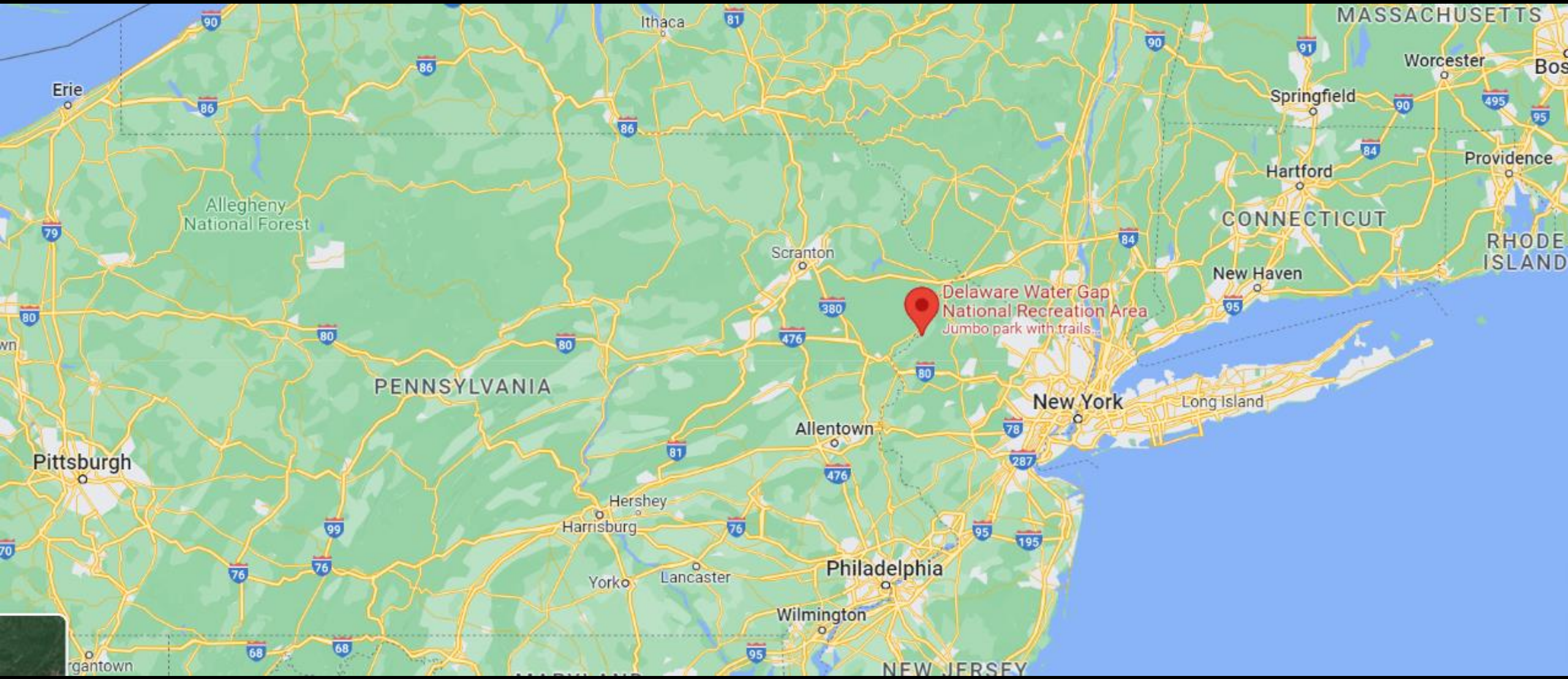




Delaware Watergap National Recreation Area

Watergate Wetlands Restoration Project



Delaware Water Gap
National Recreation Area
Jumbo park with trails

PENNSYLVANIA

CONNECTICUT

MASSACHUSETTS

RHODE ISLAND

NEW JERSEY

Allegheny
National Forest

New York

Pittsburgh

Springfield

Scranton

Worcester

Hartford

Providence

New Haven

Allentown

Long Island

Hershey

Harrisburg

Philadelphia

York

Lancaster

Wilmington

Gettysburg

Pre-project



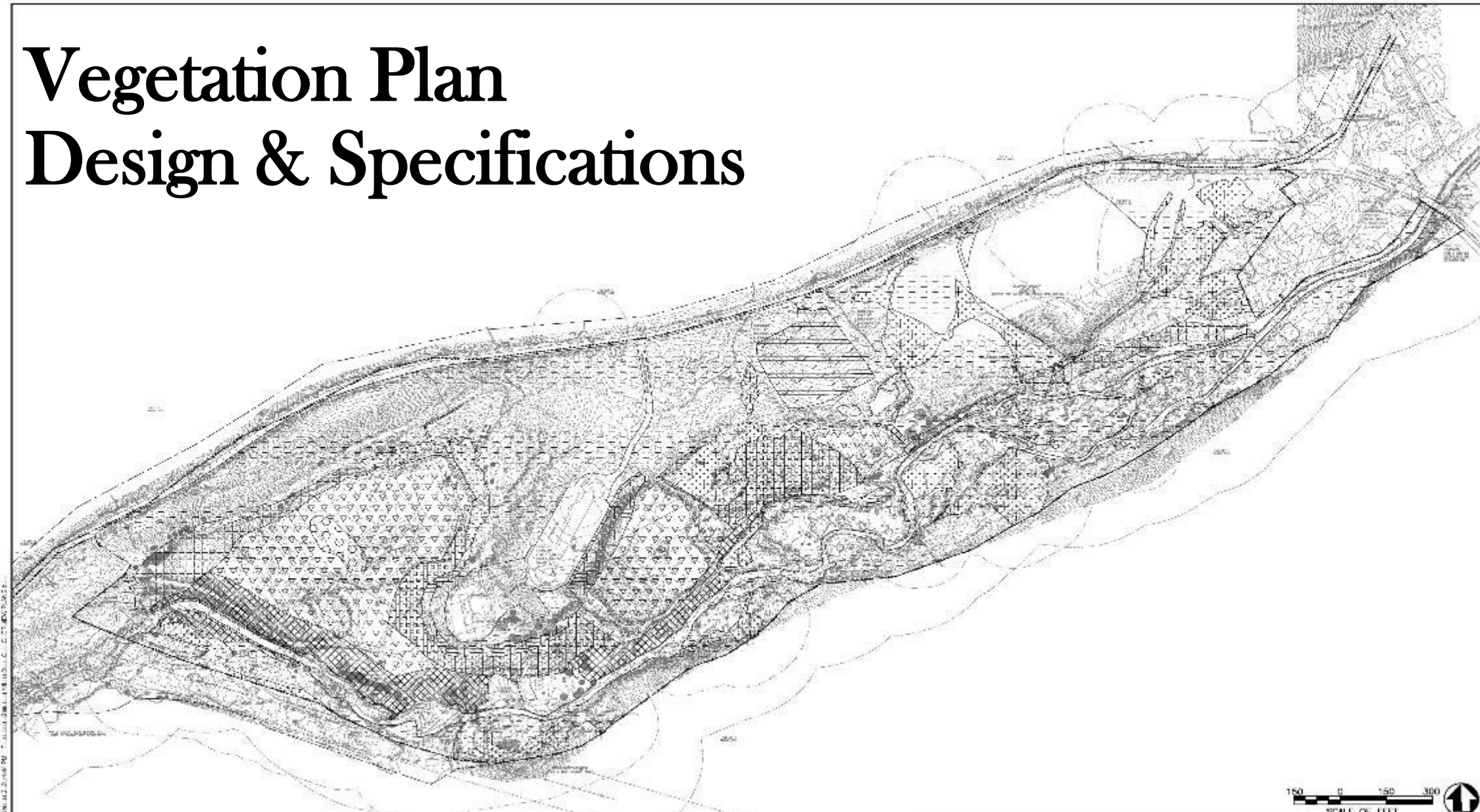


Old Mine Road

Water gate Rec Parking

Vancampens Brook

Vegetation Plan Design & Specifications



L.L. S. & ASSOCIATES, INC. 1000 ROUTE 102, SUITE 200, HANOVER, NJ 07930
 TEL: 908.528.1234 FAX: 908.528.1235 WWW.LLSA.COM

LEGEND			
	LIVE STAKES		SCRUB SHRUB WETLAND
	DEEP MARSH		FORESTED WETLAND
	WET MEADOW		UPLAND MEADOW
	UPLAND SLOPE SHRUB		UPLAND FOREST
	UPLAND FOREST/SCRUB SHRUB ENHANCEMENT		UPLAND FOREST/SCRUB SHRUB ENHANCEMENT
	WETLAND FOREST/SCRUB SHRUB ENHANCEMENT		PROPOSED MAJOR CONTOUR
	PROPOSED MINOR CONTOUR		LIMIT OF DISTURBANCE
	LIMIT OF GRADING		

CONSTRUCTION DOCUMENTS



AFTER SEAL: DATE: 11/20/20 	DESIGNED: TC/AV CHECKED: JP/AH TECH. REVIEW: MH/JB DATE: NOV 2020	SUB SHEET NO. L2	TITLE OF SHEET LANDSCAPING PLANS (OVERVIEW) DELAWARE WATER GAP NATIONAL RECREATION AREA HARDWICK, NEW JERSEY	DRAWING NO. 820 154473 PWS/PMC NO. 284821 SHEET 68 of 80
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Construction Weed Control

Installation of Critter Fence & Erosion Control



Vegetation Clearing



Earthen Dam Removal





Dewatering

Topsoil Removal & Salvage





Recontouring

Habitat Structures



Decompaction



Topsoil Replacement





Stream Re-alignment



Species Selection

UPLAND HABITAT AREAS

HABITAT AREA	ACREAGE	SPECIES	COMMON NAME	ROOT	CALIPER & HEIGHT			
UPLAND FOREST	2.97	CARYA OVATA	SHAGBARK HICKORY	TUBELING	MIN. 1/4 IN. ROOT COLLAR 1.0 TO 2.0 FT. HIGH			
		LIRIODENDRON TULIPIFERA	TULIP POPLAR	TUBELING	MIN. 1/4 IN. ROOT COLLAR 1.0 TO 2.0 FT. HIGH			
		PLATANUS OCCIDENTALIS	SYCAMORE	TUBELING	MIN. 1/4 IN. ROOT COLLAR 1.0 TO 2.0 FT. HIGH			
		ACER SACCHARINUM	SILVER MAPLE	TUBELING	MIN. 1/4 IN. ROOT COLLAR 1.0 TO 2.0 FT. HIGH			
		CORNUS AMOMUM	SILKY DOGWOOD	NO. 2 CANS	2.0 TO 3.0 FT. HIGH			
		AMELANCHIER ARBOREA	DOWNY SERVICEBERRY	NO. 2 CANS	2.0 TO 3.0 FT. HIGH			
		LINDERA BENZOIN	SPICEBUSH	NO. 2 CANS	2.0 TO 3.0 FT. HIGH			
		VIBURNUM LENTAGO	NANNYBERRY	NO. 2 CANS	2.0 TO 3.0 FT. HIGH			
		VIBURNUM PRUNIFOLIUM	BLACKHAW	NO. 2 CANS	2.0 TO 3.0 FT. HIGH			
		NOTE: THE SPACING BETWEEN INSTALLED PLANTS IN THIS AREA SHALL BE APPROXIMATELY 10 FT O.C.						
UPLAND MEADOW SEED MIXTURE				N/A	N/A			
UPLAND SLOPE SHRUB	1.29	CORNUS AMOMUM	SILKY DOGWOOD	NO. 2 CANS	2.0 TO 3.0 FT. HIGH			
		RHUS GLABRA	SMOOTH SUMAC	NO. 2 CANS	2.0 TO 3.0 FT. HIGH			
		LINDERA BENZOIN	SPICEBUSH	NO. 2 CANS	2.0 TO 3.0 FT. HIGH			
		VACCINIUM ANGUSTIFOLIUM	LOWBUSH BLUEBERRY	NO. 2 CANS	2.0 TO 3.0 FT. HIGH	36	30	39
		VIBURNUM LENTAGO	NANNYBERRY	NO. 2 CANS	2.0 TO 3.0 FT. HIGH	47	20	25
		VIBURNUM PRUNIFOLIUM	BLACKHAW	NO. 2 CANS	2.0 TO 3.0 FT. HIGH	38	30	39
		NOTE: THE SPACING BETWEEN INSTALLED PLANTS IN THIS AREA SHALL BE APPROXIMATELY 18 FT O.C.				18	150	167
UPLAND MEADOW SEED MIXTURE				N/A	N/A	22.23 LBS/ACRE PLS	29	
UPLAND MEADOW	3.34	UPLAND MEADOW SEED MIXTURE			N/A	N/A	22.23 LBS/ACRE PLS	100

WETLAND HABITAT AREAS

HABITAT AREA	ACREAGE	SPECIES	COMMON NAME	ROOT	CALIPER & HEIGHT	SPACING (O.C.)	QUANTITY PER ACRE	TOTAL QUANTITY	
FORESTED WETLAND	4.22	QUERCUS PALUSTRIS	PIN OAK	TUBELING	MIN. 1/4 IN. ROOT COLLAR 1.0 TO 2.0 FT. HIGH	32	52	211	
		PLATANUS OCCIDENTALIS	SYCAMORE	TUBELING	MIN. 1/4 IN. ROOT COLLAR 1.0 TO 2.0 FT. HIGH	27	62	253	
		ACER RUBRUM	RED MAPLE	TUBELING	MIN. 1/4 IN. ROOT COLLAR 1.0 TO 2.0 FT. HIGH	35	42	138	
		BETULA NIGRA	RIVER BIRCH	TUBELING	MIN. 1/4 IN. ROOT COLLAR 1.0 TO 2.0 FT. HIGH	27	62	253	
		SALIX NIGRA	BLACK WILLOW	TUBELING	MIN. 1/4 IN. ROOT COLLAR 1.0 TO 2.0 FT. HIGH	35	32	127	
		ALNUS SERRULATA	HAZEL ALDER	NO. 2 CANS	2.0 TO 3.0 FT. HIGH	47	22	34	
		CORNUS AMOMUM	SILKY DOGWOOD	NO. 2 CANS	2.0 TO 3.0 FT. HIGH	32	52	211	
		ALEX MERTENSII	WATERBERRY	NO. 2 CANS	2.0 TO 3.0 FT. HIGH	32	52	211	
		VIBURNUM LENTAGO	NANNYBERRY	NO. 2 CANS	2.0 TO 3.0 FT. HIGH	27	62	253	
		VACCINIUM CORYMBOSUM	HIGH-BUSH BLUEBERRY	NO. 2 CANS	2.0 TO 3.0 FT. HIGH	27	62	253	
		NOTE: THE SPACING BETWEEN INSTALLED PLANTS IN THIS AREA SHALL BE APPROXIMATELY 12 FT O.C.				10	400	2400	
WET MEADOW SEED MIXTURE				N/A	N/A	12.89 LBS/ACRE PLS	54		
SCRUB SHRUB WETLAND	3.96	ALNUS SERRULATA	HAZEL ALDER	NO. 2 CANS	2.0 TO 3.0 FT. HIGH	47	22	79	
		OPHIOCLYDON OCCIDENTALIS	BUTTONWOOD	NO. 2 CANS	2.0 TO 3.0 FT. HIGH	47	22	79	
		CORNUS AMOMUM	SILKY DOGWOOD	NO. 2 CANS	2.0 TO 3.0 FT. HIGH	35	35	120	
		CORNUS SERICEA	RED-OSIER DOGWOOD	NO. 2 CANS	2.0 TO 3.0 FT. HIGH	42	25	99	
		ALEX MERTENSII	WATERBERRY	NO. 2 CANS	2.0 TO 3.0 FT. HIGH	47	22	79	
		ROSA PALUSTRIS	SWAMP ROSE	NO. 2 CANS	2.0 TO 3.0 FT. HIGH	47	22	79	
		SALIX DISCOLOR	HUSSY WILLOW	NO. 2 CANS	2.0 TO 3.0 FT. HIGH	42	25	99	
		SAMBUCUS NIGRA CANADENSIS	AMERICAN BLACK-ELDERBERRY	NO. 2 CANS	2.0 TO 3.0 FT. HIGH	47	22	79	
		VIBURNUM LENTAGO	NANNYBERRY	NO. 2 CANS	2.0 TO 3.0 FT. HIGH	14	35	139	
		NOTE: THE SPACING BETWEEN INSTALLED PLANTS IN THIS AREA SHALL BE APPROXIMATELY 14 FT O.C.				14	220	871	
WET MEADOW SEED MIXTURE				N/A	N/A	12.89 LBS/ACRE PLS	50		
WET MEADOW	11.39	OSPREY OSMORHIZA	OSPREY FERN	CONTAINER	N/A	N/A	SEE NOTES	24	273
		SYPHILA ALBA	WHITE MEADOWSWEET	NO. 1 CANS	2.0 TO 3.0 FT. HIGH	SEE NOTES	24	273	
		SYPHILA TOMENTOSA	STEEPLE BUSH	NO. 1 CANS	2.0 TO 3.0 FT. HIGH	SEE NOTES	24	273	
		THALYCTERON PALUSTRIS	MARSH FERN	CONTAINER	N/A	SEE NOTES	24	273	
TOTAL						92	1,054		
WET MEADOW SEED MIXTURE				N/A	N/A	12.89 LBS/ACRE PLS	146		
DEEP MARSH	0.42	HELIANTHUS ARGENTUS	ARROWWEED	2 N X 2 IN DIA. PLUGS	N/A	N/A	SEE NOTES	35	15
		PONTEDERA CORDATA	PICKERELWEED	2 N X 2 IN DIA. PLUGS	N/A	N/A	SEE NOTES	35	15
		SAGITTARIA LATIFOLIA	COMMON ARROWHEAD	2 N X 2 IN DIA. PLUGS	N/A	N/A	SEE NOTES	35	15
		SPARGANUM AMERICANUM	AMERICAN BUR-REED	2 N X 2 IN DIA. PLUGS	N/A	N/A	SEE NOTES	35	15
TOTAL						116	75		

Seed Test Review



NST LABS
 340 N. Main Ave
 PO Box 100
 Bridgewater, SD 57319

Phone: (806) 729-2000
 Fax: (806) 729-2001

Sender Information

Ernst Seeds
 8884 Mercer Pike
 Meadville, PA 16335

Date Received: 11/19/2020
 Date Completed: 12/02/2020
 Date of Report: 12/02/2020
 Sample Number: 132310

Kind of Seed: Bottlebrush Grass
 Variety: PA Ecotype
 Lot Number: ELYHYS01-18SCH

Purity Results in		Other Crops		# Found	Per Pound
Bottlebrush Grass (<i>Hystrix patula</i>)	87.82 %	Panicgrass (<i>Panicum</i> spp)	2	63	
Mountain brome (<i>Bromus marginatus</i>)	8.98 %	Ryegrass (<i>Lolium</i> spp.)	6	149	
Other Crops:	0.22 %	Sedge (<i>Carex</i> spp)	6	179	
Inert Material:	2.91 %				
Weed Seeds:	0.07 %				
	100.00 %				
15.70 grams tested					

Weed Seeds		# Found	Per Pound
Japanese chess (<i>Bromus japonicus</i>)		4	119

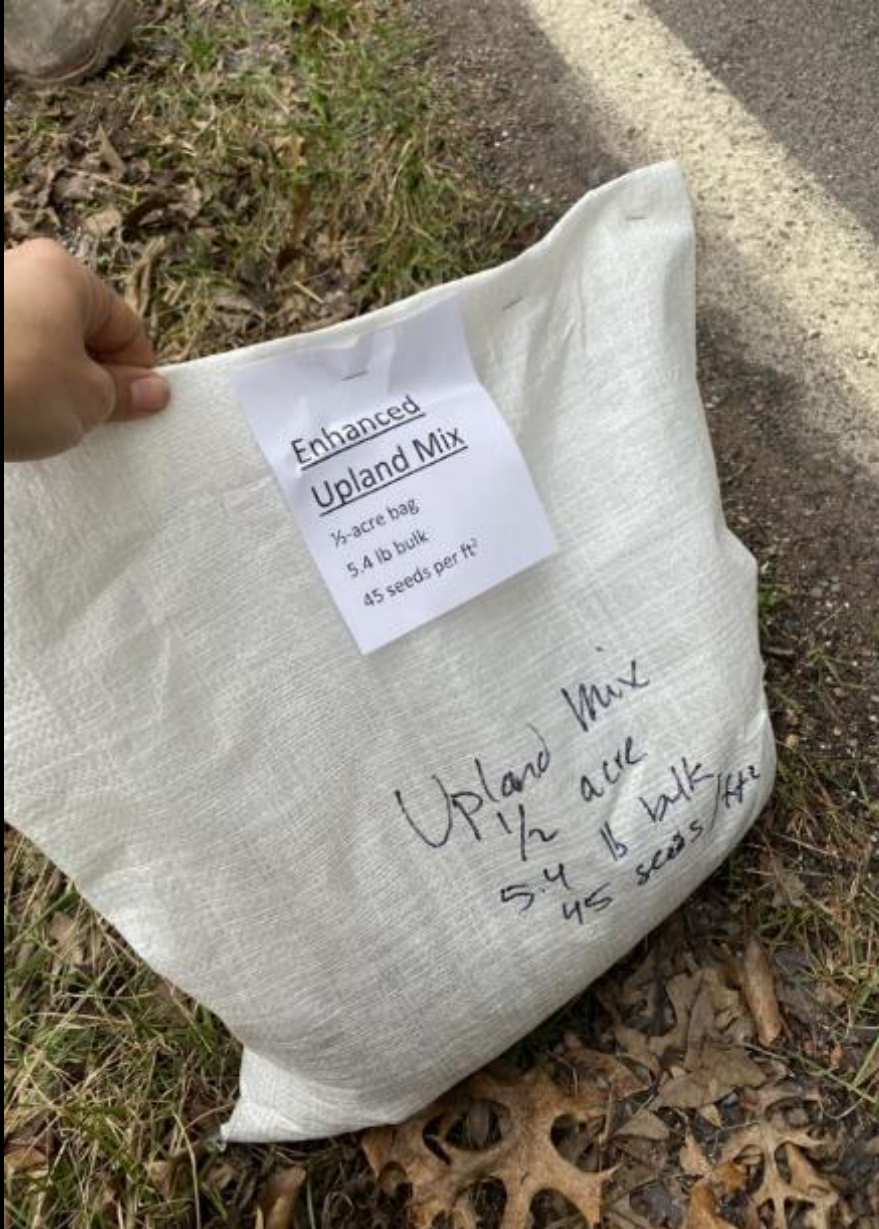
	Germ%	Hard%	Dorm%	Viable%	# Tested	Test Days	Temp	%PLS	TZ%
Bottlebrush Grass (<i>Hystrix patula</i>)	83	0	11	94	400	13	20-30 7,14	82.55	94
Mountain brome (<i>Bromus marginatus</i>)	97	0	0	97	200	13	20-30 7,14	8.71	98

Noxious Weeds (All States Noxious)	# Found*	Per Pound	Additional Comments
Wild carrot (<i>Daucus carota</i>)	1	3	ORIGIN: PA CANADA STANDARDS: (157.3g search) No (C) Brassica crops including S. Alba. No (C) Sweetclover. Found (1) Ergot body. (.005g) Found (1) Soil. (.014g) No (E) Canadian Prohibited Noxious. No (E) Canadian Primary Noxious. Found (18) Canadian Secondary Noxious. 18 Japanese chess, 1 Wild carrot Found (83) Other crop, 9 Ryegrass, 34 Sedge, 8 Panicgrass Found (2) Other weed. Yellow foxtail Origin: PA
157.30 grams tested			Seed Count: 72,463 seed(s) per pound

Special Noxious Weeds	# Found	Per Pound	UGS	# Found	Per Pound
Not Requested			Not Requested		

Dormancy determination was not conducted in accordance with the AOSA rules for testing seeds. Viability of un-germinated seed is to be determined at the

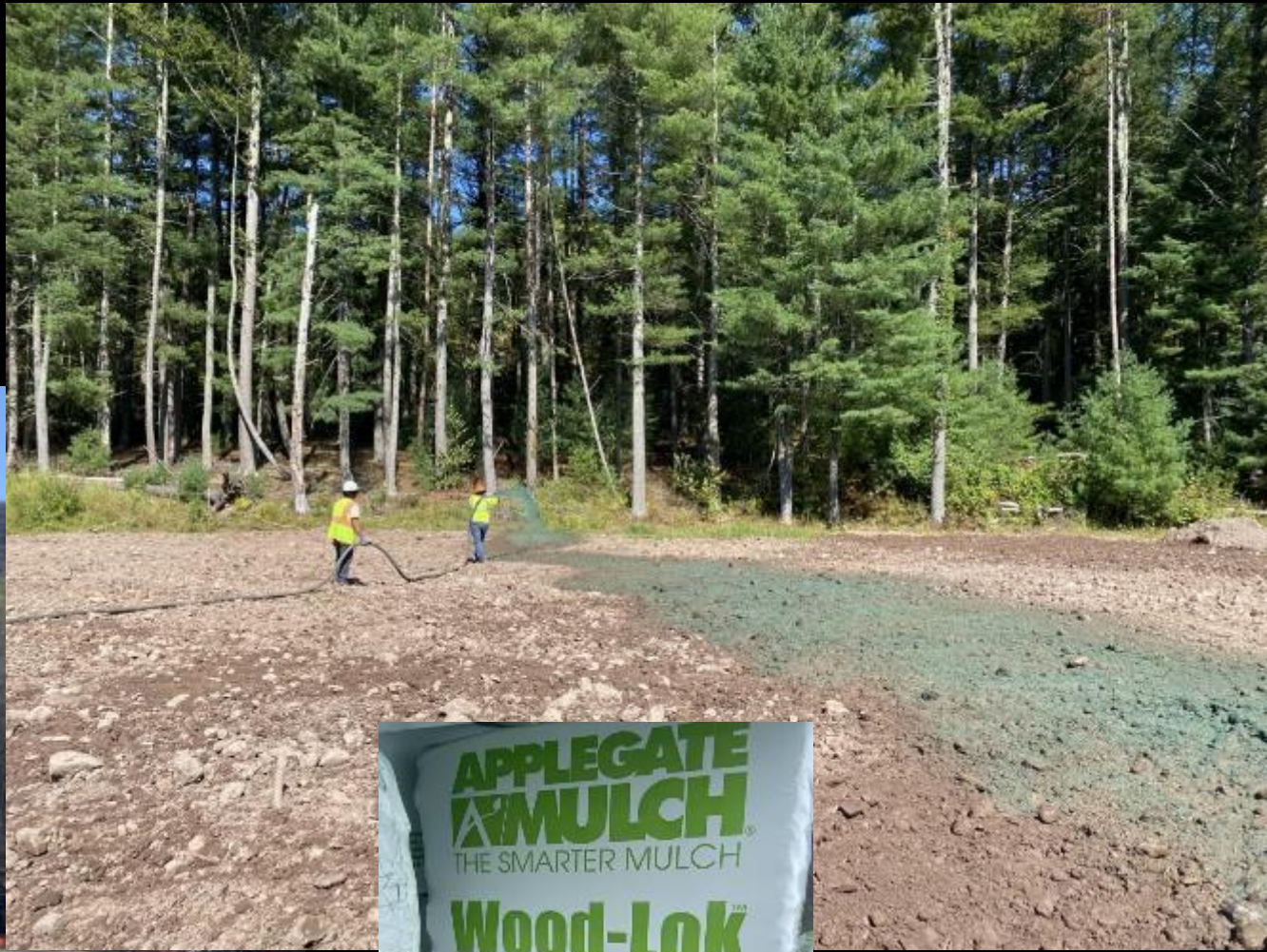
Seeding



Raking/Chain Harrow



Hydromulching



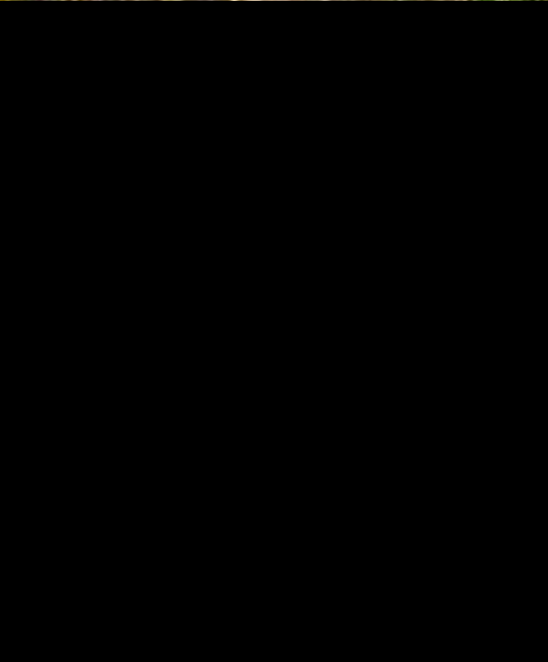
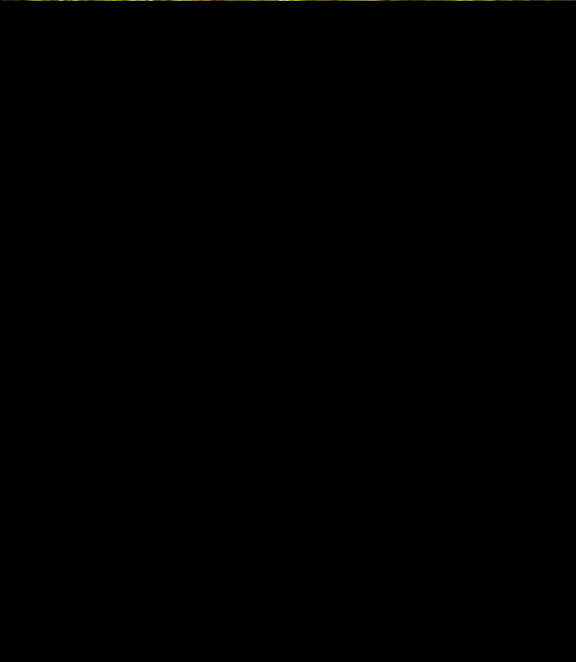
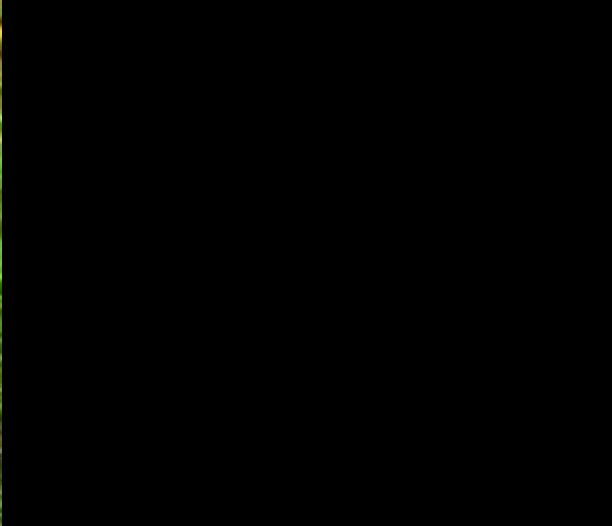
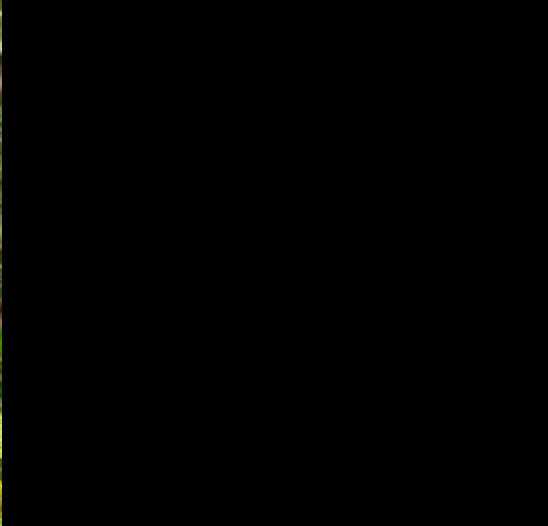
Container Planting











Weed Control



Thank you!

