

STORMWATER MASTER PLAN

PRGS REDEVELOPMENT

ALEXANDRIA, VIRGINIA

VICINITY MAP
SCALE 1"= 350'



VCS 1983 GRID NORTH

SHEET INDEX	
C100	COVER SHEET
C101	STORMWATER MASTER PLAN TRACKING CHART
C200	OVERALL EXISTING CONDITIONS PLAN
C200A	TREE SCHEDULE
C201-C204	EXISTING CONDITIONS PLAN
C300	OVERALL SITE PLAN
C301-C304	CONCEPTUAL SITE PLAN
C400	EXISTING IMPERVIOUS MAP
C500	PROPOSED IMPERVIOUS MAP
C600	SWM COMPUTATIONS AND NARRATIVES
C601	BMP COMPUTATIONS AND DETAILS
C602-C605	SWM-BMP PLAN
C606	BMP COMPUTATIONS - BLOCK A
C607	BMP COMPUTATIONS - BLOCK B
C608	BMP COMPUTATIONS - BLOCK C
C609	BMP COMPUTATIONS - BLOCK D
C610	BMP COMPUTATIONS - BLOCK E
C611	BMP COMPUTATIONS - BLOCK F
C612	BMP COMPUTATIONS - INFRASTRUCTURE & PARK
C613	BMP COMPUTATIONS - BIO SIZING
C700-C703	DRAINAGE AREA MAP
C704	STORM SEWER COMPUTATIONS

NOTES:

1. THIS SWMP IS BASED ON UTILITY "OPTION 2" AS SHOWN IN THE IDSP AND THE SWMP WILL BE COORDINATED WITH THE INFRASTRUCTURE DSP AND FSP AS HRP FINALIZES UTILITY CONFIGURATION FOR THE SITE.

PROFESSIONAL SEAL AND SIGNATURE	DATE	REVISION
	10-07-2022	FIRST SUBMISSION

APPLICANT

HRP
POTOMAC, LLC
1199 N FAIRFAX ST.
SUITE 808
ALEXANDRIA, VA 22314
312 796-6564

CIVIL ENGINEER

christopher consultants, ltd.
4035 RIDGE TOP RD
SUITE 601
FAIRFAX, VIRGINIA 22030
703 273-6820

TRAFFIC ENGINEER

GOROVE SLADE
225 REINEKERS LANE
SUITE 750
ALEXANDRIA, VIRGINIA 22314
703 721-3044

ATTORNEY

WIRE GILL
700 N FAIRFAX ST
SUITE 600
ALEXANDRIA, VA 22314
703 836-5757

ARCHITECT

GENSLER
2020 K STREET NW
WASHINGTON, D.C. 20006
202 721-5200

LANDSCAPE ARCHITECT

OJB LANDSCAPE ARCHITECTURE
ONE BOWDOIN SQUARE,
SUITE 801
BOSTON, MASSACHUSETTS 02114
857 233-5171

SUSTAINABILITY CONSULTANT

SUSTAINABLE BUILDING
PARTNERS
2701 PROSPERITY AVENUE
SUITE 100
FAIRFAX, VIRGINIA 22031
703 970-2890

APPROVED	
DEVELOPMENT SITE PLAN NO. _____	
DEPARTMENT OF PLANNING & ZONING	
DIRECTOR	DATE
DEPT. OF TRANSPORTATION & ENVIRONMENTAL SERVICES	
SITE PLAN No. _____	
DIRECTOR	DATE
CHAIRMAN, PLANNING COMMISSION	DATE
DATE RECORDED	_____
INSTRUMENT NO.	DEED BOOK NO. PAGE NO.

D

C

B

A

STORMWATER MASTERPLAN BMP TRACKING SPREADSHEET (DESIGN)

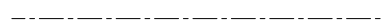
DSP/Building Number	Total Acres	Pre-Impervious Area	Pre-Pervious Area	Post-Impervious Area	Post-Pervious Area	Final Post TP Load	Required Phosphorous Reduction (lbs)	Provided Phosphorous Reduction (lbs)
A	0.36	0.01	0.35	0.36	0.00	0.78	0.09	0.30
B	1.02	0.02	1.00	1.02	0.00	2.21	1.77	1.80
C	1.78	0.27	1.51	1.78	0.00	3.86	1.13	1.36
D	0.99	0.99	0.00	0.99	0.00	2.15	0.21	0.72
E	1.51	1.51	0.00	1.51	0.00	3.27	0.65	1.04
F	1.25	1.24	0.01	1.25	0.00	2.71	0.55	0.87
Infrastructure	6.57	4.77	1.80	6.57	0.00	14.24	5.23	5.3
Park	5.39	4.25	1.14	2.28	3.11	6.19	0	2.07
Total Phase 1	18.87	13.06	5.81	15.76	3.11	35.41	9.63	13.46
Required Phase 1	Total LOD							

Block B requires
Manufactured Treatment
Device - Filtering in the
basement

Green Roof, Solar, Other						
	A	B	C	D	E = B + C + D	F = A - B
DSP/Building	Roof ft ²	Green Roof ft ²	Solar Roof ft ²	Other Roof ft ²	Combined Green, Solar, Other Roof ft ²	Impervious Roof ft ² (not vegetated)
A	13,977	8,194		5,783	13,977	5,783
B	41,565	11,935	5,607	24,023	41,565	29,630
C	67,280	19,068	7,826	40,386	67,280	48,212
D	35,834	10,388	3,050	22,396	35,834	25,446
E	56,328	13,833	6,477	36,018	56,328	42,495
F	50,789	10,477	6,423	33,889	50,789	40,312
Total ft ² Phase 1	265,773	73,895	29,383	162,495	265,773	191,878
Total percentage		28%	11%	61%	100%	
Required Phase 1		25% of total roof ft ² green		25% total roof ft ² green/solar/other		

NOTE: THIS SPREADSHEET WILL BE UPDATED UPON THE APPROVAL OF EACH INDIVIDUAL DSP IN ORDER TO TRACK AND MAINTAIN COMPLIANCE WITH THE CDD CONDITIONS.

LEGEND

- 
- : PROP. PARKING SPACES
- 
- : PROP. RIGHT-OF-WAY
- 
- : PROP. ROAD CENTERLINE
- 
- : PROP. BUILDING
- 
- : PROP. CURB
- 
- : EX. CONTOUR
- 
- : EX. SANITARY SEWER
- 
- : EX. STORM SEWER
- 
- : EX. TREE LINE
- 
- : EX. CURB & GUTTER
- 
- : EX. FENCE
- 
- : EX. LIGHT
- 
- : EX. UNDERGROUND ELECTRIC LINE
- 
- : EX. VERIZON UNDERGROUND COMM LINE
- 
- : EX. COMCAST UNDERGROUND COMM LINE
- 
- : EX. ELECTRIC LINE
- 
- : EX. COMMUNICATION LINE
- 
- : EX. PEP CO LINE
- 
- : UNIDENTIFIED UNDERGROUND UTILITY
- 
- : EX. STORM MANHOLE
- 
- : EX. SANITARY MANHOLE
- 
- : EX. LIGHT

APPROVED

DEVELOPMENT SITE PLAN NO. _____
DEPARTMENT OF PLANNING & ZONING

DIRECTOR _____ DATE _____
DEPT. OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN NO. _____

DIRECTOR _____ DATE _____

CHAIRMAN, PLANNING COMMISSION _____ DATE _____

DATE RECORDED _____

INSTRUMENT NO. _____ DEED BOOK NO. _____ PAGE NO. _____

POTOMAC RIVER GENERATING

STATION

STORMWATER MASTERPLAN

CITY OF ALEXANDRIA, VA

FIRST SUBMISSION

10/07/2022

1

MARK

DATE

DESCRIPTION

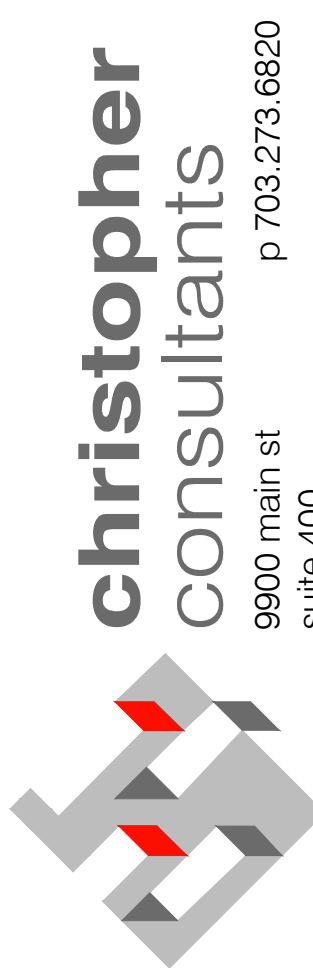
PROJECT No.: 17005.004.01
DRAWING No.: 111759
DATE: 2022-05-09
DESIGN:
DRAWN: MG
CHECKED: JH

SHEET TITLE:

STORMWATER
MASTER PLAN
TRACKING CHART

SHEET No.

C101



christopher
consultants

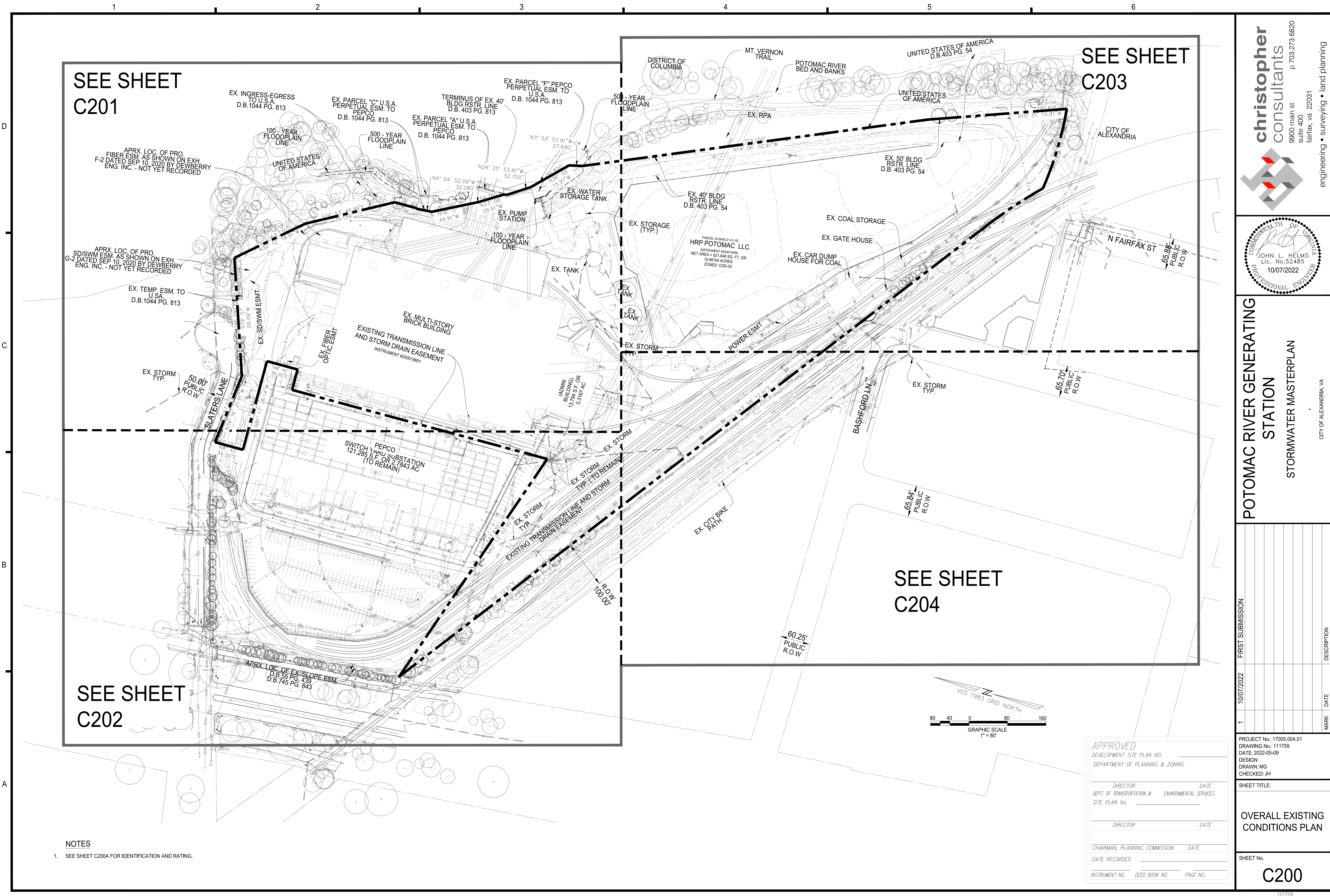
9900 main st
suite 400
fairfax, va 22031

p 703.273.6820

engineering • surveying • land planning



COMMONWEALTH OF VIRGINIA
JOHN L. HELMS
Lic. No. 52485
10/07/2022
PROFESSIONAL ENGINEER



NOTES
1. SEE SHEET C200A FOR IDENTIFICATION AND RATING.

christopher
consultants

9900 main st
suite 400
fairfax, va 22031

engineering • surveying • land planning

**POTOMAC RIVER GENERATING
STATION
STORMWATER MASTERPLAN**

MARK	DATE	DESCRIPTION
1	10/07/2022	FIRST SUBMISSION

PROJECT No.: 17005.004.01
DRAWING No.: 111759
DATE: 2022-05-09
DESIGN:
DRAWN: MG
CHECKED: JH

SHEET TITLE:

**OVERALL EXISTING
CONDITIONS PLAN**

SHEET No.

C200

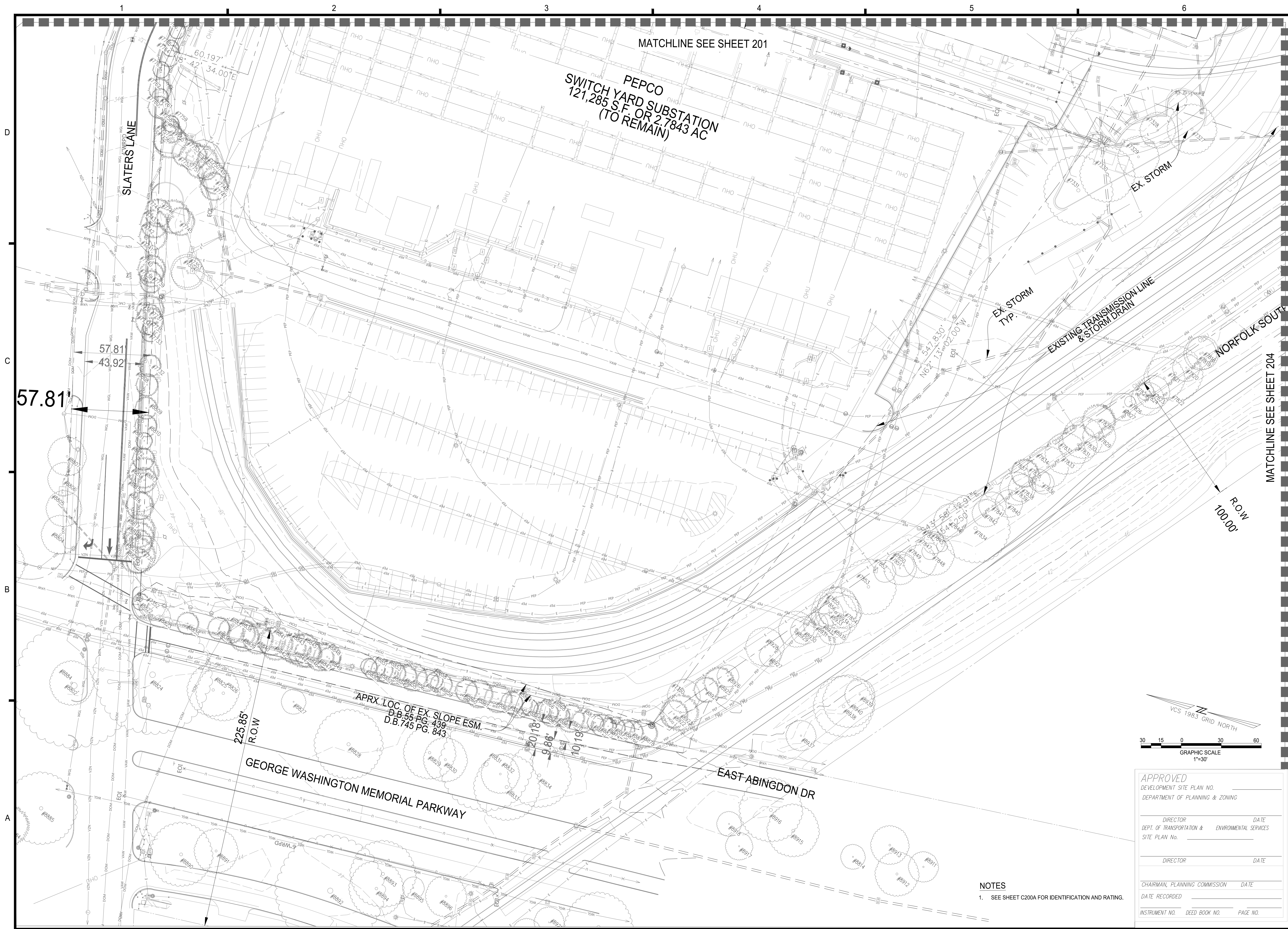
SCHEDULE OF TREES

Tree Tag #	Tree Description	Tree Tag #	Tree Description
5907	DT S216/36	7510	CT S28/11
6456	DT S214/14	7511	CT S215/27/MULTIPLE
6477	DT S29/12	7512	DT S218/13
6669	DT S217/20 TRIPLE SPLIT	7513	DT S218/12
7327	DT S218/11	7514	DT S210/6
7328	DT S213/12	7516	DT S215/24/MULTIPLE
7329	DT S215/10	7517	DT S212/12
7330	DT S220/28	7520	DT S210/9
7331	DT S225/24	7521	DT S248/24
7332	DT S215/22/TWIN	7522	DT S210/12
7333	DT S210/7	7524	DT S212/11
7334	DT S210/12	7525	DT S210/13
7335	CT S28/48/MULTIPLE	7526	DT S210/9
7336	CT S28/40/MULTIPLE	7527	CT S22/9
7337	CT S28/24/MULTIPLE	7528	CT S210/12
7338	CT S28/24/MULTIPLE	7529	DT S220/14
7339	CT S28/14/MULTIPLE	7530	DT S218/39
7340	DT S212/15	7531	DT S210/10
7341	CT S28/34/MULTIPLE	7532	DT S210/6
7342	DT S212/42	7533	DT S210/31
7343	DT S225/19	7534	DT S210/36
7344	DT S225/12	7535	DT S222/20
7345	DT S215/36	7536	DT S28/9
7346	DT S215/30	7537	DT S220/14
7347	DT S212/13	7538	DT S212/7
7348	DT S212/12	7539	DT S215/13
7349	DT S220/11	7540	DT S212/34
7350	DT S212/12	7541	DT S215/39/MULTIPLE
7351	DT S212/30/MULTIPLE	7542	DT S212/14
7352	DT S212/36/MULTIPLE	7543	DT S212/22
7353	DT S212/9	7544	DT S210/12
7354	DT S212/6	7545	DT S212/14
7355	DT S28/26/MULTIPLE	7546	DT S220/55/TWIN
7356	CT S215/16	7547	DT S28/11
7357	CT S210/12	7548	DT S212/11
7358	DT S26/9	7549	DT S28/6
7359	DT S28/6	7550	DT S215/13
7360	DT S210/7	7551	DT S215/19
7361	DT S225/12	7552	DT S210/13
7362	DT S230/60	7553	DT S215/9
7363	DT S212/30/MULTIPLE	7554	DT S220/25
7364	DT S212/12	7555	DT S215/25
7365	DT S220/18	7556	DT S28/17
7366	DT S28/8	7557	DT S215/13
7367	CT S215/30/TWIN	7558	DT S212/11
7368	CT S212/26	7559	DT S222/19
7369	DT S212/74/MULTIPLE	7560	DT S215/22
7370	CT S215/36	7561	DT S210/30
7371	DT S212/78	7562	DT S215/17
7372	DT S222/22	7563	DT S28/10
7373	DT S29/7	7564	DT S230/21
7374	DT S26/40/MULTIPLE	7565	DT S210/21
7375	DT S25/12/MULTIPLE	7566	DT S215/30
7376	DT S215/13	7567	DT S28/27
7377	DT S24/6	7568	DT S212/14
7378	DT S216/15	7569	CT S210/11
7379	DT S210/12	7570	DT S212/14
7380	DT S28/9	7571	DT S212/7
7381	DT S28/9	7572	DT S26/9
7382	DT S215/19	7573	DT S26/17
7383	DT S210/6	7574	DT S210/16/TWIN
7384	DT S210/9	7575	DT S225/9
7385	DT S225/24	7576	DT S212/21
7386	DT S225/19	7577	DT S28/19
7387	DT S222/21	7578	DT S210/14
7388	DT S210/15	7579	DT S210/7
7389	DT S25/12	7580	DT S28/10
7390	DT S28/10	7581	DT S212/12
7391	DT S215/9	7582	DT S225/26
7392	DT S215/12	7583	DT S212/16
7393	DT S212/9	7584	DT S214/36
7394	DT S215/24/TWIN	7585	DT S212/16
7395	DT S28/11	7586	DT S215/18
7396	DT S215/20	7587	DT S210/9
7397	DT S222/51	7588	CT S28/19
7398	CT S210/20/TWIN	7589	DT S26/11
7399	DT S210/8	7590	DT S212/19
7400	CT S210/16	7591	DT S28/15
		7592	DT S26/9

NOTES

- SEE SHEETS C201-C204 FOR TREE LOCATIONS.

Tree Tag #	Tree Description	Tree Tag #	Tree Description	Tree Tag #	Tree Description	Tree Tag #	Tree Description
7593	DT S212/14	7828	CT S212/10	8422	DT S210/7	8850	CT S26/8
7594	DT S21/12	7829	DT S212/24	8424	DT S216/10	8851	CT S28/8
7597	DT S210/11	7830	DT S215/10	8425	DT S230/22 TRIPLE SPLIT	8852	CT S28/8
7598	DT S21/19	7831	DT S214/15	8426	DT S216/26 TRIPLE SPLIT	8853	CT S28/7
7599	DT S212/10	7832	DT S21/2	8427	DT S225/26 TRIPLE SPLIT	8854	CT S28/8
7600	DT S28/11	7833	DT S215/27	8428	DT S222/16 TRIPLE SPLIT	8855	CT S28/6
7702	DT S28/12	7834	DT S215/18	8429	DT S214/8	8856	CT S210/10
7703	DT S26/7	7835	DT S28/27/MULTIPLE	8430	DT S219/11	8857	CT S28/7
7704	DT S24/6	7836	DT S28/7	8431	DT S218/30/5 SPLIT	8858	CT S26/9
7705	DT S28/9	7837	CT S210/14	8432	DT S212/8 SPLIT	8859	CT S28/8
7706	CT S24/18	7838	DT S210/24/TWIN	8433	DT S210/22	8860	CT S28/10
7707	DT S210/7	7839	DT S212/7	8434	DT S214/8	8861	CT S210/8
7708	DT S28/14	7840	DT S210/15	8435	DT S215/11	8862	CT S210/10
7709	DT S225/33	7841	DT S210/8	8436	DT S29/7	8863	CT S28/9
7710	DT S220/24	7842	DT S210/13	8437	DT S210/6	8864	CT S210/9
7711	DT S220/40/TWIN	7843	DT S225/34	8438	DT S216/35 MANY SPLIT	8865	CT S26/10
7712	DT S222/12	7844	DT S212/11	8439	DT S212/9	8866	CT S28/7
7713	DT S235/82	7845	DT S24/48/TWIN	8440	DT S220/6	8867	CT S28/9
7714	DT S220/7	7846	DT S28/15	8441	DT S240/30/SPLIT	8868	CT S210/7
7715	DT S228/33	7847	DT S26/6	8442	DT S230/16	8869	CT S27/6
7718	CT S210/21/MULTIPLE	7848	DT S215/17	8443	DT S220/12	8870	CT S210/11
7719	DT S215/24/TWIN	7849	DT S212/26	8444	DT S215/22 MANY SPLIT	8871	CT S28/11
7720	DT S220/11	7850	DT S28/11	8445	DT S214/10 SPLIT	8872	CT S26/6
7721	DT S210/26	7851	DT S212/13	8446	DT S29/10 SPLIT	8873	CT S28/10
7722	DT S215/12	7852	DT S28/10	8447	DT S215/30 SPLIT	8874	CT S26/1
7723	DT S215/9	7853	DT S220/60/TWIN	8448	DT S211/7	8875	CT S28/8
7724	DT S220/19	7854	DT S212/15	8449	DT S214/12	8876	CT S27/8
7725	DT S26/7	7855	DT S215/13	8450	DT S213/14	8877	CT S28/10
7726	DT S215/9	7856	DT S215/9	8451	DT S210/8	8878	CT S210/15
7727	DT S212/12	7857	DT S210/12	8452	DT S218/20	8880	DT S221/18
7728	DT S225/15	7858	DT S210/10	8453	DT S216/18	8881	DT S223/20
7729	DT S218/10	7859	DT S210/9	8454	DT S211/13	8882	DT S219/25 SPLIT
7730	CT S28/10	7860	DT S210/11	8455	DT S217/15	8883	CT S212/8
7731	DT S222/17	7861	DT S212/38/MULTIPLE	8456	DT S214/9	8884	CT S214/8
7732	CT S28/12	7862	DT S212/33/MULTIPLE	8457	DT S28/9	8885	DT S226/25
7733	CT S27/9	7863	DT S210/32/MULTIPLE	8458	DT S25/9	8886	DT S230/25
7734	CT S25/14	7864	DT S210/28/MULTIPLE	8459	DT S226/22	8887	DT S228/27
7735	CT S210/11	7865	DT S210/33/MULTIPLE	8460	DT S228/19	8888	DT S221/18
7736	CT S28/17	7866	DT S212/14	8461	DT S221/16	8890	DT S223/14
7737	CT S210/10	7867	DT S212/12	8462	DT S213/10	8891	DT S216/14
7738	CT S28/16	7868	DT S210/10	8463	DT S224/13	8892	DT S240/32
7739	CT S29/12	7869	DT S215/48	8464	DT S222/14 LAYING DOWN ALIVE	8893	DT S224/18
7740	CT S210/10	7870	DT S215/15	8465	DT S224/12 LAYING DOWN ALIVE	8894	DT S220/15
7741	DT S25/6	8237	DT S221/9	8466	DT S211/9	8895	DT S28/7
7742	CT S210/9	8238	DT S217/10	8467	DT S218/40 SPLIT	8896	DT S215/15 SPLIT
7743	CT S210/9	8239	DT S210/6	8468	DT S222/14	8897	DT S214/12
7744	CT S210/12	8240	DT S223/9	8469	DT S219/15 SPLIT	8898	CT S220/25 SPLIT
7745	CT S210/10	8241	DT S214/7	8470	DT S219/12	8899	DT S213/14
7746	CT S212/31	8242	DT S28/9	8471	DT S29/9	8900	DT S219/14
7747	CT S210/10	8243	DT S212/11	8472	DT S213/8	8901	DT S225/23
7748	CT S210/15	8244	DT S219/11	8473	DT S223/20 SPLIT	8902	DT S234/29
7749	CT S210/12	8245	DT S215/22 SPLIT	8474	DT S220/18	8903	DT S225/20
7750	CT S28/7	8246	DT S220/12	8475	DT S215/30 SPLIT	8904	DT S217/21
7751	CT S212/30/TWIN	8247	DT S212/7	8476	DT S224/22	8905	DT S210/12
7752	CT S210/15	8248	DT S211/9	8477	DT S221/17	8906	DT S215/15
7753	CT S210/19	8249	DT S230/21	8478	DT S230/15	8907	DT S219/18
7755	CT S212/11	8250	DT S218/14	8479	DT S215/14	8908	DT S215/18
7756	CT S28/16/TWIN	8251	DT S217/8	8480	DT S27/16	8910	DT S232/27
7757	CT S26/21/MULTIPLE	8252	DT S220/91	8481	DT S224/19	8911	DT S214/9
7758	CT S26/30/MULTIPLE	8253	DT S210/8	8482	DT S26/12	8912	DT S216/8
7759	DT S28/34/MULTIPLE	8254	DT S222/11	8483	DT S214/13	8913	DT S214/10
7760	CT S28/9	8255	DT S225/20 SPLIT	8484	DT S28/10	8914	DT S29/12
7761	CT S26/7	8256	DT S212/7	8485	DT S211/9	8915	DT S219/21
7762	CT S28/6	8257	DT S29/7	8486	DT S212/12	8916	DT S223/19
7763	CT S26/9	8258	DT S210/6	8487	DT S214/13	8917	DT S210/7
7764	CT S28/6	8259	DT S219/8	8488	DT S210/15	8918	DT S29/7
7765	CT S26/6	8260	DT S228/25 4 WAY SPLIT	8489	DT S220/18	8919	DT S218/12
7766	CT S26/7	8261	DT S212/14 SPLIT	8490	DT S211/12	8920	DT S211/19 SPLIT
7767	CT S26/6	8262	DT S213/16	8491	DT S29/14	8921	DT S211/19 MULTI SPLIT
7768	CT S26/7	8263	DT S214/16 SPLIT	8492	DT S219/18	8922	CT S210/18
7769	CT S26/6	8264	DT S214/11	8493	DT S219/14	8923	CT S213/16 SPLIT
7770	CT S26/7	8265	DT S28/6	8494	DT S214/18	8924	CT S29/15
7771	CT S26/7	8266	DT S223/16	8495	DT S210/20	8925	CT S211/18
7772	CT S26/7	8267	DT S211/7	8496	DT S222/21 SPLIT	8926	DT S28/12
7773	CT S26/6	8268	DT S223/19	8497	DT S213/18	8927	DT S28/19 3 SPLIT DEAD
7774	CT S28/13/MULTIPLE	8269	DT S220/12	8498	DT S213/12	8928	DT S214/11
7775	CT S28/7	8270	DT S217/11	8499	DT S211/17	8929	DT S213/12
7776	DT S215/12	8271	DT S226/14	8500	DT S216/15 SPLIT	8930	DT S210/14
7777	CT S212/22	8272	DT S211/7	8801	DT S211/7	8931	DT S29/8
7778	CT S210/12	8273	DT S211/7	8802	DT S245/30	8932	DT S27/8
7779	DT S212/55/MULTIPLE	8274	DT S27/9	8803	DT S218/12	8933	DT S29/14
7780	DT S210/47/MULTIPLE	8275	DT S27/7	8804	DT S214/12	8934	DT S218/8
7781	DT S210/48/MULTIPLE	8276	DT S216/15	8805	DT S213/12	8935	DT S212/8
7782	DT S212/53/MULTIPLE	8277	DT S220/8	8806	DT S212/9	8937	DT S211/18
7783	DT S212/48/MULTIPLE	8278	DT S213/8	8807	DT S214/14	8938	DT S222/21
7784	DT S212/56/MULTIPLE	8279	DT S210/8	8808	CT S28/14	8939	DT S211/10
7785	DT S210/42/MULTIPLE	8280	DT S29/8	8809	CT S28/18 SPLIT	8940	DT S219/10
7786	DT S210/39/MULTIPLE	8281	DT S28/6	8810	CT S28/14 SPLIT	8942	DT S232/38
7787	DT S212/54/MULTIPLE	8282	DT S212/10	8811	CT S26/10	8943	DT S212/11
7788	DT S212/55/MULTIPLE	8283	DT S224/16	8812	CT S28/16 SPLIT	8944	DT S218/11 SPLIT
7789	DT S212/59/MULTIPLE	8284	DT S211/6	8813	CT S211/14	8945	DT S240/30 SPLIT
7790	DT S210/36/MULTIPLE	8285	DT S214/7	8814	CT S29/5	8946	DT S211/6
7791	DT S210/38/MULTIPLE	8286	DT S217/13	8815	DT S214/12	8947	DT S212/6
7792	DT S210/38/MULTIPLE	8287	DT S213/7	8816	CT S210/18	8948	DT S233/22
7793	DT S210/46/MULTIPLE	8288	DT S211/6	8817	DT S212/18 SPLIT	8949	DT S211/6
7794	DT S212/55/MULTIPLE	8289	DT S210/8	8818	CT S211/9	8951	DT S219/20
7795	DT S26/13	8290	DT S210/6	8819	CT S210/7	8952	DT S210/9
7796	CT S24/6	8291	DT S223/14	8820	CT S213/12	8953	DT S212/12
7797	CT S26/8	8292	DT S215/30 SPLIT	8821	CT S29/11	8954	DT S213/10
7798	CT S212/10	8293	DT S219/17	8822	CT S26/15	8955	DT S213/14
7801	DT S210/13/MULTIPLE	8294	DT S211/6	8823	CT S28/14	8956	DT S212/8
7802	DT S210/44/MULTIPLE	8295	DT S216/16	8824	DT S243/28	8957	DT S213/7
7803	DT S212/40/MULTIPLE	8296	DT S214/6	8825	DT S219/17	8958	DT S234/35
7804	DT S212/51/MULTIPLE	8297	DT S211/6	8826	DT S220/22	8959	DT S225/24
7805	DT S212/55/MULTIPLE	8298	DT S28/11	8827	DT S29/6	8960	DT S218/24
7806	DT S212/45/MULTIPLE	8299	DT S225/12	8828	DT S225/24	8961	DT S225/27
7807	DT S212/42/MULTIPLE	8300	DT S211/7	8829	DT S219/17	8962	DT S223/19
7808	DT S212/54/MULTIPLE	8401	DT S212/12	8830	DT S216/16	8963	DT S214/9
7809	DT S212/53/MULTIPLE	8402	DT S213/15	8831	CT S234/24	8964	DT S215/9
7810	CT S210/18	8404	DT S211/12	8832	CT S214/11	8965	DT S215/11
7811	CT S212/12	8405	DT S28/12	8833	CT S28/16 SPLIT	8966	DT S218/11 SPLIT
7812	CT S210/7	8406	DT S211/6	8834	CT S211/14	8967	DT S210/7
7813	CT S210/12	8407	DT S28/16	8835	CT S28/23 SPLIT	8968	DT S230/22
7814	CT S210/9	8408	DT S220/15	8836	CT S28/13	8969	DT S215/9
7815	DT S215/14	8409	DT S216/19	8837	CT S29/6	8970	DT S213/12
7816	DT S225/18	8410	DT S217/11	8838	CT S210/11 SPLIT	8971	DT S219/12
7817	DT S220/15	8411	DT S244/22 TRIPLE SPLIT	8839	CT S211/8	8972	DT S215/11
7818	DT S212/10	8412	DT S221/19	8840	DT S212/18	8973	DT S214/12
7819	DT S212/21	8413	DT S220/10 TRIPLE SPLIT	8841	CT S210/6	8974	DT S214/10
7820	DT S210/19/MULTIPLE	8414	DT S214/9	8842	CT S212/10	8975	DT S214/30 MULTISPLIT
7821	DT S212/10	8415	DT S213/9	8843	CT S210/19	8976	DT S214/16
7822	DT S212/39/MULTIPLE	8416	DT S212/12	8844	CT S211/9		
7823	DT S212/41/MULTIPLE	8417	DT S220/12	8845	DT S212/10		
7824	DT S26/7	8418	DT S212/12 SPLIT	8846	CT S210/10		
7825	DT S212/7	8419	DT S220/14 SPLIT	8847	CT S210/6		
7826	DT S24/24	8420	DT S220/12	8848	CT S210/10		
7827	DT S210/11	8421	DT S217/11	8849	CT S28/10		



9900 main st
suite 400
fairfax, va 22031

engineering • surveying • land planning

COMMONWEALTH OF VIRGINIA

JOHN L. HELMS
Lic. No. 52485
10/07/2022

PROFESSIONAL ENGINEER

POTOMAC RIVER GENERATING
STATION
STORMWATER MASTERPLAN

CITY OF ALEXANDRIA, VA

MARK	DATE	DESCRIPTION
1	10/07/2022	FIRST SUBMISSION

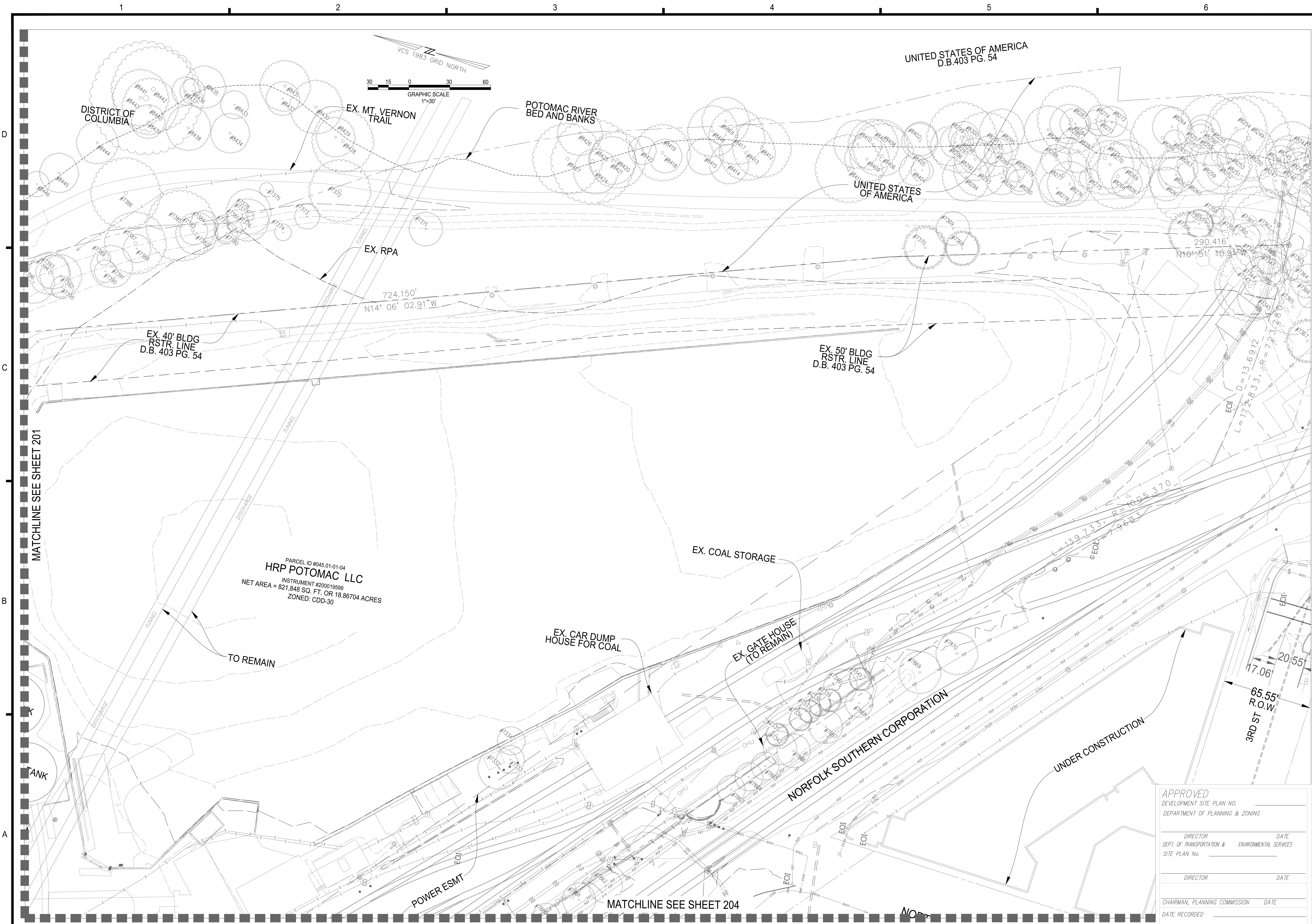
PROJECT No.: 17005.004.01
DRAWING No.: 111759
DATE: 2022-05-09
DESIGN:
DRAWN: MG
CHECKED: JH

SHEET TITLE:

EXISTING
CONDITIONS

SHEET No.

C202



D
C
B
A

MATCHLINE SEE SHEET 201

TANK

MATCHLINE SEE SHEET 204

NOTES
1. SEE SHEET C200A FOR IDENTIFICATION AND RATING.

APPROVED
DEVELOPMENT SITE PLAN NO. _____
DEPARTMENT OF PLANNING & ZONING

DIRECTOR _____ DATE _____
DEPT. OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN NO. _____

DIRECTOR _____ DATE _____
CHAIRMAN, PLANNING COMMISSION

DATE RECORDED _____
INSTRUMENT NO. _____ DEED BOOK NO. _____ PAGE NO. _____

christopher consultants
9900 main st
suite 400
fairfax, va 22031
engineering • surveying • land planning

POTOMAC RIVER GENERATING STATION
STORMWATER MASTERPLAN

CITY OF ALEXANDRIA, VA

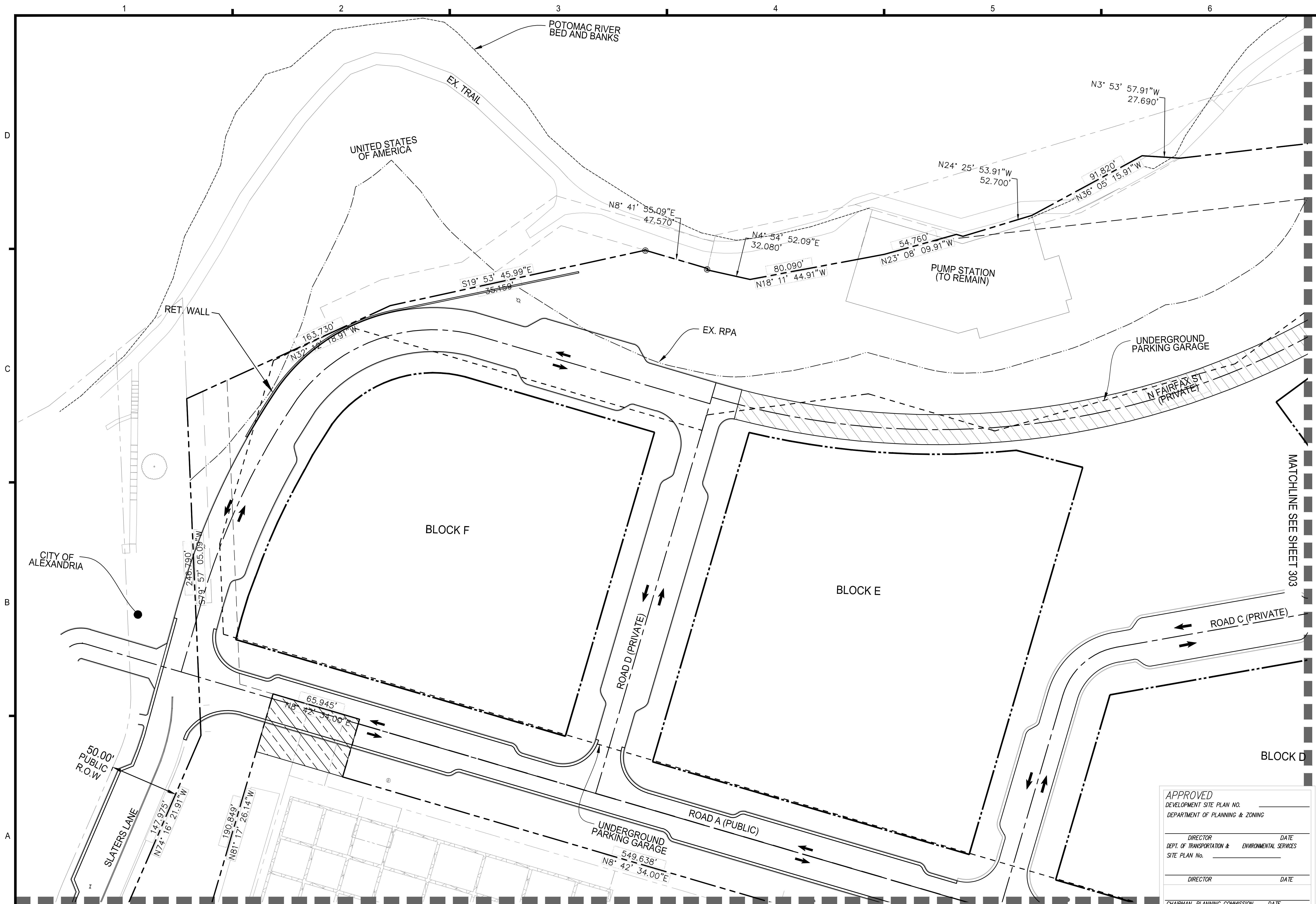
MARK	DATE	DESCRIPTION
1	10/07/2022	FIRST SUBMISSION

PROJECT No.: 17005.004.01
DRAWING No.: 111759
DATE: 2022-05-09
DESIGN:
DRAWN: MG
CHECKED: JH

SHEET TITLE:

EXISTING CONDITIONS

SHEET No. C203



D
C
B
A

THE WOONERF IS AN EXTENSION OF NORTH FAIRFAX STREET. IT WILL FUNCTION AS SHARED SPACE THAT USES NON-TRADITIONAL DESIGN TO ELEVATE PEDESTRIAN PRIORITY, SLOW VEHICULAR SPEEDS, AND CREATE A SEAMLESS AND FLEXIBLE SPACE THAT ACTS TO DEVELOP A SENSE OF PLACE AND MINIMIZE THE ROADWAY AS A BARRIER TO THE WATERFRONT.

TO BE CONVEYED TO HRP POTOMAC LLC AS PART OF SEPARATE RESUBDIVISION

NOTES:
1. THIS PLAN IS FOR STORMWATER ONLY. LAYOUTS AND DESIGN ELEMENTS FOR SPECIFIC BLOCK AND INFRASTRUCTURE ARE SUBJECT TO CHANGE.

MATCHLINE SEE SHEET 302

THIS PLAN IS FOR STORMWATER ONLY!!

VCS 1983 GRID NORTH

APPROVED

DEVELOPMENT SITE PLAN NO. _____

DEPARTMENT OF PLANNING & ZONING

DIRECTOR _____ DATE _____

DEPT. OF TRANSPORTATION & ENVIRONMENTAL SERVICES

SITE PLAN No. _____

DIRECTOR _____ DATE _____

CHAIRMAN, PLANNING COMMISSION _____ DATE _____

DATE RECORDED _____

INSTRUMENT NO. _____ DEED BOOK NO. _____ PAGE NO. _____

9900 main st
suite 400
fairfax, va 22031
p 703.273.6820
engineering • surveying • land planning

POTOMAC RIVER GENERATING STATION

STORMWATER MASTERPLAN

CITY OF ALEXANDRIA, VA

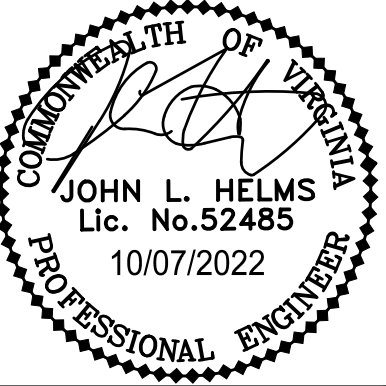
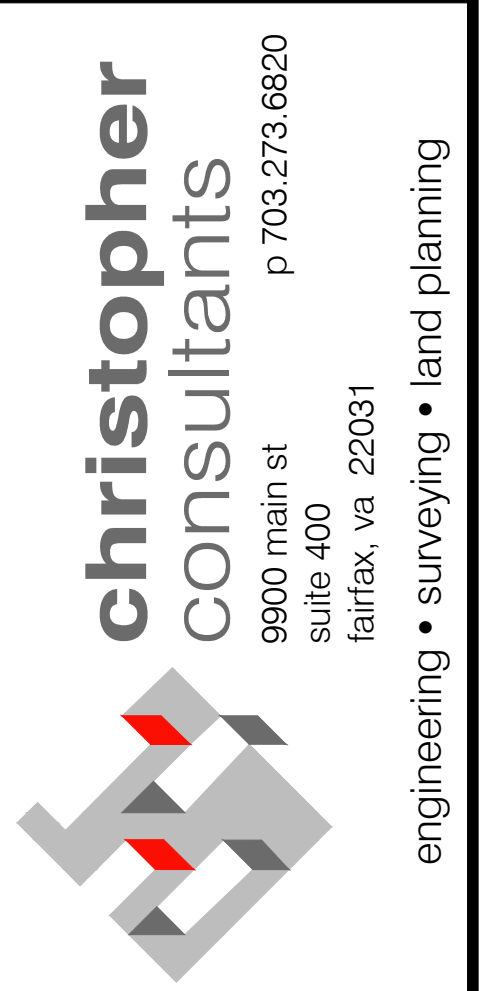
10/07/2022	FIRST SUBMISSION	MARK	DATE	DESCRIPTION
1				

PROJECT No.: 17005.004.01
DRAWING No.: 111759
DATE: 2022-05-09
DESIGN:
DRAWN: MG
CHECKED: JH

SHEET TITLE:

SITE PLAN

SHEET No.
C301



POTOMAC RIVER GENERATING STATION

STORMWATER MASTERPLAN

1	10/07/2022	FIRST SUBMISSION
MARK	DATE	DESCRIPTION

PROJECT No.: 17005.004.01
DRAWING No.: 111759
DATE: 2022-05-09
DESIGN:
DRAWN: MG
CHECKED: JH

SHEET TITLE:

SITE PLAN

SHEET No.

C302

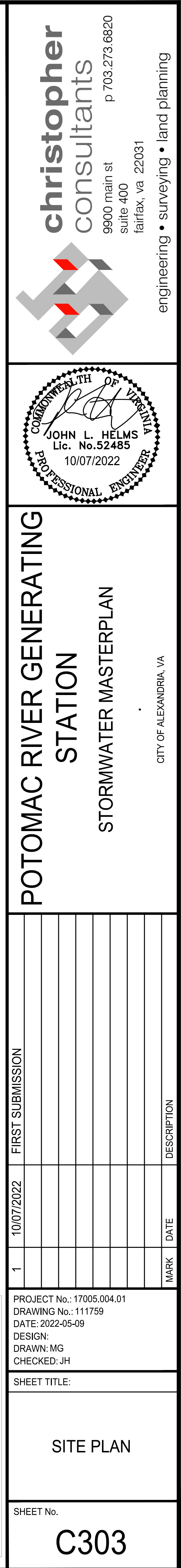
111759

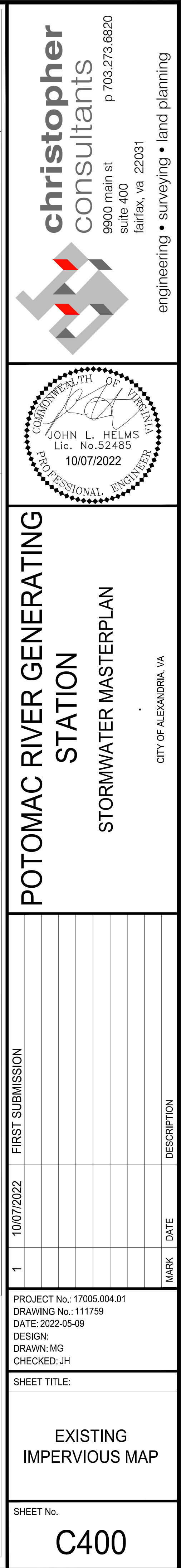
APPROVED

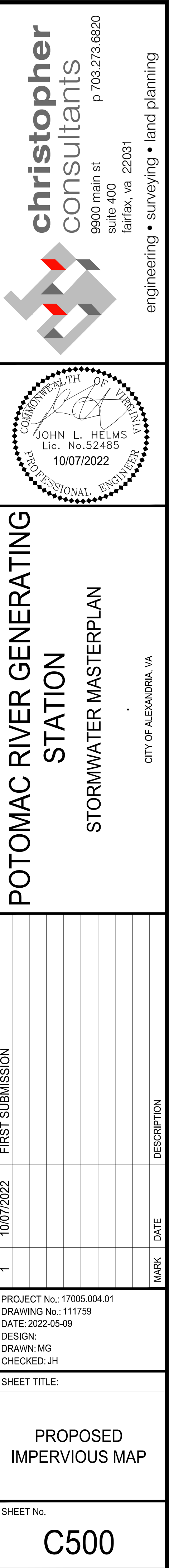
DEVELOPMENT SITE PLAN NO. _____

DEPARTMENT OF PLANNING & ZONING

DIRECTOR	DATE
DEPT. OF TRANSPORTATION & INFRASCTURE	
SITE PLAN No. _____	
_____ _____ _____	
DIRECTOR	DATE
_____ _____ _____	
CHAIRMAN, PLANNING COMMISSION	DATE
DATE RECORDED _____	
_____ _____	
INSTRUMENT NO. _____	DEED BOOK NO. _____
PAGE NO. _____	







D

- C

B

A

- A. ALL PRIVATE UTILITIES SHALL BE LOCATED OUTSIDE OF THE PUBLIC RIGHT-OF-WAY AND PUBLIC UTILITY EASEMENTS UNLESS THE UTILITY OWNERS HAVE FRANCHISE AGREEMENT WITH THE CITY OF ALEXANDRIA; HOWEVER, NO ELECTRIC TRANSFORMERS AND SWITCH GEARS/CONTROL BOXES SHALL BE PLACED IN THE PUBLIC RIGHT-OF-WAY.
- B. ALL THE EXISTING AND PROPOSED PUBLIC AND PRIVATE UTILITIES AND EASEMENTS SHALL BE SHOWN AND A DESCRIPTIVE NARRATION OF VARIOUS UTILITIES SHALL BE PROVIDED ON THE PLAN.
- C. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN UTILITY SERVICES AT ALL TIMES DURING CONNECTION AND/OR CONSTRUCTION.
- D. NO MORE THAN ONE LINEAR FEET OF TRENCH MAY BE OPENED AT ONE TIME.
- E. EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES.
- F. EFFLUENT FROM DEWATERING OPERATIONS SHALL BE FILTERED OR PASSED,

ADEQUATE OUTFALL FOR THIS APPLICATION HAS BEEN MET THROUGH THE USE OF ADEQUATE EXISTING DISCHARGE TUNNELS DRAINING TO POTOMAC RIVER. IN BOTH THE PRE-DEVELOPMENT AND POST-DEVELOPMENT CONDITIONS, THE RUNOFF FROM THE SITE IS DISCHARGED INTO EXISTING DISCHARGE TUNNELS WHICH OUTFALLS INTO POTOMAC RIVER. THE EXISTING DISCHARGE TUNNELS HAVE ADEQUATE CAPACITY TO CONVEY POST-DEVELOPMENT RUNOFF CONDITIONS; THEREFORE, THE OUTFALL IS ADEQUATE.

INTENSITY VALUES USE FOR COMPUTATIONS	
1-YEAR 24 HOUR	2.70 IN/HR
2-YEAR 24 HOUR	3.20 IN/HR
10-YEAR 24 HOUR	5.20 IN/HR
100-YEAR 24 HOUR	8.20 IN/HR

2-YEAR STORM 1-year storm	10-YEAR STORM 2-year storm	100-YEAR STORM 10-year storm
2.70	3.20	8.20

Use NOAA Atlas 14 (<http://hdsc.nws.noaa.gov/hdsc/pfds/>)

[1] The curve numbers and runoff volumes computed in this spreadsheet for each drainage area are limited in their applicability for determining and demonstrating compliance with water quantity requirements. See VRRM User's Guide and Documentation for additional information.

[3] Adjusted CNs are based on runoff reduction volumes as calculated in D.A. tabs. An alternative CN adjustment calculation for Vegetated Roofs is included in BMP specification No. 5.

Curve numbers (CN, CNadj) and runoff depths (RV_{developed}) are computed with and without reduction practices.

Drainage Area A		A Soils	B Soils	C Soils	D Soils	Total Area (acres): 18.87 Runoff Reduction Volume (ft ³): 9,849
Forest/Open Space -- undisturbed, protected forest/open space or reforested land	Area (acres)	0.00	0.00	0.00	0.00	
	CN	30	55	70	77	
Managed Turf -- disturbed, graded for yards or other turf to be mowed/managed	Area (acres)	0.00	0.00	0.00	3.11	
	CN	39	61	74	80	
Impervious Cover	Area (acres)	0.00	0.00	0.00	15.76	
	CN	98	98	98	98	
					CN (D.A. A)	
					95	
		2-YEAR STORM 1-year storm	10-YEAR STORM 2-year storm	100-YEAR STORM 10-year storm		
RV _{Developed} (watershed-inch) with no Runoff Reduction*		2.16	2.64	7.60		
RV _{Developed} (watershed-inch) with Runoff Reduction*		2.01	2.50	7.46		
Adjusted CN*		93	93	94		

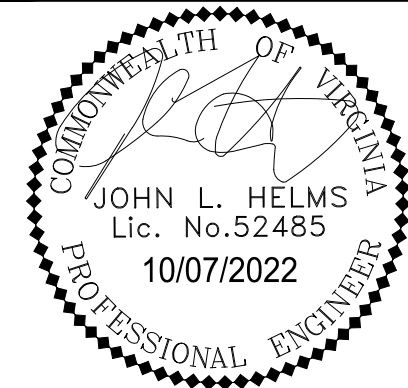
**See Notes above*

christopher
consultants

9900 main st
suite 400
fairfax va 22031

p 703.273.6820

engineering • surveying • land planning



POTOMAC RIVER GENERATING

STATION

STORMWATER MASTERPLAN

CITY OF ALEXANDRIA VA

1	10/07/2022	FIRST SUBMISSION
MARK	DATE	DESCRIPTION

PROJECT No.: 17005.004.01
DRAWING No.: 111759
DATE: 2022-05-09
DESIGN:
DRAWN: MG
CHECKED: JH

SHEET TITLE

SWM COMPUTATIONS AND NARRATIVES

SHEET No.

C600

111759

D

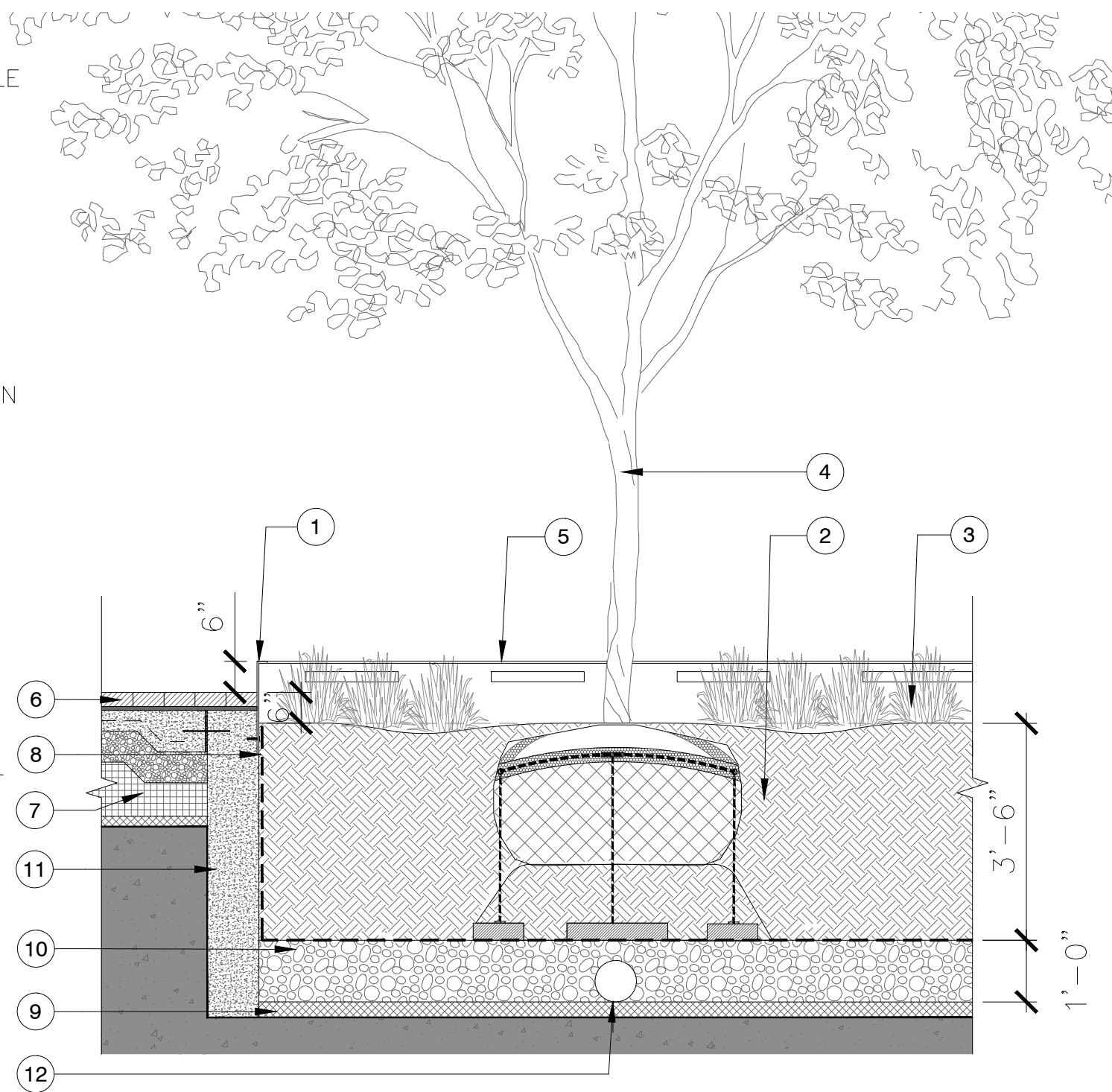
C

B

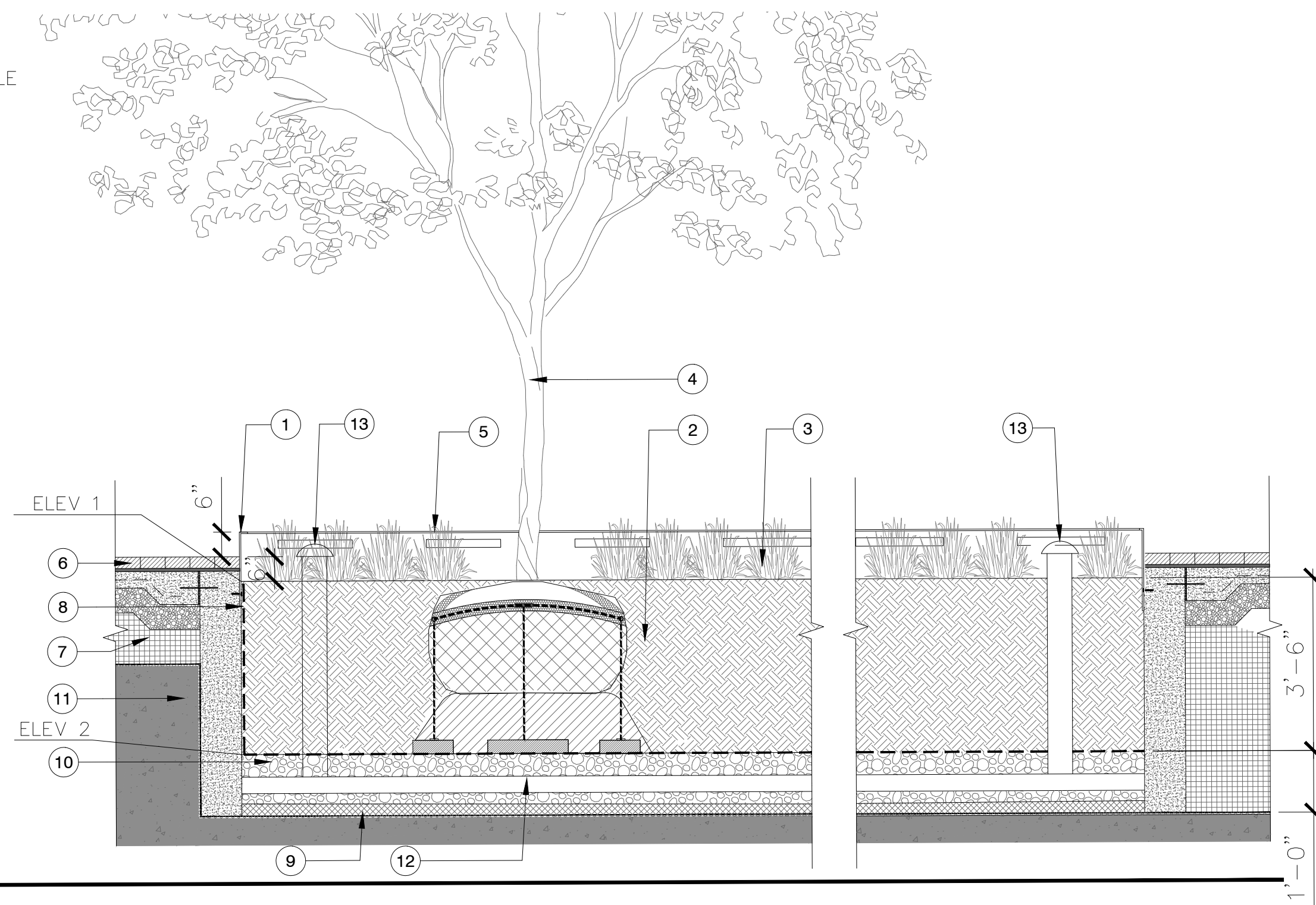
A

BIORETENTION DETAIL

- 1 METAL EDGING RE: CONSTRUCTION SCHEDULE FOR COLOR AND FINISH
- 2 PLANTING SOIL RE: SOIL PLAN
- 3 PROPOSED PLANTING RE: PLANTING PLAN
- 4 PROPOSED TREE RE: PLANTING PLAN
- 5 METAL EDGING BEYOND
- 6 ADJACENT PAVING. RE: CONSTRUCTION PLAN
- 7 LIGHTWEIGHT FILL. RE: STRUCTURAL
- 8 FILTER FABRIC
- 9 DRAINAGE AND ROOF ASSEMBLY RE: ARCH
- 10 AGGREGATE STONE. RE: CIVIL
- 11 REINFORCED C.I.P CONCRETE SLAB RE: STRUCTURAL
- 12 UNDER DRAIN. RE: CIVIL



- 1 METAL EDGING RE: CONSTRUCTION SCHEDULE FOR COLOR AND FINISH
- 2 PLANTING SOIL RE: SOIL PLAN
- 3 PROPOSED PLANTING RE: PLANTING PLAN
- 4 PROPOSED TREE RE: PLANTING PLAN
- 5 METAL EDGING BEYOND
- 6 ADJACENT PAVING.
- 7 LIGHTWEIGHT FILL.
- 8 FILTER FABRIC
- 9 DRAINAGE AND ROOF ASSEMBLY RE: ARCH
- 10 AGGREGATE STONE.
- 11 REINFORCED C.I.P CONCRETE SLAB
- 12 UNDER DRAIN.
- 13 OVERFLOW DRAIN/ CLEANOUT



DETAIL – BMP PLANTER

LEVEL 2 GREEN ROOF DETAIL

VA DCR-DEQ STORMWATER DESIGN SPECIFICATION NO. 5

VEGETATED ROOF

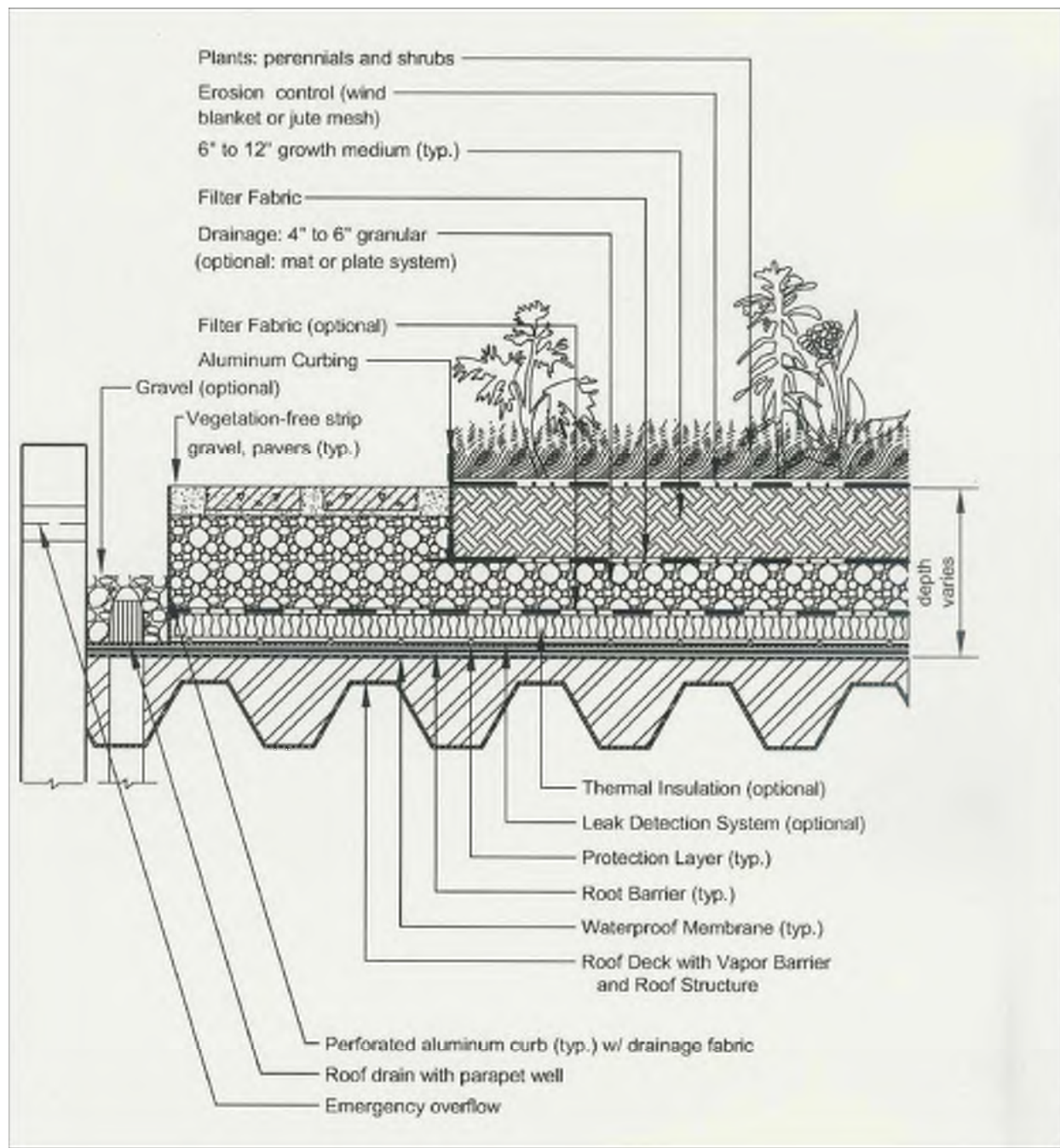


Figure 5.3. Typical Section – Intensive Vegetated Roof (Source: Northern VA Regional Commission)

SECTION 5: PHYSICAL FEASIBILITY & DESIGN APPLICATIONS

5.1. Typical applications

Version 2.4, January 1, 2013

Page 6 of 19

PROPOSED WQVD

Project Description
Development

Redevelopment

Drainage Area	Impervious	Pervious	Total
On-Site Treated	13.72	1.23	14.95
Off-Site Treated	0.00	0.00	0.00
Total Treated	13.72	1.23	14.95
Any On-Site Disconnected by a Vegetated Buffer (25')	0.00		
Total On-Site Treated or Disconnected			14.95

Water Treatment On-Site

BMP Type	Area Treated by BMP (acres)	Impervious Area treated by BMP (acres)	BMP Efficiency (%)
Bioretention	3.05	3.05	25%
Green Roof	1.80	1.80	60%RR
MTD HYDRODYNAMIC	10.10	8.87	20%

Miscellaneous Information

Total WQV treated
Detention on Site
Project is within which watershed?
Project Discharges to which body of water?

yes
no
yes
no
POTOMAC RIVER
POTOMAC RIVER

christopher consultants

9900 main st
suite 400
fairfax, va 22031

engineering • surveying • land planning

COMMONWEALTH OF VIRGINIA

JOHN L. HELMS
Lic. No. 52485
10/07/2022
PROFESSIONAL ENGINEER

POTOMAC RIVER GENERATING STATION

STORMWATER MASTERPLAN

CITY OF ALEXANDRIA, VA

10/07/2022	FIRST SUBMISSION	MARK	DATE	DESCRIPTION
1				

PROJECT No.: 17005.004.01
DRAWING No.: 111759
DATE: 2022-05-09
DESIGN:
DRAWN: MG
CHECKED: JH

SHEET TITLE:

BMP COMPUTATIONS AND DETAILS

SHEET No.
C601

das
Curb Marker

NO DUMPING
NO CONTAMINE!
DRAINS TO POTOMAC RIVER

CITY STANDARD
BMP/SWM MARKER
WATERSHED MARKER
TO BE PROVIDED ON STORM
INLETS & STRUCTURES

das
Manufacturing
Incorporated
Made in U.S.A.

(800) 549-6029
FAX (813) 681-6024
(813) 681-5807
P.O. # 51-AJ-C-140
107802955
www.dasmanufacturing.com

APPROVED

DEVELOPMENT SITE PLAN NO. _____

DEPARTMENT OF PLANNING & ZONING

DIRECTOR _____ DATE _____

DEPT. OF TRANSPORTATION & ENVIRONMENTAL SERVICES

SITE PLAN No. _____

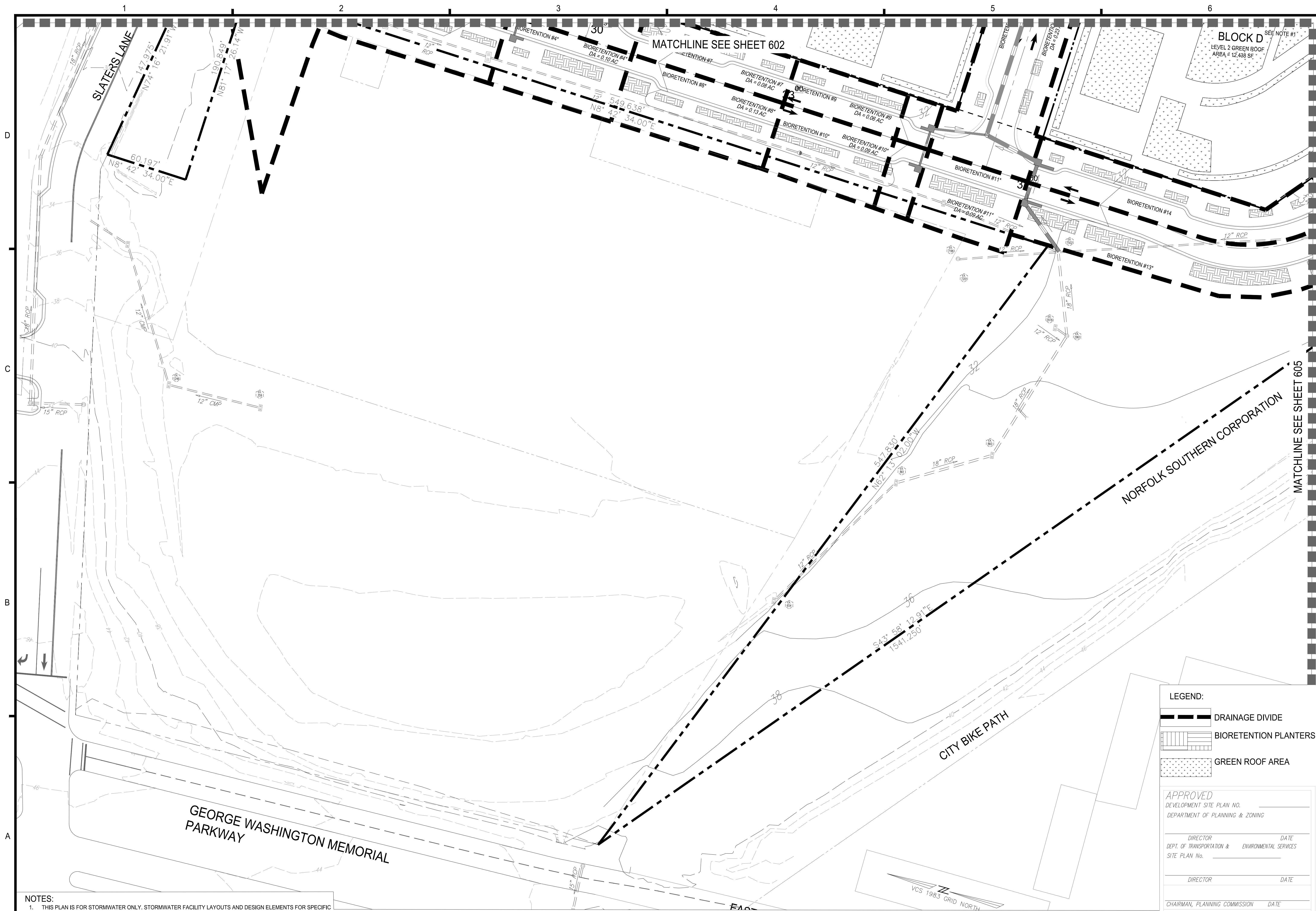
DIRECTOR _____ DATE _____

CHAIRMAN, PLANNING COMMISSION _____ DATE _____

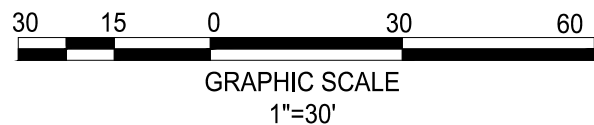
DATE RECORDED _____

INSTRUMENT NO. _____ DEED BOOK NO. _____ PAGE NO. _____

PROPOSED IMPERVIOUS AREA (15.76 Ac)



- NOTES:
1. THIS PLAN IS FOR STORMWATER ONLY. STORMWATER FACILITY LAYOUTS AND DESIGN ELEMENTS FOR SPECIFIC BLOCKS AND INFRASTRUCTURE ARE SUBJECT TO CHANGE AND FINAL DESIGN IN EACH BLOCK'S DSUP.
 2. SEE SHEET C613 FOR INDIVIDUAL DRAINAGE AREAS AND SIZING OF BIORETENTION BASINS.
 3. SEE SHEETS C606-C612 FOR BMP COMPUTATIONS AND DETAILS.
 4. * BMP PLANTERS ARE NOT PART OF THIS BMP COMPUTATIONS.



LEGEND:

- DRAINAGE DIVIDE
- BIORETENTION PLANTERS
- GREEN ROOF AREA

APPROVED

DEVELOPMENT SITE PLAN NO. _____

DEPARTMENT OF PLANNING & ZONING

DIRECTOR _____ DATE _____

DEPT. OF TRANSPORTATION & ENVIRONMENTAL SERVICES

SITE PLAN NO. _____

DIRECTOR _____ DATE _____

CHAIRMAN, PLANNING COMMISSION _____ DATE _____

DATE RECORDED _____

INSTRUMENT NO. _____ DEED BOOK NO. _____ PAGE NO. _____

christopher consultants
9900 main st
suite 400
fairfax, va 22031
engineering • surveying • land planning

POTOMAC RIVER GENERATING STATION

STORMWATER MASTERPLAN

CITY OF ALEXANDRIA, VA

MARK	DATE	DESCRIPTION
1	10/07/2022	FIRST SUBMISSION

PROJECT No.: 17005.004.01
DRAWING No.: 111759
DATE: 2022-05-09
DESIGN:
DRAWN: MG
CHECKED: JH

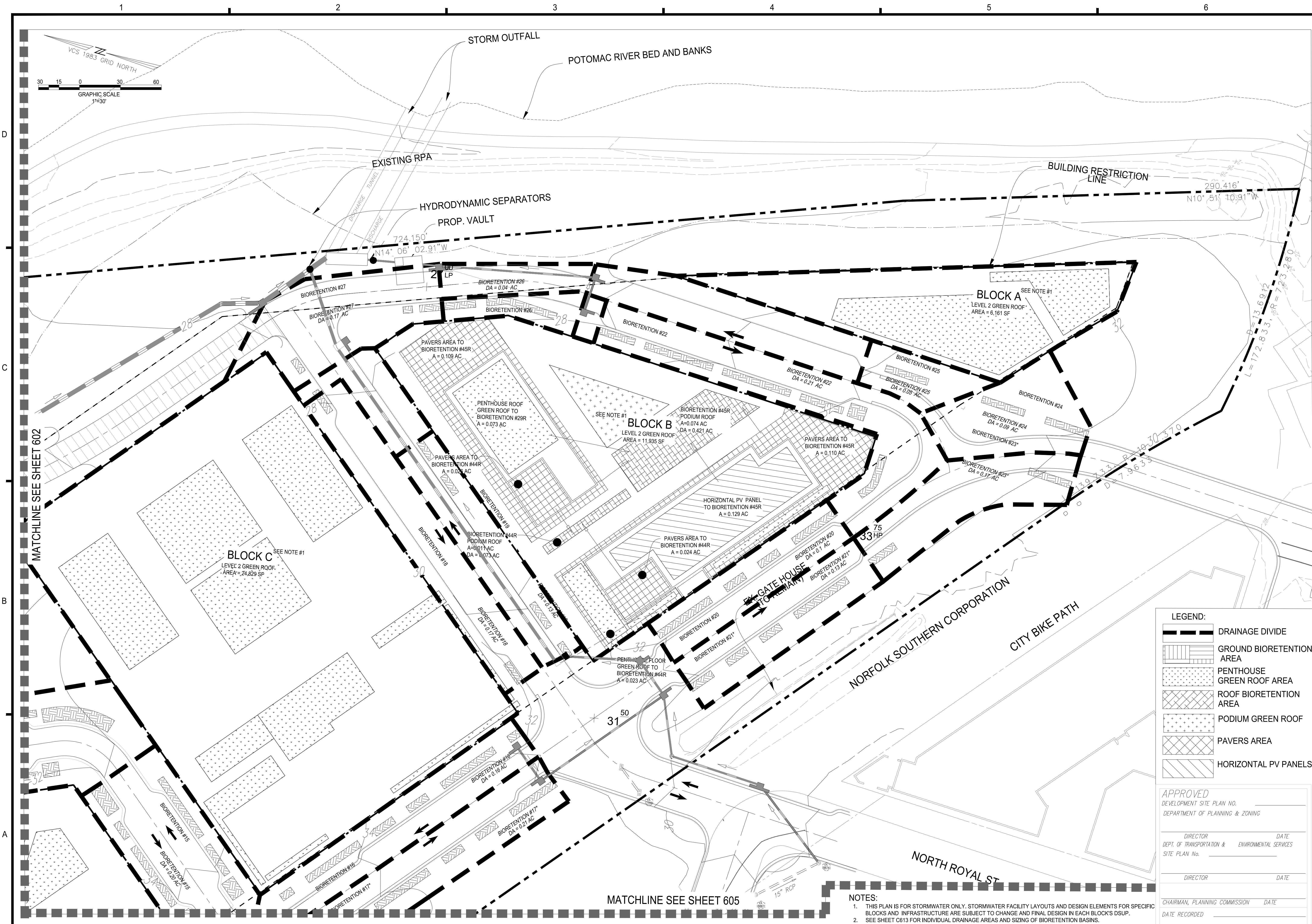
SHEET TITLE:

SWM-BMP PLAN

SHEET No.

C603

THIS PLAN IS FOR STORMWATER ONLY!!



THIS PLAN IS FOR STORMWATER ONLY!!

LEGEND:

- DRAINAGE DIVIDE
- GROUND BIORETENTION AREA
- PENTHOUSE GREEN ROOF AREA
- ROOF BIORETENTION AREA
- PODIUM GREEN ROOF
- PAVERS AREA
- HORIZONTAL PV PANELS

APPROVED
DEVELOPMENT SITE PLAN NO. _____
DEPARTMENT OF PLANNING & ZONING

DIRECTOR _____ DATE _____
DEPT. OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN NO. _____

DIRECTOR _____ DATE _____

CHAIRMAN, PLANNING COMMISSION _____ DATE _____

DATE RECORDED _____

INSTRUMENT NO. _____ DEED BOOK NO. _____ PAGE NO. _____

- NOTES:**
- THIS PLAN IS FOR STORMWATER ONLY. STORMWATER FACILITY LAYOUTS AND DESIGN ELEMENTS FOR SPECIFIC BLOCKS AND INFRASTRUCTURE ARE SUBJECT TO CHANGE AND FINAL DESIGN IN EACH BLOCK'S DSUP.
 - SEE SHEET C613 FOR INDIVIDUAL DRAINAGE AREAS AND SIZING OF BIORETENTION BASINS.
 - SEE SHEETS C606-C612 FOR BMP COMPUTATIONS AND DETAILS.
 - * BMP PLANTERS ARE NOT PART OF THIS BMP COMPUTATIONS.
 - INTERSECTION OF NORTH FAIRFAX STREET AND ROAD A SUBJECT TO CHANGE WITH IDSP.

christopher consultants
9900 main st
suite 400
fairfax, va 22031
engineering • surveying • land planning

COMMONWEALTH OF VIRGINIA
JOHN L. HELMS
Lic. No. 52485
10/07/2022
PROFESSIONAL ENGINEER

POTOMAC RIVER GENERATING STATION
STORMWATER MASTERPLAN

MARK	DATE	DESCRIPTION
1	10/07/2022	FIRST SUBMISSION

PROJECT No.: 17005.004.01
DRAWING No.: 111759
DATE: 2022-05-09
DESIGN: DRAWN: MG
CHECKED: JH

SHEET TITLE:

SWM-BMP PLAN

SHEET No.

C604



OVERALL- BMP COMPUTATIONS

Project Name: **PRGS - REDEVELOPMENT**
Date: **9/14/2022**
Linear Development Project? **No**

CLEAR ALL
(Ctrl+Shift+R)data input cells
constant values
calculation cells
final results

Site Information

Post-Development Project (Treatment Volume and Loads)

Enter Total Disturbed Area (acres) → **18.87**

Maximum reduction required: **20%**
The site's net increase in impervious cover (acres) is: **2.7**
Post-Development TP Load Reduction for Site (lb/yr): **10.76**

Check:
BMP Design Specifications List: 2013 Draft Stds & Specs
Linear project? **No**
Land cover areas entered correctly? **✓**
Total disturbed area entered? **✓**

Pre-ReDevelopment Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed forest/open space					0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be				5.81	5.81
Impervious Cover (acres)				13.06	13.06
					18.87

Post-Development Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested					0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be				3.11	3.11
Impervious Cover (acres)				15.76	15.76
Area Check	OK.	OK.	OK.		18.87

Constants

Annual Rainfall (inches)	43
Target Rainfall Event (inches)	1.00
Total Phosphorus (TP) EMC (mg/L)	0.26
Total Nitrogen (TN) EMC (mg/L)	1.86
Target TP Load (lb/acre/yr)	0.41
TP (unitless correction factor)	0.90

Runoff Coefficients (Rv)

	A Soils	B Soils	C Soils	D Soils
Forest/Open Space	0.02	0.03	0.04	0.05
Managed Turf	0.15	0.20	0.22	0.25
Impervious Cover	0.95	0.95	0.95	0.95

LAND COVER SUMMARY -- PRE-REDEVELOPMENT

Land Cover Summary-Pre		
Pre-ReDevelopment	Used	Adjusted ¹
Forest/Open Space Cover (acres)	0.00	0.00
Weighted Rv(forest)	0.00	0.00
% Forest	0%	0%
Managed Turf Cover (acres)	5.81	3.11
Weighted Rv(turf)	0.25	0.25
% Managed Turf	31%	19%
Impervious Cover (acres)	13.06	13.06
Rv(impervious)	0.95	0.95
% Impervious	69%	81%
Total Site Area (acres)	18.87	16.17
Site Rv	0.73	0.82

Treatment Volume and Nutrient Load

Pre-ReDevelopment Treatment Volume (acre-ft)	1.1550	1.0987
Pre-ReDevelopment Treatment Volume (cubic feet)	50,310	47,860
Pre-ReDevelopment TP Load (lb/yr)	31.61	30.07
Pre-ReDevelopment TP Load per acre (lb/acre/yr)	1.68	1.86
Baseline TP Load (lb/yr) (0.41 lb/acre/yr applied to pre-redevelopment area excluding previous land proposed for new impervious cover)		6.63

¹ Adjusted Land Cover Summary:
Pre-ReDevelopment land cover minus previous land cover (forest/open space or managed turf) acreage proposed for new impervious cover.

Adjusted total acreage is consistent with Post-ReDevelopment acreage (minus acreage of new impervious cover).

Column I shows load reduction requirement for new impervious cover (based on new development load limit, 0.41 lb/acre/year).

Post-Development Requirement for Site Area

TP Load Reduction Required (lb/yr) **10.76**

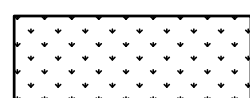
Nitrogen Loads (Informational Purposes Only)

Pre-ReDevelopment TN Load (lb/yr)	226.13	Final Post-Development TN Load (Post-ReDevelopment & New Impervious) (lb/yr)	256.97
-----------------------------------	--------	--	--------

LEGEND:



DRAINAGE DIVIDE



GREEN ROOF AREA

NOTES:

1. THIS PLAN IS FOR STORMWATER ONLY. STORMWATER FACILITY LAYOUTS AND DESIGN ELEMENTS FOR SPECIFIC BLOCKS AND INFRASTRUCTURE ARE SUBJECT TO CHANGE.

DEQ Virginia Runoff Reduction Method for Development Compliance Spreadsheet - Version 5.0

BMP Design Specifications List: 2013 Draft Stds & Specs

Update Summary Sheet

Site Summary

Report Date: 09/14/2022

Project Name: PRGS - REDEVELOPMENT

Date: 9/14/2022

Total Rainfall (in): 43

Total Disturbed Acreage: 18.87

Site Land Cover Summary

	A Soils	B Soils	C Soils	D Soils	Totals	% of Total
Forest/Open Space (acres)	0.00	0.00	0.00	0.00	0.00	0
Managed Turf (acres)	0.00	0.00	0.00	5.81	5.81	31
Impervious Cover (acres)	0.00	0.00	0.00	13.06	13.06	69
					18.87	100

Post-Development Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals	% of Total
Forest/Open Space (acres)	0.00	0.00	0.00	0.00	0.00	0
Managed Turf (acres)	0.00	0.00	0.00	3.11	3.11	18
Impervious Cover (acres)	0.00	0.00	0.00	15.76	15.76	82
					18.87	100

Site Treatment Land Cover Nutrient Loads

	Final Post-Development Post-Development & New Impervious	Post-Development (New Impervious)	Post-Development (New Impervious)	Adjusted Post-Development
Site Rv	0.82	0.82	0.82	0.82
Treatment Volume (ft ³)	17,273	47,860	5,311	62,844
TP Load (lb/yr)	15,92	30,62	5,83	30,67

Total TP Load Reduction Required (lb/yr)

	Final Post-Development Post-Development & New Impervious	Post-Development (New Impervious)
TP Load (lb/yr)	256.97	226.13

Site Compliance Summary

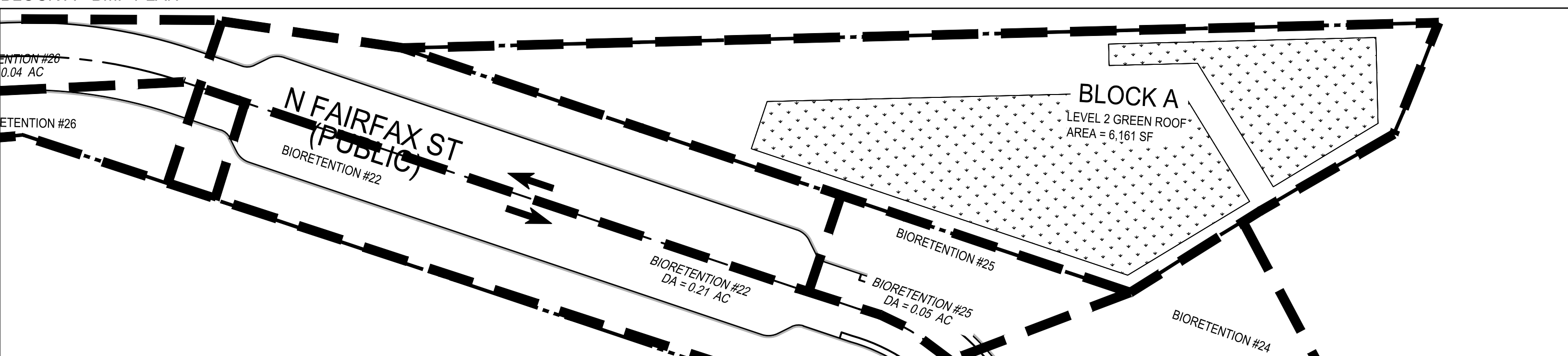
Maximum % Reduction Required Below Pre-Development Load
20%

Total Runoff Volume Reduction (ft³)

	Final Post-Development Post-Development & New Impervious	Post-Development (New Impervious)	Post-Development (New Impervious)	Adjusted Post-Development
Total Runoff Volume Reduction (ft ³)	7,917	13,32	47,860	69,109
Total TP Load Reduction Achieved (lb/yr)	47.34	30,62	5,83	83.79
Remaining Post-Development TP Load (lb/yr)	24.80	0.00	0.00	24.80
Remaining TP Load Reduction (lb/yr) Required	0.00	0.00	0.00	0.00

** TARGET TP REDUCTION EXCEEDED BY 0.37 LB/YEAR **

BLOCK A - BMP PLAN



BLOCK A - BMP COMPUTATIONS

Drainage Area A

Drainage Area A Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv
Forest/Open Space (acres)					0.00	0.00
Managed Turf (acres)				0.00	0.00	0.00
Impervious Cover (acres)				0.36	0.36	0.95
Total					0.36	

CLEAR BMP AREAS

Total Phosphorus Available for Removal in D.A. A (lb/yr) **0.78**
Post Development Treatment Volume in D.A. A (ft³) **1,241**

Stormwater Best Management Practices (RR = Runoff Reduction)

--Select from dropdown lists--

Practice	Runoff Reduction Credit (%)	Managed Turf Credit Area (acres)	Impervious Cover Credit Area (acres)	Volume from Upstream Practice (ft ³)	Runoff Reduction (ft ³)	Remaining Runoff Volume (ft ³)	Total BMP Treatment Volume (ft ³)	Phosphorus Removal Efficiency (%)	Phosphorus Load from Upstream Practices (lb)	Untreated Phosphorus Load to Practice (lb)	Phosphorus Removed By Practice (lb)	Remaining Phosphorus Load (lb)	Downstream Practice to be Employed
1. Vegetated Roof (RR)													
1.a. Vegetated Roof #1 (Spec #5)	45				0	0	0	0		0.00	0.00	0.00	None
1.b. Vegetated Roof #2 (Spec #5)	60		0.14		292	194	486	0		0.31	0.18	0.12	14.a. MTD - Hydrodynamic
14. Manufactured Treatment Devices (no RR)													
14.a. Manufactured Treatment Device- Hydrodynamic	0		0.22	194	0	950	950	20	0.12	0.47	0.12	0.48	

Site Results (Water Quality Compliance)

Area Checks	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	AREA CHECK
FOREST/OPEN SPACE (ac)	0.00	0.00	0.00	0.00	0.00	OK.
IMPERVIOUS COVER (ac)	0.36	0.00	0.00	0.00	0.00	OK.
IMPERVIOUS COVER TREATED (ac)	0.36	0.00	0.00	0.00	0.00	OK.
MANAGED TURF AREA (ac)	0.00	0.00	0.00	0.00	0.00	OK.
MANAGED TURF AREA TREATED (ac)	0.00	0.00	0.00	0.00	0.00	OK.
AREA CHECK	OK.	OK.	OK.	OK.	OK.	

Site Treatment Volume (ft³) **1,241**

Runoff Reduction Volume and TP By Drainage Area

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	TOTAL
RUNOFF REDUCTION VOLUME ACHIEVED (ft ³)	292	0	0	0	0	292
TP LOAD AVAILABLE FOR REMOVAL (lb/yr)	0.78	0.00	0.00	0.00	0.00	0.78
TP LOAD REDUCTION ACHIEVED (lb/yr)	0.30	0.00	0.00	0.00	0.00	0.30
TP LOAD REMAINING (lb/yr)	0.48	0.00	0.00	0.00	0.00	0.48
NITROGEN LOAD REDUCTION ACHIEVED (lb/yr)	1.31	0.00	0.00	0.00	0.00	1.31

Total Phosphorus

	Final Post-Development TP Load (lb/yr)	TP Load Reduction Required (lb/yr)	TP Load Reduction Achieved (lb/yr)	TP Load Remaining (lb/yr)
Final Post-Development TP Load (lb/yr)	0.78		0.09	0.30
TP Load Reduction Required (lb/yr)		0.78		0.48
TP Load Reduction Achieved (lb/yr)			0.30	
TP Load Remaining (lb/yr)				0.48

REMAINING TP LOAD REDUCTION REQUIRED (lb/yr): **0.00** **

** TARGET TP REDUCTION EXCEEDED BY 0.21 LB/YEAR **

Total Nitrogen (For Informational Purposes)

	Final Post-Development TP Load (lb/yr)	TP Load Reduction Required (lb/yr)	TP Load Reduction Achieved (lb/yr)	TP Load Remaining (lb/yr)
Final Post-Development TP Load (lb/yr)	5.58		1.31	4.27
NITROGEN LOAD REDUCTION ACHIEVED (lb/yr)			1.31	
REMAINING POST-DEVELOPMENT NITROGEN LOAD (lb/yr)				4.27

BLOCK A - 65% GREEN PRACTICES CALCULATION:

PHOSPHORUS REMOVED BY VEGETATED ROOF #2 = 0.18 lb
TOTAL PHOSPHORUS REDUCTION REQUIRED = 0.09 lb/yr
0.18/0.09 = 200%

APPROVED

DEVELOPMENT SITE PLAN NO.

DEPARTMENT OF PLANNING & ZONING

DIRECTOR

DATE

DEPT. OF TRANSPORTATION & ENVIRONMENTAL SERVICES

SITE PLAN No.

DIRECTOR

DATE

CHAIRMAN, PLANNING COMMISSION

DATE

DATE RECORDED

INSTRUMENT NO.

DEED BOOK NO.

PAGE NO.

POTOMAC RIVER GENERATING STATION

STATION

STORMWATER MASTERPLAN

CITY OF ALEXANDRIA, VA

christopher consultants
9900 main st
suite 400
fairfax, va 22031
engineering • surveying • land planning

JOHN L. HELMS
Lic. No. 52485
10/07/2022
PROFESSIONAL ENGINEER

10/07/2022

1

SHEET TITLE:

BMP
COMPUTATIONS -
BLOCK A

SHEET No.

C606

D

C

B

A

CLEAR BMP AREAS

--Select from dropdown lists--

--Select from dropdown lists--

--Select from dropdown lists--

CLEAR BMP AREAS

Total Phosphorus Available for Removal in D.A. B (lb/yr)	0.39
Post Development Treatment Volume in D.A. B (ft ³)	624

--Select from dropdown lists--

--Select from dropdown lists--

CLEAR BMP AREAS

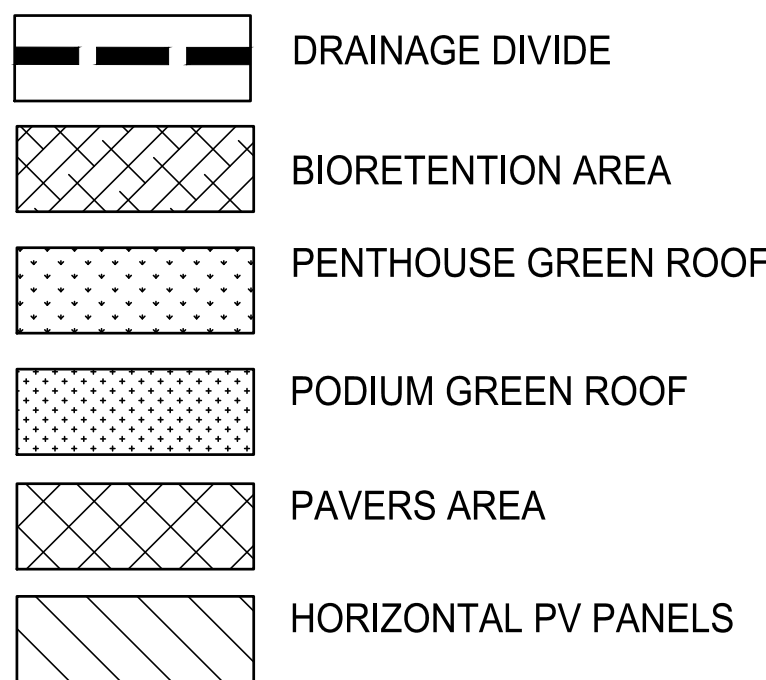
Total Phosphorus Available for Removal in D.A. C (lb/yr)	0.76
Post Development Treatment Volume in D.A. C (ft ³)	1,214

--Select from dropdown lists--

--Select from dropdown lists--

NOTES:

- NOTES:



Site Results (Water Quality Compliance)												
Area Checks												
	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	AREA CHECK						
FOREST/OPEN SPACE (ac)	0.00	0.00	0.00	0.00	0.00	OK.						
IMPERVIOUS COVER (ac)	0.49	0.18	0.35	0.00	0.00	OK.						
IMPERVIOUS COVER TREATED (ac)	0.49	0.18	0.35	0.00	0.00	OK.						
MANAGED TURF AREA (ac)	0.00	0.00	0.00	0.00	0.00	OK.						
MANAGED TURF AREA TREATED (ac)	0.00	0.00	0.00	0.00	0.00	OK.						
AREA CHECK	OK.	OK.	OK.	OK.	OK.							
Site Treatment Volume (ft ³)	3,517											
Runoff Reduction Volume and TP By Drainage Area												
	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	TOTAL						
RUNOFF REDUCTION VOLUME ACHIEVED (ft ³)	124	369	486	0	0	979						
TP LOAD AVAILABLE FOR REMOVAL (lb/yr)	1.06	0.39	0.76	0.00	0.00	2.21						
TP LOAD REDUCTION ACHIEVED (lb/yr)	0.78	0.36	0.67	0.00	0.00	1.80						
TP LOAD REMAINING (lb/yr)	0.27	0.03	0.10	0.00	0.00	0.41						
NITROGEN LOAD REDUCTION ACHIEVED (lb/yr)	0.56	2.11	3.49	0.00	0.00	6.16						
Total Phosphorus												
FINAL POST-DEVELOPMENT TP LOAD (lb/yr)	2.21											
TP LOAD REDUCTION REQUIRED (lb/yr)	1.77											
TP LOAD REDUCTION ACHIEVED (lb/yr)	1.80											
TP LOAD REMAINING (lb/yr)	0.41											
REMAINING TP LOAD REDUCTION REQUIRED (lb/yr)	0.00 **											
** TARGET TP REDUCTION EXCEEDED BY 0.04 LB/YEAR **												
Total Nitrogen (For Information Purposes)												
POST-DEVELOPMENT LOAD (lb/yr)	15.81											
NITROGEN LOAD REDUCTION ACHIEVED (lb/yr)	6.16											
REMAINING POST-DEVELOPMENT NITROGEN LOAD (lb/yr)	9.65											

<i>DIRECTOR</i>		<i>DATE</i>
<i>DEPT. OF TRANSPORTATION &</i>		<i>ENVIRONMENTAL SERVICES</i>
<i>SITE PLAN No.</i> _____		
<i>DIRECTOR</i>		<i>DATE</i>
<i>CHAIRMAN, PLANNING COMMISSION</i>		<i>DATE</i>
<i>DATE RECORDED</i> _____		
<i>INSTRUMENT NO.</i>	<i>DEED BOOK NO.</i>	<i>PAGE NO.</i>

COMMONWEALTH OF VIRGINIA
 JOHN L. HELMS
 Lic. No. 52485
 10/07/2022
 PROFESSIONAL ENGINEER

CITY OF ALEXANDRIA, VA

1	10/07/2022	FIRST SUBMISSION
MARK	DATE	DESCRIPTION

SHEET TITLE:

SHEET No.

111759

BLOCK C - BMP COMPUTATIONS

Drainage Area A

Drainage Area A Land Cover (acres)						
	A Soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv
Forest/Open Space (acres)					0.00	0.00
Managed Turf (acres)				0.00	0.00	0.00
Impervious Cover (acres)				1.78	1.78	0.95
Total				1.78		

CLEAR BMP AREAS

Total Phosphorus Available for Removal in D.A. A (lb/yr)	3.86
Post Development Treatment Volume in D.A. A (ft³)	6,138

Stormwater Best Management Practices (RR = Runoff Reduction)

--Select from dropdown lists--

Practice	Runoff Reduction Credit (%)	Managed Turf Credit Area (acres)	Impervious Cover Credit Area (acres)	Volume from Upstream Practice (ft³)	Runoff Reduction (ft³)	Remaining Runoff Volume (ft³)	Total BMP Treatment Volume (ft³)	Phosphorus Removal Efficiency (%)	Phosphorus Load from Upstream Practices (lb)	Untreated Phosphorus Load to Practice (lb)	Phosphorus Removed By Practice (lb)	Remaining Phosphorus Load (lb)	Downstream Practice to be Employed
1. Vegetated Roof (RR)													
1.a. Vegetated Roof #1 (Spec #5)	45				0	0	0	0		0.00	0.00	0.00	None
1.b. Vegetated Roof #2 (Spec #5)	60		0.57		1,179	786	1,966	0		1.23	0.74	0.49	14.a. MTD - Hydrodynamic
14. Manufactured Treatment Devices (no RR)													
14.a. Manufactured Treatment Device- Hydrodynamic	0		1.21	786	0	4,959	4,959	20	0.49	2.62	0.62	2.49	None

Site Results (Water Quality Compliance)

Area Checks	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	AREA CHECK
FOREST/OPEN SPACE (ac)	0.00	0.00	0.00	0.00	0.00	OK.
IMPERVIOUS COVER (ac)	1.78	0.00	0.00	0.00	0.00	OK.
IMPERVIOUS COVER TREATED (ac)	1.78	0.00	0.00	0.00	0.00	OK.
MANAGED TURF AREA (ac)	0.00	0.00	0.00	0.00	0.00	OK.
MANAGED TURF AREA TREATED (ac)	0.00	0.00	0.00	0.00	0.00	OK.
AREA CHECK	OK.	OK.	OK.	OK.	OK.	

Site Treatment Volume (ft³)

6,138

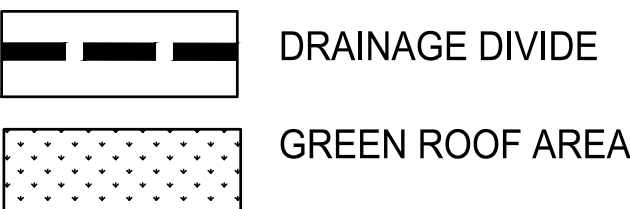
Runoff Reduction Volume and TP By Drainage Area

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	TOTAL
RUNOFF REDUCTION VOLUME ACHIEVED (ft³)	1,179	0	0	0	0	1,179
TP LOAD AVAILABLE FOR REMOVAL (lb/yr)	3.86	0.00	0.00	0.00	0.00	3.86
TP LOAD REDUCTION ACHIEVED (lb/yr)	1.36	0.00	0.00	0.00	0.00	1.36
TP LOAD REMAINING (lb/yr)	2.49	0.00	0.00	0.00	0.00	2.49
NITROGEN LOAD REDUCTION ACHIEVED (lb/yr)	5.30	0.00	0.00	0.00	0.00	5.30

Total Phosphorus

FINAL POST-DEVELOPMENT TP LOAD (lb/yr)	3.86
TP LOAD REDUCTION REQUIRED (lb/yr)	1.13
TP LOAD REDUCTION ACHIEVED (lb/yr)	1.36
TP LOAD REMAINING (lb/yr)	2.49
REMAINING TP LOAD REDUCTION REQUIRED (lb/yr):	0.00
** TARGET TP REDUCTION EXCEEDED BY 0.23 LB/YEAR **	
Total Nitrogen (For Information Purposes)	
POST-DEVELOPMENT LOAD (lb/yr)	27.59
NITROGEN LOAD REDUCTION ACHIEVED (lb/yr)	5.30
REMAINING POST-DEVELOPMENT NITROGEN LOAD (lb/yr)	22.30

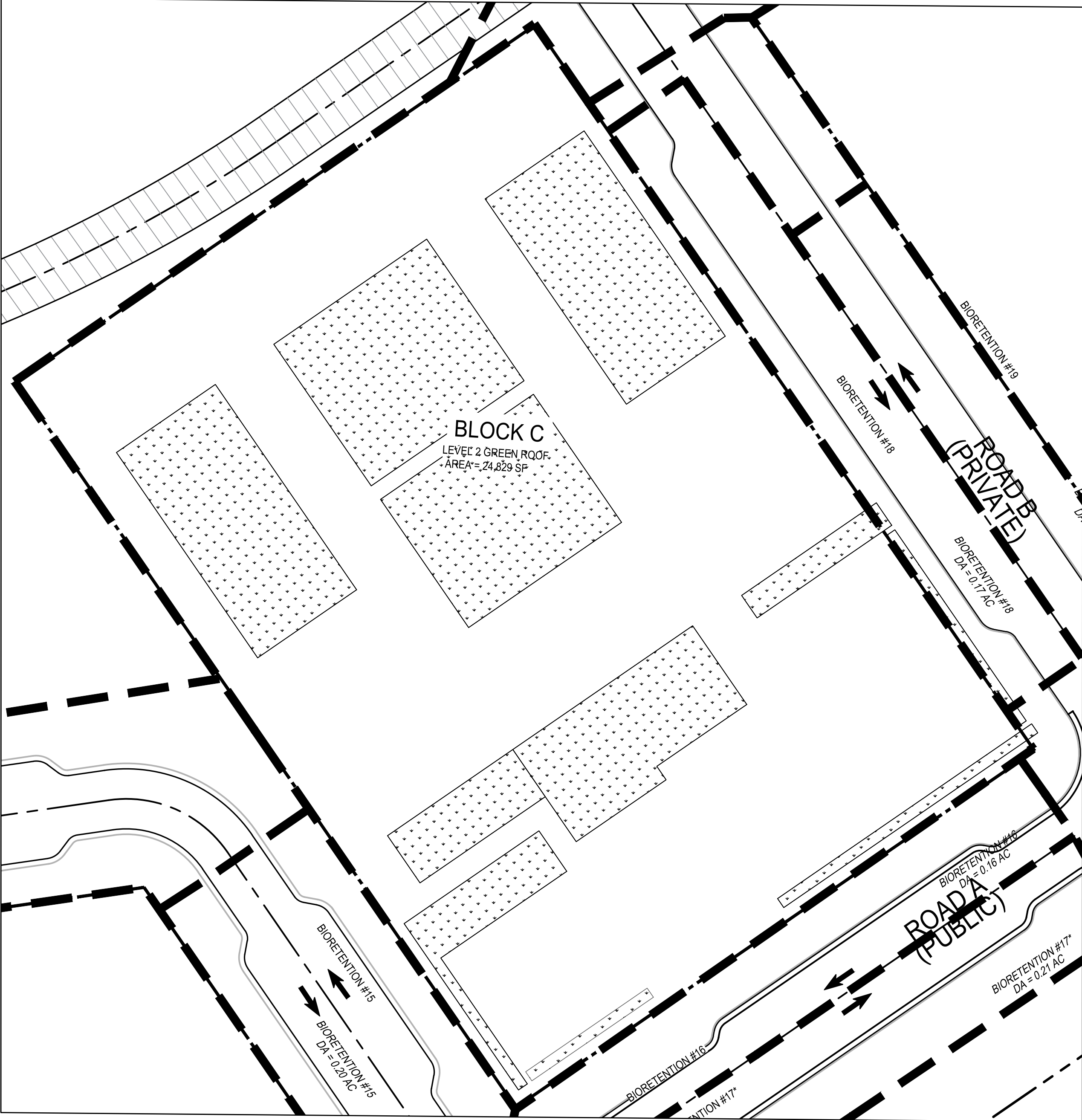
LEGEND:



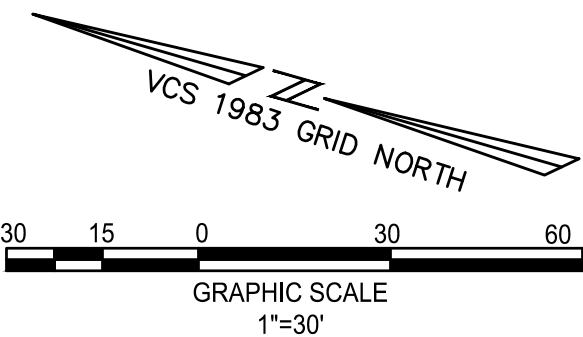
NOTES:

1. THIS PLAN IS FOR STORMWATER ONLY. STORMWATER FACILITY LAYOUTS AND DESIGN ELEMENTS FOR SPECIFIC BLOCKS AND INFRASTRUCTURE ARE SUBJECT TO CHANGE.

BLOCK C - BMP PLAN



BLOCK C - 65% GREEN PRACTICES CALCULATION:
PHOSPHORUS REMOVED BY VEGETATED ROOF #2 = 0.74 lb
TOTAL PHOSPHORUS REDUCTION REQUIRED = 1.13 lb/yr
0.74/1.13 = 65.48%



APPROVED

DEVELOPMENT SITE PLAN NO. _____
DEPARTMENT OF PLANNING & ZONING

DIRECTOR _____ DATE _____
DEPT. OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN No. _____

DIRECTOR _____ DATE _____

CHAIRMAN, PLANNING COMMISSION _____ DATE _____

DATE RECORDED _____

INSTRUMENT NO. _____ DEED BOOK NO. _____ PAGE NO. _____

POTOMAC RIVER GENERATING

STATION

STORMWATER MASTERPLAN

CITY OF ALEXANDRIA, VA

FIRST SUBMISSION

10/07/2022

1

10/07/2022

MARK

DATE

DESCRIPTION

SHEET TITLE:

BMP
COMPUTATIONS -
BLOCK C

SHEET No.

C608

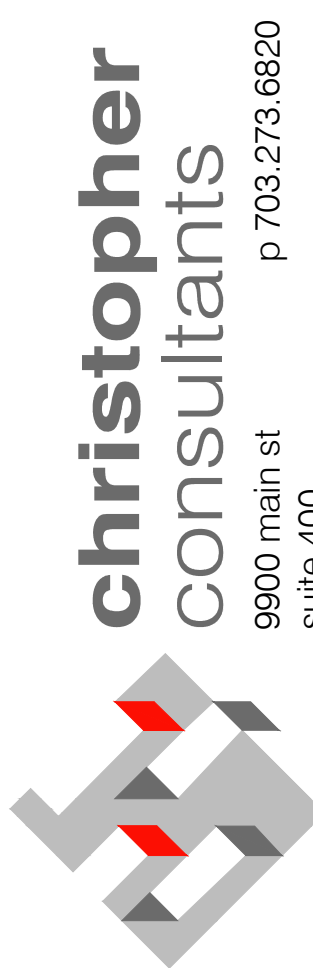
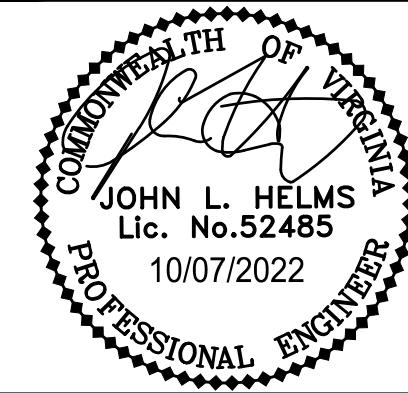
PROJECT No.: 17005.004.01
DRAWING No.: 111759
DATE: 2022-05-09
DESIGN:
DRAWN: MG
CHECKED: JH

SHEET TITLE:

BMP
COMPUTATIONS -
BLOCK C

SHEET No.

C608



engineering • surveying • land planning

D

C

B

A

CLEAR BMP AREAS

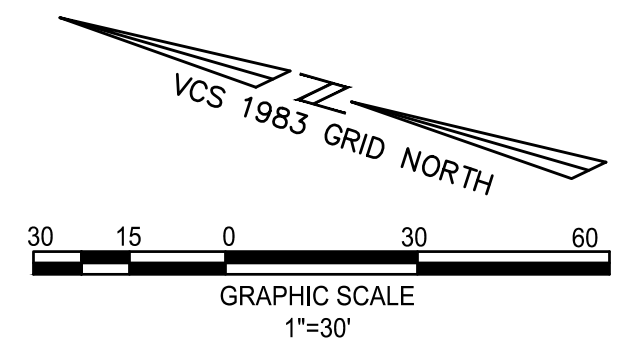
-Select from dropdown lists

-Select from dropdown lists

NOTES:

1. THIS PLAN IS FOR STORMWATER ONLY. STORMWATER FACILITY LAYOUTS AND DESIGN ELEMENTS FOR SPECIFIC BLOCKS AND INFRASTRUCTURE ARE SUBJECT TO CHANGE.

BLOCK F - 65% GREEN PRACTICES CALCULATION:
 PHOSPHORUS REMOVED BY VEGETATED ROOF #2 = 0.42 lb
 TOTAL PHOSPHOROUS REDUCTION REQUIRED = 0.55 lb/yr
 $0.42/0.55 = 76.36\%$



BLOCK F - 65% GREEN PRACTICES CALCULATION:
 PHOSPHORUS REMOVED BY VEGETATED ROOF #2 = 0.42 lb
 TOTAL PHOSPHOROUS REDUCTION REQUIRED = 0.55 lb/yr
 0.42/0.55 = 76.36%

APPROVED	
DEVELOPMENT SITE PLAN NO. _____	
DEPARTMENT OF PLANNING & ZONING	
_____ DIRECTOR	_____ DATE
DEPT. OF TRANSPORTATION & SITE PLAN No. _____	ENVIRONMENTAL SERVICES
_____ DIRECTOR	_____ DATE
CHAIRMAN, PLANNING COMMISSION	
DATE RECORDED _____	
INSTRUMENT NO. _____	DEED BOOK NO. _____ PAGE NO. _____

POTOMAC RIVER GENERATING STATION

1	10/07/2022	FIRST SUBMISSION
MARK	DATE	DESCRIPTION

PROJECT No.: 17005.004.01
DRAWING No.: 111759
DATE: 2022-05-09
DESIGN:
DRAWN: MG
CHECKED: JH

SHEET TITLE:

BMP
COMPUTATIONS -
BLOCK F

SHEET No.

C611



christopher
consultants

9900 main st
suite 400
fairfax, va 22031

p 703.273.6920

engineering • surveying • land planning

CITY OF ALEXANDRIA, VA

INFRASTRUCTURE - BMP PLAN



INFRASTRUCTURE - BMP COMPUTATIONS

Drainage Area A

Drainage Area A Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv
Forest/Open Space (acres)					0.00	0.00
Managed Turf (acres)				0.00	0.00	0.00
Impervious Cover (acres)				6.57	6.57	0.95
Total					6.57	

CLEAR BMP AREAS

Total Phosphorus Available for Removal in D.A. A (lb/yr)

14.24

Post Development Treatment Volume in D.A. A (ft³)

22,657

Stormwater Best Management Practices (RR = Runoff Reduction)

--Select from dropdown lists--

Practice	Runoff Reduction Credit (%)	Managed Turf Credit Area (acres)	Impervious Cover Credit Area (acres)	Volume from Upstream Practice (ft ³)	Runoff Reduction (ft ³)	Remaining Runoff Volume (ft ³)	Total BMP Treatment Volume (ft ³)	Phosphorus Removal Efficiency (%)	Phosphorus Load from Upstream Practices (lb)	Untreated Phosphorus Load to Practice (lb)	Phosphorus Removed By Practice (lb)	Remaining Phosphorus Load (lb)	Downstream Practice to be Employed
6. Bioretention (RR)													
6.a. Bioretention #1 or Micro-Bioretention #1 or Urban Bioretention (Spec #9)	40		2.61	0	3,600	5,400	9,001	25	0.00	5.65	3.11	2.54	14.a. MTD - Hydrodynamic
14. Manufactured Treatment Devices (no RR)													
14.a. Manufactured Treatment Device- Hydrodynamic	0		3.89	5,400	0	18,815	18,815	20	2.54	8.42	2.19	8.77	

Site Results (Water Quality Compliance)

Area Checks	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	AREA CHECK
FOREST/OPEN SPACE (ac)	0.00	0.00	0.00	0.00	0.00	OK
IMPERVIOUS COVER (ac)	6.57	0.00	0.00	0.00	0.00	OK
IMPERVIOUS COVER TREATED (ac)	6.50	0.00	0.00	0.00	0.00	OK
MANAGED TURF AREA (ac)	0.00	0.00	0.00	0.00	0.00	OK
MANAGED TURF AREA TREATED (ac)	0.00	0.00	0.00	0.00	0.00	OK
AREA CHECK	OK	OK	OK	OK	OK	OK

Site Treatment Volume (ft³)

22,657

Runoff Reduction Volume and TP By Drainage Area

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	TOTAL
RUNOFF REDUCTION VOLUME ACHIEVED (in ³)	3,600	0	0	0	0	3,600
TP LOAD AVAILABLE FOR REMOVAL (lb/yr)	14.24	0.00	0.00	0.00	0.00	14.24
TP LOAD REDUCTION ACHIEVED (lb/yr)	5.30	0.00	0.00	0.00	0.00	5.30
TP LOAD REMAINING (lb/yr)	8.94	0.00	0.00	0.00	0.00	8.94
NITROGEN LOAD REDUCTION ACHIEVED (lb/yr)	25.86	0.00	0.00	0.00	0.00	25.86

Total Phosphorus

FINAL POST-DEVELOPMENT TP LOAD (lb/yr)	14.24
TP LOAD REDUCTION REQUIRED (lb/yr)	5.23
TP LOAD REDUCTION ACHIEVED (lb/yr)	5.30
TP LOAD REMAINING (lb/yr)	8.94

REMAINING TP LOAD REDUCTION REQUIRED (lb/yr): 0.00 **

** TARGET TP REDUCTION EXCEEDED BY 0.07 LB/YEAR **

Total Nitrogen (For Information Purposes)

POST-DEVELOPMENT LOAD (lb/yr)	101.84
NITROGEN LOAD REDUCTION ACHIEVED (lb/yr)	25.86
REMAINING POST-DEVELOPMENT NITROGEN LOAD (lb/yr)	75.97

LEGEND:

- DRAINAGE DIVIDE
- BIORETENTION AREA
- INFRASTRUCTURE AREA/BLOCKS
- PARK AREA

PARK - BMP PLAN



PARK - BMP COMPUTATIONS

Drainage Area A

Drainage Area A Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv
Forest/Open Space (acres)					0.00	0.00
Managed Turf (acres)				3.11	3.11	0.25
Impervious Cover (acres)				2.04	2.04	0.95
Total					5.15	

CLEAR BMP AREAS

Total Phosphorus Available for Removal in D.A. A (lb/yr)

6.19

Post Development Treatment Volume in D.A. A (ft³)

9.857

Stormwater Best Management Practices (RR = Runoff Reduction)

--Select from dropdown lists

Practice	Runoff Reduction Credit (%)	Managed Turf Credit Area (acres)	Impervious Cover Credit Area (acres)	Volume from Upstream Practice (ft³)	Runoff Reduction (ft³)	Remaining Runoff Volume (ft³)	Total BMP Treatment Volume (ft³)	Phosphorus Removal Efficiency (%)	Phosphorus Load from Upstream Practices (lb)	Untreated Phosphorus Load to Practice (lb)	Phosphorus Removed By Practice (lb)	Remaining Phosphorus Load (lb)	Downstream Practice to be Employed
14. Manufactured Treatment Devices (no RR)													
14.a. Manufactured Treatment Device- Hydrodynamic	0	1.23	1.51	0	0	6,320	6,320	20	0.00	3.97	0.79	3.17	

Site Results (Water Quality Compliance)

Area Checks	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	AREA CHECK
FOREST/OPEN SPACE (ac)	0.00	0.00	0.00	0.00	0.00	OK
IMPERVIOUS COVER (ac)	1.51	0.00	0.00	0.00	0.00	OK
IMPERVIOUS COVER TREATED (ac)	1.51	0.00	0.00	0.00	0.00	OK
MANAGED TURF AREA (ac)	1.23	0.00	0.00	0.00	0.00	OK
MANAGED TURF AREA TREATED (ac)	1.23	0.00	0.00	0.00	0.00	OK
AREA CHECK	OK	OK	OK	OK	OK	OK

Site Treatment Volume (ft³)9,857

Runoff Reduction Volume and TP By Drainage Area

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	TOTAL
RUNOFF REDUCTION VOLUME ACHIEVED (ft³)	0	0	0	0	0	0
TP LOAD AVAILABLE FOR REMOVAL (lb/yr)	3.97	0.00	0.00	0.00	0.00	3.97
TP LOAD REDUCTION ACHIEVED (lb/yr)	0.79	0.00	0.00	0.00	0.00	0.79
TP LOAD REMAINING (lb/yr)	3.18	0.00	0.00	0.00	0.00	3.18
NITROGEN LOAD REDUCTION ACHIEVED (lb/yr)	0.00	0.00	0.00	0.00	0.00	0.00

Total Phosphorus

FINAL POST-DEVELOPMENT TP LOAD (lb/yr)	6.19
TP LOAD REDUCTION REQUIRED (lb/yr)	-1.28
TP LOAD REDUCTION ACHIEVED (lb/yr)	0.79
TP LOAD REMAINING (lb/yr)	5.40

REMAINING TP LOAD REDUCTION REQUIRED (lb/yr): 0.00 **

** TARGET TP REDUCTION EXCEEDED BY 2.07 LB/YEAR **

Total Nitrogen (For Information Purposes)

POST-DEVELOPMENT LOAD (lb/yr)	44.31
NITROGEN LOAD REDUCTION ACHIEVED (lb/yr)	0.00
REMAINING POST-DEVELOPMENT NITROGEN LOAD (lb/yr)	44.31

NOTES:

- THIS PLAN IS FOR STORMWATER ONLY. STORMWATER FACILITY LAYOUTS AND DESIGN ELEMENTS FOR SPECIFIC BLOCKS AND INFRASTRUCTURE ARE SUBJECT TO CHANGE.
- * BMP PLANTERS ARE NOT PART OF THIS BMP COMPUTATIONS.

APPROVED

DEVELOPMENT SITE PLAN NO. _____
DEPARTMENT OF PLANNING & ZONING

DIRECTOR _____ DATE _____
DEPT. OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN No. _____

DIRECTOR _____ DATE _____

CHAIRMAN, PLANNING COMMISSION _____ DATE _____

DATE RECORDED _____

INSTRUMENT NO. _____ DEED BOOK NO. _____ PAGE NO. _____

POTOMAC RIVER GENERATING STATION

STORMWATER MASTERPLAN

FIRST SUBMISSION

10/07/2022

1

10/07/2022

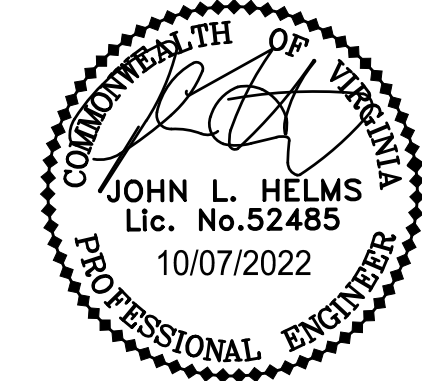
SHEET TITLE:

BMP
COMPUTATIONS -
INFRASTRUCTURE
& PARK

SHEET No.

C612

christopher consultants
9900 main st
suite 400
fairfax, va 22031
p 703.273.6620
engineering • surveying • land planning



CITY OF ALEXANDRIA, VA

D

C

B

A

5

Bioretention #45R Block B (Podium)	
Impervious DA (AC)	0.421
Managed DA (AC)	0.00
Treatment Volume (CF)	352
Additional Available Volume (CF)	3764
Minimum Area (SF)	276
Actual Area (SF)	3228
Upstream BMP	Green Roof
Downstream BMP	Filtering Device & Hydrodynamic Separator

Bioretention #30R - Block C (Podium)	
Impervious DA (AC)	0.100
Managed DA (AC)	0.00
Treatment Volume (CF)	446
Additional Available Volume (CF)	1046
Minimum Area (SF)	350
Actual Area (SF)	1170
Upstream BMP	Green Roof
Downstream BMP	Filtering Device

Bioretention #12R - Block E (Podium)	
Impervious DA (AC)	0.043
Managed DA (AC)	0.00
Treatment Volume (CF)	249
Additional Available Volume (CF)	1541
Minimum Area (SF)	195
Actual Area (SF)	1404
Upstream BMP	None
Downstream BMP	Hydrodynamic Separator

Bioretention #1R - Block-F (Podium)	
Impervious DA (AC)	0.150
Managed DA (AC)	0.00
Treatment Volume (CF)	618
Additional Available Volume (CF)	3248
Minimum Area (SF)	485
Actual Area (SF)	3032
Bioretention #2R - Block-F (Podium)	
Impervious DA (AC)	0.109
Managed DA (AC)	0.00
Treatment Volume (CF)	477
Additional Available Volume (CF)	51
Minimum Area (SF)	374
Actual Area (SF)	414
Upstream BMP	None
Downstream BMP	Hydrodynamic Separator

DEVELOPMENT SITE PLAN NO. _____
DEPARTMENT OF PLANNING & ZONING

DIRECTOR DATE

DATE RECORDED _____

INSTRUMENT NO. DEED BOOK NO. PAGE NO.

FIRST SUBMISSION

1

PROJECT No.: 17005.004.01
DRAWING No.: 111759
DATE: 2022-05-09
DESIGN:
DRAWN: MG
CHECKED: JH

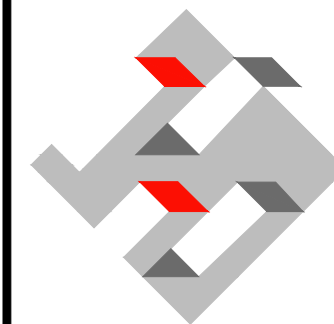
SHEET TITLE

BMP
COMPUTATIONS -
BIO SIZING

SHEET No.

C613

111759

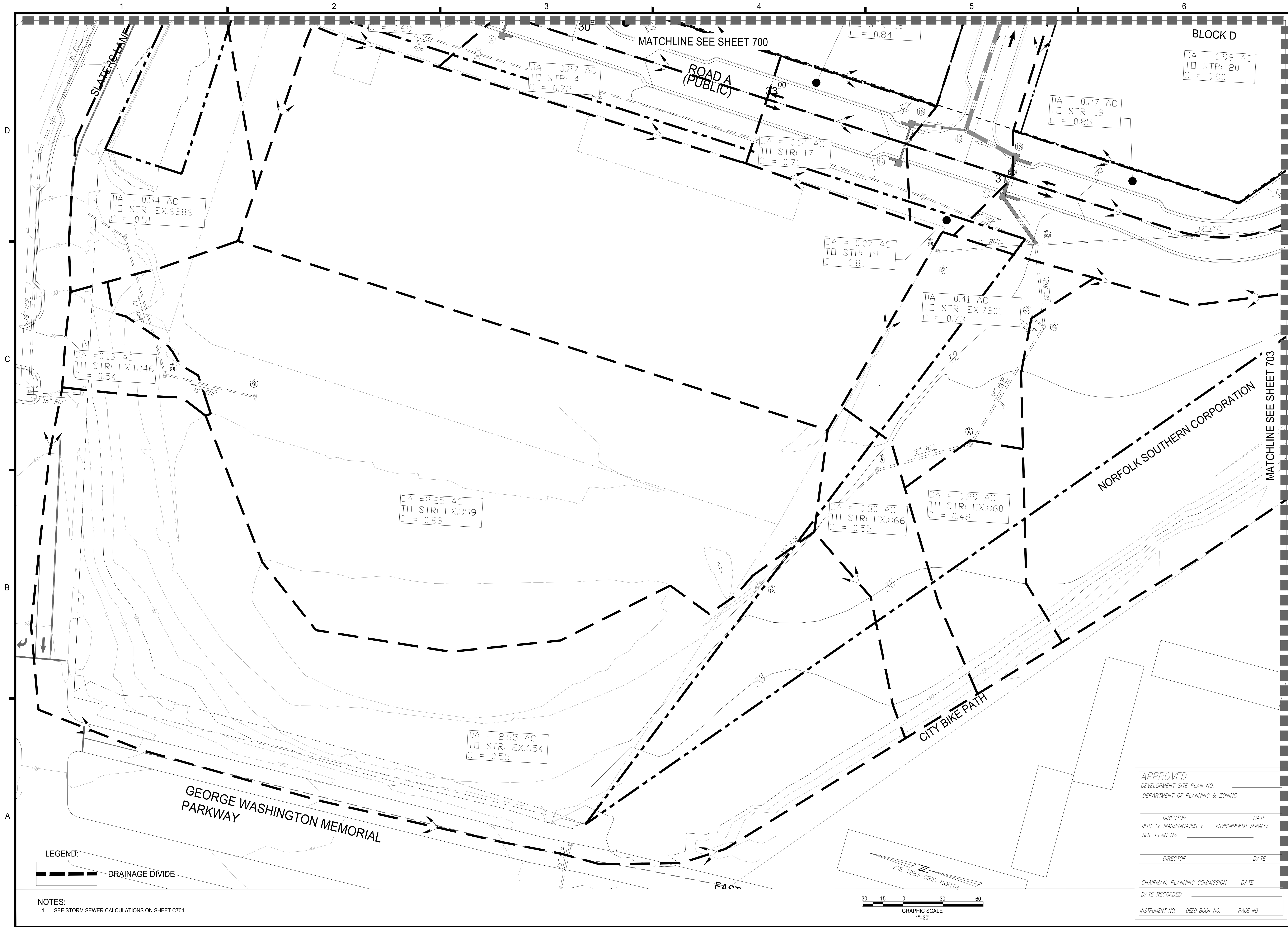


COMMONWEALTH OF VIRGINIA
[Signature]
 JOHN L. HELMS
 Lic. No. 52485
 10/07/2022
 PROFESSIONAL ENGINEER

FOUJUMAC RIVER GENERATING
STATION

STORMWATER MASTERPLAN

engineering • surveying • land planning



9900 main st
suite 400
fairfax, va 22031

engineering • surveying • land planning

POTOMAC RIVER GENERATING STATION

STORMWATER MASTERPLAN

CITY OF ALEXANDRIA, VA

MARK	DATE	DESCRIPTION
1	10/07/2022	FIRST SUBMISSION

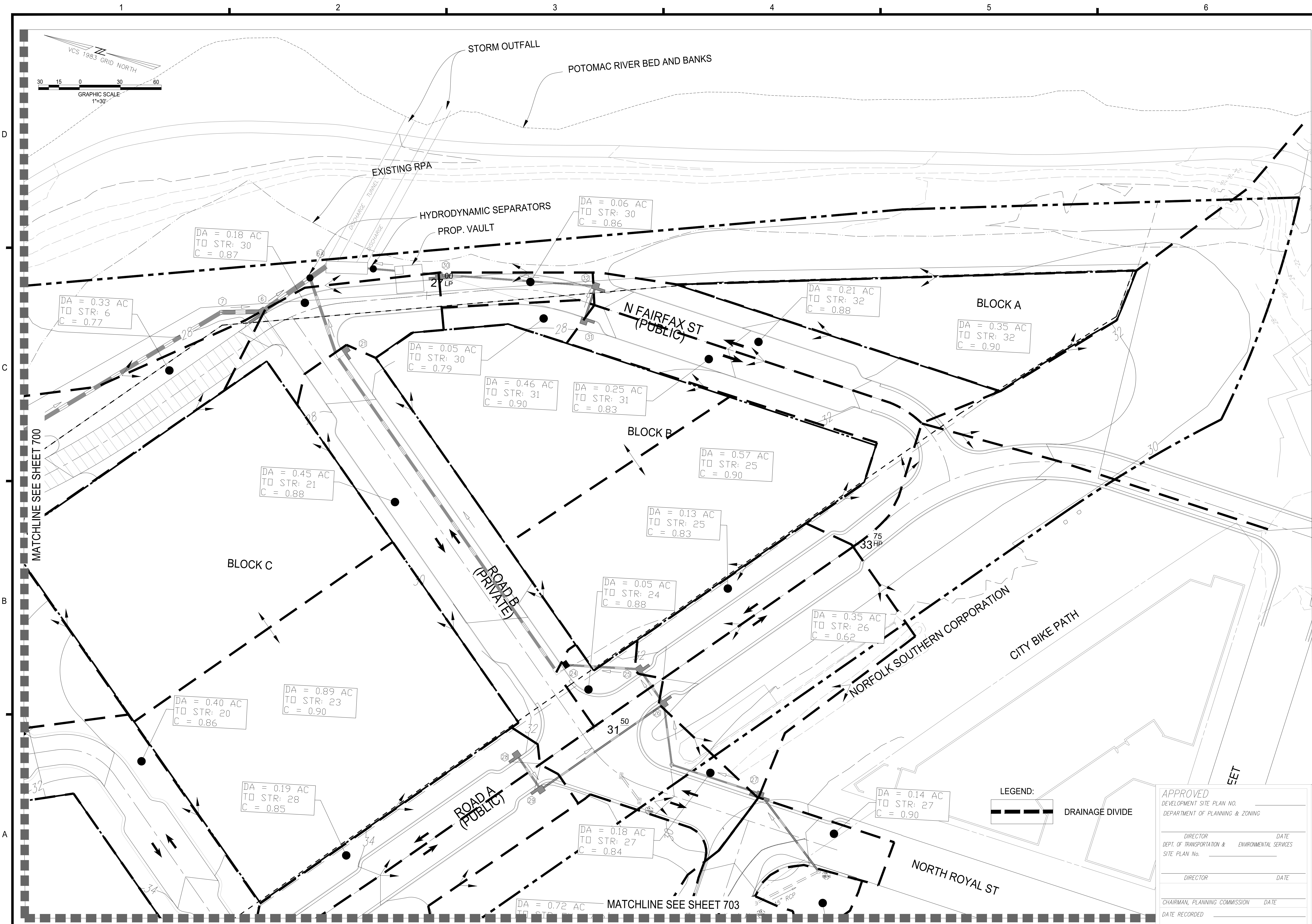
PROJECT No.: 17005.004.01
DRAWING No.: 111759
DATE: 2022-05-09
DESIGN:
DRAWN: MG
CHECKED: JH

SHEET TITLE:

DRAINAGE AREA MAP

SHEET No.

C701



NOTES:
1. SEE STORM SEWER CALCULATIONS ON SHEET C704.

LEGEND:
--- DRAINAGE DIVIDE

APPROVED
DEVELOPMENT SITE PLAN No. _____
DEPARTMENT OF PLANNING & ZONING

DIRECTOR _____ DATE _____
DEPT. OF TRANSPORTATION & ENVIRONMENTAL SERVICES
SITE PLAN No. _____

DIRECTOR _____ DATE _____

CHAIRMAN, PLANNING COMMISSION _____ DATE _____

DATE RECORDED _____

INSTRUMENT NO. _____ DEED BOOK NO. _____ PAGE NO. _____

christopher consultants
9900 main st
suite 400
fairfax, va 22031
engineering • surveying • land planning

COMMONWEALTH OF VIRGINIA
JOHN L. HELMS
Lic. No. 52485
10/07/2022
PROFESSIONAL ENGINEER

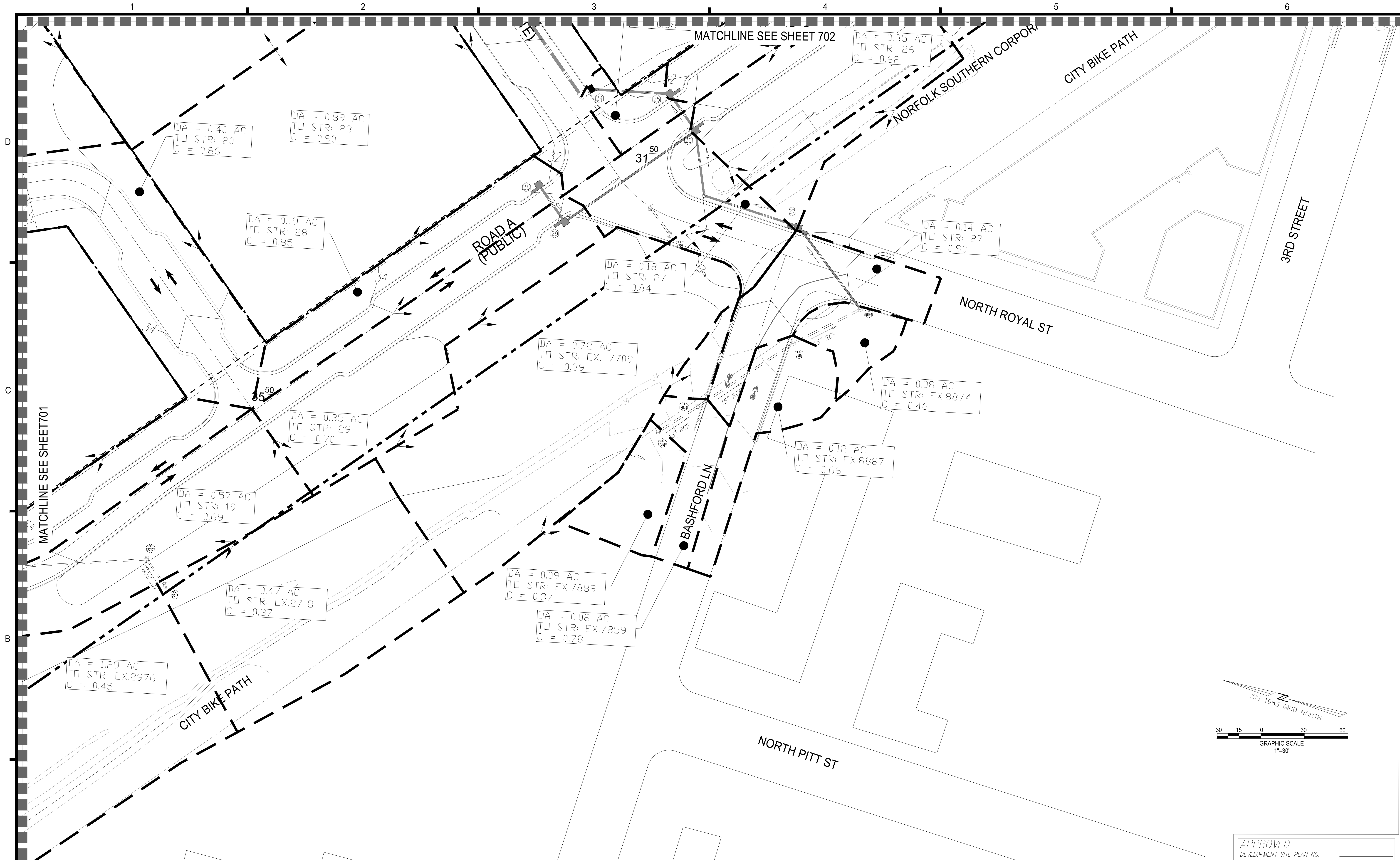
POTOMAC RIVER GENERATING STATION
STORMWATER MASTERPLAN

MARK	DATE	DESCRIPTION
1	10/07/2022	FIRST SUBMISSION

PROJECT No.: 17005.004.01
DRAWING No.: 111759
DATE: 2022-05-09
DESIGN: _____
DRAWN: MG
CHECKED: JH

SHEET TITLE:
DRAINAGE AREA MAP

SHEET No.
C702

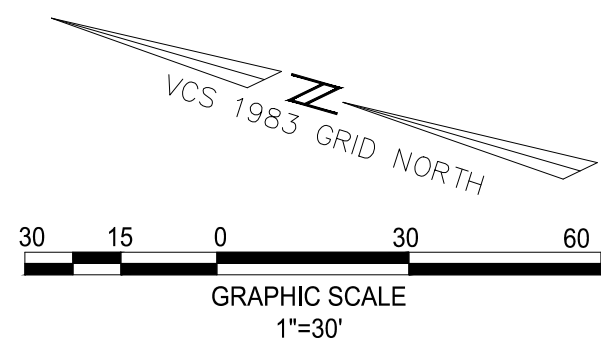


LEGEND:

--- DRAINAGE DIVIDE

NOTES:

1. SEE STORM SEWER CALCULATIONS ON SHEET C704.



APPROVED

DEVELOPMENT SITE PLAN NO. _____

DEPARTMENT OF PLANNING & ZONING

DIRECTOR _____ DATE _____

DEPT. OF TRANSPORTATION & ENVIRONMENTAL SERVICES

SITE PLAN No. _____

DIRECTOR _____ DATE _____

CHAIRMAN, PLANNING COMMISSION _____ DATE _____

DATE RECORDED _____

INSTRUMENT NO. _____ DEED BOOK NO. _____ PAGE NO. _____

christopher consultants
9900 main st
suite 400
fairfax, va 22031
engineering • surveying • land planning

POTOMAC RIVER GENERATING STATION
STORMWATER MASTERPLAN

CITY OF ALEXANDRIA, VA

MARK	DATE	DESCRIPTION
1	10/07/2022	FIRST SUBMISSION

PROJECT No.: 17005.004.01
DRAWING No.: 111759
DATE: 2022-05-09
DESIGN:
DRAWN: MG
CHECKED: JH

SHEET TITLE:

DRAINAGE AREA MAP

SHEET No.

C703

1

2

3

4

5

6

STORM SEWER PIPE COMPUTATIONS

FROM POINT	TO POINT	DRAIN AREA	RUNOFF COEFF.	CA INCREM.	ACCUM.	INLET TIME	RAINFALL INTENSITY	PIPED IN FROM EXISTING	RUNOFF Q	INVERT ELEVATION (ft)	LENGTH	SLOPE	DIA.	α	CAPACITY	VELOCITY	FULL FLOW VELOCITY	FLOW TIME				NOTES	
		ACRES	C			MIN.	IN./HR.	C.F.S.	C.F.S.	UPPER	LOWER	ft	ft/ft	IN.		C.F.S.	FPS	FPS	SEC.	Q/Qfull	V/Vfull	Vfull	
STRM 4 - EX. 6426																							
4	3	0.270	0.72	0.19	0.19	5.00	5.20		1.01	19.20	19.00	30.97	0.0065	15	0.015	4.50	2.9	3.67	10.5	0.22	0.80	3.67	
3	2								1.01	18.90	17.85	212.60	0.0050	15	0.015	3.94	2.7	3.21	79.5	0.26	0.83	3.21	
2	1	0.160	0.84	0.36	0.56	6.50	5.20		2.89	17.60	17.15	88.39	0.0051	18	0.015	6.50	3.5	3.68	24.9	0.45	0.96	3.68	Increment 0.23 from STRM 5
1	EX. 6426	0.330	0.87	0.29	0.84	6.00	5.20		4.39	17.05	16.71	65.50	0.0052	18	0.015	6.56	3.9	3.71	16.6	0.67	1.06	3.71	
STRM 5 - STRM 2																							
5	2	0.330	0.69	0.23	0.23	5.00	5.20		1.18	17.76	17.60	31.01	0.0052	15	0.015	4.02	2.8	3.28	11.1	0.29	0.86	3.28	
STRM 13 - STRM 6A																							
13	12	0.720	0.88	0.63	0.63	5.00	5.20		3.29	26.00	25.86	27.00	0.0052	18	0.015	6.56	3.7	3.71	7.3	0.50	1.00	3.71	
12	11	0.120	0.48	0.06	0.69	5.12	5.20		3.59	25.76	25.43	63.57	0.0052	18	0.015	6.56	3.8	3.71	16.8	0.55	1.02	3.71	
11	10	0.370	0.74	0.27	0.97	5.40	5.20		5.02	24.93	24.42	97.12	0.0053	24	0.015	14.21	4.1	4.52	23.8	0.35	0.90	4.52	
10	9			0.00	0.97	5.80	5.20		5.02	24.32	23.78	106.27	0.0051	24	0.015	13.98	4.0	4.45	26.5	0.36	0.90	4.45	
9	8			0.00	0.97	6.24	5.20		5.02	23.68	22.79	175.56	0.0051	24	0.015	13.96	4.0	4.44	43.8	0.36	0.90	4.44	
8	7	0.430	0.71	4.61	5.38	6.97	5.20		29.01	21.79	20.64	226.86	0.0051	36	0.013	47.49	7.0	6.72	32.3	0.61	1.05	6.72	Increment 4.99 from STRM 14
7	6	0.250	0.9	0.23	5.80	7.51	5.20		30.18	20.54	20.38	30.20	0.0053	36	0.013	48.55	7.2	6.87	4.2	0.62	1.05	6.87	
6	6A	0.330	0.77	0.25	7.87	7.58	5.20		40.93	19.88	19.58	57.25	0.0052	42	0.013	72.83	7.7	7.57	7.4	0.56	1.02	7.57	Increment 1.64 from STRM 22
EX.654 - STRM 8																							
EX.654	EX.861	2.650	0.55	1.46	1.46																		
EX.861	EX.860	0.300	0.55	0.17	1.62																		
EX.860	EX.2961	0.290	0.48	0.14	1.76																		
EX.2961	EX.7502			0.58	2.34																		Increment 0.58 from EX.2976
EX.7502	19			0.47	2.82	5.00	5.20		14.64	25.59	25.37	43.58	0.0050	30	0.015	25.26	5.3	5.15	8.2	0.58	1.03	5.15	Increment 0.47 from EX.7196 & EX.2717
19	18	0.570	0.69	0.39	3.21	5.14	5.20		16.69	25.27	25.11	31.43	0.0051	30	0.015	25.36	5.5	5.17	5.7	0.66	1.06	5.17	
18	15	0.270	0.85	0.23	3.44	5.23	5.20		17.88	25.01	24.81	38.10	0.0052	30	0.015	25.76	5.6	5.25	6.8	0.69	1.07	5.25	
15	14			0.18	3.61	5.35	5.20		18.79	24.31	22.88	282.95	0.0051	36	0.013	47.42	6.2	6.71	45.7	0.40	0.92	6.71	Increment 0.86 from STRM 16
14	8			0.70	4.31	6.11	5.20		22.41	22.78	22.03	146.20	0.0051	36	0.013	47.77	6.6	6.76	22.0	0.47	0.98	6.76	Increment 0.70 from STRM 20
EX.2976 - EX.2961																							
EX.2976	EX.2961	1.29	0.45	0.58	0.58																		
EX.7201 - EX.7502																							
EX.7201	EX.7196	0.41	0.73	0.30	0.30																		
EX.7196	EX.7502			0.00	0.30																		
EX.2718 - EX.7502																							
EX.2718	EX.2717	0.47	0.37	0.17	0.17																		
EX.2717	EX.7502			0.00	0.17																		
STRM 17 - STRM 15																							
17	16	0.14	0.71	0.10	0.10	5.00	5.20		0.52	24.81	24.65	30.96	0.0052	15	0.015	4.02	2.2	3.28	13.8	0.13	0.68	3.28	
16	15	0.09	0.84	0.08	0.18	5.23	5.20		0.91	24.55	24.32	43.91	0.0052	15	0.015	4.05	2.7	3.30	16.5	0.22	0.80	3.30	
STRM 20 - STRM 14																							
20	14	0.80	0.87	0.70	0.70	5.00	5.20		3.62	23.22	22.88	65.56	0.0052	18	0.015	6.56	3.8	3.71	17.4	0.55	1.02	3.71	
EX.7889 - STRM 6																							
EX.7889	EX.7859	0.090	0.37	0.03	0.03																		
EX.7859	EX.8887	0.080	0.78	0.06	0.10																		
EX.8887	EX.8874	0.120	0.66	0.08	0.17																		
EX.8874	27	0.080	0.46	0.04	0.21	5.00	5.20		1.10	27.65	27.25	71.13	0.0056	15	0.015	4.20	2.8	3.42	25.0	0.26	0.83	3.42	
27	26	0.180	0.84	0.15	0.36	5.42	5.20		1.89	27.15	26.65	96.64	0.0052	15	0.015	4.03	3.2	3.28	30.0	0.47	0.98	3.28	
26	25	0.350	0.62	0.22	0.58	5.92	5.20		3.02	26.40	26.24	30.98	0.0052	18	0.015	6.54	3.6	3.70	8.7	0.46	0.96	3.70	
25	24	0.130	0.83	0.11	0.69	6.06	5.20		3.58	26.14	25.91	44.06	0.0052	18	0.015	6.58	3.8	3.72	11.6	0.54	1.02	3.72	
24	23	0.050	0.88	0.04	0.73	6.26	5.20		3.81	25.81	25.64	32.32	0.0053	18	0.015	6.60	3.9	3.74	8.4	0.58	1.03	3.74	
23	22	0.050	0.88	0.04	0.73	6.40	5.20		7.61	25.14	23.70	269.08	0.0054	24	0.015	14.34	4.6	4.57	58.9	0.53	1.00	4.57	Increment 0.69 from STRM 23
22	6	0.200	0.87	0.17	1.81	7.38	5.20		9.43	23.60	23.22	70.57	0.0054	24	0.015	14.39	4.9	4.58	14.5	0.66	1.06	4.58	
STRM 21 - STRM 22																							
21	22	0.200	0.88	0.18	0.18	5.00	5.20		0.92	23.90	23.70	38.82	0.0052	15	0.015	4.02	2.6	3.27	14.7	0.23	0.80	3.27	
EX.7709 - STRM 23																							
EX.7709	29	0.72	0.39	0.28	0.28	5.00	5.20		1.46	26.32	25.99	65.07	0.0051	15	0.015	3.99	2.9	3.25	22.2	0.37	0.90	3.25	
29	28	0.35	0.7	0.25	0.53	5.37	5.20		2.73	25.74	25.58	31.34	0.0051	18	0.015	6.51	3.5	3.68	9.0	0.42	0.94	3.68	
28	23	0.19	0.85	0.16	0.69	5.52	5.20		3.57	25.48	25.24	46.20	0.0052	18	0.015	6.56	3.8	3.71	12.2	0.54	1.02	3.71	
STRM 32 - STRM 6A																							
32	31	0.21	0.88	0.18	0.18	5.00	5.20		0.96	24.00	23.85	27.00	0.0056	15	0.015	4.17	2.7	3.40	9.9	0.23	0.80	3.40	
31	30	0.25	0.83	0.21	0.39	5.16	5.20		2.04	23.80	23.20	111.69	0.0054	15	0.015	4.10	3.3	3.34	34.0	0.50	0.98	3.34	
30	6A	0.06	0.86	0.05	0.44	5.73	5.20		2.31	23.10	22.80	52.44	0.0057	15	0.015	4.23	3.5	3.45	15.0	0.55	1.02	3.45	

HGL COMPUTATIONS

Outlet	
--------	--