GC-002

Contents for Stormwater Management Facilities As-built Files

Each file is to contain:

1. As-built plan
2. Completed construction certification
3. Construction Plan
4. Design Calculations
5. Watershed Map
6. Maintenance Agreement
7. Correspondence with owners
8. Inspection Records
9. Enforcement Actions

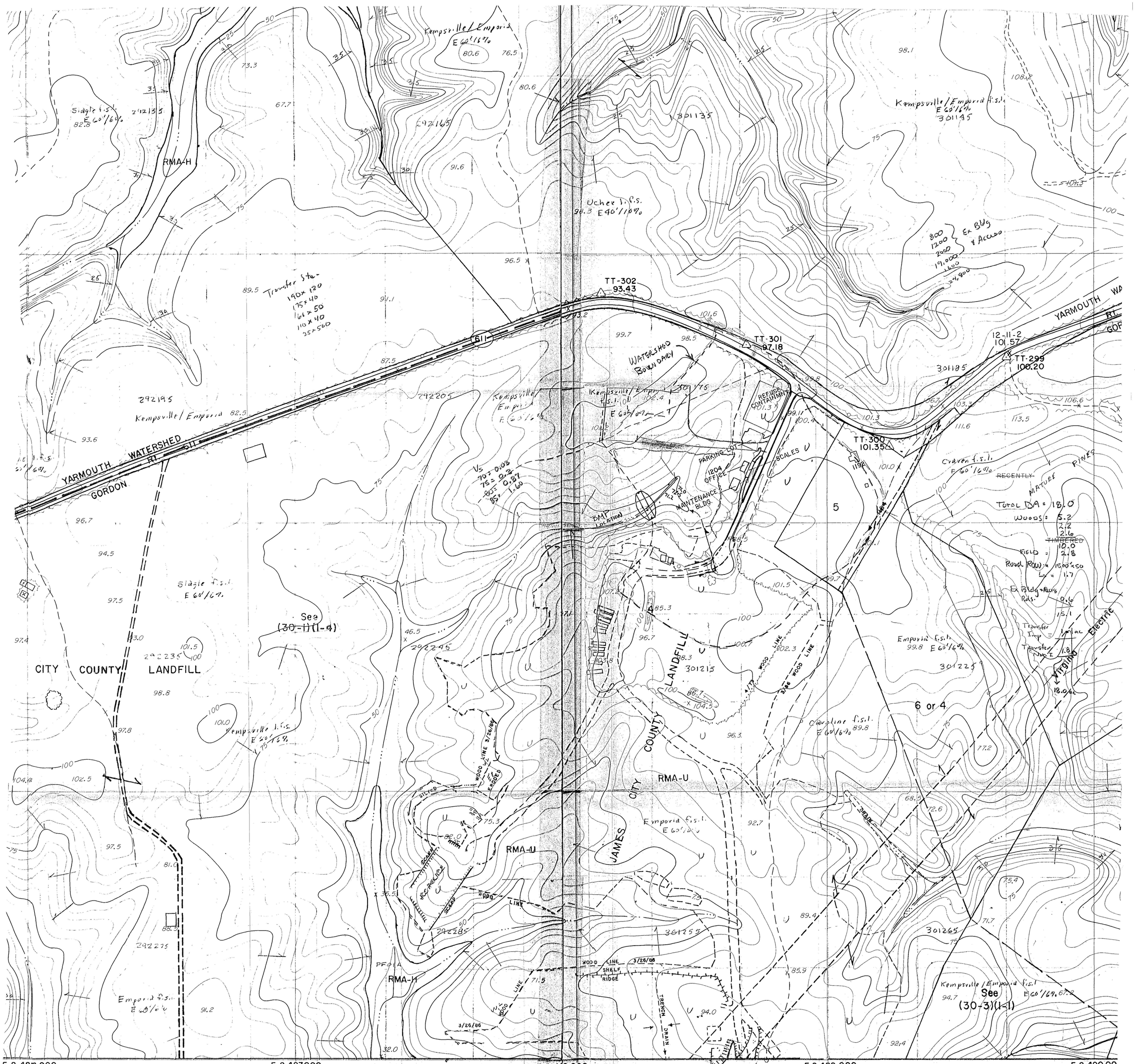
TABLE 2

BMP POINT SYSTEM FOR EVALUATION ACCEPTABLE STRUCTURAL BMPS

		Acceptable BMP	Average Total P Removal Efficiency	BMP Points
A.	EXTENDED DRY DETENTION			
	(1)	Design 2 (6-12 hrs):	20%	4
	(2)	Design 3 (24 hrs):	30%	6
	(3)	Design 4 (shallow marsh):	50%	9
B.	WET POND			
	(1)	Design 5 (0.5 in/imp. ac):	35%	6
	(2)	Design 6 (2.5 V):	40%-45%	8
	(3)	Design 7 (4.0 V):	50%	9
C.	INFILTRATION (TRENCH, BASIN, POROUS PAVEMENT)			
	(1)	Design 8 (0.5 in/imp. ac):	50%	9
	(2)	Design 9 (1.0 in/imp. ac):	65%	10
	(3)	Design 10 (2-yr storm):	70%	11
D.	GRASSED SWALE			
	(1)	Design 15 (check dams)	10%-20%	2
E.	WATER QUALITY INLET			
	(1)	Design 11 (400 cu ft/imp. ac):	*	2

* To be used upstream of dentention basin or infiltration system to enhance pollutant removal.

NOTE: A weighted total of 10 points is required for the development plan to achieve BMP compliance.



YARMOUTH WATERSHED
GORDON
RMA-H
RMA-U
CITY COUNTY LANDFILL
JAMES CITY COUNTY LANDFILL
TT-302
93.43
TT-301
97.18
TT-300
101.35
TT-299
100.20
12-11-2
101.57
WATERSHED BOUNDARY
REFUSE CONTAINMNT
PARKING LOT
1204 OFFICE
MAINTENANCE BLDG.
SCALES
BMP LOCATION
Transfer Sta.
Kempsville/Emporia
Uchee l.f.s.
Ex Bldg & Access
Craven f.s.l.
Emporia f.s.l.
Caroline f.s.l.
Kempsville/Emporia f.s.l.
Siagle f.s.l.
See (30-1)(1-4)
See (30-3)(1-1)
6 or 4
Virginia Electric
Total DA = 18.0
Woods = 5.2
Field = 2.8
Road Row = 1500'x50
Ex Bldg & Access Rds.
Transfer Imp = 1 ac
Transfer Nut = 1.8
WOOD LINE
SHELF RIDGE
TRENCH DRAIN
E 2,486,000
E 2,487,000
E 2,488,000
E 2,489,000
E 2,490,00
29-4
30-3
SCALE IN FEET
0
2000
4000
6000
8000

SECTION 29-2

TABLE 3

WORKSHEET FOR BMP POINT SYSTEM

A. STRUCTURAL BMP POINT ALLOCATION

BMP	BMP Points		Fraction of Site Served by BMP		Weighted BMP Points
Design 3	6	x	80%	=	4.8
"	"	x	offsite 15ac/3ac = 500%	=	30.0 = 34.8
Design 2	4	x	80%	=	3.2
"	"	x	500%	=	20.0

TOTAL WEIGHTED STRUCTURAL BMP POINTS: 23.2

B. NATURAL OPEN SPACE CREDIT

Fraction of Site		Natural Open Space Credit (0.1 per 1%)		Points for Natural Open Space
0	x	0	=	0

C. TOTAL WEIGHTED POINTS

Structural BMP Points	+	Natural Open Space Points	=	TOTAL

JCC - Transfer Station

2/1/93

1. Construct basin behind dog pound

a) DA = 18.0 acres

b) Land Use (Post)

				RCN			
Woods	-	10.0	×	70	=	700	
Field	-	2.8	×	71	=	198.8	
Road ROW	-	1.7	×	92	=	156.4	
Ex. Building Area + Access Rds (Imp)	-	0.6	×	98	=	58.8	
Transfer Sta (Imp)	-	1.1	×	98		107.8	
Transfer Sta (Per)	-	1.8	×	74		133.2	AVG RCN
		18.0				1355	$\frac{1355}{18} = 75.28$

c) Soil Types -

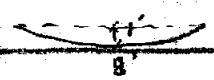
Soil Type	Hy. Soil Group
29B	C
15E	C
11C	C/A (small %)
19B	B/C

- Use C As Avg Soil Group

d) Time of Concentration

1) Sheet flow - 150', 0.007, woods - $T_c = 1.25$

2) Shallow Concentrated Flow - 430'; 13' elev slope = 3% $T_c = 0.04$

3) Channel Flow - 375', 15' - 0.04 %;  $T_c = 0.04$

$T_{TOTAL} = 1.25 + 0.04 + 0.04 = 1.34$ hr

e) BASIN STORAGE / ELEV CURVE

ELEV	AREA	STORAGE
70	0.03	0
		.825
75	0.3	0.825
		2.925
80	0.87	3.75
		6.175
85	1.60	9.93

f) 6 Pt BMP

$I = 10\%$ $R_v = 0.14$

$A = 18$ ac $\Rightarrow$ Vol = 0.21 acft or elev 71.25

use elev 1.5'

release rate = 0.21 acft = 9150 ft^3 / 3600 × 24 = 0.1 cfs

∴ use 1.6" ø orifice

g) BMP Design - Q_2 pre = 6.2 cfs

	STORM	Orifice	Principle	Emergency
		2"	12" @ 1.5	10' @ 5.0
	Q_2 OUT = 4.7	@ elev 3.0	V_s = 0.5	
	Q_{10} in = 15.3	Q_{10} OUT = 12.1	@ elev 5.1	V_s = 0.9
	same 10 yr	Q_{10} OUT = 10.5	elev 5.2	V_s = 1.0
	"	Q_{10} OUT = 11.4	" 5.2	V_s = 0.9
24 hr	"	Q_{10} OUT = 11.1	5.2	V_s = 0.9
6 hr	Q_{10} in = 14.0	Q_{10} OUT = 8.1	5.0	V_s = 0.8
24 hr	Q_{25} = 22.0	Q_{25} OUT = 17.8	5.6	V_s = 1.2
	Q_{100} = 30.2 (28.6 (pre))	Q_{100} out = 25.3	6.0	V_s = 1.4

Top of dam = 76 + 1 = 77.0

h) Orifice ϕ = 2.0" @ 70.0

12" barrel, 18" riser @ elev 71.5

10' wide E.S. @ elev 75.3

Top of dam = 77.0 (1 ft freeboard for 100 yr storm)

ELEV	
Q_2	73.0
Q_{10}	75.2
Q_{25}	75.6
Q_{100}	76.0

i) 4 Pt BMP

½" vol for imp area =

$\frac{1}{2}" \times 1.7 ac \times \frac{43,560\ ft^2}{1 ac} \times \frac{1 ft}{12"} = 3085\ ft^3 = 0.07\ ac\ ft$

@ elev 0.5' - have needed storage

→ Try No orifice, 12" pipe release culvert, + 10' E.S.

P.S - @ elev 71, EM @ 75.

Q_2 in = 7.1

Q_2 out = 4.8 cfs Elev = 2.7 V_s = 0.4

Q_{10} in = 15.5 Q_{10} out = 11.7 Elev = 5.1 V_s = 0.9

Q_{100} in = 30.2 Q_{100} out = 27.6 Elev = 5.7 V_s = 1.2

E.S @ 75.3

Q_{10} out = 10.9 cfs Elev 5.2 V_s = 0.9

Q_{100} out = 24.9 Elev 6.0 V_s = 1.4

JCC TRANSFER STATION

3/2/93

1. Entrance Road Culvert @ 2+00

a) DA = 4.2 ac

t_c = 20 min

I_{10} = 4.5

C = 0.4

Q = CIA = 0.4 × 4.5 × 4.2 = 7.4 cfs

b) Pipe Size

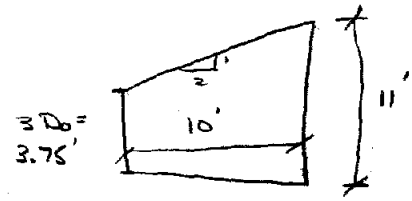
Try 15" RCP

Slope = $\frac{87-82}{100}$ = 5%

Q_{cap} = 14.5 cfs - ok

c) Rip Rap Protection @ Outfall

10' long,



2. Culvert @ Entrance to Transfer Sta.

165' long

Inv in = 94.2 -

3. Sed Trap @ Culvert sta 2+00

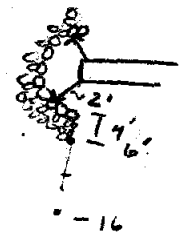
DA = 0.75 ac

Wet Sed Storage = 0.75 × 67 = 50 cyds = 1350 ft^3

1350 Ft^3 = (11 × π) × 10 × D

D = 3.9'

$\frac{2\pi R}{2}$ = Length of trap



JCC TRANSFER STATION

3/2/93

4. Sed Trap @ west end of Project

DA = 1 ac

STORAGE = 134 CY

V_1 = 67 CY - wet

V_2 = 67 CY - dry

a) $V_1 = 0.85 \times A_1 \times D_1$

$\frac{1800 \text{ Ft}^3}{0.85} = A_1 \times D_1 = 2130 \text{ ft}^3$

Try D = 3' A_1 = 709 ft^2 or 20'x35'

D = 4' A_1 = 532 ft^2 or 20 x 27

b) Wet Storage V_2 = 1800 ft^3

A_1 =

$1800 = V_2 = \frac{A_1 + A_2}{2} \times D_2 = \frac{709 + 55 \times 22}{2} = 960 \times D$

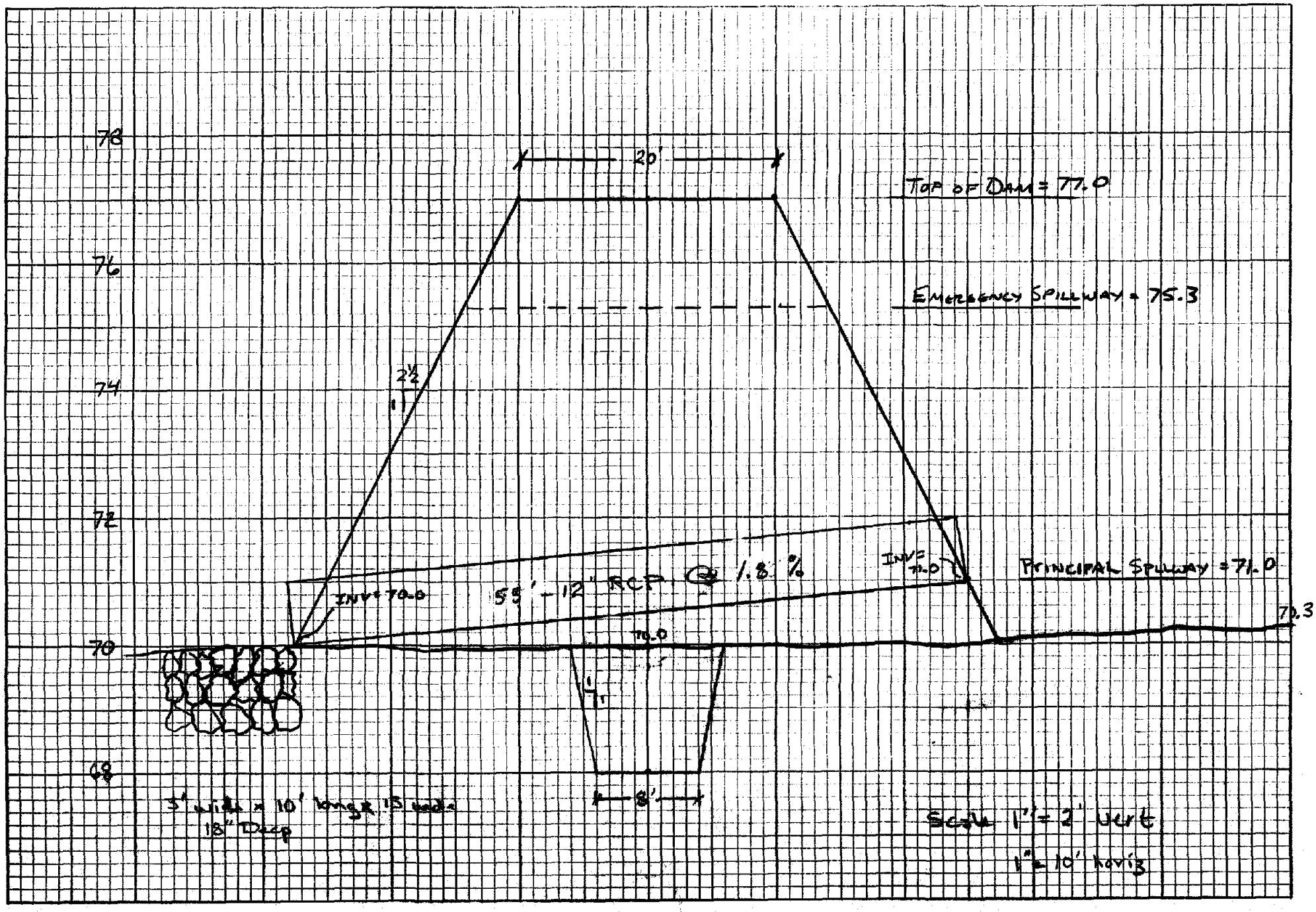
D = 1.9' => 2

H_o = 2' H = 3' W = 2.5'

K+E 10 X 10 TO THE INCH 46 0780
7 X 10 INCHES MADE IN U.S.A.
KEUFFEL & ESSER CO.

2/2/93

JCSA TRANSFER STATION



K+E 10 X 10 TO THE INCH 46 0780
7 X 10 INCHES MADE IN U.S.A.
KEUFFEL & ESSER CO.

2/2/93

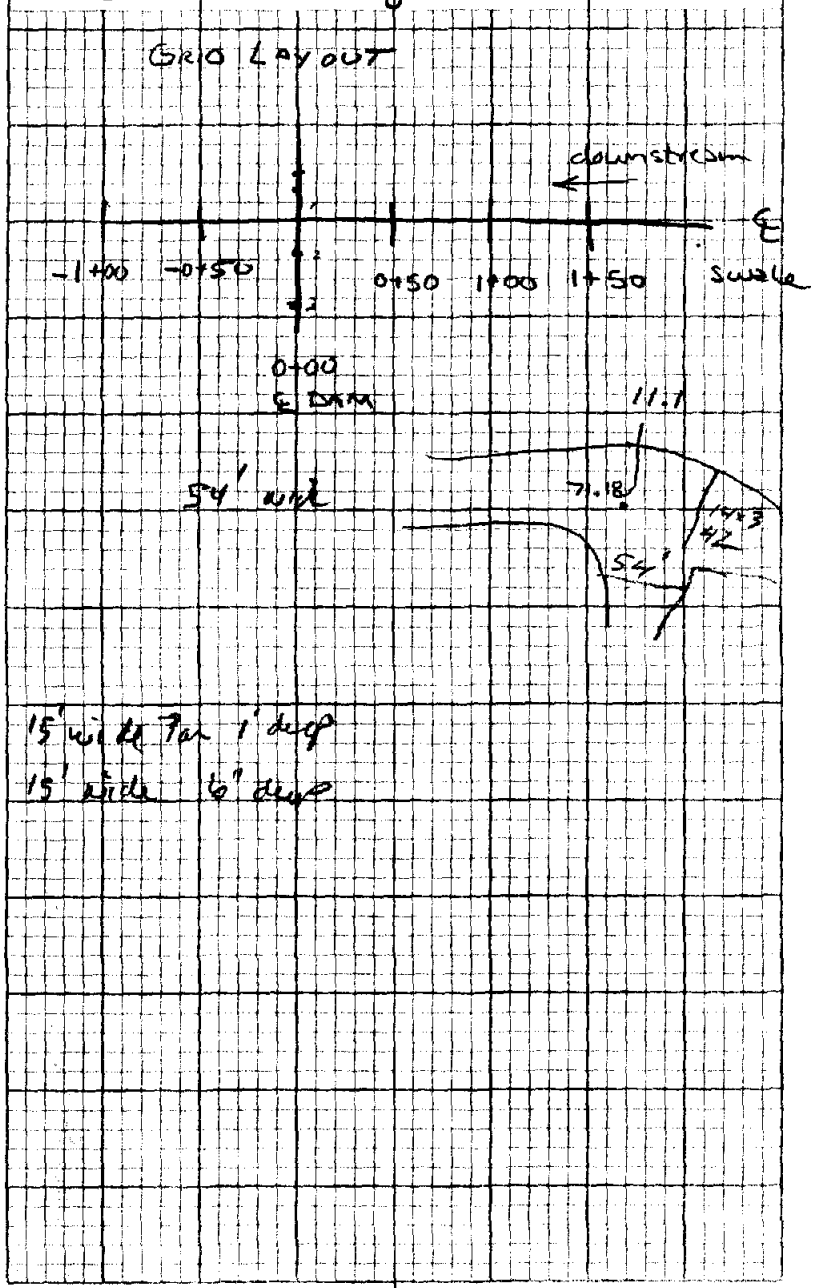
JCSA TRANSFER STATION BMP

TRANSFER STATION BMP 2/2/93

Right + Left looking upstream	+	HI	−	ELEV	RMK
0+00	12.28	82.28		70.0	Assumed Elev.
0+10			12.22	70.06	17' wide
0+25			8.05	74.23	
0+28 left			9.5	72.78	
0+60 left			5.98	76.3	
0+75			2.25	80.03	
0+50			11.95	70.33	left
0+12			11.95	70.33	Right
0+20			7.78	74.50	℄
0+38			11.90	70.38	Left
0+63			7.3	74.98	
1+30			9.80	72.48	℄
1+45			7.23	75.05	℄
−0+50			12.7	69.58	℄
−1+00			12.7	69.58	℄

DEC Mark Swilley

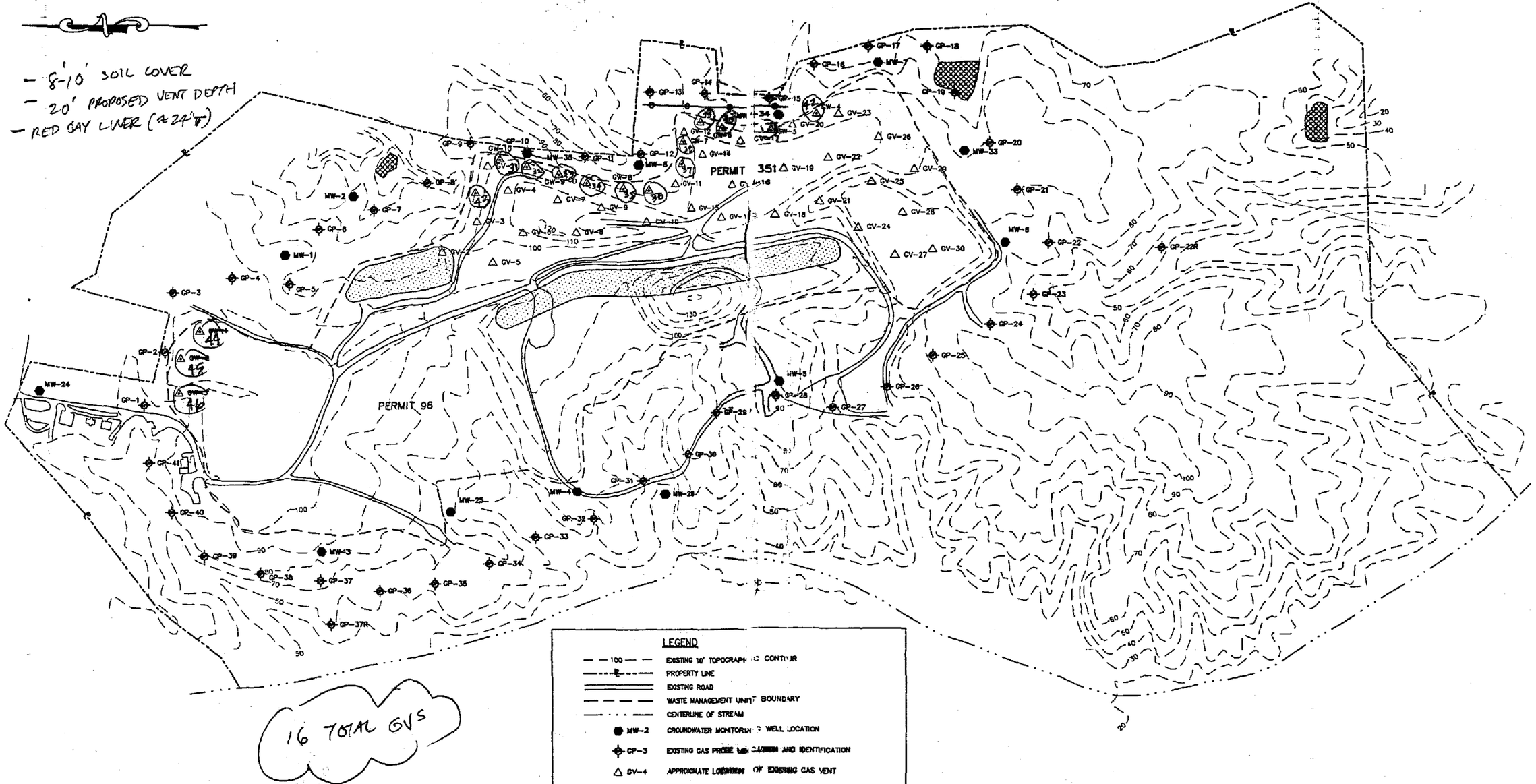
GRID LAYOUT



15' wide for 1' deep

15' wide 6" deep

- 8-10' SOIL COVER
- 20' PROPOSED VENT DEPTH
- RED GAY LINER (±24'W)



NOTES:

1. TOPOGRAPHIC CONTOUR INTERVAL = 10 FEET.
2. BASE MAP TAKEN FROM DRAWING BY RESOURCE INTERNATIONAL, LTD. DATED 12/19/98.
3. EAST/WEST ACCESS ROAD GENERALLY SEPARATES PERMIT 96 AND PERMIT 351 AREAS.

LEGEND

- 100 — EXISTING 10' TOPOGRAPHIC CONTOUR
- PROPERTY LINE
- EXISTING ROAD
- WASTE MANAGEMENT UNIT BOUNDARY
- CENTERLINE OF STREAM
- MW-2 — GROUNDWATER MONITORING WELL LOCATION
- GP-3 — EXISTING GAS PROBE LOCATION AND IDENTIFICATION
- GV-4 — APPROXIMATE LOCATION OF EXISTING GAS VENT
- GW-1 — APPROXIMATE LOCATION OF PROPOSED GAS VENT
- APPROXIMATE LOCATION OF PROPOSED LANDFILL GAS INTERCEPTION TRENCH AND ASSOCIATED GAS VENTS. THE PROPOSED INTERCEPTION TRENCH WILL BE APPROXIMATELY 550 FEET LONG BUT MAY VARY IN LENGTH AND LOCATION BASED ON FIELD CONDITIONS.
- FIBER FILL AREA
- SEDIMENT PONDS

DATE	REVISIONS AND RECORD OF ISSUE	NO	BY	CK	APP

DESIGNED
DRAWN CADD
CHECKED
APPROVED
DATE 11/25/02

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4808 RADFORD AVENUE
RICHMOND, VA. 23230-3506
PHONE: (804) 355-4520

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SCALE: 1"=450'

PROJECT NO.: 4351.01.21

JAMES CITY COUNTY LANDFILL
JAMES CITY COUNTY, VIRGINIA
FACILITY SITE PLAN

DRAWING NO. 2

N:\DWGS\VPPSA\James City County\gas\Compliance Monitoring FY03\CM-02 Facility Site Plan.dwg11x17