BUFFER MANAGEMENT PLAN CALCULATIONS

STEP 1: ESTABLISHMENT OR MITIGATION

DISTURBANCE TO THE 100-FOOT AND/OR EXPANDED BUFFER?
IF YES, MITIGATION IS REQUIRED, PROCEED TO STEP 2. OTHERWISE, SKIP TO STEP 5.

| SELECT | ACTIMITY | ACTION |
|--------|---|----------------------------|
| | PROJECT COMPLETELY OUTSIDE BUFFER, NO BUFFER IMPACTS | ESTABLISHMENT |
| × | DISTURBANCE TO BUFFER OR VEGETATION REMOVAL IN BUFFER | MITIGATION |
| | SOME DISTURBANCE IN BUFFER AND SOME OUTSIDE BUFFER | ESTABLISHMENT & MITIGATION |

STEP 2, 3 & 4: DETERMINING MITIGATION FOR WORK IN THE BUFFER

| SELECT | ACTIMITY | MITIGATION RATIO | |
|--|--|------------------|--|
| × | SHORE EROSION CONTROL* | 1:1 | |
| | RIPARIAN WATER ACCESS (TEMPORARY DISTURBANCE) | 1:1 | |
| RIPARIAN WATER ACCESS (PERMANENT DISTURBANCE) | | 2:1 | |
| | WATER-DEPENDENT FACILITIES | 2:1 | |
| | VARIANCE | 3:1 | |
| | VIOLATION | 4:1 | |

| MITIGATION CALCULATIONS | |
|--|-----------------------|
| BUFFER DISTURBANCE AREA | AREA, SF |
| LOD IN BUFFER | 8780 |
| LOT COVERAGE | |
| NEW IMPERVIOUS AREA | 0 |
| BUFFER ACTIVITY TYPE & MITIGATION RATIOS | |
| SHORE EROSION CONTROL | |
| PERMANENT (1:1) | 0 |
| TEMPORARY (1:1) | 8780 |
| TOTAL MITIGATION REQUIRED FOR BUFFER DISTURBANCE | 8780 |
| BUFFER TREE REMOVAL MITIGATION (BASED ON CAMOPY REDU | стюн)* |
| 12* DBH TREES (TR65, TR70) | 134 |
| 13.3" DBH TREE (TR77) | 1214 |
| TOTAL BUFFER MITIGATION REQUIRED FOR TREE REMOVAL | 1348 |
| TREE CLEARING OUTSIDE OF BUFFER | |
| COMMUNITY TYPE | DEVELOPED WOODLAND |
| MITIGATION RATIO | 1:1 |
| INVASIVE TREE REMOVAL | 7,950 |
| REMAINING TREE REMOVAL | 6,714 |
| TOTAL CLEARING OUTSIDE OF BUFFER | 14,664 |
| TOTAL MITIGATION REQUIRED | |
| MITIGATION REQUIRED FOR BUFFER DISTURBANCE | 8,780 |
| MITIGATION REQUIRED FOR BUFFER TREE REMOVAL | 1,348 |
| MITIGATION REQUIRED FOR CLEARING OUTSIDE OF BUFFER | 14,664 |
| TOTAL MITIGATION REQUIRED | 24,792 |

STEP 5: ESTABLISHMENT FOR DEVELOPMENT ESTABLISHMENT REQUIRED? (YES / (NO)

YEAR LOT OREATED-

| SELECT | DEVELOPMENT CATEGORY | BEFORE PROGRAM DATE | BEFORE PROGRAM DATE | |
|--------|---|--|---------------------|--|
| N/A | NEW DEVELOPMENT ON VACANT LOT | TOTAL LOT COVERAGE | FULL ESTABLISHMENT | |
| N/A | NEW SUBDIVISION OR NEW LOT | FULL ESTABLISHMENT | | |
| N/A | NEW LOT WITH EXISTING DWELLING UNIT | ESTABLISHMENT = TOTAL LOT COVERAGE | | |
| N/A | CONVERSION OF LAND USE TO ANOTHER LAND USE | FULL ESTABLISHMENT | | |
| N/A | ADDITION OR ACCESSORY STRUCTURE | ESTABLISHMENT = INCREASE IN LOT COVERAGE | | |
| N/A | SUBSTANTIAL ALTERATION | ESTABLISHMENT = TOTAL LOT COVERAGE | | |

STEP 6: ADJUST FOR EXISTING FOREST COVER

FULL ESTABLISHMENT OF BUFFER REQUIRED?

STEP 7: ELIGIBILITY FOR NATURAL REGENERATION

IF THE PROJECT REQUIRES BUFFER ESTABLISHMENT GREATER THAN ONE ACRE, THEN 50% OF THE AREA REQUIRED CAN BE ESTABLISHED THROUGH MATURAL RECEIVERATION, AS LONG AS IT IS WITHIN 50 FEET OF MATURE FOREST, AND A SUPPLEMENTAL PLANTING PLANT & FINANCIAL ASSUMANCE ARE PROVIDED. IF ELIGIBLE, IDENTIFY THE MATURAL RECEIVERATION AREA ON THE PLAN AND REDUCE THE PLANTING REQUIREMENT BY THE MATURAL RECEIVERATION APER FOOTAGE.

TOTAL AREA OF BUFFER REQUIRED TO BE ESTABLISHED (STEP 5 OR STEP 6)

TOTAL ESTABLISHMENT > 1 ACRE?

NONE (YES / (NO))

(IF ESTABLISHMENT > 1 ACRE, YES. OTHERWISE, NO) NATURAL REGENERATION PERMITTED?

| Γ | COVER/NURSE CROP SEEDING TABLE | | | | | | |
|---|--------------------------------|-------------------|-----------------|--------------|--|--|--|
| Г | SEEDING RATE | BOTANICAL NAME | COMMON NAME | SEEDING DATE | | | |
| Г | 30 LB/AC | SECALE CEREAL | CEREAL RYE | 11/1-2/28 | | | |
| Г | 30 LB/AC | AVENA SATIVA | GRAIN OATS | 3/1-4/30 | | | |
| Г | 10 LB/AC | SETARIA ITALICA | FOXTAIL MILLET | 5/1-8/31 | | | |
| Г | 10 LB/AC | LOLIUM MULTFLORUM | ANNUAL RYEGRASS | 9/1-10/31 | | | |

BUFFER MANAGEMENT PLAN CALCULATIONS-CONT.

STEP 8: DETERMINE STOCKING

IDENTIFY AREAS OF NATURAL REGENERATION
 USE TABLE BELOW TO EVALUATE THE AREA THAT MUST BE PLANTED USING LINDSCAPING STOCK AND AREA THAT MAY BE PLANTED USING FLEXIBLE STOCKING.

| SELECT | AMOUNT | OPTIONS |
|------------|------------------|--|
| MITIGATION | | |
| × | LESS THAN 1 ACRE | LANDSCAPING STOCK |
| | 1 ACRE OR MORE | MIN. 50% LANDSCAPING STOCK, REMAINDER FLEXIBLE |

MITICATION RECUIREMENT-

STOCKING REQUIREMENT: LANDSCAPE STOCK: 100% X (ACRES) = (ACRES) FLEXIBLE STOCK: 0% X (ACRES) = 0.0 (ACRES)

STEP 9: CLUSTER PLANTING EVALUATION

STEP 10: LANDSCAPE SCHEDULE: SPECIES, STOCK, SIZE, AND QUANTITY BUFFER PLANTING AREA SCHEDULE

| | POOL PLANTING SCH | IEDULE, 900 SF | | | |
|----------------------|-------------------|---------------------|--------------------|--------------|---------------------|
| SCIENTIFIC NAME | COMMON NAME | INDICATOR STATUS | MAXIMUM SPACING | QUANTITY | CREDIT TOTAL, SF |
| HERBACEOUS - QUARTS | • | | SF CRED | T PER UNIT = | 2 |
| PONTEDERIA CORDATA | PICKERELWEED | OBL | 1.5' O.C. | 80 | 160 |
| SAGITTARIA LATIFOLIA | DUCK POTATO | OBL | 1.5' O.C. | 70 | 140 |
| HERBACEOUS - PLUGS | • | SF | CREDIT BASEI | ON AREA COV | ERED |
| PONTEDERIA CORDATA | PICKERELWEED | OBL | 1" O.C. | 300 | 300 |
| SAGITTARIA LATIFOLIA | DUCK POTATO | OBL | 1' O.C. | 300 | 300 |
| | • | | HERBACEOL | S CREDIT % = | 100.0% |
| | | | TOTAL: | 750 | 900 |

| EDGE OF WATER PLANTING SCHEDULE, 2,130 SF | | | | | |
|---|----------------|---------------------|--------------------|--------------|---------------------|
| SCIENTIFIC NAME | COMMON NAME | INDICATOR STATUS | MAXIMUM SPACING | QUANTITY | CREDIT TOTAL, SF |
| SMALL SHRUBS -18" CONTAINERIZED | | | SF CREDI | T PER UNIT = | 25 |
| CEPHALANTHUS OCCIDENTALIS | BUTTONBUSH | OBL | 5' O.C | 42 | 1050 |
| | | | SMALL SHRUE | CREDIT # = | 48.8% |
| HERBACEOUS - QUARTS | | | SF CREDI | T PER UNIT = | 2 |
| JUNCUS EFFUSUS | SOFT RUSH | OBL | 1.5° 0.C. | 150 | 300 |
| HIBISCUS MOSHEUTOS* | MARSH HIBISCUS | OBL | 1.5' O.C. | 100 | 200 |
| PELTANDRA VRGINICA | ARROW ARUM | OBL | 1.5° O.C. | 50 | 100 |
| SAURURUS CERNUUS | UZARD TAIL | OBL | 1.5' O.C. | 150 | 300 |
| SCIRPUS CYPERINUS* | WOOLGRASS | OBL | 1.5° O.C. | 100 | 200 |
| HERBACEOUS CREDIT % = | | | | 51.2% | |
| TOTAL: 592 | | | | 2150 | |

| | FRINGE PLANTING SCHEDULE, 2 | ,020 SF | | | |
|--------------------------------|-----------------------------|---------------------|--------------------|--------------|---------------------|
| SCIENTIFIC NAME | COMMON NAME | INDICATOR STATUS | MAXIMUM SPACING | QUANTITY | CREDIT TOTAL, SF |
| HERBACEOUS - QUARTS | | | SF CREDI | T PER UNIT = | 2 |
| OSMUNDA CINNAMOMEA | CINNAMON FERN | FACW | 1.5° O.C. | 60 | 120 |
| ASCLEPIAS INCARNATA | SWAMP MILKWEED | OBL | 1.5' O.C. | 70 | 140 |
| ANDROPOGON VIRGINICUS | BROOMSEDGE | FAC | 1.5° O.C. | 50 | 100 |
| PANICUM VIRGATUM | SWITCHGRASS | FAC | 1.5° O.C. | 70 | 140 |
| SYMPHYPOTRICHUM NOVAE -ANGLIAE | NEW ENGLAND ASTER | FACW | 1.5' O.C. | 60 | 120 |
| HERBACEOUS - PLUGS | | SF C | REDIT BASED | ON AREA COV | ERED |
| ANDROPOGON VIRGINICUS | BROOMSEDGE | FAC | 1' O.C. | 250 | 250 |
| EUPATORIUM PERFOLIATUM | COMMON BONESET | FACW | 1° 0.C. | 300 | 300 |
| LOBELIA SIPHILITICA | GREAT BUE LOBELIA | FACW | 1" O.C. | 300 | 300 |
| RUDBECKIA LACINATA | GREEN-HEADED CONE FLOWER | FACW | 1' O.C. | 300 | 300 |
| SYMPHYPOTRICHUM NOVAE -ANGLIAE | NEW ENGLAND ASTER | FACW | 1' O.C. | 250 | 250 |
| HERBACEOUS CREDIT % = | | | | | 100.0% |
| | | | TOTAL: | 1710 | 2020 |

| WATER & SEWER EASEMENT AREAS 5,600 SF | | | | | |
|---|---------------------------------|---------------------|--------------------|----------|---------------------|
| SCIENTIFIC NAME | COMMON NAME | INDICATOR STATUS | MAXIMUM SPACING | QUANTITY | CREDIT TOTAL, SF |
| MD COASTAL PLAIN RIPARIAN MIX ERNMX-732 (OR APPROVED EQUIV.) | COASTAL PLAIN RIPARIAN SEED MIX | NA | NA | 2 LB | 5600 |
| COVER/NURSE CROP, SEE TABLE FOR RATE & DATES NA NA NA NA | | | | | |

LANDSCAPE NOTES

- SPECIES HAVE BEEN SELECTED BASED ON AN ANALYSIS OF SURROUNDING NATIVE FOREST AND DEVELOPED WOODLAND COVER.

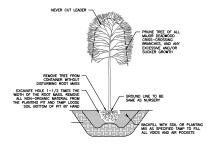
| % COMPOSTION | BOTANICAL NAME | COMMON NAME | | | | |
|--------------|-------------------------|---------------------|--|--|--|--|
| 30.00% | SORGHASTRUM NUTANS | INDIANGRASS | | | | |
| 18.00% | ELYMUS VIRGINICUS | VIRGINIA WLDRYE | | | | |
| 17.80% | PANICUM ANCEPS | BEAKED PANICGRASS | | | | |
| 15.00% | ANDROPOGON GERARDII | BIG BLUESTEM | | | | |
| 5.0% | CAREX VULPINOIDEA | FOX SEDGE | | | | |
| 5.0% | PANICUM VIRGATUM | SWTCHGRASS | | | | |
| 4.0% | AGROSTIS PERENNANS | AUTUMN BENTGRASS | | | | |
| 2.0% | EUTHAMIA GRAMINIFOLIA | GRASSLEAF GOLDENROD | | | | |
| 1.0% | SENNA HEBECARPA | WILD SENNA | | | | |
| 1.0% | VERNONIA NOVEBORACENSIS | NEW YORK IRONWEED | | | | |
| | CUCATAGORAL CONTRACTOR | ME DISCUSSION | | | | |

MITIGATION SUMMARY

| CATEGORY | AREA, SF | | | |
|---------------------------|----------|--|--|--|
| TOTAL MITIGATION REQUIRED | 24,792 | | | |
| HITIGATION PROVIDED | | | | |
| POOL PLANTINGS | 900 | | | |
| EDGE OF WATER PLANTINGS | 2,130 | | | |
| FRINGE PLANTINGS | 2,020 | | | |
| WATER & SEWER AREA | 5,600 | | | |
| FOREST PLANTING | 14,850 | | | |
| TOTAL MITIGATION PROVIDED | 25,500 | | | |

| SCIENTIFIC NAME | COMMON NAME | INDICATOR STATUS | MAXIMUM SPACING | QUANTITY | CREDIT TOTAL, SF | |
|---|---------------------------------|---------------------|----------------------|----------|---------------------|--|
| CANOPY TREES - 3/4" CALIPER | | | SF CREDIT PER UNIT = | | | |
| NYSSA SYLVATICA | BLACK GUM | FAC | 10° 0.0 | 20 | 2000 | |
| PINUS TAEDA | LOBLOLLY PINE | FAC | 10' O.C | 30 | 3000 | |
| QUERCUS FALCATA | SOUTHERN RED OAK | FACU | 10' O.C | 24 | 2400 | |
| QUERCUS PHELLOS | WILLOW OAK | FACW | 10° 0.0 | 24 | 2400 | |
| 3/4" CALIPER CREDIT % = | | | | | | |
| UNDERSTORY TREES - 3/4" CALIPER | | | SF CREDIT PER UNIT = | | | |
| AMELANCHIER CANADENSIS | SERVICEBERRY | FAC | 8.5° O.C | 6 | 450 | |
| ASIMINA TRILOBA | PAW PAW | FAC | 8.5° O.C | 6 | 450 | |
| CORUS FLORIDA | FLOWERING DOGWOOD | FACU | 8.5° O.C | 6 | 450 | |
| MAGNOLIA VIRGINIANA | SWEETBAY MAGNOLIA | FACW | 8.5° O.C | 6 | 450 | |
| UNDERSTORY CREDIT % = | | | | | | |
| LARGE SHRUBS - 36" CONTAINERIZED | | | SF CREDIT PER UNIT = | | | |
| CLETHRA ALNIFOLIA | COASTAL SWEETPEPPERBUSH | FACW | 7' O.C | 10 | 500 | |
| ILEX GLABRA | INKBERRY | FACW | 7° 0.C | 9 | 450 | |
| RHODODENDRON PERICLYMENOIDES | PINXTER FLOWER | FAC | 7° 0.0 | 9 | 450 | |
| VIBURNUM DENTATUM | SOUTHERN ARROWWOOD | FAC | 7' O.C | 10 | 500 | |
| LARGE SHRUB CREDIT % = | | | | | | |
| SMALL SHRUBS -18" CONTAINERIZED | | | SF CREDIT PER UNIT = | | | |
| CLETHRA ALNIFOLIA | COASTAL SWEETPEPPERBUSH | FACW | 5' O.C | 15 | 375 | |
| RHODODENDRON PERICLYMENOIDES | PINXTER FLOWER | FAC | 5' 0.C | 12 | 300 | |
| VACCINIUM ANGUSTIFOLIUM | LOWBUSH BLUE BERRY | FACU | 5' 0.C | 12 | 300 | |
| VIBURNUM DENTATUM | SOUTHERN ARROWWOOD | FAC | 5' O.C | 15 | 375 | |
| | SMALL SHRUB CREDIT % = | | | | | |
| HERBACEOUS-SEEDING SF CREDIT BASED ON AF | | | | | EA COVERE | |
| MD COASTAL PLAIN RIPARIAN MIX ERNMX-732 (OR APPROVED EQUIV.) | COASTAL PLAIN RIPARIAN SEED MIX | NA. | NA | 7 LB | 0 | |
| COVER/NURSE CROP, SEE TABLE FOR RATE & DATES NA NA | | | | | | |
| HERBACEOUS CREDIT % = | | | | | | |
| TOTAL: | | | | 214 | 14,850 | |
| | | | | | | |

RIPARIAN PLANTING SCHEDULE 14,850 SF



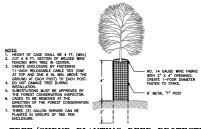
TREE PLANTING - CONTAINER GROWN

INSPECTION AGREEMENT

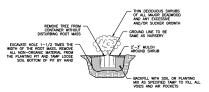
I THE DEVELOPER OF THE SUBJECT PROPERTY, SHOWN HERON, DO HERBY GRANT PERMISSION TO THE APPROVING AUTHORITY TO INSPECT THE PLANTINGS AT THE APPROPRIATE TIMES AT THE ADDRESS PROVIDED BELOW. STREET ADDRESS: CAPE ST. CLAIRE ROAD, ANNAPOLIS, MARYLAND 21409 TAX MAP: 40 PARCEL #: 398 SECTION: N/A

BUFFER MANAGEMENT PLAN APPROVAL

THIS MAJOR BUFFER MANAGEMENT PLAN HAS BEEN REVIEWED AND APPROVED FOR CONSISTENCY WITH THE LOCAL CRITICAL AREA PROGRAM AND PROVISIONS OF COMMR 27.01.09.01-1-7



TREE/SHRUB PLANTING DEER PROTECTION



SHRUB PLANTING - CONTAINER GROWN



HERBACEOUS PLANTING - PLUGS



HERBACEOUS PLANTING - QUART

| Consultants & Designers, Inc. |
|---|
| "Integrating Engineering and Environment" |

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| | ANNE ARUNDEL COUNTY | | | | | | | | |
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| | DEPARTMENT OF PUBLIC WORKS | | | | | | | | |
| DA | REVISED TE | BY | APPROVED | DATE | APPROVED | | SCALE: | AS SHOWN | MAGOTHY RIVER OUTFALL PROJECT GROUP 4 |
| | | | | | | | DESIGNED BY:DM/M | | CAPE ST. CLAIRE |
| - | \rightarrow | | CHEF ENGINEER | | PROJECT MANAGER | | DRAWN BY: DM | 2/7/18 | CUTEAU MACCOCC |
| | | | APPROVED | DATE | APPROVED | DATE | CHECKED BY: MB/C | | OUTFALL W16O009 |
| | | | | | | | SHEET NO. | 11 OF 12 | LANDSCAPE & BUFFER MANAGEMENT |
| _ | _ | | | | | | PROJECT NO. | B552400 | |
| | - 1 | | ENGINEED ADMINISTRATOR | | CHIEF BIOUT OF WAY SERVICES | | PROPOSAL NO. | R552401 | PLAN COUNCIL DISTRICT |