN

FLUVANNA COUNTY, VIRGINIA

ENVIRONMENTAL IMPACT SUMMARY

JOB NO. 34967
SHEET NO. 1 OF 1

APPROXIMATE PROJECT LIMITS

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NOT FOR CONSTRUCTION

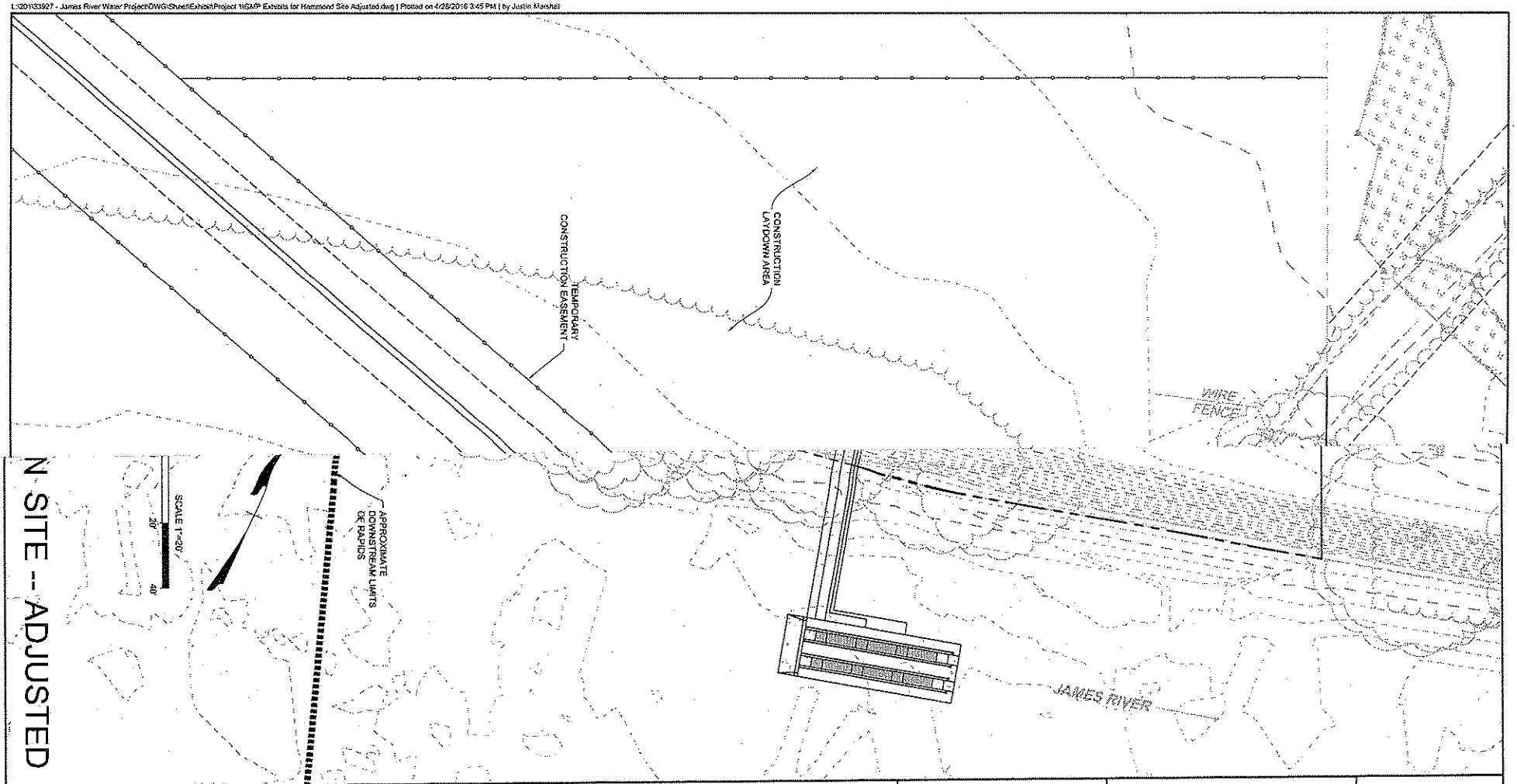
REVISION DESCRIPTION	DATE

DESIGNED BY: J. CARTER
DRAWN BY: D. SAUNDERS
CHECKED BY: D. SAUNDERS
SCALE: AS SHOWN

JAMES RIVER WATER PROJECT
JAMES RIVER WATER AUTHORITY
RAW WATER INTAKE AND PUMP STATION

Project No. 34967
Sheet No. SURV

L:\20133927 - James River Water Project\DWG\Sheet\Exhibit\Project HGMP Exhibits for Hammond Site Adjusted.dwg | Plotted on 4/28/2016 3:45 PM | by Justin Marshall



N SITE -- ADJUSTED

FAULCONER CONSTRUCTION COMPANY IN ASSOCIATION WITH **TIMMONS GROUP** AND **MEB General Contractors**

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1001 Boulders Parkway, Suite 300 | Richmond, VA 23225
TEL 804.200.6500 FAX 804.560.1016 www.timmons.com

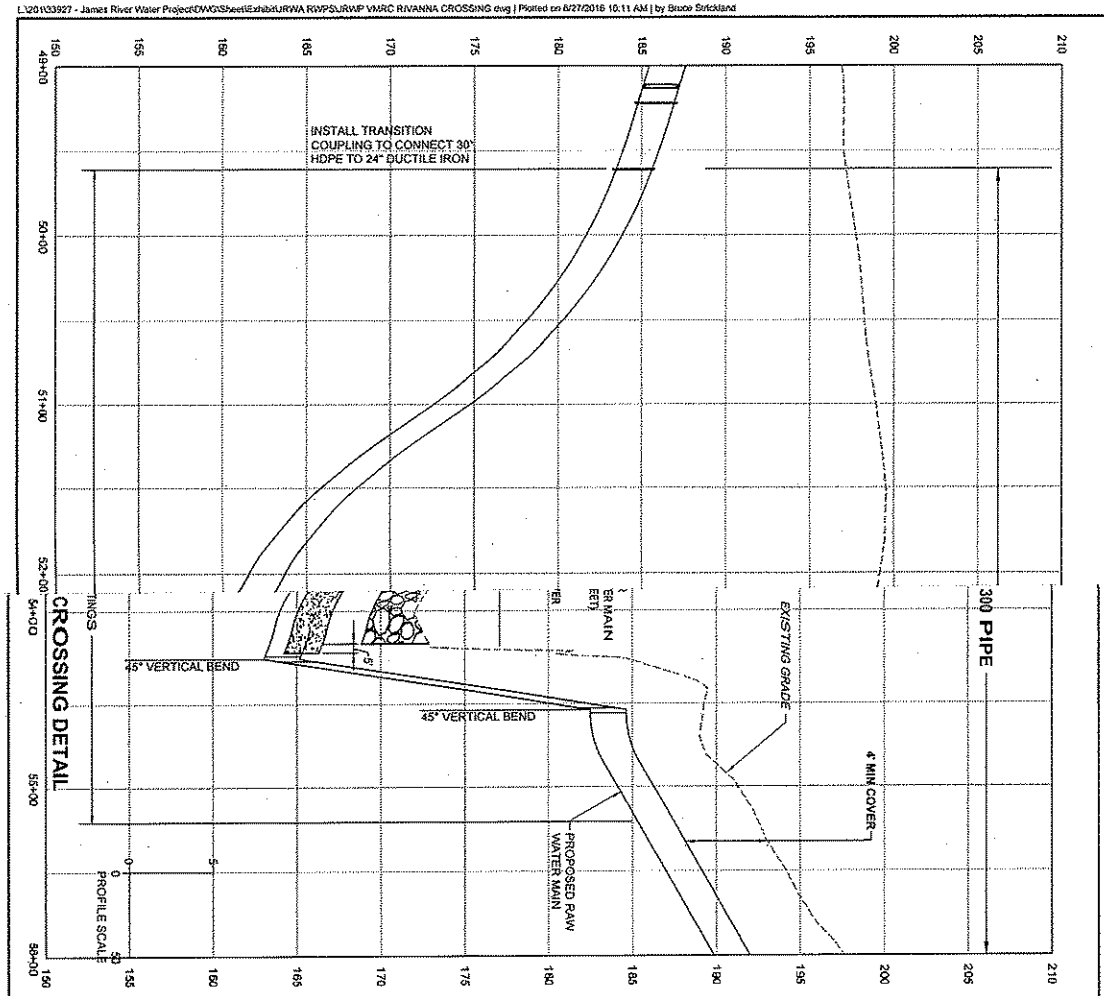
Site Development | Residential | Infrastructure | Technology

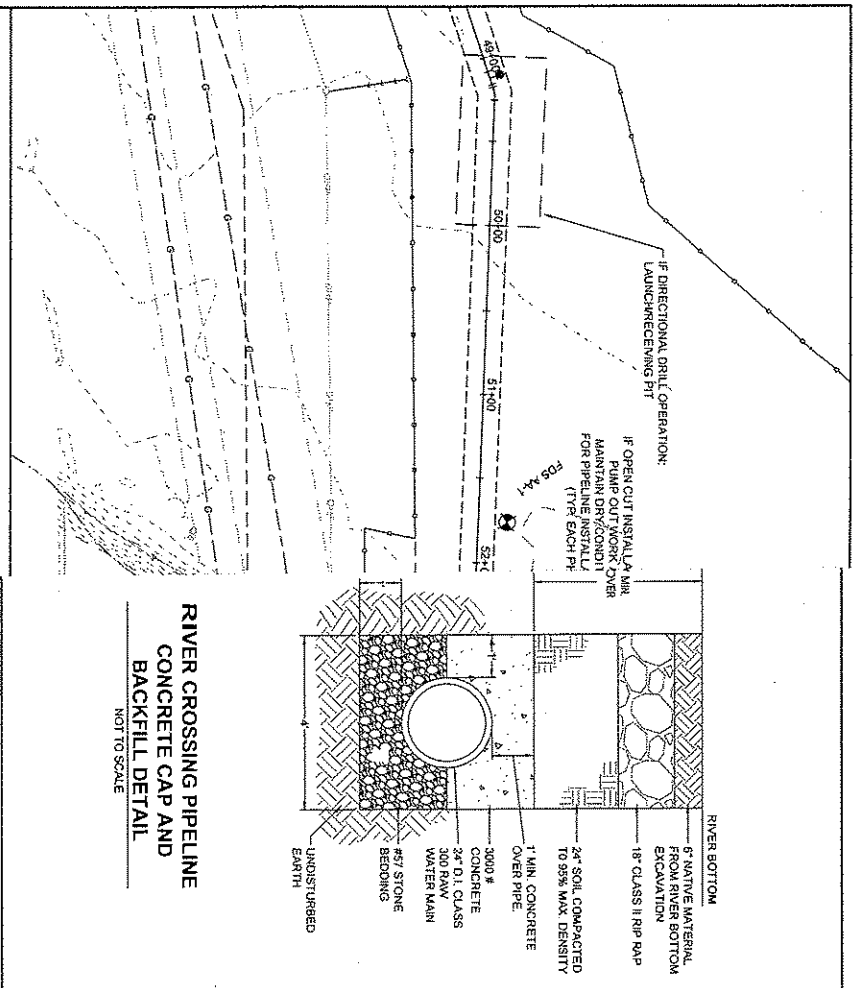
JAMES RIVER WATER PROJECT - PROJECT 2 - PLAN SET A
24 INCH RAW WATER MAIN

SHEET NO.	JOB NO.	SCALE	CHECKED BY	DESIGNED BY	DRAWN BY	DATE
	33927					04-14-2016

DATE	REVISION DESCRIPTION

L:\2015\33927 - James River Water Project\DWG\Sheet\Exhibit\JRWA RWPS\JRWP VMRC RIVANNA CROSSING.dwg | Plotted on 6/27/2016 10:11 AM | by Bruce Strickland





FAULCONER CONSTRUCTION COMPANY

IN ASSOCIATION WITH **TIMMONS GROUP** AND MEB General Contractors

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JAMES RIVER WATER PROJECT

JAMES RIVER WATER AUTHORITY

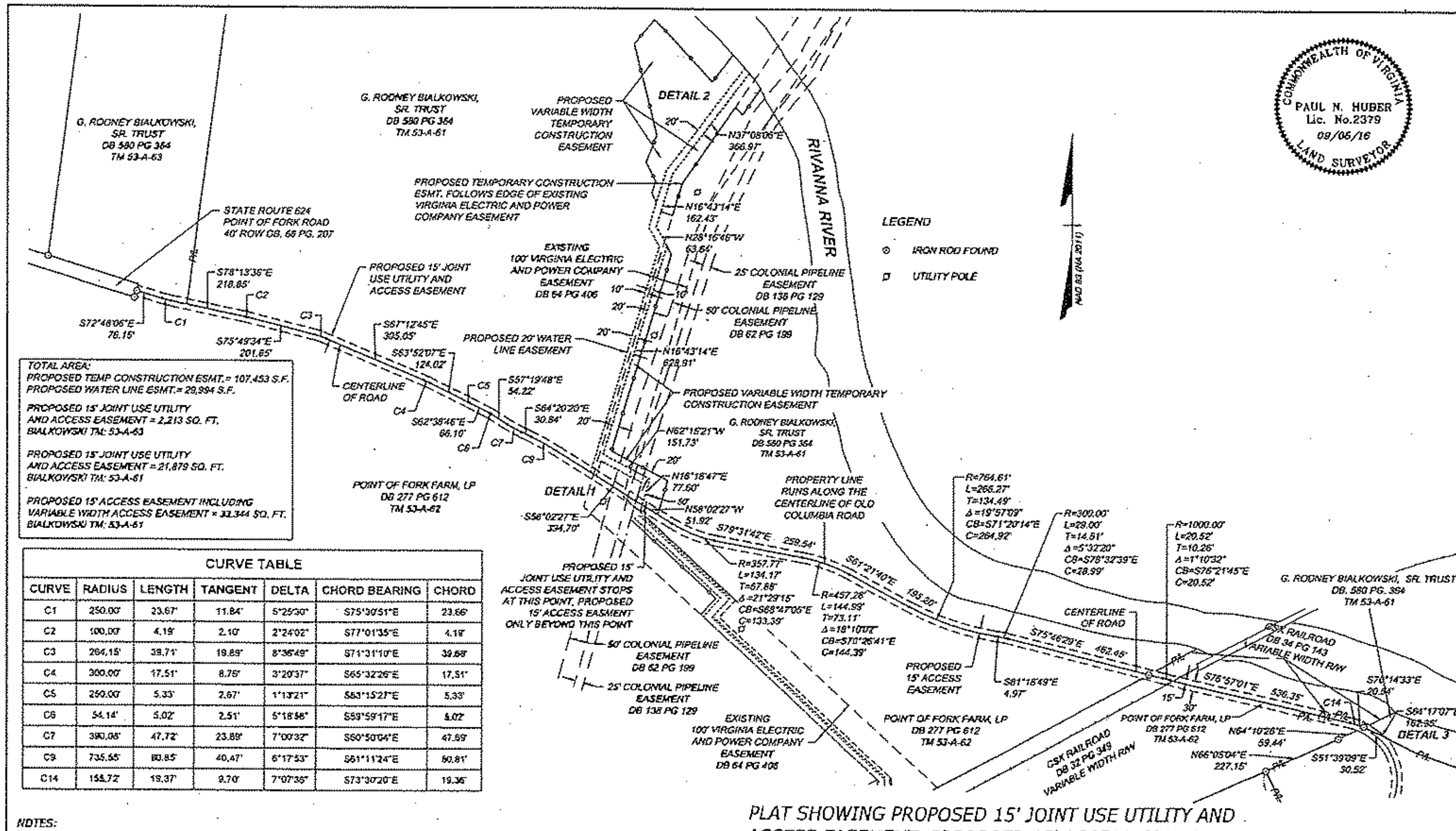
RAW WATER MAIN RIVANNA RIVER CROSSING

SHEET NO.	JOB NO.	SCALE	CHECKED BY	DESIGNED BY	DRAWN BY	DATE
VMRC 2	33927	AS SHOWN	D. SAUNDERS	D. SAUNDERS	J. CARTER	2-24-2016

DATE	REVISION DESCRIPTION
6-23-2016	revised alignment

RECEIVED
FEB 09 2017
MARINE RESOURCES
COMMISSION

ADDITIONAL INFO
REVISION



TOTAL AREA:
PROPOSED TEMP CONSTRUCTION ESMT.= 107,453 S.F.
PROPOSED WATER LINE ESMT.= 29,994 S.F.

PROPOSED 15' JOINT USE UTILITY
AND ACCESS EASEMENT = 2,213 SQ. FT.
BIALKOWSKI TM: 53-A-63

PROPOSED 15' JOINT USE UTILITY
AND ACCESS EASEMENT = 21,879 SQ. FT.
BIALKOWSKI TM: 53-A-61

PROPOSED 15' ACCESS EASEMENT INCLUDING
VARIABLE WIDTH ACCESS EASEMENT = 33,344 SQ. FT.
BIALKOWSKI TM: 53-A-61

CURVE TABLE

CURVE	RADIUS	LENGTH	TANGENT	DELTA	CHORD BEARING	CHORD
C1	250.00'	23.67'	11.84'	5°25'30"	S75°30'51"E	23.66'
C2	100.00'	4.19'	2.10'	2°24'02"	S77°01'35"E	4.19'
C3	264.15'	39.71'	19.89'	8°36'49"	S71°31'10"E	39.68'
C4	300.00'	17.51'	8.75'	3°20'37"	S65°32'26"E	17.51'
C5	250.00'	5.33'	2.67'	1°13'21"	S63°15'21"E	5.33'
C6	54.14'	5.02'	2.51'	5°18'56"	S59°59'17"E	5.02'
C7	390.08'	47.72'	23.89'	7°00'32"	S60°50'04"E	47.69'
C9	735.65'	80.85'	40.47'	6°17'53"	S61°11'24"E	80.81'
C14	155.72'	19.37'	9.70'	7°07'35"	S73°30'20"E	19.36'

NOTES:

1. HORIZONTAL DATUM IS BASED ON NAD 83 (NA2011), VIRGINIA STATE GRID, SOUTH ZONE. DATUM ESTABLISHED THOUGHT LEICA SmartNet.

2. THIS IS NOT A BOUNDARY SURVEY. BOUNDARY DELINEATION SHOWN IS BASED ON RECOVERED MONUMENTS IN THE FIELD AND DEEDS OF RECORD. NO TITLE REPORT FURNISHED. EASEMENTS MAY EXIST WHICH ARE NOT SHOWN HEREON.

PLAT SHOWING PROPOSED 15' JOINT USE UTILITY AND ACCESS EASEMENT, PROPOSED 15' ACCESS EASEMENT, PROPOSED VARIABLE WIDTH ACCESS EASEMENT, PROPOSED 20' WATER LINE EASEMENT AND PROPOSED VARIABLE WIDTH CONSTRUCTION EASEMENTS ACROSS THE PROPERTIES OF G. RODNEY BIALKOWSKI, SR. TRUST

SCALE 1"=200'
0 200' 400'

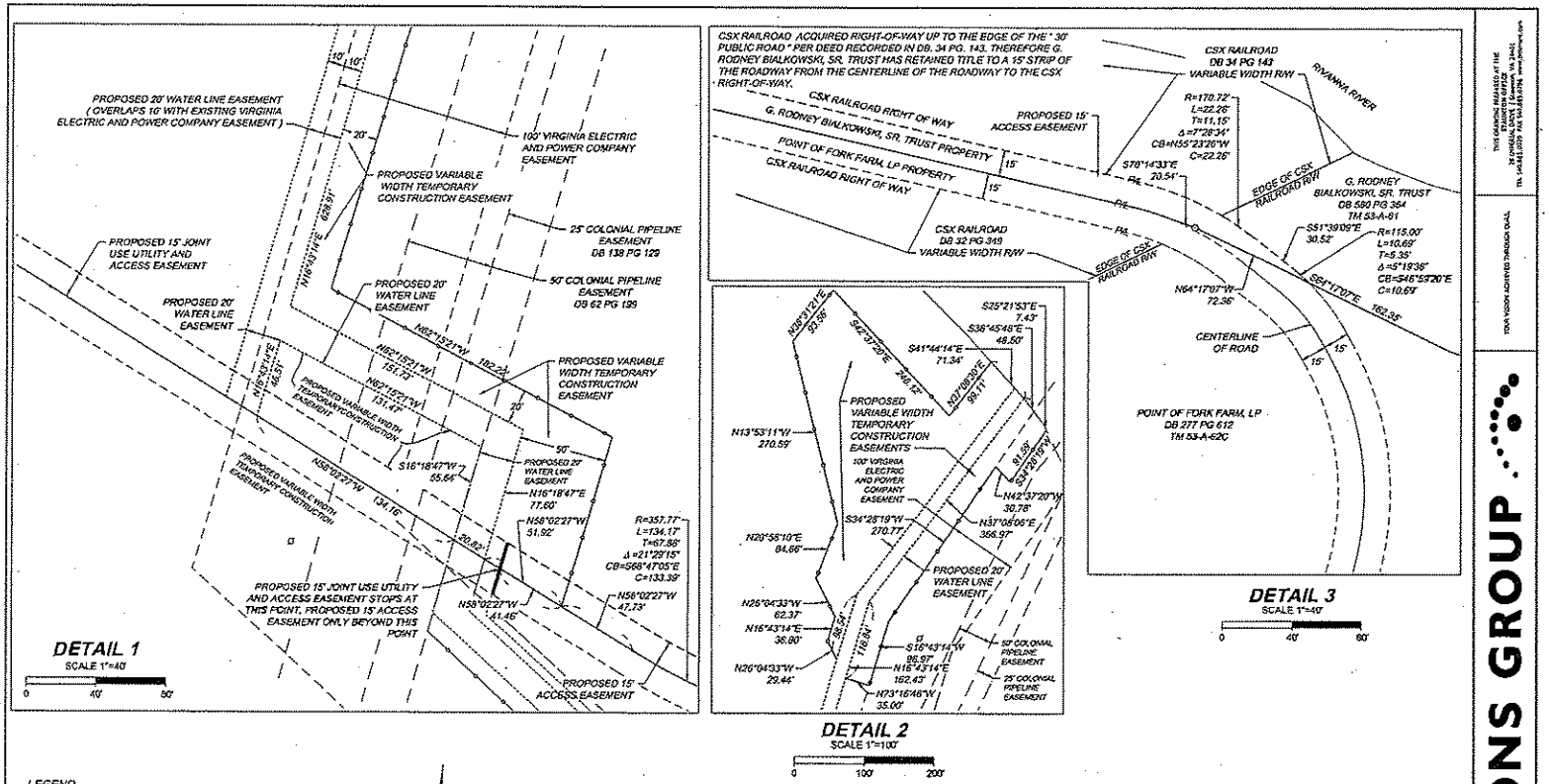
Columbia District	Fluvanna County
Date: 09/06/2016	Scale: 1"=200'
Sheet1 of 2	J.N.: 33927
Drawn by: MUI	Checked by: PNH

TIMMONS GROUP

YOUR VISION ACHIEVED THROUGH OURS.

RECEIVED
FEB 09 2017
MARINE RESOURCES COMMISSION

ADDITIONAL INFO
REVISION



LEGEND

- ● IRON ROD FOUND
- □ UTILITY POLE

NOTES:

1. HORIZONTAL DATUM IS BASED ON NAD 83 (NA2011), VIRGINIA STATE GRID, SOUTH ZONE. DATUM ESTABLISHED THOUGHT LEICA SmartNet.

2. THIS IS NOT A BOUNDARY SURVEY. BOUNDARY DELINEATION SHOWN IS BASED ON RECOVERED MONUMENTS IN THE FIELD AND DEEDS OF RECORD. NO TITLE REPORT FURNISHED. EASEMENTS MAY EXIST WHICH ARE NOT SHOWN HEREON.

NAD 83 (NA 2011)

COMMONWEALTH OF VIRGINIA
PAUL N. HUBER
Lic. No.2379
08/06/16
LAND SURVEYOR

PLAT SHOWING PROPOSED 15' JOINT USE UTILITY AND ACCESS EASEMENT, PROPOSED 15' ACCESS EASEMENT, PROPOSED VARIABLE WIDTH ACCESS EASEMENT, PROPOSED 20' WATER LINE EASEMENT AND PROPOSED VARIABLE WIDTH CONSTRUCTION EASEMENTS ACROSS THE PROPERTIES OF G. RODNEY BIALKOWSKI, SR. TRUST

Columbia District	Fluvanna County
Date: 09/06/16	Scale: AS SHOWN
Sheet 2 of 2	J.N.: 33927
Drawn by: MLH	Checked by: PNH

TIMMONS GROUP

JAMES RIVER WATER SUPPLY PROJECT LOUISA COUNTY OWNED SYSTEM

CONTINGENCY PLAN FOR DIRECTIONAL DRILLING

TABLE OF CONTENTS

FRAC-OUT CONTINGENCY PLAN (FCP)

1.0 Introduction and Purpose

Directional bore operations have a potential to release drilling fluids into the surface environment through frac-outs (A frac-out is the condition where drilling mud is released through fractured bedrock into the surrounding rock and sand and travels toward the surface.) Because drilling muds consist largely of a bentonite clay-water mixture, they are not classified as toxic or hazardous substances. However, if it is released into water bodies, bentonite has the potential to adversely impact fish and invertebrates.

While drilling fluid seepage associated with a frac-out is most likely to occur near the bore entry and exit points where the drill head is shallow, frac-outs can occur in any location along a directional bore. This Frac-Out Contingency Plan (FCP) establishes operational procedures and responsibilities for the prevention, containment, and clean-up of frac-outs associated with the proposed directional drilling utility project of associated with the James River Water Supply Project Louisa County Owned System. All personnel and Sub-Contractors responsible for the work must adhere to this plan during the directional drilling process.

The specific objectives of this plan are to:

1. Minimize the potential for a frac-out associated with directional drilling activities;
2. Provide for the timely detection of frac-outs;
3. Protect the environmentally sensitive riverbed and associated riparian vegetation;
4. Ensure an organized, timely, and "minimum-impact" response in the event of a frac-out and release of drilling bentonite; and
5. Ensure that all appropriate notifications are made immediately to the customer, management and safety personnel.

2.0 Description of Work:

The proposed project consists of: *(Explain work task in detail to crew members.)*

Drilling operations will be halted by the drill rig operators immediately upon detection of a drop in drilling pressure or other evidence of a frac-out. The clean-up of all spills shall begin immediately. Management & safety department shall be notified immediately of any spills and shall be consulted regarding clean-up procedures. A spill kit shall be on-site and used if a frac-out occurs. A vacuum truck and containment materials, such as straw bales, shall also be on-site prior to and during all operations. The Site Supervisor will be immediately notified. In the event of a frac-out, the on-site foreman/supervisor will conduct an evaluation of the situation and direct recommended mitigation actions, based on the following guidelines:

a. If the frac-out is minor, easily contained, has not reached the surface and is not threatening sensitive resources, drilling operations may resume after use of a leak stopping compound or redirection of the bore;

b. If the frac-out has reached the surface, any material contaminated with Bentonite shall be removed by hand to a depth of 2-feet, contained and properly disposed of, as required by law. The drilling contractor shall be responsible for ensuring that the bentonite is either properly disposed of at an approved disposal facility or properly recycled in an approved manner. The Site Supervisor shall notify and take any necessary follow-up response actions in coordination with agency representatives. The Site Supervisor will coordinate the mobilization of equipment stored at off-site locations (e.g., vacuum trucks) on an as needed basis;

3.0 Site Supervisor/Foremen Responsibilities:

The Site Supervisor/Foremen has overall responsibility for implementing this FCP. The Site Supervisor/Foremen will ensure that all employees are trained prior to all drilling. The Site Supervisor/Foremen shall be notified immediately when a frac-out is detected. The Site Supervisor/Foremen will be responsible for ensuring that the safety department is aware of the frac-out, coordinating personnel, response, cleanup, regulatory agency notification and coordination to ensure proper clean-up, disposal of recovered material and timely reporting of the incident. The Site Supervisor/Foremen shall ensure all waste materials are properly containerized, labeled, and removed from the site to an approved disposal facility by personnel experienced in the removal, transport and disposal of drilling mud.

The Site Supervisor/Foremen shall be familiar with all aspects of the drilling activity, the contents of this Frac-out Contingency Plan and the conditions of approval under which the activity is permitted to take place. The Site Supervisor/Foremen shall have the authority to stop work and commit the resources (personnel and equipment) necessary to implement this plan. The Site Supervisor/Foremen shall assure that a copy of this plan is available (onsite) and accessible to all construction personnel. The Site Supervisor/Foremen shall ensure that all workers are properly trained and familiar with the necessary procedures for response to a frac-out, prior to commencement of drilling operations.

4.0 Equipment:

The Site Supervisor shall ensure that:

- All equipment and vehicles are be checked and maintained daily to prevent leaks of hazardous materials;
- Spill kits and spill containment materials are available on-site at all times and that the equipment is in good working order;
- Equipment required to contain and clean up a frac-out release will either be available at the work site or readily available at an offsite location within 15-minutes of the bore site; and
- If equipment is required to be operated near a riverbed, absorbent pads and plastic sheeting for placement beneath motorized equipment shall be used to protect the riverbed from engine fluids;

5.0 Training

Prior to the start of construction, the Site Supervisor/Foremen, shall ensure that the crew members receive training in the following:

- The provisions of the Frac-out Contingency Plan, equipment maintenance and site specific permit and monitoring requirements;
- Inspection procedures for release prevention and containment equipment and materials;
- Contractor/crew obligation to immediately stop the drilling operation upon first evidence of the occurrence of a frac-out and to immediately report any frac-out releases;
- Contractor/crew member responsibilities in the event of a release;
- Operation of release prevention and control equipment and the location of release control materials, as necessary and appropriate; and
- Protocols for communication with agency representatives who might be on-site during the clean-up effort.

6.0 Drilling Procedures

The following procedures shall be followed each day, prior to the start of work. The Frac-out Contingency Plan shall available on-site during **all** construction. The Site Supervisor/Foremen shall be on-site at any time that drilling is occurring or is planned to occur. The Site Supervisor/Foremen shall ensure that a Job Briefing meeting is held at the start of each day of drilling to review the appropriate procedures to be followed in case of a frac-out. Questions shall be answered and clarification given on any point over which the drilling crew or other project staff has concerns.

Drilling pressures shall be closely monitored so they do not exceed those needed to penetrate the formation. Pressure levels shall be monitored randomly by the operator. Pressure levels shall be set at a minimum level to prevent frac-outs. During the pilot bore, maintain the drilled annulus. Cutters and reamers will be pulled back into previously-drilled sections after each new joint of pipe is added.

Exit and entry pits shall be enclosed by silt fences and straw. A spill kit shall be on-site and used if a frac-out occurs. A vacuum truck shall be readily available on-site prior to and during all drilling operations. Containment materials (Straw, silt fencing, sand bags, frac-out spill kits, etc.) shall be staged on-site at location where they are readily available and easily mobilized for immediate use in the event of an accidental release of drilling mud (frac-out). If necessary, barriers (straw bales or sedimentation fences) between the bore site and the edge of the water source, shall be constructed, prior to drilling, to prevent released bentonite material from reaching the water.

Once the drill rig is in place, and drilling begins, the drill operator shall stop work whenever the pressure in the drill rig drops, or there is a lack of returns in the entrance pit. At this time the Site Supervisor/Foremen shall be informed of the potential frac-out. The Site Supervisor/Foremen and the drill rig operator(s) shall work to coordinate the likely location of the frac-out. The location of the frac-out shall be recorded and notes made on the location and measures taken to address the concern. The following subsections shall be adhered to when addressing a frac-out situation.

Water containing mud, silt, bentonite, or other pollutants from equipment washing or other activities, shall not be allowed to enter a lake, flowing stream or any other water source. The Bentonite used in the drilling process shall be either disposed of at an approved disposal facility or recycled in an approved manner. Other construction materials and wastes shall be recycled, or disposed of, as appropriate.

6.1 Vac-Truck:

A vacuum truck shall be staged at a location from which it can be mobilized and relocated so that any place along the drill shot, can be reached by the apparatus, within 10 minutes of a frac-out.

6.2 Field Response to Frac-out Occurrence:

The response of the field crew to a frac-out release shall be immediate and in accordance with procedures identified in this Plan. All appropriate emergency actions that do not pose additional threats to sensitive resources will be taken, as follows:

a. Directional boring will stop immediately;
b. The bore stem will be pulled back to relieve pressure on frac-out;
c. The Site Supervisor/Foremen will be notified to ensure that management and the safety department is notified, adequate response actions are taken and notifications made;
d. The Site Supervisor/Foremen shall evaluate the situation and recommend the type and level of response warranted, including the level of notification required;
e. If the frac-out is minor, easily contained, has not reached the surface and is not threatening sensitive resources, a leak stopping compound shall be used to block the frac-out. If the use of leak stopping compound is not fully successful, the bore stem shall be redirected to a new location along the desired drill path where a frac-out has not occurred;
f. If the frac-out has reached the surface, any material contaminated with Bentonite shall be removed by hand, to a depth of 2-feet, contained and properly disposed of, as required by law. A dike or berm may be constructed around the frac-out to entrap released drilling fluid, if necessary. Clean sand shall be placed and the area returned to pre-project contours; and
g. If a frac-out occurs, reaches the surface and becomes widespread, the Site Supervisor/Foremen shall authorize a readily accessible vacuum truck and bulldozer stored off-site to be mobilized. The vacuum truck may be either positioned at either end of the line of the drill so that the frac-out can be reached by crews on foot, or may be pulled by a bulldozer, so that contaminated soils can be vacuumed up.

6.3 Response Close-out Procedures:

When the release has been contained and cleaned up, response closeout activities will be conducted at the direction of the Site Supervisor/Foremen and shall include the following:

a. The recovered drilling fluid will either be recycled or hauled to an approved facility for disposal. No recovered drilling fluids will be discharged into streams, storm drains or any other water source;
b. All frac-out excavation and clean-up sites will be returned to pre-project contours using clean fill, as necessary; and
c. All containment measures (fiber rolls, straw bale, etc.) will be removed, unless otherwise specified by the Site Supervisor/Foremen.

6.4 Construction Re-start:

For small releases not requiring external notification, drilling may continue, if 100 percent containment is achieved through the use of a leak stopping compound or redirection of the bore and the clean-up crew remains at the frac-out location throughout the construction period.

For releases requiring external notification and/or other agencies, construction activities will not restart without prior approval from the safety department.

6.5 Bore Abandonment:

Abandonment of the bore will only be required when all efforts to control the frac-out within the existing directional bore have failed.

7.0 Notification:

In the event of a Frac-out that reaches a water source, the Site Supervisor/Foremen will notify safety department so they can notify the appropriate resource agencies. All agency notifications will occur within 24 hours and proper documentation will be accomplished in a timely and complete manner. The following information will be provided:

1. Name and telephone number of person reporting;
2. Location of the release;
3. Date and time of release;
4. Type and quantity, estimated size of release;
5. How the release occurred;
6. The type of activity that was occurring around the area of the frac-out;
7. Description of any sensitive areas, and their location in relation to the frac-out;
8. Description of the methods used to clean up or secure the site; and
9. Listing of the current permits obtained for the project.

7.1 Communicating with Regulatory Agency Personnel:

All employees and subcontractors will adhere to the following protocols when permitting Regulatory Agency Personnel arrive on site. Regulatory Agency Personnel will be required to comply with appropriate safety rules. Only the Site Supervisor/Foremen and the safety department are to coordinate communication with Regulatory Agency Personnel.

7.2 Documentation:

The Site Supervisor/Foremen shall record the frac-out event in his or her daily log. The log will include the following: Details on the release event, including an estimate of the amount of bentonite released, the location and time of release, the size of the area impacted, and the success of the clean-up action. The log report shall also include the: Name and telephone number of person reporting; Date, How the release occurred; The type of activity that was occurring around the area of the free-out: Description of any sensitive areas, and their location in relation to the frac-out: Description of the methods used to clean up or secure the site; and a listing of the current permits obtained for the project.

8.0 Project Completion and Clean-up:

a. All materials and any rubbish-construction debris shall be removed from the construction zone at the end of each workday;
b. Sump pits at bore entry and exits will be filled and returned to natural grade; and
c. All protective measures (fiber rolls, straw bale, silt fence, etc.) will be removed unless otherwise specified by the Site Supervisor/Foremen.