

VICINITY MAP

RIO HILL STORMWATER RETROFIT

VSMP/WPO 201900023

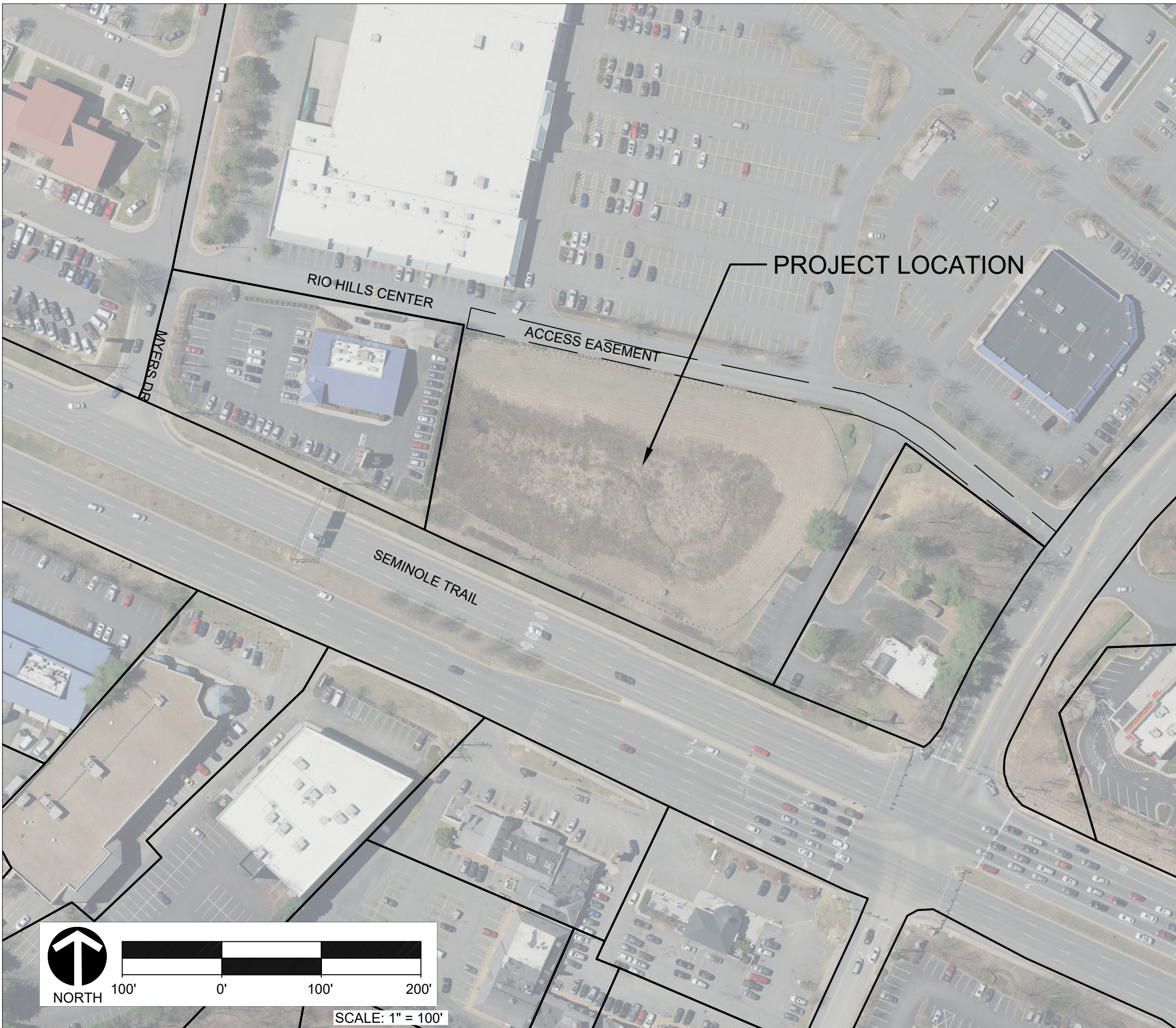
ALBEMARLE COUNTY, VA

PROJECT NARRATIVE

THE PROPOSED PROJECT IS A COUNTY WATER RESOURCES PROJECT TO CONVERT THE EXISTING DRY DETENTION POND AT THE RIO HILL SHOPPING CENTER INTO A STORMWATER WETLAND. THIS WILL BE DONE BY ADDING INTERNAL WETLAND ZONES, ADJUSTING THE FLOW PATH THROUGH THE BASIN, MAKING MODIFICATIONS TO THE OUTLET STRUCTURE TO RETAIN MORE WATER DURING SMALL STORM EVENTS, AND ADDING MEASURES TO ASSIST WITH FUTURE OPERATION AND MAINTENANCE (E.G., ADDING FOREBAYS AND MAINTENANCE ACCESS POINTS AT THE INLETS AND THE OUTLET).

GENERAL NOTES

1. ALL BASEMAPPING AND TOPOGRAPHIC SURVEY INFORMATION IS PROVIDED BY ECOSYSTEM SERVICES, LLC. THE SURVEY WAS COMPLETED IN FEBRUARY 2018.
2. ADDITIONAL FIELD SURVEYS WERE CONDUCTED BY ECOSYSTEM SERVICES, LLC.
3. ADDITIONAL BASE MAPPING OBTAINED FROM VGIN.
4. HORIZONTAL DATUM: NAD83 VIRGINIA STATE PLANE, SOUTH ZONE, US FOOT
5. VERTICAL DATUM: NAVD 88, US FOOT
6. THE CONTRACTOR SHALL CONTACT "MISS UTILITY" AT 811 OR 1-800-552-7001 PRIOR TO ANY LAND DISTURBING ACTIVITIES.
7. ALL WORK SHALL BE IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL STANDARDS.
8. ANY WORK THAT IS REQUIRED FOR THE SUCCESSFUL COMPLETION OF THE PROJECT AS SPECIFIED IN THIS SET OF PLANS BUT NOT SPECIFICALLY ADDRESSED IN THE PLAN SET SHALL NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY TO COMPLETE SUCH WORK.
9. THE PROJECT DOES NOT INCLUDE THE ADDITION OF ANY IMPERVIOUS COVER. NO INCREASE IN RUNOFF WILL RESULT FROM THIS PROJECT.
10. NO WORK SHALL BEGIN WITHOUT ACQUISITION OF ALL LOCAL, STATE, AND FEDERAL PERMITS AND APPROVALS.
11. THE CONTRACTOR SHALL CONTACT ECOSYSTEM SERVICES, AND ALBEMARLE COUNTY FOR A PRE-CONSTRUCTION MEETING PRIOR TO ANY LAND DISTURBING ACTIVITIES.
12. SHOULD A DISCREPANCY BE FOUND IN THE PLAN SET, THE CONTRACTOR SHALL CONSULT WITH DESIGN ENGINEER PRIOR TO COMPLETION OF SPECIFIC WORK.
13. ALL GRADING ACTIVITIES SHALL INCLUDE REMOVAL AND TEMPORARY STOCKPILING OF TOP SOIL, EXECUTION OF GRADING, AND REPLACEMENT OF TOPSOIL TO ACHIEVE FINAL GRADES.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO EXISTING CONDITIONS AS A RESULT OF ITS WORK PERFORMED DURING THE CONTRACT PERIOD. THIS RESPONSIBILITY SHALL INCLUDE RE-SEEDING DISTURBED AREAS AND TEMPORARY ACCESS ROADS.
15. THE CONTRACTOR SHALL KEEP ALL EQUIPMENT AND STAGING MATERIAL INSIDE THE LIMITS OF DISTURBANCE UNLESS PRIOR APPROVAL BY THE PROJECT ENGINEER IS PROVIDED.
16. CLEARING & GRUBBING SHALL BE CONFINED TO THOSE AREAS NEEDED FOR CONSTRUCTION ACCESS AND GRADING AND SHALL REQUIRE ALBEMARLE COUNTY APPROVAL.
17. UNDER NO CIRCUMSTANCES ARE TREES OVER 6 INCHES IN DIAMETER TO BE REMOVED WITHOUT PRIOR APPROVAL FROM THE PROJECT ENGINEER UNLESS OTHERWISE SPECIFIED WITHIN THIS PLAN SET.
18. IN CONFORMANCE WITH DPOR REGULATIONS, SECTION 54.1-112 INVITED BIDDERS MUST DISCLOSE (I) WHETHER BIDDER IS A RESIDENT OR NONRESIDENT OF THE COMMONWEALTH, (II) WHETHER THE PROPER LICENSE OR CERTIFICATE HAS BEEN ISSUED TO THE BIDDER, AND (III) THE INFORMATION REQUIRED OF THE BIDDER TO SHOW EVIDENCE OF PROPER LICENSURE OR CERTIFICATION UNDER THE PROVISIONS OF THE ABOVE MENTIONED CORRESPONDING CHAPTER.

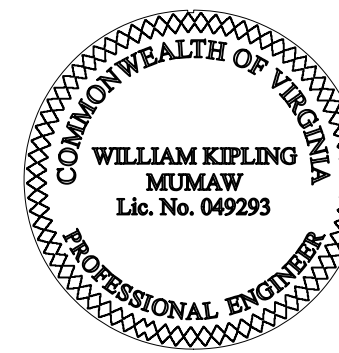


PROJECT INFORMATION

1. CLIENT: ALBEMARLE COUNTY
CONTACT: STAVROS CARLOS
PHONE: 434.296.5816
EMAIL: SCALOS@ALBEMARLE.ORG
PROJECT AGENT: ECOSYSTEM SERVICES
PROJECT ENGINEER: WILLIAM MUMAW, PE
ECOSYSTEM SERVICES
1739-A ALLIED STREET
CHARLOTTESVILLE, VA 22903
CONTACT: WILLIAM MUMAW
PHONE: 540.239.1428
EMAIL: KIP@ECOSYSTEMSERVICES.US
2. PROPERTY OWNER: ROSENTHAL PROPERTIES
3. TOTAL ACREAGE OF DISTURBANCE: 2.02 ACRES
4. PROJECT WATERSHED: RIVANNA
5. HYDROLOGIC UNIT CODE (8-DIGIT): 02080204
6. CLOSEST PROPERTY ADDRESS: 1740 RIO HILL CENTER
7. PARCEL ID: 04500-00-00-094A0

1739-A Allied Street
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540.239.1428
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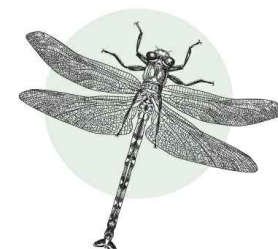
2/14/2020



VSMP/WPO 201900023

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**Hirschman Water &
Environment, LLC**

Stormwater & Stewardship



RIO HILL STORMWATER RETROFIT

COVER
ALBEMARLE COUNTY, VA

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LEGEND

EXISTING MAJOR CONTOURS (5')

EXISTING MINOR CONTOURS (1')

PARCEL BOUNDARY

EDGE OF CURB/EDGE OF ROAD

EXISTING STORM PIPE

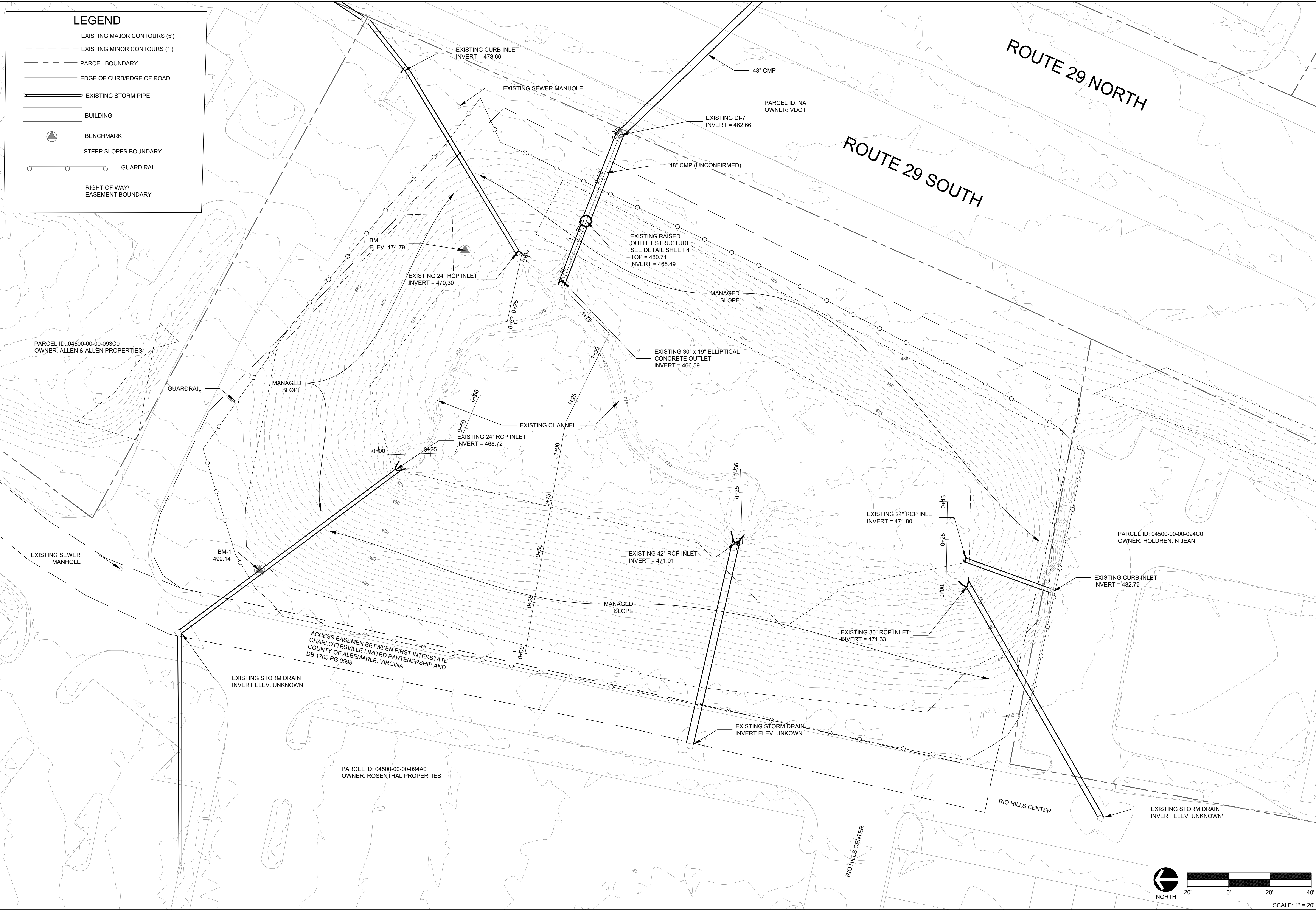
BUILDING

BENCHMARK

STEEP SLOPES BOUNDARY

GUARD RAIL

RIGHT OF WAY/
EASEMENT BOUNDARY



NORTH

20'

0'

20'

40'

SCALE: 1" = 20'

Hirschman Water & Environment, LLC

Stormwater & Stewardship

ECOSYSTEM SERVICES

1739-A Allied Street
Charlottesville, VA 22903
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ecosystems-services.us

COMMONWEALTH OF VIRGINIA

WILLIAM KIPLING MUMAW
Lic. No. 049293

PROFESSIONAL ENGINEER

RIO HILL STORMWATER RETROFIT

EXISTING CONDITIONS

ALBEMARLE COUNTY, VA

REVISION:	
PROJECT MANAGER:	WKM
DESIGNED:	WKM
DRAWN:	JNB
PROJECT #:	17-0042
DATE:	12/30/2019
SHEET:	2

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LEGEND

EXISTING MAJOR CONTOURS (5')

EXISTING MINOR CONTOURS (1')

PROPOSED MAJOR CONTOUR LINES (1 FT.)

PROPOSED MINOR CONTOUR LINES (1 FT.)

PARCEL BOUNDARY

EASEMENT

ROCK WEIR

FOREBAY OUTLET

STEEP SLOPES BOUNDARY

DRAINAGE DIRECTION LINES

FOREBAY #	APPROX TOP LENGTH (FT)	APPROX TOP WIDTH (FT)	PIPE INV IN ELEV (FT)	BOTTOM ELEV (FT)	OUTLET WEIR ELEV (FT)
SF1	24.00	20.00	470.30	468.00	470.00
SF2	50.00	24.00	468.72	466.00	469.00
SF3	25.00	24.00	471.01	468.00	470.00
SF4	29.00	28.00	471.80	468.00	471.00

NOTE: CROSS-SECTIONS OF EACH FOREBAY IS PROVIDED ON SHEET 7

ROUTE 29 NORTH

ROUTE 29 SOUTH

NOTE: CROSS-SECTIONS OF EACH FOREBAY IS PROVIDED ON SHEET 7

EXISTING INLET

VDOT CLASS 1

RIPRAP APRON VDOT CLASS 1

WSE

GEOTEXTILE

EXISTING GROUND

SEDIMENT FOREBAY

NTS

RIO HILL STORMWATER RETROFIT

GRADING PLAN

ALBEMARLE COUNTY, VA

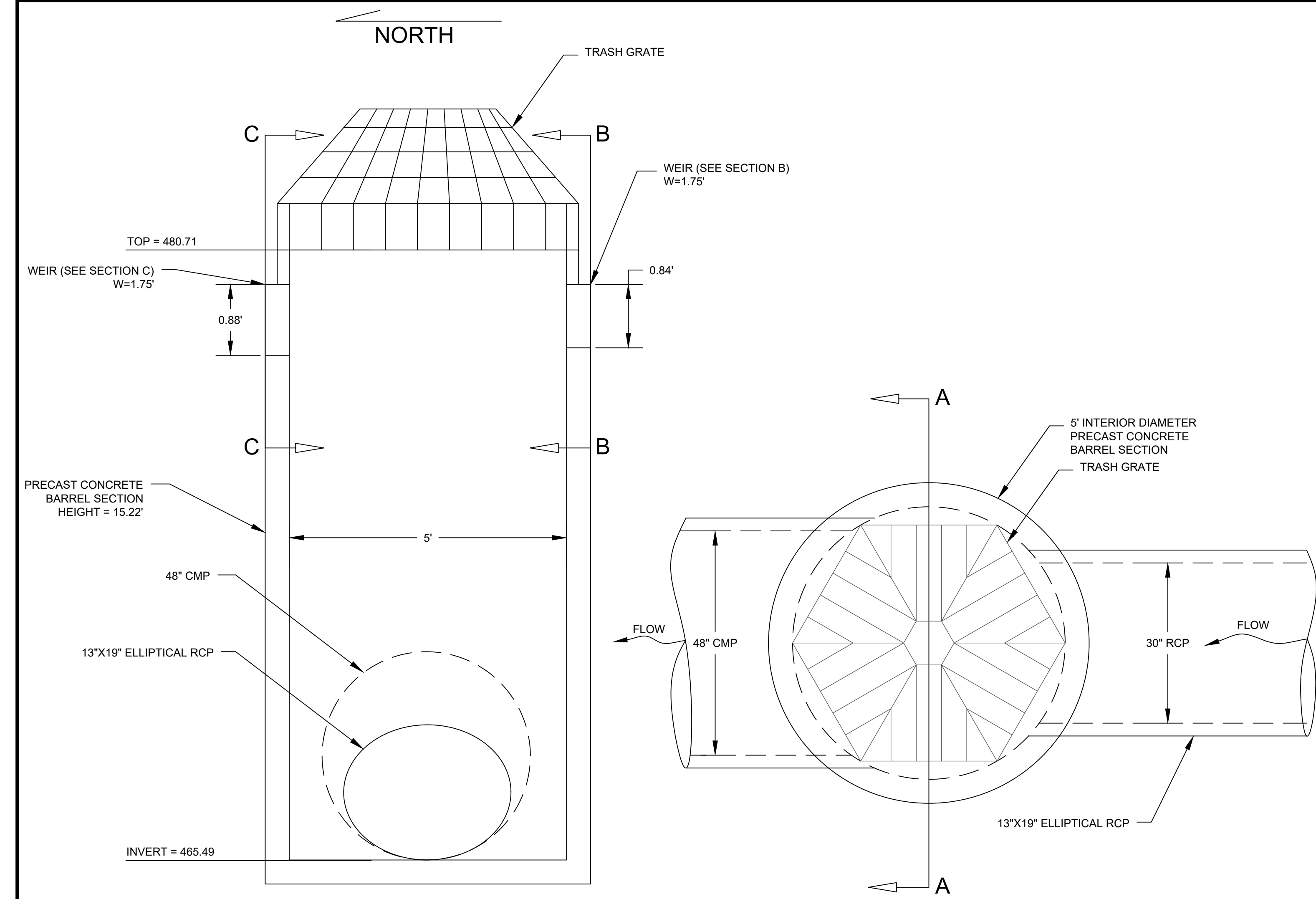
REVISION:
9/18/2018

PROJECT MANAGER: WKM
DESIGNED: WKM
DRAWN: JNB
PROJECT #: 17-0042
DATE: 2/14/2020
SHEET:

3

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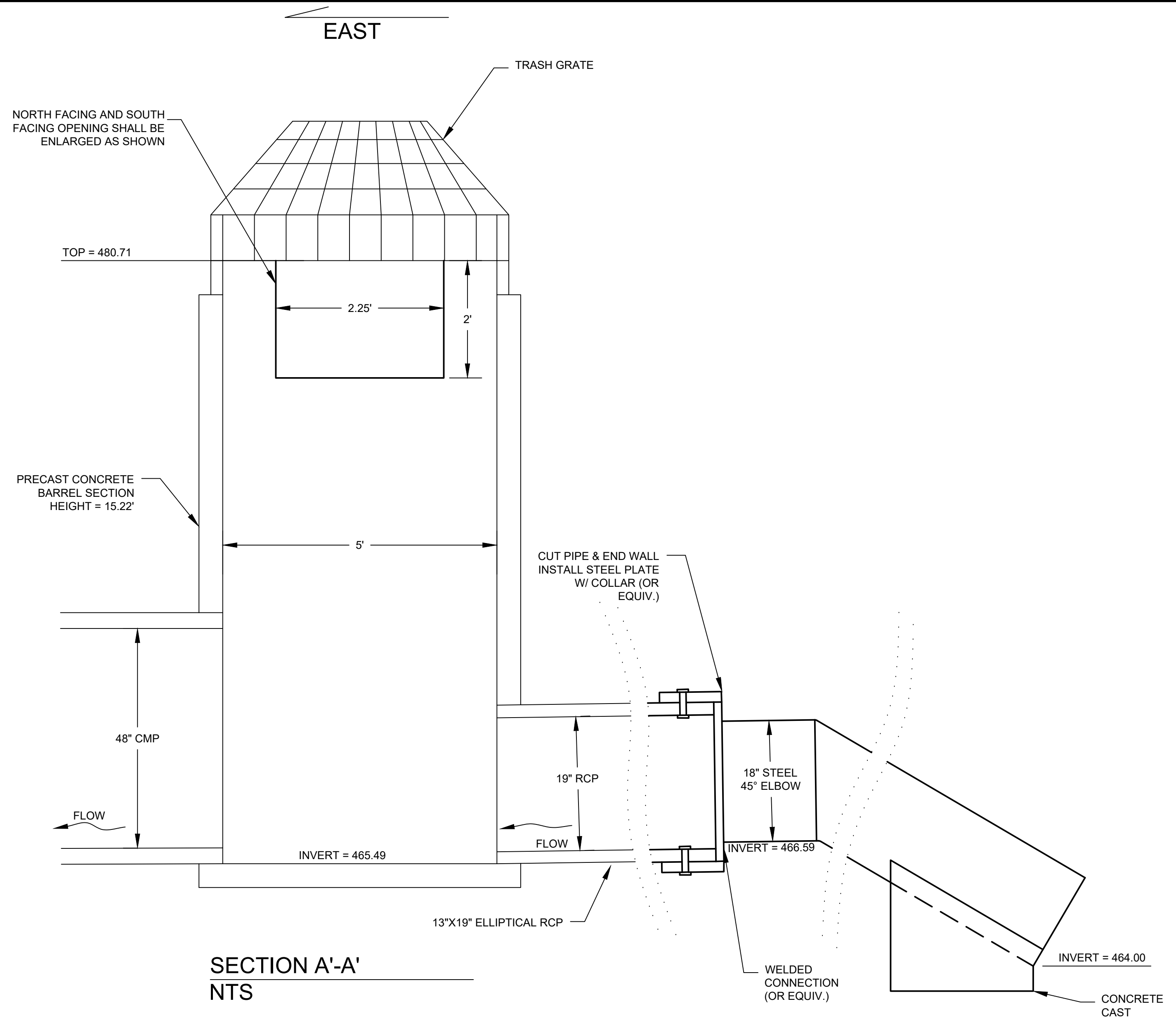
SECTION A-A
NTS

PLAN VIEW
NTS

SECTION B-B
NTS

SECTION C-C
NTS

EXISTING OUTLET



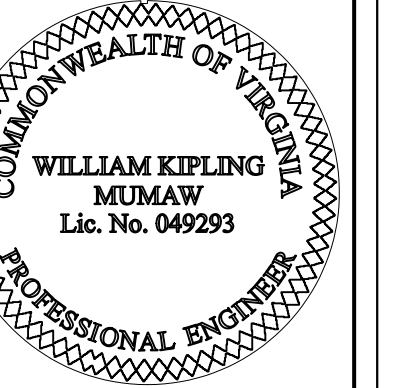
SECTION A'-A'
NTS

PLAN VIEW
NTS

PROPOSED MODIFIED OUTLET



**ECOSYSTEM
SERVICES**
1739-A Allied Street
Charlottesville, VA 22903
540.239.1428
ecosystemservices.us



**RIO HILL STORMWATER RETROFIT
OUTLET DETAILS**
ALBEMARLE COUNTY, VA

REVISION:

PROJECT MANAGER:	WKM
DESIGNED:	WKM
DRAWN:	JNB
PROJECT #:	17-0042
DATE:	2/14/2020
SHEET:	

4

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EROSION & SEDIMENT CONTROL NARRATIVE

PROJECT DESCRIPTION

THE PROPOSED PROJECT IS A COUNTY WATER RESOURCES PROJECT TO CONVERT THE EXISTING DRY DETENTION POND AT THE RIO HILL SHOPPING CENTER INTO MORE OF A STORMWATER WETLANDS. IN TOTAL 2.03 ACRES WILL BE DISTURBED FOR THIS PROJECT. THIS WILL BE DONE BY ADDING INTERNAL WETLAND ZONES, ADJUSTING THE FLOW PATH THROUGH THE BASIN, MAKING MODIFICATIONS TO THE OUTLET STRUCTURE TO RETAIN MORE WATER DURING SMALL STORM EVENTS, CONDUCTING NECESSARY MAINTENANCE, AND ALSO ADDING MEASURES TO ASSIST WITH FUTURE OPERATION AND MAINTENANCE (E.G., ADDING FOREBAYS AND MAINTENANCE ACCESS POINTS AT THE INLETS AND THE OUTLET).

THE DESIGN OBJECTIVES FOR RETROFITTING THE RIO HILL BASIN ARE NOTED BELOW:

- PROVIDE COST-EFFECTIVE POLLUTANT REDUCTIONS, PARTICULARLY FOR PHOSPHORUS.
- ENHANCE THE HYDROLOGIC FUNCTION OF THE BASIN TO CONTROL SMALLER STORMS AS ONE STRATEGY FOR A BROADER WATERSHED CONTEXT, WHILE NOT COMPROMISING THE HYDROLOGIC FUNCTION FOR LARGER STORMS.
- PERFORM NECESSARY MAINTENANCE, ENHANCE THE INTERNAL FUNCTIONALITY OF THE BASIN, SUCH AS REPAIRING EXISTING EROSION AND SCOURS, LENGTHENING FLOW PATHS FROM INLETS TO OUTLET, PROMOTE A SIMPLE AND MAINTAINABLE PLANTING SCHEME, AND SIMPLIFY MAINTENANCE ACCESS AND PROCEDURES.
- ADHERE TO REGULATORY GUIDANCE FOR POLLUTANT ACCOUNTING AND DESIGN.

THE DESIGN TEAM HAS DEVELOPED A CONCEPT PLAN FOR THE PROJECT, AND IS WORKING ON THE ENGINEERING PLANS. BASED ON GUIDANCE FROM A DECEMBER 13 2018 MEETING WITH THE COUNTY ENGINEER AND WATER RESOURCES AND CIP STAFF, THE PLAN SUBMITTAL WILL BE PHASED. THIS EROSION & SEDIMENT CONTROL PLAN AND SWPPP ARE BEING SUBMITTED FIRST, AND THE TEAM WILL CONTINUE TO WORK ON OTHER PLAN DETAILS, SUCH AS THE PLANTING AND LONG-TERM O&M PLANS. AS SUCH, THIS IS A STAND-ALONE SWPPP FOR A LAND-DISTURBING ACTIVITY NOT ASSOCIATED WITH ANY OTHER SITE DEVELOPMENT.

A. EXISTING SITE CONDITIONS

THE EXISTING SITE IS AN OLD STORMWATER DETENTION POND BUILT IN ASSOCIATION WITH THE RIO HILL SHOPPING CENTER. THE POND IS ON PRIVATE PROPERTY, BUT THE COUNTY HOLDS AN EASEMENT (INCLUDING A 20' WIDE ACCESS EASEMENT) FOR THE PURPOSES OF PROVIDING LONG-TERM O&M. THE COUNTY HAS BEEN CONDUCTING PERIODIC MAINTENANCE ON THE POND FOR THE PAST SEVERAL YEARS.

THERE ARE 5 INLETS TO THE POND, CONTROLLING A 72-ACRE DRAINAGE AREA. TWO OF THE LARGER INLETS HAVE BASEFLOW, AND THE STORM FLOWS HAVE CUT CHANNELS THROUGH THE BASIN BOTTOM DIRECTING WATER TOWARDS THE OUTLET. SEVERAL FEET OF SEDIMENT HAVE ACCUMULATED IN THE POND BOTTOM OVER THE COURSE OF SEVERAL DECADES, AND THICKETS OF VEGETATION GENERALLY GROW IN DENSE STANDS. AN EXISTING 24" OUTLET PIPE AND RISER STRUCTURE CONTROL OUTLET FLOWS. THE POND BOTTOM APPEARS TO BE FLAT, BUT THE INLETS AT THE UPPER END ARE OVER 5' HIGHER THAN THE OUTLET PIPE. THE EXISTING SIDE SLOPES TO THE POND CONFINE ITS FOOTPRINT, SINCE THE SLOPES ARE VERY STEEP, WITH OVER 20' OF ELEVATION DROP ON THE WESTERN SIDE.

B. ADJACENT AREAS

THE POND IS IN THE RIO HILL SHOPPING CENTER PARKING LOT, CLOSEST TO ROUTE 29, WHICH RUNS JUST EAST OF THE TOP SLOPE OF THE POND. COMMERCIAL PROPERTIES AND OUTPARCELS ENCRICLE ALL OTHER SIDES OF THE POND. THE OUTLET PIPE RUNS UNDER ROUTE 29 AND DISCHARGES BETWEEN COMMERCIAL PROPERTIES ALONG THE EAST SIDE OF ROUTE 29 AND RESIDENTIAL PROPERTIES IN THE WOODBROOK SUBDIVISION. A COMBINATION OF ENGINEERED AND MORE NATURAL CHANNEL SEGMENTS CARRY THE WATER DOWN INTO THE WOODBROOK LAGOON.

C. OFF-SITE AREAS

PRIOR TO COMMENCING LAND DISTURBING ACTIVITIES IN AREAS OTHER THAN INDICATED ON THESE PLANS (INCLUDING, BUT NOT LIMITED TO, OFF-SITE BORROW OR WASTE AREAS), THE CONTRACTOR SHALL SUBMIT A SUPPLEMENTARY EROSION CONTROL PLAN TO THE COUNTY FOR REVIEW AND APPROVAL.

D. SOILS

BEING AT THE BOTTOM OF A STORMWATER BASIN, THE SOILS ARE MOSTLY AN INDICATION OF SEDIMENT THAT HAS WASHED IN FROM THE DRAINAGE AREA OVER THE COURSE OF MANY YEARS, AS WELL AS BEING THE PRODUCT OF AN EXCAVATED BASIN. AS SUCH, THE SOIL SURVEY WOULD NOT BE A RELIABLE SOURCE OF INFORMATION FOR THE SITE SOILS. TWO CORE SAMPLE WERE TAKEN AT THE BOTTOM OF THE BASIN. THE TOP LAYER IS COMPRISED OF CLAY LOAM, INDICATIVE OF MATERIAL THAT HAS WASHED INTO THE BASIN. BELOW THAT TO A DEPTH OF ABOUT 3', THERE IS A SANDY LOAM LAYER THAT HAS BEEN HEAVILY COMPACTED IN SOME AREAS. BELOW THAT LAYER IS A VERY HARD SUBSOIL (SILT AND SOME SAND), WHICH LIKELY ACCOUNTS FOR THE WET CONDITIONS IN THE BASIN BECAUSE IT FUNCTIONS AS A CONFINING LAYER. DURING THE WINTER SOILS INVESTIGATION, THE WATER TABLE WAS EITHER SATURATED TO THE SURFACE AT THE LOWER END OF THE BASIN OR ABOUT 2.5' BELOW GRADE AT THE HIGHER END.

SOILS FROM THE USDA SOIL SURVEY FOUND WITHIN THE PROJECT LIMITS INCLUDE THE FOLLOWING:

- 1) 34C-GLENELG LOAM, 2 TO 7 PERCENT SLOPES
- 2) 27C-ELIOAK LOAM, 7 TO 15 PERCENT SLOPES
- 3) 28C3-ELIOAK CLAY LOAM, 7 TO 15 PERCENT SLOPES, SEVERELY ERODE

E. CRITICAL AREAS

THE CRITICAL AREAS INCLUDE THE SIDE SLOPES OF THE BASIN, WHICH ARE STEEP, AND THE TWO EXISTING EROSION CHANNELS THAT BEEN CUT THROUGH THE BASIN BOTTOM FROM THE TWO MAIN INLETS. THERE ARE TWO ERODED SCOUR HOLES AT INLETS #2 AND #3, AND THESE WILL BE EXPANDED INTO FUNCTIONAL FOREBAYS AS PART OF THE RETROFIT PROJECT.

EROSION AND SEDIMENT CONTROL MEASURES

PHASE 1

PHASE 1 STRUCTURAL PRACTICES

1. TEMPORARY CONSTRUCTION ENTRANCE - 3.02: A TEMPORARY CONSTRUCTION ENTRANCE WILL BE CONSTRUCTED AT THE NORTHWEST CORNER OF THE BASIN EASEMENT AREA. ACCESS TO THE CE WILL BE VIA THE PRIVATE SHOPPING CENTER ROAD OFF OF WOODBROOK DRIVE.
2. CONSTRUCTION ROAD STABILIZATION - 3.03: THE ACCESS ROUTE TO THE BOTTOM OF THE BASIN WILL BE STABILIZED WITH FILTER FABRIC AND STONE. NOTE THAT THIS ACCESS ROAD WILL REMAIN AS A PERMANENT FEATURE TO AID WITH LONG-TERM MAINTENANCE.
3. SAFETY FENCE - 3.01: SAFETY FENCE WILL BE INSTALLED ALONG THE TOP OF SLOPE PERIMETER OF THE BASIN.
4. SILT FENCE - 3.05: SILT FENCE WILL BE INSTALLED BELOW THE EXCAVATION NEEDED TO INSTALL THE CONSTRUCTION ACCESS ROAD INTO THE BASIN.
5. TEMPORARY SEDIMENT TRAP - 3.13: A TEMPORARY SEDIMENT TRAP WILL BE INSTALLED TO ISOLATE THE UPPER END OF THE BASIN FLOOR AS PART OF PHASE 1 CONSTRUCTION (SEE GRADING AND DETAIL SHEET). THE TRAP WILL BE SIZED FOR THE PHASE 1 DISTURBED AREA.
6. TEMPORARY DIVERSION DIKE - 3.09: ALONG WITH THE TEMPORARY SEDIMENT TRAP, THE DIVERSION DIKE WILL ISOLATE GRADING IN THE UPPER PART OF THE BASIN.
7. CULVERT INLET PROTECTION - 3.08: CULVERT INLET PROTECTION WILL BE APPLIED AROUND THE BASIN'S OUTLET STRUCTURE (24" PIPE) TO PROTECT IT DURING PHASE 2 GRADING. IT WILL BE INSTALLED AS PART OF PHASE 1 AS A BACKUP SEDIMENT TRAPPING DEVICE DOWNSTREAM FROM THE PHASE 1 SEDIMENT TRAP AND DIVERSION DIKE.

PHASE 1 VEGETATIVE PRACTICES

1. SURFACE ROUGHENING - 3.29: SURFACE ROUGHENING WILL BE APPLIED TO ALL SIDE SLOPE GRADED OR DISTURBED AREAS THAT ARE TO BE STABILIZED WITH VEGETATION, ESPECIALLY THOSE STEEPER THAN 3:1.
2. TEMPORARY SEEDING - 3.31: TEMPORARY SEEDING WILL BE APPLIED TO ALL PHASE 1 DISTURBED AREAS BEFORE MOVING ON TO PHASE 2. THIS SEEDING WILL BE TEMPORARY BECAUSE A WETLAND PLANTING PLAN WILL ALSO BE INCLUDED THAT INDICATES PERMANENT WETLAND SEEDING AND INSTALLTION OF PLUGS.
3. PERMANENT SEEDING - 3.32: PERMANENT SEEDING WILL BE APPLIED TO ALL SIDE SLOPES ABOVE THE BASIN FLOOR THAT WILL BE DISTURBED DURING PHASE 1 AND THAT WILL NOT BE DISTURBED AGAIN DURING SUBSEQUENT PHASES.
4. MULCHING - 3.35: MULCHING WILL BE APPLIED TO ALL AREAS THAT RECEIVE TEMPORARY OR PERMANENT SEED. MULCH SHALL BE APPLIED IMMEDIATELY AFTER SEEDING.
5. SOIL STABILIZATION BLANKETS & MATTING - 3.36: APPROPRIATE BLANKETS/MATTING WILL BE APPLIED AFTER TEMPORARY AND PERMANENT SEEDING TO ANY AREAS THAT ARE PRONE TO EROSION WHERE ADDITIONAL STABILIZATION MAY BE WARRANTED (E.G., STEEP SIDE SLOPES, FLOW PATHS THROUGH THE BASIN) AND TO ALL SLOPES GREATER THAN 3:1 BEFORE MOVING TO PHASE 2. BLANKETS & MATTING IS TO BE BIODEGRADABLE AND NOT TO CONTAIN ANY PLASTIC MESH.

PHASE 2

PHASE 2 STRUCTURAL PRACTICES

DURING PHASE 2, THE PHASE 1 TEMPORARY SEDIMENT TRAP AND DIVERSION DIKE WILL REMAIN IN PLACE TO EFFECTIVELY ISOLATE THE UPPER END OF THE BASIN. THIS WILL HELP REDUCE THE DISTURBED AREA FOR PHASE 2. ADDITIONAL STRUCTURAL PRACTICES ARE NOTED BELOW.

1. PUMP AROUND: WHILE NOT A PRACTICE COVERED IN THE VESCH, PUMP AROUNDS FROM INLETS #2 AND #3 ARE CRITICAL E&S COMPONENTS FOR PHASE 2. SEE THE CONSTRUCTION SEQUENCE FOR MORE DETAIL.

PHASE 2 VEGETATIVE PRACTICES

1. SURFACE ROUGHENING - 3.29: SURFACE ROUGHENING WILL BE APPLIED TO ALL SIDE SLOPE GRADED OR DISTURBED AREAS THAT ARE TO BE STABILIZED WITH VEGETATION, ESPECIALLY THOSE STEEPER THAN 3:1.
 2. TEMPORARY SEEDING - 3.31: TEMPORARY SEEDING WILL BE APPLIED TO ALL PHASE 2 DISTURBED AREAS BEFORE MOVING ON TO PHASE 3. THIS SEEDING WILL BE TEMPORARY BECAUSE A WETLAND PLANTING PLAN WILL ALSO BE INCLUDED THAT INDICATES PERMANENT WETLAND SEEDING AND INSTALLTION OF PLUGS.
 3. PERMANENT SEEDING - 3.32: PERMANENT SEEDING WILL BE APPLIED TO ALL SIDE SLOPES ABOVE THE BASIN FLOOR THAT WILL BE DISTURBED DURING PHASE 2 AND THAT WILL NOT BE DISTURBED AGAIN DURING SUBSEQUENT PHASES.
- MULCHING - 3.35: MULCHING WILL BE APPLIED TO ALL AREAS THAT RECEIVE TEMPORARY OR PERMANENT SEED. MULCH SHALL BE APPLIED IMMEDIATELY AFTER SEEDING.
4. SOIL STABILIZATION BLANKETS & MATTING - 3.36: APPROPRIATE BLANKETS/MATTING WILL BE APPLIED AFTER TEMPORARY AND PERMANENT SEEDING TO ANY AREAS THAT ARE PRONE TO EROSION WHERE ADDITIONAL STABILIZATION MAY BE WARRANTED (E.G., STEEP SIDE SLOPES, FLOW PATHS THROUGH THE BASIN) AND TO ALL SLOPES GREATER THAN 3:1 BEFORE MOVING TO PHASE 3.

PHASE 3

PHASE 3 STRUCTURAL PRACTICES

DURING PHASE 3, THE PHASE 1 TEMPORARY SEDIMENT TRAP AND DIVERSION DIKE WILL REMAIN IN PLACE TO EFFECTIVELY ISOLATE THE UPPER END OF THE BASIN. THE PUMP-AROUND SYSTEM INSTALLED DURING PHASE 2 WILL BE MODIFIED TO ALLOW COMPLETION OF GRADING OF SEDIMENT FOREBAYS. THE FOLLOWING ARE ALSO INCLUDED WITH PHASE 3.

1. DEWATERING STRUCTURE - 3.26: PHASE 3 WILL UTILIZE DIRT BAGS OR OTHER APPROVED DEWATERING STRUCTURE FOR COMPLETION OF FOREBAYS AND OUTLET MICROPPOOL.
2. PUMP AROUND: WHILE NOT A PRACTICE COVERED IN THE VESCH, PUMP AROUNDS FROM INLETS #2 AND #3 AND THE OUTLET MICROPPOOL ARE CRITICAL E&S COMPONENTS FOR PHASE 3. SEE THE CONSTRUCTION SEQUENCE FOR MORE DETAIL.
3. SILT FENCE - 3.05: SILT FENCE WILL BE INSTALLED BELOW THE GRADING NEEDED TO MODIFY THE EXISTING RISER STRUCTURE.

PHASE 3 VEGETATIVE PRACTICES

1. SURFACE ROUGHENING - 3.29: SURFACE ROUGHENING WILL BE APPLIED TO ALL SIDE SLOPE GRADED OR DISTURBED AREAS THAT ARE TO BE STABILIZED WITH VEGETATION, ESPECIALLY THOSE STEEPER THAN 3:1.
2. TEMPORARY SEEDING - 3.31: TEMPORARY SEEDING WILL BE APPLIED TO ANY REMAINING PHASE 3 DISTURBED AREAS THAT WERE NOT STABILIZED DURING PHASE 2.
3. PERMANENT SEEDING - 3.32: PERMANENT SEEDING WILL BE APPLIED TO DISTURBED AREAS ON THE BASIN SIDE SLOPE THAT ARE DUE TO GRADING FOR THE RISER MODIFICATIONS AS WELL AS OTHER DISTURBED AREAS ON THE SIDE SLOPES DUE TO EQUIPMENT ACCESS OR OTHER CONSTRUCTION ACTIVITIES.
4. MULCHING - 3.35: MULCHING WILL BE APPLIED TO ALL AREAS THAT RECEIVE TEMPORARY OR PERMANENT SEED. MULCH SHALL BE APPLIED IMMEDIATELY AFTER SEEDING.
5. SOIL STABILIZATION BLANKETS & MATTING - 3.36: APPROPRIATE BLANKETS/MATTING WILL BE APPLIED AFTER TEMPORARY AND PERMANENT SEEDING TO ANY AREAS THAT ARE PRONE TO EROSION WHERE ADDITIONAL STABILIZATION MAY BE WARRANTED (E.G., STEEP SIDE SLOPES, FLOW PATHS THROUGH THE BASIN) AND TO ALL SLOPES GREATER THAN 3:1.

PHASE 4

PHASE 4 INVOLVES COMPLETING THE WETLAND PLANTING PLAN, AS INDICATED ON THE PLAN SHEETS AND IN THE CONSTRUCTION SEQUENCE.

G. RIO HILL BASIN - EROSION & SEDIMENT CONTROL PLAN, SEQUENCE OF CONSTRUCTION

OVERALL APPROACH TO PHASING OF CONSTRUCTION

THE PROPOSED LAND-DISTURBING ACTIVITY IS IN THE BOTTOM OF AN EXISTING DRY DETENTION POND WITH A 72-ACRE DRAINAGE AREA. THE PURPOSE IS TO RETROFIT THE POND TO PROVIDE ENHANCED WATER QUALITY TREATMENT AS WELL AS NECESSARY MAINTENANCE. AS SUCH, THE GRADING WILL TAKE PLACE ON THE FLOOR OF THE EXISTING POND. A PHASED EROSION AND SEDIMENT CONTROL PLAN IS PROPOSED IN ORDER TO REDUCE EXPOSURE OF SOIL TO RAINFALL AND STORM FLOWS AT ANY GIVEN TIME. THE PHASING WILL ALSO ALLOW SOME AREAS OF THE POND TO FULFILL AN E&S PURPOSE WHILE OTHERS ARE BEING GRADED AND MODIFIED. FOUR PHASES ARE PROPOSED IN THE PLAN.

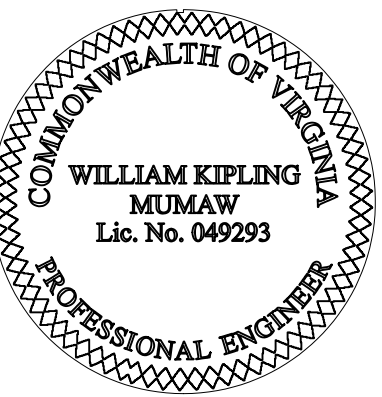
NOTE ALSO THAT THE PROPOSED WORK WILL ACCOMPLISH NECESSARY MAINTENANCE AND ALSO IMPROVE ACCESS FOR FUTURE OPERATION AND MAINTENANCE. COMPARED TO A FULL DREDGE PROJECT, THIS ACCOMPLISHES THESE GOALS AND IMPROVES WATER QUALITY TREATMENT WITH LESS DISTURBANCE. WITH REGARD TO LONG-TERM MAINTENANCE ACCESS, NOTE THAT PART OF THE CONSTRUCTION ENTRANCE AND THE ACCESS ROUTE TO THE BOTTOM OF THE BASIN WILL REMAIN AS PERMANENT

ACCESS FEATURES (SEE SHEET 7, PHASE 1 PLAN).

PHASE 1

PHASE 1 ISOLATES THE TOP END OF THE POND FLOOR. THE END HAS THE LEAST AMOUNT OF DRAINAGE AREA COMING TO IT AND THE GRADING/BASIN MODIFICATIONS CAN BE DONE RELATIVELY QUICKLY. IT MAKES SENSE TO GET THIS WORK DONE BEFORE MOVING TO THE SUBSEQUENT PHASES.

1. HOLD A PRE-CONSTRUCTION MEETING WITH THE COUNTY VSMP AUTHORITY PERSONNEL, WATER RESOURCES STAFF, AND PROJECT DESIGNERS.
2. INSTALL SAFETY FENCE AROUND PERIMETER AS SHOWN ON THE PLAN.
3. INSTALL SILT FENCE BELOW THE AREA SHOWN FOR GRADING OF THE CONSTRUCTION ENTRANCE.
4. CONSTRUCT THE CONSTRUCTION ENTRANCE (INCLUDING STABILIZING WITH STONE) AT THE LOCATION INDICATED. NOTE THAT PART OF THE CONSTRUCTION ENTRANCE FROM THE INGRESS POINT TO THE ACCESS ROUTE, AND THE ACCESS ROUTE ITSELF, WILL REMAIN AS PERMANENT ACCESS FEATURES. THE CONSTRUCTION ENTRANCE SOUTH OF THE ACCESS ROUTE, ALONG WITH ASSOCIATED LAYDOWN AREAS, WILL BE TEMPORARY. REMOVE EXISTING GUARDRAIL ONLY IN SPOTS TO ALLOW INGRESS AND EGRESS FROM THE CONSTRUCTION ENTRANCE.
5. CONSTRUCT AND STABILIZE THE ACCESS ROUTE TO THE BOTTOM OF THE BASIN, USING CONSTRUCTION ROAD STABILIZATION (FILTER FABRIC AND STONE). STABILIZE CUT AND FILL SLOPES ASSOCIATED WITH THE ACCESS ROUTE IMMEDIATELY (SURFACE ROUGHENING, SEEDING, MATTING). NOTE THAT WHILE THE ACCESS ROUTE WILL ALLOW ACCESS TO THE BOTTOM OF THE BASIN, MOVEMENT OF EQUIPMENT WITHIN THE BASIN BOTTOM FOR EACH PHASE SHOULD BE BY USE OF TIMBER MATS OR EQUIVALENT.
6. CLEAR VEGETATION IN THE PHASE 1 WORK AREA AT THE BOTTOM OF THE BASIN. ONLY GRUB AREAS THAT ARE NECESSARY TO GAIN ACCESS TO DIVERSION DIKE, PROPOSED SEDIMENT TRAP AND MAINTENANCE CAUSEWAY AREAS, AND SEDIMENT FOREBAY (S.F.) #4. OTHER AREAS SHOULD BE CLEARED, BUT NOT GRUBBED.
7. CONSTRUCT THE PHASE 1 DIVERSION DIKES AND SEDIMENT TRAP IN ORDER TO ISOLATE THE TOP END OF THE BASIN. WHEN BUILDING THE DIVERSION DIKES, CONSTRUCT MAINTENANCE CAUSEWAY (M.C.) #3 TO THE PROPOSED GRADE AND COVER WITH RIP-RAP. THIS M.C. WILL FUNCTION AS PART OF THE DIVERSION DIKE FOR PHASE 1.
8. CONSTRUCT THE CULVERT INLET PROTECTION (SEDIMENT TRAP INLET PROTECTION) AT THE EXISTING BASIN OUTLET STRUCTURE (24" PIPE FROM THE RISER). THIS AREA IS IN THE PHASE 2 CONSTRUCTION AREA, BUT THE CULVERT INLET PROTECTION WILL SERVE AS A BACKUP SEDIMENT TRAPPING DEVICE IF THE PHASE 1 SEDIMENT TRAP OVERFLOWS.
9. GRADE M.C. #4 AND FOREBAY #4. THERE IS NO BASEFLOW FROM THE TWO PIPES THAT LEAD TO S.F. #4, SO WORK SHOULD BE IN THE DRY UNLESS THERE IS A STORM EVENT.
10. IN THE CASE OF AN ANTICIPATED SIGNIFICANT STORM EVENT, STABILIZE DISTURBED AREAS TO THE EXTENT POSSIBLE AND PULL EQUIPMENT OUT OF THE BOTTOM OF THE BASIN.
11. AT THE COMPLETION OF PHASE 1 INTERNAL GRADING, APPLY TEMPORARY SEED AND MULCH TO ALL BASIN FLOOR DISTURBED AREAS, AND PERMANENT SEED AND MULCH TO DISTURBED AREAS ON SIDE SLOPES DUE TO EQUIPMENT ACCESS. APPLY AN APPROVED EC-2 MATTING TO AREAS WHERE FLOW IS LIKELY TO CONCENTRATE.
12. PHASE 1 FEATURES TO BE COMPLETED: M.C. #3 AND #4, S.F. #4. **INSPECTOR/DESIGNER CHECK-OFF FOR PROPER GRADING OF FEATURES.**



RIO HILL STORMWATER RETROFIT
ESC NOTES
ALBEMARLE COUNTY, VA

REVISION

PROJECT MANAGER:	WKM
DESIGNED:	WKM
DRAWN:	JNB
PROJECT #:	17-0042
DATE:	2/14/2020
SHEET:	

5

EROSION AND SEDIMENT CONTROL MEASURES CONTINUED

PHASE 2

PHASE 2 ALLOWS MOST OF THE GRADING TO TAKE PLACE AT THE LOWER END OF THE POND, WHILE PUMPING BASEFLOW FROM TWO INLETS AROUND THE WORK AREA. THIS IS SIMILAR TO E&S APPROACHES USED FOR STREAM RESTORATION WORK.

- 1. LEAVE THE PHASE 1 DIVERSION DIKES AND SEDIMENT TRAP IN PLACE. ENSURE THE CULVERT INLET PROTECTION IS OPERATIONAL AND IN GOOD WORKING ORDER, OR PROVIDE MAINTENANCE (E.G., SEDIMENT REMOVAL) AS NECESSARY.
- 2. CLEAR VEGETATION IN THE PHASE 2 WORK AREA. GRUB AREAS IN ORDER TO CONDUCT GRADING AND GAIN ACCESS TO THE VARIOUS INLETS AND OUTLET.
- 3. AT THE IMMEDIATE PIPE OUTFALLS OF PIPES #2 AND #3, THERE ARE EXISTING SCOUR HOLES. PLACE RIP-RAP AROUND THE PERIMETER OF THESE SCOUR HOLES AND MODIFY THEM AS NEEDED IN ORDER TO PLACE A PUMP IN EACH ONE. THE PUMP AT PIPE #3 SHOULD RUN TO A PUMP-AROUND SYSTEM LEADING TO PIPE OUTFALL #2. THE PIPE #3 PUMP ONLY NEEDS TO BE SIZED FOR FLOW FROM PIPE #3. THE PUMP AT PIPE #2 SHOULD BE SIZED FOR FLOW FROM PIPES #2 AND #3, AND SHOULD GO TO A PUMP AROUND SYSTEM TO THE BASIN OUTLET AT THE CULVERT INLET PROTECTION (SEE PHASE 2 PLAN FOR PROPOSED ALIGNMENT TO KEEP THE PUMP AROUND OUT OF THE MAIN WORK AREA).
- 4. CONDUCT GRADING IN THE PHASE 2 WORK AREA. THIS INCLUDES M.C. #1 AND #2 AND S.F. #1. FOR S.F. #2 AND #3 AND THE OUTLET MICROPOOL, CONSTRUCT ENOUGH OF THE FOREBAY WHILE LEAVING THE PUMP-AROUND SYSTEM AT #2 AND #3 AND OUTLET CIP IN PLACE. THIS WILL LIKELY MEAN NOT COMPLETING THE FINISHED GRADING RIGHT AT THE PIPE OUFALLS OR BASIN OUTLET.
- 5. THE PHASE 2 WORK AREA ALSO INCLUDES INTERNAL BASIN GRADING TO CREATE THE HIGH MARSH AND LOW MARSH ZONE AND BERM THAT RUNS GENERALLY FROM NORTH TO SOUTH.
- 6. IF A RAINFALL EVENT EXCEEDING 0.25" IS ANTICIPATED DURING PHASE 2 ACTIVITIES, STABILIZE DISTURBED AREAS AND PULL EQUIPMENT OUT OF THE BOTTOM OF THE BASIN. DEPENDING ON THE AMOUNT OF RAINFALL ACTUALLY RECEIVED, THE BASIN WILL DEWATER THROUGH THE CULVERT INLET PROTECTION AND EXISTING OUTLET. HOWEVER, RESUMING WORK IN THE PHASE 2 AREA MAY REQUIRE ADDITIONAL DEWATERING THROUGH AN APPROVED FILTERING DEVICE, SUCH AS A DIRT BAG. CHECK WITH THE COUNTY INSPECTOR AND DESIGNER BASED ON ACTUAL SITE CONDITIONS. REMOVE THE TEMPORARY PLATE/PLUG WHEN WORK IS READY TO RESUME.
- 7. AT THE COMPLETION OF PHASE 2 INTERNAL GRADING, APPLY TEMPORARY SEED AND MULCH TO ALL BASIN FLOOR DISTURBED AREAS, AND PERMANENT SEED AND MULCH TO DISTURBED AREAS ON SIDE SLOPES DUE TO EQUIPMENT ACCESS. APPLY AN APPROVED EC-2 MATTING TO AREAS WHERE FLOW IS LIKELY TO CONCENTRATE. MULCH SHALL BE APPLIED IMMEDIATELY AFTER SEEDING.
- 8. PHASE 2 FEATURES TO BE COMPLETED: M.C. #1 AND #2, S.F. #1 AND AS MUCH OF S.F. #2 AND #3 AND OUTLET MICROPOOL AS POSSIBLE, WHILE LEAVING THE PUMP-AROUND SYSTEMS IN PLACE. **INSPECTOR/DESIGNER CHECK-OFF FOR PROPER GRADING OF FEATURES.**
- 9. PHASE 2 FEATURES BE COMPLETED: PLANTING PLAN, REMOVAL OF TEMPORARY E&S DEVICES. **INSPECTOR/DESIGNER CHECK-OFF FOR ADHERENCE TO PLANTING PLAN.**

PHASE 3

PHASE 3 ALLOWS THE REMAINING GRADING TO TAKE PLACE AT THE LOWER END OF THE BASIN, WHILE KEEP WORK AREAS DEWATERED.

- 1. PHASE 3 INVOLVES COMPLETING THE GRADING FOR S.F. #2 AND #3, THE OUTLET MICROPOOL, AND MODIFICATIONS TO THE EXISTING RISER.
- 2. RECONFIGURE THE PUMP AT S.F. #2 TO GAIN ACCESS TO THE AREA IMMEDIATELY AT THE PIPE OUTFALL. RUN THE PUMP FROM S.F. #2 TO AN APPROVED SEDIMENT FILTERING DEVICE, SUCH AS A DIRT BAG. COMPLETE GRADING FOR S.F. #2.
- 3. REPEAT #2 ABOVE FOR S.F. #3. THIS MAY INVOLVE PUMPING S.F. #3 TO A SEPARATE DIRT BAG.
- 4. SET UP A PUMP SYSTEM AT THE OUTLET MICROPOOL AND RUN TO ONE OF THE EXISTING OR A SEPARATE DIRT BAG. TEMPORARILY REMOVE THE CIP SO THAT GRADING ON THE MICROPOOL CAN BE COMPLETED, AND THEN RE-ESTABLISH THE CIP, USING THE FINAL MICROPOOL CONFIGURATION FOR THE CIP.
- 5. INSTALL THE PLATE WITH 1.6" ORIFICE ON THE EXISTING OUTLET PIPE.
- 6. GRADE THE EMBANKMENT AROUND THE EXISTING RISER AND ENLARGE THE RISER NOTCHES AS SHOWN ON THE PLAN DETAIL.
- 7. AT THE COMPLETION OF PHASE 3 INTERNAL GRADING, APPLY TEMPORARY SEED AND MULCH TO ALL BASIN FLOOR DISTURBED AREAS, AND PERMANENT SEED AND MULCH TO DISTURBED AREAS ON SIDE SLOPES DUE TO EQUIPMENT ACCESS AND GRADING AROUND THE RISER. APPLY SURFACE ROUGHENING AND AN APPROVED EC-2 MATTING TO AREAS WHERE FLOW IS LIKELY TO CONCENTRATE AND SLOPES GREATER THAN 3:1.
- 8. STABILIZE AND REPAIR THE ACCESS ROUTE TO THE BOTTOM OF THE BASIN AND THE CONSTRUCTION ENTRANCE NORTH OF THE ACCESS ROUTE. REPAIR ANY EROSION AREAS AND APPLY CLEAN STONE WHERE NECESSARY. THESE FEATURES WILL REMAIN IN PLACE AS PERMANENT MAINTENANCE ACCESS POINTS.
- 9. REMOVE AND STABILIZE STONE AND LAYDOWN AREAS ALONG THE TOP EDGE OF THE BASIN SOUTH OF THE ACCESS ROUTE.
- 10. PHASE 3 FEATURES TO BE COMPLETED: S.F. #2 AND #3 AND OUTLET MICROPOOL. **INSPECTOR/DESIGNER CHECK-OFF FOR PROPER GRADING OF FEATURES.**

PHASE 4

PHASE 4 INVOLVED IMPLEMENTING THE PLANTING PLAN AT THE APPROPRIATE TIME OF YEAR AS INDICATED IN THE PLAN. THIS MAY ALSO REQUIRE REMOVAL AND ERADICATION OF INVASIVE OR NON-NATIVE SPECIES THAT HAVE INHABITED THE BASIN FLOOR PRIOR TO PLANTING THE SPECIFIED VEGETATION.

- 1. STORE AND PLANT ALL VEGETATION ACCORDING THE PLANTING PLAN SPECIFICATIONS.
- 2. WHEN THE BASIN FLOOR AND SIDE SLOPES ARE STABILIZED WITH VEGETATION, REMOVE ANY TEMPORARY COMPONENTS OF THE OUTLET STRUCTURE CIP AND OTHER TEMPORARY EROSION AND SEDIMENT CONTROL DEVICES STILL IN PLACE. REMOVE THE DEWATERING SNOUT ON THE OUTLET PIPE AND INSTALL THE FINAL PLATE WITH THE 1.6" ORIFICE AS PER THE RISER DETAILS.
- 3. REPAIR OR REPLACE DAMAGED CURB & GUTTER UPON REMOVING CONSTRUCTION ENTRANCE AS NEEDED.
- 4. PHASE 4 FEATURES TO BE COMPLETED: PLANTING PLAN, REMOVAL OF TEMPORARY E&S DEVICES. **INSPECTOR/DESIGNER CHECK-OFF FOR ADHERENCE TO PLANTING PLAN.**
- 5. CONSULT THE VIRGINIA DCR INVASIVE SPECIES LIST: <https://www.dcr.virginia.gov/natural-heritage/invspdfdist> . IN ADDITION, INVASIVE WOODY SPOUTS SHOULD BE CUT AND SPRAYED PRIOR TO PLANTING NEW MATERIAL AS PER THE PLANTING PLAN.

PERMANENT STABILIZATION

AS STATED, TEMPORARY STABILIZATION WILL BE APPLIED TO ALL DISTURBED AREAS ON THE BASIN FLOOR. THESE AREAS WILL ULTIMATELY BE CONVERTED TO PERMANENT WETLAND VEGETATION BASED ON A WETLAND PLANTING PLAN. THE WETLAND PLANTINGS WILL BE A COMBINATION OF SEED MIX AND PLUGS. THE PERMANENT WETLAND PLANTING WILL BE ACCOMPLISHED DURING AN APPROPRIATE TIME OF YEAR, BUT PRIOR TO THE TEMPORARY VEGETATION GOING DORMANT. SEE THE PLANTING PLAN AND SCHEDULE ON THE DESIGN PLANS. IF THE PERMANENT WETLAND PLANTING CANNOT BE DONE PRIOR TO THE DORMANT SEASON, APPROPRIATE ADDITIONAL TEMPORARY STABILIZATION WILL BE APPLIED IN THE EARLY FALL UNTIL WETLAND PLANTING CAN TAKE PLACE IN THE SPRING. APPROPRIATE GOOSE PROTECTION FENCING AND NETTING WILL BE NEEDED IN SELECTED AREAS PLANTED WITH PLUGS AND/OR SEEDED WITH WETLAND SEED. THE CONTRACTOR SHOULD CONSULT THE COUNTY OF ALBEMARLE AS TO THE SPECIFIC AREAS, AND GOOSE PROTECTION

SHALL BE INSTALLED IMMEDIATELY AFTER PLUG INSTALLATION OR SEEDING.

STABILIZATION NOTES

- 1. GENERAL SEEDING SHALL OCCUR WITHIN SEVEN DAYS OF REACHING FINAL GRADE.
- 2. PLANTING AT OTHER TIMES THAN SPECIFIED MAY BE DONE ONLY UNDER SPECIFIC CONDITIONS AND WITH THE CONSENT OF THE ENGINEER.
- 3. ALL OPERATIONS SHALL BE PERFORMED ONLY WHEN THE SOIL IS IN PROPER CONDITION TO PERMIT SATISFACTORY INSTALL.
- 4. SURFACE SHALL BE CLEARED OF ALL GRADE STAKES, SURFACE TRASH OR OTHER OBJECTS, WHICH WOULD HINDER INSTALLATION OF SEED.
- 5. SEED SHALL BE APPLIED WITH AN APPROPRIATE METHOD EITHER BY HYDROSEEDING/HYDROMULCHING OR BROADCAST SPREAD.
- 6. HYDROSEED OR HYDRO MULCH SHALL BE DYED GREEN TO AID IN VISUAL METERING DURING APPLICATION AND SHALL BE APPLIED AT A RATE OF 1200 POUNDS PER ACRE.
- 7. UNLESS HYDROSEEDING/HYDROMULCHING METHODS ARE USED, SEED SHALL BE RAKED AND LIGHTLY ROLLED. SEED SHALL BE COVERED WITH STRAW MULCH AT A RATE OF 1.5 TONS PER ACRE AND SHALL BE OF STANDARD QUALITY AND FREE OF WEEDS.

MAINTENANCE SCHEDULE

IN GENERAL, THE CONTRACTOR SHALL CHECK ALL EROSION AND SEDIMENT CONTROL MEASURES EVERY FOUR DAYS AND WITHIN 48-HOURS OF THE END OF A STORM EVENT THAT IS 0.25 INCHES OR GREATER. IF SITE INSPECTIONS IDENTIFY BMPS THAT ARE NOT OPERATING EFFECTIVELY, MAINTENANCE SHALL BE PERFORMED BEFORE THE NEXT ANTICIPATED STORM EVENT.

UNLESS OTHERWISE SPECIFIED, ALL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION. A COPY OF THE APPROVED ESC PLAN SHALL BE MADE AVAILABLE ONSITE AT ALL TIMES.

- 1. TEMPORARY STONE CONSTRUCTION ENTRANCE SHALL BE MAINTAINED IN A CONDITION, WHICH WILL PREVENT TRACKING OR FLOW OF MUD ONTO PUBLIC RIGHT-OF-WAYS. PERIODIC TOP DRESSING WITH ADDITIONAL STONE OR THE WASHING AND REWORKING OF EXISTING STONE SHALL BE EXECUTED AS CONDITIONS DEMAND. ALL MATERIALS SPILLED, DROPPED, WASHED OR TRACKED FROM VEHICLES ONTO ROADWAYS OR INTO STORM DRAINS MUST BE REMOVED IMMEDIATELY, BUT NO LATER THAN THE END OF EACH WORKDAY.

CONSTRUCTION VEHICLES ENTERING AND EXITING THE SITE ON A REGULAR BASIS TO HAUL IN AND OUT MATERIAL AND EQUIPMENT SHALL USE THE TEMPORARY CONSTRUCTION ENTRANCE, BUT SHALL NOT ENTER THE ACTIVE GRADING AREA ON THE BASIN FLOOR. EXCAVATION AND GRADING EQUIPMENT ON THE BASIN FLOOR WILL GENERALLY REMAIN ON SITE AND USE THE ACCESS ROUTE TO THE BOTTOM OF THE BASIN, AND WILL BE WASHED PRIOR TO LEAVING THE SITE. THESE PROVISIONS ARE INTENDED TO KEEP THE TEMPORARY CONSTRUCTION ENTRANCE AS CLEAN AS POSSIBLE. NOTE ON SHEET 7 TO SECTIONS OF THE CONSTRUCTION ENTRANCE AND ACCESS ROUTE TO THE BASIN FLOOR THAT ARE TO REMAIN AS PERMANENT MAINTENANCE ACCESS FEATURES.

- 2. SILT FENCE SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY. SEDIMENT DEPOSITS SHALL BE REMOVED AFTER EACH STORM EVENT AND WHEN DEPOSITS REACH APPROXIMATELY ONE-HALF THE HEIGHT OF THE BARRIER. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT FENCE IS NO LONGER REQUIRED SHALL BE DRESSED TO CONFORM TO THE EXISTING GRADE, REPAIRED, AND SEEDED.

- 3. DISTURBED AREAS AND AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION SHALL BE INSPECTED FOR EVIDENCE OF, OR THE POTENTIAL FOR, POLLUTANTS ENTERING THE DRAINAGE SYSTEM.

- 4. WHERE DISCHARGE LOCATIONS OR POINTS ARE ACCESSIBLE, THEY SHALL BE INSPECTED TO ASCERTAIN WHETHER EROSION CONTROL MEASURES ARE EFFECTIVE IN PREVENTING SIGNIFICANT IMPACTS TO RECEIVING WATERS. WHERE DISCHARGE LOCATIONS ARE INACCESSIBLE, NEARBY DOWNSTREAM LOCATIONS SHALL BE INSPECTED TO THE EXTENT THAT SUCH INSPECTIONS ARE PRACTICAL.

- 5. LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE SHALL BE INSPECTED DAILY FOR EVIDENCE OF OFFSITE SEDIMENT TRACKING.

- 6. INLET PROTECTION SHALL BE CHECKED REGULARLY FOR SEDIMENT BUILD-UP, WHICH WILL PREVENT DRAINAGE. IF THE GRAVEL IS CLOGGED WITH SEDIMENT, IT SHALL BE REMOVED AND CLEANED OR REPLACED.

- 7. TREE PROTECTION SHALL BE CHECKED REGULARLY FOR DAMAGE AND REPAIRED AS NECESSARY. SITE INSPECTION FOR ADDITIONAL AREAS THAT WARRANT TREE PROTECTION SHOULD BE CONDUCTED DAILY.

EROSION AND SEDIMENT CONTROL NOTES

- 1. THE OWNER/DEVELOPER MUST NOTIFY ALBEMARLE COUNTY AT LEAST 24 HOURS PRIOR TO THE START OF CONSTRUCTIONS IN ACCORDANCE WITH APPLICABLE COUNTY ORDINANCES AND POLICIES.
- 2. THE OWNER/DEVELOPER GRANTS THE RIGHT-OF-ENTRY ON THIS PROPERTY TO THE DESIGNATED ALBEMARLE COUNTY PERSONNEL FOR THE PURPOSE OF INSPECTING AND MONITORING FOR COMPLIANCE WITH TITLE 10.01, CHAPTER 5, ARTICLE 4 OF THE CODE OF VIRGINIA, EROSION AND SEDIMENT CONTROL LAW AND THE DESIGN AND CONSTRUCTION STANDARDS MANUAL SECTION 750.04 (C).
- 3. ALL EROSION CONTROL MEASURES SHOWN ON THE APPROVED PLAN MUST BE IN PLACE AND INSPECTED AND APPROVED BY THE DESIGNATED AUTHORITY PRIOR TO CLEARING, STRIPPING OF TOPSOIL OR GRADING.
- 4. A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN AND PERMIT SHALL BE KEPT ON THE SITE AT ALL TIMES.
- 5. THE CONTRACTOR IS RESPONSIBLE FOR THE INSTALLATION OF ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY THE DESIGNATED AUTHORITY.
- 6. ALL DISTURBED AREAS ARE TO DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL COMPLETE AND ADEQUATE STABILIZATIONS IS ACHIEVED.
- 7. WATER MUST BE PUMPED INTO AN APPROVED FILTERING DEVICE DURING DEWATERING OPERATIONS.
- 8. ALL EROSION AND SEDIMENT CONTROL PRACTICES MUST BE CONSTRUCTED AND MAINTAINED ACCORDING TO THE MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, CHAPTER 840, "EROSION AND SEDIMENT CONTROL REGULATIONS", THE DEVELOPER/DEVELOPER'S REPRESENTATIVE SHALL INSPECT ALL EROSION AND SEDIMENT CONTROL MEASURES AT A MINIMUM EVERY FOUR DAYS AND AFTER EACH SIGNIFICANT RAINFALL. THE FOLLOWING ITEMS WILL BE CHECKED IN PARTICULAR: 1) SILT FENCE BARRIERS WILL BE CHECKED REGULARLY FOR UNDERMINING OR DETERIORATION OF THE FABRIC. 2) SEDIMENT SHALL BE REMOVED WHEN THE LEVEL OF SEDIMENT DEPOSITION REACHES HALF WAY TO THE TOP OF THE BARRIER 3) SEEDDED AREAS WILL BE CHECKED REGULARLY TO ENSURE THAT A GOOD STAND IS MAINTAINED. AREAS SHOULD BE FERTILIZED AND RESEEDDED AS NEEDED 4) STREAM DIVERSIONS SHALL BE INSPECTED DAILY AND AFTER EACH RAIN TO ENSURE THEY'RE FUNCTIONING PROPERLY AND THAT THE INTEGRITY OF THE LINING ARE NOT IMPAIRED. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVICES MUST BE MADE IMMEDIATELY AFTER THE INSPECTION.
- 9. PERMANENT SOIL STABILIZATION SHALL BE APPLIED TO DENUDED AREAS WITHIN SEVEN (7) DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN SEVEN (7) DAYS TO DENUDED AREAS THAT MAY NOT BE AT FINAL GRADE BUT WILL REMAIN UNDISTURBED FOR LONGER THAN FOURTEEN (14) DAYS. SEEDING AND SELECTION OF THE SEED MIXTURE SHALL BE IN ACCORDANCE WITH THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK 3.32. ROADS AND PARKING AREAS SHALL BE STABILIZED WITHIN SEVEN (7) DAYS AFTER FINAL GRADE IS REACHED.
- 10. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES WILL BE REMOVED WITHIN 30 DAYS AFTER ADEQUATE SITE STABILIZATION AND AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED, AS AUTHORIZED BY THE DESIGNATED VESCP INSPECTORS. TRAPPED SEDIMENT AND THE DISTURBED SOIL AREAS RESULTING FROM THE DISPOSITION OF TEMPORARY MEASURES WILL BE PERMANENTLY STABILIZED TO PREVENT FURTHER EROSION AND SEDIMENTATION.
- 11. WHEN THE SEDIMENT IS TRANSPORTED ONTO A PAVED ROAD SURFACE, THE ROAD WILL BE CLEANED THOROUGHLY AT THE END OF EACH DAY. SEDIMENT WILL BE REMOVED FROM THE ROADS BY SHOVELING OR SWEEPING AND TRANSPORTED TO A SEDIMENT CONTROL DISPOSAL AREA. STREET WASHING WILL BE ALLOWED ONLY AFTER SEDIMENT IS DISPOSED IN THIS MANNER.
- 12. AREAS WHICH ARE NOT TO BE DISTURBED WILL BE CLEARLY MARKED BY FLAGS, SIGNS, ETC.
- 13. TREE SAVE AREAS SHALL BE CLEARLY MARKED IN THE FIELD BY ORANGE SAFETY FENCE.
- 14. ORANGE SAFETY FENCE MUST BE INSTALLED AROUND ALL SILT TRAPS AND SEDIMENT BASINS.

MINIMUM STANDARDS NARRATIVE

- 1. MS-1 : SOIL STABILIZATION WILL BE ACHEIVED PER STABILIZATION NOTES AND EROSION AND SEDIMENT CONTROL NARRATIVE.
- 2. MS-2: SILT FENCE SHALL BE INSTALLED ALONG PERIMETER OF ALL TEMPORARY STOCKPILES.
- 3. MS-3: PERMANENT STABILIZATION WILL BE COMPLETED PURSUANT OF NOTES PROVIDED.
- 4. MS-4: A SEDIMENT TRAP WILL BE CONSTRUCTED IN PHASE ONE OF THE ESC PLAN.
- 5. MS-5: IMMEDIATE STABILIZATION SHALL OCCUR ON ALL EARTHEN STRUCTURES AFTER INSTALLATION.
- 6. MS-6: THE SEDIMENT TRAP HAS BEEN SIZED AT 1800 CUBIC FEET TO CAPTURE 0.5 ACRES OF RUNOFF.
- 7. MS-7: CUT AND FILL SLOPES WILL BE STABILIZED ACCORDING TO NOTES PROVIDED IN ESC PLAN AND PLANTING PLAN.
- 8. MS-8: NOT APPLICABLE.
- 9. MS-9: EROSION CONTROL MATTING, DECK MATS, STRAW MULCH, AND SHREDDED HARDWOOD MULCH WILL BE USED IN STEEP SLOPE AREAS.
- 10. MS-10: CULVERT INLET PROTECTION WILL BE INSTALLED IN PHASE ONE AROUND THE STORM SEWER INLET.
- 11. MS-11: PERMANENT INLET PROTECTION IS BEING CONSTRUCTED AROUND THE STORM SEWER INLET AS PART OF THE PROJECT.
- 12. MS-12: NOT APPLICABLE
- 13. MS-13: NOT APPLICABLE
- 14. MS-14: NOT APPLICABLE
- 15. MS-15: NOT APPLICABLE
- 16. MS-16: NOT APPLICABLE.
- 17. MS-17: A STONE CONSTRUCTION ENTRANCE (WITH WASH RACK IF NECESSARY) WILL BE INSTALLED AS DEPICTED ON PLANS.
- 18. MS-18: REMOVAL OF TEMPORARY MEASURES WILL BE COMPLETED ACCORDING TO NOTES PROVIDED.
- 19. MS-19: THE PROPOSED PROJECT WILL ADD CAPACITY AND ENHANCE VEGETATION COMPARED TO THE EXISTING CONDITION. AS SUCH, THE PROJECT WILL DECREASE RUNOFF TO THE DOWNSTREAM CHANNEL IN WOODBROOK.

STORMWATER RUNOFF CONSIDERATIONS

THE PROPOSED PROJECT WILL ADD CAPACITY AND ENHANCE VEGETATION COMPARED TO THE EXISTING CONDITION. AS SUCH, THE PROJECT WILL DECREASE RUNOFF TO THE DOWNSTREAM CHANNEL IN WOODBROOK. THE WHOLE PURPOSE OF THIS PROJECT IS TO IMPROVE RUNOFF CONDITIONS AND POLLUTANT REMOVAL COMPARED TO THE EXISTING BASIN.

STORMWATER MANAGEMENT PLAN

THIS PROJECT IS A STORMWATER RETROFIT PLAN, AND AS SUCH, CONSTITUTES THE STORMWATER MANAGEMENT PLAN. AT FUTURE DATE,THE FULL PLAN SET, INCLUDING A PLANTING PLAN WILL BE SUBMITTED TO THE COUNTY WATER RESOURCES BOARD.

CALCULATIONS

SIZE OF DISTURBED AREA = 0.5 ACRES

REQUIRED CAPACITY OF SEDIMENT TRAP = 0.5 ACRES X 134 CUBIC YARDS = 67 CUBIC YARDS

BOTTOM WIDTH OF SEDIMENT TRAP = 15'

BOTTOM LENGTH OF SEDIMENT TRAP = 30'

DEPTH OF SEDIMENT TRAP = 4'

CAPACITY OF PROPOSED SEDIMENT TRAP = 15' X 30' X 4' = 1800 FTSQ = 66.5 CUBIC YARDS

VARIANCES

TEMPORARY SEDIMENT TRAP - 3.13 & 3.14 & MS-6: REQUESTED VARIANCE TO SIZE AND CONSTRUCT THE SEDIMENT TRAP BASED ON THE PHASE 1 DISTURBED AREA IN THE BASIN FLOOR AND AROUND THE INLETS. THE TWO INLET PIPES IN PHASE 1 DRAIN AN ADDITIONAL DRAINAGE AREA OF 9.5 ACRES. HOWEVER, CONSTRUCTING A TEMPORARY SEDIMENT BASIN IN THE BOTTOM OF AN EXISTING DETENTION POND (SIZED FOR THE TOTAL DRAINAGE AREA) WOULD BE IMPRACTICAL AND WOULD NOT FIT WITHIN THE CONFINED LIMITS OF THE BASIN FLOOR. IT WOULD ALSO PROLONG THE PERIOD OF DISTURBANCE, WHEN THE BEST APPROACH FOR PHASE 1 WOULD BE TO DO THE WORK QUICKLY AND GET DISTURBED AREAS STABILIZED BEFORE MOVING ON TO PHASE 2. THE LONGER THE CONSTRUCTION TAKE PLACE IN THE BASIN BOTTOM, THE MORE RISK THERE IS OF A LARGER STORM EVENT. THE PROPOSED COMBINATION OF SEDIMENT TRAP, DIVERSION DIKE, AND CULVERT INLET PROTECTION WILL BE PROVIDE AMPLE PROTECTION FOR THE SHORT DURATION OF PHASE 1.

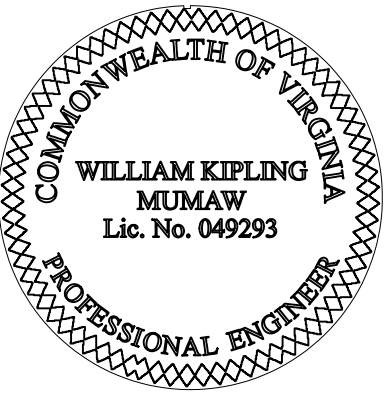
THE DRAINAGE AREA TO THE ENTIRE BMP IS APPROXIMATELY 72 ACRES. RETROFITTING THE BASIN OUTLET IS SIMILARLY INADVISABLE/INFEASIBLE. THE STORAGE NEEDED TO MEET SEDIMENT BASIN DESIGN STANDARDS WOULD BE 259,200 CUBIC FEET, WHICH WOULD EQUATE TO AN ELEVATION OF 480.50. THIS ELEVATION WOULD DISCHARGE THROUGH THE EXISTING RISER STRUCTURE. THE WET VOLUME OF 129,600 CUBIC FEET WOULD EQUATE TO AN ELEVATION OF 476.10, APPROXIMATELY 9.5 FEET ABOVE THE CONCRETE OUTLET. TWO OF THE OUTLETS THAT DRAIN TO THE BMP HAVE BASEFLOW; TO IMPLEMENT A SEDIMENT BASIN PRACTICE WOULD REQUIRE CLOSING OFF THE ELLIPTICAL CONCRETE OUTLET AND WOULD CONTRIBUTE TO PONDED WATER IN THE WORK AREA. FOR THESE REASONS AND MORE, A VARIANCE IS BEING REQUESTED TO MANAGE SEDIMENT LADEN RUNOFF THROUGH THE PROPOSED ESC PRACTICES AND PHASING IN PLACE OF A SEDIMENT BASIN.

DEWATERING STRUCTURE - 3.26: THE VESCH DOES NOT INCLUDE DIRT BAGS AS ONE OF THE OPTIONS FOR DEWATERING STRUCTURES. HOWEVER, DIRT BAGS ARE USED ROUTINELY FOR THE APPLICATIONS ENVISIONED, AND ARE MORE VERSATILE THAN THE VESCH OPTIONS. WE REQUEST USE OF DIRT BAGS AS AN OPTION FOR THE DEWATERING APPLICATIONS THAT WILL TAKE PLACE DURING PHASES 2 AND 3.

PAYED WASH RACK, ALBEMARLE COUNTY DSM, PGS. 7-8: REQUESTED VARIANCE FROM THE PAVED WASH RACK REQUIREMENT DUE TO THE RELATIVELY SHORT DURATION OF CONSTRUCTION AND LACK OF WATER SOURCE. TO SUPPORT THIS VARIANCE, THE MAINTENANCE SCHEDULE STIPULATES THAT CONSTRUCTION VEHICLES ENTERING AND EXITING THE SITE ON A REGULAR BASIS TO HAUL IN AND OUT MATERIAL AND EQUIPMENT SHALL USE THE TEMPORARY CONSTRUCTION ENTRANCE, BUT SHALL NOT ENTER THE ACTIVE GRADING AREA ON THE BASIN FLOOR. EXCAVATION AND GRADING EQUIPMENT ON THE BASIN FLOOR WILL GENERALLY REMAIN ON SITE AND USE THE ACCESS ROUTE TO THE BOTTOM OF THE BASIN, AND WILL BE WASHED PRIOR TO LEAVING THE SITE. THESE PROVISIONS TO SEGREGATE EQUIPMENT IN THE ACTIVE CONSTRUCTION AREA VERSUS OTHER CONSTRUCTION-RELATED VEHICLES ARE INTENDED TO KEEP THE TEMPORARY CONSTRUCTION ENTRANCE AS CLEAN AS POSSIBLE, RELIEVING THE NECESSITY OF A PAVED WASH RACK.



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RIO HILL STORMWATER RETROFIT

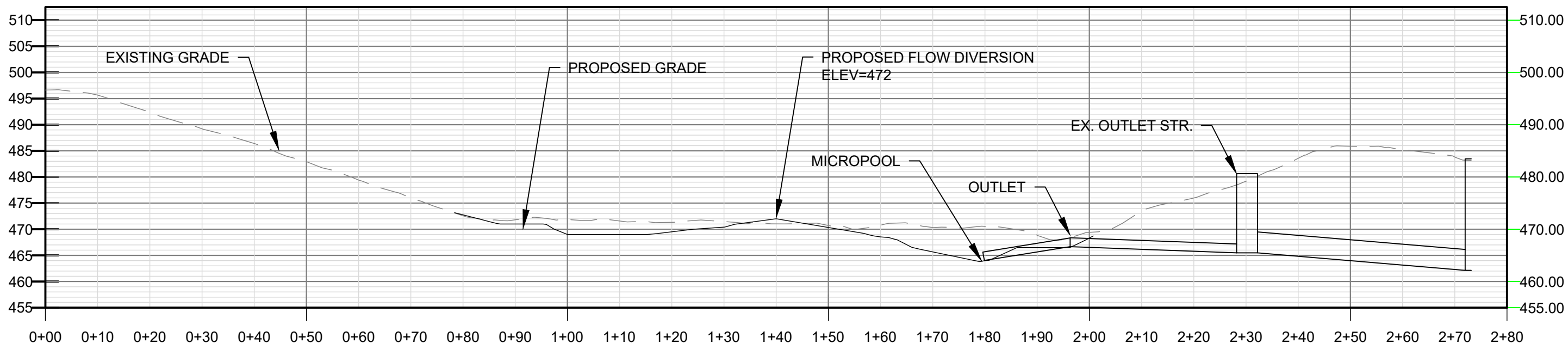
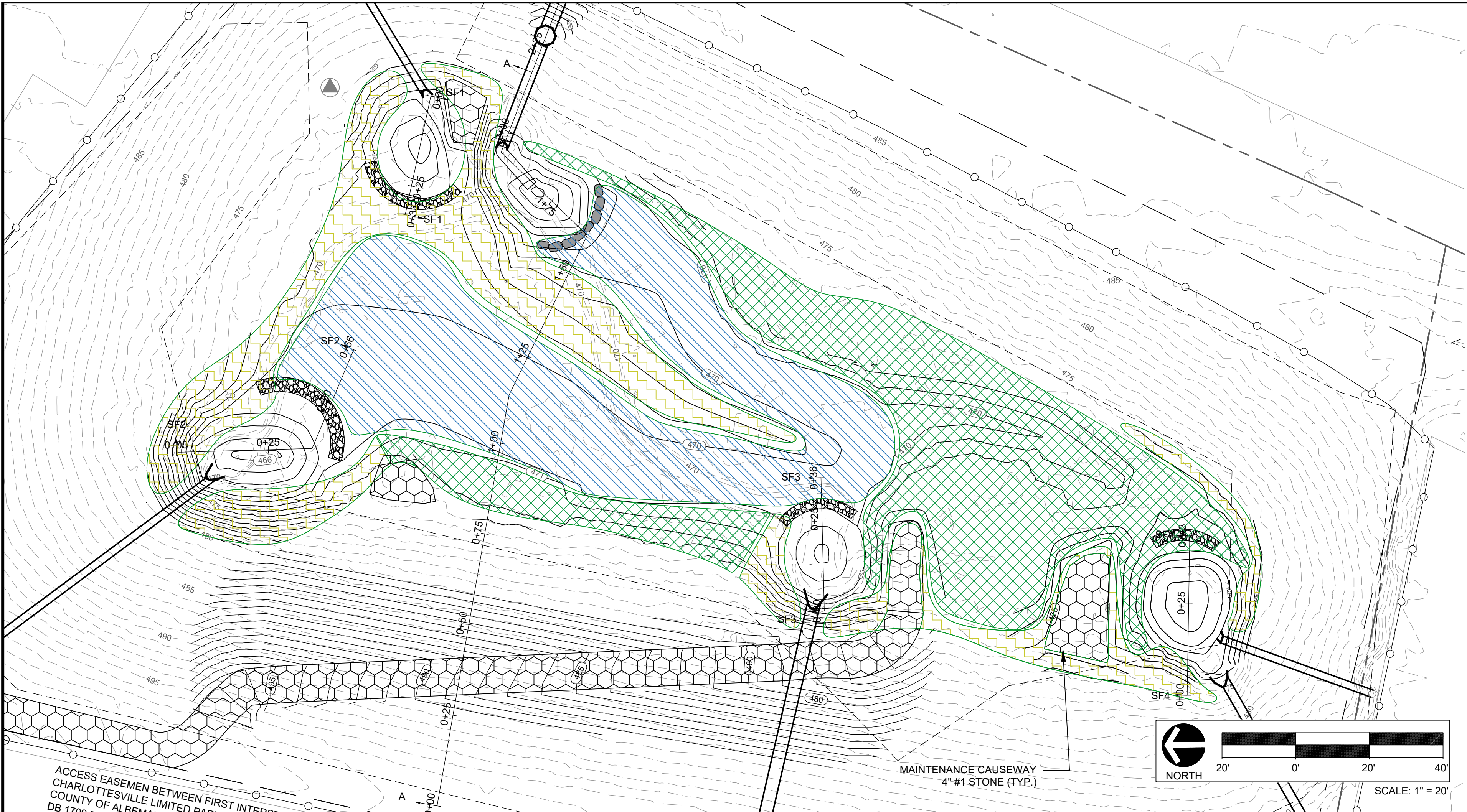
ESC NOTES
ALBEMARLE COUNTY, VA

REVISION:

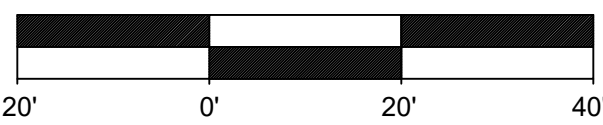
PROJECT MANAGER:	WKM
DESIGNED:	WKM
DRAWN:	JNB
PROJECT #:	17-0042
DATE:	2/14/2020
SHEET:	

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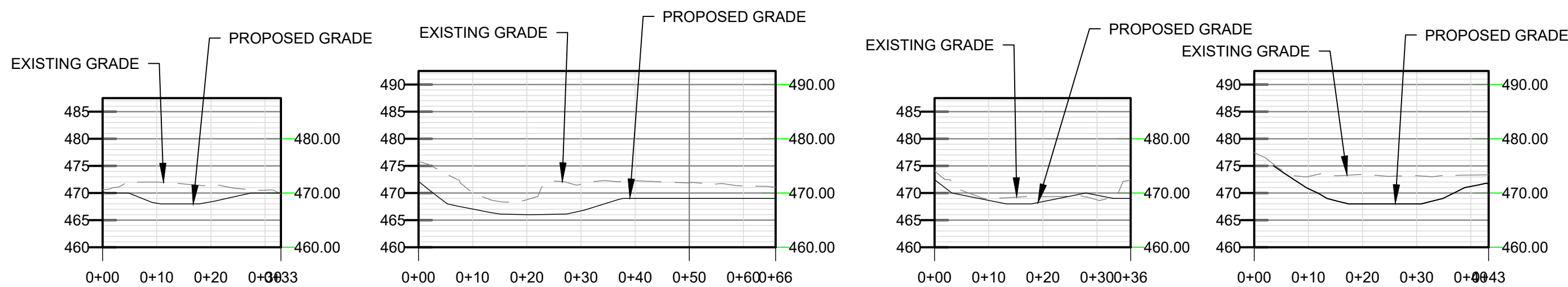
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A-A'



VERTICAL & HORIZ. SCALE: 1" = 20'

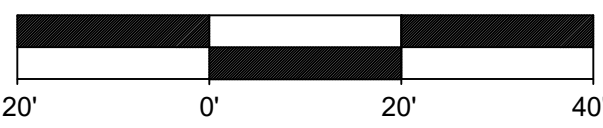


SF1-SF1
PROFILE

SF2-SF2
PROFILE

SF3-SF3
PROFILE

SF4-SF4
PROFILE



VERTICAL & HORIZ. SCALE: 1" = 20'

PLANTING SCHEDULE

ZONE 2: 6,630 S.F. LOW MARSH (APPROXIMATE ELEVATIONS 468-470)

PERMANENT POOL, WETLAND, PLANTING PLUGS/BARE ROOT ONLY- PLANTING IN MAY THROUGH SEPTEMBER. PLANTS SHOULD CONSIST OF 40% GRASSES AND 60% WILDFLOWERS; MUST USE A MINIMUM OF 5 WILDFLOWER SPECIES. NO SUBSTITUTIONS ALLOWED ONTO THIS LIST BUT OMISSIONS ARE ANTICIPATED. THE FINAL PLANTING LIST SHOULD BE APPROVED BY ALBEMARLE COUNTY INCLUDING SOURCES, SPECIES, QUANTITIES, AND DATES OF PLANTING. ALL PLANTS MUST BE VIRGINIA PIEDMONT NATIVES, PLANTING DENSITY SHOULD BE 12 INCH ON-CENTER. THE TOTAL NUMBER OF PLUGS SHALL BE 7,621. ZONE 2 SHALL BE FLAGGED OUT IN THE FIELD POST CONSTRUCTION AND PRIOR TO PLANTING. SOIL DECOMPACTION MAY BE NECESSARY BEFORE PLANTING. THE CONTRACTOR IS RESPONSIBLE FOR FURNISHING, TRANSPORTING, STORING, AND INSTALLING ALL HERBACEOUS PLUGS TO MAXIMIZE PLANTING SUCCESS. THESE PLANTS SHALL BE UNDER A 1-YEAR CARE AND REPLACEMENT WARRANTY BY THE CONTRACTOR IN ORDER TO ATTAIN 90% SURVIVAL. GOOSE PROTECTION IS REQUIRED POST-PLANTING AROUND THE ENTIRE AREA OF PLUGS. FOR THIS SITE THE SUGGESTED PROTECTION IS BRIGHTLY-COLORED STRING OR RIBBON INSTALLED IN A CRISS-CROSS PATTERN OVER THE SURFACE AREA OF PLUGS. GOOSE PROTECTION SHALL BE REMOVED WHEN PLANTS BECOME ESTABLISHED AND NO LONGER SUSCEPTIBLE TO GOOSE PREDATION. THE TIMING OF REMOVAL SHALL BE APPROVED BY THE COUNTY OF ALBEMARLE.

Latin name	Common name	Vegetation Type	
Carex comosa	Bottlebrush sedge	Grass	Plug
Carex stricta	Tussock sedge	Grass	Plug
Iris versicolor	Blue flag iris	Wildflower	Plug
Juncus effusus	Soft rush	Grass	Plug
Nuphar advena	Spatterdock (Yellow pond lily)	Wildflower	Plug
Orontium aquaticum	Golden club	Wildflower	Plug
Peltandra virginica	Arrow arum	Wildflower	Plug
Pontederia cordata	Pickerselweed	Wildflower	Plug
Sagittaria latifolia	Arrowhead (Swamp potato)	Wildflower	Plug
Saururus cernuus	Lizards tail	Wildflower	Plug
Schoenoplectus (was Scirpus) pungens	Common three square	Grass	Plug
Schoenoplectus tabernaemontani (was Scirpus validus)	Soft stem bulrush	Grass	Plug
Scirpus cyperinus	Woolgrass	Grass	Plug

ZONE 3: 6,952 S.F. HIGH MARSH (APPROXIMATE ELEVATIONS 470-473)

WETLAND FRINGE. SEED AT 20LBS/ACRE, 40% GRASS AND 60% WILDFLOWER BY WEIGHT. PLANT USING A SEED DRILL OR BY BROADCAST FOLLOWED BY A CULTI-PACKER. INSTALL SEED PER SEASON ERNST CONSERVATION SEED RECOMMENDATIONS OR INSTALL ANNUAL SEED EACH SEASON UNTIL CORRECT PLANTING TIME IS AVAILABLE. SEEDING SHOULD OCCUR IMMEDIATELY AFTER GRADING OF THE AREA. AFTER SEED IS INSTALLED, STRAW MULCH SHALL BE APPLIED. NO SUBSTITUTIONS ONTO THIS LIST UNLESS SPECIES ARE UNAVAILABLE BUT OMISSIONS ARE ANTICIPATED. THE PERCENTS PROVIDED ARE SUGGESTED PERCENTS ONLY AND ARE OPEN TO CHANGE. ALBEMARLE COUNTY SHALL REVIEW AND APPROVE ALL SUBSTITUTIONS. VIRGINIA PIEDMONT NATIVE PLANTS ONLY. NO WATERING OR FERTILIZATION IS ANTICIPATED, BUT IF NEEDED FERTILIZERS SHOULD BE ORGANIC. ALL PERMANENT SEEDED AREAS ARE UNDER A 2-YEAR WARRANTY WITH THE CONTRACTOR TO ATTAIN 85% SURFACE COVER. RESEEDING IN JUNE OR SEPTEMBER SHALL BE REQUIRED TO ATTAIN 85% COVERAGE WITHIN THE 2 YEAR WARRANTY. RESEEDING SHALL USE A SEED DRILL OR BROADCAST SEEDER FOLLOWED BY A CULTIPACKER AT A RATE OF 10LBS/ACRE.

Botanical Name	Common Name	Plant type	Perennial/ annual	Percent seed per mix (lowland)
Bidens cernua	nodding bur marigold	wildflower	annual	0.01
Onoclea sensibilis	sensitive, bead fern	Fern	Perennial	0.01
Carex squarrosa, VA Ecotype	Squarrose Sedge	Grass	Perennial	0.01
Carex vulpinoidea	Fox Sedge	Grass	Perennial	0.182
Carex intumescens	Greater bladder sedge	Grass	Perennial	0.01
Carex lurida	Lurid (Shallow) sedge	Grass	Perennial	0.05
Panicum rigidulum (Coleataenia rigidulum)	Redtop Panicgrass	Grass	Perennial	0.15
Juncus effusus	Soft Rush	Grass	Perennial	0.03
Juncus tenuis, NC Ecotype	Path Rush, NC Ecotype	Grass	Perennial	0.01
Panicum anceps (Coleataenia anceps) VA Ecotype	Beaked Panic Grass VA Ecotype	Grass	Perennial	0.3
Elymus virginus	Wild Rye	Grass	Perennial	0.14
Asclepias incarnata, PA & Midwestern U.S. Ecotype	Swamp Milkweed, PA & Midwestern U.S. Ecotype	wildflower	Perennial	0.030
Aster prenanthoides	Zigzag Aster	wildflower	Perennial	0.020
Eupatorium coelestinum	Mistflower	wildflower	Perennial	0.020
Eupatorium perfoliatum	Boneset	wildflower	Perennial	0.010
Helenium flexuosum	Purplehead Sneezeweed	wildflower	Perennial	0.010
Lobelia siphilitica	Great Lobelia	wildflower	Perennial	0.002
Mimulus ringens	monkeyflower	wildflower	Perennial	0.001
Penthorum sedoides	Ditch stonecrop	wildflower	Perennial	0.005

ZONE 4: 5,782 S.F. SIDE SLOPE (APPROXIMATE ELEVATIONS 473+)

DRY, UPLAND. SEED AT 20LBS/ACRE, 40% GRASS AND 60% WILDFLOWER BY WEIGHT. PLANT USING A SEED DRILL OR BY BROADCAST FOLLOWED BY A CULTI-PACKER. INSTALL SEED PER SEASON ERNST CONSERVATION SEED RECOMMENDS OR INSTALL ANNUAL SEED EACH SEASON UNTIL CORRECT PLANTING TIME IS AVAILABLE. SEEDING SHOULD OCCUR IMMEDIATELY AFTER GRADING OF THE AREA. AFTER SEED IS INSTALLED, STRAW MULCH SHALL BE APPLIED. NO SUBSTITUTIONS ONTO THIS LIST UNLESS SPECIES ARE UNAVAILABLE BUT OMISSIONS ARE ANTICIPATED. THE PERCENTS PROVIDED ARE SUGGESTED PERCENTS ONLY AND ARE OPEN TO CHANGE. ALBEMARLE COUNTY SHALL REVIEW AND APPROVE ALL SUBSTITUTIONS. VIRGINIA PIEDMONT NATIVE PLANTS ONLY. NO WATERING OR FERTILIZATION IS ANTICIPATED, BUT IF NEEDED FERTILIZERS SHOULD BE ORGANIC. ALL PERMANENT SEEDED AREAS ARE UNDER A 2-YEAR WARRANTY WITH THE CONTRACTOR TO ATTAIN 85% SURFACE COVER. RESEEDING IN JUNE OR SEPTEMBER SHALL BE REQUIRED TO ATTAIN 85% COVERAGE WITHIN THE 2 YEAR WARRANTY. RESEEDING SHALL USE A SEED DRILL OR BROADCAST SEEDER FOLLOWED BY A CULTIPACKER AT A RATE OF 10 LBS/ACRE.

Botanical Name	Common Name	Plant type	Perennial/ annual	Percent seed per mix (Slope Steeper Than 3:1)	Percent seed per mix (Slope Less Than 3:1)
Chamaecrista fasciculata	Partridge Pea	wildflower	annual	0.020	0.025
Rudbeckia hirta	Black-eyed Susan	wildflower	annual	0.017	0.024
Agrostis perennans APB-NY Ecotype	Autumn Bentgrass, PA & APB-NY Ecotype	Grass	Perennial	0.040	0.025
Juncus effusus	Soft Rush	Grass	Perennial	0.005	0.050
Juncus tenuis, NC Ecotype	Path Rush, NC Ecotype	Grass	Perennial	0.030	0.040
Panicum anceps (Coleataenia anceps) VA Ecotype	Beaked Panic Grass VA Ecotype	Grass	Perennial	0.305	0.250
Elymus virginus	Wild Rye	Grass	Perennial	0.255	0.170
Schizachyrium scoparium, Piedmont NC Ecotype	Little Bluestem	Grass	Perennial	0.250	0.250
Asclepias incarnata, PA & Midwestern U.S. Ecotype	Swamp Milkweed, PA & Midwestern U.S. Ecotype	wildflower	Perennial	0.005	0.010
Asclepias tuberosa	Butterfly Milkweed, Midwestern U.S. Ecotype	wildflower	Perennial	0.010	0.020
Aster prenanthoides	Zigzag Aster	wildflower	Perennial	0.005	0.015
Aster cordifolius	Blue Wood	wildflower	Perennial	0.005	0.015
Eupatorium coelestinum	Mistflower	wildflower	Perennial	0.010	0.020
Helenium flexuosum	Purplehead Sneezeweed	wildflower	Perennial	0.010	0.020
Liatris spicata, PA Ecotype	Marsh (Dense) Blazing Star, PA Ecotype	wildflower	Perennial	0.010	0.020
Monarda punctata	Spotted Beebalm	wildflower	Perennial	0.005	0.010
Penstemon laevisgatus, PA Ecotype	Appalachian Beardtongue, PA Ecotype	wildflower	Perennial	0.005	0.010
pycnanthemum tenuifolium	Narrowleaf Mountainmint, PA Ecotype	wildflower	Perennial	0.002	0.004
Rudbeckia fulgida VA Ecotype	Orange Coneflower	wildflower	Perennial	0.005	0.010
Solidago juncea	Early Goldenrod	wildflower	Perennial	0.003	0.006
Solidago nemoralis	Gray Goldenrod	wildflower	Perennial	0.003	0.006

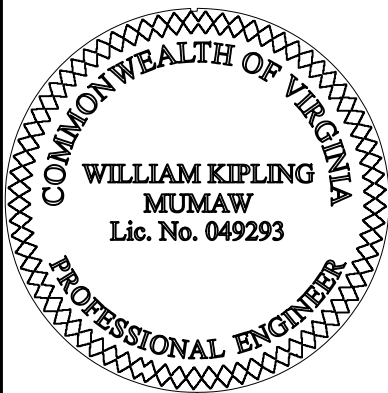
GRAVEL ACCESS AREAS 3,100 SQUARE FEET

Annual seed to be used for gravel access road and with both seed mixes above

jan 1 to april 30	30 lb oats		
may 1 to aug 31	10 lb brown millet		
sept 1 to dec 31	30 lb cereal rye		



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RIO HILL STORMWATER RETROFIT PLANTING PLAN & SECTIONS ALBEMARLE COUNTY, VA

REVISION:

PROJECT MANAGER: WKM

DESIGNED: WKM

DRAWN: JNB

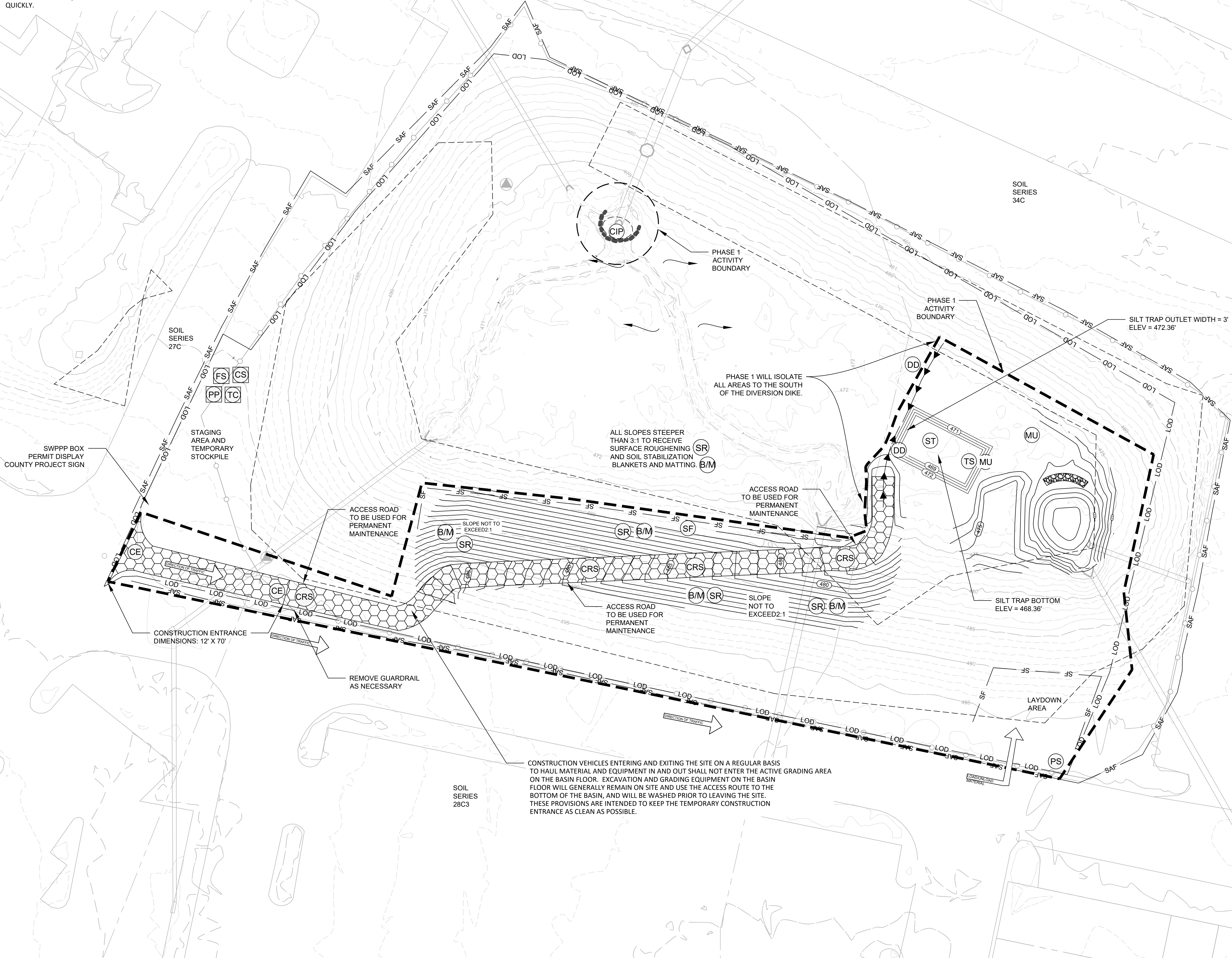
PROJECT #: 17-0042

DATE: 2/14/2020

SHEET:

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PHASE 1 ISOLATES THE TOP END OF THE POND FLOOR. THE CONSTRUCTION OF INLET PROTECTION, A SILT TRAP AND A DIVERSION DIKE WILL PREVENT SILT FROM WORK ACTIVITIES FROM REACHING THE BASIN OUTLET. IT MAKES SENSE TO GET THIS WORK DONE BEFORE MOVING TO THE SUBSEQUENT PHASES. THE END HAS THE LEAST AMOUNT OF DRAINAGE AREA COMING TO IT AND THE GRADING/BASIN MODIFICATIONS CAN BE DONE RELATIVELY QUICKLY.



_____ EXISTING MAJOR CONTOURS (5')
 _____ EXISTING MINOR CONTOURS (1')
 _____ PHASE 1 PROPOSED CONTOUR LINES (1 FT.)
 _____ PHASE 2 AND 3 PROPOSED CONTOUR LINES (1 FT.)
 _____ SF PROPOSED SILT FENCE
 _____ LOD PROPOSED LIMITS OF DISTURBANCE
 _____ AND TREE PROTECTION
 _____ SOIL BOUNDARY
 _____ SAF SAFETY FENCE
 _____ STEEP SLOPES BOUNDARY



SIX INCH THICK (MINIMUM) LAYER OF MULCH

EROSION/SEDIMENT CONTROL LEGEND

NO.	TITLE	KEY	SYMBOL	UNITS	QUANTITY
3.01	SAFETY FENCE	(SAF)		N/A	TBD
3.02	TEMP. STONE CONSTRUCTION ENTRANCE	(CE)		EA	TBD
3.26	DEWATERING STRUCTURE	(DS)		EA	TBD
3.05	SILT FENCE	(SF)		LF	TBD
3.08	CULVERT INLET PROTECTION	(CIP)		N/A	TBD
3.09	TEMPORARY DIVERSION DIKE	(DD)		N/A	TBD
3.13	TEMPORARY SEDIMENT TRAP	(ST)	N/A	N/A	TBD
3.31	TEMPORARY SEEDING	(TS)	N/A	EA	TBD
3.32	PERMANENT SEEDING	(PS)	N/A	EA	TBD
3.36	SOIL STABILIZATION BLANKETS AND MATTING	(B/M)	N/A	N/A	TBD
MGWOP 1.2	PUMP AROUND DIVERSION	(P)		EA	1
3.35	MULCH	(MU)		N/A	TBD
3.03	CONSTRUCTION ROAD STABILIZATION	(CRS)	N/A	EA	1
3.29	SURFACE ROUGHENING	(SR)	N/A	EA	1
NA	SEDIMENT FOREBAY	(SEBFY)	N/A	EA	4
NA	MAINTENANCE CAUSEWAY	(MC)	N/A	EA	4

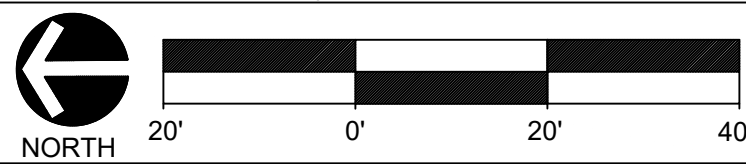
SWPP ELEMENTS LEGEND*

NO.	TITLE	KEY	N/A	UNITS	QUANTITY
N/A	PORTA POTTY	(PP)	N/A	EA	TBD
N/A	FUELING STATION	(FS)	N/A	EA	TBD
N/A	CHEMICAL STORAGE	(CS)	N/A	EA	TBD
N/A	TRASH CONTAINMENT	(TC)	N/A	EA	TBD

*FIELD LOCATIONS MAY BE ADJUSTED BY CONTRACTOR TO COORDINATE MODIFICATIONS WITH SWPP INSPECTOR AND UPDATE PLAN TO MAINTAIN COMPLIANCE WITH APPLICABLE REGULATIONS.

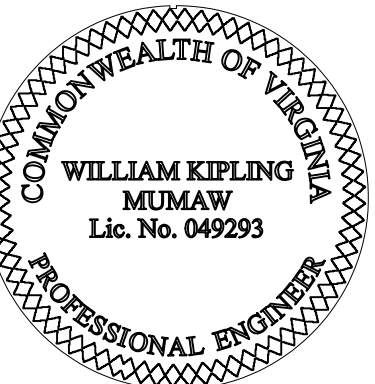
GENERAL NOTES

1. ALL APPLICABLE LOCAL, STATE, AND FEDERAL PERMITS SHALL BE OBTAINED PRIOR TO ANY LAND DISTURBING ACTIVITIES.
2. ALL PERMITS SHALL BE KEPT ONSITE. THE SWPPP SHALL BE HELD ON SITE AND MADE AVAILABLE UPON REQUEST TO ANY REGULATORY AUTHORITY AND THE GENERAL PUBLIC. ALL CONSTRUCTION ACTIVITIES SHALL BE LOGGED AND A RECORD KEPT ONSITE.
3. DECK MATS SHALL BE PLACED IN AREAS DEPICTED ON PLANS AND WHERE NECESSARY TO MINIMIZE GROUND AND CRITICAL TREE ROOT ZONES.
4. ACTIVE WORK AREAS SHALL BE TEMPORARILY STABILIZED AT THE END OF EACH WORK DAY.
5. CONTRACTOR SHALL INSTALL RAIN GAGE ONSITE.
6. CONTRACTOR IS RESPONSIBLE FOR ANY ADDITIONAL TEMPORARY EROSION & SEDIMENT CONTROL MEASURES THAT MAY BE REQUIRED BY COUNTY INSPECTOR.



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RIO HILL STORMWATER RETROFIT

ESC PLAN - PHASE I

ALBEMARLE COUNTY, VA

[illegible]

PROJECT MANAGER:	WKM
DESIGNED:	WKM
DRAWN:	JNB
PROJECT #:	17-0042
DATE:	2/14/2020
SHEET:	

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PHASE 2
PHASE 2 FEATURES TO BE COMPLETED:
MC #1 AND #2, SFBY #1 AND AS MUCH OF SF #2 AND #3 AND OUTLET MICROPOOL AS POSSIBLE, WHILE LEAVING THE PUMP-AROUND SYSTEMS IN PLACE.
PHASE 2 ALLOWS MOST OF THE GRADING TO TAKE PLACE AT THE LOWER END OF THE POND, WHILE PUMPING BASEFLOW FROM TWO INLETS AROUND THE WORK AREA. BASEFLOW FROM SFBY #2 AND SFBY #3 WILL PUMPED DIRECTLY TO THE OUTLET THEREBY ALLOWING WORK TO PROCEED ON SFBY #1. THIS IS SIMILAR TO E&S APPROACHES USED FOR STREAM RESTORATION WORK.



RIO HILL STORMWATER RETROFIT
ESC PLAN - PHASE II
ALBEMARLE COUNTY, VA

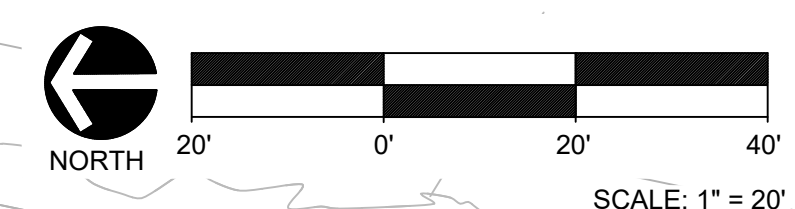
REVISION:

PROJECT MANAGER: WKM
DESIGNED: WKM
DRAWN: JNB
PROJECT #: 17-0042
DATE: 2/14/2020
SHEET:

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Hirschman Water & Environment, LLC
Stormwater & Stewardship
ECOSYSTEM SERVICES
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COMMONWEALTH OF VIRGINIA
WILLIAM KIPLING MUMAW
Lic. No. 049293
PROFESSIONAL ENGINEER

PHASE 3 ALLOWS THE REMAINING GRADING TO TAKE PLACE AT THE LOWER END OF THE BASIN, WHILE KEEPING WORK AREAS DEWATERED.



10



SHALLOW SLOPE

ON SHALLOW SLOPES, STRIPS OF NETTING PROTECTIVE COVERINGS MAY BE APPLIED ACROSS THE SLOPE.

BERM

WHERE THERE IS A BERM AT THE TOP OF THE SLOPE, BRING THE MATERIAL OVER THE BERM AND ANCHOR IT BEHIND THE BERM.

STEEP SLOPE

ON STEEP SLOPES, APPLY PROTECTIVE COVERING PARALLEL TO THE DIRECTION OF FLOW AND ANCHOR SECURELY.

DITCH

BRING MATERIAL DOWN TO A LEVEL AREA BEFORE TERMINATING THE INSTALLATION, TURN THE END UNDER 4" AND STAPLE AT 12" INTERVALS.

DITCH

IN DITCHES, APPLY PROTECTIVE COVERING PARALLEL TO THE DIRECTION OF FLOW. USE CHECK SLOTS AS REQUIRED, AVOID JOINING MATERIAL IN THE CENTER OF THE DITCH IF AT ALL POSSIBLE.

STAKES, STAPLES, & PINS

FOR INSTALLATION OF TREATMENT – 2 SOIL STABILIZATION MATTING

The technical drawings include:

- STAKE:** A triangular survey stake with a top width of $3-1/4"$ and a minimum length of $10"$. It is labeled "STAKE".
- STAPLE:** A U-shaped staple made of 11 gauge steel, $6"$ x $1/8"$ in size, with a width of $1"$. It is labeled "STAPLE".
- PIN:** A vertical pin made of 3/16" diameter steel, with a total length of $18"$ and a top section of $6"$. It has a 2" diameter washer on top. It is labeled "PIN".

11 GAUGE STEEL
 $6"$ x $1/8"$ STAPLE

1) 1/4 TRIANGULAR SURVEY STAKE – MINIMUM
"10" IN LENGTH. PLACEMENT OF THE STAKE
ACROSS THE FLOW OF THE WATER IS THOUGHT
TO PROVIDE A "PINBALL EFFECT" TO HELP
SLOW THE VELOCITY.

2) 11 GAUGE STEEL – MINIMUM 1" WIDE BY 6"
IN LENGTH STEEL STAPLE – 2"x8" STAPLE
MAY BE REQUIRED IN CERTAIN SOIL CONDITIONS.

3) STEEL PINS – 3/16 DIAMETER STEEL PIN
BY 18" IN LENGTH WITH A 2" DIAMETER
WASHER ON TOP. (SEE ILLUSTRATION)

ORANGE CONSTRUCTION FENCE AS DIRECTED BY DESIGN ENGINEER

6" MIN. THICK LAYER OF WOOD CHIP MULCH REPLENISHED AS NEEDED DURING CONSTRUCTION

UNDISTURBED GROUND

10'-12" TYP.

MULCH ACCESS ROAD DETAIL
NOT TO SCALE

MULCH ACCESS ROAD DETAIL
NOT TO SCALE

(ML)

NOTES:

1. ACCESS ROUTES TO BE VERIFIED BY ENGINEER AT PRE-CONSTRUCTION MEETING. REVISIONS TO THE ALIGNMENT THAT MINIMIZE TREE DISTURBANCE ARE ENCOURAGED AND REQUIRE REVIEW AND APPROVAL BY DESIGN ENGINEER.
2. CONTRACTOR SHALL MAINTAIN MULCH MAT THROUGHOUT CONSTRUCTION PERIOD. MULCH CAN REMAIN IN PLACE AT A MAXIMUM DEPTH OF 1".
3. THE HAUL ROAD IS DESIGNED TO PREVENT COMPACTION OF EXISTING SOILS USING LOW GROUND PRESSURE EQUIPMENT WHICH EXERTS NO MORE THAN 8 PSI. IF THE CONTRACTOR INTENDS TO USE ANY EQUIPMENT WITH HIGHER LOADS, ADDITIONAL PROTECTION MEASURES MUST BE PROVIDED SUCH AS HARDWOOD MATS (SEE DETAIL BELOW).

DEBRIS FROM SLOPE ABOVE IS CAUGHT BY STEPS

DRAINAGE

30"-40"

40"-50"

WATER, SOIL AND FERTILIZER ARE HELD BY STEPS - PLANTS CAN BECOME ESTABLISHED ON

This diagram illustrates a stepped slope design. It shows a series of horizontal steps descending a hillside. The top step is labeled with a width of 40"-50" and a height of 30"-40". Above the top step, a pile of debris is shown, with an arrow pointing to it from the text 'DEBRIS FROM SLOPE ABOVE IS CAUGHT BY STEPS'. To the left of the top step, a drainage channel is indicated by an arrow and the word 'DRAINAGE'. The steps are shown in cross-section, revealing a hatched pattern representing soil or vegetation. At the bottom right, a circular area is shown, possibly representing a plant or a specific feature. The text 'WATER, SOIL AND FERTILIZER ARE HELD BY STEPS - PLANTS CAN BECOME ESTABLISHED ON' is written at the bottom right of the diagram.

TYPICAL TREATMENT - 1

(SOIL STABILIZATION BLANKET)

INSTALLATION CRITERIA

ANCHOR SLOT

JUNCTION SLOT

CHECK SLOT*

TERMINAL FOLD

LAP JOINT 2" MIN.
(JUTE MESH ONLY)

TAMP FIRMLY

1" TO 12"

6" TO 8" MIN.

12" MAX. 4:1 OR FLATTER

6" MAX. STEEPER THAN 4:1

EDGE AND END POINTS TO BE SNIUGLY ABUTTED
(JUTE MESH WILL HAVE STAPLED LAP JOINT IN LIEU OF EDGE JOINT)

5' MAX. 4:1 OR FLATTER
3' MAX. STEEPER THAN 4:1

1" TO 2"

CHECK SLOTS AT MIN. 50" C-C INTERVALS;
***NOT REQ'D WITH ALL COMBINATION BLANKETS**

PLAN VIEW STAPLING DIAGRAM

12" SLOT

TAMP FIRMLY

6" TO 12"

2"

4"

2"

TERMINAL FOLD

TAMP FIRMLY

2"

GROOVING SLOPES

The diagram illustrates a cross-section of a slope that has been treated with grooving. The slope is covered with a layer of material, likely straw or hay, which is cut into a series of transverse ridges and furrows. A circular inset provides a magnified view of one of these furrows. In this inset, the furrow is shown as a V-shape with a depth labeled 'h' and a width at the top labeled '12" - 15"'. An arrow points from the circular inset to the main slope. To the right of the slope, there is a vertical line representing a wall or a boundary, with several small plants growing along its base. Below the diagram, a text box contains the following information:

GROOVING IS CUTTING FURROWS
ALONG THE CONTOUR OF A SLOPE.
IRREGULARITIES IN THE SOIL
SURFACE CATCH RAINWATER AND
PROVIDE SOME COVERAGE OF LIME,
FERTILIZER AND SEED.

The diagram illustrates the Pump-Around Practice in two parts: PLAN and SECTION A-A.

PLAN View: This top-down view shows a river channel with a central 'Work Area' flanked by 'Sandbag/Stone Barrier's. Water flow is indicated by arrows labeled 'Flow'. A 'Dewatering Device' (a pump on a barge) is positioned upstream, connected by 'Discharge Hoses' to two 'Dewatering Pumps (as needed)' (labeled 'P'). One pump is located within the work area, and the other is further downstream. A 'Diversion Pump' (labeled 'P') is situated at the downstream end of the barriers, connected by an 'Intake Hose' to a 'Sump-hole Or Pond' with dimensions of '12" Min Depth' and '2' Min Diameter'. A 'Discharge Pump into Velocity Dissipater' is located at the upstream end of the barriers.

Cross Section A-A: This side view shows the 'Work Area' as a rectangular excavation. It is lined with 'Sheeting' and reinforced with 'Sandbag/Stone Barrier's. A 'Base Flow + 1 Foot (2 Foot Minimum)' is maintained behind the barriers. The diagram is labeled 'SECTION A-A'.

Legend: A box in the bottom right corner states: 'Adapted From Maryland's Waterway Construction Guidelines'.

TEMPORARY INFRASTRUCTURE CONSTRUCTION MEASURES	DECEMBER 2000	VIRGINIA DEPARTMENT OF CONSERVATION RECREATION
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