STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

AVERY COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	11C.095102	1	29

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION

LOCATION: *SR 1515 PILOT RIDGE RD FROM US 221 TO SR 1514 EDGEMONT RD STA 00+00 TO 28+44, STA 77+00 TO 85+83, AND STA 122+50 TO EOP STA 137+70*

TYPE OF WORK: *GRADING, DRAINAGE, BASE AND PAVING – 1.00 MILES*

BEGAN SURVEY: *01/16/04*

END SURVEY: *11/12/14*

Top Section
0+00 – 28+44

Bottom Section
122+50 – 137+70

Middle Section
77+00 – 85+83

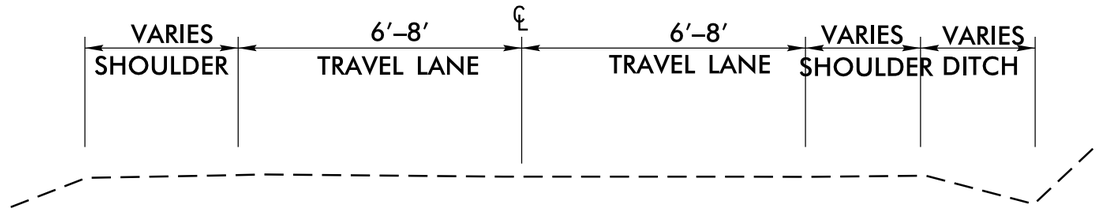
CONTRACT:

Prepared in the Office of: DIVISION OF HIGHWAYS DIVISION 11, DISTRICT 2 BOONE P.O. BOX 1460, BOONE, N.C. 28607		DIVISION ENGINEER	DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA
2002 STANDARD SPECIFICATIONS			
RIGHT OF WAY DATE:	M.A. PETTYJOHN P.E. DIVISION ENGINEER	P.E. SIGNATURE:	
LETTING DATE:	M.L.POE P.E. DISTRICT ENGINEER	DISTRICT ENGINEER P.E. SIGNATURE:	P.E. STATE HIGHWAY DESIGN ENGINEER

08-DEC-2014 11:24
R:\Road Projects\Secondary\Avery\sr1515\SR1515EC_COVERPAGE.dgn
$$$$USERNAME$$$$

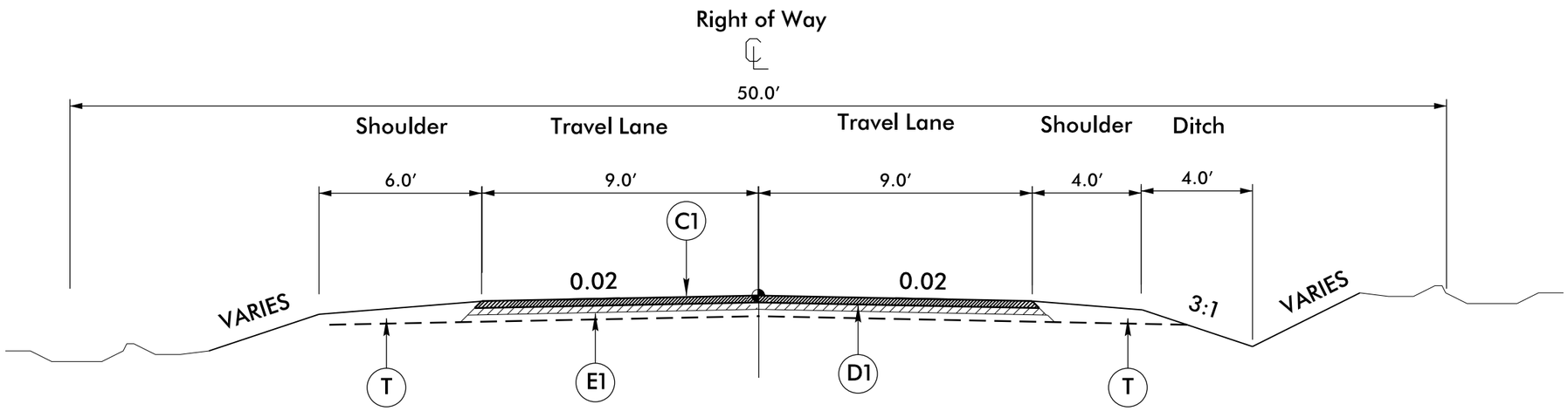
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
SR-1515 AVERY	1



12'–16' EXISTING TYPICAL SECTION

SR–1515 AVERY



TYPICAL SECTION NO. 1

	PAVEMENT SCHEDULE
C1	ASPHALT SURFACE TREATMENT COURSE (TRIPLE SEAL)
T	SHOULDER CONSTRUCTION
D1	3 INCH ACIC TYPE I19.0B
E1	6 INCH AGGREGATE BASE COURSE (COMPLETED)

AVERY COUNTY SR 1515 Revised 12/16/2014
PILOT RIDGE ROAD

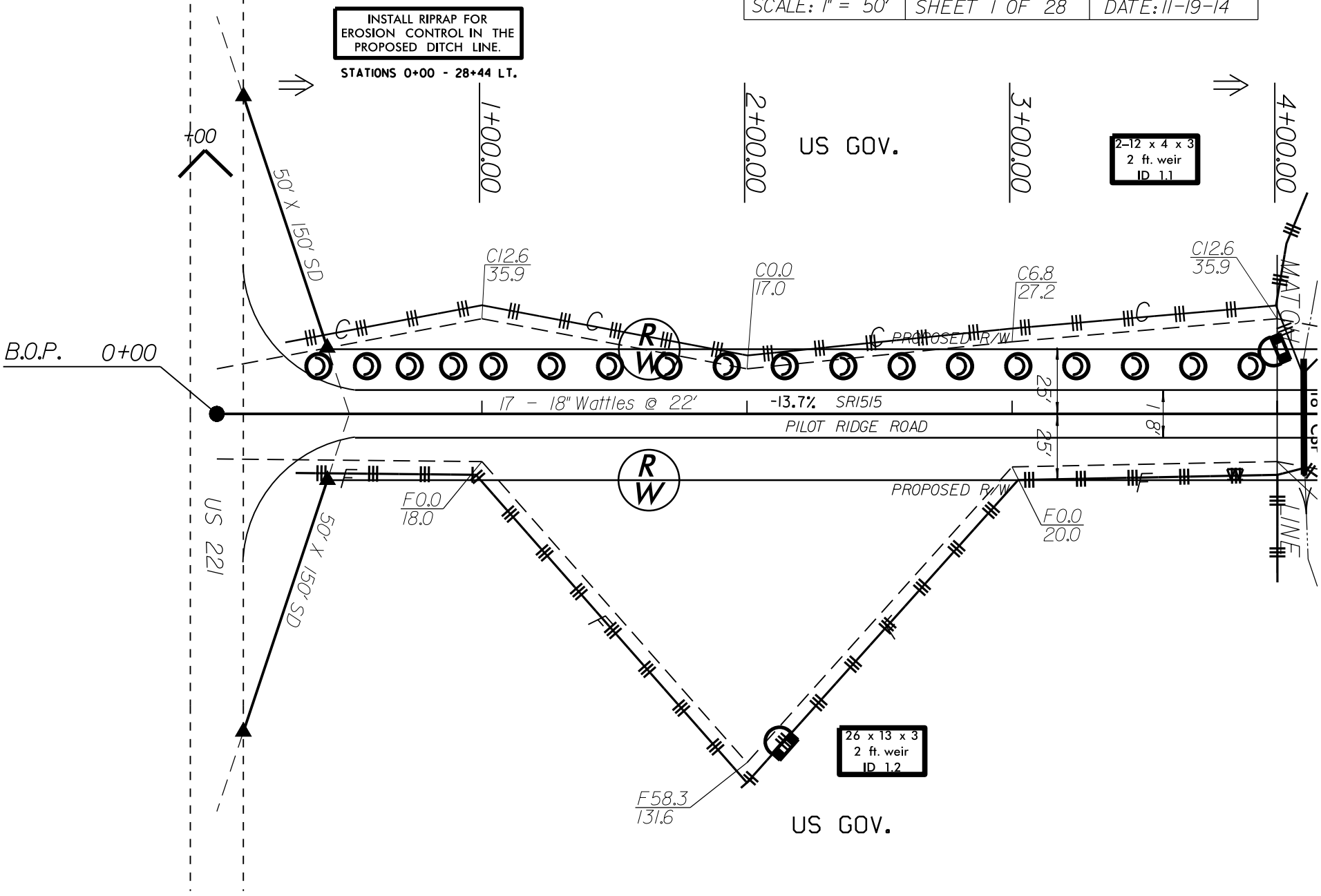
STATION	NEW PIPE SIZE	EXISTING WET PIPE	WET PIPE	CREEK SIZE
4+12	40' x 18"	30' x 18"	YES	1'
5+91	50' x 18"	40' x 18"	NO	
8+15	50' x 18"	40' x 18"	NO	
11+10	50' x 18"	40' x 18"	NO	
14+29	50' x 18"	40' x 18"	NO	
17+30	50' x 18"	40' x 18"	NO	
25+00	50' x 18"	Addition	NO	
~~30+35~~	~~50' x 18"~~	~~40' x 18"~~	~~NO~~	
~~33+50~~	~~50' x 18"~~	~~Addition~~	~~NO~~	
~~37+00~~	~~50' x 18"~~	~~40' x 24"~~	~~NO~~	
~~41+00~~	~~50' x 18"~~	~~Addition~~	~~NO~~	
~~43+60~~	~~50' x 18"~~	~~Addition~~	~~NO~~	
~~49+85~~	~~50' x 24"~~	~~40' x 18"~~	~~NO~~	
~~53+00~~	~~50' x 18"~~	~~Addition~~	~~NO~~	
~~54+75~~	~~50' x 18"~~	~~40' x 18"~~	~~NO~~	
~~57+00~~	~~50' x 36"~~	~~40' x 24"~~	~~YES~~	~~2'~~
~~57+85~~	~~50' x 18"~~	~~40' x 18"~~	~~YES~~	~~1'~~
~~62+52~~	~~DO NOT DISTURB~~	~~50' x 60"~~	~~YES~~	~~5'~~
~~64+24~~	~~50' x 72"~~	~~40' x 60"~~	~~YES~~	~~4'~~
~~70+10~~	~~50' x 18"~~	~~40' x 18"~~	~~YES~~	~~1'~~
77+00	50' x 18"	Addition	NO	
80+50	50' x 18"	Addition	NO	
83+50	50' x 18"	40' x 18"	NO	
85+65	50' x 24"	40' x 24"	No	
~~88+00~~	~~50' x 36"~~	~~40' x 24"~~	~~NO~~	
~~92+65~~	~~50' x 24"~~	~~40' x 24"~~	~~NO~~	
~~94+45~~	~~50' x 48"~~	~~30' x 36"~~	~~YES~~	~~3'~~
~~99+00~~	~~50' x 18"~~	~~Addition~~	~~NO~~	
~~101+45~~	~~50' x 48"~~	~~40' x 36"~~	~~YES~~	~~3'~~
~~106+00~~	~~50' x 18"~~	~~Addition~~	~~NO~~	
~~110+00~~	~~50' x 18"~~	~~Addition~~	~~NO~~	
~~114+00~~	~~50' x 18"~~	~~Addition~~	~~NO~~	
~~118+00~~	~~50' x 18"~~	~~Addition~~	~~NO~~	
122+90	50' x 18"	40' x 18"	NO	
128+25	80' x 24"	25' x 24"	YES	2'
132+20	50' x 18"	40' x 18"	NO	
137+00	50' x 18"		NO	

*DOES NOT INCLUDE DRIVEWAY PIPE

REVISED-1/16/04-TO SHOW GAPPED SECTION BETWEEN SURVEY STATIONS 77+00 TO 85+83

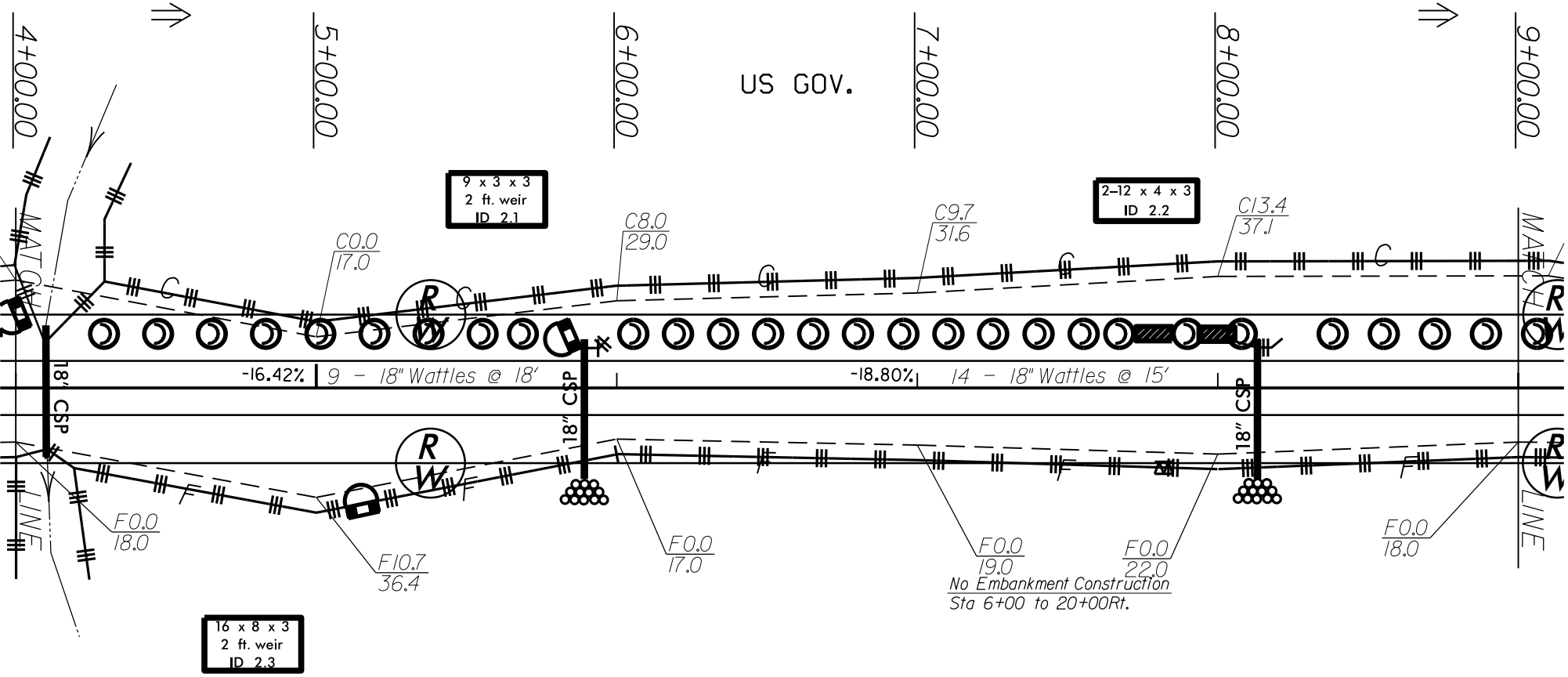
REVISED-12/02/04-TO SHOW GAPPED SECTION BETWEEN SURVEY STATIONS 123+07 TO 130+25

PROJECT:	11C.006010 (R/W)	
	(CONST)	
ROAD:	SR 1515 PILOT RIDGE RD.	
COUNTY:	AVERY- WILSON CREEK TOWNSHIP	
TYPE:	GRADE, DRAIN, BASE, AND PAVE (1.00 MI)	
SCALE: 1" = 50'	SHEET 1 OF 28	DATE: 11-19-14



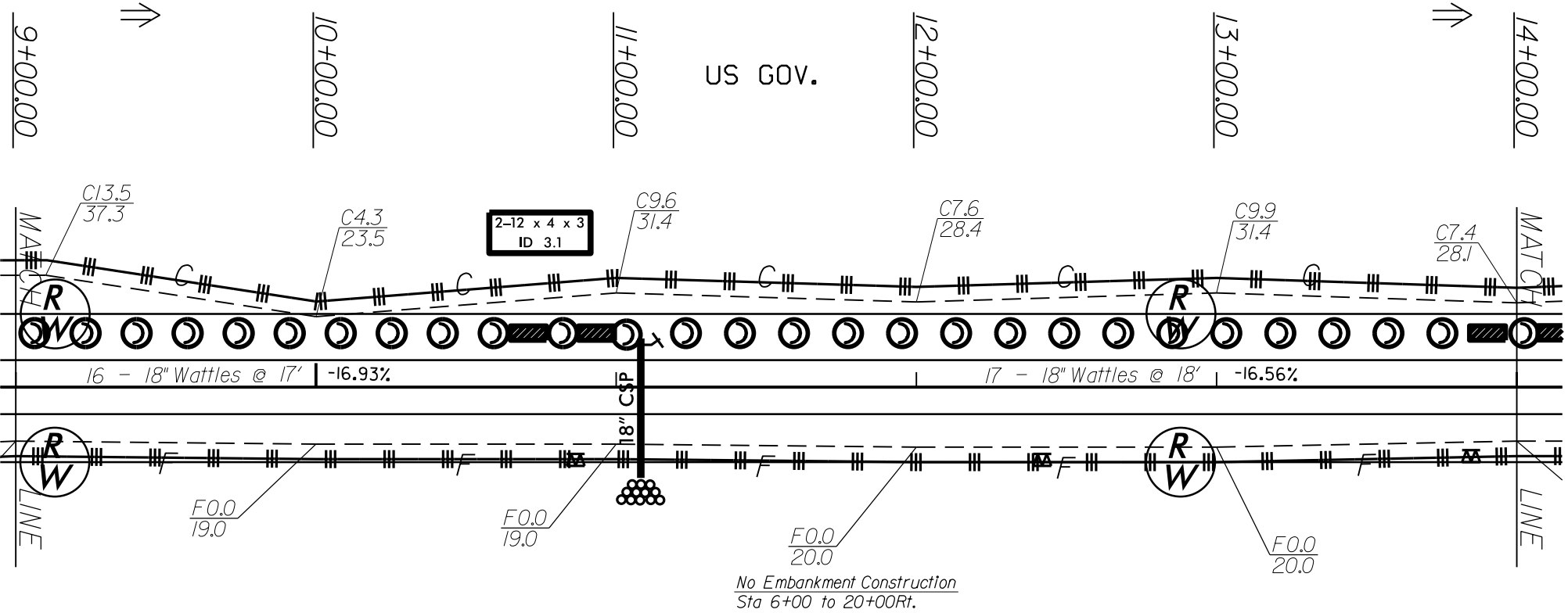
INSTALL RIPRAP FOR EROSION CONTROL IN THE PROPOSED DITCH LINE.

STATIONS 0+00 - 28+44 LT.



INSTALL RIPRAP FOR EROSION CONTROL IN THE PROPOSED DITCH LINE.

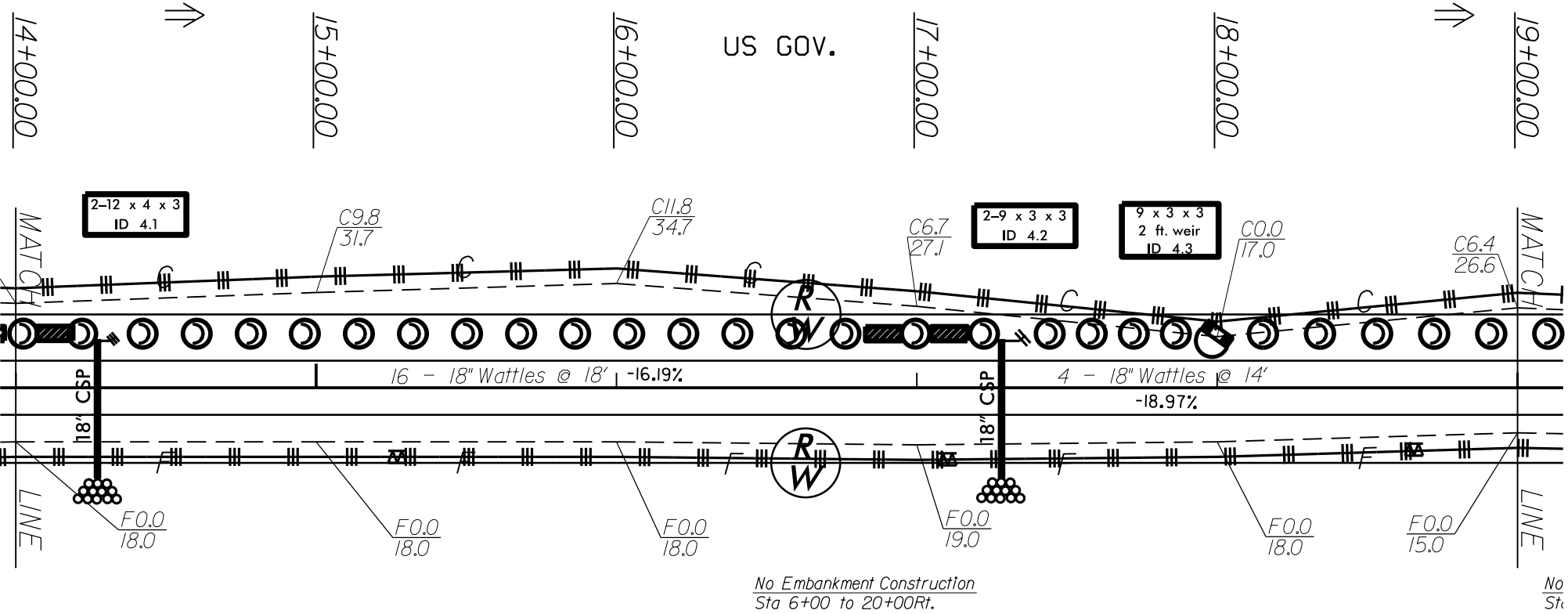
STATIONS 0+00 - 28+44 LT.



US GOV.

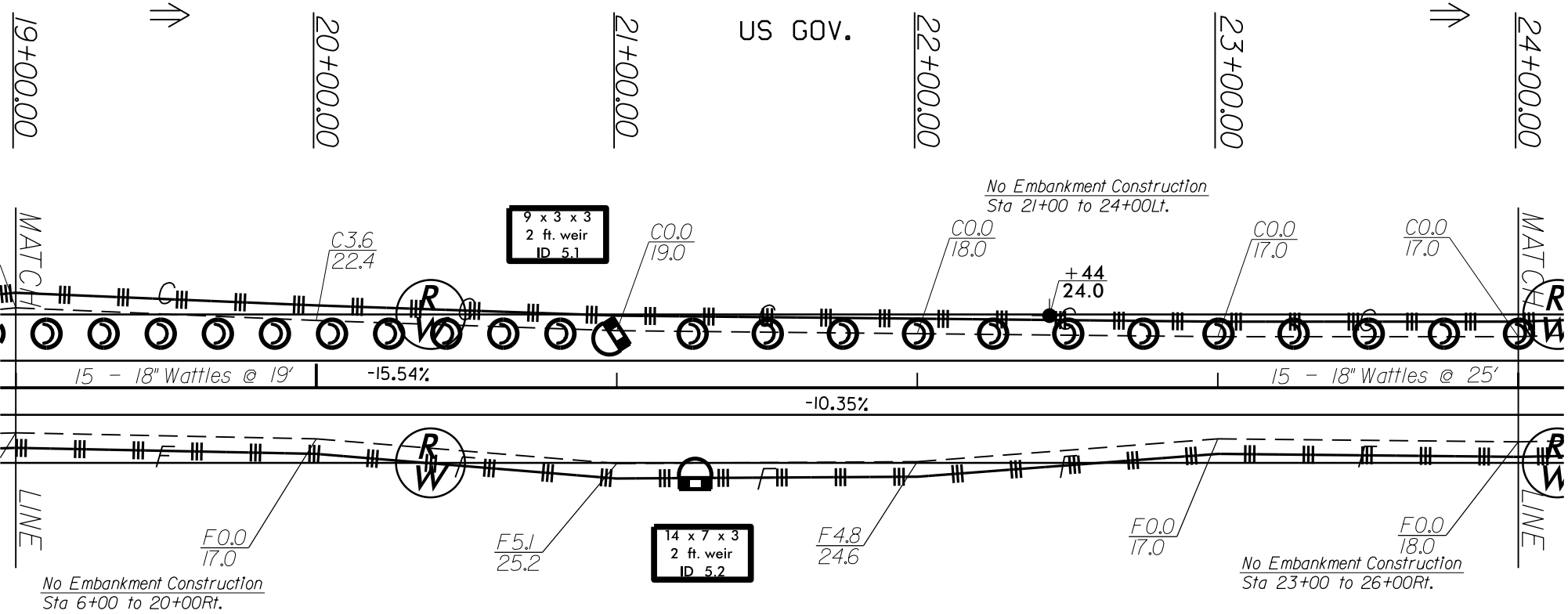
INSTALL RIPRAP FOR EROSION CONTROL IN THE PROPOSED DITCH LINE.

STATIONS 0+00 - 28+44 LT.

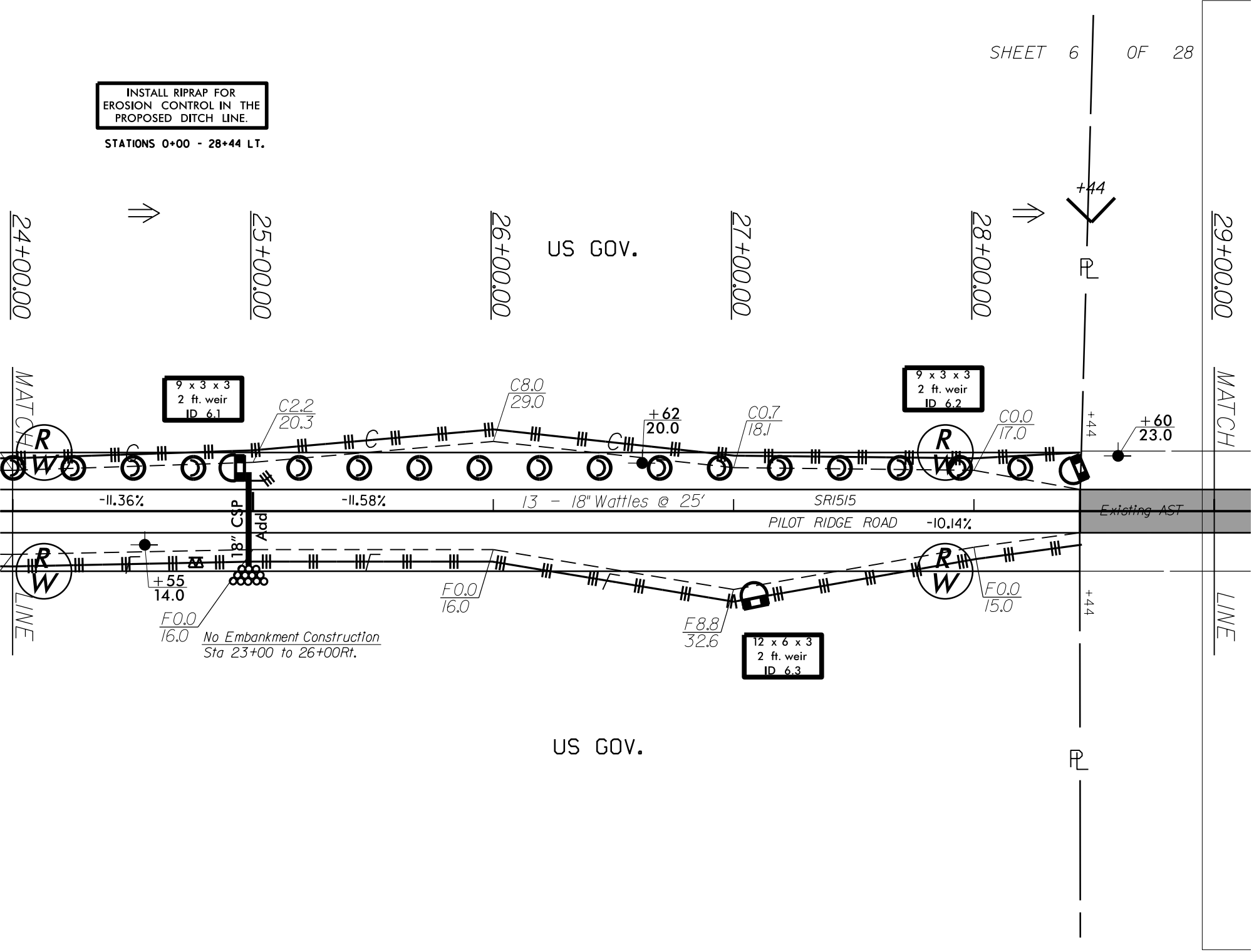


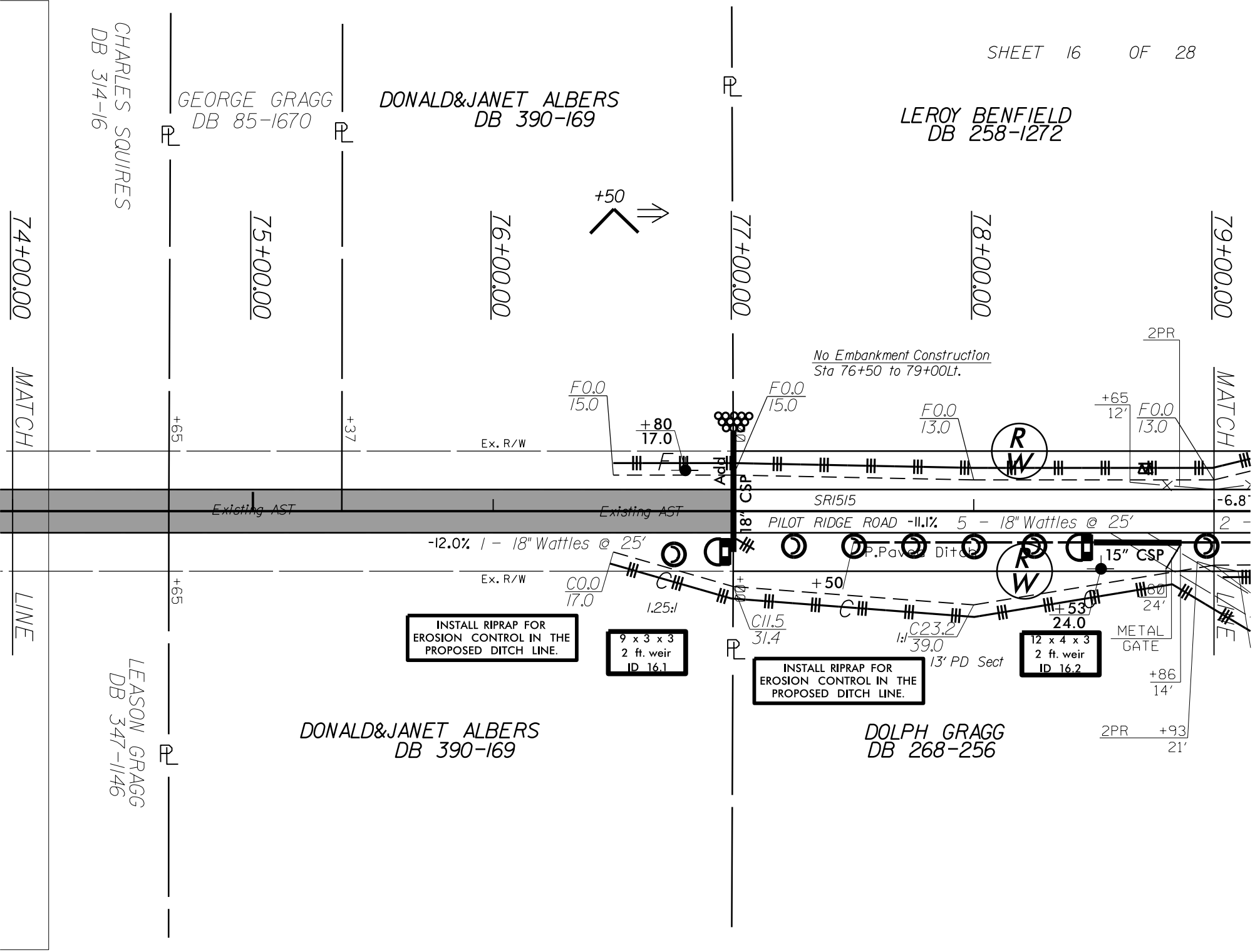
INSTALL RIPRAP FOR EROSION CONTROL IN THE PROPOSED DITCH LINE.

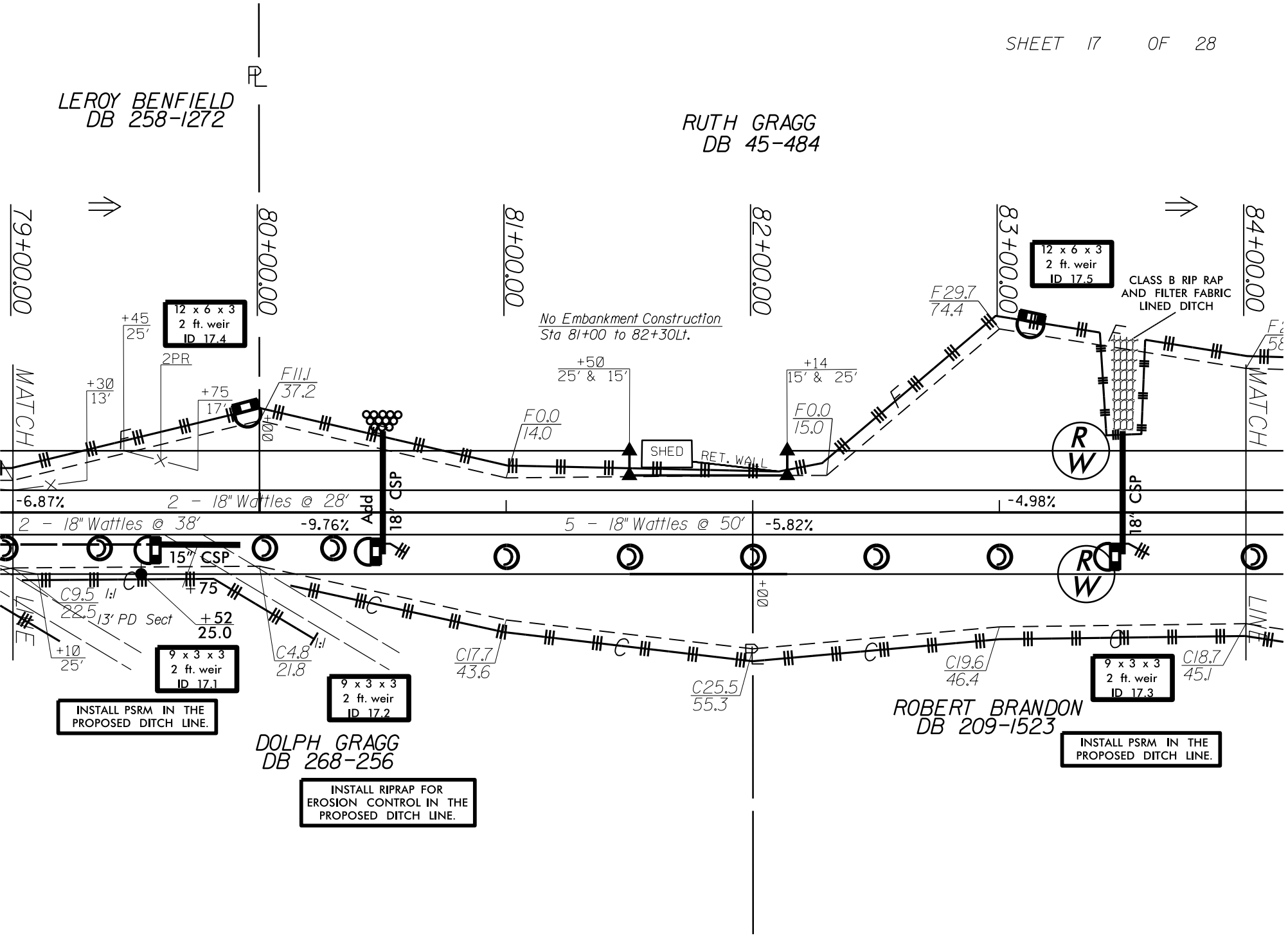
STATIONS 0+00 - 28+44 LT.

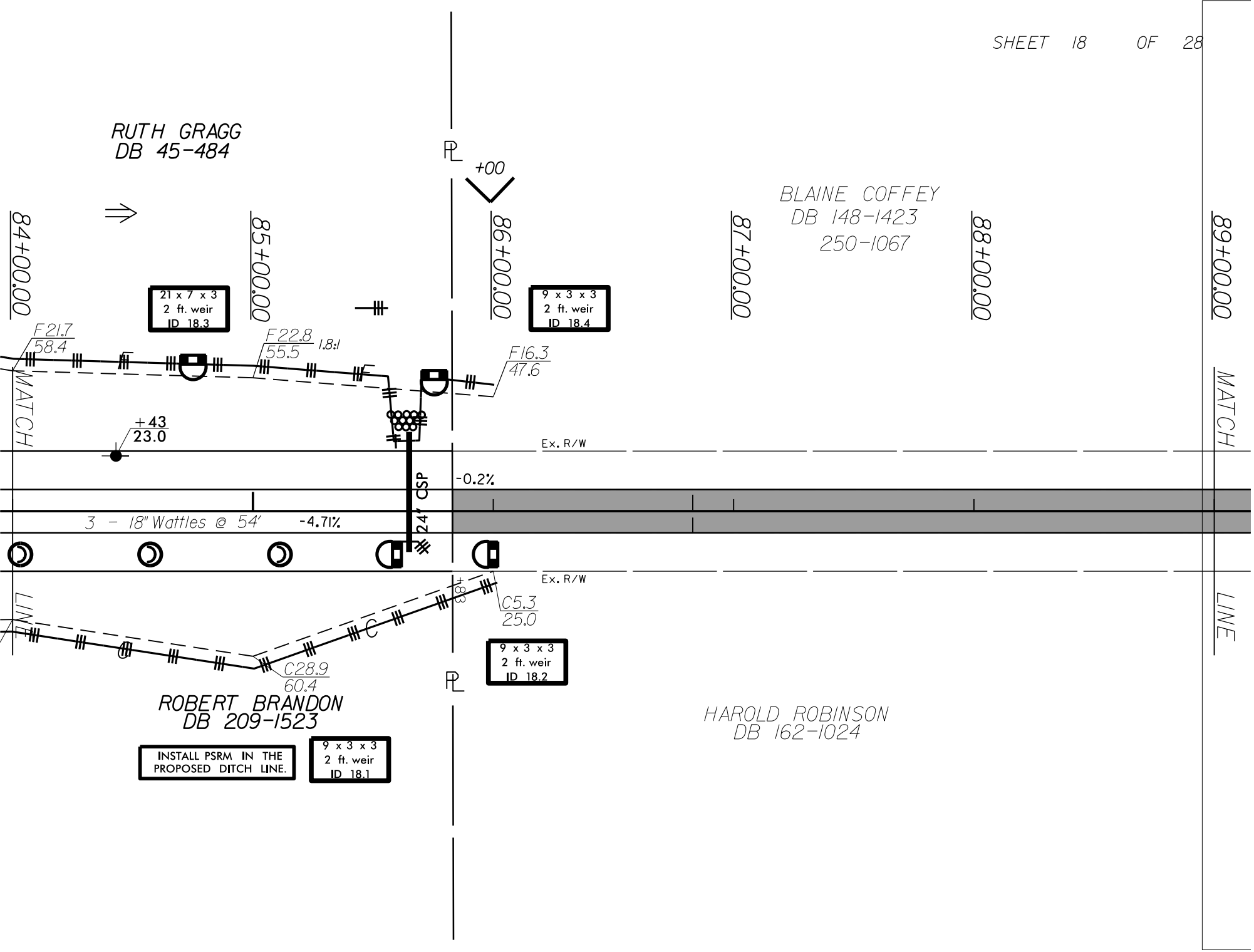


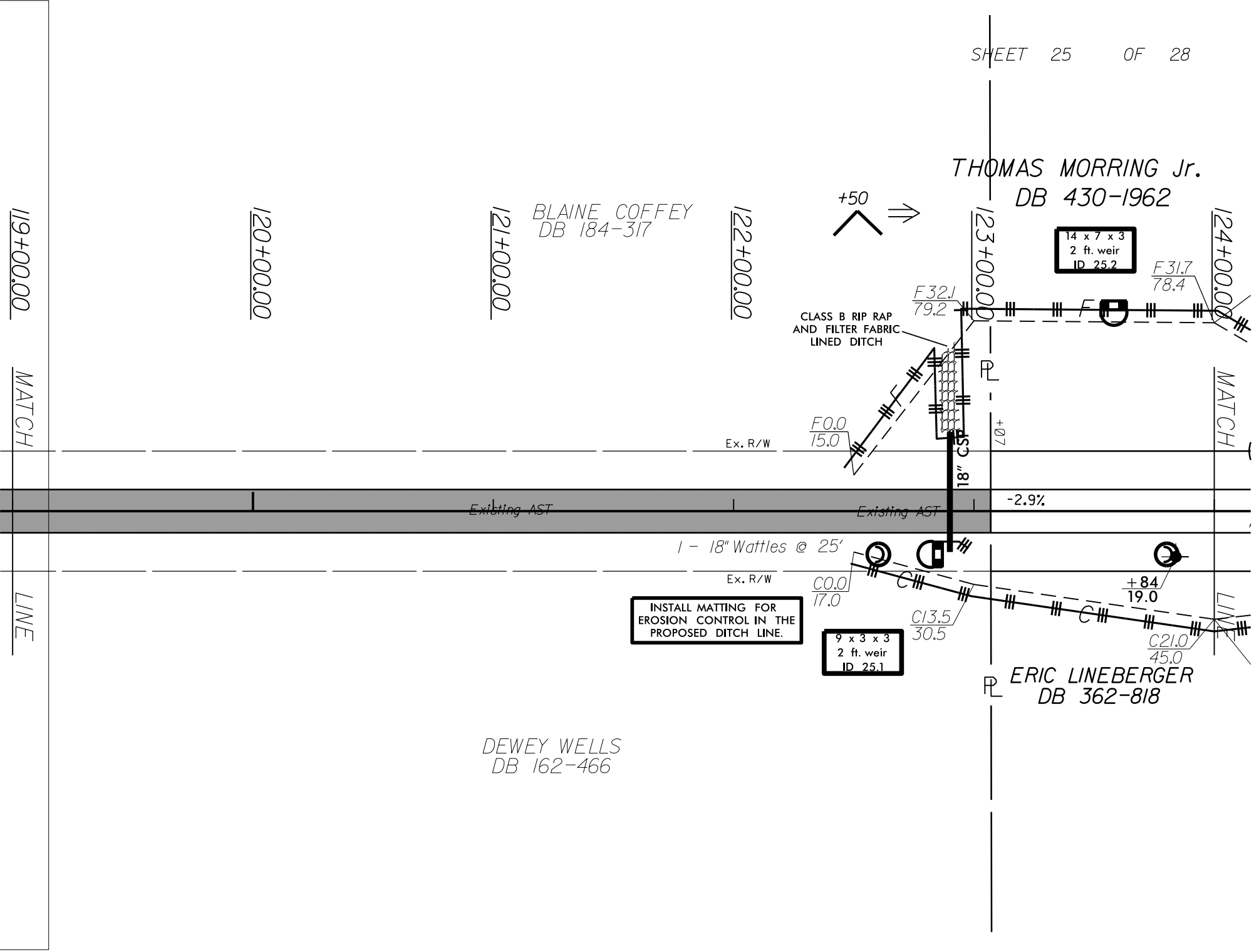
US GOV.


INSTALL RIPRAP FOR EROSION CONTROL IN THE PROPOSED DITCH LINE.
STATIONS 0+00 - 28+44 LT.
24+00.00
25+00.00
26+00.00
27+00.00
28+00.00
29+00.00
+44
US GOV.
MATCH LINE
9 x 3 x 3 2 ft. weir ID 6.1
C2.2 20.3
C8.0 29.0
+62 20.0
C0.7 18.1
9 x 3 x 3 2 ft. weir ID 6.2
C0.0 17.0
+60 23.0
-11.36%
-11.58%
13 - 18" Wattles @ 25'
SR1515
PILOT RIDGE ROAD
-10.14%
Existing AST
18" CSP Add
+55 14.0
F0.0 16.0
No Embankment Construction Sta 23+00 to 26+00Rt.
F0.0 16.0
F8.8 32.6
12 x 6 x 3 2 ft. weir ID 6.3
F0.0 15.0
US GOV.


CHARLES SQUIRES
DB 314-16
GEORGE GRAGG
DB 85-1670
DONALD&JANET ALBERS
DB 390-169
LEROY BENFIELD
DB 258-1272
74+00.00
75+00.00
76+00.00
77+00.00
78+00.00
79+00.00
+50
MATCH LINE
No Embankment Construction
Sta 76+50 to 79+00Lt.
F0.0
15.0
+80
17.0
Ex. R/W
Existing AST
Existing AST
18" CSP
SR1515
PILOT RIDGE ROAD -11.1%
5 - 18" Wattles @ 25'
-12.0% 1 - 18" Wattles @ 25'
C0.0
17.0
1.25:1
C11.5
31.4
+50
C23.2
39.0
1:1
13' PD Sect
+53
24.0
15" CSP
2PR
+65
12'
F0.0
13.0
-6.8
+86
14'
METAL GATE
+93
21'
INSTALL RIPRAP FOR EROSION CONTROL IN THE PROPOSED DITCH LINE.
9 x 3 x 3
2 ft. weir
ID 16.1
INSTALL RIPRAP FOR EROSION CONTROL IN THE PROPOSED DITCH LINE.
12 x 4 x 3
2 ft. weir
ID 16.2
DONALD&JANET ALBERS
DB 390-169
DOLPH GRAGG
DB 268-256
LEASON GRAGG
DB 347-1146

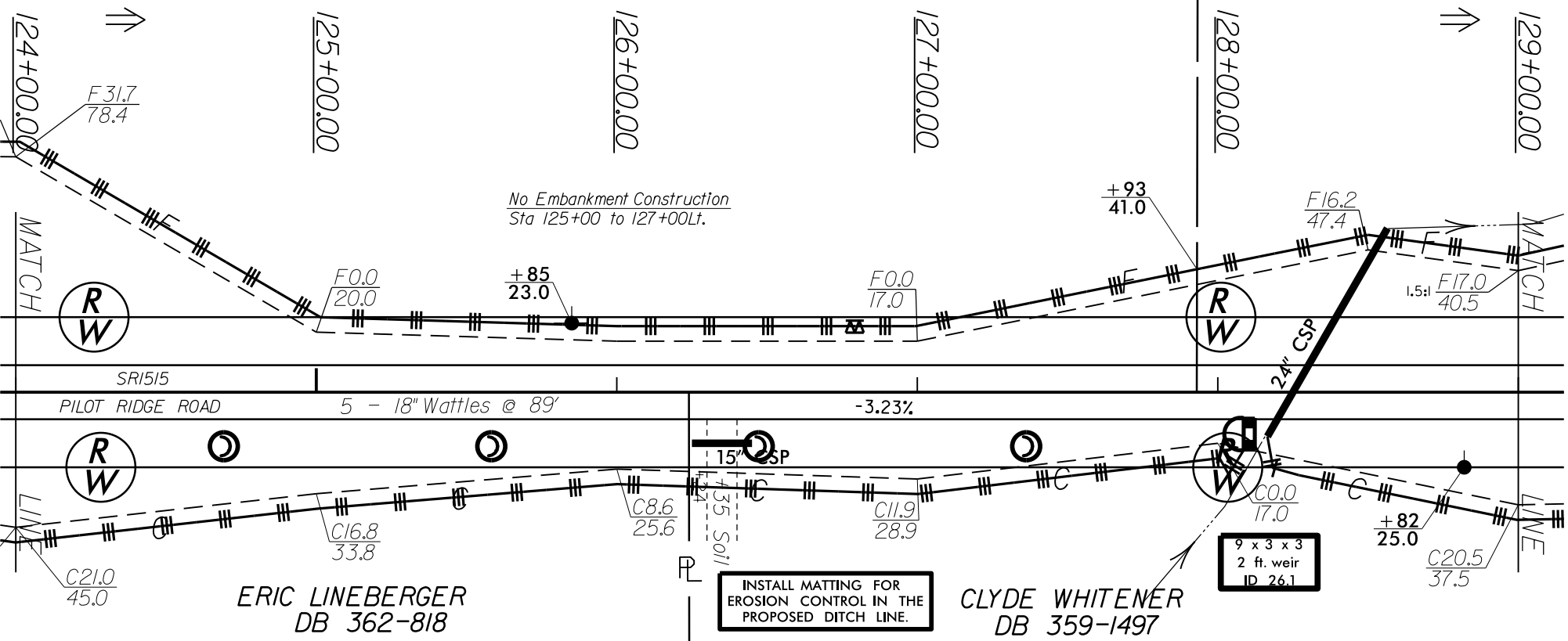

LEROY BENFIELD
DB 258-1272
RUTH GRAGG
DB 45-484
79+00.00
80+00.00
81+00.00
82+00.00
83+00.00
84+00.00
MATCH
MATCH
LINE
LINE
12 x 6 x 3
2 ft. weir
ID 17.4
12 x 6 x 3
2 ft. weir
ID 17.5
CLASS B RIP RAP
AND FILTER FABRIC
LINED DITCH
+45
25'
+30
13'
+75
17'
2PR
F11.1
37.2
+00
No Embankment Construction
Sta 81+00 to 82+30Lt.
+50
25' & 15'
F0.0
14.0
SHED
RET. WALL
+14
15' & 25'
F0.0
15.0
F29.7
74.4
-6.87%
2 - 18" Wattles @ 28'
Add 18" CSP
-4.98%
18" CSP
2 - 18" Wattles @ 38'
-9.76%
5 - 18" Wattles @ 50'
-5.82%
15" CSP
+75
C9.5
22.5
1:1
13' PD Sect
+52
25.0
+10
25'
9 x 3 x 3
2 ft. weir
ID 17.1
C4.8
21.8
1:1
9 x 3 x 3
2 ft. weir
ID 17.2
C17.7
43.6
C25.5
55.3
C19.6
46.4
9 x 3 x 3
2 ft. weir
ID 17.3
C18.7
45.1
INSTALL PSRM IN THE
PROPOSED DITCH LINE.
DOLPH GRAGG
DB 268-256
INSTALL RIPRAP FOR
EROSION CONTROL IN THE
PROPOSED DITCH LINE.
ROBERT BRANDON
DB 209-1523
INSTALL PSRM IN THE
PROPOSED DITCH LINE.


RUTH GRAGG
DB 45-484
PL
+00
BLAINE COFFEY
DB 148-1423
250-1067
84+00.00
85+00.00
86+00.00
87+00.00
88+00.00
89+00.00
21 x 7 x 3
2 ft. weir
ID 18.3
9 x 3 x 3
2 ft. weir
ID 18.4
F21.7
58.4
F22.8
55.5
1.8:1
F16.3
47.6
MATCH
+43
23.0
Ex. R/W
-0.2%
24" CSP
3 - 18" Wattles @ 54'
-4.71%
Ex. R/W
LINE
+83
C5.3
25.0
C28.9
60.4
9 x 3 x 3
2 ft. weir
ID 18.2
PL
ROBERT BRANDON
DB 209-1523
INSTALL PSRM IN THE
PROPOSED DITCH LINE.
9 x 3 x 3
2 ft. weir
ID 18.1
HAROLD ROBINSON
DB 162-1024


THOMAS MORRING Jr.
DB 430-1962
BLAINE COFFEY
DB 184-317
DEWEY WELLS
DB 162-466
ERIC LINEBERGER
DB 362-818
119+00.00
120+00.00
121+00.00
122+00.00
123+00.00
124+00.00
MATCH LINE
MATCH LINE
+50
14 x 7 x 3
2 ft. weir
ID 25.2
F32.1
79.2
F31.7
78.4
CLASS B RIP RAP
AND FILTER FABRIC
LINED DITCH
F0.0
15.0
18" CSP
+07
Ex. R/W
Existing AST
Existing AST
-2.9%
1 - 18" Wattles @ 25'
Ex. R/W
C0.0
17.0
C13.5
30.5
+84
19.0
C21.0
45.0
INSTALL MATTING FOR
EROSION CONTROL IN THE
PROPOSED DITCH LINE.
9 x 3 x 3
2 ft. weir
ID 25.1

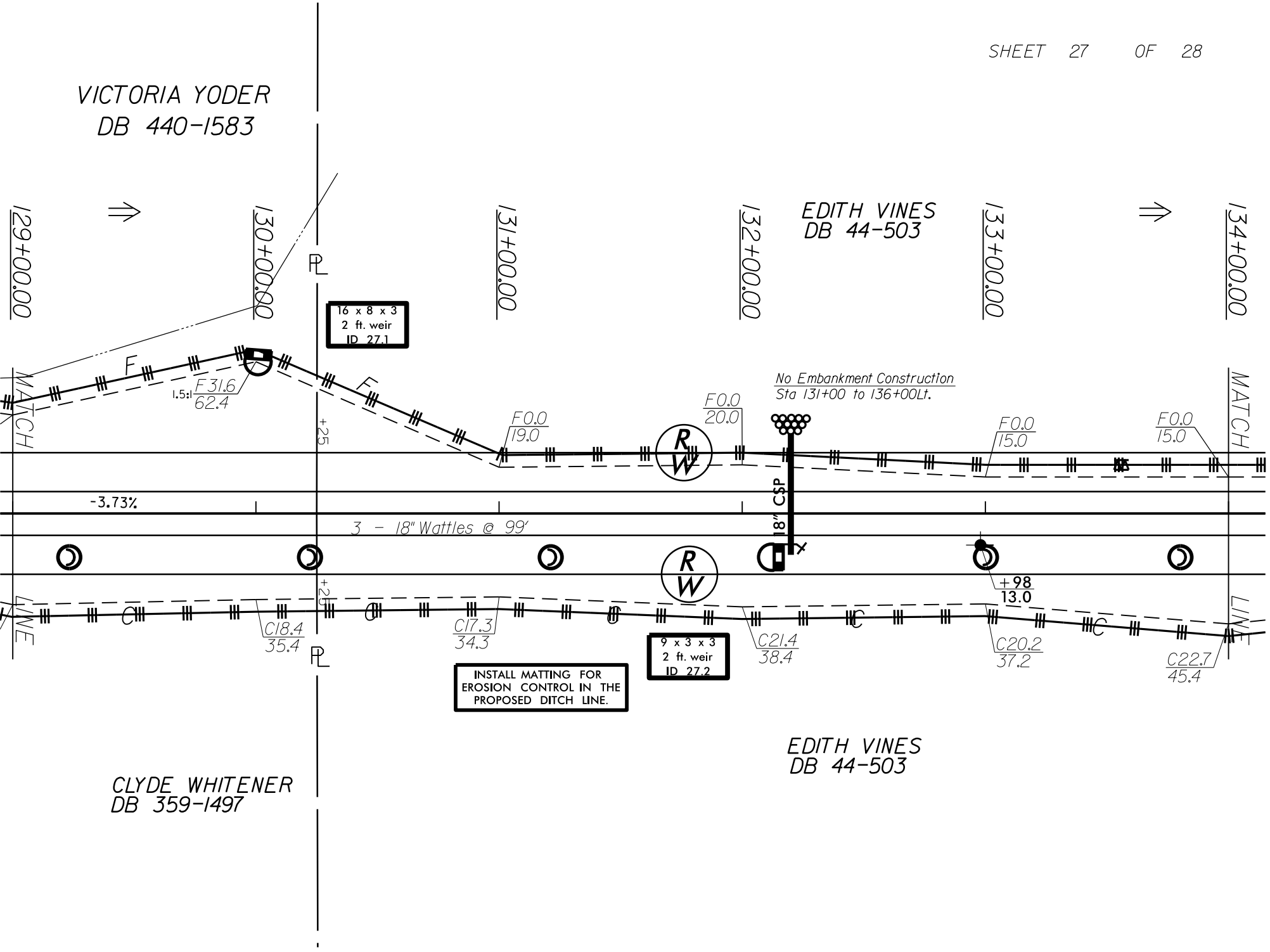
THOMAS MORRING Jr.
DB 430-1962

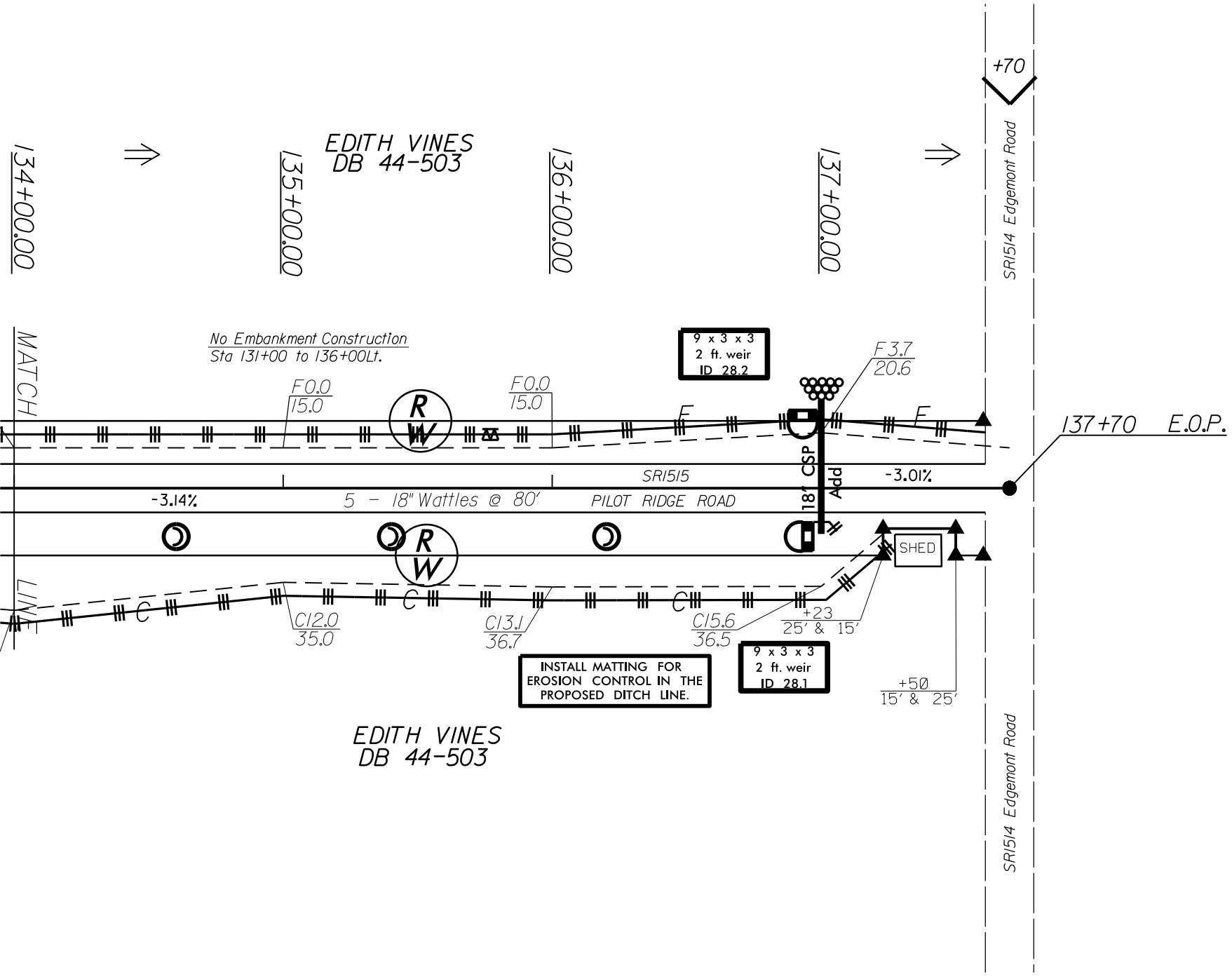
VICTORIA YODER
DB 440-1583

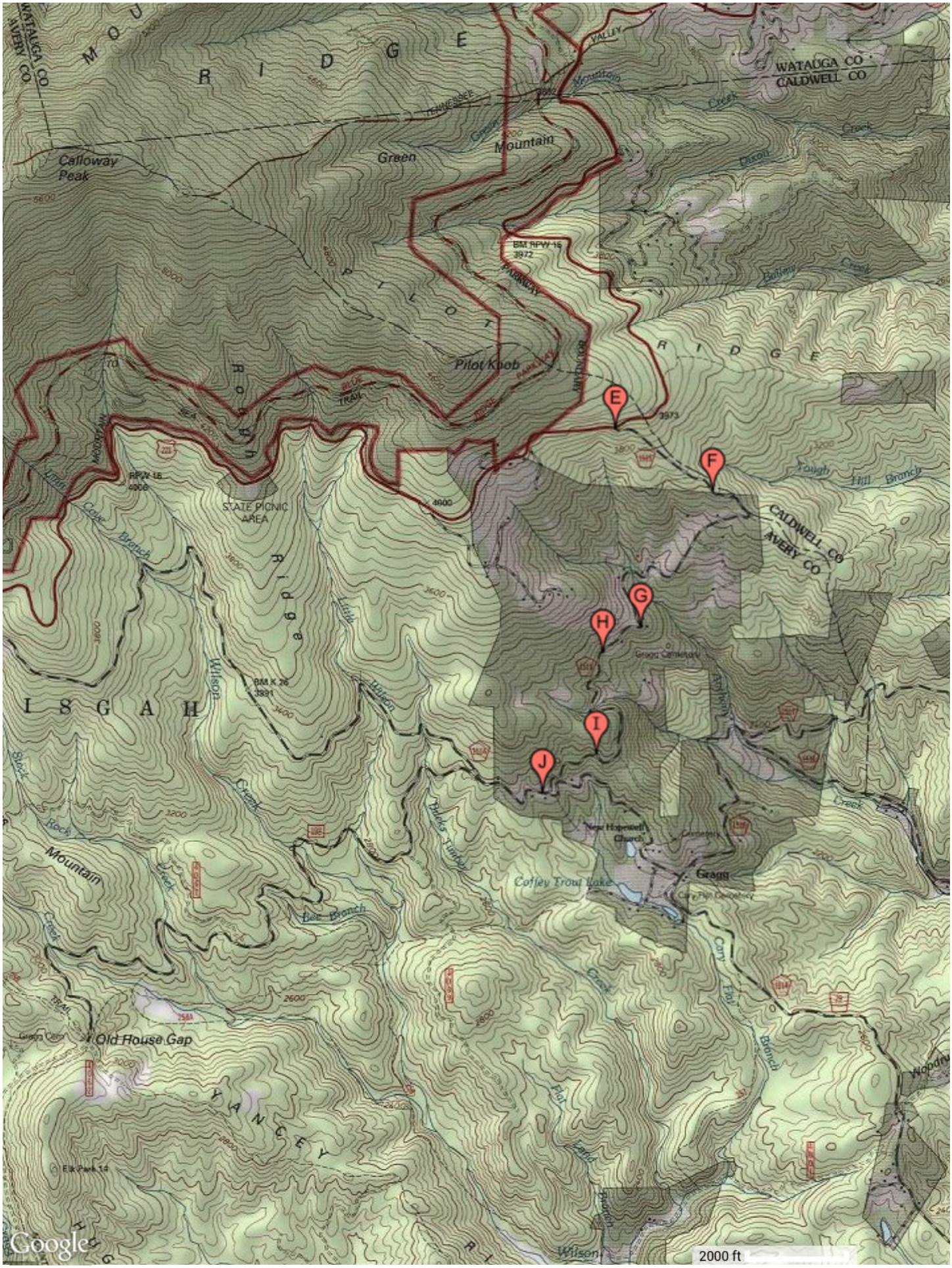


ERIC LINEBERGER
DB 362-818

CLYDE WHITENER
DB 359-1497


VICTORIA YODER
DB 440-1583
129+00.00
130+00.00
131+00.00
132+00.00
EDITH VINES
DB 44-503
133+00.00
134+00.00
16 x 8 x 3
2 ft. weir
ID 27.1
MATCH
LINE
F
1.5:1
F31.6
62.4
+25
F0.0
19.0
F0.0
20.0
No Embankment Construction
Sta 131+00 to 136+00Lt.
F0.0
15.0
F0.0
15.0
MATCH
LINE
-3.73%
3 - 18" Wattles @ 99'
18" C&P
+98
13.0
C18.4
35.4
C17.3
34.3
C21.4
38.4
C20.2
37.2
C22.7
45.4
9 x 3 x 3
2 ft. weir
ID 27.2
INSTALL MATTING FOR
EROSION CONTROL IN THE
PROPOSED DITCH LINE.
EDITH VINES
DB 44-503
CLYDE WHITENER
DB 359-1497


+70
SR1514 Edgemont Road
EDITH VINES
DB 44-503
134+00.00
135+00.00
136+00.00
137+00.00
MATCH LINE
No Embankment Construction
Sta 131+00 to 136+00Lt.
9 x 3 x 3
2 ft. weir
ID 28.2
F3.7
20.6
F0.0
15.0
F0.0
15.0
137+70 E.O.P.
SR1515
-3.01%
-3.14%
5 - 18" Wattles @ 80'
PILOT RIDGE ROAD
18" CSP
Add
SHED
C12.0
35.0
C13.1
36.7
C15.6
36.5
+23
25' & 15'
+50
15' & 25'
9 x 3 x 3
2 ft. weir
ID 28.1
INSTALL MATTING FOR EROSION CONTROL IN THE PROPOSED DITCH LINE.
EDITH VINES
DB 44-503
SR1514 Edgemont Road


MOUNTAIN RIDGE
PILOT
ROAN
RIDGE
BLACK
YANCEY
WATAUGA CO
AVERY CO
CALDWELL CO
Calloway Peak
Green Mountain
Pilot Knob
STATE PICNIC AREA
Gragg
Coffey Trout Lake
Old House Gap
Elk Park 14
Google
2000 ft
E
F
G
H
I
J

STEP 1: Input Project Information ****items in red are REQUIRED***

SECTION 1 of 32

Construction time ≤ 6 months (Y/N)?	Y
HQW (Y/N)?	Y
Trout (Y/N)?	Y
From Sta.:	0 + 0
to Sta.:	4 + 12
Right/Left:	Lt
% Ditch Grade:	13.680 %
Contributing R/W Width:	17 feet
Length of Run	X 412 feet
Disturbed Area	= 0.16 acres
Drainage Area:	0.16 acres

Elevation Tool (ft)
0
0
No Elev Data

*Drainage Area must equal or exceed the Disturbed Area found above

Surface Dewatering Device	N
Is this a Typical Section (Y/N)?	Y
Will RUSLE2 be used to model the Non-Typical sections?	N

County:	Avery
Location:	Pilot Ridge Rd
Prepared By:	Jacob Combs
Date Prepared:	11/18/2014
Level III A #:	3474
Level III A Expiration:	12/31/2016
Reviewed By:	Greg Kirby
Date Reviewed:	11/19/2014
Level III A #:	391
Level III A Expiration:	1/0/1900

ERODES EROsion DESign

Version 2.10.2012

Regression Constant, *C*	659	*Table 2-7 (Level III Ref Manual)*
Rainfall Factor, *R*	106.4	*Figure 2-1*
Erodibility Factor, *K*	0.24	*Table 2-2 or Web Soil Survey (http://soildatamart.nrcs.usda.gov/)*
Soil Type	SoD Soco	** informational purposes only.*

STEP 2: Ditch Liner requirements: *Utilize the* ***Required Liner*** *tab and note recommendations on plans.*

STEP 3: Velocity Control Requirements

TYPE B ROCK SILT CHECKS OR WATTLES 18 ***spaced at*** 22 **feet**

Wattles are required in conjunction with PAMs

****See the HELP Tab for additional clarification and an example on how to place on plans.***

Start with Option 4A

OPTION 4: Using RUSLE2 Analysis to determine required storage

OPTION 4A: For DRAINAGE AREA < 3 Acre: Use V=CRKs to determine storage

Regression Constant, **C**	659	
Rainfall Factor, **R**	106.4	
Erodibility Factor, **K**	0.24	
Soil Type	SoD Soco	
Ditchline Slope, **s**	0.13680	ft/ft
V=	1887.72	$ft^3/ac/yr$
Required Storage Volume=	303.53	ft^3

From Step 1 above

Using 82% of Rainfall Factor-see note in cell C4 - Move on to Option 4C

OPTION 4B: For DRAINAGE AREA > 3 Acre: Use RUSLE2 Modeling to determine storage

Sediment Delivery from RUSLE2:	0.00	tons/acre/yr
Converting to $ft^3/ac/yr$:	N/A	$ft^3/ac/yr$
Required Storage Volume=	N/A	ft^3

See Option 4A

OPTION 4C: Using the Required Storage Volume from Option 4A or 4B to determine # of Wrapped TRSC-A/Wattles Required

**** These devices can be used to satisfy the velocity requirements in Step 3.***

Storage from Wrapped Type A Rock Silt Checks or Wattles

Enter Ditch Front Slope Gradient (H:V):	3	:1
Enter Ditch Back Slope Gradient (H:V):	1.5	:1
Enter Device Height:	1.5	ft
Area Behind Device:	5.06	ft^2
Length of Ditch Behind Device:	10.96	ft
Storage Behind Device (assumes 65% effeciency):	12.03	ft^3
Wrapped TRSC-A/Wattles required:	X 26.0	
Total	312.71	ft^3

WATTLES REQUIRED

Excessive number of devices required. Go to Option 5

****Designer still has the option of using Option 5 or 6***

COMMENTS:

Use Temporary Sediment Dam, Type-B 12x4x3. Dam and wattles cover required storage.

OPTION 5: IF DRAINAGE AREA > 1 Acre: Use Surface Area Calculations to determine storage, A=325Q $_p$

a. Determine the Peak Runoff Rate, **Q_p** ($Q_p = Q_{10}$ (Q_{25} for HQW or Trout)) **USE Q25**

Q_p=CiA

Runoff Coefficient, **C** 0 *Table 1-4,1-5,1-6*

Time of Concentration, **t_c** (minutes)

1 ***Shortcut Method,*** **t_c (A≤4.6S)**

Watershed Slope, **S** 0 %

t_c= **N/A** minutes **See Kirpich**

2 ***Kirpich Method***

Flow Path, **L** 0 feet **see Module 1 Eq. 3*

Watershed Slope, **S** 0 ft/ft **see Module 1 Eq. 3*

Kirpich, **t_c=** **#DIV/0!** minutes

*Using a Return Period (**T**) of 10 yrs (25 for HQW) and a **t_c** of* **#DIV/0!** *minutes, the rainfall intensity, **i** (in/hr), can be read from Appendix A or the NOAA website, http://hdsc.nws.noaa.gov/hdsc/pfds/orb/nc_pfds.html*

Rainfall Intensity, **i** (in/hr) 0 in/hr *Appendix A*

Drainage Area given as **0.16** acres

Peak Rate of Runoff, **Q_p =CiA** **0.00** cfs

b. Determine the Required Surface Area= **0.00** ft^2

c. Use Surface Area (**A**) to determine required **VOLUME** of Temporary Type-B Sediment Dam

Design Depth: 3

Required VOLUME using the design depth: **0.00** ft^3

d. Sediment Storage Required using 1800 ft^3/ac

Disturbed Area (acres)= **0.16**

Required Sediment Storage (ft^3)= **289.42** ft^3

Final Required Storage: **289.42** ft^3

Proposed Basin Side Slopes: **0.0** **:1 side slopes** ***must be at least 1.5:1 or flatter***

Infiltration Analysis Web Soil Survey (http://soildatamart.nrcs.usda.gov/)

Sat. Hydraulic Con. (Ksat, micro m/sec)	**0**
Soil Permeability (in/hr)	**0.00**
Dewatering Time (Days)	**N/A**

Skimmer Basin Required

Basin Design	***Minimum 2:1 (L:W) Ratio***
Suggested Top Width (ft):	**0**
Suggested Top Length (ft):	**0**
Final Design Top Width (ft):	**4**
Final Design Top Length (ft):	**12**
Final Design Depth (ft):	**3**
Weir Width (ft):	**4**
Skimmer Size (in)	**1.5**
Orifice Diameter (in)	**0.25**
Dewatering Time (Days)	**3**
Verify Storage (ft^3)	*144.00* **Too Low**
Verify Surface Area (ft^2)	*48.00* **OK**

Place Basin at outlet point. Ensure devices are used to satisfy requirements of Step 3. Install Baffles*.

See Option 6 if installing this measure is not practical.

* **Baffles** are required for infiltration and skimmer basins that are located at drainage turnouts.
If the device is greater than 20' in length, it will require 3 baffles. If it is 10'-20' in length, it will require 2 baffles.
If it is less than 10', it will require 1 baffle.

STEP 1: Input Project Information ****items in red are REQUIRED***

SECTION 2 of 32

Construction time ≤ 6 months (Y/N)?	Y
HQW (Y/N)?	Y
Trout (Y/N)?	Y
From Sta.:	0 + 0
to Sta.:	3 + 0
Right/Left:	Rt.
% Ditch Grade:	13.680 %
Contributing R/W Width:	46 feet
Length of Run	X 300 feet
Disturbed Area	= 0.32 acres
Drainage Area:	0.32 acres

Elevation Tool (ft)
0
0
No Elev Data

*Drainage Area must equal or exceed the Disturbed Area found above

Surface Dewatering Device	n
Is this a Typical Section (Y/N)?	Y
Will RUSLE2 be used to model the Non-Typical sections?	N

County:	Avery
Location:	Pilot Ridge Rd
Prepared By:	Jacob Combs
Date Prepared:	11/18/2014
Level III A #:	3474
Level III A Expiration:	12/31/2016
Reviewed By:	Greg Kirby
Date Reviewed:	11/19/2014
Level III A #:	391
Level III A Expiration:	1/0/1900

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Regression Constant, *C*	549	*Table 2-7 (Level III Ref Manual)*
Rainfall Factor, *R*	106.4	*Figure 2-1*
Erodibility Factor, *K*	0.24	*Table 2-2 or Web Soil Survey (http://soildatamart.nrcs.usda.gov/)*
Soil Type	SoD Soco	** informational purposes only.*

STEP 2: Ditch Liner requirements: *Utilize the* ***Required Liner*** *tab and note recommendations on plans.*

STEP 3: Velocity Control Requirements

TYPE B ROCK SILT CHECKS OR WATTLES 13 ***spaced at*** 21 **feet**

Wattles are required in conjunction with PAMs

****See the HELP Tab for additional clarification and an example on how to place on plans.***

Start with Option 4A

OPTION 4: Using RUSLE2 Analysis to determine required storage

OPTION 4A: For DRAINAGE AREA < 3 Acre: Use V=CRKs to determine storage

Regression Constant, **C**	549	
Rainfall Factor, **R**	106.4	
Erodibility Factor, **K**	0.24	
Soil Type	SoD Soco	
Ditchline Slope, **s**	0.13680	ft/ft
V=	1572.62	$ft^3/ac/yr$
Required Storage Volume=	498.21	ft^3

From Step 1 above

Using 82% of Rainfall Factor-see note in cell C4 - Move on to Option 4C

OPTION 4B: For DRAINAGE AREA > 3 Acre: Use RUSLE2 Modeling to determine storage

Sediment Delivery from RUSLE2:	0.00	tons/acre/yr
Converting to $ft^3/ac/yr$:	N/A	$ft^3/ac/yr$
Required Storage Volume=	N/A	ft^3

See Option 4A

OPTION 4C: Using the Required Storage Volume from Option 4A or 4B to determine # of Wrapped TRSC-A/Wattles Required

**** These devices can be used to satisfy the velocity requirements in Step 3.***

Storage from Wrapped Type A Rock Silt Checks or Wattles

Enter Ditch Front Slope Gradient (H:V):	3	:1
Enter Ditch Back Slope Gradient (H:V):	1.5	:1
Enter Device Height:	1.5	ft
Area Behind Device:	5.06	ft^2
Length of Ditch Behind Device:	10.96	ft
Storage Behind Device (assumes 65% effeciency):	12.03	ft^3
Wrapped TRSC-A/Wattles required:	X 42.0	
Total	505.14	ft^3

WATTLES REQUIRED

Excessive number of devices required. Go to Option 5

****Designer still has the option of using Option 5 or 6***

COMMENTS:

Use Temporary Sediment Dam, Type-B 26x13x3. Dam covers required storage.

OPTION 5: IF DRAINAGE AREA > 1 Acre: Use Surface Area Calculations to determine storage, A=325Q $_p$

a. Determine the Peak Runoff Rate, **Q_p** ($Q_p = Q_{10}$ (Q_{25} for HQW or Trout)) **USE Q25**

Q_p=CiA

Runoff Coefficient, **C** 0 *Table 1-4,1-5,1-6*

Time of Concentration, **t_c** (minutes)

1 ***Shortcut Method,*** **t_c (A≤4.6S)**

Watershed Slope, **S** 0 %

t_c= **N/A** minutes **See Kirpich**

2 ***Kirpich Method***

Flow Path, **L** 0 feet **see Module 1 Eq. 3*

Watershed Slope, **S** 0 ft/ft **see Module 1 Eq. 3*

Kirpich, **t_c=** **#DIV/0!** minutes

*Using a Return Period (**T**) of 10 yrs (25 for HQW) and a **t_c** of* **#DIV/0!** *minutes, the rainfall intensity, **i** (in/hr), can be read from Appendix A or the NOAA website, http://hdsc.nws.noaa.gov/hdsc/pfds/orb/nc_pfds.html*

Rainfall Intensity, **i** (in/hr) 0 in/hr *Appendix A*

Drainage Area given as **0.32** acres

Peak Rate of Runoff, **Q_p =CiA** **0.00** cfs

b. Determine the Required Surface Area= **0.00** ft^2

c. Use Surface Area (**A**) to determine required **VOLUME** of Temporary Type-B Sediment Dam

Design Depth: 3

Required VOLUME using the design depth: **0.00** ft^3

d. Sediment Storage Required using 1800 ft^3/ac

Disturbed Area (acres)= **0.32**

Required Sediment Storage (ft^3)= **570.25** ft^3

Final Required Storage: **570.25** ft^3

Proposed Basin Side Slopes: **1.5** **:1 side slopes** ***must be at least 1.5:1 or flatter**

Infiltration Analysis Web Soil Survey (http://soildatamart.nrcs.usda.gov/)

Sat. Hydraulic Con. (Ksat, micro m/sec)	**0**
Soil Permeability (in/hr)	**0.00**
Dewatering Time (Days)	**N/A**

Skimmer Basin Required

Basin Design	***Minimum 2:1 (L:W) Ratio***
Suggested Top Width (ft):	**0**
Suggested Top Length (ft):	**0**
Final Design Top Width (ft):	**13**
Final Design Top Length (ft):	**26**
Final Design Depth (ft):	**3**
Weir Width (ft):	**5**
Skimmer Size (in)	**1.5**
Orifice Diameter (in)	**0.25**
Dewatering Time (Days)	**11**
Verify Storage (ft^3)	*568.50* **Too Low**
Verify Surface Area (ft^2)	*338.00* **OK**

Place Basin at outlet point. Ensure devices are used to satisfy requirements of Step 3. Install Baffles*.

See Option 6 if installing this measure is not practical.

* **Baffles** are required for infiltration and skimmer basins that are located at drainage turnouts.
If the device is greater than 20' in length, it will require 3 baffles. If it is 10'-20' in length, it will require 2 baffles.
If it is less than 10', it will require 1 baffle.

STEP 1: Input Project Information ****items in red are REQUIRED***

SECTION 3 of 32

Construction time ≤ 6 months (Y/N)?	Y
HQW (Y/N)?	Y
Trout (Y/N)?	Y
From Sta.:	4 + 12
to Sta.:	5 + 91
Right/Left:	Lt
% Ditch Grade:	16.420 %
Contributing R/W Width:	15 feet
Length of Run	X 179 feet
Disturbed Area	= 0.06 acres
Drainage Area:	0.06 acres

Elevation Tool (ft)
0
0
No Elev Data

County:	Avery
Location:	Pilot Ridge Rd
Prepared By:	Jacob Combs
Date Prepared:	11/18/2014
Level III A #:	3474
Level III A Expiration:	12/31/2016
Reviewed By:	Greg Kirby
Date Reviewed:	11/19/2014
Level III A #:	391
Level III A Expiration:	1/0/1900

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Drainage Area must equal or exceed the Disturbed Area found above

Surface Dewatering Device	n
Is this a Typical Section (Y/N)?	Y
Will RUSLE2 be used to model the Non-Typical sections?	N

Regression Constant, *C*	659	*Table 2-7 (Level III Ref Manual)*
Rainfall Factor, *R*	106.4	*Figure 2-1*
Erodibility Factor, *K*	0.24	*Table 2-2 or Web Soil Survey (http://soildatamart.nrcs.usda.gov/)*
Soil Type	SoD Soco	** informational purposes only.*

STEP 2: Ditch Liner requirements: *Utilize the* ***Required Liner*** *tab and note recommendations on plans.*

STEP 3: Velocity Control Requirements

TYPE B ROCK SILT CHECKS OR WATTLES 9 ***spaced at*** 18 **feet**

Wattles are required in conjunction with PAMs

See the HELP Tab for additional clarification and an example on how to place on plans.

Start with Option 4A

OPTION 4: Using RUSLE2 Analysis to determine required storage

OPTION 4A: For DRAINAGE AREA < 3 Acre: Use V=CRKs to determine storage

Regression Constant, **C**	659	
Rainfall Factor, **R**	106.4	
Erodibility Factor, **K**	0.24	
Soil Type	SoD Soco	
Ditchline Slope, **s**	0.16420	ft/ft
V=	2265.82	$ft^3/ac/yr$
Required Storage Volume=	139.66	ft^3

From Step 1 above

Using 82% of Rainfall Factor-see note in cell C4 - Move on to Option 4C

OPTION 4B: For DRAINAGE AREA > 3 Acre: Use RUSLE2 Modeling to determine storage

Sediment Delivery from RUSLE2:	0.00	tons/acre/yr
Converting to $ft^3/ac/yr$:	N/A	$ft^3/ac/yr$
Required Storage Volume=	N/A	ft^3

See Option 4A

OPTION 4C: Using the Required Storage Volume from Option 4A or 4B to determine # of Wrapped TRSC-A/Wattles Required

**** These devices can be used to satisfy the velocity requirements in Step 3.***

Storage from Wrapped Type A Rock Silt Checks or Wattles

Enter Ditch Front Slope Gradient (H:V):	3	:1
Enter Ditch Back Slope Gradient (H:V):	1.5	:1
Enter Device Height:	1.5	ft
Area Behind Device:	5.06	ft^2
Length of Ditch Behind Device:	9.14	ft
Storage Behind Device (assumes 65% effeciency):	10.02	ft^3
Wrapped TRSC-A/Wattles required:	X 14.0	
Total	140.28	ft^3

WATTLES REQUIRED

Excessive number of devices required. Go to Option 5

****Designer still has the option of using Option 5 or 6***

COMMENTS:

Use Temporary Sediment Dam, Type-B 9x3x3. Dam and wattles cover required storage.

OPTION 5: IF DRAINAGE AREA > 1 Acre: Use Surface Area Calculations to determine storage, A=325Q $_p$

a. Determine the Peak Runoff Rate, **Q_p** ($Q_p = Q_{10}$ (Q_{25} for HQW or Trout)) **USE Q25**

Q_p=CiA

Runoff Coefficient, **C** 0 *Table 1-4,1-5,1-6*

Time of Concentration, **t_c** (minutes)

1 ***Shortcut Method,*** **t_c (A≤4.6S)**

Watershed Slope, **S** 0 %

t_c= **N/A** minutes **See Kirpich**

2 ***Kirpich Method***

Flow Path, **L** 0 feet **see Module 1 Eq. 3*

Watershed Slope, **S** 0 ft/ft **see Module 1 Eq. 3*

Kirpich, **t_c=** **#DIV/0!** minutes

*Using a Return Period (**T**) of 10 yrs (25 for HQW) and a **t_c** of* **#DIV/0!** *minutes, the rainfall intensity, **i** (in/hr), can be read from Appendix A or the NOAA website, http://hdsc.nws.noaa.gov/hdsc/pfds/orb/nc_pfds.html*

Rainfall Intensity, **i** (in/hr) 0 in/hr *Appendix A*

Drainage Area given as **0.06** acres

Peak Rate of Runoff, **Q_p =CiA** **0.00** cfs

b. Determine the Required Surface Area= **0.00** ft^2

c. Use Surface Area (**A**) to determine required **VOLUME** of Temporary Type-B Sediment Dam

Design Depth: 3

Required VOLUME using the design depth: **0.00** ft^3

d. Sediment Storage Required using 1800 ft^3/ac

Disturbed Area (acres)= **0.06**

Required Sediment Storage (ft^3)= **110.95** ft^3

Final Required Storage: **110.95** ft^3

Proposed Basin Side Slopes: **0.0** **:1 side slopes** ***must be at least 1.5:1 or flatter***

Infiltration Analysis Web Soil Survey (http://soildatamart.nrcs.usda.gov/)

Sat. Hydraulic Con. (Ksat, micro m/sec)	**0**
Soil Permeability (in/hr)	**0.00**
Dewatering Time (Days)	**N/A**

Skimmer Basin Required

Basin Design	***Minimum 2:1 (L:W) Ratio***
Suggested Top Width (ft):	**0**
Suggested Top Length (ft):	**0**
Final Design Top Width (ft):	**3**
Final Design Top Length (ft):	**9**
Final Design Depth (ft):	**3**
Weir Width (ft):	**4**
Skimmer Size (in)	**1.5**
Orifice Diameter (in)	**0.25**
Dewatering Time (Days)	**2**
Verify Storage (ft^3)	*81.00* **Too Low**
Verify Surface Area (ft^2)	*27.00* **OK**

Place Basin at outlet point. Ensure devices are used to satisfy requirements of Step 3. Install Baffles*.

See Option 6 if installing this measure is not practical.

* **Baffles** are required for infiltration and skimmer basins that are located at drainage turnouts.
If the device is greater than 20' in length, it will require 3 baffles. If it is 10'-20' in length, it will require 2 baffles.
If it is less than 10', it will require 1 baffle.

STEP 1: Input Project Information ****items in red are REQUIRED***

SECTION 4 of 32

Construction time ≤ 6 months (Y/N)?	Y
HQW (Y/N)?	Y
Trout (Y/N)?	Y
From Sta.:	5 + 91
to Sta.:	8 + 15
Right/Left:	Lt
% Ditch Grade:	18.800 %
Contributing R/W Width:	24 feet
Length of Run	X 224 feet
Disturbed Area	= 0.12 acres
Drainage Area:	0.12 acres

Elevation Tool (ft)
0
0
No Elev Data

County:	Avery
Location:	Pilot Ridge Rd
Prepared By:	Jacob Combs
Date Prepared:	11/18/2014
Level III A #:	3474
Level III A Expiration:	12/31/2016
Reviewed By:	Greg Kirby
Date Reviewed:	11/19/2014
Level III A #:	391
Level III A Expiration:	1/0/1900

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***Drainage Area must equal or exceed the Disturbed Area found above**

Surface Dewatering Device	n
Is this a Typical Section (Y/N)?	Y
Will RUSLE2 be used to model the Non-Typical sections?	N

Regression Constant, *C*	659	*Table 2-7 (Level III Ref Manual)*
Rainfall Factor, *R*	106.4	*Figure 2-1*
Erodibility Factor, *K*	0.24	*Table 2-2 or Web Soil Survey (http://soildatamart.nrcs.usda.gov/)*
Soil Type	SoD Soco	** informational purposes only.*

STEP 2: Ditch Liner requirements: *Utilize the* ***Required Liner*** *tab and note recommendations on plans.*

STEP 3: Velocity Control Requirements

TYPE B ROCK SILT CHECKS OR WATTLES 14 ***spaced at*** 15 **feet**

Wattles are required in conjunction with PAMs

****See the HELP Tab for additional clarification and an example on how to place on plans.***

Start with Option 4A

OPTION 4: Using RUSLE2 Analysis to determine required storage

OPTION 4A: For DRAINAGE AREA < 3 Acre: Use V=CRKs to determine storage

Regression Constant, **C**	659	
Rainfall Factor, **R**	106.4	
Erodibility Factor, **K**	0.24	
Soil Type	SoD Soco	
Ditchline Slope, **s**	0.18800	ft/ft
V=	2594.24	$ft^3/ac/yr$
Required Storage Volume=	320.17	ft^3

From Step 1 above

Using 82% of Rainfall Factor-see note in cell C4 - Move on to Option 4C

OPTION 4B: For DRAINAGE AREA > 3 Acre: Use RUSLE2 Modeling to determine storage

Sediment Delivery from RUSLE2:	0.00	tons/acre/yr
Converting to $ft^3/ac/yr$:	N/A	$ft^3/ac/yr$
Required Storage Volume=	N/A	ft^3

See Option 4A

OPTION 4C: Using the Required Storage Volume from Option 4A or 4B to determine # of Wrapped TRSC-A/Wattles Required

**** These devices can be used to satisfy the velocity requirements in Step 3.***

Storage from Wrapped Type A Rock Silt Checks or Wattles

Enter Ditch Front Slope Gradient (H:V):	3	:1
Enter Ditch Back Slope Gradient (H:V):	1.5	:1
Enter Device Height:	1.5	ft
Area Behind Device:	5.06	ft^2
Length of Ditch Behind Device:	7.98	ft
Storage Behind Device (assumes 65% effeciency):	8.75	ft^3
Wrapped TRSC-A/Wattles required:	X 37.0	
Total	323.81	ft^3

WATTLES REQUIRED

Excessive number of devices required. Go to Option 5

****Designer still has the option of using Option 5 or 6***

COMMENTS:

Use 2 Tiered Silt Basins, Type-B 12x4x3. Dams and wattles cover required storage.

OPTION 5: IF DRAINAGE AREA > 1 Acre: Use Surface Area Calculations to determine storage, A=325Q $_p$

a. Determine the Peak Runoff Rate, **Q_p** ($Q_p = Q_{10}$ (Q_{25} for HQW or Trout)) **USE Q25**

Q_p=CiA

Runoff Coefficient, **C** 0 *Table 1-4,1-5,1-6*

Time of Concentration, **t_c** (minutes)

1 ***Shortcut Method,*** **t_c (A≤4.6S)**

Watershed Slope, **S** 0 %

t_c= **N/A** minutes **See Kirpich**

2 ***Kirpich Method***

Flow Path, **L** 0 feet **see Module 1 Eq. 3*

Watershed Slope, **S** 0 ft/ft **see Module 1 Eq. 3*

Kirpich, **t_c=** **#DIV/0!** minutes

*Using a Return Period (**T**) of 10 yrs (25 for HQW) and a **t_c** of* **#DIV/0!** *minutes, the rainfall intensity, **i** (in/hr), can be read from Appendix A or the NOAA website, http://hdsc.nws.noaa.gov/hdsc/pfds/orb/nc_pfds.html*

Rainfall Intensity, **i** (in/hr) 0 in/hr *Appendix A*

Drainage Area given as **0.12** acres

Peak Rate of Runoff, **Q_p =CiA** **0.00** cfs

b. Determine the Required Surface Area= **0.00** ft^2

c. Use Surface Area (**A**) to determine required **VOLUME** of Temporary Type-B Sediment Dam

Design Depth: 3

Required VOLUME using the design depth: **0.00** ft^3

d. Sediment Storage Required using 1800 ft^3/ac

Disturbed Area (acres)= **0.12**

Required Sediment Storage (ft^3)= **222.15** ft^3

Final Required Storage: **222.15** ft^3

Proposed Basin Side Slopes: **0.0** **:1 side slopes** ***must be at least 1.5:1 or flatter**

Infiltration Analysis Web Soil Survey (http://soildatamart.nrcs.usda.gov/)

Sat. Hydraulic Con. (Ksat, micro m/sec)	**0**
Soil Permeability (in/hr)	**0.00**
Dewatering Time (Days)	**N/A**

Skimmer Basin Required

Basin Design	***Minimum 2:1 (L:W) Ratio***
Suggested Top Width (ft):	**0**
Suggested Top Length (ft):	**0**
Final Design Top Width (ft):	**4**
Final Design Top Length (ft):	**12**
Final Design Depth (ft):	**3**
Weir Width (ft):	**4**
Skimmer Size (in)	**1.5**
Orifice Diameter (in)	**0.25**
Dewatering Time (Days)	**3**
Verify Storage (ft^3)	*144.00* **Too Low**
Verify Surface Area (ft^2)	*48.00* **OK**

Place Basin at outlet point. Ensure devices are used to satisfy requirements of Step 3. Install Baffles*.

See Option 6 if installing this measure is not practical.

* **Baffles** are required for infiltration and skimmer basins that are located at drainage turnouts.
If the device is greater than 20' in length, it will require 3 baffles. If it is 10'-20' in length, it will require 2 baffles.
If it is less than 10', it will require 1 baffle.

STEP 1: Input Project Information ****items in red are REQUIRED***

SECTION 5 of 32

County:	Avery
Location:	Pilot Ridge Rd
Prepared By:	Jacob Combs
Date Prepared:	11/18/2014
Level III A #:	3474
Level III A Expiration:	12/31/2016
Reviewed By:	Greg Kirby
Date Reviewed:	11/19/2014
Level III A #:	391
Level III A Expiration:	1/0/1900

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Construction time ≤ 6 months (Y/N)?	Y		
HQW (Y/N)?	Y		**Elevation Tool (ft)**
Trout (Y/N)?	Y		
From Sta.:	4 + 12		0
to Sta.:	5 + 91		0
Right/Left:	Rt		**No Elev Data** %
% Ditch Grade:	16.420	%	
Contributing R/W Width:	20	feet	
Length of Run	X 179	feet	
Disturbed Area	= 0.08	acres	
Drainage Area:	0.08	acres	

****Drainage Area must equal or exceed the Disturbed Area found above***

Surface Dewatering Device	n
Is this a Typical Section (Y/N)?	Y
Will RUSLE2 be used to model the Non-Typical sections?	N

Regression Constant, *C*	549	*Table 2-7 (Level III Ref Manual)*
Rainfall Factor, *R*	106.4	*Figure 2-1*
Erodibility Factor, *K*	0.24	*Table 2-2 or Web Soil Survey (http://soildatamart.nrcs.usda.gov/)*
Soil Type	SoD Soco	** informational purposes only.*

STEP 2: Ditch Liner requirements: *Utilize the* ***Required Liner*** *tab and note recommendations on plans.*

STEP 3: Velocity Control Requirements

TYPE B ROCK SILT CHECKS OR WATTLES 9 ***spaced at*** 18 **feet**

Wattles are required in conjunction with PAMs

****See the HELP Tab for additional clarification and an example on how to place on plans.***

Start with Option 4A

OPTION 4: Using RUSLE2 Analysis to determine required storage

OPTION 4A: For DRAINAGE AREA < 3 Acre: Use V=CRKs to determine storage

Regression Constant, **C**	549		*From Step 1 above*
Rainfall Factor, **R**	106.4		
Erodibility Factor, **K**	0.24		
Soil Type	SoD Soco		
Ditchline Slope, **s**	0.16420	ft/ft	
V=	1887.61	$ft^3/ac/yr$	
Required Storage Volume=	155.13	ft^3	

Using 82% of Rainfall Factor-see note in cell C4 - Move on to Option 4C

OPTION 4B: For DRAINAGE AREA > 3 Acre: Use RUSLE2 Modeling to determine storage

Sediment Delivery from RUSLE2:	0.00	tons/acre/yr
Converting to $ft^3/ac/yr$:	N/A	$ft^3/ac/yr$
Required Storage Volume=	N/A	ft^3

See Option 4A

OPTION 4C: Using the Required Storage Volume from Option 4A or 4B to determine # of Wrapped TRSC-A/Wattles Required

**** These devices can be used to satisfy the velocity requirements in Step 3.***

Storage from Wrapped Type A Rock Silt Checks or Wattles

Enter Ditch Front Slope Gradient (H:V):	3	:1
Enter Ditch Back Slope Gradient (H:V):	1.5	:1
Enter Device Height:	1.5	ft
Area Behind Device:	5.06	ft^2
Length of Ditch Behind Device:	9.14	ft
Storage Behind Device (assumes 65% effeciency):	10.02	ft^3
Wrapped TRSC-A/Wattles required:	X 16.0	
Total	160.32	ft^3

WATTLES REQUIRED

Excessive number of devices required. Go to Option 5

****Designer still has the option of using Option 5 or 6***

COMMENTS:

Use Temporary Sediment Dam, Type-B 16x8x3. Dams covers required storage.

OPTION 5: IF DRAINAGE AREA > 1 Acre: Use Surface Area Calculations to determine storage, A=325Q $_p$

a. Determine the Peak Runoff Rate, **Q_p** ($Q_p = Q_{10}$ (Q_{25} for HQW or Trout)) **USE Q25**

Q_p=CiA

Runoff Coefficient, **C** 0 *Table 1-4,1-5,1-6*

Time of Concentration, **t_c** (minutes)

1 ***Shortcut Method,*** **t_c (A≤4.6S)**

Watershed Slope, **S** 0 %

t_c= **N/A** minutes **See Kirpich**

2 ***Kirpich Method***

Flow Path, **L** 0 feet **see Module 1 Eq. 3*

Watershed Slope, **S** 0 ft/ft **see Module 1 Eq. 3*

Kirpich, **t_c=** **#DIV/0!** minutes

*Using a Return Period (**T**) of 10 yrs (25 for HQW) and a **t_c** of* **#DIV/0!** *minutes, the rainfall intensity, **i** (in/hr), can be read from Appendix A or the NOAA website, http://hdsc.nws.noaa.gov/hdsc/pfds/orb/nc_pfds.html*

Rainfall Intensity, **i** (in/hr) 0 in/hr *Appendix A*

Drainage Area given as **0.08** acres

Peak Rate of Runoff, **Q_p =CiA** **0.00** cfs

b. Determine the Required Surface Area= **0.00** ft^2

c. Use Surface Area (**A**) to determine required **VOLUME** of Temporary Type-B Sediment Dam

Design Depth: 3

Required VOLUME using the design depth: **0.00** ft^3

d. Sediment Storage Required using 1800 ft^3/ac

Disturbed Area (acres)= **0.08**

Required Sediment Storage (ft^3)= **147.93** ft^3

Final Required Storage: **147.93** ft^3

Proposed Basin Side Slopes: **1.5** **:1 side slopes** ***must be at least 1.5:1 or flatter**

Infiltration Analysis Web Soil Survey (http://soildatamart.nrcs.usda.gov/)

Sat. Hydraulic Con. (Ksat, micro m/sec)	**0**
Soil Permeability (in/hr)	**0.00**
Dewatering Time (Days)	**N/A**

Skimmer Basin Required

Basin Design	***Minimum 2:1 (L:W) Ratio***
Suggested Top Width (ft):	**0**
Suggested Top Length (ft):	**0**
Final Design Top Width (ft):	**8**
Final Design Top Length (ft):	**16**
Final Design Depth (ft):	**3**
Weir Width (ft):	**4**
Skimmer Size (in)	**1.5**
Orifice Diameter (in)	**0.25**
Dewatering Time (Days)	**3**
Verify Storage (ft^3)	*156.00* **OK**
Verify Surface Area (ft^2)	*128.00* **OK**

Place Basin at outlet point. Ensure devices are used to satisfy requirements of Step 3. Install Baffles*.

See Option 6 if installing this measure is not practical.

* **Baffles** are required for infiltration and skimmer basins that are located at drainage turnouts.
If the device is greater than 20' in length, it will require 3 baffles. If it is 10'-20' in length, it will require 2 baffles.
If it is less than 10', it will require 1 baffle.

STEP 1: Input Project Information ****items in red are REQUIRED***

SECTION 6 of 32

Construction time ≤ 6 months (Y/N)?	Y
HQW (Y/N)?	Y
Trout (Y/N)?	Y
From Sta.:	8 + 15
to Sta.:	11 + 10
Right/Left:	Lt
% Ditch Grade:	16.930 %
Contributing R/W Width:	22 feet
Length of Run	X 295 feet
Disturbed Area	= 0.15 acres
Drainage Area:	0.15 acres

Elevation Tool (ft)
0
0
No Elev Data

County:	Avery
Location:	Pilot Ridge Rd
Prepared By:	Jacob Combs
Date Prepared:	11/18/2014
Level III A #:	3474
Level III A Expiration:	12/31/2016
Reviewed By:	Greg Kirby
Date Reviewed:	11/19/2014
Level III A #:	391
Level III A Expiration:	1/0/1900

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Drainage Area must equal or exceed the Disturbed Area found above

Surface Dewatering Device	n
Is this a Typical Section (Y/N)?	Y
Will RUSLE2 be used to model the Non-Typical sections?	N

Regression Constant, *C*	659	*Table 2-7 (Level III Ref Manual)*
Rainfall Factor, *R*	106.4	*Figure 2-1*
Erodibility Factor, *K*	0.24	*Table 2-2 or Web Soil Survey (http://soildatamart.nrcs.usda.gov/)*
Soil Type	SoD Soco	** informational purposes only.*

STEP 2: Ditch Liner requirements: *Utilize the* ***Required Liner*** *tab and note recommendations on plans.*

STEP 3: Velocity Control Requirements

TYPE B ROCK SILT CHECKS OR WATTLES 16 ***spaced at*** 17 **feet**

Wattles are required in conjunction with PAMs

****See the HELP Tab for additional clarification and an example on how to place on plans.***

Start with Option 4A

OPTION 4: Using RUSLE2 Analysis to determine required storage

OPTION 4A: For DRAINAGE AREA < 3 Acre: Use V=CRKs to determine storage

Regression Constant, **C**	659	
Rainfall Factor, **R**	106.4	
Erodibility Factor, **K**	0.24	
Soil Type	SoD Soco	
Ditchline Slope, **s**	0.16930	ft/ft
V=	2336.20	$ft^3/ac/yr$
Required Storage Volume=	348.07	ft^3

From Step 1 above

Using 82% of Rainfall Factor-see note in cell C4 - Move on to Option 4C

OPTION 4B: For DRAINAGE AREA > 3 Acre: Use RUSLE2 Modeling to determine storage

Sediment Delivery from RUSLE2:	0.00	tons/acre/yr
Converting to $ft^3/ac/yr$:	N/A	$ft^3/ac/yr$
Required Storage Volume=	N/A	ft^3

See Option 4A

OPTION 4C: Using the Required Storage Volume from Option 4A or 4B to determine # of Wrapped TRSC-A/Wattles Required

**** These devices can be used to satisfy the velocity requirements in Step 3.***

Storage from Wrapped Type A Rock Silt Checks or Wattles

Enter Ditch Front Slope Gradient (H:V):	3	:1
Enter Ditch Back Slope Gradient (H:V):	1.5	:1
Enter Device Height:	1.5	ft
Area Behind Device:	5.06	ft^2
Length of Ditch Behind Device:	8.86	ft
Storage Behind Device (assumes 65% effeciency):	9.72	ft^3
Wrapped TRSC-A/Wattles required:	X 36.0	
Total	349.86	ft^3

WATTLES REQUIRED

Excessive number of devices required. Go to Option 5

****Designer still has the option of using Option 5 or 6***

COMMENTS:

Use 2 Tiered Silt Basins, Type-B 12x4x3. Dams and wattles cover required storage.

OPTION 5: IF DRAINAGE AREA > 1 Acre: Use Surface Area Calculations to determine storage, A=325Q $_p$

a. Determine the Peak Runoff Rate, **Q_p** ($Q_p = Q_{10}$ (Q_{25} for HQW or Trout)) **USE Q25**

Q_p=CiA

Runoff Coefficient, **C** 0 *Table 1-4,1-5,1-6*

Time of Concentration, **t_c** (minutes)

1 ***Shortcut Method,*** **t_c (A≤4.6S)**

Watershed Slope, **S** 0 %

t_c= **N/A** minutes **See Kirpich**

2 ***Kirpich Method***

Flow Path, **L** 0 feet **see Module 1 Eq. 3*

Watershed Slope, **S** 0 ft/ft **see Module 1 Eq. 3*

Kirpich, **t_c=** **#DIV/0!** minutes

*Using a Return Period (**T**) of 10 yrs (25 for HQW) and a **t_c** of* **#DIV/0!** *minutes, the rainfall intensity, **i** (in/hr), can be read from Appendix A or the NOAA website, http://hdsc.nws.noaa.gov/hdsc/pfds/orb/nc_pfds.html*

Rainfall Intensity, **i** (in/hr) 0 in/hr *Appendix A*

Drainage Area given as **0.15** acres

Peak Rate of Runoff, **Q_p =CiA** **0.00** cfs

b. Determine the Required Surface Area= **0.00** ft^2

c. Use Surface Area (**A**) to determine required **VOLUME** of Temporary Type-B Sediment Dam

Design Depth: 3

Required VOLUME using the design depth: **0.00** ft^3

d. Sediment Storage Required using 1800 ft^3/ac

Disturbed Area (acres)= **0.15**

Required Sediment Storage (ft^3)= **268.18** ft^3

Final Required Storage: **268.18** ft^3

Proposed Basin Side Slopes: **0.0** **:1 side slopes** ***must be at least 1.5:1 or flatter**

Infiltration Analysis Web Soil Survey (http://soildatamart.nrcs.usda.gov/)

Sat. Hydraulic Con. (Ksat, micro m/sec)	**0**
Soil Permeability (in/hr)	**0.00**
Dewatering Time (Days)	**N/A**

Skimmer Basin Required

Basin Design	***Minimum 2:1 (L:W) Ratio***
Suggested Top Width (ft):	**0**
Suggested Top Length (ft):	**0**
Final Design Top Width (ft):	**4**
Final Design Top Length (ft):	**12**
Final Design Depth (ft):	**3**
Weir Width (ft):	**4**
Skimmer Size (in)	**1.5**
Orifice Diameter (in)	**0.25**
Dewatering Time (Days)	**3**
Verify Storage (ft^3)	*144.00* **Too Low**
Verify Surface Area (ft^2)	*48.00* **OK**

Place Basin at outlet point. Ensure devices are used to satisfy requirements of Step 3. Install Baffles*.

See Option 6 if installing this measure is not practical.

* **Baffles** are required for infiltration and skimmer basins that are located at drainage turnouts.
If the device is greater than 20' in length, it will require 3 baffles. If it is 10'-20' in length, it will require 2 baffles.
If it is less than 10', it will require 1 baffle.

STEP 1: Input Project Information ****items in red are REQUIRED***

SECTION 7 of 32

Construction time ≤ 6 months (Y/N)?	Y		
HQW (Y/N)?	Y	Elevation Tool (ft)	
Trout (Y/N)?	Y		
From Sta.:	11 + 10	0	
to Sta.:	14 + 29	0	
Right/Left:	Lt	No Elev Data	%
% Ditch Grade:	16.560	%	
Contributing R/W Width:	20	feet	
Length of Run	X 319	feet	
Disturbed Area	= 0.15	acres	
Drainage Area:	0.15	acres	

County:	Avery
Location:	Pilot Ridge Rd
Prepared By:	Jacob Combs
Date Prepared:	11/18/2014
Level III A #:	3474
Level III A Expiration:	12/31/2016
Reviewed By:	Greg Kirby
Date Reviewed:	11/19/2014
Level III A #:	391
Level III A Expiration:	1/0/1900

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***Drainage Area must equal or exceed the Disturbed Area found above**

Surface Dewatering Device	n	
Is this a Typical Section (Y/N)?	Y	
Will RUSLE2 be used to model the Non-Typical sections?	N	

Regression Constant, *C*	659	*Table 2-7 (Level III Ref Manual)*
Rainfall Factor, *R*	106.4	*Figure 2-1*
Erodibility Factor, *K*	0.24	*Table 2-2 or Web Soil Survey (http://soildatamart.nrcs.usda.gov/)*
Soil Type	SoD Soco	** informational purposes only.*

STEP 2: Ditch Liner requirements: *Utilize the* ***Required Liner*** *tab and note recommendations on plans.*

STEP 3: Velocity Control Requirements

TYPE B ROCK SILT CHECKS OR WATTLES 17 ***spaced at*** 18 **feet**

Wattles are required in conjunction with PAMs

****See the HELP Tab for additional clarification and an example on how to place on plans.***

Start with Option 4A

OPTION 4: Using RUSLE2 Analysis to determine required storage

OPTION 4A: For DRAINAGE AREA < 3 Acre: Use V=CRKs to determine storage

Regression Constant, **C**	659	
Rainfall Factor, **R**	106.4	
Erodibility Factor, **K**	0.24	
Soil Type	SoD Soco	
Ditchline Slope, **s**	0.16560	ft/ft
V=	2285.14	$ft^3/ac/yr$
Required Storage Volume=	334.69	ft^3

From Step 1 above

Using 82% of Rainfall Factor-see note in cell C4 - Move on to Option 4C

OPTION 4B: For DRAINAGE AREA > 3 Acre: Use RUSLE2 Modeling to determine storage

Sediment Delivery from RUSLE2:	0.00	tons/acre/yr
Converting to $ft^3/ac/yr$:	N/A	$ft^3/ac/yr$
Required Storage Volume=	N/A	ft^3

See Option 4A

OPTION 4C: Using the Required Storage Volume from Option 4A or 4B to determine # of Wrapped TRSC-A/Wattles Required

**** These devices can be used to satisfy the velocity requirements in Step 3.***

Storage from Wrapped Type A Rock Silt Checks or Wattles

Enter Ditch Front Slope Gradient (H:V):	3	:1
Enter Ditch Back Slope Gradient (H:V):	1.5	:1
Enter Device Height:	1.5	ft
Area Behind Device:	5.06	ft^2
Length of Ditch Behind Device:	9.06	ft
Storage Behind Device (assumes 65% effeciency):	9.94	ft^3
Wrapped TRSC-A/Wattles required:	X 34.0	
Total	337.81	ft^3

WATTLES REQUIRED

Excessive number of devices required. Go to Option 5

****Designer still has the option of using Option 5 or 6***

COMMENTS:

Use 2 Tiered Silt Basins, Type-B 12x4x3. Dams and wattles cover required storage.

OPTION 5: IF DRAINAGE AREA > 1 Acre: Use Surface Area Calculations to determine storage, A=325Q $_p$

a. Determine the Peak Runoff Rate, **Q_p** ($Q_p = Q_{10}$ (Q_{25} for HQW or Trout)) **USE Q25**

Q_p=CiA

Runoff Coefficient, **C** 0 *Table 1-4,1-5,1-6*

Time of Concentration, **t_c** (minutes)

1 ***Shortcut Method,*** **t_c (A≤4.6S)**

Watershed Slope, **S** 0 %

t_c= **N/A** minutes **See Kirpich**

2 ***Kirpich Method***

Flow Path, **L** 0 feet **see Module 1 Eq. 3*

Watershed Slope, **S** 0 ft/ft **see Module 1 Eq. 3*

Kirpich, **t_c=** **#DIV/0!** minutes

*Using a Return Period (**T**) of 10 yrs (25 for HQW) and a **t_c** of* **#DIV/0!** *minutes, the rainfall intensity, **i** (in/hr), can be read from Appendix A or the NOAA website, http://hdsc.nws.noaa.gov/hdsc/pfds/orb/nc_pfds.html*

Rainfall Intensity, **i** (in/hr) 0 in/hr *Appendix A*

Drainage Area given as **0.15** acres

Peak Rate of Runoff, **Q_p =CiA** **0.00** cfs

b. Determine the Required Surface Area= **0.00** ft^2

c. Use Surface Area (**A**) to determine required **VOLUME** of Temporary Type-B Sediment Dam

Design Depth: 3

Required VOLUME using the design depth: **0.00** ft^3

d. Sediment Storage Required using 1800 ft^3/ac

Disturbed Area (acres)= **0.15**

Required Sediment Storage (ft^3)= **263.64** ft^3

Final Required Storage: **263.64** ft^3

Proposed Basin Side Slopes: **0.0** **:1 side slopes** ***must be at least 1.5:1 or flatter**

Infiltration Analysis Web Soil Survey (http://soildatamart.nrcs.usda.gov/)

Sat. Hydraulic Con. (Ksat, micro m/sec)	**0**
Soil Permeability (in/hr)	**0.00**
Dewatering Time (Days)	**N/A**

Skimmer Basin Required

Basin Design	***Minimum 2:1 (L:W) Ratio***
Suggested Top Width (ft):	**0**
Suggested Top Length (ft):	**0**
Final Design Top Width (ft):	**4**
Final Design Top Length (ft):	**12**
Final Design Depth (ft):	**3**
Weir Width (ft):	**4**
Skimmer Size (in)	**1.5**
Orifice Diameter (in)	**0.25**
Dewatering Time (Days)	**3**
Verify Storage (ft^3)	*144.00* **Too Low**
Verify Surface Area (ft^2)	*48.00* **OK**

Place Basin at outlet point. Ensure devices are used to satisfy requirements of Step 3. Install Baffles*.

See Option 6 if installing this measure is not practical.

* **Baffles** are required for infiltration and skimmer basins that are located at drainage turnouts.
If the device is greater than 20' in length, it will require 3 baffles. If it is 10'-20' in length, it will require 2 baffles.
If it is less than 10', it will require 1 baffle.

STEP 1: Input Project Information ****items in red are REQUIRED***

Construction time ≤ 6 months (Y/N)?	Y		
HQW (Y/N)?	Y	Elevation Tool (ft)	
Trout (Y/N)?	Y		
From Sta.:	14 + 29	0	
to Sta.:	17 + 30	0	
Right/Left:	Lt	No Elev Data	%
% Ditch Grade:	16.190	%	
Contributing R/W Width:	20	feet	
Length of Run	X 301	feet	
Disturbed Area	= 0.14	acres	
Drainage Area:	0.15	acres	

County:	Avery
Location:	Pilot Ridge Rd
Prepared By:	Jacob Combs
Date Prepared:	11/18/2014
Level III A #:	3474
Level III A Expiration:	12/31/2016
Reviewed By:	Greg Kirby
Date Reviewed:	11/19/2014
Level III A #:	391
Level III A Expiration:	1/0/1900

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Drainage Area must equal or exceed the Disturbed Area found above

Surface Dewatering Device	n	
Is this a Typical Section (Y/N)?	Y	
Will RUSLE2 be used to model the Non-Typical sections?	N	

Regression Constant, *C*	659	*Table 2-7 (Level III Ref Manual)*
Rainfall Factor, *R*	106.4	*Figure 2-1*
Erodibility Factor, *K*	0.24	*Table 2-2 or Web Soil Survey (http://soildatamart.nrcs.usda.gov/)*
Soil Type	SoD Soco	** informational purposes only.*

STEP 2: Ditch Liner requirements: *Utilize the* ***Required Liner*** *tab and note recommendations on plans.*

STEP 3: Velocity Control Requirements

TYPE B ROCK SILT CHECKS OR WATTLES 16 ***spaced at*** 18 **feet**

Wattles are required in conjunction with PAMs

****See the HELP Tab for additional clarification and an example on how to place on plans.***

Start with Option 4A

OPTION 4: Using RUSLE2 Analysis to determine required storage

OPTION 4A: For DRAINAGE AREA < 3 Acre: Use V=CRKs to determine storage

Regression Constant, **C**	659	
Rainfall Factor, **R**	106.4	
Erodibility Factor, **K**	0.24	
Soil Type	SoD Soco	
Ditchline Slope, **s**	0.16190	ft/ft
V=	2234.08	$ft^3/ac/yr$
Required Storage Volume=	308.75	ft^3

From Step 1 above

Using 82% of Rainfall Factor-see note in cell C4 - Move on to Option 4C

OPTION 4B: For DRAINAGE AREA > 3 Acre: Use RUSLE2 Modeling to determine storage

Sediment Delivery from RUSLE2:	0.00	tons/acre/yr
Converting to $ft^3/ac/yr$:	N/A	$ft^3/ac/yr$
Required Storage Volume=	N/A	ft^3

See Option 4A

OPTION 4C: Using the Required Storage Volume from Option 4A or 4B to determine # of Wrapped TRSC-A/Wattles Required

**** These devices can be used to satisfy the velocity requirements in Step 3.***

Storage from Wrapped Type A Rock Silt Checks or Wattles

Enter Ditch Front Slope Gradient (H:V):	3	:1
Enter Ditch Back Slope Gradient (H:V):	1.5	:1
Enter Device Height:	1.5	ft
Area Behind Device:	5.06	ft^2
Length of Ditch Behind Device:	9.26	ft
Storage Behind Device (assumes 65% effeciency):	10.16	ft^3
Wrapped TRSC-A/Wattles required:	X 31.0	
Total	315.04	ft^3

WATTLES REQUIRED

Excessive number of devices required. Go to Option 5

****Designer still has the option of using Option 5 or 6***

COMMENTS:

Use 2 Tiered Silt Basins, Type-B 9x3x3. Dams and wattles cover required storage.

OPTION 5: IF DRAINAGE AREA > 1 Acre: Use Surface Area Calculations to determine storage, A=325Q $_p$

a. Determine the Peak Runoff Rate, **Q_p** ($Q_p = Q_{10}$ (Q_{25} for HQW or Trout)) **USE Q25**

Q_p=CiA

Runoff Coefficient, **C** 0 *Table 1-4,1-5,1-6*

Time of Concentration, **t_c** (minutes)

1 ***Shortcut Method,*** **t_c (A≤4.6S)**

Watershed Slope, **S** 0 %

t_c= **N/A** minutes **See Kirpich**

2 ***Kirpich Method***

Flow Path, **L** 0 feet **see Module 1 Eq. 3*

Watershed Slope, **S** 0 ft/ft **see Module 1 Eq. 3*

Kirpich, **t_c=** **#DIV/0!** minutes

*Using a Return Period (**T**) of 10 yrs (25 for HQW) and a **t_c** of* **#DIV/0!** *minutes, the rainfall intensity, **i** (in/hr), can be read from Appendix A or the NOAA website, http://hdsc.nws.noaa.gov/hdsc/pfds/orb/nc_pfds.html*

Rainfall Intensity, **i** (in/hr) 0 in/hr *Appendix A*

Drainage Area given as **0.15** acres

Peak Rate of Runoff, **Q_p =CiA** **0.00** cfs

b. Determine the Required Surface Area= **0.00** ft^2

c. Use Surface Area (**A**) to determine required **VOLUME** of Temporary Type-B Sediment Dam

Design Depth: 3

Required VOLUME using the design depth: **0.00** ft^3

d. Sediment Storage Required using 1800 ft^3/ac

Disturbed Area (acres)= **0.14**

Required Sediment Storage (ft^3)= **248.76** ft^3

Final Required Storage: **248.76** ft^3

Proposed Basin Side Slopes: **0.0** **:1 side slopes** ***must be at least 1.5:1 or flatter**

Infiltration Analysis Web Soil Survey (http://soildatamart.nrcs.usda.gov/)

Sat. Hydraulic Con. (Ksat, micro m/sec)	0
Soil Permeability (in/hr)	0.00
Dewatering Time (Days)	N/A

Skimmer Basin Required

Basin Design	***Minimum 2:1 (L:W) Ratio***
Suggested Top Width (ft):	0
Suggested Top Length (ft):	0
Final Design Top Width (ft):	3
Final Design Top Length (ft):	9
Final Design Depth (ft):	3
Weir Width (ft):	4
Skimmer Size (in)	1.5
Orifice Diameter (in)	0.25
Dewatering Time (Days)	2
Verify Storage (ft^3)	*81.00* **Too Low**
Verify Surface Area (ft^2)	*27.00* **OK**

Place Basin at outlet point. Ensure devices are used to satisfy requirements of Step 3. Install Baffles*.

See Option 6 if installing this measure is not practical.

* **Baffles** are required for infiltration and skimmer basins that are located at drainage turnouts.
If the device is greater than 20' in length, it will require 3 baffles. If it is 10'-20' in length, it will require 2 baffles.
If it is less than 10', it will require 1 baffle.

STEP 1: Input Project Information ****items in red are REQUIRED***

Construction time ≤ 6 months (Y/N)?	Y		
HQW (Y/N)?	Y	**Elevation Tool (ft)**	
Trout (Y/N)?	Y		
From Sta.:	17 + 30	0	
to Sta.:	18 + 0	0	
Right/Left:	Lt	No Elev Data	%
% Ditch Grade:	18.970	%	
Contributing R/W Width:	10	feet	
Length of Run	X 70	feet	
Disturbed Area	= 0.02	acres	
Drainage Area:	0.02	acres	

County:	Avery
Location:	Pilot Ridge Rd
Prepared By:	Jacob Combs
Date Prepared:	11/18/2014
Level III A #:	3474
Level III A Expiration:	12/31/2016
Reviewed By:	Greg Kirby
Date Reviewed:	11/19/2014
Level III A #:	391
Level III A Expiration:	1/0/1900

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Drainage Area must equal or exceed the Disturbed Area found above

Surface Dewatering Device	n	
Is this a Typical Section (Y/N)?	Y	
Will RUSLE2 be used to model the Non-Typical sections?	N	

Regression Constant, *C*	659	*Table 2-7 (Level III Ref Manual)*
Rainfall Factor, *R*	106.4	*Figure 2-1*
Erodibility Factor, *K*	0.24	*Table 2-2 or Web Soil Survey (http://soildatamart.nrcs.usda.gov/)*
Soil Type	SoD Soco	** informational purposes only.*

STEP 2: Ditch Liner requirements: *Utilize the* ***Required Liner*** *tab and note recommendations on plans.*

STEP 3: Velocity Control Requirements

TYPE B ROCK SILT CHECKS OR WATTLES 4 ***spaced at*** 14 **feet**

Wattles are required in conjunction with PAMs

****See the HELP Tab for additional clarification and an example on how to place on plans.***

Start with Option 4A

OPTION 4: Using RUSLE2 Analysis to determine required storage

OPTION 4A: For DRAINAGE AREA < 3 Acre: Use V=CRKs to determine storage

Regression Constant, **C**	659	
Rainfall Factor, **R**	106.4	
Erodibility Factor, **K**	0.24	
Soil Type	SoD Soco	
Ditchline Slope, **s**	0.18970	ft/ft
V=	2617.70	$ft^3/ac/yr$
Required Storage Volume=	42.07	ft^3

From Step 1 above

Using 82% of Rainfall Factor-see note in cell C4 - Move on to Option 4C

OPTION 4B: For DRAINAGE AREA > 3 Acre: Use RUSLE2 Modeling to determine storage

Sediment Delivery from RUSLE2:	0.00	tons/acre/yr
Converting to $ft^3/ac/yr$:	N/A	$ft^3/ac/yr$
Required Storage Volume=	N/A	ft^3

See Option 4A

OPTION 4C: Using the Required Storage Volume from Option 4A or 4B to determine # of Wrapped TRSC-A/Wattles Required

**** These devices can be used to satisfy the velocity requirements in Step 3.***

Storage from Wrapped Type A Rock Silt Checks or Wattles

Enter Ditch Front Slope Gradient (H:V):	3	:1
Enter Ditch Back Slope Gradient (H:V):	1.5	:1
Enter Device Height:	1.5	ft
Area Behind Device:	5.06	ft^2
Length of Ditch Behind Device:	7.91	ft
Storage Behind Device (assumes 65% effeciency):	8.67	ft^3
Wrapped TRSC-A/Wattles required:	X 5.0	
Total	43.37	ft^3

WATTLES REQUIRED

Excessive number of devices required. Go to Option 5

****Designer still has the option of using Option 5 or 6***

COMMENTS:

Use Temporary Sediment Dam, Type-B 9x3x3. Dam and wattles cover required storage.

OPTION 5: IF DRAINAGE AREA > 1 Acre: Use Surface Area Calculations to determine storage, A=325Q $_p$

a. Determine the Peak Runoff Rate, **Q_p** ($Q_p = Q_{10}$ (Q_{25} for HQW or Trout)) **USE Q25**

Q_p=CiA

Runoff Coefficient, **C** 0 *Table 1-4,1-5,1-6*

Time of Concentration, **t_c** (minutes)

1 ***Shortcut Method,*** **t_c (A≤4.6S)**

Watershed Slope, **S** 0 %

t_c= **N/A** minutes **See Kirpich**

2 ***Kirpich Method***

Flow Path, **L** 0 feet **see Module 1 Eq. 3*

Watershed Slope, **S** 0 ft/ft **see Module 1 Eq. 3*

Kirpich, **t_c=** **#DIV/0!** minutes

*Using a Return Period (**T**) of 10 yrs (25 for HQW) and a **t_c** of* **#DIV/0!** *minutes, the rainfall intensity, **i** (in/hr), can be read from Appendix A or the NOAA website, http://hdsc.nws.noaa.gov/hdsc/pfds/orb/nc_pfds.html*

Rainfall Intensity, **i** (in/hr) 0 in/hr *Appendix A*

Drainage Area given as **0.02** acres

Peak Rate of Runoff, **Q_p =CiA** **0.00** cfs

b. Determine the Required Surface Area= **0.00** ft^2

c. Use Surface Area (**A**) to determine required **VOLUME** of Temporary Type-B Sediment Dam

Design Depth: 3

Required VOLUME using the design depth: **0.00** ft^3

d. Sediment Storage Required using 1800 ft^3/ac

Disturbed Area (acres)= **0.02**

Required Sediment Storage (ft^3)= **28.93** ft^3

Final Required Storage: **28.93** ft^3

Proposed Basin Side Slopes: **0.0** **:1 side slopes** ***must be at least 1.5:1 or flatter**

Infiltration Analysis Web Soil Survey (http://soildatamart.nrcs.usda.gov/)

Sat. Hydraulic Con. (Ksat, micro m/sec)	**0**
Soil Permeability (in/hr)	**0.00**
Dewatering Time (Days)	**N/A**

Skimmer Basin Required

Basin Design	***Minimum 2:1 (L:W) Ratio***
Suggested Top Width (ft):	**0**
Suggested Top Length (ft):	**0**
Final Design Top Width (ft):	**3**
Final Design Top Length (ft):	**9**
Final Design Depth (ft):	**3**
Weir Width (ft):	**4**
Skimmer Size (in)	**1.5**
Orifice Diameter (in)	**0.25**
Dewatering Time (Days)	**2**
Verify Storage (ft^3)	*81.00* **OK**
Verify Surface Area (ft^2)	*27.00* **OK**

Place Basin at outlet point. Ensure devices are used to satisfy requirements of Step 3. Install Baffles*.

See Option 6 if installing this measure is not practical.

* **Baffles** are required for infiltration and skimmer basins that are located at drainage turnouts.
If the device is greater than 20' in length, it will require 3 baffles. If it is 10'-20' in length, it will require 2 baffles.
If it is less than 10', it will require 1 baffle.

STEP 1: Input Project Information ****items in red are REQUIRED***

SECTION 10 of 32

Construction time ≤ 6 months (Y/N)?	Y
HQW (Y/N)?	Y
Trout (Y/N)?	Y
From Sta.:	18 + 0
to Sta.:	21 + 0
Right/Left:	Lt
% Ditch Grade:	15.540 %
Contributing R/W Width:	13 feet
Length of Run	X 300 feet
Disturbed Area	= 0.09 acres
Drainage Area:	0.09 acres

Elevation Tool (ft)
0
0
No Elev Data

*Drainage Area must equal or exceed the Disturbed Area found above

Surface Dewatering Device	n
Is this a Typical Section (Y/N)?	Y
Will RUSLE2 be used to model the Non-Typical sections?	N

County:	Avery
Location:	Pilot Ridge Rd
Prepared By:	Jacob Combs
Date Prepared:	11/18/2014
Level III A #:	3474
Level III A Expiration:	12/31/2016
Reviewed By:	Greg Kirby
Date Reviewed:	11/19/2014
Level III A #:	391
Level III A Expiration:	1/0/1900

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Regression Constant, *C*	659	*Table 2-7 (Level III Ref Manual)*
Rainfall Factor, *R*	106.4	*Figure 2-1*
Erodibility Factor, *K*	0.24	*Table 2-2 or Web Soil Survey (http://soildatamart.nrcs.usda.gov/)*
Soil Type	SoD Soco	** informational purposes only.*

STEP 2: Ditch Liner requirements: *Utilize the* ***Required Liner*** *tab and note recommendations on plans.*

STEP 3: Velocity Control Requirements

TYPE B ROCK SILT CHECKS OR WATTLES 15 ***spaced at*** 19 **feet**

Wattles are required in conjunction with PAMs

****See the HELP Tab for additional clarification and an example on how to place on plans.***

Start with Option 4A

OPTION 4: Using RUSLE2 Analysis to determine required storage

OPTION 4A: For DRAINAGE AREA < 3 Acre: Use V=CRKs to determine storage

Regression Constant, **C**	659	
Rainfall Factor, **R**	106.4	
Erodibility Factor, **K**	0.24	
Soil Type	SoD Soco	
Ditchline Slope, **s**	0.15540	ft/ft
V=	2144.39	$ft^3/ac/yr$
Required Storage Volume=	191.99	ft^3

From Step 1 above

Using 82% of Rainfall Factor-see note in cell C4 - Move on to Option 4C

OPTION 4B: For DRAINAGE AREA > 3 Acre: Use RUSLE2 Modeling to determine storage

Sediment Delivery from RUSLE2:	0.00	tons/acre/yr
Converting to $ft^3/ac/yr$:	N/A	$ft^3/ac/yr$
Required Storage Volume=	N/A	ft^3

See Option 4A

OPTION 4C: Using the Required Storage Volume from Option 4A or 4B to determine # of Wrapped TRSC-A/Wattles Required

**** These devices can be used to satisfy the velocity requirements in Step 3.***

Storage from Wrapped Type A Rock Silt Checks or Wattles

Enter Ditch Front Slope Gradient (H:V):	3	:1
Enter Ditch Back Slope Gradient (H:V):	1.5	:1
Enter Device Height:	1.5	ft
Area Behind Device:	5.06	ft^2
Length of Ditch Behind Device:	9.65	ft
Storage Behind Device (assumes 65% effeciency):	10.59	ft^3
Wrapped TRSC-A/Wattles required:	X 19.0	
Total	201.16	ft^3

WATTLES REQUIRED

Excessive number of devices required. Go to Option 5

****Designer still has the option of using Option 5 or 6***

COMMENTS:

Use Temporary Sediment Dam, Type-B 9x3x3. Dam and wattles cover required storage.

OPTION 5: IF DRAINAGE AREA > 1 Acre: Use Surface Area Calculations to determine storage, A=325Q $_p$

a. Determine the Peak Runoff Rate, **Q_p** ($Q_p = Q_{10}$ (Q_{25} for HQW or Trout)) **USE Q25**

Q_p=CiA

Runoff Coefficient, **C** 0 *Table 1-4,1-5,1-6*

Time of Concentration, **t_c** (minutes)

1 ***Shortcut Method,*** **t_c (A≤4.6S)**

Watershed Slope, **S** 0 %

t_c= **N/A** minutes **See Kirpich**

2 ***Kirpich Method***

Flow Path, **L** 0 feet **see Module 1 Eq. 3*

Watershed Slope, **S** 0 ft/ft **see Module 1 Eq. 3*

Kirpich, **t_c=** **#DIV/0!** minutes

*Using a Return Period (**T**) of 10 yrs (25 for HQW) and a **t_c** of* **#DIV/0!** *minutes, the rainfall intensity, **i** (in/hr), can be read from Appendix A or the NOAA website, http://hdsc.nws.noaa.gov/hdsc/pfds/orb/nc_pfds.html*

Rainfall Intensity, **i** (in/hr) 0 in/hr *Appendix A*

Drainage Area given as **0.09** acres

Peak Rate of Runoff, **Q_p =CiA** **0.00** cfs

b. Determine the Required Surface Area= **0.00** ft^2

c. Use Surface Area (**A**) to determine required **VOLUME** of Temporary Type-B Sediment Dam

Design Depth: 3

Required VOLUME using the design depth: **0.00** ft^3

d. Sediment Storage Required using 1800 ft^3/ac

Disturbed Area (acres)= **0.09**

Required Sediment Storage (ft^3)= **161.16** ft^3

Final Required Storage: **161.16** ft^3

Proposed Basin Side Slopes: **0.0** **:1 side slopes** ***must be at least 1.5:1 or flatter***

Infiltration Analysis Web Soil Survey (http://soildatamart.nrcs.usda.gov/)

Sat. Hydraulic Con. (Ksat, micro m/sec)	0
Soil Permeability (in/hr)	0.00
Dewatering Time (Days)	N/A

Skimmer Basin Required

Basin Design	***Minimum 2:1 (L:W) Ratio***
Suggested Top Width (ft):	0
Suggested Top Length (ft):	0
Final Design Top Width (ft):	3
Final Design Top Length (ft):	9
Final Design Depth (ft):	3
Weir Width (ft):	4
Skimmer Size (in)	1.5
Orifice Diameter (in)	0.25
Dewatering Time (Days)	2
Verify Storage (ft^3)	*81.00* **Too Low**
Verify Surface Area (ft^2)	*27.00* **OK**

Place Basin at outlet point. Ensure devices are used to satisfy requirements of Step 3. Install Baffles*.

See Option 6 if installing this measure is not practical.

* **Baffles** are required for infiltration and skimmer basins that are located at drainage turnouts.
If the device is greater than 20' in length, it will require 3 baffles. If it is 10'-20' in length, it will require 2 baffles.
If it is less than 10', it will require 1 baffle.

STEP 1: Input Project Information ****items in red are REQUIRED***

SECTION 11 of 32

Construction time ≤ 6 months (Y/N)?	Y
HQW (Y/N)?	Y
Trout (Y/N)?	Y
From Sta.:	20 + 0
to Sta.:	23 + 0
Right/Left:	Rt.
% Ditch Grade:	10.350 %
Contributing R/W Width:	13 feet
Length of Run	X 300 feet
Disturbed Area	= 0.09 acres
Drainage Area:	0.09 acres

Elevation Tool (ft)
0
0
No Elev Data

*Drainage Area must equal or exceed the Disturbed Area found above

Surface Dewatering Device	n
Is this a Typical Section (Y/N)?	Y
Will RUSLE2 be used to model the Non-Typical sections?	N

County:	Avery
Location:	Pilot Ridge Rd
Prepared By:	Jacob Combs
Date Prepared:	11/18/2014
Level III A #:	3474
Level III A Expiration:	12/31/2016
Reviewed By:	Greg Kirby
Date Reviewed:	11/19/2014
Level III A #:	391
Level III A Expiration:	1/0/1900

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Regression Constant, *C*	549	*Table 2-7 (Level III Ref Manual)*
Rainfall Factor, *R*	106.4	*Figure 2-1*
Erodibility Factor, *K*	0.24	*Table 2-2 or Web Soil Survey (http://soildatamart.nrcs.usda.gov/)*
Soil Type	SoD Soco	** informational purposes only.*

STEP 2: Ditch Liner requirements: *Utilize the* ***Required Liner*** *tab and note recommendations on plans.*

STEP 3: Velocity Control Requirements

TYPE B ROCK SILT CHECKS OR WATTLES 10 ***spaced at*** 27 **feet**

Wattles are required in conjunction with PAMs

****See the HELP Tab for additional clarification and an example on how to place on plans.***

Start with Option 4A

OPTION 4: Using RUSLE2 Analysis to determine required storage

OPTION 4A: For DRAINAGE AREA < 3 Acre: Use V=CRKs to determine storage

Regression Constant, **C**	549	
Rainfall Factor, **R**	106.4	
Erodibility Factor, **K**	0.24	
Soil Type	SoD Soco	
Ditchline Slope, **s**	0.10350	ft/ft
V=	1189.81	$ft^3/ac/yr$
Required Storage Volume=	106.53	ft^3

From Step 1 above

Using 82% of Rainfall Factor-see note in cell C4 - Move on to Option 4C

OPTION 4B: For DRAINAGE AREA > 3 Acre: Use RUSLE2 Modeling to determine storage

Sediment Delivery from RUSLE2:	0.00	tons/acre/yr
Converting to $ft^3/ac/yr$:	N/A	$ft^3/ac/yr$
Required Storage Volume=	N/A	ft^3

See Option 4A

OPTION 4C: Using the Required Storage Volume from Option 4A or 4B to determine # of Wrapped TRSC-A/Wattles Required

**** These devices can be used to satisfy the velocity requirements in Step 3.***

Storage from Wrapped Type A Rock Silt Checks or Wattles

Enter Ditch Front Slope Gradient (H:V):	3	:1
Enter Ditch Back Slope Gradient (H:V):	1.5	:1
Enter Device Height:	1.5	ft
Area Behind Device:	5.06	ft^2
Length of Ditch Behind Device:	14.49	ft
Storage Behind Device (assumes 65% effeciency):	15.90	ft^3
Wrapped TRSC-A/Wattles required:	X 7.0	
Total	111.28	ft^3

WATTLES REQUIRED

Excessive number of devices required. Go to Option 5

****Designer still has the option of using Option 5 or 6***

COMMENTS:

Use Temporary Sediment Dam, Type-B 14x7x3. Dam covers required storage.

OPTION 5: IF DRAINAGE AREA > 1 Acre: Use Surface Area Calculations to determine storage, A=325Q $_p$

a. Determine the Peak Runoff Rate, **Q_p** ($Q_p = Q_{10}$ (Q_{25} for HQW or Trout)) **USE Q25**

Q_p=CiA

Runoff Coefficient, **C** 0 *Table 1-4,1-5,1-6*

Time of Concentration, **t_c** (minutes)

1 ***Shortcut Method,*** **t_c (A≤4.6S)**

Watershed Slope, **S** 0 %

t_c= **N/A** minutes **See Kirpich**

2 ***Kirpich Method***

Flow Path, **L** 0 feet **see Module 1 Eq. 3*

Watershed Slope, **S** 0 ft/ft **see Module 1 Eq. 3*

Kirpich, **t_c=** **#DIV/0!** minutes

*Using a Return Period (**T**) of 10 yrs (25 for HQW) and a **t_c** of* **#DIV/0!** *minutes, the rainfall intensity, **i** (in/hr), can be read from Appendix A or the NOAA website, http://hdsc.nws.noaa.gov/hdsc/pfds/orb/nc_pfds.html*

Rainfall Intensity, **i** (in/hr) 0 in/hr *Appendix A*

Drainage Area given as **0.09** acres

Peak Rate of Runoff, **Q_p =CiA** **0.00** cfs

b. Determine the Required Surface Area= **0.00** ft^2

c. Use Surface Area (**A**) to determine required **VOLUME** of Temporary Type-B Sediment Dam

Design Depth: 3

Required VOLUME using the design depth: **0.00** ft^3

d. Sediment Storage Required using 1800 ft^3/ac

Disturbed Area (acres)= **0.09**

Required Sediment Storage (ft^3)= **161.16** ft^3

Final Required Storage: **161.16** ft^3

Proposed Basin Side Slopes: **1.5** **:1 side slopes** ***must be at least 1.5:1 or flatter***

Infiltration Analysis Web Soil Survey (http://soildatamart.nrcs.usda.gov/)

Sat. Hydraulic Con. (Ksat, micro m/sec)	**0**
Soil Permeability (in/hr)	**0.00**
Dewatering Time (Days)	**N/A**

Skimmer Basin Required

Basin Design	***Minimum 2:1 (L:W) Ratio***
Suggested Top Width (ft):	**0**
Suggested Top Length (ft):	**0**
Final Design Top Width (ft):	**7**
Final Design Top Length (ft):	**14**
Final Design Depth (ft):	**3**
Weir Width (ft):	**4**
Skimmer Size (in)	**1.5**
Orifice Diameter (in)	**0.25**
Dewatering Time (Days)	**2**
Verify Storage (ft^3)	*115.50* **Too Low**
Verify Surface Area (ft^2)	*98.00* **OK**

Place Basin at outlet point. Ensure devices are used to satisfy requirements of Step 3. Install Baffles*.

See Option 6 if installing this measure is not practical.

* **Baffles** are required for infiltration and skimmer basins that are located at drainage turnouts.
If the device is greater than 20' in length, it will require 3 baffles. If it is 10'-20' in length, it will require 2 baffles.
If it is less than 10', it will require 1 baffle.

STEP 1: Input Project Information ****items in red are REQUIRED***

SECTION 12 of 32

Construction time ≤ 6 months (Y/N)?	Y
HQW (Y/N)?	Y
Trout (Y/N)?	Y
From Sta.:	21 + 0
to Sta.:	25 + 0
Right/Left:	Lt
% Ditch Grade:	11.360 %
Contributing R/W Width:	9 feet
Length of Run	X 400 feet
Disturbed Area	= 0.08 acres
Drainage Area:	0.08 acres

Elevation Tool (ft)
0
0
No Elev Data

*Drainage Area must equal or exceed the Disturbed Area found above

Surface Dewatering Device	n
Is this a Typical Section (Y/N)?	Y
Will RUSLE2 be used to model the Non-Typical sections?	N

County:	Avery
Location:	Pilot Ridge Rd
Prepared By:	Jacob Combs
Date Prepared:	11/18/2014
Level III A #:	3474
Level III A Expiration:	12/31/2016
Reviewed By:	Greg Kirby
Date Reviewed:	11/19/2014
Level III A #:	391
Level III A Expiration:	1/0/1900

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Regression Constant, *C*	659	*Table 2-7 (Level III Ref Manual)*
Rainfall Factor, *R*	106.4	*Figure 2-1*
Erodibility Factor, *K*	0.24	*Table 2-2 or Web Soil Survey (http://soildatamart.nrcs.usda.gov/)*
Soil Type	SoD Soco	** informational purposes only.*

STEP 2: Ditch Liner requirements: *Utilize the* ***Required Liner*** *tab and note recommendations on plans.*

STEP 3: Velocity Control Requirements

TYPE B ROCK SILT CHECKS OR WATTLES **15** ***spaced at*** **25** **feet**

Wattles are required in conjunction with PAMs

****See the HELP Tab for additional clarification and an example on how to place on plans.***

Start with Option 4A

OPTION 4: Using RUSLE2 Analysis to determine required storage

OPTION 4A: For DRAINAGE AREA < 3 Acre: Use V=CRKs to determine storage

Regression Constant, **C**	659	
Rainfall Factor, **R**	106.4	
Erodibility Factor, **K**	0.24	
Soil Type	SoD Soco	
Ditchline Slope, **s**	0.11360	ft/ft
V=	1567.58	$ft^3/ac/yr$
Required Storage Volume=	129.55	ft^3

From Step 1 above

Using 82% of Rainfall Factor-see note in cell C4 - Move on to Option 4C

OPTION 4B: For DRAINAGE AREA > 3 Acre: Use RUSLE2 Modeling to determine storage

Sediment Delivery from RUSLE2:	0.00	tons/acre/yr
Converting to $ft^3/ac/yr$:	N/A	$ft^3/ac/yr$
Required Storage Volume=	N/A	ft^3

See Option 4A

OPTION 4C: Using the Required Storage Volume from Option 4A or 4B to determine # of Wrapped TRSC-A/Wattles Required

**** These devices can be used to satisfy the velocity requirements in Step 3.***

Storage from Wrapped Type A Rock Silt Checks or Wattles

Enter Ditch Front Slope Gradient (H:V):	3	:1
Enter Ditch Back Slope Gradient (H:V):	1.5	:1
Enter Device Height:	1.5	ft
Area Behind Device:	5.06	ft^2
Length of Ditch Behind Device:	13.20	ft
Storage Behind Device (assumes 65% effeciency):	14.48	ft^3
Wrapped TRSC-A/Wattles required:	X 9.0	
Total	130.35	ft^3

WATTLES REQUIRED

Excessive number of devices required. Go to Option 5

****Designer still has the option of using Option 5 or 6***

COMMENTS:

Use Temporary Sediment Dam, Type-B 9x3x3. Dam and wattles cover required storage.

OPTION 5: IF DRAINAGE AREA > 1 Acre: Use Surface Area Calculations to determine storage, A=325Q $_p$

a. Determine the Peak Runoff Rate, **Q_p** ($Q_p = Q_{10}$ (Q_{25} for HQW or Trout)) **USE Q25**

Q_p=CiA

Runoff Coefficient, **C** 0 *Table 1-4,1-5,1-6*

Time of Concentration, **t_c** (minutes)

1 ***Shortcut Method,*** **t_c (A≤4.6S)**

Watershed Slope, **S** 0 %

t_c= **N/A** minutes **See Kirpich**

2 ***Kirpich Method***

Flow Path, **L** 0 feet **see Module 1 Eq. 3*

Watershed Slope, **S** 0 ft/ft **see Module 1 Eq. 3*

Kirpich, **t_c=** **#DIV/0!** minutes

*Using a Return Period (**T**) of 10 yrs (25 for HQW) and a **t_c** of* **#DIV/0!** *minutes, the rainfall intensity, **i** (in/hr), can be read from Appendix A or the NOAA website, http://hdsc.nws.noaa.gov/hdsc/pfds/orb/nc_pfds.html*

Rainfall Intensity, **i** (in/hr) 0 in/hr *Appendix A*

Drainage Area given as **0.08** acres

Peak Rate of Runoff, **Q_p =CiA** **0.00** cfs

b. Determine the Required Surface Area= **0.00** ft^2

c. Use Surface Area (**A**) to determine required **VOLUME** of Temporary Type-B Sediment Dam

Design Depth: 3

Required VOLUME using the design depth: **0.00** ft^3

d. Sediment Storage Required using 1800 ft^3/ac

Disturbed Area (acres)= **0.08**

Required Sediment Storage (ft^3)= **148.76** ft^3

Final Required Storage: **148.76** ft^3

Proposed Basin Side Slopes: **0.0** **:1 side slopes** ***must be at least 1.5:1 or flatter***

Infiltration Analysis Web Soil Survey (http://soildatamart.nrcs.usda.gov/)

Sat. Hydraulic Con. (Ksat, micro m/sec)	0
Soil Permeability (in/hr)	0.00
Dewatering Time (Days)	N/A

Skimmer Basin Required

Basin Design	***Minimum 2:1 (L:W) Ratio***
Suggested Top Width (ft):	0
Suggested Top Length (ft):	0
Final Design Top Width (ft):	3
Final Design Top Length (ft):	9
Final Design Depth (ft):	3
Weir Width (ft):	4
Skimmer Size (in)	1.5
Orifice Diameter (in)	0.25
Dewatering Time (Days)	2
Verify Storage (ft^3)	*81.00* **Too Low**
Verify Surface Area (ft^2)	*27.00* **OK**

Place Basin at outlet point. Ensure devices are used to satisfy requirements of Step 3. Install Baffles*.

See Option 6 if installing this measure is not practical.

* **Baffles** are required for infiltration and skimmer basins that are located at drainage turnouts.
If the device is greater than 20' in length, it will require 3 baffles. If it is 10'-20' in length, it will require 2 baffles.
If it is less than 10', it will require 1 baffle.

STEP 1: Input Project Information ****items in red are REQUIRED***

SECTION 13 of 32

Construction time ≤ 6 months (Y/N)?	Y		
HQW (Y/N)?	Y	**Elevation Tool (ft)**	
Trout (Y/N)?	Y		
From Sta.:	25 + 0	0	
to Sta.:	28 + 44	0	
Right/Left:	Lt	**No Elev Data**	%
% Ditch Grade:	11.580	%	
Contributing R/W Width:	12	feet	
Length of Run	X 344	feet	
Disturbed Area	= 0.09	acres	
Drainage Area:	0.09	acres	

County:	Avery
Location:	Pilot Ridge Rd
Prepared By:	Jacob Combs
Date Prepared:	11/18/2014
Level III A #:	3474
Level III A Expiration:	12/31/2016
Reviewed By:	Greg Kirby
Date Reviewed:	11/19/2014
Level III A #:	391
Level III A Expiration:	1/0/1900

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***Drainage Area must equal or exceed the Disturbed Area found above**

Surface Dewatering Device	n	
Is this a Typical Section (Y/N)?	Y	
Will RUSLE2 be used to model the Non-Typical sections?	N	

Regression Constant, *C*	659	*Table 2-7 (Level III Ref Manual)*
Rainfall Factor, *R*	106.4	*Figure 2-1*
Erodibility Factor, *K*	0.24	*Table 2-2 or Web Soil Survey (http://soildatamart.nrcs.usda.gov/)*
Soil Type	SoD Soco	** informational purposes only.*

STEP 2: Ditch Liner requirements: *Utilize the* ***Required Liner*** *tab and note recommendations on plans.*

STEP 3: Velocity Control Requirements

TYPE B ROCK SILT CHECKS OR WATTLES **13** ***spaced at*** **25** **feet**

Wattles are required in conjunction with PAMs

****See the HELP Tab for additional clarification and an example on how to place on plans.***

Start with Option 4A

OPTION 4: Using RUSLE2 Analysis to determine required storage

OPTION 4A: For DRAINAGE AREA < 3 Acre: Use V=CRKs to determine storage

Regression Constant, **C**	659		*From Step 1 above*
Rainfall Factor, **R**	106.4		
Erodibility Factor, **K**	0.24		
Soil Type	SoD Soco		
Ditchline Slope, **s**	0.11580	ft/ft	
V=	1597.94	$ft^3/ac/yr$	
Required Storage Volume=	151.43	ft^3	

Using 82% of Rainfall Factor-see note in cell C4 - Move on to Option 4C

OPTION 4B: For DRAINAGE AREA > 3 Acre: Use RUSLE2 Modeling to determine storage

Sediment Delivery from RUSLE2:	0.00	tons/acre/yr
Converting to $ft^3/ac/yr$:	N/A	$ft^3/ac/yr$
Required Storage Volume=	N/A	ft^3

See Option 4A

OPTION 4C: Using the Required Storage Volume from Option 4A or 4B to determine # of Wrapped TRSC-A/Wattles Required

**** These devices can be used to satisfy the velocity requirements in Step 3.***

Storage from Wrapped Type A Rock Silt Checks or Wattles

Enter Ditch Front Slope Gradient (H:V):	3	:1
Enter Ditch Back Slope Gradient (H:V):	1.5	:1
Enter Device Height:	1.5	ft
Area Behind Device:	5.06	ft^2
Length of Ditch Behind Device:	12.95	ft
Storage Behind Device (assumes 65% effeciency):	14.21	ft^3
Wrapped TRSC-A/Wattles required:	X 11.0	
Total	156.29	ft^3

WATTLES REQUIRED

Excessive number of devices required. Go to Option 5

****Designer still has the option of using Option 5 or 6***

COMMENTS:

Use Temporary Sediment Dam, Type-B 9x3x3. Dam and wattles cover required storage.

OPTION 5: IF DRAINAGE AREA > 1 Acre: Use Surface Area Calculations to determine storage, A=325Q $_p$

a. Determine the Peak Runoff Rate, **Q_p** ($Q_p = Q_{10}$ (Q_{25} for HQW or Trout)) **USE Q25**

Q_p=CiA

Runoff Coefficient, **C** 0 *Table 1-4,1-5,1-6*

Time of Concentration, **t_c** (minutes)

1 ***Shortcut Method,*** **t_c (A≤4.6S)**

Watershed Slope, **S** 0 %

t_c= **N/A** minutes **See Kirpich**

2 ***Kirpich Method***

Flow Path, **L** 0 feet **see Module 1 Eq. 3*

Watershed Slope, **S** 0 ft/ft **see Module 1 Eq. 3*

Kirpich, **t_c=** **#DIV/0!** minutes

*Using a Return Period (**T**) of 10 yrs (25 for HQW) and a **t_c** of* **#DIV/0!** *minutes, the rainfall intensity, **i** (in/hr), can be read from Appendix A or the NOAA website, http://hdsc.nws.noaa.gov/hdsc/pfds/orb/nc_pfds.html*

Rainfall Intensity, **i** (in/hr) 0 in/hr *Appendix A*

Drainage Area given as **0.09** acres

Peak Rate of Runoff, **Q_p =CiA** **0.00** cfs

b. Determine the Required Surface Area= **0.00** ft^2

c. Use Surface Area (**A**) to determine required **VOLUME** of Temporary Type-B Sediment Dam

Design Depth: 3

Required VOLUME using the design depth: **0.00** ft^3

d. Sediment Storage Required using 1800 ft^3/ac

Disturbed Area (acres)= **0.09**

Required Sediment Storage (ft^3)= **170.58** ft^3

Final Required Storage: **170.58** ft^3

Proposed Basin Side Slopes: **0.0** **:1 side slopes** ***must be at least 1.5:1 or flatter***

Infiltration Analysis Web Soil Survey (http://soildatamart.nrcs.usda.gov/)

Sat. Hydraulic Con. (Ksat, micro m/sec)	0
Soil Permeability (in/hr)	0.00
Dewatering Time (Days)	N/A

Skimmer Basin Required

Basin Design	***Minimum 2:1 (L:W) Ratio***
Suggested Top Width (ft):	0
Suggested Top Length (ft):	0
Final Design Top Width (ft):	3
Final Design Top Length (ft):	9
Final Design Depth (ft):	3
Weir Width (ft):	4
Skimmer Size (in)	1.5
Orifice Diameter (in)	0.25
Dewatering Time (Days)	2
Verify Storage (ft^3)	*81.00* **Too Low**
Verify Surface Area (ft^2)	*27.00* **OK**

Place Basin at outlet point. Ensure devices are used to satisfy requirements of Step 3. Install Baffles*.

See Option 6 if installing this measure is not practical.

* **Baffles** are required for infiltration and skimmer basins that are located at drainage turnouts.
If the device is greater than 20' in length, it will require 3 baffles. If it is 10'-20' in length, it will require 2 baffles.
If it is less than 10', it will require 1 baffle.

STEP 1: Input Project Information ****items in red are REQUIRED***

SECTION 14 of 32

Construction time ≤ 6 months (Y/N)?	Y
HQW (Y/N)?	Y
Trout (Y/N)?	Y
From Sta.:	26 + 0
to Sta.:	28 + 44
Right/Left:	Rt.
% Ditch Grade:	10.140 %
Contributing R/W Width:	12 feet
Length of Run	X 244 feet
Disturbed Area	= 0.07 acres
Drainage Area:	0.07 acres

Elevation Tool (ft)
0
0
No Elev Data

****Drainage Area must equal or exceed the Disturbed Area found above***

Surface Dewatering Device	n
Is this a Typical Section (Y/N)?	Y
Will RUSLE2 be used to model the Non-Typical sections?	N

County:	Avery
Location:	Pilot Ridge Rd
Prepared By:	Jacob Combs
Date Prepared:	11/18/2014
Level III A #:	3474
Level III A Expiration:	12/31/2016
Reviewed By:	Greg Kirby
Date Reviewed:	11/19/2014
Level III A #:	391
Level III A Expiration:	1/0/1900

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Regression Constant, *C*	549	*Table 2-7 (Level III Ref Manual)*
Rainfall Factor, *R*	106.4	*Figure 2-1*
Erodibility Factor, *K*	0.24	*Table 2-2 or Web Soil Survey (http://soildatamart.nrcs.usda.gov/)*
Soil Type	SoD Soco	** informational purposes only.*

STEP 2: Ditch Liner requirements: *Utilize the* ***Required Liner*** *tab and note recommendations on plans.*

STEP 3: Velocity Control Requirements

TYPE B ROCK SILT CHECKS OR WATTLES 8 ***spaced at*** 27 **feet**

Wattles are required in conjunction with PAMs

****See the HELP Tab for additional clarification and an example on how to place on plans.***

Start with Option 4A

OPTION 4: Using RUSLE2 Analysis to determine required storage

OPTION 4A: For DRAINAGE AREA < 3 Acre: Use V=CRKs to determine storage

Regression Constant, **C**	549	
Rainfall Factor, **R**	106.4	
Erodibility Factor, **K**	0.24	
Soil Type	SoD Soco	
Ditchline Slope, **s**	0.10140	ft/ft
V=	1165.67	$ft^3/ac/yr$
Required Storage Volume=	78.35	ft^3

From Step 1 above

Using 82% of Rainfall Factor-see note in cell C4 - Move on to Option 4C

OPTION 4B: For DRAINAGE AREA > 3 Acre: Use RUSLE2 Modeling to determine storage

Sediment Delivery from RUSLE2:	0.00	tons/acre/yr
Converting to $ft^3/ac/yr$:	N/A	$ft^3/ac/yr$
Required Storage Volume=	N/A	ft^3

See Option 4A

OPTION 4C: Using the Required Storage Volume from Option 4A or 4B to determine # of Wrapped TRSC-A/Wattles Required

**** These devices can be used to satisfy the velocity requirements in Step 3.***

Storage from Wrapped Type A Rock Silt Checks or Wattles

Enter Ditch Front Slope Gradient (H:V):	3	:1
Enter Ditch Back Slope Gradient (H:V):	1.5	:1
Enter Device Height:	1.5	ft
Area Behind Device:	5.06	ft^2
Length of Ditch Behind Device:	14.79	ft
Storage Behind Device (assumes 65% effeciency):	16.23	ft^3
Wrapped TRSC-A/Wattles required:	X 5.0	
Total	81.13	ft^3

WATTLES REQUIRED

Excessive number of devices required. Go to Option 5

****Designer still has the option of using Option 5 or 6***

COMMENTS:

Use Temporary Sediment Dam, Type-B 12x6x3. Dam covers required storage.

OPTION 5: IF DRAINAGE AREA > 1 Acre: Use Surface Area Calculations to determine storage, A=325Q $_p$

a. Determine the Peak Runoff Rate, **Q_p** ($Q_p = Q_{10}$ (Q_{25} for HQW or Trout)) **USE Q25**

Q_p=CiA

Runoff Coefficient, **C** 0 *Table 1-4,1-5,1-6*

Time of Concentration, **t_c** (minutes)

1 ***Shortcut Method,*** **t_c (A≤4.6S)**

Watershed Slope, **S** 0 %

t_c= **N/A** minutes **See Kirpich**

2 ***Kirpich Method***

Flow Path, **L** 0 feet **see Module 1 Eq. 3*

Watershed Slope, **S** 0 ft/ft **see Module 1 Eq. 3*

Kirpich, **t_c=** **#DIV/0!** minutes

*Using a Return Period (**T**) of 10 yrs (25 for HQW) and a **t_c** of* **#DIV/0!** *minutes, the rainfall intensity, **i** (in/hr), can be read from Appendix A or the NOAA website, http://hdsc.nws.noaa.gov/hdsc/pfds/orb/nc_pfds.html*

Rainfall Intensity, **i** (in/hr) 0 in/hr *Appendix A*

Drainage Area given as **0.07** acres

Peak Rate of Runoff, **Q_p =CiA** **0.00** cfs

b. Determine the Required Surface Area= **0.00** ft^2

c. Use Surface Area (**A**) to determine required **VOLUME** of Temporary Type-B Sediment Dam

Design Depth: 3

Required VOLUME using the design depth: **0.00** ft^3

d. Sediment Storage Required using 1800 ft^3/ac

Disturbed Area (acres)= **0.07**

Required Sediment Storage (ft^3)= **120.99** ft^3

Final Required Storage: **120.99** ft^3

Proposed Basin Side Slopes: **1.5** **:1 side slopes** ***must be at least 1.5:1 or flatter**

Infiltration Analysis Web Soil Survey (http://soildatamart.nrcs.usda.gov/)

Sat. Hydraulic Con. (Ksat, micro m/sec)	**0**
Soil Permeability (in/hr)	**0.00**
Dewatering Time (Days)	**N/A**

Skimmer Basin Required

Basin Design	***Minimum 2:1 (L:W) Ratio***
Suggested Top Width (ft):	**0**
Suggested Top Length (ft):	**0**
Final Design Top Width (ft):	**6**
Final Design Top Length (ft):	**12**
Final Design Depth (ft):	**3**
Weir Width (ft):	**4**
Skimmer Size (in)	**1.5**
Orifice Diameter (in)	**0.25**
Dewatering Time (Days)	**2**
Verify Storage (ft^3)	*81.00* **Too Low**
Verify Surface Area (ft^2)	*72.00* **OK**

Place Basin at outlet point. Ensure devices are used to satisfy requirements of Step 3. Install Baffles*.

See Option 6 if installing this measure is not practical.

* **Baffles** are required for infiltration and skimmer basins that are located at drainage turnouts.
If the device is greater than 20' in length, it will require 3 baffles. If it is 10'-20' in length, it will require 2 baffles.
If it is less than 10', it will require 1 baffle.

STEP 1: Input Project Information ****items in red are REQUIRED***

SECTION 15 of 32

Construction time ≤ 6 months (Y/N)?	**Y**
HQW (Y/N)?	**Y**
Trout (Y/N)?	**Y**
From Sta.:	**76 + 50**
to Sta.:	**77 + 0**
Right/Left:	**Rt.**
% Ditch Grade:	**12.000** %
Contributing R/W Width:	**14** feet
Length of Run	X **50** feet
Disturbed Area	= **0.02** acres
Drainage Area:	**0.02** acres

Elevation Tool (ft)
0
0
No Elev Data %

****Drainage Area must equal or exceed the Disturbed Area found above***

Surface Dewatering Device	**n**
Is this a Typical Section (Y/N)?	**Y**
Will RUSLE2 be used to model the Non-Typical sections?	**N**

County:	Avery
Location:	Pilot Ridge Rd
Prepared By:	Jacob Combs
Date Prepared:	11/18/2014
Level III A #:	3474
Level III A Expiration:	12/31/2016
Reviewed By:	Greg Kirby
Date Reviewed:	11/19/2014
Level III A #:	391
Level III A Expiration:	1/0/1900

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Regression Constant, *C*	**733.5**	*Table 2-7 (Level III Ref Manual)*
Rainfall Factor, *R*	**106.4**	*Figure 2-1*
Erodibility Factor, *K*	**0.24**	*Table 2-2 or Web Soil Survey (http://soildatamart.nrcs.usda.gov/)*
Soil Type	**SoD Soco**	** informational purposes only.*

STEP 2: Ditch Liner requirements: *Utilize the* ***Required Liner*** *tab and note recommendations on plans.*

STEP 3: Velocity Control Requirements

TYPE B ROCK SILT CHECKS OR WATTLES **1** ***spaced at*** **25** **feet**

Wattles are required in conjunction with PAMs

****See the HELP Tab for additional clarification and an example on how to place on plans.***

Start with Option 4A

OPTION 4: Using RUSLE2 Analysis to determine required storage

OPTION 4A: For DRAINAGE AREA < 3 Acre: Use V=CRKs to determine storage

Regression Constant, **C**	**733.5**	
Rainfall Factor, **R**	**106.4**	
Erodibility Factor, **K**	**0.24**	
Soil Type	**SoD Soco**	
Ditchline Slope, **s**	**0.12000**	ft/ft
V=	**1843.10**	$ft^3/ac/yr$
Required Storage Volume=	**29.62**	ft^3

From Step 1 above

Using 82% of Rainfall Factor-see note in cell C4 - Move on to Option 4C

OPTION 4B: For DRAINAGE AREA > 3 Acre: Use RUSLE2 Modeling to determine storage

Sediment Delivery from RUSLE2:	**0.00**	tons/acre/yr
Converting to $ft^3/ac/yr$:	**N/A**	$ft^3/ac/yr$
Required Storage Volume=	**N/A**	ft^3

See Option 4A

OPTION 4C: Using the Required Storage Volume from Option 4A or 4B to determine # of Wrapped TRSC-A/Wattles Required

**** These devices can be used to satisfy the velocity requirements in Step 3.***

Storage from Wrapped Type A Rock Silt Checks or Wattles

Enter Ditch Front Slope Gradient (H:V):	**3**	**:1**
Enter Ditch Back Slope Gradient (H:V):	**1.5**	**:1**
Enter Device Height:	**1.5**	ft
Area Behind Device:	5.06	ft^2
Length of Ditch Behind Device:	12.50	ft
Storage Behind Device (assumes 65% effeciency):	**13.71**	ft^3
Wrapped TRSC-A/Wattles required:	X **3.0**	
Total	**41.13**	ft^3

WATTLES REQUIRED

Excessive number of devices required. Go to Option 5

****Designer still has the option of using Option 5 or 6***

COMMENTS:

Use Temporary Sediment Dam, Type-B 9x3x3. Dam covers required storage.

OPTION 5: IF DRAINAGE AREA > 1 Acre: Use Surface Area Calculations to determine storage, A=325Q $_p$

a. Determine the Peak Runoff Rate, **Q_p** ($Q_p = Q_{10}$ (Q_{25} for HQW or Trout)) **USE Q25**

Q_p=CiA

Runoff Coefficient, **C** 0 *Table 1-4,1-5,1-6*

Time of Concentration, **t_c** (minutes)

1 ***Shortcut Method,*** **t_c (A≤4.6S)**

Watershed Slope, **S** 0 %

t_c= **N/A** minutes **See Kirpich**

2 ***Kirpich Method***

Flow Path, **L** 0 feet **see Module 1 Eq. 3*

Watershed Slope, **S** 0 ft/ft **see Module 1 Eq. 3*

Kirpich, **t_c=** **#DIV/0!** minutes

*Using a Return Period (**T**) of 10 yrs (25 for HQW) and a **t_c** of* **#DIV/0!** *minutes, the rainfall intensity, **i** (in/hr), can be read from Appendix A or the NOAA website, http://hdsc.nws.noaa.gov/hdsc/pfds/orb/nc_pfds.html*

Rainfall Intensity, **i** (in/hr) 0 in/hr *Appendix A*

Drainage Area given as **0.02** acres

Peak Rate of Runoff, **Q_p =CiA** **0.00** cfs

b. Determine the Required Surface Area= **0.00** ft^2

c. Use Surface Area (**A**) to determine required **VOLUME** of Temporary Type-B Sediment Dam

Design Depth: 3

Required VOLUME using the design depth: **0.00** ft^3

d. Sediment Storage Required using 1800 ft^3/ac

Disturbed Area (acres)= **0.02**

Required Sediment Storage (ft^3)= **28.93** ft^3

Final Required Storage: **28.93** ft^3

Proposed Basin Side Slopes: **0.0** **:1 side slopes** ***must be at least 1.5:1 or flatter**

Infiltration Analysis Web Soil Survey (http://soildatamart.nrcs.usda.gov/)

Sat. Hydraulic Con. (Ksat, micro m/sec)	**0**
Soil Permeability (in/hr)	**0.00**
Dewatering Time (Days)	**N/A**

Skimmer Basin Required

Basin Design	***Minimum 2:1 (L:W) Ratio***
Suggested Top Width (ft):	**0**
Suggested Top Length (ft):	**0**
Final Design Top Width (ft):	**3**
Final Design Top Length (ft):	**9**
Final Design Depth (ft):	**3**
Weir Width (ft):	**4**
Skimmer Size (in)	**1.5**
Orifice Diameter (in)	**0.25**
Dewatering Time (Days)	**2**
Verify Storage (ft^3)	*81.00* **OK**
Verify Surface Area (ft^2)	*27.00* **OK**

Place Basin at outlet point. Ensure devices are used to satisfy requirements of Step 3. Install Baffles*.

See Option 6 if installing this measure is not practical.

* **Baffles** are required for infiltration and skimmer basins that are located at drainage turnouts.
If the device is greater than 20' in length, it will require 3 baffles. If it is 10'-20' in length, it will require 2 baffles.
If it is less than 10', it will require 1 baffle.

STEP 1: Input Project Information ****items in red are REQUIRED***

SECTION 16 of 32

Construction time ≤ 6 months (Y/N)?	Y		
HQW (Y/N)?	Y	**Elevation Tool (ft)**	
Trout (Y/N)?	Y		
From Sta.:	77 + 0	0	
to Sta.:	78 + 50	0	
Right/Left:	Rt.	**No Elev Data**	%
% Ditch Grade:	11.100	%	
Contributing R/W Width:	28	feet	
Length of Run	X 150	feet	
Disturbed Area	= 0.10	acres	
Drainage Area:	0.1	acres	

****Drainage Area must equal or exceed the Disturbed Area found above***

Surface Dewatering Device	n
Is this a Typical Section (Y/N)?	Y
Will RUSLE2 be used to model the Non-Typical sections?	N

County:	Avery
Location:	Pilot Ridge Rd
Prepared By:	Jacob Combs
Date Prepared:	11/18/2014
Level III A #:	3474
Level III A Expiration:	12/31/2016
Reviewed By:	Greg Kirby
Date Reviewed:	11/19/2014
Level III A #:	391
Level III A Expiration:	1/0/1900

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Regression Constant, *C*	808	*Table 2-7 (Level III Ref Manual)*
Rainfall Factor, *R*	106.4	*Figure 2-1*
Erodibility Factor, *K*	0.24	*Table 2-2 or Web Soil Survey (http://soildatamart.nrcs.usda.gov/)*
Soil Type	SoD Soco	** informational purposes only.*

STEP 2: Ditch Liner requirements: *Utilize the* ***Required Liner*** *tab and note recommendations on plans.*

STEP 3: Velocity Control Requirements

TYPE B ROCK SILT CHECKS OR WATTLES 5 ***spaced at*** 25 **feet**

Wattles are required in conjunction with PAMs

****See the HELP Tab for additional clarification and an example on how to place on plans.***

Start with Option 4A

OPTION 4: Using RUSLE2 Analysis to determine required storage

OPTION 4A: For DRAINAGE AREA < 3 Acre: Use V=CRKs to determine storage

Regression Constant, **C**	808	
Rainfall Factor, **R**	106.4	
Erodibility Factor, **K**	0.24	
Soil Type	SoD Soco	
Ditchline Slope, **s**	0.11100	ft/ft
V=	1878.02	$ft^3/ac/yr$
Required Storage Volume=	181.08	ft^3

From Step 1 above

Using 82% of Rainfall Factor-see note in cell C4 - Move on to Option 4C

OPTION 4B: For DRAINAGE AREA > 3 Acre: Use RUSLE2 Modeling to determine storage

Sediment Delivery from RUSLE2:	0.00	tons/acre/yr
Converting to $ft^3/ac/yr$:	N/A	$ft^3/ac/yr$
Required Storage Volume=	N/A	ft^3

See Option 4A

OPTION 4C: Using the Required Storage Volume from Option 4A or 4B to determine # of Wrapped TRSC-A/Wattles Required

**** These devices can be used to satisfy the velocity requirements in Step 3.***

Storage from Wrapped Type A Rock Silt Checks or Wattles

Enter Ditch Front Slope Gradient (H:V):	3	:1
Enter Ditch Back Slope Gradient (H:V):	1.5	:1
Enter Device Height:	1.5	ft
Area Behind Device:	5.06	ft^2
Length of Ditch Behind Device:	13.51	ft
Storage Behind Device (assumes 65% effeciency):	14.82	ft^3
Wrapped TRSC-A/Wattles required:	X 13.0	
Total	192.69	ft^3

WATTLES REQUIRED

Excessive number of devices required. Go to Option 5

****Designer still has the option of using Option 5 or 6***

COMMENTS:

Use Temporary Sediment Dam, Type-B 12x4x3. Dam and wattles cover required storage.

OPTION 5: IF DRAINAGE AREA > 1 Acre: Use Surface Area Calculations to determine storage, A=325Q_p

a. Determine the Peak Runoff Rate, **Q_p** ($Q_p = Q_{10}$ (Q_{25} for HQW or Trout)) **USE Q25**

Q_p=CiA

Runoff Coefficient, **C** 0 *Table 1-4,1-5,1-6*

Time of Concentration, **t_c** (minutes)

1 ***Shortcut Method,*** **t_c (A≤4.6S)**

Watershed Slope, **S** 0 %

t_c= **N/A** minutes **See Kirpich**

2 ***Kirpich Method***

Flow Path, **L** 0 feet **see Module 1 Eq. 3*

Watershed Slope, **S** 0 ft/ft **see Module 1 Eq. 3*

Kirpich, **t_c=** **#DIV/0!** minutes

*Using a Return Period (**T**) of 10 yrs (25 for HQW) and a **t_c** of* **#DIV/0!** *minutes, the rainfall intensity, **i** (in/hr), can be read from Appendix A or the NOAA website, http://hdsc.nws.noaa.gov/hdsc/pfds/orb/nc_pfds.html*

Rainfall Intensity, **i** (in/hr) 0 in/hr *Appendix A*

Drainage Area given as **0.1** acres

Peak Rate of Runoff, **Q_p =CiA** **0.00** cfs

b. Determine the Required Surface Area= **0.00** ft^2

c. Use Surface Area (**A**) to determine required **VOLUME** of Temporary Type-B Sediment Dam

Design Depth: 3

Required VOLUME using the design depth: **0.00** ft^3

d. Sediment Storage Required using 1800 ft^3/ac

Disturbed Area (acres)= **0.10**

Required Sediment Storage (ft^3)= **173.55** ft^3

Final Required Storage: **173.55** ft^3

Proposed Basin Side Slopes: **0.0** **:1 side slopes** ***must be at least 1.5:1 or flatter***

Infiltration Analysis Web Soil Survey (http://soildatamart.nrcs.usda.gov/)

Sat. Hydraulic Con. (Ksat, micro m/sec)	**0**
Soil Permeability (in/hr)	**0.00**
Dewatering Time (Days)	**N/A**

Skimmer Basin Required

Basin Design	***Minimum 2:1 (L:W) Ratio***
Suggested Top Width (ft):	**0**
Suggested Top Length (ft):	**0**
Final Design Top Width (ft):	**4**
Final Design Top Length (ft):	**12**
Final Design Depth (ft):	**3**
Weir Width (ft):	**4**
Skimmer Size (in)	**1.5**
Orifice Diameter (in)	**0.25**
Dewatering Time (Days)	**3**
Verify Storage (ft^3)	*144.00* **Too Low**
Verify Surface Area (ft^2)	*48.00* **OK**

Place Basin at outlet point. Ensure devices are used to satisfy requirements of Step 3. Install Baffles*.

See Option 6 if installing this measure is not practical.

* **Baffles** are required for infiltration and skimmer basins that are located at drainage turnouts.
If the device is greater than 20' in length, it will require 3 baffles. If it is 10'-20' in length, it will require 2 baffles.
If it is less than 10', it will require 1 baffle.

STEP 1: Input Project Information ****items in red are REQUIRED***

SECTION 17 of 32

Construction time ≤ 6 months (Y/N)?	Y
HQW (Y/N)?	Y
Trout (Y/N)?	Y
From Sta.:	78 + 50
to Sta.:	79 + 65
Right/Left:	Rt.
% Ditch Grade:	6.870 %
Contributing R/W Width:	16 feet
Length of Run	X 115 feet
Disturbed Area	= 0.04 acres
Drainage Area:	0.04 acres

Elevation Tool (ft)
0
0
No Elev Data

*Drainage Area must equal or exceed the Disturbed Area found above

Surface Dewatering Device	n
Is this a Typical Section (Y/N)?	Y
Will RUSLE2 be used to model the Non-Typical sections?	N

County:	Avery
Location:	Pilot Ridge Rd
Prepared By:	Jacob Combs
Date Prepared:	11/18/2014
Level III A #:	3474
Level III A Expiration:	12/31/2016
Reviewed By:	Greg Kirby
Date Reviewed:	11/19/2014
Level III A #:	391
Level III A Expiration:	1/0/1900

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Regression Constant, *C*	808	*Table 2-7 (Level III Ref Manual)*
Rainfall Factor, *R*	106.4	*Figure 2-1*
Erodibility Factor, *K*	0.24	*Table 2-2 or Web Soil Survey (http://soildatamart.nrcs.usda.gov/)*
Soil Type	SoD Soco	** informational purposes only.*

STEP 2: Ditch Liner requirements: *Utilize the* ***Required Liner*** *tab and note recommendations on plans.*

STEP 3: Velocity Control Requirements

TYPE B ROCK SILT CHECKS OR WATTLES 2 ***spaced at*** 38 **feet**

Wattles are required in conjunction with PAMs

****See the HELP Tab for additional clarification and an example on how to place on plans.***

Start with Option 4A

OPTION 4: Using RUSLE2 Analysis to determine required storage

OPTION 4A: For DRAINAGE AREA < 3 Acre: Use V=CRKs to determine storage

Regression Constant, **C**	808	
Rainfall Factor, **R**	106.4	
Erodibility Factor, **K**	0.24	
Soil Type	SoD Soco	
Ditchline Slope, **s**	0.06870	ft/ft
V=	1162.34	$ft^3/ac/yr$
Required Storage Volume=	49.10	ft^3

From Step 1 above

Using 82% of Rainfall Factor-see note in cell C4 - Move on to Option 4C

OPTION 4B: For DRAINAGE AREA > 3 Acre: Use RUSLE2 Modeling to determine storage

Sediment Delivery from RUSLE2:	0.00	tons/acre/yr
Converting to $ft^3/ac/yr$:	N/A	$ft^3/ac/yr$
Required Storage Volume=	N/A	ft^3

See Option 4A

OPTION 4C: Using the Required Storage Volume from Option 4A or 4B to determine # of Wrapped TRSC-A/Wattles Required

**** These devices can be used to satisfy the velocity requirements in Step 3.***

Storage from Wrapped Type A Rock Silt Checks or Wattles

Enter Ditch Front Slope Gradient (H:V):	3	:1
Enter Ditch Back Slope Gradient (H:V):	1.5	:1
Enter Device Height:	1.5	ft
Area Behind Device:	5.06	ft^2
Length of Ditch Behind Device:	21.83	ft
Storage Behind Device (assumes 65% effeciency):	23.95	ft^3
Wrapped TRSC-A/Wattles required:	X 3.0	
Total	71.85	ft^3

WATTLES REQUIRED

Excessive number of devices required. Go to Option 5

****Designer still has the option of using Option 5 or 6***

COMMENTS:

Use Temporary Sediment Dam, Type-B 9x3x3. Dam and wattles cover required storage.

OPTION 5: IF DRAINAGE AREA > 1 Acre: Use Surface Area Calculations to determine storage, A=325Q $_p$

a. Determine the Peak Runoff Rate, **Q_p** ($Q_p = Q_{10}$ (Q_{25} for HQW or Trout)) **USE Q25**

Q_p=CiA

Runoff Coefficient, **C** 0 *Table 1-4,1-5,1-6*

Time of Concentration, **t_c** (minutes)

1 ***Shortcut Method,*** **t_c (A≤4.6S)**

Watershed Slope, **S** 0 %

t_c= **N/A** minutes **See Kirpich**

2 ***Kirpich Method***

Flow Path, **L** 0 feet **see Module 1 Eq. 3*

Watershed Slope, **S** 0 ft/ft **see Module 1 Eq. 3*

Kirpich, **t_c=** **#DIV/0!** minutes

*Using a Return Period (**T**) of 10 yrs (25 for HQW) and a **t_c** of* **#DIV/0!** *minutes, the rainfall intensity, **i** (in/hr), can be read from Appendix A or the NOAA website, http://hdsc.nws.noaa.gov/hdsc/pfds/orb/nc_pfds.html*

Rainfall Intensity, **i** (in/hr) 0 in/hr *Appendix A*

Drainage Area given as **0.04** acres

Peak Rate of Runoff, **Q_p =CiA** **0.00** cfs

b. Determine the Required Surface Area= **0.00** ft^2

c. Use Surface Area (**A**) to determine required **VOLUME** of Temporary Type-B Sediment Dam

Design Depth: 3

Required VOLUME using the design depth: **0.00** ft^3

d. Sediment Storage Required using 1800 ft^3/ac

Disturbed Area (acres)= **0.04**

Required Sediment Storage (ft^3)= **76.03** ft^3

Final Required Storage: **76.03** ft^3

Proposed Basin Side Slopes: **0.0** **:1 side slopes** ***must be at least 1.5:1 or flatter***

Infiltration Analysis Web Soil Survey (http://soildatamart.nrcs.usda.gov/)

Sat. Hydraulic Con. (Ksat, micro m/sec)	**0**
Soil Permeability (in/hr)	**0.00**
Dewatering Time (Days)	**N/A**

Skimmer Basin Required

Basin Design	***Minimum 2:1 (L:W) Ratio***
Suggested Top Width (ft):	**0**
Suggested Top Length (ft):	**0**
Final Design Top Width (ft):	**3**
Final Design Top Length (ft):	**9**
Final Design Depth (ft):	**3**
Weir Width (ft):	**4**
Skimmer Size (in)	**1.5**
Orifice Diameter (in)	**0.25**
Dewatering Time (Days)	**2**
Verify Storage (ft^3)	*81.00* **OK**
Verify Surface Area (ft^2)	*27.00* **OK**

Place Basin at outlet point. Ensure devices are used to satisfy requirements of Step 3. Install Baffles*.

See Option 6 if installing this measure is not practical.

* **Baffles** are required for infiltration and skimmer basins that are located at drainage turnouts.
If the device is greater than 20' in length, it will require 3 baffles. If it is 10'-20' in length, it will require 2 baffles.
If it is less than 10', it will require 1 baffle.

STEP 1: Input Project Information ****items in red are REQUIRED***

Construction time ≤ 6 months (Y/N)?	Y
HQW (Y/N)?	Y
Trout (Y/N)?	Y
From Sta.:	79 + 65
to Sta.:	80 + 50
Right/Left:	Rt.
% Ditch Grade:	9.760 %
Contributing R/W Width:	16 feet
Length of Run	X 85 feet
Disturbed Area	= 0.03 acres
Drainage Area:	0.03 acres

Elevation Tool (ft)
0
0
No Elev Data

*Drainage Area must equal or exceed the Disturbed Area found above

Surface Dewatering Device	n
Is this a Typical Section (Y/N)?	Y
Will RUSLE2 be used to model the Non-Typical sections?	N

County:	Avery
Location:	Pilot Ridge Rd
Prepared By:	Jacob Combs
Date Prepared:	11/18/2014
Level III A #:	3474
Level III A Expiration:	12/31/2016
Reviewed By:	Greg Kirby
Date Reviewed:	11/19/2014
Level III A #:	391
Level III A Expiration:	1/0/1900

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Regression Constant, *C*	808	*Table 2-7 (Level III Ref Manual)*
Rainfall Factor, *R*	106.4	*Figure 2-1*
Erodibility Factor, *K*	0.24	*Table 2-2 or Web Soil Survey (http://soildatamart.nrcs.usda.gov/)*
Soil Type	SoD Soco	** informational purposes only.*

STEP 2: Ditch Liner requirements: *Utilize the* ***Required Liner*** *tab and note recommendations on plans.*

STEP 3: Velocity Control Requirements

TYPE B ROCK SILT CHECKS OR WATTLES 2 ***spaced at*** 28 **feet**

Wattles are required in conjunction with PAMs

****See the HELP Tab for additional clarification and an example on how to place on plans.***

Start with Option 4A

OPTION 4: Using RUSLE2 Analysis to determine required storage

OPTION 4A: For DRAINAGE AREA < 3 Acre: Use V=CRKs to determine storage

Regression Constant, **C**	808	
Rainfall Factor, **R**	106.4	
Erodibility Factor, **K**	0.24	
Soil Type	SoD Soco	
Ditchline Slope, **s**	0.09760	ft/ft
V=	1651.31	$ft^3/ac/yr$
Required Storage Volume=	51.56	ft^3

From Step 1 above

Using 82% of Rainfall Factor-see note in cell C4 - Move on to Option 4C

OPTION 4B: For DRAINAGE AREA > 3 Acre: Use RUSLE2 Modeling to determine storage

Sediment Delivery from RUSLE2:	0.00	tons/acre/yr
Converting to $ft^3/ac/yr$:	N/A	$ft^3/ac/yr$
Required Storage Volume=	N/A	ft^3

See Option 4A

OPTION 4C: Using the Required Storage Volume from Option 4A or 4B to determine # of Wrapped TRSC-A/Wattles Required

**** These devices can be used to satisfy the velocity requirements in Step 3.***

Storage from Wrapped Type A Rock Silt Checks or Wattles

Enter Ditch Front Slope Gradient (H:V):	3	:1
Enter Ditch Back Slope Gradient (H:V):	1.5	:1
Enter Device Height:	1.5	ft
Area Behind Device:	5.06	ft^2
Length of Ditch Behind Device:	15.37	ft
Storage Behind Device (assumes 65% effeciency):	16.86	ft^3
Wrapped TRSC-A/Wattles required:	X 4.0	
Total	67.43	ft^3

WATTLES REQUIRED

Excessive number of devices required. Go to Option 5

****Designer still has the option of using Option 5 or 6***

COMMENTS:

Use Temporary Sediment Dam, Type-B 9x3x3. Dam and wattles cover required storage.

OPTION 5: IF DRAINAGE AREA > 1 Acre: Use Surface Area Calculations to determine storage, A=325Q $_p$

a. Determine the Peak Runoff Rate, **Q_p** ($Q_p = Q_{10}$ (Q_{25} for HQW or Trout)) **USE Q25**

Q_p=CiA

Runoff Coefficient, **C** 0 *Table 1-4,1-5,1-6*

Time of Concentration, **t_c** (minutes)

1 ***Shortcut Method,*** **t_c (A≤4.6S)**

Watershed Slope, **S** 0 %

t_c= **N/A** minutes **See Kirpich**

2 ***Kirpich Method***

Flow Path, **L** 0 feet **see Module 1 Eq. 3*

Watershed Slope, **S** 0 ft/ft **see Module 1 Eq. 3*

Kirpich, **t_c=** **#DIV/0!** minutes

*Using a Return Period (**T**) of 10 yrs (25 for HQW) and a **t_c** of* **#DIV/0!** *minutes, the rainfall intensity, **i** (in/hr), can be read from Appendix A or the NOAA website, http://hdsc.nws.noaa.gov/hdsc/pfds/orb/nc_pfds.html*

Rainfall Intensity, **i** (in/hr) 0 in/hr *Appendix A*

Drainage Area given as **0.03** acres

Peak Rate of Runoff, **Q_p =CiA** **0.00** cfs

b. Determine the Required Surface Area= **0.00** ft^2

c. Use Surface Area (**A**) to determine required **VOLUME** of Temporary Type-B Sediment Dam

Design Depth: 3

Required VOLUME using the design depth: **0.00** ft^3

d. Sediment Storage Required using 1800 ft^3/ac

Disturbed Area (acres)= **0.03**

Required Sediment Storage (ft^3)= **56.20** ft^3

Final Required Storage: **56.20** ft^3

Proposed Basin Side Slopes: **0.0** **:1 side slopes** ***must be at least 1.5:1 or flatter**

Infiltration Analysis Web Soil Survey (http://soildatamart.nrcs.usda.gov/)

Sat. Hydraulic Con. (Ksat, micro m/sec)	**0**
Soil Permeability (in/hr)	**0.00**
Dewatering Time (Days)	**N/A**

Skimmer Basin Required

Basin Design	***Minimum 2:1 (L:W) Ratio***
Suggested Top Width (ft):	**0**
Suggested Top Length (ft):	**0**
Final Design Top Width (ft):	**3**
Final Design Top Length (ft):	**9**
Final Design Depth (ft):	**3**
Weir Width (ft):	**4**
Skimmer Size (in)	**1.5**
Orifice Diameter (in)	**0.25**
Dewatering Time (Days)	**2**
Verify Storage (ft^3)	*81.00* **OK**
Verify Surface Area (ft^2)	*27.00* **OK**

Place Basin at outlet point. Ensure devices are used to satisfy requirements of Step 3. Install Baffles*.

See Option 6 if installing this measure is not practical.

* **Baffles** are required for infiltration and skimmer basins that are located at drainage turnouts.
If the device is greater than 20' in length, it will require 3 baffles. If it is 10'-20' in length, it will require 2 baffles.
If it is less than 10', it will require 1 baffle.

STEP 1: Input Project Information ****items in red are REQUIRED***

SECTION 19 of 32

Construction time ≤ 6 months (Y/N)?	Y
HQW (Y/N)?	Y
Trout (Y/N)?	Y
From Sta.:	80 + 50
to Sta.:	83 + 50
Right/Left:	Rt.
% Ditch Grade:	5.820 %
Contributing R/W Width:	39 feet
Length of Run	X 300 feet
Disturbed Area	= 0.27 acres
Drainage Area:	0.27 acres

Elevation Tool (ft)
0
0
No Elev Data

*Drainage Area must equal or exceed the Disturbed Area found above

Surface Dewatering Device	n
Is this a Typical Section (Y/N)?	Y
Will RUSLE2 be used to model the Non-Typical sections?	N

County:	Avery
Location:	Pilot Ridge Rd
Prepared By:	Jacob Combs
Date Prepared:	11/18/2014
Level III A #:	3474
Level III A Expiration:	12/31/2016
Reviewed By:	Greg Kirby
Date Reviewed:	11/19/2014
Level III A #:	391
Level III A Expiration:	1/0/1900

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Regression Constant, *C*	659	*Table 2-7 (Level III Ref Manual)*
Rainfall Factor, *R*	106.4	*Figure 2-1*
Erodibility Factor, *K*	0.24	*Table 2-2 or Web Soil Survey (http://soildatamart.nrcs.usda.gov/)*
Soil Type	SoD Soco	** informational purposes only.*

STEP 2: Ditch Liner requirements: *Utilize the* ***Required Liner*** *tab and note recommendations on plans.*

STEP 3: Velocity Control Requirements

TYPE B ROCK SILT CHECKS OR WATTLES 5 ***spaced at*** 50 **feet**

Wattles are required in conjunction with PAMs

****See the HELP Tab for additional clarification and an example on how to place on plans.***

Start with Option 4A

OPTION 4: Using RUSLE2 Analysis to determine required storage

OPTION 4A: For DRAINAGE AREA < 3 Acre: Use V=CRKs to determine storage

Regression Constant, **C**	659	
Rainfall Factor, **R**	106.4	
Erodibility Factor, **K**	0.24	
Soil Type	SoD Soco	
Ditchline Slope, **s**	0.05820	ft/ft
V=	803.11	$ft^3/ac/yr$
Required Storage Volume=	215.71	ft^3

From Step 1 above

Using 82% of Rainfall Factor-see note in cell C4 - Move on to Option 4C

OPTION 4B: For DRAINAGE AREA > 3 Acre: Use RUSLE2 Modeling to determine storage

Sediment Delivery from RUSLE2:	0.00	tons/acre/yr
Converting to $ft^3/ac/yr$:	N/A	$ft^3/ac/yr$
Required Storage Volume=	N/A	ft^3

See Option 4A

OPTION 4C: Using the Required Storage Volume from Option 4A or 4B to determine # of Wrapped TRSC-A/Wattles Required

**** These devices can be used to satisfy the velocity requirements in Step 3.***

Storage from Wrapped Type A Rock Silt Checks or Wattles

Enter Ditch Front Slope Gradient (H:V):	3	:1
Enter Ditch Back Slope Gradient (H:V):	1.5	:1
Enter Device Height:	1.5	ft
Area Behind Device:	5.06	ft^2
Length of Ditch Behind Device:	25.77	ft
Storage Behind Device (assumes 65% effeciency):	28.27	ft^3
Wrapped TRSC-A/Wattles required:	X 8.0	
Total	226.16	ft^3

WATTLES REQUIRED

Excessive number of devices required. Go to Option 5

****Designer still has the option of using Option 5 or 6***

COMMENTS:

Use Temporary Sediment Dam, Type-B 9x3x3. Dam and wattles cover required storage.

OPTION 5: IF DRAINAGE AREA > 1 Acre: Use Surface Area Calculations to determine storage, A=325Q $_p$

a. Determine the Peak Runoff Rate, **Q_p** ($Q_p = Q_{10}$ (Q_{25} for HQW or Trout)) **USE Q25**

Q_p=CiA

Runoff Coefficient, **C** 0 *Table 1-4,1-5,1-6*

Time of Concentration, **t_c** (minutes)

1 ***Shortcut Method,*** **t_c (A≤4.6S)**

Watershed Slope, **S** 0 %

t_c= **N/A** minutes **See Kirpich**

2 ***Kirpich Method***

Flow Path, **L** 0 feet **see Module 1 Eq. 3*

Watershed Slope, **S** 0 ft/ft **see Module 1 Eq. 3*

Kirpich, **t_c=** **#DIV/0!** minutes

*Using a Return Period (**T**) of 10 yrs (25 for HQW) and a **t_c** of* **#DIV/0!** *minutes, the rainfall intensity, **i** (in/hr), can be read from Appendix A or the NOAA website, http://hdsc.nws.noaa.gov/hdsc/pfds/orb/nc_pfds.html*

Rainfall Intensity, **i** (in/hr) 0 in/hr *Appendix A*

Drainage Area given as **0.27** acres

Peak Rate of Runoff, **Q_p =CiA** **0.00** cfs

b. Determine the Required Surface Area= **0.00** ft^2

c. Use Surface Area (**A**) to determine required **VOLUME** of Temporary Type-B Sediment Dam

Design Depth: 3

Required VOLUME using the design depth: **0.00** ft^3

d. Sediment Storage Required using 1800 ft^3/ac

Disturbed Area (acres)= **0.27**

Required Sediment Storage (ft^3)= **483.47** ft^3

Final Required Storage: **483.47** ft^3

Proposed Basin Side Slopes: **0.0** **:1 side slopes** ***must be at least 1.5:1 or flatter**

Infiltration Analysis Web Soil Survey (http://soildatamart.nrcs.usda.gov/)

Sat. Hydraulic Con. (Ksat, micro m/sec)	**0**
Soil Permeability (in/hr)	**0.00**
Dewatering Time (Days)	**N/A**

Skimmer Basin Required

Basin Design	***Minimum 2:1 (L:W) Ratio***
Suggested Top Width (ft):	**0**
Suggested Top Length (ft):	**0**
Final Design Top Width (ft):	**3**
Final Design Top Length (ft):	**9**
Final Design Depth (ft):	**3**
Weir Width (ft):	**4**
Skimmer Size (in)	**1.5**
Orifice Diameter (in)	**0.25**
Dewatering Time (Days)	**2**
Verify Storage (ft^3)	*81.00* **Too Low**
Verify Surface Area (ft^2)	*27.00* **OK**

Place Basin at outlet point. Ensure devices are used to satisfy requirements of Step 3. Install Baffles*.

See Option 6 if installing this measure is not practical.

* **Baffles** are required for infiltration and skimmer basins that are located at drainage turnouts.
If the device is greater than 20' in length, it will require 3 baffles. If it is 10'-20' in length, it will require 2 baffles.
If it is less than 10', it will require 1 baffle.

STEP 1: Input Project Information ****items in red are REQUIRED***

SECTION 20 of 32

Construction time ≤ 6 months (Y/N)?	Y
HQW (Y/N)?	Y
Trout (Y/N)?	Y
From Sta.:	79 + 0
to Sta.:	81 + 0
Right/Left:	Lt
% Ditch Grade:	8.100 %
Contributing R/W Width:	18 feet
Length of Run	X 200 feet
Disturbed Area	= 0.08 acres
Drainage Area:	0.08 acres

Elevation Tool (ft)
0
0
No Elev Data %

****Drainage Area must equal or exceed the Disturbed Area found above***

Surface Dewatering Device	n
Is this a Typical Section (Y/N)?	Y
Will RUSLE2 be used to model the Non-Typical sections?	N

County:	Avery
Location:	Pilot Ridge Rd
Prepared By:	Jacob Combs
Date Prepared:	11/18/2014
Level III A #:	3474
Level III A Expiration:	12/31/2016
Reviewed By:	Greg Kirby
Date Reviewed:	11/19/2014
Level III A #:	391
Level III A Expiration:	1/0/1900

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Regression Constant, *C*	549	*Table 2-7 (Level III Ref Manual)*
Rainfall Factor, *R*	106.4	*Figure 2-1*
Erodibility Factor, *K*	0.24	*Table 2-2 or Web Soil Survey (http://soildatamart.nrcs.usda.gov/)*
Soil Type	SoD Soco	** informational purposes only.*

STEP 2: Ditch Liner requirements: *Utilize the* ***Required Liner*** *tab and note recommendations on plans.*

STEP 3: Velocity Control Requirements

TYPE B ROCK SILT CHECKS OR WATTLES 5 ***spaced at*** 33 **feet**

Wattles are required in conjunction with PAMs

****See the HELP Tab for additional clarification and an example on how to place on plans.***

Start with Option 4A

OPTION 4: Using RUSLE2 Analysis to determine required storage

OPTION 4A: For DRAINAGE AREA < 3 Acre: Use V=CRKs to determine storage

Regression Constant, **C**	549	
Rainfall Factor, **R**	106.4	
Erodibility Factor, **K**	0.24	
Soil Type	SoD Soco	
Ditchline Slope, **s**	0.08100	ft/ft
V=	931.16	$ft^3/ac/yr$
Required Storage Volume=	76.96	ft^3

From Step 1 above

Using 82% of Rainfall Factor-see note in cell C4 - Move on to Option 4C

OPTION 4B: For DRAINAGE AREA > 3 Acre: Use RUSLE2 Modeling to determine storage

Sediment Delivery from RUSLE2:	0.00	tons/acre/yr
Converting to $ft^3/ac/yr$:	N/A	$ft^3/ac/yr$
Required Storage Volume=	N/A	ft^3

See Option 4A

OPTION 4C: Using the Required Storage Volume from Option 4A or 4B to determine # of Wrapped TRSC-A/Wattles Required

**** These devices can be used to satisfy the velocity requirements in Step 3.***

Storage from Wrapped Type A Rock Silt Checks or Wattles

Enter Ditch Front Slope Gradient (H:V):	3	:1
Enter Ditch Back Slope Gradient (H:V):	1.5	:1
Enter Device Height:	1.5	ft
Area Behind Device:	5.06	ft^2
Length of Ditch Behind Device:	18.52	ft
Storage Behind Device (assumes 65% effeciency):	20.31	ft^3
Wrapped TRSC-A/Wattles required:	X 4.0	
Total	81.25	ft^3

WATTLES REQUIRED

GOOD. Place measure(s) on EC Plan. Start with the first device as close to the outlet point as possible and then space them evenly up the grade. PAM should not be placed on the last BMP at outlet.

****Designer still has the option of using Option 5 or 6***

COMMENTS:

Use Temporary Sediment Dam, Type-B 12x6x3. Dam covers required storage.

OPTION 5: IF DRAINAGE AREA > 1 Acre: Use Surface Area Calculations to determine storage, A=325Q $_p$

a. Determine the Peak Runoff Rate, **Q_p** ($Q_p = Q_{10}$ (Q_{25} for HQW or Trout)) **USE Q25**

Q_p=CiA

Runoff Coefficient, **C** 0 *Table 1-4,1-5,1-6*

Time of Concentration, **t_c** (minutes)

1 ***Shortcut Method,*** **t_c (A≤4.6S)**

Watershed Slope, **S** 0 %

t_c= **N/A** minutes **See Kirpich**

2 ***Kirpich Method***

Flow Path, **L** 0 feet **see Module 1 Eq. 3*

Watershed Slope, **S** 0 ft/ft **see Module 1 Eq. 3*

Kirpich, **t_c=** **#DIV/0!** minutes

*Using a Return Period (**T**) of 10 yrs (25 for HQW) and a **t_c** of* **#DIV/0!** *minutes, the rainfall intensity, **i** (in/hr), can be read from Appendix A or the NOAA website, http://hdsc.nws.noaa.gov/hdsc/pfds/orb/nc_pfds.html*

Rainfall Intensity, **i** (in/hr) 0 in/hr *Appendix A*

Drainage Area given as **0.08** acres

Peak Rate of Runoff, **Q_p =CiA** **0.00** cfs

b. Determine the Required Surface Area= **0.00** ft^2

c. Use Surface Area (**A**) to determine required **VOLUME** of Temporary Type-B Sediment Dam

Design Depth: 3

Required VOLUME using the design depth: **0.00** ft^3

d. Sediment Storage Required using 1800 ft^3/ac

Disturbed Area (acres)= **0.08**

Required Sediment Storage (ft^3)= **148.76** ft^3

Final Required Storage: **148.76** ft^3

Proposed Basin Side Slopes: **1.5** **:1 side slopes** ***must be at least 1.5:1 or flatter**

Infiltration Analysis Web Soil Survey (http://soildatamart.nrcs.usda.gov/)

Sat. Hydraulic Con. (Ksat, micro m/sec)	**0**
Soil Permeability (in/hr)	**0.00**
Dewatering Time (Days)	**N/A**

Skimmer Basin Required

Basin Design	***Minimum 2:1 (L:W) Ratio***
Suggested Top Width (ft):	**0**
Suggested Top Length (ft):	**0**
Final Design Top Width (ft):	**6**
Final Design Top Length (ft):	**12**
Final Design Depth (ft):	**3**
Weir Width (ft):	**4**
Skimmer Size (in)	**1.5**
Orifice Diameter (in)	**0.25**
Dewatering Time (Days)	**2**
Verify Storage (ft^3)	*81.00* **Too Low**
Verify Surface Area (ft^2)	*72.00* **OK**

Place Basin at outlet point. Ensure devices are used to satisfy requirements of Step 3. Install Baffles*.

See Option 6 if installing this measure is not practical.

* **Baffles** are required for infiltration and skimmer basins that are located at drainage turnouts.
If the device is greater than 20' in length, it will require 3 baffles. If it is 10'-20' in length, it will require 2 baffles.
If it is less than 10', it will require 1 baffle.

STEP 1: Input Project Information ****items in red are REQUIRED***

SECTION 21 of 32

Construction time ≤ 6 months (Y/N)?	Y
HQW (Y/N)?	Y
Trout (Y/N)?	Y
From Sta.:	82 + 30
to Sta.:	83 + 50
Right/Left:	Lt
% Ditch Grade:	4.980 %
Contributing R/W Width:	48 feet
Length of Run	X 120 feet
Disturbed Area	= 0.13 acres
Drainage Area:	0.13 acres

Elevation Tool (ft)
0
0
No Elev Data

*Drainage Area must equal or exceed the Disturbed Area found above

Surface Dewatering Device	n
Is this a Typical Section (Y/N)?	Y
Will RUSLE2 be used to model the Non-Typical sections?	N

County:	Avery
Location:	Pilot Ridge Rd
Prepared By:	Jacob Combs
Date Prepared:	11/18/2014
Level III A #:	3474
Level III A Expiration:	12/31/2016
Reviewed By:	Greg Kirby
Date Reviewed:	11/19/2014
Level III A #:	391
Level III A Expiration:	1/0/1900

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Regression Constant, *C*	549	*Table 2-7 (Level III Ref Manual)*
Rainfall Factor, *R*	106.4	*Figure 2-1*
Erodibility Factor, *K*	0.24	*Table 2-2 or Web Soil Survey (http://soildatamart.nrcs.usda.gov/)*
Soil Type	SoD Soco	** informational purposes only.*

STEP 2: Ditch Liner requirements: *Utilize the* ***Required Liner*** *tab and note recommendations on plans.*

STEP 3: Velocity Control Requirements

TYPE B ROCK SILT CHECKS OR WATTLES 1 ***spaced at*** 60 **feet**

Wattles are required in conjunction with PAMs

****See the HELP Tab for additional clarification and an example on how to place on plans.***

Start with Option 4A

OPTION 4: Using RUSLE2 Analysis to determine required storage

OPTION 4A: For DRAINAGE AREA < 3 Acre: Use V=CRKs to determine storage

Regression Constant, **C**	549	
Rainfall Factor, **R**	106.4	
Erodibility Factor, **K**	0.24	
Soil Type	SoD Soco	
Ditchline Slope, **s**	0.04980	ft/ft
V=	572.49	$ft^3/ac/yr$
Required Storage Volume=	75.70	ft^3

From Step 1 above

Using 82% of Rainfall Factor-see note in cell C4 - Move on to Option 4C

OPTION 4B: For DRAINAGE AREA > 3 Acre: Use RUSLE2 Modeling to determine storage

Sediment Delivery from RUSLE2:	0.00	tons/acre/yr
Converting to $ft^3/ac/yr$:	N/A	$ft^3/ac/yr$
Required Storage Volume=	N/A	ft^3

See Option 4A

OPTION 4C: Using the Required Storage Volume from Option 4A or 4B to determine # of Wrapped TRSC-A/Wattles Required

**** These devices can be used to satisfy the velocity requirements in Step 3.***

Storage from Wrapped Type A Rock Silt Checks or Wattles

Enter Ditch Front Slope Gradient (H:V):	3	:1
Enter Ditch Back Slope Gradient (H:V):	1.5	:1
Enter Device Height:	1.5	ft
Area Behind Device:	5.06	ft^2
Length of Ditch Behind Device:	30.12	ft
Storage Behind Device (assumes 65% effeciency):	33.04	ft^3
Wrapped TRSC-A/Wattles required:	X 3.0	
Total	99.12	ft^3

WATTLES REQUIRED

Excessive number of devices required. Go to Option 5

****Designer still has the option of using Option 5 or 6***

COMMENTS:

Use Temporary Sediment Dam, Type-B 12x6x3. Dam covers required storage.

OPTION 5: IF DRAINAGE AREA > 1 Acre: Use Surface Area Calculations to determine storage, A=325Q $_p$

a. Determine the Peak Runoff Rate, **Q_p** ($Q_p = Q_{10}$ (Q_{25} for HQW or Trout)) **USE Q25**

Q_p=CiA

Runoff Coefficient, **C** 0 *Table 1-4,1-5,1-6*

Time of Concentration, **t_c** (minutes)

1 ***Shortcut Method,*** **t_c (A≤4.6S)**

Watershed Slope, **S** 0 %

t_c= **N/A** minutes **See Kirpich**

2 ***Kirpich Method***

Flow Path, **L** 0 feet **see Module 1 Eq. 3*

Watershed Slope, **S** 0 ft/ft **see Module 1 Eq. 3*

Kirpich, **t_c=** **#DIV/0!** minutes

*Using a Return Period (**T**) of 10 yrs (25 for HQW) and a **t_c** of* **#DIV/0!** *minutes, the rainfall intensity, **i** (in/hr), can be read from Appendix A or the NOAA website, http://hdsc.nws.noaa.gov/hdsc/pfds/orb/nc_pfds.html*

Rainfall Intensity, **i** (in/hr) 0 in/hr *Appendix A*

Drainage Area given as **0.13** acres

Peak Rate of Runoff, **Q_p =CiA** **0.00** cfs

b. Determine the Required Surface Area= **0.00** ft^2

c. Use Surface Area (**A**) to determine required **VOLUME** of Temporary Type-B Sediment Dam

Design Depth: 3

Required VOLUME using the design depth: **0.00** ft^3

d. Sediment Storage Required using 1800 ft^3/ac

Disturbed Area (acres)= **0.13**

Required Sediment Storage (ft^3)= **238.02** ft^3

Final Required Storage: **238.02** ft^3

Proposed Basin Side Slopes: **1.5** **:1 side slopes** ***must be at least 1.5:1 or flatter**

Infiltration Analysis Web Soil Survey (http://soildatamart.nrcs.usda.gov/)

Sat. Hydraulic Con. (Ksat, micro m/sec)	0
Soil Permeability (in/hr)	0.00
Dewatering Time (Days)	N/A

Skimmer Basin Required

Basin Design	***Minimum 2:1 (L:W) Ratio***
Suggested Top Width (ft):	0
Suggested Top Length (ft):	0
Final Design Top Width (ft):	6
Final Design Top Length (ft):	12
Final Design Depth (ft):	3
Weir Width (ft):	4
Skimmer Size (in)	1.5
Orifice Diameter (in)	0.25
Dewatering Time (Days)	2
Verify Storage (ft^3)	*81.00* **Too Low**
Verify Surface Area (ft^2)	*72.00* **OK**

Place Basin at outlet point. Ensure devices are used to satisfy requirements of Step 3. Install Baffles*.

See Option 6 if installing this measure is not practical.

* **Baffles** are required for infiltration and skimmer basins that are located at drainage turnouts.
If the device is greater than 20' in length, it will require 3 baffles. If it is 10'-20' in length, it will require 2 baffles.
If it is less than 10', it will require 1 baffle.

STEP 1: Input Project Information ****items in red are REQUIRED***

SECTION 22 of 32

County:	Avery
Location:	Pilot Ridge Rd
Prepared By:	Jacob Combs
Date Prepared:	11/18/2014
Level III A #:	3474
Level III A Expiration:	12/31/2016
Reviewed By:	Greg Kirby
Date Reviewed:	11/19/2014
Level III A #:	391
Level III A Expiration:	1/0/1900

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Construction time ≤ 6 months (Y/N)?			Y	
HQW (Y/N)?			Y	Elevation Tool (ft)
Trout (Y/N)?			Y	
From Sta.:	83 +	50		0
to Sta.:	85 +	65		0
Right/Left:			Rt	No Elev Data
% Ditch Grade:			4.710	%
Contributing R/W Width:			43	feet
Length of Run	X		215	feet
Disturbed Area	=		0.21	acres
Drainage Area:			0.21	acres

****Drainage Area must equal or exceed the Disturbed Area found above***

Surface Dewatering Device	n
Is this a Typical Section (Y/N)?	Y
Will RUSLE2 be used to model the Non-Typical sections?	N

Regression Constant, *C*	659	*Table 2-7 (Level III Ref Manual)*
Rainfall Factor, *R*	106.4	*Figure 2-1*
Erodibility Factor, *K*	0.24	*Table 2-2 or Web Soil Survey (http://soildatamart.nrcs.usda.gov/)*
Soil Type	SoD Soco	** informational purposes only.*

STEP 2: Ditch Liner requirements: *Utilize the* ***Required Liner*** *tab and note recommendations on plans.*

STEP 3: Velocity Control Requirements

TYPE B ROCK SILT CHECKS OR WATTLES 3 ***spaced at*** 54 **feet**

Wattles are required in conjunction with PAMs

****See the HELP Tab for additional clarification and an example on how to place on plans.***

Start with Option 4A

OPTION 4: Using RUSLE2 Analysis to determine required storage

OPTION 4A: For DRAINAGE AREA < 3 Acre: Use V=CRKs to determine storage

Regression Constant, **C**	659	
Rainfall Factor, **R**	106.4	
Erodibility Factor, **K**	0.24	
Soil Type	SoD Soco	
Ditchline Slope, **s**	0.04710	ft/ft
V=	649.94	$ft^3/ac/yr$
Required Storage Volume=	137.94	ft^3

From Step 1 above

Using 82% of Rainfall Factor-see note in cell C4 - Move on to Option 4C

OPTION 4B: For DRAINAGE AREA > 3 Acre: Use RUSLE2 Modeling to determine storage

Sediment Delivery from RUSLE2:	0.00	tons/acre/yr
Converting to $ft^3/ac/yr$:	N/A	$ft^3/ac/yr$
Required Storage Volume=	N/A	ft^3

See Option 4A

OPTION 4C: Using the Required Storage Volume from Option 4A or 4B to determine # of Wrapped TRSC-A/Wattles Required
**** These devices can be used to satisfy the velocity requirements in Step 3.***

Storage from Wrapped Type A Rock Silt Checks or Wattles

Enter Ditch Front Slope Gradient (H:V):	3	:1
Enter Ditch Back Slope Gradient (H:V):	1.5	:1
Enter Device Height:	1.5	ft
Area Behind Device:	5.06	ft^2
Length of Ditch Behind Device:	31.85	ft
Storage Behind Device (assumes 65% effeciency):	34.93	ft^3
Wrapped TRSC-A/Wattles required:	X 4.0	
Total	139.73	ft^3

WATTLES REQUIRED

GOOD. Place measure(s) on EC Plan. Start with the first device as close to the outlet point as possible and then space them evenly up the grade. PAM should not be placed on the last BMP at outlet.

****Designer still has the option of using Option 5 or 6***

COMMENTS:

Use Temporary Sediment Dam, Type-B 9x3x3. Dam and wattles cover required storage.

OPTION 5: IF DRAINAGE AREA > 1 Acre: Use Surface Area Calculations to determine storage, A=325Q $_p$

a. Determine the Peak Runoff Rate, **Q_p** ($Q_p = Q_{10}$ (Q_{25} for HQW or Trout)) **USE Q25**

Q_p=CiA

Runoff Coefficient, **C** 0 *Table 1-4,1-5,1-6*

Time of Concentration, **t_c** (minutes)

1 ***Shortcut Method,*** **t_c (A≤4.6S)**

Watershed Slope, **S** 0 %

t_c= **N/A** minutes **See Kirpich**

2 ***Kirpich Method***

Flow Path, **L** 0 feet **see Module 1 Eq. 3*

Watershed Slope, **S** 0 ft/ft **see Module 1 Eq. 3*

Kirpich, **t_c=** **#DIV/0!** minutes

*Using a Return Period (**T**) of 10 yrs (25 for HQW) and a **t_c** of* **#DIV/0!** *minutes, the rainfall intensity, **i** (in/hr), can be read from Appendix A or the NOAA website, http://hdsc.nws.noaa.gov/hdsc/pfds/orb/nc_pfds.html*

Rainfall Intensity, **i** (in/hr) 0 in/hr *Appendix A*

Drainage Area given as **0.21** acres

Peak Rate of Runoff, **Q_p =CiA** **0.00** cfs

b. Determine the Required Surface Area= **0.00** ft^2

c. Use Surface Area (**A**) to determine required **VOLUME** of Temporary Type-B Sediment Dam

Design Depth: 3

Required VOLUME using the design depth: **0.00** ft^3

d. Sediment Storage Required using 1800 ft^3/ac

Disturbed Area (acres)= **0.21**

Required Sediment Storage (ft^3)= **382.02** ft^3

Final Required Storage: **382.02** ft^3

Proposed Basin Side Slopes: **0.0** **:1 side slopes** ***must be at least 1.5:1 or flatter**

Infiltration Analysis Web Soil Survey (http://soildatamart.nrcs.usda.gov/)

Sat. Hydraulic Con. (Ksat, micro m/sec)	**0**
Soil Permeability (in/hr)	**0.00**
Dewatering Time (Days)	**N/A**

Skimmer Basin Required

Basin Design	***Minimum 2:1 (L:W) Ratio***
Suggested Top Width (ft):	**0**
Suggested Top Length (ft):	**0**
Final Design Top Width (ft):	**3**
Final Design Top Length (ft):	**9**
Final Design Depth (ft):	**3**
Weir Width (ft):	**4**
Skimmer Size (in)	**1.5**
Orifice Diameter (in)	**0.25**
Dewatering Time (Days)	**2**
Verify Storage (ft^3)	*81.00* **Too Low**
Verify Surface Area (ft^2)	*27.00* **OK**

Place Basin at outlet point. Ensure devices are used to satisfy requirements of Step 3. Install Baffles*.

See Option 6 if installing this measure is not practical.

* **Baffles** are required for infiltration and skimmer basins that are located at drainage turnouts.
If the device is greater than 20' in length, it will require 3 baffles. If it is 10'-20' in length, it will require 2 baffles.
If it is less than 10', it will require 1 baffle.

STEP 1: Input Project Information ****items in red are REQUIRED***

SECTION 23 of 32

Construction time ≤ 6 months (Y/N)?	Y		
HQW (Y/N)?	Y		
Trout (Y/N)?	Y		
From Sta.:	85 + 65	Elevation Tool (ft)	
		0	
to Sta.:	86 + 0	0	
Right/Left:	Rt	No Elev Data	%
% Ditch Grade:	0.200	%	
Contributing R/W Width:	30	feet	
Length of Run	X 35	feet	
Disturbed Area	= 0.02	acres	
Drainage Area:	0.02	acres	

County:	Avery
Location:	Pilot Ridge Rd
Prepared By:	Jacob Combs
Date Prepared:	11/18/2014
Level III A #:	3474
Level III A Expiration:	12/31/2016
Reviewed By:	Greg Kirby
Date Reviewed:	11/19/2014
Level III A #:	391
Level III A Expiration:	1/0/1900

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***Drainage Area must equal or exceed the Disturbed Area found above**

Surface Dewatering Device	n	
Is this a Typical Section (Y/N)?	Y	
Will RUSLE2 be used to model the Non-Typical sections?	N	

Regression Constant, *C*	659	*Table 2-7 (Level III Ref Manual)*
Rainfall Factor, *R*	106.4	*Figure 2-1*
Erodibility Factor, *K*	0.24	*Table 2-2 or Web Soil Survey (http://soildatamart.nrcs.usda.gov/)*
Soil Type	SoD Soco	** informational purposes only.*

STEP 2: Ditch Liner requirements: *Utilize the* ***Required Liner*** *tab and note recommendations on plans.*

STEP 3: Velocity Control Requirements

TYPE B ROCK SILT CHECKS OR WATTLES 0 ***spaced at*** N/A **feet**

Velocity control is not required. The outlet device from Option 4,5, or 6 will be sufficient.

****See the HELP Tab for additional clarification and an example on how to place on plans.***

Start with Option 4A

OPTION 4: Using RUSLE2 Analysis to determine required storage

OPTION 4A: For DRAINAGE AREA < 3 Acre: Use V=CRKs to determine storage

Regression Constant, **C**	659	
Rainfall Factor, **R**	106.4	
Erodibility Factor, **K**	0.24	
Soil Type	SoD Soco	
Ditchline Slope, **s**	0.00200	ft/ft
V=	27.60	$ft^3/ac/yr$
Required Storage Volume=	0.67	ft^3

From Step 1 above

Using 82% of Rainfall Factor-see note in cell C4 - Move on to Option 4C

OPTION 4B: For DRAINAGE AREA > 3 Acre: Use RUSLE2 Modeling to determine storage

Sediment Delivery from RUSLE2:	0.00	tons/acre/yr
Converting to $ft^3/ac/yr$:	N/A	$ft^3/ac/yr$
Required Storage Volume=	N/A	ft^3

See Option 4A

OPTION 4C: Using the Required Storage Volume from Option 4A or 4B to determine # of Wrapped TRSC-A/Wattles Required

**** These devices can be used to satisfy the velocity requirements in Step 3.***

Storage from Wrapped Type A Rock Silt Checks or Wattles

Enter Ditch Front Slope Gradient (H:V):	3	:1
Enter Ditch Back Slope Gradient (H:V):	1.5	:1
Enter Device Height:	1.5	ft
Area Behind Device:	5.06	ft^2
Length of Ditch Behind Device:	750.00	ft
Storage Behind Device (assumes 65% effeciency):	38.39	ft^3
Wrapped TRSC-A/Wattles required:	X 1.0	
Total	38.39	ft^3

WATTLES REQUIRED

Excessive number of devices required. Go to Option 5

****Designer still has the option of using Option 5 or 6***

COMMENTS:

Use Temporary Sediment Dam, Type-B 9x3x3. Dam covers required storage.

OPTION 5: IF DRAINAGE AREA > 1 Acre: Use Surface Area Calculations to determine storage, A=325Q $_p$

a. Determine the Peak Runoff Rate, **Q_p** ($Q_p = Q_{10}$ (Q_{25} for HQW or Trout)) **USE Q25**

Q_p=CiA

Runoff Coefficient, **C** 0 *Table 1-4,1-5,1-6*

Time of Concentration, **t_c** (minutes)

1 ***Shortcut Method,*** **t_c (A≤4.6S)**

Watershed Slope, **S** 0 %

t_c= **N/A** minutes **See Kirpich**

2 ***Kirpich Method***

Flow Path, **L** 0 feet **see Module 1 Eq. 3*

Watershed Slope, **S** 0 ft/ft **see Module 1 Eq. 3*

Kirpich, **t_c=** **#DIV/0!** minutes

*Using a Return Period (**T**) of 10 yrs (25 for HQW) and a **t_c** of* **#DIV/0!** *minutes, the rainfall intensity, **i** (in/hr), can be read from Appendix A or the NOAA website, http://hdsc.nws.noaa.gov/hdsc/pfds/orb/nc_pfds.html*

Rainfall Intensity, **i** (in/hr) 0 in/hr *Appendix A*

Drainage Area given as **0.02** acres

Peak Rate of Runoff, **Q_p =CiA** **0.00** cfs

b. Determine the Required Surface Area= **0.00** ft^2

c. Use Surface Area (**A**) to determine required **VOLUME** of Temporary Type-B Sediment Dam

Design Depth: 3

Required VOLUME using the design depth: **0.00** ft^3

d. Sediment Storage Required using 1800 ft^3/ac

Disturbed Area (acres)= **0.02**

Required Sediment Storage (ft^3)= **43.39** ft^3

Final Required Storage: **43.39** ft^3

Proposed Basin Side Slopes: **0.0** **:1 side slopes** ***must be at least 1.5:1 or flatter**

Infiltration Analysis Web Soil Survey (http://soildatamart.nrcs.usda.gov/)

Sat. Hydraulic Con. (Ksat, micro m/sec)	**0**
Soil Permeability (in/hr)	**0.00**
Dewatering Time (Days)	**N/A**

Skimmer Basin Required

Basin Design	***Minimum 2:1 (L:W) Ratio***
Suggested Top Width (ft):	**0**
Suggested Top Length (ft):	**0**
Final Design Top Width (ft):	**3**
Final Design Top Length (ft):	**9**
Final Design Depth (ft):	**3**
Weir Width (ft):	**4**
Skimmer Size (in)	**1.5**
Orifice Diameter (in)	**0.25**
Dewatering Time (Days)	**2**
Verify Storage (ft^3)	*81.00* **OK**
Verify Surface Area (ft^2)	*27.00* **OK**

Place Basin at outlet point. Ensure devices are used to satisfy requirements of Step 3. Install Baffles*.

See Option 6 if installing this measure is not practical.

* **Baffles** are required for infiltration and skimmer basins that are located at drainage turnouts.
If the device is greater than 20' in length, it will require 3 baffles. If it is 10'-20' in length, it will require 2 baffles.
If it is less than 10', it will require 1 baffle.

STEP 1: Input Project Information ****items in red are REQUIRED***

SECTION 24 of 32

Construction time ≤ 6 months (Y/N)?	Y
HQW (Y/N)?	Y
Trout (Y/N)?	Y
From Sta.:	83 + 50
to Sta.:	85 + 65
Right/Left:	Lt
% Ditch Grade:	5.960 %
Contributing R/W Width:	49 feet
Length of Run	X 215 feet
Disturbed Area	= 0.24 acres
Drainage Area:	0.24 acres

Elevation Tool (ft)
0
0
No Elev Data

*Drainage Area must equal or exceed the Disturbed Area found above

Surface Dewatering Device	n
Is this a Typical Section (Y/N)?	Y
Will RUSLE2 be used to model the Non-Typical sections?	N

County:	Avery
Location:	Pilot Ridge Rd
Prepared By:	Jacob Combs
Date Prepared:	11/18/2014
Level III A #:	3474
Level III A Expiration:	12/31/2016
Reviewed By:	Greg Kirby
Date Reviewed:	11/19/2014
Level III A #:	391
Level III A Expiration:	1/0/1900

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Regression Constant, *C*	549	*Table 2-7 (Level III Ref Manual)*
Rainfall Factor, *R*	106.4	*Figure 2-1*
Erodibility Factor, *K*	0.24	*Table 2-2 or Web Soil Survey (http://soildatamart.nrcs.usda.gov/)*
Soil Type	SoD Soco	** informational purposes only.*

STEP 2: Ditch Liner requirements: *Utilize the* ***Required Liner*** *tab and note recommendations on plans.*

STEP 3: Velocity Control Requirements

TYPE B ROCK SILT CHECKS OR WATTLES 4 ***spaced at*** 43 **feet**

Wattles are required in conjunction with PAMs

****See the HELP Tab for additional clarification and an example on how to place on plans.***

Start with Option 4A

OPTION 4: Using RUSLE2 Analysis to determine required storage

OPTION 4A: For DRAINAGE AREA < 3 Acre: Use V=CRKs to determine storage

Regression Constant, **C**	549	
Rainfall Factor, **R**	106.4	
Erodibility Factor, **K**	0.24	
Soil Type	SoD Soco	
Ditchline Slope, **s**	0.05960	ft/ft
V=	685.15	$ft^3/ac/yr$
Required Storage Volume=	165.70	ft^3

From Step 1 above

Using 82% of Rainfall Factor-see note in cell C4 - Move on to Option 4C

OPTION 4B: For DRAINAGE AREA > 3 Acre: Use RUSLE2 Modeling to determine storage

Sediment Delivery from RUSLE2:	0.00	tons/acre/yr
Converting to $ft^3/ac/yr$:	N/A	$ft^3/ac/yr$
Required Storage Volume=	N/A	ft^3

See Option 4A

OPTION 4C: Using the Required Storage Volume from Option 4A or 4B to determine # of Wrapped TRSC-A/Wattles Required

**** These devices can be used to satisfy the velocity requirements in Step 3.***

Storage from Wrapped Type A Rock Silt Checks or Wattles

Enter Ditch Front Slope Gradient (H:V):	3	:1
Enter Ditch Back Slope Gradient (H:V):	1.5	:1
Enter Device Height:	1.5	ft
Area Behind Device:	5.06	ft^2
Length of Ditch Behind Device:	25.17	ft
Storage Behind Device (assumes 65% effeciency):	27.61	ft^3
Wrapped TRSC-A/Wattles required:	X 7.0	
Total	193.24	ft^3

WATTLES REQUIRED

Excessive number of devices required. Go to Option 5

****Designer still has the option of using Option 5 or 6***

COMMENTS:

Use Temporary Sediment Dam, Type-B 21x7x3. Dam covers required storage.

OPTION 5: IF DRAINAGE AREA > 1 Acre: Use Surface Area Calculations to determine storage, A=325Q $_p$

a. Determine the Peak Runoff Rate, **Q_p** ($Q_p = Q_{10}$ (Q_{25} for HQW or Trout)) **USE Q25**

Q_p=CiA

Runoff Coefficient, **C** 0 *Table 1-4,1-5,1-6*

Time of Concentration, **t_c** (minutes)

1 ***Shortcut Method,*** **t_c (A≤4.6S)**

Watershed Slope, **S** 0 %

t_c= **N/A** minutes **See Kirpich**

2 ***Kirpich Method***

Flow Path, **L** 0 feet **see Module 1 Eq. 3*

Watershed Slope, **S** 0 ft/ft **see Module 1 Eq. 3*

Kirpich, **t_c=** **#DIV/0!** minutes

*Using a Return Period (**T**) of 10 yrs (25 for HQW) and a **t_c** of* **#DIV/0!** *minutes, the rainfall intensity, **i** (in/hr), can be read from Appendix A or the NOAA website, http://hdsc.nws.noaa.gov/hdsc/pfds/orb/nc_pfds.html*

Rainfall Intensity, **i** (in/hr) 0 in/hr *Appendix A*

Drainage Area given as **0.24** acres

Peak Rate of Runoff, **Q_p =CiA** **0.00** cfs

b. Determine the Required Surface Area= **0.00** ft^2

c. Use Surface Area (**A**) to determine required **VOLUME** of Temporary Type-B Sediment Dam

Design Depth: 3

Required VOLUME using the design depth: **0.00** ft^3

d. Sediment Storage Required using 1800 ft^3/ac

Disturbed Area (acres)= **0.24**

Required Sediment Storage (ft^3)= **435.33** ft^3

Final Required Storage: **435.33** ft^3

Proposed Basin Side Slopes: **1.5** **:1 side slopes** ***must be at least 1.5:1 or flatter**

Infiltration Analysis Web Soil Survey (http://soildatamart.nrcs.usda.gov/)

Sat. Hydraulic Con. (Ksat, micro m/sec)	**0**
Soil Permeability (in/hr)	**0.00**
Dewatering Time (Days)	**N/A**

Skimmer Basin Required

Basin Design	***Minimum 2:1 (L:W) Ratio***
Suggested Top Width (ft):	**0**
Suggested Top Length (ft):	**0**
Final Design Top Width (ft):	**7**
Final Design Top Length (ft):	**21**
Final Design Depth (ft):	**3**
Weir Width (ft):	**4**
Skimmer Size (in)	**1.5**
Orifice Diameter (in)	**0.25**
Dewatering Time (Days)	**4**
Verify Storage (ft^3)	*189.00* **Too Low**
Verify Surface Area (ft^2)	*147.00* **OK**

Place Basin at outlet point. Ensure devices are used to satisfy requirements of Step 3. Install Baffles*.

See Option 6 if installing this measure is not practical.

* **Baffles** are required for infiltration and skimmer basins that are located at drainage turnouts.
If the device is greater than 20' in length, it will require 3 baffles. If it is 10'-20' in length, it will require 2 baffles.
If it is less than 10', it will require 1 baffle.

STEP 1: Input Project Information ****items in red are REQUIRED***

SECTION 25 of 32

Construction time ≤ 6 months (Y/N)?	Y
HQW (Y/N)?	Y
Trout (Y/N)?	Y
From Sta.:	85 + 65
to Sta.:	86 + 0
Right/Left:	Lt
% Ditch Grade:	0.200 %
Contributing R/W Width:	40 feet
Length of Run	X 35 feet
Disturbed Area	= 0.03 acres
Drainage Area:	0.03 acres

Elevation Tool (ft)
0
0
No Elev Data

County:	Avery
Location:	Pilot Ridge Rd
Prepared By:	Jacob Combs
Date Prepared:	11/18/2014
Level III A #:	3474
Level III A Expiration:	12/31/2016
Reviewed By:	Greg Kirby
Date Reviewed:	11/19/2014
Level III A #:	391
Level III A Expiration:	1/0/1900

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***Drainage Area must equal or exceed the Disturbed Area found above**

Surface Dewatering Device	n
Is this a Typical Section (Y/N)?	Y
Will RUSLE2 be used to model the Non-Typical sections?	N

Regression Constant, *C*	549	*Table 2-7 (Level III Ref Manual)*
Rainfall Factor, *R*	106.4	*Figure 2-1*
Erodibility Factor, *K*	0.24	*Table 2-2 or Web Soil Survey (http://soildatamart.nrcs.usda.gov/)*
Soil Type	SoD Soco	** informational purposes only.*

STEP 2: Ditch Liner requirements: *Utilize the* ***Required Liner*** *tab and note recommendations on plans.*

STEP 3: Velocity Control Requirements

TYPE B ROCK SILT CHECKS OR WATTLES 0 ***spaced at*** N/A **feet**

Velocity control is not required. The outlet device from Option 4,5, or 6 will be sufficient.

****See the HELP Tab for additional clarification and an example on how to place on plans.***

Start with Option 4A

OPTION 4: Using RUSLE2 Analysis to determine required storage

OPTION 4A: For DRAINAGE AREA < 3 Acre: Use V=CRKs to determine storage

Regression Constant, **C**	549	
Rainfall Factor, **R**	106.4	
Erodibility Factor, **K**	0.24	
Soil Type	SoD Soco	
Ditchline Slope, **s**	0.00200	ft/ft
V=	22.99	$ft^3/ac/yr$
Required Storage Volume=	0.74	ft^3

From Step 1 above

Using 82% of Rainfall Factor-see note in cell C4 - Move on to Option 4C

OPTION 4B: For DRAINAGE AREA > 3 Acre: Use RUSLE2 Modeling to determine storage

Sediment Delivery from RUSLE2:	0.00	tons/acre/yr
Converting to $ft^3/ac/yr$:	N/A	$ft^3/ac/yr$
Required Storage Volume=	N/A	ft^3

See Option 4A

OPTION 4C: Using the Required Storage Volume from Option 4A or 4B to determine # of Wrapped TRSC-A/Wattles Required

**** These devices can be used to satisfy the velocity requirements in Step 3.***

Storage from Wrapped Type A Rock Silt Checks or Wattles

Enter Ditch Front Slope Gradient (H:V):	3	:1
Enter Ditch Back Slope Gradient (H:V):	1.5	:1
Enter Device Height:	1.5	ft
Area Behind Device:	5.06	ft^2
Length of Ditch Behind Device:	750.00	ft
Storage Behind Device (assumes 65% effeciency):	38.39	ft^3
Wrapped TRSC-A/Wattles required:	X 1.0	
Total	38.39	ft^3

WATTLES REQUIRED

Excessive number of devices required. Go to Option 5

****Designer still has the option of using Option 5 or 6***

COMMENTS:

Use Temporary Sediment Dam, Type-B 9x3x3. Dam covers required storage.

OPTION 5: IF DRAINAGE AREA > 1 Acre: Use Surface Area Calculations to determine storage, A=325Q $_p$

a. Determine the Peak Runoff Rate, **Q_p** ($Q_p = Q_{10}$ (Q_{25} for HQW or Trout)) **USE Q25**

Q_p=CiA

Runoff Coefficient, **C** 0 *Table 1-4,1-5,1-6*

Time of Concentration, **t_c** (minutes)

1 ***Shortcut Method,*** **t_c (A≤4.6S)**

Watershed Slope, **S** 0 %

t_c= **N/A** minutes **See Kirpich**

2 ***Kirpich Method***

Flow Path, **L** 0 feet **see Module 1 Eq. 3*

Watershed Slope, **S** 0 ft/ft **see Module 1 Eq. 3*

Kirpich, **t_c=** **#DIV/0!** minutes

*Using a Return Period (**T**) of 10 yrs (25 for HQW) and a **t_c** of* **#DIV/0!** *minutes, the rainfall intensity, **i** (in/hr), can be read from Appendix A or the NOAA website, http://hdsc.nws.noaa.gov/hdsc/pfds/orb/nc_pfds.html*

Rainfall Intensity, **i** (in/hr) 0 in/hr *Appendix A*

Drainage Area given as **0.03** acres

Peak Rate of Runoff, **Q_p =CiA** **0.00** cfs

b. Determine the Required Surface Area= **0.00** ft^2

c. Use Surface Area (**A**) to determine required **VOLUME** of Temporary Type-B Sediment Dam

Design Depth: 3

Required VOLUME using the design depth: **0.00** ft^3

d. Sediment Storage Required using 1800 ft^3/ac

Disturbed Area (acres)= **0.03**

Required Sediment Storage (ft^3)= **57.85** ft^3

Final Required Storage: **57.85** ft^3

Proposed Basin Side Slopes: **1.5** **:1 side slopes** ***must be at least 1.5:1 or flatter**

Infiltration Analysis Web Soil Survey (http://soildatamart.nrcs.usda.gov/)

Sat. Hydraulic Con. (Ksat, micro m/sec)	**0**
Soil Permeability (in/hr)	**0.00**
Dewatering Time (Days)	**N/A**

Skimmer Basin Required

Basin Design	***Minimum 2:1 (L:W) Ratio***
Suggested Top Width (ft):	**0**
Suggested Top Length (ft):	**0**
Final Design Top Width (ft):	**3**
Final Design Top Length (ft):	**9**
Final Design Depth (ft):	**3**
Weir Width (ft):	**4**
Skimmer Size (in)	**1.5**
Orifice Diameter (in)	**0.25**
Dewatering Time (Days)	**1**
Verify Storage (ft^3)	*27.00* **Too Low**
Verify Surface Area (ft^2)	*27.00* **OK**

Place Basin at outlet point. Ensure devices are used to satisfy requirements of Step 3. Install Baffles*.

See Option 6 if installing this measure is not practical.

* **Baffles** are required for infiltration and skimmer basins that are located at drainage turnouts.
If the device is greater than 20' in length, it will require 3 baffles. If it is 10'-20' in length, it will require 2 baffles.
If it is less than 10', it will require 1 baffle.

STEP 1: Input Project Information ****items in red are REQUIRED***

SECTION 26 of 32

County:	Avery
Location:	Pilot Ridge Rd
Prepared By:	Jacob Combs
Date Prepared:	11/18/2014
Level III A #:	3474
Level III A Expiration:	12/31/2016
Reviewed By:	Greg Kirby
Date Reviewed:	11/19/2014
Level III A #:	391
Level III A Expiration:	1/0/1900

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Construction time ≤ 6 months (Y/N)?			Y	
HQW (Y/N)?			Y	Elevation Tool (ft)
Trout (Y/N)?			Y	
From Sta.:	122 +	50		0
to Sta.:	122 +	90		0
Right/Left:			Rt.	No Elev Data
% Ditch Grade:			2.900	%
Contributing R/W Width:			12	feet
Length of Run	X		40	feet
Disturbed Area	=		0.01	acres
Drainage Area:			0.01	acres

****Drainage Area must equal or exceed the Disturbed Area found above***

Surface Dewatering Device	n
Is this a Typical Section (Y/N)?	Y
Will RUSLE2 be used to model the Non-Typical sections?	N

Regression Constant, *C*	808	*Table 2-7 (Level III Ref Manual)*
Rainfall Factor, *R*	106.4	*Figure 2-1*
Erodibility Factor, *K*	0.24	*Table 2-2 or Web Soil Survey (http://soildatamart.nrcs.usda.gov/)*
Soil Type	SoD Soco	** informational purposes only.*

STEP 2: Ditch Liner requirements: *Utilize the* ***Required Liner*** *tab and note recommendations on plans.*

STEP 3: Velocity Control Requirements

TYPE B ROCK SILT CHECKS OR WATTLES 0 ***spaced at*** N/A **feet**

Velocity control is not required. The outlet device from Option 4,5, or 6 will be sufficient.

****See the HELP Tab for additional clarification and an example on how to place on plans.***

Start with Option 4A

OPTION 4: Using RUSLE2 Analysis to determine required storage

OPTION 4A: For DRAINAGE AREA < 3 Acre: Use V=CRKs to determine storage

Regression Constant, **C**	808	
Rainfall Factor, **R**	106.4	
Erodibility Factor, **K**	0.24	
Soil Type	SoD Soco	
Ditchline Slope, **s**	0.02900	ft/ft
V=	490.65	$ft^3/ac/yr$
Required Storage Volume=	5.41	ft^3

From Step 1 above

Using 82% of Rainfall Factor-see note in cell C4 - Move on to Option 4C

OPTION 4B: For DRAINAGE AREA > 3 Acre: Use RUSLE2 Modeling to determine storage

Sediment Delivery from RUSLE2:	0.00	tons/acre/yr
Converting to $ft^3/ac/yr$:	N/A	$ft^3/ac/yr$
Required Storage Volume=	N/A	ft^3

See Option 4A

OPTION 4C: Using the Required Storage Volume from Option 4A or 4B to determine # of Wrapped TRSC-A/Wattles Required

**** These devices can be used to satisfy the velocity requirements in Step 3.***

Storage from Wrapped Type A Rock Silt Checks or Wattles

Enter Ditch Front Slope Gradient (H:V):	3	:1
Enter Ditch Back Slope Gradient (H:V):	1	:1
Enter Device Height:	1.5	ft
Area Behind Device:	4.50	ft^2
Length of Ditch Behind Device:	51.72	ft
Storage Behind Device (assumes 65% effeciency):	39.00	ft^3
Wrapped TRSC-A/Wattles required:	X 1.0	
Total	39.00	ft^3

WATTLES REQUIRED

Excessive number of devices required. Go to Option 5

****Designer still has the option of using Option 5 or 6***

COMMENTS:

Use Temporary Sediment Dam, Type-B 9x3x3. Dam covers required storage.

OPTION 5: IF DRAINAGE AREA > 1 Acre: Use Surface Area Calculations to determine storage, A=325Q $_p$

a. Determine the Peak Runoff Rate, **Q_p** ($Q_p = Q_{10}$ (Q_{25} for HQW or Trout)) **USE Q25**

Q_p=CiA

Runoff Coefficient, **C** 0 *Table 1-4,1-5,1-6*

Time of Concentration, **t_c** (minutes)

1 ***Shortcut Method,*** **t_c (A≤4.6S)**

Watershed Slope, **S** 0 %

t_c= **N/A** minutes **See Kirpich**

2 ***Kirpich Method***

Flow Path, **L** 0 feet **see Module 1 Eq. 3*

Watershed Slope, **S** 0 ft/ft **see Module 1 Eq. 3*

Kirpich, **t_c=** **#DIV/0!** minutes

*Using a Return Period (**T**) of 10 yrs (25 for HQW) and a **t_c** of* **#DIV/0!** *minutes, the rainfall intensity, **i** (in/hr), can be read from Appendix A or the NOAA website, http://hdsc.nws.noaa.gov/hdsc/pfds/orb/nc_pfds.html*

Rainfall Intensity, **i** (in/hr) 0 in/hr *Appendix A*

Drainage Area given as **0.01** acres

Peak Rate of Runoff, **Q_p =CiA** **0.00** cfs

b. Determine the Required Surface Area= **0.00** ft^2

c. Use Surface Area (**A**) to determine required **VOLUME** of Temporary Type-B Sediment Dam

Design Depth: 3

Required VOLUME using the design depth: **0.00** ft^3

d. Sediment Storage Required using 1800 ft^3/ac

Disturbed Area (acres)= **0.01**

Required Sediment Storage (ft^3)= **19.83** ft^3

Final Required Storage: **19.83** ft^3

Proposed Basin Side Slopes: **0.0** **:1 side slopes** ***must be at least 1.5:1 or flatter**

Infiltration Analysis Web Soil Survey (http://soildatamart.nrcs.usda.gov/)

Sat. Hydraulic Con. (Ksat, micro m/sec)	**0**
Soil Permeability (in/hr)	**0.00**
Dewatering Time (Days)	**N/A**

Skimmer Basin Required

Basin Design	***Minimum 2:1 (L:W) Ratio***
Suggested Top Width (ft):	**0**
Suggested Top Length (ft):	**0**
Final Design Top Width (ft):	**3**
Final Design Top Length (ft):	**9**
Final Design Depth (ft):	**3**
Weir Width (ft):	**4**
Skimmer Size (in)	**1.5**
Orifice Diameter (in)	**0.25**
Dewatering Time (Days)	**2**
Verify Storage (ft^3)	*81.00* **OK**
Verify Surface Area (ft^2)	*27.00* **OK**

Place Basin at outlet point. Ensure devices are used to satisfy requirements of Step 3. Install Baffles*.

See Option 6 if installing this measure is not practical.

* **Baffles** are required for infiltration and skimmer basins that are located at drainage turnouts.
If the device is greater than 20' in length, it will require 3 baffles. If it is 10'-20' in length, it will require 2 baffles.
If it is less than 10', it will require 1 baffle.

STEP 1: Input Project Information ****items in red are REQUIRED***

SECTION 27 of 32

Construction time ≤ 6 months (Y/N)?		Y	
HQW (Y/N)?		Y	Elevation Tool (ft)
Trout (Y/N)?		Y	
From Sta.:	122 + 50		0
to Sta.:	125 + 0		0
Right/Left:		Lt	No Elev Data
% Ditch Grade:		2.900	%
Contributing R/W Width:		52	feet
Length of Run	X	250	feet
Disturbed Area	=	0.30	acres
Drainage Area:		0.3	acres

****Drainage Area must equal or exceed the Disturbed Area found above***

Surface Dewatering Device	n	
Is this a Typical Section (Y/N)?	Y	
Will RUSLE2 be used to model the Non-Typical sections?	N	

County:	Avery
Location:	Pilot Ridge Rd
Prepared By:	Jacob Combs
Date Prepared:	11/18/2014
Level III A #:	3474
Level III A Expiration:	12/31/2016
Reviewed By:	Greg Kirby
Date Reviewed:	11/19/2014
Level III A #:	391
Level III A Expiration:	1/0/1900

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Regression Constant, *C*	549	*Table 2-7 (Level III Ref Manual)*
Rainfall Factor, *R*	106.4	*Figure 2-1*
Erodibility Factor, *K*	0.24	*Table 2-2 or Web Soil Survey (http://soildatamart.nrcs.usda.gov/)*
Soil Type	SoD Soco	** informational purposes only.*

STEP 2: Ditch Liner requirements: *Utilize the* ***Required Liner*** *tab and note recommendations on plans.*

STEP 3: Velocity Control Requirements

TYPE B ROCK SILT CHECKS OR WATTLES **2** ***spaced at*** **83** **feet**

Wattles are required in conjunction with PAMs

****See the HELP Tab for additional clarification and an example on how to place on plans.***

Start with Option 4A

OPTION 4: Using RUSLE2 Analysis to determine required storage

OPTION 4A: For DRAINAGE AREA < 3 Acre: Use V=CRKs to determine storage

Regression Constant, **C**	549	
Rainfall Factor, **R**	106.4	
Erodibility Factor, **K**	0.24	
Soil Type	SoD Soco	
Ditchline Slope, **s**	0.02900	ft/ft
V=	333.38	$ft^3/ac/yr$
Required Storage Volume=	99.49	ft^3

From Step 1 above

Using 82% of Rainfall Factor-see note in cell C4 - Move on to Option 4C

OPTION 4B: For DRAINAGE AREA > 3 Acre: Use RUSLE2 Modeling to determine storage

Sediment Delivery from RUSLE2:	0.00	tons/acre/yr
Converting to $ft^3/ac/yr$:	N/A	$ft^3/ac/yr$
Required Storage Volume=	N/A	ft^3

See Option 4A

OPTION 4C: Using the Required Storage Volume from Option 4A or 4B to determine # of Wrapped TRSC-A/Wattles Required

**** These devices can be used to satisfy the velocity requirements in Step 3.***

Storage from Wrapped Type A Rock Silt Checks or Wattles

Enter Ditch Front Slope Gradient (H:V):	3	:1
Enter Ditch Back Slope Gradient (H:V):	1	:1
Enter Device Height:	1.5	ft
Area Behind Device:	4.50	ft^2
Length of Ditch Behind Device:	51.72	ft
Storage Behind Device (assumes 65% effeciency):	50.43	ft^3
Wrapped TRSC-A/Wattles required:	X 2.0	
Total	100.86	ft^3

WATTLES REQUIRED

GOOD. Place measure(s) on EC Plan. Start with the first device as close to the outlet point as possible and then space them evenly up the grade. PAM should not be placed on the last BMP at outlet.

****Designer still has the option of using Option 5 or 6***

COMMENTS:

Use Temporary Sediment Dam, Type-B 14x7x3. Dam covers required storage.

OPTION 5: IF DRAINAGE AREA > 1 Acre: Use Surface Area Calculations to determine storage, A=325Q $_p$

a. Determine the Peak Runoff Rate, **Q_p** ($Q_p = Q_{10}$ (Q_{25} for HQW or Trout)) **USE Q25**

Q_p=CiA

Runoff Coefficient, **C** 0 *Table 1-4,1-5,1-6*

Time of Concentration, **t_c** (minutes)

1 ***Shortcut Method,*** **t_c (A≤4.6S)**

Watershed Slope, **S** 0 %

t_c= **N/A** minutes **See Kirpich**

2 ***Kirpich Method***

Flow Path, **L** 0 feet **see Module 1 Eq. 3*

Watershed Slope, **S** 0 ft/ft **see Module 1 Eq. 3*

Kirpich, **t_c=** **#DIV/0!** minutes

*Using a Return Period (**T**) of 10 yrs (25 for HQW) and a **t_c** of* **#DIV/0!** *minutes, the rainfall intensity, **i** (in/hr), can be read from Appendix A or the NOAA website, http://hdsc.nws.noaa.gov/hdsc/pfds/orb/nc_pfds.html*

Rainfall Intensity, **i** (in/hr) 0 in/hr *Appendix A*

Drainage Area given as **0.3** acres

Peak Rate of Runoff, **Q_p =CiA** **0.00** cfs

b. Determine the Required Surface Area= **0.00** ft^2

c. Use Surface Area (**A**) to determine required **VOLUME** of Temporary Type-B Sediment Dam

Design Depth: 3

Required VOLUME using the design depth: **0.00** ft^3

d. Sediment Storage Required using 1800 ft^3/ac

Disturbed Area (acres)= **0.30**

Required Sediment Storage (ft^3)= **537.19** ft^3

Final Required Storage: **537.19** ft^3

Proposed Basin Side Slopes: **1.5** **:1 side slopes** ***must be at least 1.5:1 or flatter**

Infiltration Analysis Web Soil Survey (http://soildatamart.nrcs.usda.gov/)

Sat. Hydraulic Con. (Ksat, micro m/sec)	**0**
Soil Permeability (in/hr)	**0.00**
Dewatering Time (Days)	**N/A**

Skimmer Basin Required

Basin Design	***Minimum 2:1 (L:W) Ratio***
Suggested Top Width (ft):	**0**
Suggested Top Length (ft):	**0**
Final Design Top Width (ft):	**7**
Final Design Top Length (ft):	**14**
Final Design Depth (ft):	**3**
Weir Width (ft):	**4**
Skimmer Size (in)	**1.5**
Orifice Diameter (in)	**0.25**
Dewatering Time (Days)	**2**
Verify Storage (ft^3)	*115.50* **Too Low**
Verify Surface Area (ft^2)	*98.00* **OK**

Place Basin at outlet point. Ensure devices are used to satisfy requirements of Step 3. Install Baffles*.

See Option 6 if installing this measure is not practical.

* **Baffles** are required for infiltration and skimmer basins that are located at drainage turnouts.
If the device is greater than 20' in length, it will require 3 baffles. If it is 10'-20' in length, it will require 2 baffles.
If it is less than 10', it will require 1 baffle.

STEP 1: Input Project Information ****items in red are REQUIRED***

SECTION 28 of 32

Construction time ≤ 6 months (Y/N)?	**Y**
HQW (Y/N)?	**Y**
Trout (Y/N)?	**Y**
From Sta.:	**122 + 90**
to Sta.:	**128 + 25**
Right/Left:	**Rt**
% Ditch Grade:	**3.230** %
Contributing R/W Width:	**22** feet
Length of Run	X **535** feet
Disturbed Area	= **0.27** acres
Drainage Area:	**0.27** acres

Elevation Tool (ft)	
0	
0	
No Elev Data	%

****Drainage Area must equal or exceed the Disturbed Area found above***

Surface Dewatering Device	**n**
Is this a Typical Section (Y/N)?	**Y**
Will RUSLE2 be used to model the Non-Typical sections?	**N**

County:	Avery
Location:	Pilot Ridge Rd
Prepared By:	Jacob Combs
Date Prepared:	11/18/2014
Level III A #:	3474
Level III A Expiration:	12/31/2016
Reviewed By:	Greg Kirby
Date Reviewed:	11/19/2014
Level III A #:	391
Level III A Expiration:	1/0/1900

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Regression Constant, *C*	**808**	*Table 2-7 (Level III Ref Manual)*
Rainfall Factor, *R*	**106.4**	*Figure 2-1*
Erodibility Factor, *K*	**0.24**	*Table 2-2 or Web Soil Survey (http://soildatamart.nrcs.usda.gov/)*
Soil Type	**SoD Soco**	** informational purposes only.*

STEP 2: Ditch Liner requirements: *Utilize the* ***Required Liner*** *tab and note recommendations on plans.*

STEP 3: Velocity Control Requirements

TYPE B ROCK SILT CHECKS OR WATTLES **5** ***spaced at*** **89** **feet**

Wattles are required in conjunction with PAMs

****See the HELP Tab for additional clarification and an example on how to place on plans.***

Start with Option 4A

OPTION 4: Using RUSLE2 Analysis to determine required storage

OPTION 4A: For DRAINAGE AREA < 3 Acre: Use V=CRKs to determine storage

Regression Constant, **C**	**808**	
Rainfall Factor, **R**	**106.4**	
Erodibility Factor, **K**	**0.24**	
Soil Type	**SoD Soco**	
Ditchline Slope, **s**	**0.03230**	ft/ft
V=	**546.49**	$ft^3/ac/yr$
Required Storage Volume=	**147.66**	ft^3

From Step 1 above

Using 82% of Rainfall Factor-see note in cell C4 - Move on to Option 4C

OPTION 4B: For DRAINAGE AREA > 3 Acre: Use RUSLE2 Modeling to determine storage

Sediment Delivery from RUSLE2:	**0.00**	tons/acre/yr
Converting to $ft^3/ac/yr$:	**N/A**	$ft^3/ac/yr$
Required Storage Volume=	**N/A**	ft^3

See Option 4A

OPTION 4C: Using the Required Storage Volume from Option 4A or 4B to determine # of Wrapped TRSC-A/Wattles Required

**** These devices can be used to satisfy the velocity requirements in Step 3.***

Storage from Wrapped Type A Rock Silt Checks or Wattles

Enter Ditch Front Slope Gradient (H:V):	**3**	**:1**
Enter Ditch Back Slope Gradient (H:V):	**1**	**:1**
Enter Device Height:	**1.5**	ft
Area Behind Device:	4.50	ft^2
Length of Ditch Behind Device:	46.44	ft
Storage Behind Device (assumes 65% effeciency):	**45.28**	ft^3
Wrapped TRSC-A/Wattles required:	X **4.0**	
Total	**181.11**	ft^3

WATTLES REQUIRED

GOOD. Place measure(s) on EC Plan. Start with the first device as close to the outlet point as possible and then space them evenly up the grade. PAM should not be placed on the last BMP at outlet.

****Designer still has the option of using Option 5 or 6***

COMMENTS:

Use Temporary Sediment Dam, Type-B 9x3x3. Dam and wattles cover required storage.

OPTION 5: IF DRAINAGE AREA > 1 Acre: Use Surface Area Calculations to determine storage, A=325Q $_p$

a. Determine the Peak Runoff Rate, **Q_p** ($Q_p = Q_{10}$ (Q_{25} for HQW or Trout)) **USE Q25**

Q_p=CiA

Runoff Coefficient, **C** 0 *Table 1-4,1-5,1-6*

Time of Concentration, **t_c** (minutes)

1 ***Shortcut Method,*** **t_c (A≤4.6S)**

Watershed Slope, **S** 0 %

t_c= **N/A** minutes **See Kirpich**

2 ***Kirpich Method***

Flow Path, **L** 0 feet **see Module 1 Eq. 3*

Watershed Slope, **S** 0 ft/ft **see Module 1 Eq. 3*

Kirpich, **t_c=** **#DIV/0!** minutes

*Using a Return Period (**T**) of 10 yrs (25 for HQW) and a **t_c** of* **#DIV/0!** *minutes, the rainfall intensity, **i** (in/hr), can be read from Appendix A or the NOAA website, http://hdsc.nws.noaa.gov/hdsc/pfds/orb/nc_pfds.html*

Rainfall Intensity, **i** (in/hr) 0 in/hr *Appendix A*

Drainage Area given as **0.27** acres

Peak Rate of Runoff, **Q_p =CiA** **0.00** cfs

b. Determine the Required Surface Area= **0.00** ft^2

c. Use Surface Area (**A**) to determine required **VOLUME** of Temporary Type-B Sediment Dam

Design Depth: 3

Required VOLUME using the design depth: **0.00** ft^3

d. Sediment Storage Required using 1800 ft^3/ac

Disturbed Area (acres)= **0.27**

Required Sediment Storage (ft^3)= **486.36** ft^3

Final Required Storage: **486.36** ft^3

Proposed Basin Side Slopes: **0.0** **:1 side slopes** ***must be at least 1.5:1 or flatter**

Infiltration Analysis Web Soil Survey (http://soildatamart.nrcs.usda.gov/)

Sat. Hydraulic Con. (Ksat, micro m/sec)	**0**
Soil Permeability (in/hr)	**0.00**
Dewatering Time (Days)	**N/A**

Skimmer Basin Required

Basin Design	***Minimum 2:1 (L:W) Ratio***
Suggested Top Width (ft):	**0**
Suggested Top Length (ft):	**0**
Final Design Top Width (ft):	**3**
Final Design Top Length (ft):	**9**
Final Design Depth (ft):	**3**
Weir Width (ft):	**4**
Skimmer Size (in)	**1.5**
Orifice Diameter (in)	**0.25**
Dewatering Time (Days)	**2**
Verify Storage (ft^3)	*81.00* **Too Low**
Verify Surface Area (ft^2)	*27.00* **OK**

Place Basin at outlet point. Ensure devices are used to satisfy requirements of Step 3. Install Baffles*.

See Option 6 if installing this measure is not practical.

* **Baffles** are required for infiltration and skimmer basins that are located at drainage turnouts.
If the device is greater than 20' in length, it will require 3 baffles. If it is 10'-20' in length, it will require 2 baffles.
If it is less than 10', it will require 1 baffle.

STEP 1: Input Project Information ****items in red are REQUIRED***

SECTION 29 of 32

Construction time ≤ 6 months (Y/N)?	Y		
HQW (Y/N)?	Y	**Elevation Tool (ft)**	
Trout (Y/N)?	Y		
From Sta.:	127 + 0	0	
to Sta.:	131 + 0	0	
Right/Left:	Lt	**No Elev Data**	%
% Ditch Grade:	3.730	%	
Contributing R/W Width:	38	feet	
Length of Run	X 400	feet	
Disturbed Area	= 0.35	acres	
Drainage Area:	0.35	acres	

County:	Avery
Location:	Pilot Ridge Rd
Prepared By:	Jacob Combs
Date Prepared:	11/18/2014
Level III A #:	3474
Level III A Expiration:	12/31/2016
Reviewed By:	Greg Kirby
Date Reviewed:	11/19/2014
Level III A #:	391
Level III A Expiration:	1/0/1900

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Drainage Area must equal or exceed the Disturbed Area found above

Surface Dewatering Device	n	
Is this a Typical Section (Y/N)?	Y	
Will RUSLE2 be used to model the Non-Typical sections?	N	

Regression Constant, *C*	549	*Table 2-7 (Level III Ref Manual)*
Rainfall Factor, *R*	106.4	*Figure 2-1*
Erodibility Factor, *K*	0.24	*Table 2-2 or Web Soil Survey (http://soildatamart.nrcs.usda.gov/)*
Soil Type	SoD Soco	** informational purposes only.*

STEP 2: Ditch Liner requirements: *Utilize the* ***Required Liner*** *tab and note recommendations on plans.*

STEP 3: Velocity Control Requirements

TYPE B ROCK SILT CHECKS OR WATTLES **4** ***spaced at*** **80** **feet**

Wattles are required in conjunction with PAMs

****See the HELP Tab for additional clarification and an example on how to place on plans.***

Start with Option 4A

OPTION 4: Using RUSLE2 Analysis to determine required storage

OPTION 4A: For DRAINAGE AREA < 3 Acre: Use V=CRKs to determine storage

Regression Constant, **C**	549		*From Step 1 above*
Rainfall Factor, **R**	106.4		
Erodibility Factor, **K**	0.24		
Soil Type	SoD Soco		
Ditchline Slope, **s**	0.03730	ft/ft	
V=	428.79	$ft^3/ac/yr$	
Required Storage Volume=	149.62	ft^3	

Using 82% of Rainfall Factor-see note in cell C4 - Move on to Option 4C

OPTION 4B: For DRAINAGE AREA > 3 Acre: Use RUSLE2 Modeling to determine storage

Sediment Delivery from RUSLE2:	0.00	tons/acre/yr
Converting to $ft^3/ac/yr$:	N/A	$ft^3/ac/yr$
Required Storage Volume=	N/A	ft^3

See Option 4A

OPTION 4C: Using the Required Storage Volume from Option 4A or 4B to determine # of Wrapped TRSC-A/Wattles Required

**** These devices can be used to satisfy the velocity requirements in Step 3.***

Storage from Wrapped Type A Rock Silt Checks or Wattles

Enter Ditch Front Slope Gradient (H:V):	3	:1
Enter Ditch Back Slope Gradient (H:V):	1	:1
Enter Device Height:	1.5	ft
Area Behind Device:	4.50	ft^2
Length of Ditch Behind Device:	40.21	ft
Storage Behind Device (assumes 65% effeciency):	39.21	ft^3
Wrapped TRSC-A/Wattles required: X	4.0	
Total	156.84	ft^3

WATTLES REQUIRED

GOOD. Place measure(s) on EC Plan. Start with the first device as close to the outlet point as possible and then space them evenly up the grade. PAM should not be placed on the last BMP at outlet.

****Designer still has the option of using Option 5 or 6***

COMMENTS:

Use Temporary Sediment Dam, Type-B 16x8x3. Dam covers required storage.

OPTION 5: IF DRAINAGE AREA > 1 Acre: Use Surface Area Calculations to determine storage, A=325Q $_p$

a. Determine the Peak Runoff Rate, **Q_p** ($Q_p = Q_{10}$ (Q_{25} for HQW or Trout)) **USE Q25**

Q_p=CiA

Runoff Coefficient, **C** 0 *Table 1-4,1-5,1-6*

Time of Concentration, **t_c** (minutes)

1 ***Shortcut Method,*** **t_c (A≤4.6S)**

Watershed Slope, **S** 0 %

t_c= **N/A** minutes **See Kirpich**

2 ***Kirpich Method***

Flow Path, **L** 0 feet **see Module 1 Eq. 3*

Watershed Slope, **S** 0 ft/ft **see Module 1 Eq. 3*

Kirpich, **t_c=** **#DIV/0!** minutes

*Using a Return Period (**T**) of 10 yrs (25 for HQW) and a **t_c** of* **#DIV/0!** *minutes, the rainfall intensity, **i** (in/hr), can be read from Appendix A or the NOAA website, http://hdsc.nws.noaa.gov/hdsc/pfds/orb/nc_pfds.html*

Rainfall Intensity, **i** (in/hr) 0 in/hr *Appendix A*

Drainage Area given as **0.35** acres

Peak Rate of Runoff, **Q_p =CiA** **0.00** cfs

b. Determine the Required Surface Area= **0.00** ft^2

c. Use Surface Area (**A**) to determine required **VOLUME** of Temporary Type-B Sediment Dam

Design Depth: 3

Required VOLUME using the design depth: **0.00** ft^3

d. Sediment Storage Required using 1800 ft^3/ac

Disturbed Area (acres)= **0.35**

Required Sediment Storage (ft^3)= **628.10** ft^3

Final Required Storage: **628.10** ft^3

Proposed Basin Side Slopes: **1.5** **:1 side slopes** ***must be at least 1.5:1 or flatter**

Infiltration Analysis Web Soil Survey (http://soildatamart.nrcs.usda.gov/)

Sat. Hydraulic Con. (Ksat, micro m/sec)	**0**
Soil Permeability (in/hr)	**0.00**
Dewatering Time (Days)	**N/A**

Skimmer Basin Required

Basin Design	***Minimum 2:1 (L:W) Ratio***
Suggested Top Width (ft):	**0**
Suggested Top Length (ft):	**0**
Final Design Top Width (ft):	**8**
Final Design Top Length (ft):	**16**
Final Design Depth (ft):	**3**
Weir Width (ft):	**4**
Skimmer Size (in)	**1.5**
Orifice Diameter (in)	**0.25**
Dewatering Time (Days)	**3**
Verify Storage (ft^3)	*156.00* **Too Low**
Verify Surface Area (ft^2)	*128.00* **OK**

Place Basin at outlet point. Ensure devices are used to satisfy requirements of Step 3. Install Baffles*.

See Option 6 if installing this measure is not practical.

* **Baffles** are required for infiltration and skimmer basins that are located at drainage turnouts.
If the device is greater than 20' in length, it will require 3 baffles. If it is 10'-20' in length, it will require 2 baffles.
If it is less than 10', it will require 1 baffle.

STEP 1: Input Project Information ****items in red are REQUIRED***

SECTION 30 of 32

Construction time ≤ 6 months (Y/N)?	Y
HQW (Y/N)?	Y
Trout (Y/N)?	Y
From Sta.:	128 + 25
to Sta.:	132 + 20
Right/Left:	Rt
% Ditch Grade:	2.970 %
Contributing R/W Width:	25 feet
Length of Run	X 395 feet
Disturbed Area	= 0.23 acres
Drainage Area:	0.23 acres

Elevation Tool (ft)	
0	
0	
No Elev Data	%

****Drainage Area must equal or exceed the Disturbed Area found above***

Surface Dewatering Device	n
Is this a Typical Section (Y/N)?	Y
Will RUSLE2 be used to model the Non-Typical sections?	N

County:	Avery
Location:	Pilot Ridge Rd
Prepared By:	Jacob Combs
Date Prepared:	11/18/2014
Level III A #:	3474
Level III A Expiration:	12/31/2016
Reviewed By:	Greg Kirby
Date Reviewed:	11/19/2014
Level III A #:	391
Level III A Expiration:	1/0/1900

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Regression Constant, *C*	808	*Table 2-7 (Level III Ref Manual)*
Rainfall Factor, *R*	106.4	*Figure 2-1*
Erodibility Factor, *K*	0.24	*Table 2-2 or Web Soil Survey (http://soildatamart.nrcs.usda.gov/)*
Soil Type	SoD Soco	** informational purposes only.*

STEP 2: Ditch Liner requirements: *Utilize the* ***Required Liner*** *tab and note recommendations on plans.*

STEP 3: Velocity Control Requirements

TYPE B ROCK SILT CHECKS OR WATTLES **3** ***spaced at*** **99** **feet**

Wattles are required in conjunction with PAMs

****See the HELP Tab for additional clarification and an example on how to place on plans.***

Start with Option 4A

OPTION 4: Using RUSLE2 Analysis to determine required storage

OPTION 4A: For DRAINAGE AREA < 3 Acre: Use V=CRKs to determine storage

Regression Constant, **C**	808	
Rainfall Factor, **R**	106.4	
Erodibility Factor, **K**	0.24	
Soil Type	SoD Soco	
Ditchline Slope, **s**	0.02970	ft/ft
V=	502.50	$ft^3/ac/yr$
Required Storage Volume=	113.92	ft^3

From Step 1 above

Using 82% of Rainfall Factor-see note in cell C4 - Move on to Option 4C

OPTION 4B: For DRAINAGE AREA > 3 Acre: Use RUSLE2 Modeling to determine storage

Sediment Delivery from RUSLE2:	0.00	tons/acre/yr
Converting to $ft^3/ac/yr$:	N/A	$ft^3/ac/yr$
Required Storage Volume=	N/A	ft^3

See Option 4A

OPTION 4C: Using the Required Storage Volume from Option 4A or 4B to determine # of Wrapped TRSC-A/Wattles Required

**** These devices can be used to satisfy the velocity requirements in Step 3.***

Storage from Wrapped Type A Rock Silt Checks or Wattles

Enter Ditch Front Slope Gradient (H:V):	3	:1
Enter Ditch Back Slope Gradient (H:V):	1	:1
Enter Device Height:	1.5	ft
Area Behind Device:	4.50	ft^2
Length of Ditch Behind Device:	50.51	ft
Storage Behind Device (assumes 65% effeciency):	49.24	ft^3
Wrapped TRSC-A/Wattles required:	X 3.0	
Total	147.73	ft^3

WATTLES REQUIRED

GOOD. Place measure(s) on EC Plan. Start with the first device as close to the outlet point as possible and then space them evenly up the grade. PAM should not be placed on the last BMP at outlet.

****Designer still has the option of using Option 5 or 6***

COMMENTS:

Use Temporary Sediment Dam, Type-B 9x3x3. Dam and wattles cover required storage.

OPTION 5: IF DRAINAGE AREA > 1 Acre: Use Surface Area Calculations to determine storage, A=325Q_p

a. Determine the Peak Runoff Rate, **Q_p** ($Q_p = Q_{10}$ (Q_{25} for HQW or Trout)) **USE Q25**

Q_p=CiA

Runoff Coefficient, **C** 0 *Table 1-4,1-5,1-6*

Time of Concentration, **t_c** (minutes)

1 ***Shortcut Method,*** **t_c (A≤4.6S)**

Watershed Slope, **S** 0 %

t_c= **N/A** minutes **See Kirpich**

2 ***Kirpich Method***

Flow Path, **L** 0 feet **see Module 1 Eq. 3*

Watershed Slope, **S** 0 ft/ft **see Module 1 Eq. 3*

Kirpich, **t_c=** **#DIV/0!** minutes

*Using a Return Period (**T**) of 10 yrs (25 for HQW) and a **t_c** of* **#DIV/0!** *minutes, the rainfall intensity, **i** (in/hr), can be read from Appendix A or the NOAA website, http://hdsc.nws.noaa.gov/hdsc/pfds/orb/nc_pfds.html*

Rainfall Intensity, **i** (in/hr) 0 in/hr *Appendix A*

Drainage Area given as **0.23** acres

Peak Rate of Runoff, **Q_p =CiA** **0.00** cfs

b. Determine the Required Surface Area= **0.00** ft^2

c. Use Surface Area (**A**) to determine required **VOLUME** of Temporary Type-B Sediment Dam

Design Depth: 3

Required VOLUME using the design depth: **0.00** ft^3

d. Sediment Storage Required using 1800 ft^3/ac

Disturbed Area (acres)= **0.23**

Required Sediment Storage (ft^3)= **408.06** ft^3

Final Required Storage: **408.06** ft^3

Proposed Basin Side Slopes: **0.0** **:1 side slopes** ***must be at least 1.5:1 or flatter**

Infiltration Analysis Web Soil Survey (http://soildatamart.nrcs.usda.gov/)

Sat. Hydraulic Con. (Ksat, micro m/sec)	**0**
Soil Permeability (in/hr)	**0.00**
Dewatering Time (Days)	**N/A**

Skimmer Basin Required

Basin Design	***Minimum 2:1 (L:W) Ratio***
Suggested Top Width (ft):	**0**
Suggested Top Length (ft):	**0**
Final Design Top Width (ft):	**3**
Final Design Top Length (ft):	**9**
Final Design Depth (ft):	**3**
Weir Width (ft):	**4**
Skimmer Size (in)	**1.5**
Orifice Diameter (in)	**0.25**
Dewatering Time (Days)	**2**
Verify Storage (ft^3)	*81.00* **Too Low**
Verify Surface Area (ft^2)	*27.00* **OK**

Place Basin at outlet point. Ensure devices are used to satisfy requirements of Step 3. Install Baffles*.

See Option 6 if installing this measure is not practical.

* **Baffles** are required for infiltration and skimmer basins that are located at drainage turnouts.
If the device is greater than 20' in length, it will require 3 baffles. If it is 10'-20' in length, it will require 2 baffles.
If it is less than 10', it will require 1 baffle.

STEP 1: Input Project Information ****items in red are REQUIRED***

SECTION 31 of 32

Construction time ≤ 6 months (Y/N)?	Y
HQW (Y/N)?	Y
Trout (Y/N)?	Y
From Sta.:	132 + 20
to Sta.:	137 + 0
Right/Left:	Rt
% Ditch Grade:	3.140 %
Contributing R/W Width:	29 feet
Length of Run	X 480 feet
Disturbed Area	= 0.32 acres
Drainage Area:	0.32 acres

Elevation Tool (ft)	
0	
0	
No Elev Data	%

****Drainage Area must equal or exceed the Disturbed Area found above***

Surface Dewatering Device	n
Is this a Typical Section (Y/N)?	Y
Will RUSLE2 be used to model the Non-Typical sections?	N

County:	Avery
Location:	Pilot Ridge Rd
Prepared By:	Jacob Combs
Date Prepared:	11/18/2014
Level III A #:	3474
Level III A Expiration:	12/31/2016
Reviewed By:	Greg Kirby
Date Reviewed:	11/19/2014
Level III A #:	391
Level III A Expiration:	1/0/1900

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Regression Constant, *C*	808	*Table 2-7 (Level III Ref Manual)*
Rainfall Factor, *R*	106.4	*Figure 2-1*
Erodibility Factor, *K*	0.24	*Table 2-2 or Web Soil Survey (http://soildatamart.nrcs.usda.gov/)*
Soil Type	SoD Soco	** informational purposes only.*

STEP 2: Ditch Liner requirements: *Utilize the* ***Required Liner*** *tab and note recommendations on plans.*

STEP 3: Velocity Control Requirements

TYPE B ROCK SILT CHECKS OR WATTLES 5 ***spaced at*** 80 **feet**

Wattles are required in conjunction with PAMs

****See the HELP Tab for additional clarification and an example on how to place on plans.***

Start with Option 4A

OPTION 4: Using RUSLE2 Analysis to determine required storage

OPTION 4A: For DRAINAGE AREA < 3 Acre: Use V=CRKs to determine storage

Regression Constant, **C**	808	
Rainfall Factor, **R**	106.4	
Erodibility Factor, **K**	0.24	
Soil Type	SoD Soco	
Ditchline Slope, **s**	0.03140	ft/ft
V=	531.26	$ft^3/ac/yr$
Required Storage Volume=	169.77	ft^3

From Step 1 above

Using 82% of Rainfall Factor-see note in cell C4 - Move on to Option 4C

OPTION 4B: For DRAINAGE AREA > 3 Acre: Use RUSLE2 Modeling to determine storage

Sediment Delivery from RUSLE2:	0.00	tons/acre/yr
Converting to $ft^3/ac/yr$:	N/A	$ft^3/ac/yr$
Required Storage Volume=	N/A	ft^3

See Option 4A

OPTION 4C: Using the Required Storage Volume from Option 4A or 4B to determine # of Wrapped TRSC-A/Wattles Required

**** These devices can be used to satisfy the velocity requirements in Step 3.***

Storage from Wrapped Type A Rock Silt Checks or Wattles

Enter Ditch Front Slope Gradient (H:V):	3	:1
Enter Ditch Back Slope Gradient (H:V):	1	:1
Enter Device Height:	1.5	ft
Area Behind Device:	4.50	ft^2
Length of Ditch Behind Device:	47.77	ft
Storage Behind Device (assumes 65% effeciency):	46.58	ft^3
Wrapped TRSC-A/Wattles required:	X 4.0	
Total	186.31	ft^3

WATTLES REQUIRED

GOOD. Place measure(s) on EC Plan. Start with the first device as close to the outlet point as possible and then space them evenly up the grade. PAM should not be placed on the last BMP at outlet.

****Designer still has the option of using Option 5 or 6***

COMMENTS:

Use Temporary Sediment Dam, Type-B 9x3x3. Dam and wattles cover required storage.

OPTION 5: IF DRAINAGE AREA > 1 Acre: Use Surface Area Calculations to determine storage, A=325Q $_p$

a. Determine the Peak Runoff Rate, **Q_p** ($Q_p = Q_{10}$ (Q_{25} for HQW or Trout)) **USE Q25**

Q_p=CiA

Runoff Coefficient, **C** 0 *Table 1-4,1-5,1-6*

Time of Concentration, **t_c** (minutes)

1 ***Shortcut Method,*** **t_c (A≤4.6S)**

Watershed Slope, **S** 0 %

t_c= **N/A** minutes **See Kirpich**

2 ***Kirpich Method***

Flow Path, **L** 0 feet **see Module 1 Eq. 3*

Watershed Slope, **S** 0 ft/ft **see Module 1 Eq. 3*

Kirpich, **t_c=** **#DIV/0!** minutes

*Using a Return Period (**T**) of 10 yrs (25 for HQW) and a **t_c** of* **#DIV/0!** *minutes, the rainfall intensity, **i** (in/hr), can be read from Appendix A or the NOAA website, http://hdsc.nws.noaa.gov/hdsc/pfds/orb/nc_pfds.html*

Rainfall Intensity, **i** (in/hr) 0 in/hr *Appendix A*

Drainage Area given as **0.32** acres

Peak Rate of Runoff, **Q_p =CiA** **0.00** cfs

b. Determine the Required Surface Area= **0.00** ft^2

c. Use Surface Area (**A**) to determine required **VOLUME** of Temporary Type-B Sediment Dam

Design Depth: 3

Required VOLUME using the design depth: **0.00** ft^3

d. Sediment Storage Required using 1800 ft^3/ac

Disturbed Area (acres)= **0.32**

Required Sediment Storage (ft^3)= **575.21** ft^3

Final Required Storage: **575.21** ft^3

Proposed Basin Side Slopes: **0.0** **:1 side slopes** ***must be at least 1.5:1 or flatter**

Infiltration Analysis Web Soil Survey (http://soildatamart.nrcs.usda.gov/)

Sat. Hydraulic Con. (Ksat, micro m/sec)	**0**
Soil Permeability (in/hr)	**0.00**
Dewatering Time (Days)	**N/A**

Skimmer Basin Required

Basin Design	***Minimum 2:1 (L:W) Ratio***
Suggested Top Width (ft):	**0**
Suggested Top Length (ft):	**0**
Final Design Top Width (ft):	**3**
Final Design Top Length (ft):	**9**
Final Design Depth (ft):	**3**
Weir Width (ft):	**4**
Skimmer Size (in)	**1.5**
Orifice Diameter (in)	**0.25**
Dewatering Time (Days)	**2**
Verify Storage (ft^3)	*81.00* **Too Low**
Verify Surface Area (ft^2)	*27.00* **OK**

Place Basin at outlet point. Ensure devices are used to satisfy requirements of Step 3. Install Baffles*.

See Option 6 if installing this measure is not practical.

* **Baffles** are required for infiltration and skimmer basins that are located at drainage turnouts.
If the device is greater than 20' in length, it will require 3 baffles. If it is 10'-20' in length, it will require 2 baffles.
If it is less than 10', it will require 1 baffle.

STEP 1: Input Project Information ****items in red are REQUIRED***

SECTION 32 of 32

County:	Avery
Location:	Pilot Ridge Rd
Prepared By:	Jacob Combs
Date Prepared:	11/18/2014
Level III A #:	3474
Level III A Expiration:	12/31/2016
Reviewed By:	Greg Kirby
Date Reviewed:	11/19/2014
Level III A #:	391
Level III A Expiration:	1/0/1900

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Construction time ≤ 6 months (Y/N)?			Y	
HQW (Y/N)?			Y	Elevation Tool (ft)
Trout (Y/N)?			Y	
From Sta.:	136	+ 0		0
to Sta.:	137	+ 70		0
Right/Left:			Lt	No Elev Data
% Ditch Grade:			3.010	%
Contributing R/W Width:			8	feet
Length of Run	X		170	feet
Disturbed Area	=		0.03	acres
Drainage Area:			0.03	acres

****Drainage Area must equal or exceed the Disturbed Area found above***

Surface Dewatering Device	n
Is this a Typical Section (Y/N)?	Y
Will RUSLE2 be used to model the Non-Typical sections?	N

Regression Constant, *C*	549	*Table 2-7 (Level III Ref Manual)*
Rainfall Factor, *R*	106.4	*Figure 2-1*
Erodibility Factor, *K*	0.24	*Table 2-2 or Web Soil Survey (http://soildatamart.nrcs.usda.gov/)*
Soil Type	SoD Soco	** informational purposes only.*

STEP 2: Ditch Liner requirements: *Utilize the* ***Required Liner*** *tab and note recommendations on plans.*

STEP 3: Velocity Control Requirements

TYPE B ROCK SILT CHECKS OR WATTLES 1 ***spaced at*** 85 **feet**

Wattles are required in conjunction with PAMs

****See the HELP Tab for additional clarification and an example on how to place on plans.***

Start with Option 4A

OPTION 4: Using RUSLE2 Analysis to determine required storage

OPTION 4A: For DRAINAGE AREA < 3 Acre: Use V=CRKs to determine storage

Regression Constant, **C**	549	
Rainfall Factor, **R**	106.4	
Erodibility Factor, **K**	0.24	
Soil Type	SoD Soco	
Ditchline Slope, **s**	0.03010	ft/ft
V=	346.02	$ft^3/ac/yr$
Required Storage Volume=	10.80	ft^3

From Step 1 above

Using 82% of Rainfall Factor-see note in cell C4 - Move on to Option 4C

OPTION 4B: For DRAINAGE AREA > 3 Acre: Use RUSLE2 Modeling to determine storage

Sediment Delivery from RUSLE2:	0.00	tons/acre/yr
Converting to $ft^3/ac/yr$:	N/A	$ft^3/ac/yr$
Required Storage Volume=	N/A	ft^3

See Option 4A

OPTION 4C: Using the Required Storage Volume from Option 4A or 4B to determine # of Wrapped TRSC-A/Wattles Required

**** These devices can be used to satisfy the velocity requirements in Step 3.***

Storage from Wrapped Type A Rock Silt Checks or Wattles

Enter Ditch Front Slope Gradient (H:V):	3	:1
Enter Ditch Back Slope Gradient (H:V):	1	:1
Enter Device Height:	1.5	ft
Area Behind Device:	4.50	ft^2
Length of Ditch Behind Device:	49.83	ft
Storage Behind Device (assumes 65% effeciency):	48.59	ft^3
Wrapped TRSC-A/Wattles required: X	1.0	
Total	48.59	ft^3

WATTLES REQUIRED

GOOD. Place measure(s) on EC Plan. Start with the first device as close to the outlet point as possible and then space them evenly up the grade. PAM should not be placed on the last BMP at outlet.

****Designer still has the option of using Option 5 or 6***

COMMENTS:

Use Temporary Sediment Dam, Type-B 9x3x3. Dam covers required storage.

OPTION 5: IF DRAINAGE AREA > 1 Acre: Use Surface Area Calculations to determine storage, A=325Q $_p$

a. Determine the Peak Runoff Rate, **Q_p** ($Q_p = Q_{10}$ (Q_{25} for HQW or Trout)) **USE Q25**

Q_p=CiA

Runoff Coefficient, **C** 0 *Table 1-4,1-5,1-6*

Time of Concentration, **t_c** (minutes)

1 ***Shortcut Method,*** **t_c (A≤4.6S)**

Watershed Slope, **S** 0 %

t_c= **N/A** minutes **See Kirpich**

2 ***Kirpich Method***

Flow Path, **L** 0 feet **see Module 1 Eq. 3*

Watershed Slope, **S** 0 ft/ft **see Module 1 Eq. 3*

Kirpich, **t_c=** **#DIV/0!** minutes

*Using a Return Period (**T**) of 10 yrs (25 for HQW) and a **t_c** of* **#DIV/0!** *minutes, the rainfall intensity, **i** (in/hr), can be read from Appendix A or the NOAA website, http://hdsc.nws.noaa.gov/hdsc/pfds/orb/nc_pfds.html*

Rainfall Intensity, **i** (in/hr) 0 in/hr *Appendix A*

Drainage Area given as **0.03** acres

Peak Rate of Runoff, **Q_p =CiA** **0.00** cfs

b. Determine the Required Surface Area= **0.00** ft^2

c. Use Surface Area (**A**) to determine required **VOLUME** of Temporary Type-B Sediment Dam

Design Depth: 3

Required VOLUME using the design depth: **0.00** ft^3

d. Sediment Storage Required using 1800 ft^3/ac

Disturbed Area (acres)= **0.03**

Required Sediment Storage (ft^3)= **56.20** ft^3

Final Required Storage: **56.20** ft^3

Proposed Basin Side Slopes: **1.5** **:1 side slopes** ***must be at least 1.5:1 or flatter**

Infiltration Analysis Web Soil Survey (http://soildatamart.nrcs.usda.gov/)

Sat. Hydraulic Con. (Ksat, micro m/sec)	**0**
Soil Permeability (in/hr)	**0.00**
Dewatering Time (Days)	**N/A**

Skimmer Basin Required

Basin Design	***Minimum 2:1 (L:W) Ratio***
Suggested Top Width (ft):	**0**
Suggested Top Length (ft):	**0**
Final Design Top Width (ft):	**3**
Final Design Top Length (ft):	**9**
Final Design Depth (ft):	**3**
Weir Width (ft):	**4**
Skimmer Size (in)	**1.5**
Orifice Diameter (in)	**0.25**
Dewatering Time (Days)	**1**
Verify Storage (ft^3)	*27.00* **Too Low**
Verify Surface Area (ft^2)	*27.00* **OK**

Place Basin at outlet point. Ensure devices are used to satisfy requirements of Step 3. Install Baffles*.

See Option 6 if installing this measure is not practical.

* **Baffles** are required for infiltration and skimmer basins that are located at drainage turnouts.
If the device is greater than 20' in length, it will require 3 baffles. If it is 10'-20' in length, it will require 2 baffles.
If it is less than 10', it will require 1 baffle.

Temporary Liner (Matting) in Ditchline Calculations (English)

Construction Sheet #	1	2	3	4	5	6	16	17	18	25	26	27	28		
Construction Line (-L-,-Y-,etc.)	1.1	2.1	3.1	4.1	5.1	6.1	16.1	17.1	18.1	25.1	26.1	27.2	28.1		
Left or Right (LT.,RT.,Median)	Lt	Lt	Lt	Lt	Lt	Lt	Lt	Rt	Rt	Rt	Rt	Rt	Rt		
Upper Station No.	0	412	815	1110	1800	2100	7650	7850	8350	12250	12290	12825	13220		
Upper Station Elevation (ft.)															
Lower Station No.	412	591	1110	1429	2100	2500	7700	7965	8565	12290	12525	13220	13700		
Lower Station Elevation (ft.)															
Design Ditch Flow Depth (ft.)	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Actual Ditch Depth (ft.)	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33		
Frontslope Grade (i.e. 2 for 2:1)	3	3	3	3	3	3	3	3	3	3	3	3	3		
Backslope Grade (i.e. 2 for 2:1)	1.5	1.5	1.5	1.5	1.5	1.5	1.25	1	1.5	1	1	1	1		
Base Width (ft., 0 for V-Ditches)	0	0	0	0	0	0	0	0	0	0	0	0	0		
Measured Ditchline Length (ft.)	412	179	295	319	300	400	50	115	215	40	535	395	180		
Ditch Grade (%)	13.68	16.42	16.93	16.56	15.54	11.36	12.00	6.87	4.70	2.90	3.23	2.97	3.14		
Velocity (ft/s)	6.75	7.40	7.51	7.43	7.19	6.15	6.26	4.67	3.96	3.03	3.20	3.07	3.16	0.00	0.00
Shear Stress in Ditch (lb/ft^2)	2.82	3.38	3.49	3.41	3.20	2.34	2.47	1.41	0.97	0.60	0.67	0.61	0.65	0.00	0.00
Ditch Liner Requirement	RIPRAP	RIPRAP	RIPRAP	RIPRAP	RIPRAP	RIPRAP	RIPRAP	PSRM	PSRM	MATTING	MATTING	MATTING	MATTING	None	None
Matting Quantity (yd^2)	0	0	0	0	0	0	0	0	0	30	360	265	125	0	0
PSRM Matting Quantity (yd^2)	0	0	0	0	0	0	0	80	160	0	0	0	0	0	0

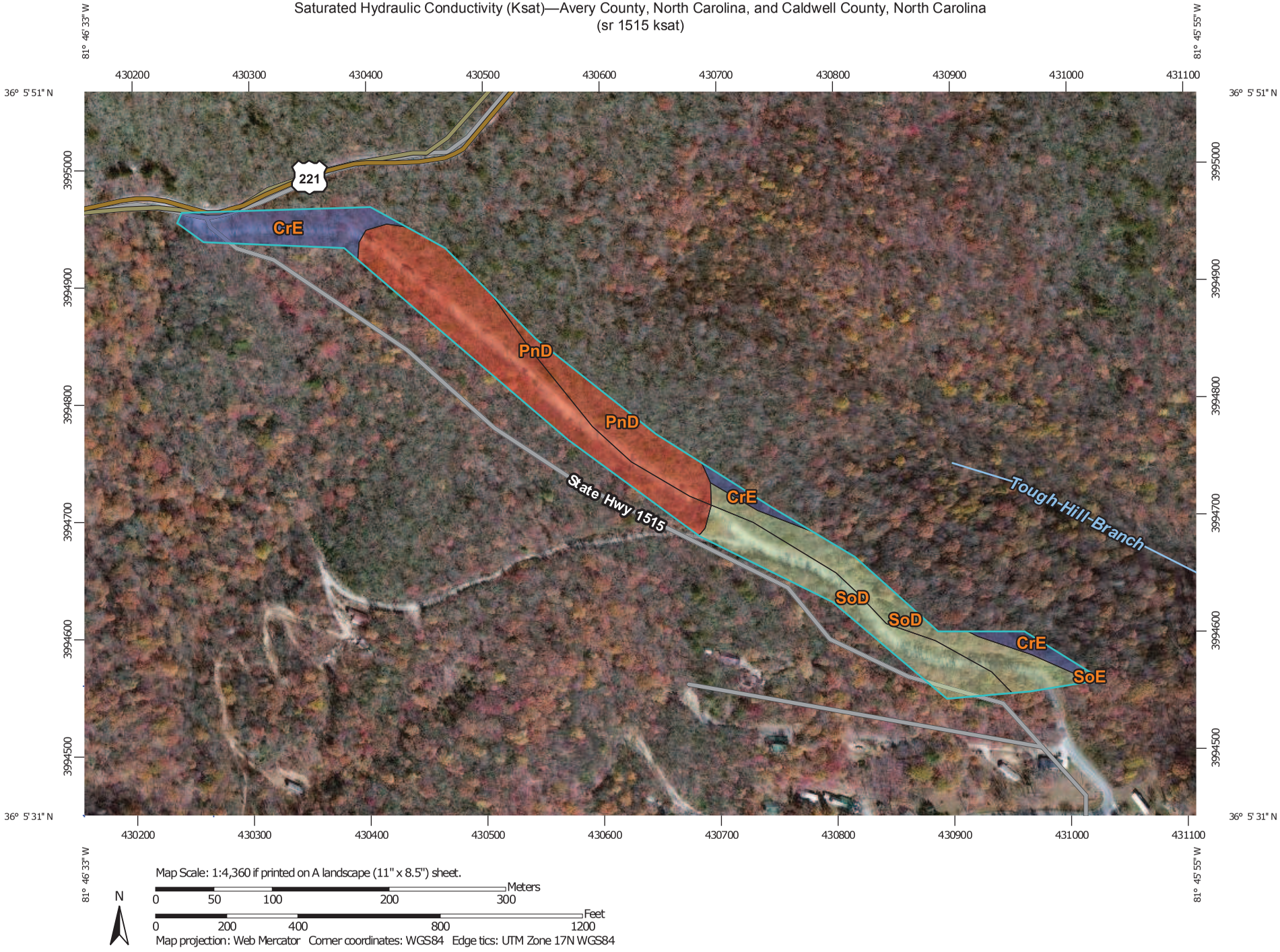
Construction Line (-L-,-Y-,etc.)		2.2		4.2		6.2	16.2	17.2	18.2						
Left or Right (LT.,RT.,Median)		Lt		Lt		Lt	Lt	Rt	Rt						
Upper Station No.		591		1429		2500	7700	7965	8565						
Upper Station Elevation (ft.)															
Lower Station No.		815		1730		2844	7850	8050	8600						
Lower Station Elevation (ft.)															
Design Ditch Flow Depth (ft.)	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Actual Ditch Depth (ft.)		1.33		1.33		1.33	1.33	1.33	1.33						
Frontslope Grade (i.e. 2 for 2:1)		3		3		3	3	3	3						
Backslope Grade (i.e. 2 for 2:1)		1.5		1.5		1.5	1	1	1.5						
Base Width (ft., 0 for V-Ditches)		0		0		0	0	0	0						
Measured Ditchline Length (ft.)		224		301		344	150	85	35						
Ditch Grade (%)	0.00	18.80	0.00	16.19	0.00	11.58	11.10	9.76	0.20	0.00	0.00	0.00		0.00	
Velocity (ft/s)	0.00	7.91	0.00	7.34	0.00	6.21	5.94	5.57	0.82	0.00	0.00	0.00	0.00	0.00	0.00
Shear Stress in Ditch (lb/ft^2)	0.00	3.87	0.00	3.33	0.00	2.38	2.29	2.01	0.04	0.00	0.00	0.00	0.00	0.00	0.00
Ditch Liner Requirement	None	RIPRAP	None	RIPRAP	None	RIPRAP	RIPRAP	RIPRAP	None	None	None	None	None	None	None
Matting Quantity (yd^2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PSRM Matting Quantity (yd^2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Construction Line (-L-,-Y-,etc.)				4.3				17.3							
Left or Right (LT.,RT.,Median)				Lt				Rt							
Upper Station No.				1730				8050							
Upper Station Elevation (ft.)															
Lower Station No.				1800				8350							

Lower Station Elevation (ft.)															
Design Ditch Flow Depth (ft.)	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Actual Ditch Depth (ft.)				1.33				1.33							
Frontslope Grade (i.e. 2 for 2:1)				3				3							
Backslope Grade (i.e. 2 for 2:1)				1.5				1.5							
Base Width (ft., 0 for V-Ditches)				0											
Measured Ditchline Length (ft.)				70				300							
Ditch Grade (%)	0.00	0.00	0.00	18.97	0.00	0.00	0.00	5.82	0.00	0.00	0.00	0.00	0.00	0.00	
Velocity (ft/s)	0.00	0.00	0.00	7.95	0.00	0.00	0.00	4.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Shear Stress in Ditch (lb/ft^2)	0.00	0.00	0.00	3.91	0.00	0.00	0.00	1.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ditch Liner Requirement	None	None	None	RIPRAP	None	None	None	PSRM	None	None	None	None	None	None	None
Matting Quantity (yd^2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PSRM Matting Quantity (yd^2)	0	0	0	0	0	0	0	220	0	0	0	0	0	0	0
Construction Line (-L-,-Y-,etc.)															
Left or Right (LT.,RT.,Median)															
Upper Station No.															
Upper Station Elevation (ft.)															
Lower Station No.															
Lower Station Elevation (ft.)															
Design Ditch Flow Depth (ft.)	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Actual Ditch Depth (ft.)															
Frontslope Grade (i.e. 2 for 2:1)															
Backslope Grade (i.e. 2 for 2:1)															
Base Width (ft., 0 for V-Ditches)															
Measured Ditchline Length (ft.)															
Ditch Grade (%)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Velocity (ft/s)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Shear Stress in Ditch (lb/ft^2)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ditch Liner Requirement	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None
Matting Quantity (yd^2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PSRM Matting Quantity (yd^2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Construction Line (-L-,-Y-,etc.)															
Left or Right (LT.,RT.,Median)															
Upper Station No.															
Upper Station Elevation (ft.)															
Lower Station No.															
Lower Station Elevation (ft.)															
Design Ditch Flow Depth (ft.)	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Actual Ditch Depth (ft.)															
Frontslope Grade (i.e. 2 for 2:1)															
Backslope Grade (i.e. 2 for 2:1)															
Base Width (ft., 0 for V-Ditches)															
Measured Ditchline Length (ft.)															

Actual Ditch Depth (ft.)															
Frontslope Grade (i.e. 2 for 2:1)															
Backslope Grade (i.e. 2 for 2:1)															
Base Width (ft., 0 for V-Ditches)															
Measured Ditchline Length (ft.)															
Ditch Grade (%)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Velocity (ft/s)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Shear Stress in Ditch (lb/ft^2)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ditch Liner Requirement	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None
Matting Quantity (yd^2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PSRM Matting Quantity (yd^2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Matting Quantity (yd^2) =	0	0	0	0	0	0	0	0	0	30	360	265	125	0	0
Total Ditchline Matting Quantity =	780.00	yd^2													
Total PSRM Quantity (yd^2) =	0	0	0	0	0	0	0	300	160	0	0	0	0	0	0
Total Ditchline PSRM Quantity =	460.00	yd^2													

Saturated Hydraulic Conductivity (Ksat)—Avery County, North Carolina, and Caldwell County, North Carolina
(sr 1515 ksat)



Map Scale: 1:4,360 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 50 100 200 300

Feet
0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- <= 6.8809
- > 6.8809 and <= 13.8930
- > 13.8930 and <= 18.5152
- Not rated or not available

Soil Rating Lines
- <= 6.8809
- > 6.8809 and <= 13.8930
- > 13.8930 and <= 18.5152
- Not rated or not available

Soil Rating Points
- <= 6.8809
- > 6.8809 and <= 13.8930
- > 13.8930 and <= 18.5152
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Avery County, North Carolina
Survey Area Data: Version 19, Sep 9, 2014

Soil Survey Area: Caldwell County, North Carolina
Survey Area Data: Version 14, Sep 9, 2014

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 22, 2010—Mar 17, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Saturated Hydraulic Conductivity (Ksat)

Saturated Hydraulic Conductivity (Ksat)— Summary by Map Unit — Avery County, North Carolina (NC011)				
Map unit symbol	**Map unit name**	**Rating (micrometers per second)**	**Acres in AOI**	**Percent of AOI**
CrE	Crossnore-Jeffrey complex, 30 to 50 percent slopes, very stony	18.5152	1.2	12.3%
PnD	Pineola gravelly loam, 15 to 30 percent slopes, stony	6.8809	3.3	33.5%
SoD	Soco-Ditney complex, 15 to 30 percent slopes, very stony	13.8930	1.9	19.1%
Subtotals for Soil Survey Area			**6.4**	**64.8%**
Totals for Area of Interest			**9.9**	**100.0%**

Saturated Hydraulic Conductivity (Ksat)— Summary by Map Unit — Caldwell County, North Carolina (NC027)				
Map unit symbol	**Map unit name**	**Rating (micrometers per second)**	**Acres in AOI**	**Percent of AOI**
CrE	Crossnore-Jeffrey complex, 30 to 50 percent slopes, very stony	18.5152	0.5	4.6%
PnD	Pineola gravelly loam, 15 to 30 percent slopes, stony	6.8809	1.3	13.0%
SoD	Soco-Ditney complex, 15 to 30 percent slopes, very stony	13.8930	1.7	17.3%
SoE	Soco-Ditney complex, 30 to 50 percent slopes, very stony	13.8930	0.0	0.2%
Subtotals for Soil Survey Area			**3.5**	**35.2%**
Totals for Area of Interest			**9.9**	**100.0%**

Description

Saturated hydraulic conductivity (Ksat) refers to the ease with which pores in a saturated soil transmit water. The estimates are expressed in terms of micrometers per second. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity is considered in the design of soil drainage systems and septic tank absorption fields.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

The numeric Ksat values have been grouped according to standard Ksat class limits.

Rating Options

Units of Measure: micrometers per second

Aggregation Method: Dominant Component

Component Percent Cutoff: *None Specified*

Tie-break Rule: Fastest

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): All Layers (Weighted Average)

RUSLE2 Related Attributes

This report summarizes those soil attributes used by the Revised Universal Soil Loss Equation Version 2 (RUSLE2) for the map units in the selected area. The report includes the map unit symbol, the component name, and the percent of the component in the map unit. Soil property data for each map unit component include the hydrologic soil group, erosion factors Kf for the surface horizon, erosion factor T, and the representative percentage of sand, silt, and clay in the surface horizon.

Report—RUSLE2 Related Attributes

RUSLE2 Related Attributes–Avery County, North Carolina								
Map symbol and soil name	Pct. of map unit	Slope length (ft)	Hydrologic group	Kf	T factor	Representative value		
						% Sand	% Silt	% Clay
CrE—Crossnore-Jeffrey complex, 30 to 50 percent slopes, very stony								
Crossnore, very stony	45	—	B	.10	3	65.1	18.9	16.0
Jeffrey, very stony	40	—	B	.10	2	65.1	18.9	16.0
PnD—Pineola gravelly loam, 15 to 30 percent slopes, stony								
Pineola, stony	85	—	C	.28	3	45.7	41.8	12.5
SoD—Soco-Ditney complex, 15 to 30 percent slopes, very stony								
Soco, very stony	60	—	B	.24	3	45.3	43.2	11.5
Ditney, very stony	25	—	B	.15	2	65.7	22.8	11.5

RUSLE2 Related Attributes–Caldwell County, North Carolina								
Map symbol and soil name	Pct. of map unit	Slope length (ft)	Hydrologic group	Kf	T factor	Representative value		
						% Sand	% Silt	% Clay
CrE—Crossnore-Jeffrey complex, 30 to 50 percent slopes, very stony								
Crossnore, very stony	45	—	B	.10	3	65.1	18.9	16.0
Jeffrey, very stony	40	—	B	.10	2	65.1	18.9	16.0
PnD—Pineola gravelly loam, 15 to 30 percent slopes, stony								
Pineola, stony	85	—	C	.28	3	45.7	41.8	12.5
SoD—Soco-Ditney complex, 15 to 30 percent slopes, very stony								
Soco, very stony	60	—	B	.24	3	45.3	43.2	11.5
Ditney, very stony	25	—	B	.15	2	65.7	22.8	11.5

RUSLE2 Related Attributes–Caldwell County, North Carolina								
Map symbol and soil name	Pct. of map unit	Slope length (ft)	Hydrologic group	Kf	T factor	Representative value		
						% Sand	% Silt	% Clay
SoE—Soco-Ditney complex, 30 to 50 percent slopes, very stony								
Soco, very stony	50	—	B	.24	3	45.3	43.2	11.5
Ditney, very stony	35	—	B	.15	2	65.7	22.8	11.5

Data Source Information

Soil Survey Area: Avery County, North Carolina
Survey Area Data: Version 19, Sep 9, 2014

Soil Survey Area: Caldwell County, North Carolina
Survey Area Data: Version 14, Sep 9, 2014

Saturated Hydraulic Conductivity (Ksat)—Avery County, North Carolina
(sr1515 middle)

Map Scale: 1:1,420 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 20 40 80 120

Feet
0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

= 18.5281

Not rated or not available

Soil Rating Lines

= 18.5281

Not rated or not available

Soil Rating Points

= 18.5281

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Avery County, North Carolina
Survey Area Data: Version 19, Sep 9, 2014

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 22, 2010—Mar 17, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Saturated Hydraulic Conductivity (Ksat)

Saturated Hydraulic Conductivity (Ksat)— Summary by Map Unit — Avery County, North Carolina (NC011)				
Map unit symbol	**Map unit name**	**Rating (micrometers per second)**	**Acres in AOI**	**Percent of AOI**
StD	Stecoah-Soco complex, 15 to 30 percent slopes, stony	18.5281	0.3	19.6%
StE	Stecoah-Soco complex, 30 to 50 percent slopes, stony	18.5281	1.3	80.4%
Totals for Area of Interest			**1.6**	**100.0%**

Description

Saturated hydraulic conductivity (Ksat) refers to the ease with which pores in a saturated soil transmit water. The estimates are expressed in terms of micrometers per second. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity is considered in the design of soil drainage systems and septic tank absorption fields.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

The numeric Ksat values have been grouped according to standard Ksat class limits.

Rating Options

Units of Measure: micrometers per second

Aggregation Method: Dominant Component

Component Percent Cutoff: *None Specified*

Tie-break Rule: Fastest

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): All Layers (Weighted Average)

RUSLE2 Related Attributes

This report summarizes those soil attributes used by the Revised Universal Soil Loss Equation Version 2 (RUSLE2) for the map units in the selected area. The report includes the map unit symbol, the component name, and the percent of the component in the map unit. Soil property data for each map unit component include the hydrologic soil group, erosion factors Kf for the surface horizon, erosion factor T, and the representative percentage of sand, silt, and clay in the surface horizon.

Report—RUSLE2 Related Attributes

RUSLE2 Related Attributes–Avery County, North Carolina								
Map symbol and soil name	Pct. of map unit	Slope length (ft)	Hydrologic group	Kf	T factor	Representative value		
						% Sand	% Silt	% Clay
StD—Stecoah-Soco complex, 15 to 30 percent slopes, stony								
Stecoah, stony	60	—	A	.28	4	45.3	43.2	11.5
Soco, stony	30	—	B	.24	3	45.3	43.2	11.5
StE—Stecoah-Soco complex, 30 to 50 percent slopes, stony								
Stecoah, stony	65	—	A	.28	4	45.3	43.2	11.5
Soco, stony	25	—	B	.24	3	45.3	43.2	11.5

Data Source Information

Soil Survey Area: Avery County, North Carolina
Survey Area Data: Version 19, Sep 9, 2014

Saturated Hydraulic Conductivity (Ksat)—Avery County, North Carolina
(sr 1515 bottom)

Map Scale: 1:2,110 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 30 60 120 180

Feet
0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

= 18.5281

Not rated or not available

Soil Rating Lines

= 18.5281

Not rated or not available

Soil Rating Points

= 18.5281

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Avery County, North Carolina
Survey Area Data: Version 19, Sep 9, 2014

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 22, 2010—Mar 17, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Saturated Hydraulic Conductivity (Ksat)

Saturated Hydraulic Conductivity (Ksat)— Summary by Map Unit — Avery County, North Carolina (NC011)				
Map unit symbol	**Map unit name**	**Rating (micrometers per second)**	**Acres in AOI**	**Percent of AOI**
StE	Stecoah-Soco complex, 30 to 50 percent slopes, stony	18.5281	3.3	76.8%
StF	Stecoah-Soco complex, 50 to 80 percent slopes, stony	18.5281	1.0	23.2%
Totals for Area of Interest			**4.3**	**100.0%**

Description

Saturated hydraulic conductivity (Ksat) refers to the ease with which pores in a saturated soil transmit water. The estimates are expressed in terms of micrometers per second. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity is considered in the design of soil drainage systems and septic tank absorption fields.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

The numeric Ksat values have been grouped according to standard Ksat class limits.

Rating Options

Units of Measure: micrometers per second

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Fastest

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): All Layers (Weighted Average)

RUSLE2 Related Attributes

This report summarizes those soil attributes used by the Revised Universal Soil Loss Equation Version 2 (RUSLE2) for the map units in the selected area. The report includes the map unit symbol, the component name, and the percent of the component in the map unit. Soil property data for each map unit component include the hydrologic soil group, erosion factors Kf for the surface horizon, erosion factor T, and the representative percentage of sand, silt, and clay in the surface horizon.

Report—RUSLE2 Related Attributes

RUSLE2 Related Attributes–Avery County, North Carolina								
Map symbol and soil name	Pct. of map unit	Slope length (ft)	Hydrologic group	Kf	T factor	Representative value		
						% Sand	% Silt	% Clay
StE—Stecoah-Soco complex, 30 to 50 percent slopes, stony								
Stecoah, stony	65	—	A	.28	4	45.3	43.2	11.5
Soco, stony	25	—	B	.24	3	45.3	43.2	11.5
StF—Stecoah-Soco complex, 50 to 80 percent slopes, stony								
Stecoah, stony	50	—	A	.28	4	45.3	43.2	11.5
Soco, stony	35	—	B	.24	3	45.3	43.2	11.5

Data Source Information

Soil Survey Area: Avery County, North Carolina
Survey Area Data: Version 19, Sep 9, 2014