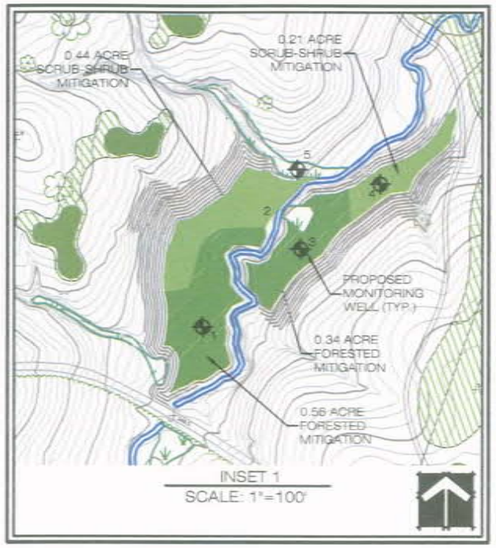


PROJECT SUMMARY

SETTING - IT IS PROPOSED THAT ALL REQUIRED MITIGATION BE PROVIDED ON-SITE. FORESTED AND SCRUB-SHRUB WETLANDS WILL BE CREATED IN A FLOODPLAIN AREA ADJACENT TO AN INTERMITTENT STREAM. THIS CREATION WILL ENHANCE AN AREA THAT HAS BEEN SEVERELY DEGRADED BY SILVICULTURAL ACTIVITIES. A DEGRADED AREA OF BULL RUN CREEK WILL BE RESTORED. AS MITIGATION FOR PERENNIAL STREAM IMPACTS THE AREA OF BULL RUN CREEK HAS ERODED STREAMBANKS IN SEVERAL AREAS, AND THE VEGETATED BUFFER HAS BEEN CLEARCUT.

GOALS - THE GOAL OF THE PROJECT IS TO PROVIDE MITIGATION AT THE APPROPRIATE RATIOS FOR SCRUB-SHRUB AND FORESTED WETLAND IMPACTS, FORESTED WETLAND CONVERSION AND STREAM IMPACTS. THIS WILL BE ACCOMPLISHED BY:

1) CREATING A DIVERSE COMMUNITY OF SCRUB-SHRUB AND FORESTED WETLANDS

2) ENHANCING DEGRADED SCRUB-SHRUB WETLANDS THROUGH WETLAND TREE AND SHRUB PLANTING TO IMPROVE THE FUNCTIONALITY, WILDLIFE HABITAT, AND AESTHETICS OF THESE WETLAND AREAS

3) RESTORING A DEGRADED REACH OF BULL RUN CREEK THROUGH STREAMBANK STABILIZATION, IN-STREAM HABITAT IMPROVEMENTS, AND RESTORATION OF THE VEGETATED BUFFER

4) CREATING OF CONSERVATION AREAS WITHIN A PERMANENT EASEMENT FOR THE PROTECTION OF WETLANDS AND OPEN WATER LIMITS ON THE SITE AS DESIGNATED

WATER BUDGET - A COMPUTER MODEL WAS USED TO SIMULATE THE WATER BUDGET FOR THE PROPOSED WETLAND CREATION SITE ON A MONTHLY BASIS. THE WATER BALANCE WAS COMPUTED BASED ON THE METHODOLOGY OUTLINED IN "CALCULATING A WATER BUDGET" (HERCE, 1992). THE WATER BALANCE WAS EVALUATED FOR A NORMAL, WET, AND DROUGHT YEAR AND CONSIDERED WATER VOLUME INPUTS (RAINFALL AND RUNOFF) AND WITHDRAWAL OR DEPOT VOLUMES (EVAPOTRANSPIRATION AND INFILTRATION). RAINFALL WAS INPUT BASED ON HISTORIC RAINFALL DATA OBTAINED FROM THE NATIONAL WEATHER SERVICE STATION LOCATED AT FARMVILLE, VIRGINIA FOR REPRESENTATIVE NORMAL (1961), DROUGHT (1988), AND WET (1997) CLIMATIC YEARS. EVAPOTRANSPIRATION WAS COMPUTED BASED ON TEMPERATURE DATA FOR THE SELECTED STATION USING THE THORNTHWAITE EQUATION. SURFACE RUNOFF WAS COMPUTED FOR THE APPROXIMATE (47.83-ACRE WATERSHED) COMPOSED SCRUB-SHRUB AND FORESTED LAND, BASED ON TR-55 METHODOLOGY. A CURVE NUMBER OF 71 AND AN INITIAL ABSTRACTION OF 0.82 INCHES WAS COMPUTED. EVAPOTRANSPIRATION WAS COMPUTED BASED ON TEMPERATURE DATA FROM THE FARMVILLE, VIRGINIA STATION USING THE THORNTHWAITE EQUATION. INFILTRATION WAS ASSUMED TO BE ZERO BECAUSE THE WETLAND AREAS ARE PROPOSED TO BE MITIGATED AT OR NEAR EXISTING WETLAND ELEVATIONS. WHERE WETLAND HYDROLOGY IS CURRENTLY ESTABLISHED. BASED ON THE RESULTS OF THE WATER BUDGET, IT APPEARS THAT THE MINIMUM CRITERIA FOR ESTABLISHING A WETLAND DURING 12.5% OF THE GROWING SEASON I.E. WATER TABLE WITHIN ONE FOOT OF THE GROUND SURFACE ARE MET.

CONSTRUCTION PLANS - THE WETLANDS WILL BE CREATED BY CONSTRUCTING A PALUSTRINE FORESTED AND SCRUB-SHRUB WETLAND COMMUNITY WITHIN A FLOODPLAIN ADJACENT TO AN INTERMITTENT STREAM. WETLAND HYDROLOGY WILL BE GENERATED FROM THE CAPTURE OF DIRECT RAINFALL AND RUNOFF FROM THE SURROUNDING LANDSCAPE. SOIL SAMPLES WILL BE SENT TO AN ACCREDITED LABORATORY FOR CHEMICAL AND PHYSICAL ANALYSES TO PROVIDE THE BASIS FOR SOIL AMENDMENTS. SOIL AMENDMENTS WILL THEN BE INCORPORATED INTO THE UPPER PORTION OF THE PROFILE SUCH THAT A SUBSTRATE CONDUCIVE FOR HYDROPHYTIC VEGETATION IS ESTABLISHED. THE CREATED WETLANDS WILL BE DESIGNED TO BE SEASONALLY SATURATED WITH INFREQUENT PERIODS OF INUNDATION IN ORDER TO REPLICATE THE HYDROPERIOD OF THE IMPACTED WETLANDS. CONSTRUCTION PLANS WILL ALSO BE PREPARED FOR STREAM RESTORATION ACTIVITIES WITHIN THE BULL RUN CREEK CORRIDOR.

PROJECT DATA

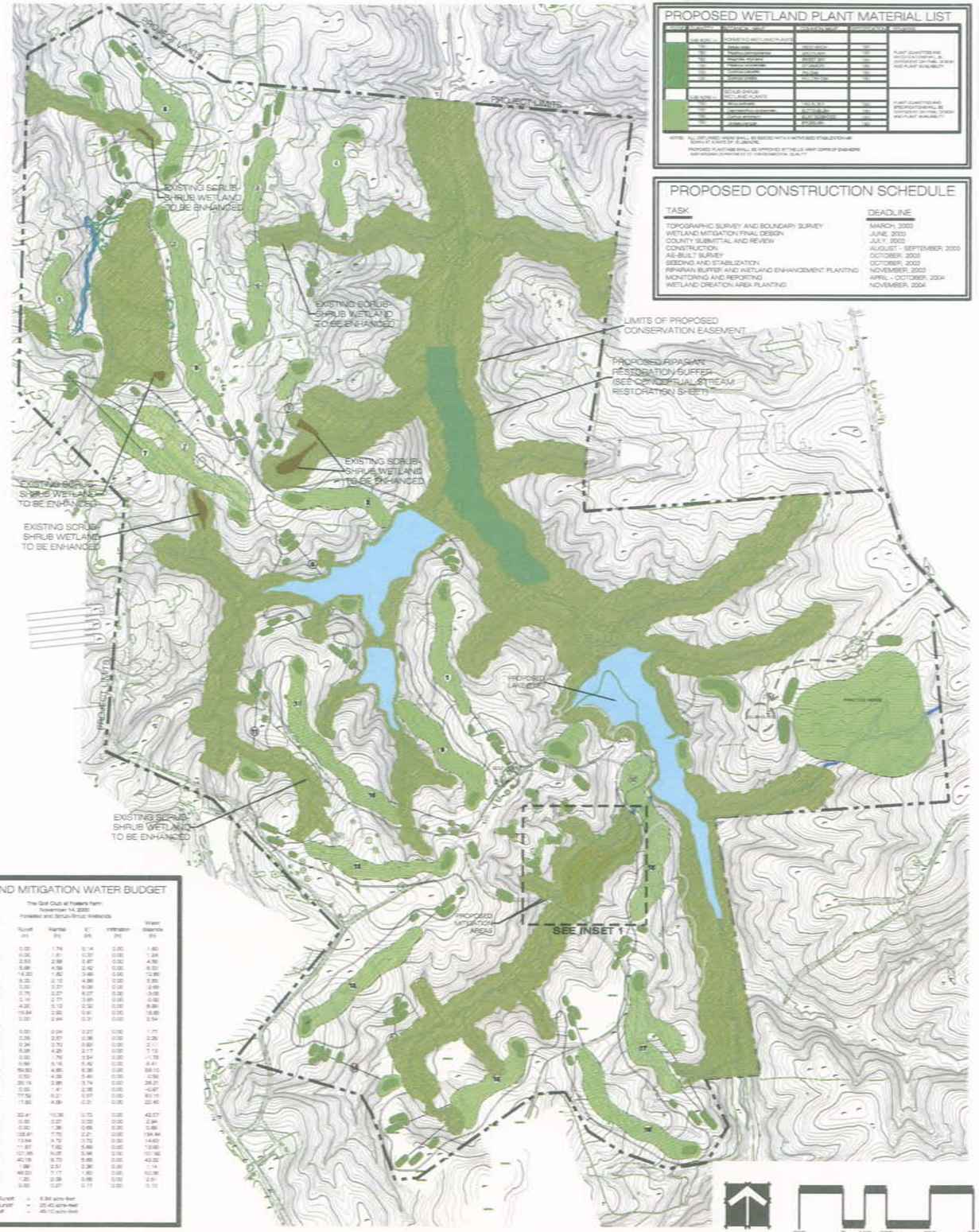
TOTAL SITE IMPACTS	
FORESTED WETLANDS	0.45 ACRE +/-
SCRUB-SHRUB WETLANDS	0.43 ACRE +/-
TOTAL WETLANDS	0.88 ACRE +/-
WATERS OF THE U.S. (EXCLUDING WETLANDS)	1.98 ACRES +/-
	7,048.05 L.F. +/-
ON-SITE CONSERVATION EASEMENT AREA	179.57 ACRES +/-
WETLAND PRESERVATION AREA	8.85 ACRES +/-
WATERS OF THE U.S. PRESERVATION AREA	4.21 ACRES +/-
	21,274.03 L.F. +/-
WETLAND CREATION SUMMARY	
FORESTED AT 2 : 1 RATIO	0.90 ACRE +/-
SCRUB-SHRUB AT 1.5 : 1 RATIO	0.65 ACRE +/-
TOTAL PROPOSED WETLAND MITIGATION	1.55 ACRES +/-
WETLAND CONVERSION	
PROPOSED SRUB-SHRUB WETLAND ENHANCEMENT AT 1:1	1.23 ACRES +/-
RIPARIAN RESTORATION CORRIDOR	
PERENNIAL STREAM (100' EACH SIDE)	2,376 L.F. +/-

WETLAND MITIGATION WATER BUDGET

The Golf Club at Foster's Farm
November 14, 2002
Forested and Scrub-Shrub Wetlands

Month	Runoff (in)	Rainfall (in)	ET (in)	Infiltration (in)	Water Balance (in)
Drought Year					
JAN	0.00	1.74	0.14	0.00	1.60
FEB	0.00	1.81	0.57	0.00	1.24
MAR	2.53	2.88	0.47	0.00	4.94
APR	5.88	4.39	2.42	0.00	8.00
MAY	14.20	1.82	3.48	0.00	12.60
JUN	8.20	2.10	4.86	0.00	5.55
JUL	0.00	3.27	6.08	0.00	-2.80
AUG	0.78	2.27	6.27	0.00	-3.68
SEP	2.16	2.77	3.85	0.00	-0.92
OCT	4.30	5.10	2.30	0.00	8.90
NOV	15.94	2.92	0.41	0.00	18.45
DEC	0.00	2.94	0.31	0.00	2.64
Normal Year					
JAN	0.00	2.04	0.27	0.00	1.77
FEB	0.26	2.57	0.38	0.00	2.20
MAR	0.34	3.70	0.93	0.00	3.11
APR	5.08	4.26	2.17	0.00	7.17
MAY	0.00	1.79	3.54	0.00	-1.75
JUN	0.99	3.16	5.42	0.00	-1.27
JUL	59.63	4.85	6.36	0.00	58.10
AUG	0.51	4.38	5.40	0.00	-0.56
SEP	26.16	2.86	3.74	0.00	26.21
OCT	0.00	1.41	2.38	0.00	-0.97
NOV	71.79	0.21	0.57	0.00	70.15
DEC	17.82	4.69	0.31	0.00	22.40
Wet Year					
JAN	32.41	10.38	0.73	0.00	42.07
FEB	0.38	2.27	0.22	0.00	2.44
MAR	0.00	1.36	0.69	0.00	0.66
APR	132.81	7.75	2.21	0.00	134.44
MAY	13.94	4.72	3.72	0.30	14.63
JUN	11.87	7.62	5.69	0.00	13.80
JUL	101.46	6.25	5.96	0.30	101.92
AUG	40.19	9.73	5.65	0.00	43.22
SEP	1.98	2.51	2.36	0.00	1.14
OCT	49.03	1.17	1.60	0.00	50.38
NOV	1.20	2.09	0.56	0.00	2.61
DEC	0.00	0.27	0.17	0.00	0.10

Drought Year Runoff = 6.94 acre-feet
Normal Year Runoff = 25.42 acre-feet
Wet Year Runoff = 49.10 acre-feet



PROPOSED WETLAND PLANT MATERIAL LIST

		FORESTED WETLAND PLANTS			
		TREES			
		SHRUBS			
		SCRUB-SHRUB WETLAND PLANTS			
		SHRUBS			

NOTE: ALL DISTURBED AREAS SHALL BE SEEDED WITH A NATIVE SEED STABILIZATION MIX SCHEDULE PLANTS OF 12 LBS/ACRE.

PROPOSED PLANTS MAY BE APPROVED BY THE U.S. ARMY CORPS OF ENGINEERS AND VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY.

PROPOSED CONSTRUCTION SCHEDULE

TASK	DEADLINE
TOPOGRAPHIC SURVEY AND BOUNDARY SURVEY	MARCH, 2003
WETLAND MITIGATION FINAL DESIGN	JUNE, 2003
COUNTY SUBMITTAL AND REVIEW	JULY, 2003
CONSTRUCTION	AUGUST - SEPTEMBER, 2003
AS-BUILT SURVEY	OCTOBER, 2003
SEEDING AND STABILIZATION	OCTOBER, 2003
RIPARIAN BUFFER AND WETLAND ENHANCEMENT PLANTING	NOVEMBER, 2003
MONITORING AND REPORTING	APRIL - OCTOBER, 2004
WETLAND CREATION AREA PLANTING	NOVEMBER, 2004

WILLIAMSBURG ENVIRONMENTAL GROUP, INC.
Environmental Consultants
3550 Ewell Circle
Williamsburg, Virginia 23188
(757) 565-1677
7401 Beaufont Springs Drive, Suite 100
Richmond, Virginia 23225
(804) 297-3474
46000 Marshall Plaza, Suite 160
Sterling, Virginia 20164
(703) 406-1360

CONCEPTUAL MITIGATION PLAN
THE GOLF CLUB AT FOSTER'S FARM
AMELIA COUNTY, VIRGINIA

DATE: JANUARY 3, 2003
JOB NUMBER: 1410
SCALE: AS NOTED
SOURCE: BASE MAP PROVIDED BY HARFORD AERIAL SURVEYS, INC.