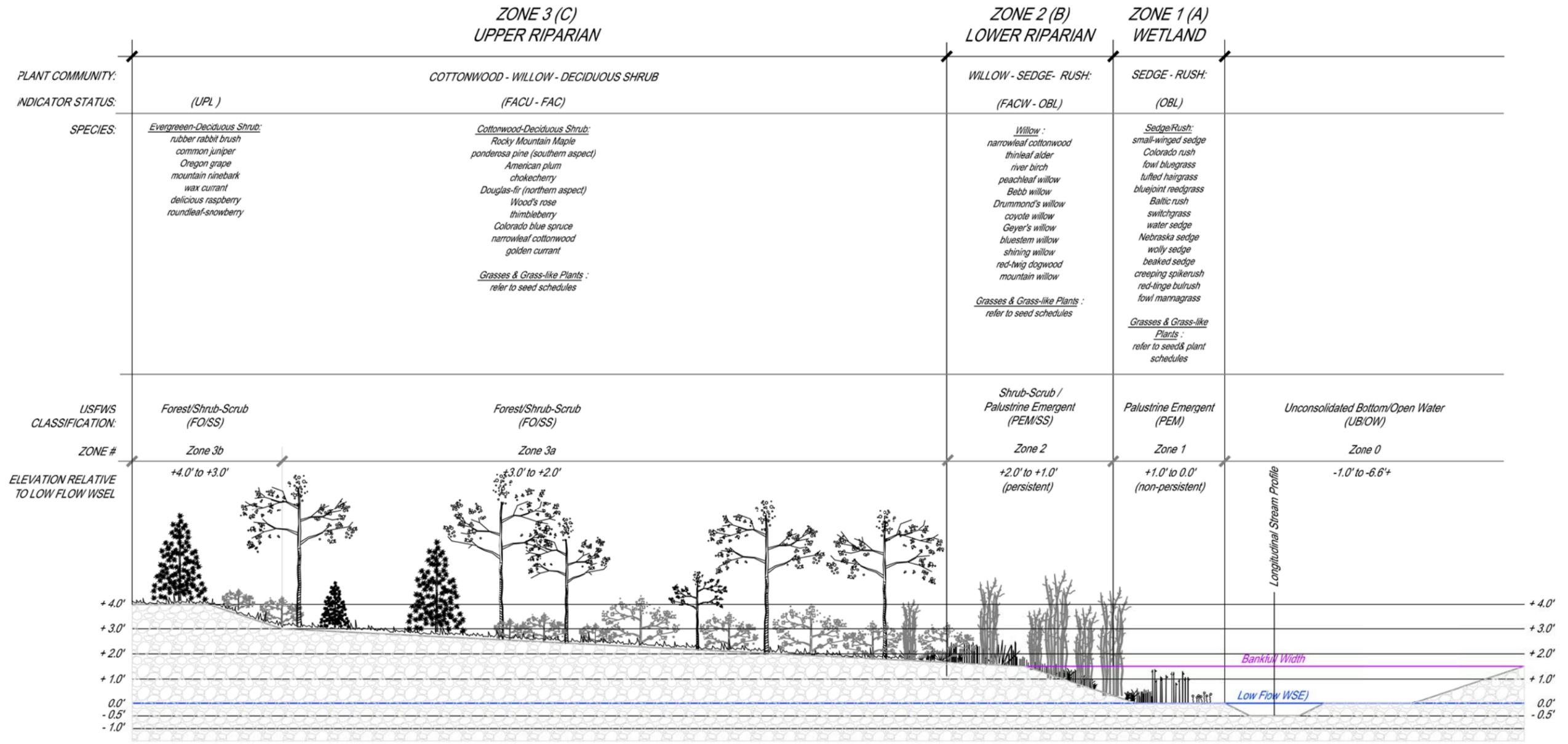
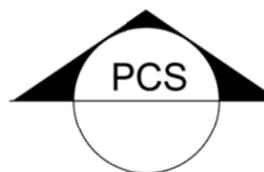


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NOTES:
 1. ALL ZONES ARE TO BE SEEDED WITH ONE BROAD-SPECTRUM SEED MIX CONTAINING THE SPECIES SHOWN ON THE SEED SCHEDULES.
 2. REFER TO PLANTING AND SEEDING SCHEDULES FOR SPECIES SIZE/FORM AND QUANTITY.
 3. UPLAND SPECIES MAY BE FOUND AND LOCATED IN WETLAND AREAS, AND CONVERSELY WETLAND SPECIES IN UPLAND AREAS DEPENDING ON FIELD CONDITIONS ESTABLISHED DURING GRADING OPERATIONS. PLANT ZONATION SHOWN IS A GENERAL GUIDELINE. TRANSITION OR EXTENSION OF SPECIES BETWEEN ZONES MAY VARY DEPENDING ON ACTUAL FIELD CONDITIONS, SLOPE, HYDROLOGY, MICRO-HABITAT, SOIL TEXTURE & MOISTURE CONDITIONS. THE ECOLOGIST OVERSEEING PLANTING OPERATIONS MUST MAKE DISCRETIONARY CALLS ON PLANT LOCATIONS CONSIDERING THAT OVERFLOW SWALES INCLUDE ZONE 1(A) WETLAND PLANT MATERIALS THAT MAY EXTEND UP INTO ZONE 2(B). ZONE 2(B) PLANT MATERIALS MAY EXTEND DOWN INTO ZONE 1(A). ZONE 3(C) PLANTS MAY EXTEND IN TO ZONE 2(B).



TYPICAL RIPARIAN PLANT COMMUNITY CROSS-SECTION
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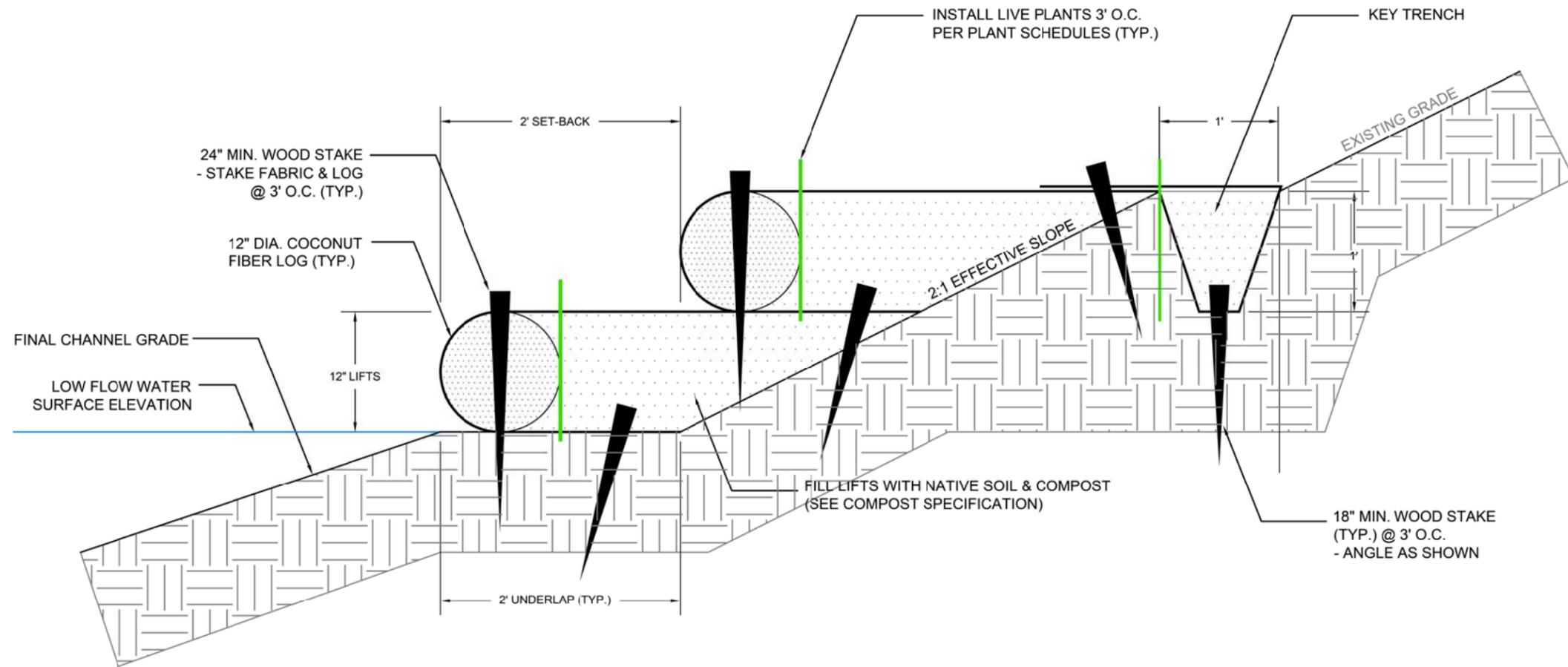
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LEFTHAND WATERSHED OVERSIGHT GROUP

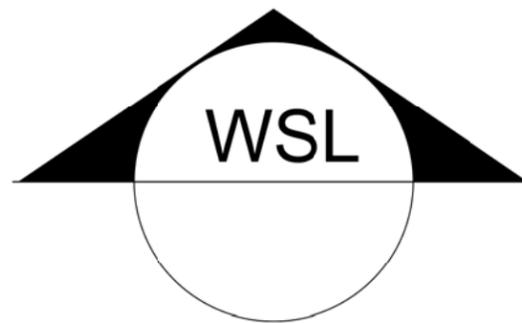
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JAMES CREEK PLANTING DETAILS (1 OF 6)	



NOTES:

1. UNIFORMLY MIX NATIVE SOIL, COMPOST & AMENDMENTS PRIOR TO INSTALLING SOIL LIFTS. (REFER TO COMPOST/SOIL AMENDMENT SPECIFICATIONS)
2. SEED SOIL BEFORE CLOSING FABRIC & KEY TRENCH.
3. USE NEDIA KOIRWRAP 1000 FABRIC (OR APPROVED EQUIVALENT) FOR SOIL LIFTS (KOIRWRAP FABRIC IS TYPICALLY PROVIDED IN 10' X 83' ROLLS)
4. REFER TO PLANT AND SEED SCHEDULES.
5. ECOLOGIST TO GUIDE THE SELECTION OF PLANTS PER LIFT DEPENDING ON ELEVATION RELATIVE TO WATER SURFACE ELEVATION.
6. UTILIZE AS MANY LIFTS AS NECESSARY TO MEET EXISTING GRADE (NOT TO EXCEED 3 LIFTS). ADJUST WIDTH OF LIFTS AS NECESSARY TO MEET EXISTING GRADE, ALLOWING A MINIMUM OF 2' EXPOSED SURFACE FOR PLANTING.
7. INSTALL FABRIC LENGTHWISE. STAKE OVERLAPPING SEAMS AS NECESSARY.
8. INSTALL & FORM WRAPPED SOIL LIFTS ALONG FLOW-LINE OF THE BANK.
9. CLOSE & STAKE UPSTREAM AND DOWNSTREAM ENDS OF LIFTS & BACKFILL ADJACENT GRADES TO MATCH.



WRAPPED SOIL LIFT DETAIL

CROSS-SECTION NTS

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FOR THE MARKING OF UNDERGROUND
MEMBER UTILITIES

REVISIONS:	NO.	DATE	REVISION DESCRIPTION:



LEFTHAND WATERSHED OVERSIGHT GROUP

DESIGNED:	CAD:	CHECKED:	DATE:
			7/12/2016

**JAMES CREEK
PLANTING DETAILS
(2 OF 6)**

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GENERAL NOTES:

1. CONSTRUCTION OBSERVATION IS TO BE PERFORMED BY AN (ECOLOGIST) ON BEHALF OF THE LEFTHAND WATERSHED OVERSIGHT GROUP (CLIENT). HEREAFTER, THE GENERAL CONTRACTOR WILL BE REFERRED TO AS THE CONTRACTOR, THE LANDSCAPE SUBCONTRACTOR AS (SUBCONTRACTOR). THE PROJECT ENGINEER (OTAK) WILL BE REFERRED TO AS THE DESIGNER.

2. ECOLOGIST WILL GUIDE AND INSPECT REVEGETATION WORK WITH THE SUBCONTRACTOR AS NEEDED WITHIN EACH REACH OF THE PROJECT. THE FOLLOWING ARE THE MAJOR MILESTONES:

- SOIL PREPARATION & FINISH GRADING
- SEEDING AND EROSION CONTROL BLANKET INSTALLATION
- PLANT DELIVERY INSPECTION, LAYOUT & PLANTING
- PUNCH LIST, SUBSTANTIAL COMPLETION & FINAL INSPECTIONS

SITE CHECKS SHALL BE COORDINATED BETWEEN THE ECOLOGIST & SUBCONTRACTOR PRIOR TO INITIATING SUBSEQUENT TASKS.

3. RESTORATION AREAS ARE TO BE SEEDED AND PLANTED WITH THE SPECIES PROVIDED ON THE PLANT & SEED SCHEDULES. THE ECOLOGIST WILL LAY OUT AND FIELD FIT PLANT MATERIAL PRIOR TO INSTALLATION.

4. SEEDING SHALL OCCUR AS SOON AS PRACTICABLE UPON COMPLETION OF EARTHWORK OPERATIONS WITHIN THE TIME FRAMES INDICATED IN THE SEEDING NOTES. PLANTING OPERATIONS ARE TO BE PERFORMED IN THE SPRING AS SOON AS SOIL CONDITIONS ARE CONDUCIVE FOR PROPER PLANTING (I.E., NOT FROZEN OR NUNDATED).

5. TO ENSURE AVAILABILITY, SEED AND PLANT MATERIALS MAY BE ACQUIRED FOR THE PROJECT BY THE CLIENT (REFER TO SEED & PLANT SCHEDULES). THE CONTRACTOR SHALL HAVE THE RIGHT TO INSPECT THE PLANT MATERIAL AT ITS SOURCE **PRIOR TO DELIVERY** TO REJECT ANY NON-STANDARD MATERIALS THAT EXHIBIT DEFECTS THAT WOULD PROHIBIT ESTABLISHMENT & GROWTH UNDER NORMAL CONDITIONS. REJECTED MATERIAL SHALL BE WARRANTED & REPLACED IN KIND BY THE SUPPLIER AT NO COST TO THE CLIENT. THE ECOLOGIST SHALL HAVE THE RIGHT TO INSPECT THE PLANT MATERIAL PRIOR TO OR UPON DELIVERY AND REJECT ANY NON-STANDARD OR DEFECTIVE MATERIAL. THEREAFTER, ALL MATERIALS SHALL BE CONSIDERED ACCEPTED. AFTER ACCEPTANCE IT IS THE SUBCONTRACTOR'S RESPONSIBILITY TO ENSURE THAT THE NURSERY OR STORAGE FACILITY MAINTAINS THE PLANTS IN GOOD HEALTH UNTIL TIME OF DELIVERY; AND THAT MATERIAL IS PROPERLY MAINTAINED AND CARED FOR ONCE DELIVERED.

6. CONSTRUCTION SURVEYING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY PLANTING AREA BOUNDARIES OR EXTENTS. AS-BUILT DRAWINGS SHOWING ANY DEVIATIONS OR CHANGES TO THE PLANS THAT WERE MADE IN THE FIELD SHALL BE PROVIDED BY THE SUBCONTRACTOR AT THE END OF THE PROJECT. AS-BUILT PLANS, NOTES & PHOTOS SHALL BE PROVIDED IN DIGITAL AND HARD COPY FORM. FAILURE TO PROVIDE COMPLETE AND ACCURATE AS-BUILT INFORMATION MAY RESULT IN REDUCTION OF PAYMENT/RETAINAGE EQUAL TO THE AMOUNT NECESSARY FOR THE CONTRACTOR TO PRODUCE ACCURATE AS-BUILT DATA.

7. CONTRACTOR SHALL NOT EXPAND OR WORK OUTSIDE OF THE DESIGNATED LIMITS OF CONSTRUCTION UNLESS OTHERWISE APPROVED BY THE ECOLOGIST. ALL AREAS DISTURBED DURING THE COURSE OF WORK SHALL BE RESTORED TO ORIGINAL OR BETTER CONDITION BY THE CONTRACTOR IN ACCORDANCE WITH THE PLANS & PERFORMANCE CRITERIA. ANY UNAPPROVED IMPACTS BEYOND THE LIMITS OF DISTURBANCE SHALL BE RESTORED BY THE SUBCONTRACTOR AT THE CONTRACTOR'S EXPENSE.

8. SITE WORK SHALL NOT BEGIN UNTIL ALL APPLICABLE LICENSES AND CONSTRUCTION PERMITS HAVE BEEN OBTAINED BY THE CONTRACTOR, INCLUDING, BUT NOT LIMITED TO:

- GENERAL LAND DEVELOPMENT PERMIT (STATE)
- STORMWATER DISCHARGE PERMIT (STATE)
- CONSTRUCTION DEWATERING PERMIT (STATE)
- GRADING PERMIT (CITY AND/ORCOUNTY)

THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND SATISFYING THE REQUIREMENTS OF ANY APPLICABLE PERMITS PERTAINING TO WETLANDS, WATERS (BOTH SURFACE AND SUBSURFACE), WATER QUALITY, WATER CONTROL DURING CONSTRUCTION ACTIVITIES, AND EROSION CONTROL.

THE CLIENT SHALL HAVE OBTAINED A CLEAN WATER ACT (CWA) SECTION 404 PERMIT & OTHER FEDERAL PERMITS/CLEARANCES FOR THE PROJECT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH SAID PERMITS.

THE CONTRACTOR SHALL NOT GO AROUND THE CLIENT, DESIGNER OR ECOLOGIST TO MODIFY PERMITS THAT WERE ALREADY IN PLACE PRIOR TO CONSTRUCTION. IF NECESSARY, THE CONTRACTOR WILL SUBMIT DRAFT CONSTRUCTION RELATED PERMITS TO THE CLIENT & DESIGNER FOR REVIEW & APPROVAL PRIOR TO SUBMITTING TO ANY AGENCY AND THEN COPY THE CLIENT AND DESIGNER ON ANY FINAL PERMIT APPLICATIONS, RESULTS OR CORRESPONDENCE WITH AGENCIES RELATED TO SAID PERMITS.

9. THE CONTRACTOR SHALL GENERATE A STORM WATER MANAGEMENT PLAN & WILL BE RESPONSIBLE FOR DEVELOPING, INSTALLING AND ENSURING ALL APPLICABLE BMPS ARE INSTALLED AND PROPERLY MAINTAINED.

10. ANY WORK THAT WILL TAKE PLACE IN AND AROUND A WATER BODY MAY BE SUBJECT TO PERIODIC FLOODING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONTROL OF SURFACE AND SUBSURFACE WATER AND EROSION DURING THE COURSE OF THE WORK. ANY DAMAGE TO THE WORK RESULTING FROM SURFACE FLOWS, BASE FLOWS, OR FLOOD FLOWS, INCLUDING BUOYANCY FORCES, AS A RESULT OF THE CONTRACTOR NOT EFFECTIVELY PROTECTING THE WORK, SHALL BE CORRECTED BY THE CONTRACTOR AT THEIR EXPENSE.

11. EROSION CONTROL MEASURES SHALL REMAIN IN FULL FORCE DURING CONSTRUCTION ACTIVITIES AND AS REQUIRED BY THE GOVERNING JURISDICTION(S).

EARTHWORK NOTES:

1. THE CONTRACTOR SHALL INSTALL AND MAINTAIN BMP's (AS NEEDED) TO PROTECT EXISTING WETLANDS, GRASSLANDS, TREES AND SHRUBS TO REMAIN. TREES & SHRUBS TO REMAIN THAT MAY BE AFFECTED BY GRADING SHALL BE PROTECTED TO AVOID EXCAVATION, COMPACTION OR DISTURBANCE WITHIN THEIR DRIP LINE. IF ANY EXCAVATION IS REQUIRED WITHIN THE DRIP LINE OF TREES AND SHRUBS TO REMAIN, IT WILL BE DONE IN A MANNER, WHICH WILL CAUSE MINIMUM DAMAGE TO THE ROOT SYSTEMS. INJURED ROOTS WILL BE PRUNED CLEANLY AND BACKFILLED AS SOON AS POSSIBLE.

2. THE PROJECT SITE SHALL BE CLEARED AND GRUBBED (WHERE APPLICABLE), PRESERVING AS MUCH TOPSOIL AS POSSIBLE. THEREAFTER, ALL EXCESS TOPSOIL SHALL BE STRIPPED FOR REUSE ON THE SITE FROM WHICH IT ORIGINATED. APPROXIMATELY **6" MIN. OF EXISTING TOPSOIL** SHALL BE PLACED TO FINAL GRADE OR AS DIRECTED BY THE ECOLOGIST. **NO IMPORTED TOPSOIL IS SPECIFIED.** FOR THE PURPOSES OF THIS PROJECT, TOPSOIL SHALL CONSIST OF ALL ORGANIC SOIL, DUFF, AND OTHER SURFACE MATERIALS CAPABLE OF SUPPORTING VEGETATION AND MAY INCLUDE GRASS, PLANT BRANCHES AND ROOTS LESS THAN 1/2 INCH DIAMETER AND SIX INCHES IN LENGTH. STOCKPILED TOPSOIL SHALL BE PLACED IN THE DESIGNATED STORAGE/STAGING AREA.

3. WHERE FEASIBLE, STOCKPILES SHALL BE PLACED NO CLOSER THAN 50' FROM ANY EXISTING WATER BODY, DRAINAGE OR WETLAND THAT COULD POTENTIALLY ERODE THE STOCKPILED MATERIALS INTO EXISTING WATERS OR WETLANDS DURING HIGH WATER. IF WITHIN 50', DOUBLE SILT FENCE (OR EFFECTIVE EQUIVALENT) SHALL BE INSTALLED BETWEEN THE STOCKPILE AND WATER/WETLAND.

4. EXCAVATION, GRADING AND DRAINAGE SHALL BE PERFORMED AS PER THE PLANS AND DIRECTIONS OF THE DESIGNER AND FIELD FIT AS NECESSARY TO ACHIEVE OPTIMAL GRADES AS INDICATED ON THE PLANS.

5. GRADED AREAS THAT WILL RECEIVE TOPSOIL WILL BE EXCAVATED AND GRADED TO ACCOMMODATE PLACEMENT OF TOPSOIL THICKNESS. THE CONTRACTOR SHALL CHECK AND THE DESIGNER SHALL VERIFY GRADES PRIOR TO AND AFTER PLACEMENT OF TOPSOIL IN PREPARATION FOR SEEDING AND PLANTING.

6. GRADED AREAS SHALL TIE IN SMOOTH & NATURALLY WITH ADJACENT GRADES. LARGE CLODS, COBBLE AND OTHER DEBRIS SHALL BE REMOVED FROM THE WORK AREA AND DISPOSED OF IN AN APPROPRIATE LOCATION. NO MATERIAL SHALL BE DISPOSED OF OR DUMPED ILLEGALLY.

SUBMITTALS & SUBSTITUTIONS:

SUBMITTALS:

THE CONTRACTOR WILL PROVIDE THE DESIGNER WITH COPIES OF THE FOLLOWING SUBMITTALS A MINIMUM OF 10 WORKING DAYS PRIOR TO INSTALLATION UNLESS NOTED OTHERWISE BELOW:

1. TYPES OF FABRIC AND/OR BLANKET SPECIFIED BY THE DESIGNER OR ECOLOGIST. MANUFACTURER'S LITERATURE/MATERIAL DATA SHEETS THAT INCLUDE THE TYPE, PHYSICAL CHARACTERISTICS, APPLICATION AND RECOMMENDED INSTALLATION INSTRUCTIONS OF ALL EROSION CONTROL FABRIC, BLANKET, INCLUDING ANY HARDWARE SPECIFIED. COPIES OF EROSION CONTROL MATERIAL SHIPPING MANIFESTS ATTESTING TO THE SAME UPON DELIVERY TO THE SITE.

2. CERTIFICATION THAT THE REQUIRED SPECIES, QUANTITY, SIZE AND FORM OF PLANTS HAVE BEEN ORDERED/OBTAINED. CERTIFICATION OR ORDER DOCUMENTS SHALL INCLUDE PLANT SOURCE, INCLUDING BOTANICAL NAME, COMMON NAME, SIZE, AND QUANTITY OF SPECIES. COPIES OF PLANT SHIPPING MANIFESTS ATTESTING TO THE SAME UPON DELIVERY TO THE SITE.

3. PLANT DELIVERY SCHEDULE.

4. SEED CERTIFICATES THAT INCLUDE SUPPLIER, SOURCE, ORIGIN OF STOCK, BOTANICAL NAME, COMMON NAME, POUNDS AND PERCENTAGE OF PURE LIVE SEED FOR EACH SPECIES. COPIES OF SEED TAGS ATTESTING TO THE SAME UPON DELIVERY TO THE SITE.

5. WEED FREE STRAW/HAY MULCH CERTIFICATION.

6. AN AGRONOMIC SOIL NUTRIENT ANALYSES OF EXISTING SOIL WILL BE OBTAINED BY THE CONTRACTOR INDICATING ANY DEFICIENCIES OR EXCESSES, AND RECOMMENDED AMENDMENTS AND RATES. **THE ECOLOGIST RESERVES THE RIGHT TO WAIVE THIS REQUIREMENT.**

7. LITERATURE ON THE TYPE AND COMPOSITION OF ANY RECOMMENDED SOIL AMENDMENT MATERIALS.

8. A LISTING OF EQUIPMENT TO BE USED FOR ALL OPERATIONS, INCLUDING PLANTING AND SEEDING.

10. MATERIAL DATA SHEET AND/OR A PHYSICAL SAMPLE OF WOOD PLANT MULCH.

11. A LIST OF ALL KEY EMPLOYEES (PROJECT MANAGERS, SUPERVISORS, EQUIPMENT OPERATORS) WHO WILL BE WORKING ON THE PROJECT, INCLUDING THEIR POSITIONS, ROLES AND RESPONSIBILITIES. THE CONTRACTOR SHALL PROVIDE THE KEY EMPLOYEES LISTED AND SHALL NOT MAKE SUBSTITUTIONS WITHOUT PRIOR APPROVAL (WRITTEN OR VERBAL) OF THE CLIENT. **THE DESIGNER RESERVES THE RIGHT TO WAIVE THIS REQUIREMENT.**

12. PRE- AND POST-CONSTRUCTION DIGITAL PHOTOS OF ANY STRUCTURE OR WORK AREA THAT IS TO BE REMOVED AND REPLACED OR DISTURBED AND RESTORED DURING THE COURSE OF THE PROJECT.

13. MAINTENANCE REPORTS & PHOTOS IF NECESSARY FOLLOWING EACH MAINTENANCE SITE VISIT THAT DOCUMENTS CONDITIONS, ACTIVITIES PERFORMED, AND ANY ISSUES OR INFORMATION THAT IS RELEVANT TO THE SUCCESS OF THE PROJECT.

14. PROPOSED MEANS, METHODS & MATERIALS FOR WATERING PLANTS AND SEEDED AREAS.

15. WEEKLY WORK PLANS/SCHEDULES/OUTLOOKS.

SUBSTITUTIONS:

1. EROSION CONTROL FABRIC, BLANKET, OR ASSOCIATED HARDWARE OR FASTENERS SUBSTITUTIONS SHALL BE EQUIVALENT OR BETTER THAN THOSE SPECIFIED. ANY SUBSTITUTIONS SHALL BE APPROVED BY THE ECOLOGIST PRIOR TO ORDERING AND DELIVERY TO THE SITE.

2. IF A PLANT OR SEED SUPPLIER IS UNABLE TO PROVIDE THE PLANTS OR SEED FOR THE PROJECT, THE CONTRACTOR SHALL CONTACT A MINIMUM OF THREE (3) SEED OR PLANT SUPPLIERS AND MAKE EVERY EFFORT TO OBTAIN THE SPECIFIED SPECIES AND QUANTITIES. THEREAFTER, ANY SUBSTITUTIONS WILL BE BROUGHT TO THE ATTENTION OF THE ECOLOGIST FOR APPROVAL PRIOR TO ACQUISITION. PLANT SUPPLIERS SHALL BE ESTABLISHED, QUALIFIED COMMERCIAL NURSERIES.

3. CONTRACTOR SHALL SUBMIT REQUESTS FOR SUBSTITUTIONS SUFFICIENTLY IN ADVANCE TO AVOID DELAY OF ANY WORK.

4. IN MAKING A REQUEST FOR SUBSTITUTIONS, OR IN USING AN APPROVED SUBSTITUTE ITEM, CONTRACTOR REPRESENTS:

A. CONTRACTOR HAS PERSONALLY INVESTIGATED PROPOSED PRODUCT OR METHOD, AND HAS DETERMINED THAT IT IS EQUAL OR SUPERIOR IN ALL RESPECTS TO THAT SPECIFIED AND THAT IT WILL PERFORM THE FUNCTION FOR WHICH IT IS INTENDED.

B. CONTRACTOR SHALL PROVIDE THE SAME GUARANTEE FOR THE SUBSTITUTE ITEM AS FOR THE PRODUCT OR METHOD SPECIFIED.

C. CONTRACTOR SHALL COORDINATE INSTALLATION OF THE APPROVED SUBSTITUTION INTO THE WORK.

D. CONTRACTOR WAIVES ALL CLAIMS FOR ADDITIONAL REIMBURSEMENT RELATED TO ANY EQUIVALENT SUBSTITUTIONS OR QUANTITIES, UNLESS OTHERWISE WAIVED BY THE CLIENT.

E. CONTRACTOR SHALL REIMBURSE THE CLIENT IF SMALLER OR FEWER PLANTS ARE PROVIDED THAT DIFFER FROM THOSE SPECIFIED IN THE PLANT SCHEDULES.

SEEDING NOTES:

1. SUBSOIL SHALL BE RIPPED TO MINIMUM DEPTH OF 12 INCHES PRIOR TO TOPSOIL PLACEMENT AND/OR SOIL AMENDMENT.

2. THE FINAL GRADED SURFACE/SEED BED SHALL BE PREPARED PRIOR TO SEEDING, CREATING A UNIFORM AND LIGHTLY COMPACTED SURFACE CONDUCIVE FOR SEED IMPREGNATION. ANY AREAS OVERLY LOOSE OR COMPACTED OR DISTURBED PRIOR TO SEEDING SHALL BE RE-PREPARED. ANY OVERLY COMPACTED SEEDING SURFACE SHALL BE COMPLETELY RIPPED IN 2 DIRECTIONS TO A MINIMUM DEPTH OF 12" PRIOR TO SEEDING. IF UPON INSPECTION, THE ECOLOGIST FINDS DEEPLY COMPACTED SOIL THAT MAY ULTIMATELY IMPACT SUSTAINED PLANT GROWTH AND ESTABLISHMENT, THE ECOLOGIST MAY REQUIRE DEEPER RIPPING.

3. ANY LARGE CLODS, COBBLE, ROCK, BRANCHES OR OTHER MATERIAL THAT WOULD PREVENT FLUSH INSTALLATION OF EROSION CONTROL FABRIC OR EFFECTIVE USE OF A DRILL SEEDER OR MOWERS SHALL BE REMOVED FROM THE AREA OR REDUCED IN SIZE TO LESS THAN 2" PRIOR TO SEEDING AND/OR FABRIC INSTALLATION. FAILURE TO PROPERLY PREPARE THE GROUND COULD RESULT IN COMPLETE REINSTALLATION OF SEED AND/OR EROSION CONTROL FABRIC.

4. NUTRIENT DEFICIENT OR EXCESSIVELY RICH TOPSOIL OR SURFACE MATERIAL SHALL BE AMENDED WITH MACRO- OR MICRO-NUTRIENTS AS DIRECTED BY THE ECOLOGIST UPON RECEIPT OF THE SOIL TEST.

5. REGARDLESS OF SOIL TEST ANALYSIS, SEEDING AREA SHALL BE AMENDED WITH **HUMATE AT A RATE OF MINIMUM 250 POUNDS PER ACRE**. HUMATES SHALL BE APPLIED TOPICALLY AND THEN TILLED IN TO THE TOPSOIL PRIOR TO SEEDING.

6. GRANULAR **ENDO MYCHORRIZAL INOCULUM SHALL BE APPLIED TO ALL SEEDING AREAS AT A MINIMUM RATE OF TWENTY (20) POUNDS PER ACRE**. ALTERNATIVELY, MYCHORRIZAL INOCULUM MAY BE POURED INTO SEED BAGS AT A RATE OF ONE (1) POUNDS PER ACRE AND SHAKEN TO THOROUGHLY COAT SEEDS. SAID MYCHORRIZAL INOCULUM SHALL BE IN THE FORM OF MICRONIZED POWDER, SHALL CONTAIN THREE SPECIES OF ENDOMYCORRIZE, SHALL BE CERTIFIED WITH A MINIMUM COUNT OF 100,000 PROPAGULES PER POUND, AND SHALL MEET THE SPECIFICATIONS OF MYCOAPPLY MICRONIZED ENDO MYCHORRIZAL INOCULUM.

7. **CLASS 1 COMPOST SHALL BE APPLIED TO ALL SEEDING AREAS AT A MINIMUM RATE OF 300 CUBIC YARDS PER ACRE**. COMPOST SHALL BE APPLIED EVENLY & THOROUGHLY TILLED IN TO THE SEEDING SURFACE TO A DEPTH OF 12" PRIOR TO SEEDING.

8. **CERTIFIED WEED FREE STRAW SHALL BE APPLIED TO ALL SEEDING AREAS AT A MINIMUM RATE OF 2000 POUNDS PER ACRE**. STRAW SHALL BE APPLIED EVENLY & THOROUGHLY TILLED IN TO THE SEEDING SURFACE TO A DEPTH OF 12" PRIOR TO SEEDING.

9. ALL SEED SHALL CONFORM TO CURRENT STATE AND FEDERAL REGULATIONS AND SHALL BE SUBJECT TO THE TESTING PROVISIONS OF THE ASSOCIATION OF OFFICIAL SEED ANALYSIS.

10. SEED WILL BE DELIVERED UNMIXED, IN INDIVIDUAL BAGS IN THE QUANTITIES SHOWN ON THE SEED SCHEDULES. THE SEED WILL BE MIXED ON SITE AND PLACED IN THE APPROPRIATE DRILL SEEDER HOPPERS OR BROADCASTER BY A QUALIFIED SEEDING CONTRACTOR PURSUANT TO THE SEED SCHEDULES.

11. DRILL SEEDING IS THE PREFERRED METHOD OF APPLICATION, FOLLOWED BY HYDRO-SEEDING, FOLLOWED BY HAND BROADCAST SEEDING AS FEASIBLE AND WHERE NECESSARY.

12. THE DRILL SEEDER SHALL BE EQUIPPED WITH: DISCS TO CUT FURROWS FOR THE SEED; DEPTH BANDS SET AT 1/2"; ROWS OR FURROWS A MAXIMUM OF 6" APART; TWO DIFFERENT TYPES OF SEED BOXES TO HANDLE SMALL AND LARGE SEED, WITH INDEPENDENT ADJUSTMENTS FOR EACH TYPE OF BOX; AGITATORS IN THE SEED BOXES TO MIX SEEDS; ABILITY TO METER SEED FLOW WITH PRECISION; AND REAR PACKER WHEELS TO COMPACT SOIL OVER PLANTED SEED. PRIOR TO COMMENCEMENT OF SEEDING, CALIBRATION TESTS SHALL BE CONDUCTED ON THE EQUIPMENT TO DETERMINE THAT THE SPECIFIED SEEDING RATE WILL BE MET.

13. SEED SHALL BE DRILLED 1/4 TO 1/2 INCH INTO THE SOIL SURFACE ON SLOPES WHERE MACHINERY CAN SAFELY OPERATE USING THE SEED RATES INDICATED ON THE SEED SCHEDULES. AREAS INACCESSIBLE BY DRILL SHALL BE HYDRO-SEEDED OR HAND SEEDED, DOUBLING THE DRILL SEEDING RATES INDICATED ON THE SEED SCHEDULES. HAND SEEDED AREAS SHALL BE COMBINED WITH SAND OR VERMICULITE FOR EASE OF SPREADING AND SEEDED IN TWO PERPENDICULAR PASSES TO ENSURE FULL COVERAGE. EVERY SQUARE FOOT OF DISTURBED SOIL, INCLUDING EXCAVATION FROM FABRIC KEY TRENCHES WILL BE SEEDED.

14. ALL SMALL/FINE SEED SHALL BE DRILLED AND BROADCAST SIMULTANEOUSLY VIA THE DRILL SEEDER. FILLERS (E.G., FINE SAND, VERMICULITE) SHALL BE USED FOR ALL SMALL/FINE SEED TO ENSURE ADEQUATE AND EVEN DISTRIBUTION.

15. THE DRILL SEEDER SHALL MAKE TWO PASSES; THE SECOND IN A DIRECTION THAT IS PERPENDICULAR TO THE FIRST, AS TOPOGRAPHY ALLOWS.

16. SHORTAGES OF SEED AND FAILURE TO COVER THE DESIGNATED AREA DUE TO INADEQUATE CALIBRATION WILL BE CORRECTED AND COMPENSATED AT THE CONTRACTOR'S EXPENSE.

17. ALL SEED SOWN BY HYDRO-SEEDING OR HAND BROADCASTING SHALL BE RAKED IN AND/OR HARROWED 1/4 TO 1/2 INCH INTO THE SOIL SURFACE, AND COMPACTED GENTLY TO ENSURE GOOD SEED-TO-SOIL CONTACT.

18. IF NECESSARY, BROADCAST SEEDING SHALL BE ACCOMPLISHED USING HAND-OPERATED "CYCLONE"-TYPE SEEDERS CONTAINING AGITATORS AND PICKER WHEELS TO DISTRIBUTE FLUFFY SEED. THE LARGER SEED SPECIES SHALL BE COMBINED AND SEEDED FIRST. SMALLER SEED SPECIES SHALL BE MIXED WITH A FILLER AND THEN APPLIED OVER THE LARGER SEED. SEED SHALL BE FREQUENTLY MIXED WITHIN THE HOPPER TO ENSURE EVEN DISTRIBUTION OF SPECIES.

19. SEEDING UNDER EROSION CONTROL FABRIC/BLANKET SHALL BE PERFORMED CONCURRENTLY WITH THE INSTALLATION OF THE FABRIC/BLANKET. ALL OTHER SEED SHALL BE INSTALLED PRIOR TO CONSISTENT GROUND FREEZE FROM APPROX. SEPT. 1 TO NOV. 31 FOR DORMANT SEEDING OR AFTER SPRING THAW FROM APPROX. APRIL 1 TO MAY 31 FOR ACTIVE SEEDING, UNLESS OTHERWISE APPROVED BY THE DESIGNER OR ECOLOGIST. SEEDING SHALL BE PERFORMED ONLY DURING SPECIFIED PERIODS OR WHEN SITE AND WEATHER CONDITIONS WILL PRODUCE BENEFICIAL RESULTS. IF THE CONTRACTOR PERFORMS SEEDING OUTSIDE OF THE SPECIFIED SEASONS OR WHEN UNSATISFACTORY SITE CONDITIONS SUCH AS EXCESSIVE MOISTURE, HIGH WIND VELOCITIES, OR WHEN THE SOIL IS IN A FROZEN OR CRUSTED STATE PREVENTING PROPER DISTRIBUTION AND IMPREGNATION OF SEED, THEN THE CONTRACTOR WILL INSURE ADEQUATE GERMINATION AND GROWTH CONDITIONS, RESEED, REMULCH, AND REPAIR ANY AREAS THAT FAIL TO PRODUCE.

20. ANY STRAW MULCH USED SHALL CONSIST OF CERTIFIED WEED FREE FIELD STRAW OF OATS, BARLEY, WHEAT, RYE, OR TRITICALE CERTIFIED UNDER THE COLORADO DEPT. OF AGRICULTURE WEED FREE FORAGE CERTIFICATION PROGRAM. STRAW IN AN ADVANCED STAGE OF DECOMPOSITION OR STRAW THAT BREAKS IN THE CRIMPING PROCESS WILL NOT BE ACCEPTED.

21. CERTIFIED WEED FREE **STRAW MULCH SHALL BE UNIFORMLY APPLIED AT A RATE OF 2 TONS PER ACRE** (4000#) AND ANCHORED INTO THE SOIL WITH EQUIPMENT HAVING FLAT, SERRATED DISKS WITH DULL EDGES AND DISKS SPACED NO MORE THAN 6 INCHES APART. MULCH SHALL BE ANCHORED TO A DEPTH OF AT LEAST 4 INCHES AND SHALL NOT BE COVERED WITH AN EXCESSIVE AMOUNT OF SOIL. ANCHORING OPERATIONS SHALL BE ACROSS THE SLOPES WHERE PRACTICAL WITH NO MORE THAN TWO PASSES OF THE ANCHORING EQUIPMENT. CRIMPING BY HAND SHOVEL OR OTHER MECHANICAL MEANS SHALL BE PERFORMED ON AREAS INACCESSIBLE TO LARGE CRIMPING EQUIPMENT. **MULCH SHALL BE TACKIFIED TO THE GROUND SURFACE AT A RATE OF 200# PER ACRE**. SEEDED AREAS SHALL BE MULCHED ON THE SAME DAY AS THEY ARE SEEDED.

22. SPRAY-ON OR **HYDROMULCH**, IF NECESSARY, **SHALL BE A HYDRAULICALLY APPLIED MATRIX** CONTAINING ORGANIC FIBERS, WATER SOLUBLE CROSS-LINKED TACKIFIER, AND REINFORCING NATURAL INTERLOCKING FIBERS **AT A RATE OF 3000 LBS/ACRE**. HYDROMULCHING SHALL BE A SECOND, SEPARATE OPERATION PERFORMED AFTER HYDROSEEDING, RAKING/HARROWING.

23. EROSION CONTROL FABRIC (ECF) AND/OR BLANKET (ECB) OR APPROVED EQUIVALENTS SHALL BE PROVIDED & INSTALLED AS DIRECTED BY THE ECOLOGIST.

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PLANTING NOTES:

DELIVERY:

- ALL PLANTS SHALL BE DELIVERED TO THE SITE PRIOR TO INSTALLATION TO ALLOW FOR INSPECTION AND ADVANCE STAGING OF PLANT MATERIALS.
- PLANT MATERIAL WILL BE DELIVERED TO THE SITE IN THE SPECIES, SIZE/FORM, AND QUANTITIES SPECIFIED. PLANT MATERIAL WILL BE ACCOMPANIED BY A SHIPPING CERTIFICATE ATTESTING TO THE SAME. THE CONTRACTOR SHALL COUNT AND CONFIRM THE DELIVERY IS ACCURATE AND INSPECT PLANT MATERIAL TO ENSURE THE PLANT MATERIAL IS IN GOOD CONDITION AND HEALTH.
- PLANT MATERIAL SHALL BE STAGED BY SPECIES IN SEPARATE AND IDENTIFIABLE GROUPS DURING UNLOADING.
- PLANT MATERIAL SHALL BE IDENTIFIED WITH ATTACHED, DURABLE, WATERPROOF LABELS AND WEATHER RESISTANT INK, STATING THE CORRECT SCIENTIFIC AND COMMON NAME.
- PLANT MATERIAL SHALL BE PROTECTED DURING DELIVERY TO PREVENT DESICCATION AND DAMAGE TO THE BRANCHES, TRUNK, ROOT SYSTEMS, OR EARTH/ROOTBALL. BRANCHES SHALL BE PROTECTED BY TYING-IN. EXPOSED BRANCHES SHALL BE COVERED DURING TRANSPORT.
- PLANT MATERIAL SHALL BE KEPT SHADED, WATERED AND MAINTAINED IN GOOD HEALTH DURING TRANSPORT AND THEREAFTER UNTIL THE PROJECT IS APPROVED.

PLANT QUALITY:

- ALL PLANTS WILL BE CHECKED AND APPROVED BY THE ECOLOGIST & CONTRACTOR PRIOR TO PLANTING TO ENSURE CONFORMITY OF SPECIES, QUALITY AND QUANTITY. PLANT MATERIAL SHALL:
 - BE WELL SHAPED, VIGOROUS AND HEALTHY WITH A WELL BRANCHED ROOT SYSTEM, FREE FROM DISEASE, HARMFUL INSECTS AND INSECT EGGS, SUN-SCALD INJURY, DISFIGUREMENT OR ABRASION;
 - BE CHECKED FOR UNAUTHORIZED SUBSTITUTION AND EXHIBIT TYPICAL FORM OF BRANCH TO HEIGHT RATIO;
 - MEET THE CONTAINER, CALIPER AND HEIGHT MEASUREMENTS SPECIFIED AND NOT BE CROPPED;
 - SHOW NEW FIBROUS ROOTS AND MAINTAIN ITS SHAPE WHEN REMOVED FROM THE CONTAINER AND NOT HAVE BROKEN OR CRACKED ROOTBALLS, OR BROKEN CONTAINERS;
 - CONFORM TO THE AMERICAN ASSOCIATION OF NURSERYMEN'S STANDARDS FOR NURSERY STOCK.
- IF WITHIN 24 HOURS OF DELIVERY THE DESIGNER OR ECOLOGIST DETERMINES THAT THE PLANT MATERIAL DOES NOT MEET THESE SPECIFICATIONS, THE UNACCEPTABLE MATERIAL SHALL BE REJECTED, REMOVED, AND REPLACED AT NO EXPENSE TO THE CLIENT.
- IF OVER THE COURSE OF THE PROJECT THE ECOLOGIST DISCOVERS THE CONTRACTOR HAS FAILED TO PROPERLY STORE, INSTALL & MAINTAIN ANY PREVIOUSLY ACCEPTED PLANT MATERIAL, SAID MATERIAL WILL BE REMOVED AND REPLACED WITH ACCEPTABLE MATERIAL AT THE EXPENSE OF THE CONTRACTOR.

STORAGE:

- PLANT MATERIALS SHALL BE STORED AND PROTECTED IN DESIGNATED TEMPORARY ON-SITE NURSERY AREA. PLANT MATERIAL SHALL BE PROTECTED FROM DIRECT EXPOSURE TO WIND AND SUN, KEPT SHADED AND MOIST BY WATERING, EITHER BY HAND OR A TEMPORARY IRRIGATION SYSTEM UNTIL INSTALLED.

ONLY THE NUMBER OF WILLOW CUTTINGS (IF SPECIFIED) THAT CAN BE PLANTED IN ONE DAY WILL BE DELIVERED TO THE PLANTING SITE. IMMEDIATELY AFTER HARVESTING, WILLOW CUTTINGS OR POLES SHALL BE FULLY SUBMERGED AND STORED IN A COLD/COOL WATER (EITHER IN A TANK OR NATURAL WATER BODY) IN A DARK OR SHADED LOCATION FOR A MINIMUM OF 5 DAYS. FAILURE TO PROPERLY STORE AND HYDRATE WILLOW CUTTINGS OR IF CUTTINGS LINGER ON SITE MORE THAN 2 DAYS BEFORE PLANTING WILL BE REPLACED BY THE CONTRACTOR AT NO COST TO THE CLIENT IF SAID CUTTINGS FAIL TO THRIVE.

HANDLING:

PLANT MATERIAL SHALL NOT BE INJURED DURING HANDLING OR PLANTING. ROOTS OR WILLOW CUTTINGS OR POLES, IF SPECIFIED, SHALL NOT BE ALLOWED TO BECOME DRY.

MULCH:

- ORGANIC MULCH USED TO HELP RETAIN SOIL MOISTURE IN PLANTING SAUCERS SHALL CONSIST OF SHREDDED WOOD FIBER (A.K.A., GORRILLA HAIR) TO A DEPTH OF 4". MULCH SHALL BE FREE FROM WEEDS, MOLD, AND OTHER DELETERIOUS MATERIALS

TREE STAKING AND GUYING:

- TREE STAKING WILL BE REQUIRED FOR TREES 2 INCHES IN CALIPER OR GREATER. ONE BRACING STAKE IS REQUIRED FOR TREES 4 TO 6 FEET HIGH. TWO BRACING STAKES ARE REQUIRED FOR TREES 6 TO 8 FEET HIGH. THREE BRACING OR GROUND STAKES ARE REQUIRED FOR TREES OVER 8 FEET HIGH OR GREATER THAN 6 CALIPER INCHES. AT LEAST ONE BRACING STAKE SHALL BE PLACED ON THE SIDE OF THE TREE FACING THE PREVAILING WIND WITH THE REMAINDER SPACED EQUIDISTANTLY AROUND. THE BRACING STAKE SHALL BE DRIVEN VERTICALLY INTO FIRM GROUND OUTSIDE OF THE ROOTBALL AND SHALL NOT INJURE THE BALL OR ROOT SYSTEM.

THE TREE SHALL BE HELD FIRMLY TO THE STAKE WITH A DOUBLE STRAND OF GUYING MATERIAL. GUYING MATERIAL SHALL BE ATTACHED TO A TREE STRAP (OR APPROVED EQUIVALENT) PLACED APPROXIMATELY 1/2 THE TREE HEIGHT OR ABOVE THE FIRST MAJOR BRANCH. ONE TURNBUCKLE SHALL BE CENTERED ON EACH GUY LINE FOR TREE STRAIGHTENING PURPOSES.

- TREE STAKES SHALL BE T-POSTS (OR EQUIVALENT) AND A MINIMUM 6 FEET LONG WITH A PROTECTIVE END CAP. GUYING MATERIAL SHALL BE A MINIMUM 14-16 GAUGE WIRE. TURNBUCKLES SHALL BE GALVANIZED OR CADMIUM-PLATED STEEL, AND SHALL BE A MINIMUM 3 INCHES LONG WITH CLOSED SCREW EYES ON EACH END. TREE STRAPS SHALL BE USED TO PROTECT TREE TRUNK AND BRANCHES FROM GUYING MATERIAL. LENGTH SHALL BE 1.5 TIMES THE CIRCUMFERENCE OF THE PLANT TRUNK AT ITS BASE.

INSTALLATION:

- UNLESS DIRECTED OTHERWISE OR THE HEIGHT OR SMALL STATURE OF THE PLANT DOES NOT ALLOW, ALL PLANTS CAPABLE OF DEEP BURIAL WILL BE DEEP PLANTED SO THAT THEIR ROOT BALL IS IN CONTACT WITH OR JUST ABOVE THE CAPILLARY FRINGE (I.E., LOW GROUNDWATER LEVEL). PLANTS NOT DESIGNATED FOR DEEP PLANTING (REFER TO PLANT SCHEDULES) SHALL BE DUG TO A DEPTH EQUAL TO THE HEIGHT OF THE ROOT BALL AS MEASURED FROM THE BASE OF THE BALL TO THE BASE OF THE PLANT TRUNK SO THAT THE TOP OF THE ROOT BALL IS LEVEL WITH THE FINAL GRADE. ALL PLANT PITS SHALL BE DUG A MINIMUM 2 TIMES THE WIDTH OF THE ROOT BALL TO ALLOW FOR ROOT EXPANSION. THE PIT SHALL BE EXCAVATED WITH ROUGHENED SIDES, SLOPING TOWARDS THE BASE AS A CONE. CYLINDRICAL PITS WITH VERTICAL SIDES, ESPECIALLY IN CLAY, SHALL NOT BE USED. (REFER TO PLANTING DETAILS). REFER TO PLANT SCHEDULES FOR THOSE PLANTS THAT CAN BE DEEP PLANTED.
- PLANT MATERIAL SHALL BE INSERTED INTO THE CENTER OF THE PIT, SET PLUMB, AND HELD IN POSITION UNTIL SUFFICIENT NATIVE SOIL HAS BEEN FIRMLY PLACED AROUND THE ROOT SYSTEM.
- ROOT BOUND PLANTS WILL BE SCORED OR RIPPED 1/4 TO 1/2 INCH DEEP AT 3 TO 4 LOCATIONS AROUND THE EDGES OF THE ROOT BALL.
- BACKFILL SOIL SHALL BE COMPOSED OF 50 PERCENT NATIVE SOIL AND 50% TOPSOIL. IF NATIVE SOIL IS GREATER THAN 50 PERCENT ROCK THEN TOPSOIL SHALL BE USED.
- PRIOR TO BACKFILLING, ALL BURLAP & WIRE BASKETS SHALL BE REMOVED FROM THE BALL OR ROOT SYSTEM AVOIDING DAMAGE TO THE ROOT SYSTEM.
- BACKFILL SOIL SHALL BE CAREFULLY WORKED AROUND AND OVER THE PLANT ROOTS AND THOROUGHLY AND PROPERLY SETTLED BY FIRMING, HAND TAMPING AND "WATERING IN".
- A 6" MINIMUM HIGH COMPACTED EARTH BERM OR SAUCER, CONSISTING OF BACKFILL EXCAVATED FROM THE PIT, SHALL BE FORMED AROUND THE EDGE OF THE PLANT PIT TO AID IN WATER RETENTION AND TO PROVIDE SOIL SETTLING ADJUSTMENTS. PLANTS SMALLER THAN 1 GAL. DO NOT REQUIRE A SAUCER.
- SOIL EXCAVATED FROM THE PLANT PIT WILL BE HANDLED DELIBERATELY TO FORM THE PLANT SAUCER AND WILL NOT BE CARELESSLY SPREAD OUT OR COVER EXISTING VEGETATION OR SEEDED AREAS. WHEN INTER-PLANTING IN EXISTING, MATURE GRASSLAND OR WETLAND, EXCAVATED SOIL WILL BE PLACED ON A TARP OR SIMILAR TO AVOID INDISCRIMINATE SPOILS FROM BURYING SAID EXISTING VEGETATION. EXCESS SOIL EXCAVATED FROM THE PLANT PIT THAT IS NOT USED TO FORM THE SAUCER WILL BE HAULED AWAY FROM THE PROJECT SITE AND DISPOSED OF PROPERLY. THE PLANT SAUCER AND BASIN WILL BE SEEDED.
- ALL PLANT MATERIAL SHALL BE WATERED IMMEDIATELY AFTER BACKFILLING UNTIL COMPLETELY SATURATED. SEE WATERING PARAMETERS.
- WOOD MULCH SHALL BE PLACED WITHIN 48 HOURS AFTER PLANTING TO A MINIMUM DEPTH OF 4 UNIFORM INCHES.
- PRUNING SHALL BE ACCOMPLISHED BY TRAINED AND EXPERIENCED PERSONNEL. ONLY DEAD OR BROKEN MATERIAL SHALL BE PRUNED FROM INSTALLED PLANTS. THE TYPICAL GROWTH HABIT OF INDIVIDUAL PLANT MATERIAL SHALL BE RETAINED.

HARVESTED/SALVAGED PLANTS (IF SPECIFIED):

- PLANTS HARVESTED/SALVAGED FROM DESIGNATED ON-SITE SOURCES SHALL BE CAREFULLY REMOVED FROM THE SITE PRIOR TO ANY CLEARING OR GRUBBING ACTIVITIES.
- THE ROOTBALL OF HARVESTED PLANTS SHALL BE PRESERVED, AND EITHER BALLED & BURLAPPED (B&B) OR PLACED IN APPROPRIATELY SIZED CONTAINERS. (SEE TREE & SHRUB SALVAGE SCHEDULE, IF SPECIFIED).

- WILLOW ROOTBALLS (I.E., CLUMPS), IF SPECIFIED SHALL BE STOCKPILED, MAINTAINED AND KEPT MOIST UNTIL FINAL PLANTING. ALL OTHER PLANTS (POTTED OR B&B) SHALL BE MAINTAINED IN GOOD HEALTH UNTIL FINAL PLANTING.

- WILLOW CUTTINGS WILL BE CLEANLY CUT AT THE BASE OF THE WILLOW SHRUB (APPROXIMATELY 8" FROM THE GROUND SURFACE) PRIOR TO REMOVING WILLOW CLUMP.

- ALL SALVAGED PLANTS WILL SHALL BE EQUIVALENT IN QUALITY AND HANDLED, PLANTED AND MAINTAINED WITH THE SAME CARE AS A NURSERY GROWN PLANT MATERIAL..

MAINTENANCE :

- ALL PLANTED MATERIAL AND SEEDED AREAS SHALL BE WARRANTED AND MAINTAINED BY THE CONTRACTOR UNTIL FINAL ACCEPTANCE AND THEREAFTER UNTIL PERFORMANCE CRITERIA ARE MET OR A PERIOD OF 2 FULL GROWING SEASONS FOLLOWING INSTALLATION, WHICHEVER COMES FIRST. REFER TO PERFORMANCE CRITERIA (WARRANTY) NOTES.

- MAINTENANCE TASKS WILL INCLUDE WEED CONTROL, SEEDING & MULCH REPAIR, PLANTING SAUCER REPAIR. **WATERING OF PLANTINGS AND PLANT REPLACEMENT MAY BE ADDED AS A CONTINGENCY (IF PROJECT FUNDING ALLOWS).** SEE WATERING (CONTINGENCY) BELOW.

WEED CONTROL:

- NOXIOUS & RESTRICTED WEEDS SHALL BE MONITORED & CONTROLLED BY A QUALIFIED WEED MANAGEMENT SPECIALIST WHERE WEEDS PREVENT THE ESTABLISHMENT OF NATIVE STANDS OF VEGETATION. THE AREA WHERE WEEDS SHALL BE MANAGED INCLUDES:
 - THE ACTIVE FOOTPRINT OF THE PROJECT AS DEFINED BY THE LIMITS OF DISTURBANCE (LOD);
 - ANY AREAS DISTURBED BY THE CONTRACTOR OUTSIDE OF THE LOD;
 - ADJACENT, WEED INFESTED AREAS WITHIN 100 FEET OF THE LOD; AND
 - ANY AREAS SPECIFICALLY INDICATED ON THE PLANS.

POTENTIAL CONTROLS SHALL INCLUDE:

- MOWING ENTIRE SEEDED AREAS (TO CONTROL ANNUAL WEEDS PRIOR TO SEED SET).
- MOWING LOCALIZED INFESTATIONS WITH A STRING TRIMMER.
- HAND-DIGGING OR PULLING OF THE ROOTS.
- HERBICIDE APPLICATION OF WATER SAFE OR OTHER APPROVED HERBICIDES (DEPENDING ON WEED TYPE) INCLUDING, BUT NOT LIMITED TO CANADA THISTLE, TOADFLAX, KNAPWEED, LEAFY SPURGE, AND LAMBS QUARTERS. A LICENSED HERBICIDE/PESTICIDE APPLICATOR MAY BE REQUIRED.

SEEDING MAINTENANCE:

- BARREN AREAS GREATER THAN FIVE (5) SQUARE FEET, OR THOSE AREAS THAT FAIL TO PRODUCE A SATISFACTORY STAND OF NATIVE GRASSES OR GRASS-LIKE SPECIES SHALL BE RESEEDED AND MULCHED ACCORDING TO THESE SPECIFICATIONS.
- GULLY, RILL AND EROSIONAL AREAS WILL BE REPAIRED AS NECESSARY UNTIL PLANTS HAVE ESTABLISHED AND EROSION PROBLEMS CEASE. EROSION CONTROL BLANKET AND/OR FABRIC MAY NEED TO BE INSTALLED, REINSTALLED OR REPAIRED.

PLANTING SAUCER MAINTENANCE:

- TWICE PER YEAR (IN APRIL AND AUGUST), ALL PLANTING SAUCERS SHALL BE INSPECTED AND THE FOLLOWING COMPLETED:
 - REMOVAL (BY PULLING OR STRING TRIMMER, DEPENDING ON CONDITIONS) OF ANY PLANTS THAT ARE NOT OF THE SPECIES PLANTED.
 - RE-BUILDING OF SAUCERS AND REPAIR OF BLOW-OUTS, IF NEEDED, TO A MINIMUM HEIGHT OF 6 INCHES.
 - APPLICATION OF ADDITIONAL WOOD MULCH UP TO THE 4 INCHES THAT MAY HAVE BLOWN AWAY OR BEEN DISPLACED.
 - OBSERVATION OF THE HEALTH OF TREES AND REPORTING TO THE CLIENT AND DESIGNER IF ANY EVIDENCE OF DAMAGE IS NOTICED.

WATERING (CONTINGENCY):

EVERY EFFORT HAS BEEN MADE IN THE DEVELOPMENT OF THESE PLANTING PLANS TO SPECIFY SPECIES & LOCATE PLANTS IN ZONES THAT WILL BE NATURALLY SUSTAINED BY SURFACE & ALLUVIAL SUBSURFACE FLOW. HOWEVER, RUN-OFF AND PRECIPITATION, EITHER IN THE FORM OF RAIN OR SNOW, CAN NOT BE GUARANTEED. THEREFORE, THIS SECTION IS PROVIDED AS CONTINGENCY SHOULD ADDITIONAL FUNDING BE MADE AVAILABLE TO PROVIDE ON-GOING WATERING MAINTENANCE OF INSTALLED PLANTS.

ALL WOODY PLANT MATERIAL SPECIFIED, INCLUDING TREES, SHRUBS, CUTTINGS, AND POLES (IF SPECIFIED) SHALL BE WATERED BY THE CONTRACTOR BY HAND, HOSE, BUCKET, PORTABLE OR FIXED PUMP, WATER TANK OR TRUCK, TEMPORARY OR PERMANENT IRRIGATION SYSTEM (OVERHEAD SPRAY AND/OR DRIP), OR OTHER EFFECTIVE METHOD OR WATERING DEVICE AS DETERMINED BY THE CONTRACTOR, AS NEEDED.

NOTE: CLIENT WILL MAKE AVAILABLE AN ON-SITE WATER SOURCE OR WATER RIGHTS THAT CAN BE USED TO IRRIGATE AND MAINTAIN SEEDING AREAS AND PLANT MATERIAL.

THE CONTRACTOR SHALL CONTINUE TO WATER ALL PLANT MATERIALS ACCORDING TO THE FOLLOWING GENERAL PARAMETERS:

1. TREES & SHRUBS

YEAR 1 - WATERING WILL NEED TO OCCUR ON THE FOLLOWING SCHEDULE DURING THE FIRST GROWING SEASON:

- NOVEMBER - FEBRUARY: ONCE EVERY THREE WEEKS
- MARCH - MAY: ONCE EVERY TWO WEEKS
- JUNE - AUGUST: ONCE EVERY WEEK
- SEPTEMBER - OCTOBER: ONCE EVERY TWO WEEKS

YEAR 2 - WATERING WILL NEED TO OCCUR ON THE FOLLOWING SCHEDULE DURING THE SECOND GROWING SEASON:

- NOVEMBER - FEBRUARY: ONCE EVERY FOUR WEEKS
- MARCH - MAY: ONCE EVERY THREE WEEKS
- JUNE - AUGUST: ONCE EVERY TWO WEEKS
- SEPTEMBER - OCTOBER: ONCE EVERY THREE WEEKS

THE SUBCONTRACTOR SHALL DILIGENTLY MONITOR THE PLANTS, SOIL MOISTURE LEVELS AND THE AMOUNT OF NATURAL PRECIPITATION THEY ARE RECEIVING. IF TREES & SHRUBS NEED TO BE WATERED MORE OR LESS FREQUENTLY THAN OUTLINED ABOVE, THE CONTRACTOR SHALL MAKE ADJUSTMENTS TO THE SCHEDULE ACCORDINGLY TO ENSURE THAT THE PLANTS ARE WATERED APPROPRIATELY.

2. WILLOW CLUMPS, CUTTINGS & TUBLINGS

WILLOW CUTTINGS AND/OR TUBLINGS (IF SOIL IS NOT NATURALLY & PERSISTENTLY SATURATED) SHALL BE WATERED TO COMPLETELY SATURATE THE SOIL AT LEAST ONCE A WEEK IN ACCORDANCE WITH THE YEAR 1 AND 2 WATERING SCHEDULE FOR TREES & SHRUBS.

3. SEEDING AREAS

SEEDED AREAS SHALL BE ALLOWED TO ESTABLISH NATURALLY WITHOUT IRRIGATION IF A TEMPORARY OR PERMANENT OVERHEAD IRRIGATION AND WATER SOURCE IS NOT AVAILABLE.

WATER SHALL BE APPLIED USING A METHOD DETERMINED BY THE CONTRACTOR AT A FREQUENCY AND TIME OF DAY (EARLY MORNING OR LATE EVENING) TO ENSURE THAT SEEDLINGS THRIVE. THE DURATION OF EACH IRRIGATION SESSION SHALL NOT PRODUCE GULLIES, RILLS OR OTHERWISE ERODE THE SOIL.

WATERING PARAMETERS:

- AT EACH WATERING, WOODY PLANTS SHALL RECEIVE THE FOLLOWING MINIMUM AMOUNTS OF WATER BASED ON CONTAINER SIZE OR AN AMOUNT SUFFICIENT TO SATURATE THE SOIL WITHIN THE PLANTING SAUCER TO A DEPTH OF 12 INCHES:

- QUART-SIZED CONTAINERS SHALL RECEIVE 1 GALLON
- ONE-GALLON SIZED CONTAINERS SHALL RECEIVE 2.5 GALLONS,
- FIVE-GALLON SIZED CONTAINERS SHALL RECEIVE 5 GALLONS
- SEVEN-GALLON-SIZED CONTAINERS SHALL RECEIVE 7.5 GALLONS
- TEN-GALLON SIZED CONTAINERS SHALL RECEIVE 10 GALLONS
- 2" CAL-SIZED TREES SHALL RECEIVE 20 GALLONS
- TWENTY-FIVE GALLON SIZED CONTAINERS SHALL RECEIVE 25 GALLONS

- WATER SHALL BE DISTRIBUTED EVENLY WITHIN THE SAUCER AND NOT BREACH OR DAMAGE THE SAUCER. WATER SHALL BE DISTRIBUTED EVENLY OVER SEEDED AREAS. WATERING SHALL BE ACCOMPLISHED WITHOUT DAMAGE TO EXISTING OR RECENTLY PLANTED VEGETATION.

- THE CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING THE WATER SOURCE, OBTAINING ANY APPROVALS AND PERMITS FROM THE CLIENT THAT MAY BE REQUIRED TO USE SAID WATER SOURCE, AND DELIVERY OF THE WATER TO THE SITE/IRRIGATION SYSTEM.

- WATERING TUBES SHALL BE INSTALLED ALONG WITH DEEP PLANTED NUSERY STOCK TO ALLOW FOR DEEP WATERING OF THE ROOTBALL DURING TIMES OF DROUGHT. DEEP PLANTED MATERIALS SHALL RECEIVE THE SAME AMOUNT OF WATER AS DESIGNATED ABOVE. (REFER TO DEEP PLANTING DETAIL).

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SPECIAL NOTES:

PERFORMANCE CRITERIA (PLANTING & SEEDING WARRANTY):

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACHIEVING THE FOLLOWING PERFORMANCE CRITERIA:

- ALL VEGETATION (WOODY OR HERBACEOUS) WILL BE NATIVE TO THE SITE, WATERSHED (I.E., ECOTYPIC), COLORADO AND/OR THE ECO-REGION, TO EXTENT FEASIBLE DEPENDING ON THE NURSERY AND MARKET AVAILABILITY.
- WOODY PLANT MATERIAL (2" CAL. TREES OR GREATER) SHALL BE MAINTAINED AND REPLACED UP TO A 100% MINIMUM SURVIVAL RATE.
- WOODY PLANT MATERIAL (POTTED TREES AND SHRUBS) SHALL BE MAINTAINED AND REPLACED UP TO A 80% MINIMUM SURVIVAL RATE.
- WOODY PLANT MATERIAL (WILLOW CLUMPS, CUTTINGS, OR TUBLINGS) SHALL BE MAINTAINED AND REPLACED UP TO A 80% MINIMUM SURVIVAL RATE.
- HARVESTED/SALVAGED PLANT MATERIAL, IF SPECIFIED, SHALL BE MAINTAINED AND REPLACED UP TO A 80% MINIMUM SURVIVAL RATE. REPLACEMENTS CAN BE MADE WITH NURSERY GROWN STOCK. EQUIVALENCY SHALL BE MEASURED BY ROOT MASS (E.G. 1-5 GALLON PLANT IS EQUIVALENT TO 5 - 1 GALLON PLANTS).
- INITIAL SEED GERMINATION OF ALL SEEDED AREAS SHALL PRODUCE A MINIMUM OF ONE (1) MATURE, VIABLE NATIVE PLANT PER SQUARE FOOT.
- SEEDED AREAS SHALL BE CONSIDERED SUCCESSFUL WHEN NO BARE AREAS IN EXCESS OF FIVE (5) SQUARE FEET ARE PRESENT.
- 80% OF THE WETLAND/RIPARIAN SEEDED AREAS (WHERE VEGETATION IS EVIDENTLY EFFECTED BY GREATER MOISTURE LEVELS) SHALL BE COMPRISED OF THE DESIGNED SEED MIX OR OTHER DESIRABLE SPECIES (I.E., NATIVE OR NATURALIZED COLONIZERS).
- 80% OF UPLAND SEEDED AREAS SHALL BE COMPRISED OF THE DESIGNED SEED MIX OR OTHER DESIRABLE SPECIES (I.E., NATIVE OR NATURALIZED COLONIZERS).
- NOXIOUS & RESTRICTED WEEDS (AS PER STATE STATUTE) SHALL NOT EXCEED A MEAN FOLIAR COVER OF 0% FOR THOSE ON THE A, B OR C LISTS. ANNUAL WEEDS (NOT LISTED) SHALL NOT EXCEED A MEAN FOLIAR COVER OF 5%
- PERFORMANCE CRITERIA WILL BE ASSESSED BY THE ECOLOGIST ACCORDING TO MONITORING METHODOLOGIES AND PROTOCOLS DEVELOPED FOR THE PROJECT (UNDER SEPARATE COVER).

TREE REMOVAL:

- NO TREE OR SHRUBS SHALL BE REMOVED THAT CONTAIN NESTS OR NEST CAVITIES OF BIRDS WHILE THEY ARE FLEDGING OR NESTING. TREES OR ARTIFICIAL NEST SITES THAT ARE ACTIVELY BEING USED BY RAPTORS SHALL NOT BE HARMED UNTIL FLEDGLINGS AND ADULTS HAVE LEFT THE NEST. NO BIRD SHALL BE HARASSED (INTENTIONAL OR UNINTENTIONAL) TO LEAVE OR ABANDON A NEST SITE AS SUCH ACTIONS ARE SUBJECT TO VIOLATION AND POSSIBLE FINES UNDER THE MIGRATORY BIRD TREATY ACT (MBTA)

ANY CIVIL, CRIMINAL PENALTIES OR FINES ASSESSED AS A RESULT OF CONTRACTOR NEGLIGENCE FOR FAILURE TO ABIDE BY THE MBTA SHALL BE BORN BY THE CONTRACTOR OR SUBCONTRACTOR RESPONSIBLE FOR THE VIOLATION.

NUISANCE AND INVASIVE SPECIES:

- THE CONTRACTOR SHALL PREVENT THE SPREAD OF AQUATIC NUISANCE SPECIES AND NOXIOUS AND RESTRICTED WEEDS. THE CONTRACTOR SHALL CLEAN ALL EQUIPMENT PRIOR TO MOBILIZATION TO THE SITE TO REMOVE ALL AQUATIC NUISANCE SPECIES AND WEED SEED IN ACCORDANCE WITH STATE OF COLORADO AQUATIC NUISANCE SPECIES (ANS) REGULATIONS.
- CONTRACTOR SHALL AVOID TRANSPORTING WEED SEEDS ON TO THE SITE WHICH MAY ADHERE TO EQUIPMENT, VEHICLES, CLOTHING, OR GEAR. IF WEED SEED IS DISCOVER ON ANY OF THE ABOVE, THE CONTRACTOR SHALL PLACE THE SEEDS IN A PLASTIC BAG OR SIMILAR CONTAINER AND DISPOSE OF PROPERLY.
- CONTRACTOR SHALL AVOID DRIVING IN NOXIOUS WEED INFESTED AREAS PRIOR TO ENTERING THE SITE. INSPECT VEHICLES FOR WEED SEEDS STUCK IN TIRE TREADS OR MUD ON THE VEHICLE AND PREVENT THEM FROM BEING CARRIED TO UNAFFECTED AREAS. DON'T CLEAN INFESTED VEHICLES IN WEED FREE AREA.
- CONTRACTOR SHALL USE HAY, STRAW, OR MULCH THAT HAS BEEN CERTIFIED WEED FREE.
- ANY WEED FLOWERS OR SEEDS THAT ARE FOUND ON CONTRACTOR EQUIPMENT WHILE ON SITE SHALL BE PLACED IN A DISPOSABLE BAG OR SIMILAR CONTAINER AND DISPOSED OF PROPERLY.
- CONTRACTOR SHALL RESTRICT TRAVEL TO ESTABLISHED ROADS AND TRAILS WHENEVER POSSIBLE AND NOT DRIVE THROUGH SENSITIVE AREAS.
- CONTRACTOR SHALL AVOID LEAVING PILES OF EXPOSED SOIL IN CONSTRUCTION AREAS.
- REFER TO PLANTING NOTES ON THE HANDLING, DISPOSAL, AND TREATMENT OF PLANT PIT SPOILS.

WILDLIFE DEPREDAATION:

1. PROACTIVELY OR UPON SIGNS OF DAMAGE OR LOSS, THE SUBCONTRACTOR SHALL BE PREPARED TO INSTALL CAGING OR FENCING AROUND PLANTED MATERIAL. IMPLEMENT DETERRENTS, OR TAKE ALTERNATIVE MEASURES TO PREVENT FURTHER DAMAGE OR LOSS OF INSTALLED PLANTS DUE TO WILDLIFE DEPREDAATION, INCLUDING, BUT NOT LIMITED TO BEAVER, PORCUPINE, DEER, ELK, GEESSE AND WATERFOWL.

A. BEAVER PROTECTION: BEAVER CAGING SHALL BE 48" HIGH (MIN.) 4" X 4" WIRE MESH (OR SMALLER). THE CAGE SHALL BE 12" IN DIAMETER AND FULLY ENCIRCLC THE PLANT. THE CAGE SHALL BE SECURED/STAKED TO THE GROUND WITH A MINIMUM OF THREE (3) 6-FOOT (MIN.) RIGID, DURABLE RODS (REBAR, COATED STEEL TOMATO STAKES OR EQUIVALENT). THE RODS SHALL BE WOVEN THROUGH THE WIRE. THE CAGE SHALL BE ANCHORED TO GROUND WITH A MINIMUM OF THREE (3) - 12" LONG (MIN.) STAPLES OR EQUIVALENT TO PREVENT BEAVERS FROM LIFTING AND GETTING TO THE PLANTS FROM UNDER THE CAGE.

B. ELK OR DEER PROTECTION: EACH PLANT OR SMALL GROUPS OF PLANTS SHALL BE PROTECTED FROM DEER OR ELK BROWSING WITH TEMPORARY WIRE FENCING. THE FENCE SHALL BE BUILT IN SUCH A WAY AS TO PREVENT ANIMALS FROM REACHING THE PLANT PARTS EITHER BY OUTSTRETCHED NECK OR JUMPING WITHIN THE ENCLOSURE. THE FENCE SHALL BE CONSTRUCTED WITH 48" HIGH (MIN.) 4" X 4" WIRE MESH (OR GREATER). THE ENCLOSURE SHALL BE SECURED/STAKED TO THE GROUND AND ATTACHED TO T-POSTS (OR APPROVED EQUIVALENT). OTHER DETERRENTS SUCH AS COYOTE OR PUMA URINE, BITTER SPRAY, RANDOMLY TIMED "SHOTGUN" BLASTS, GUARD DOGS, OR MOTION DETECTION SPRINKLERS, ETC. MAY ALSO BE USED.

C. WATERFOWL PROTECTION: WATERFOWL ARE KNOWN TO PULL OUT NEWLY PLANTED HERBACEOUS WETLAND PLUGS BEFORE THEY HAVE HAD TIME TO ROOT. WATERFOWL DETERRENT SHALL CONSIST OF INSTALLING A GRID OF 4' TO 6' T-POSTS (OR EQUIVALENT) APPROXIMATELY 10 FEET ON CENTER WITH 2 LEVELS OF TAUGHT MASON TWINE SECURELY STRUNG TO EACH POST. REFLECTIVE BIRD "REPELLER" RIBBON SHALL THEN BE HUNG EVERY 10 FEET ON THE DOUBLE LAYER OF TWINE. ALTERNATIVELY, RANDOMLY TIMED "SHOTGUN" BLASTS OR GUARD DOGS MAY ALSO BE USED.

UTILITY LOCATIONS:

1. UTILITY LOCATIONS AND MARKING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. COLORADO LAW REQUIRES CONTRACTORS TO NOTIFY THE UTILITY NOTIFICATION CENTER OF COLORADO 2 BUSINESS DAYS PRIOR TO MAKING OR BEGINNING AN EXCAVATION. NOTIFICATION MAY BE MADE BY CALLING: **1-800-922-1987**

2. ANY UTILITIES THAT ARE STRUCK AND DAMAGED BY THE GENERAL CONTRACTOR OR CONTRACTOR AS A RESULT OF FAILING TO GET PROPER LOCATES SHALL BE REPLACED AT NO EXPENSE TO THE CLIENT.

CLEAN-UP:

1. ANY TRASH OR DEBRIS PRODUCED BY CONSTRUCTION CREWS SHALL BE CONTAINED, REMOVED FROM THE SITE AND DISPOSED OF PROPERLY ON A DAILY BASIS AND UPON COMPLETION OF THE PROJECT. WIND BLOWN TRASH WILL NOT BE TOLERATED.

ADDITIONAL GENERAL NOTES:

1. PLANS, PERMITS AND CLARIFICATIONS - THE CONTRACTOR SHALL ENSURE ONE COPY OF THE FOLLOWING PLANS ARE ON SITE AT ALL TIMES:

- A. CONSTRUCTION PLANS
- B. STORMWATER MANAGEMENT PLAN (SWMP)/GRADING, EROSION & SEDIMENT CONTROL (GESC) PLAN
- C. CLEAN WATER ACT (CWA), SECTION 404 PERMIT
- D. ALL OTHER PERMITS REQUIRED FOR THE PROJECT

THE CONTRACTOR IS RESPONSIBLE FOR SUPPLYING ALL SUBCONTRACTORS WITH THE APPROVED PLANS AND PERMITS AND VERIFYING THAT ALL CONSTRUCTION IS DONE IN ACCORDANCE WITH THE APPROVED PLANS AND PERMITS. THE CONTRACTOR SHALL CONTACT THE ECOLOGIST IN WRITING FOR CLARIFICATION OR DISCREPANCIES ON ANY INFORMATION SHOWN IN THE PLANS.

2. REFERENCE STANDARDS - EXCEPT WHERE OTHERWISE PROVIDED FOR IN THESE PLANS AND NOTES, BOULDER COUNTY STANDARDS SHALL APPLY.

3. ANY ESTIMATE OR QUANTITIES PROVIDE IN THE PLANS OR BID SCHEDULES SHALL BE VERIFIED BY THE CONTRACTOR/SUBCONTRACTOR, WHO SHALL BE RESPONSIBLE FOR DETERMINING ALL QUANTITIES AND PROVIDING WORK AND MATERIALS AS SHOWN ON THE PLANS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ON-SITE CONDITIONS AND PERFORM AN INDEPENDENT TAKE-OFF OF ALL QUANTITIES, TO NOTIFY THE CLIENT AND ECOLOGIST OF ANY DISCREPANCIES (INCLUDING UNLISTED ITEMS), AND TO SUBMIT AN ADD-ALTERNATE BID IDENTIFYING THE DISCREPANCIES PRIOR TO FINAL EXECUTION OF THE CONSTRUCTION CONTRACT. AFTER CONTRACT AWARD, THE CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING ANY DISCREPANCIES OR CHANGES THAT MAY BE REQUIRED AND SUBMIT CHANGE ORDERS TO THE DESIGNER FOR REVIEW, APPROVAL OR REASONABLE DENIAL.

4. ALL PROPERTY PINS, INTERSECTION MONUMENTS, AND SECTION CORNERS DUSTURBED BY THE CONTRACTOR DURING CONSTRUCTION MUST BE REFERENCED AND REPLACED UNDER SUPERVISION OF A LICENSED SURVEYOR AT THE CONTRACTOR'S COST.

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CALL UTILITY NOTIFICATION CENTER OF COLORADO
CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

REVISIONS:

NO.	DATE	REVISION DESCRIPTION:



LEFTHAND WATERSHED OVERSIGHT GROUP

DESIGNED:	CAD:	CHECKED:	DATE:
			7/12/2016

JAMES CREEK PLANTING DETAILS (5 OF 6)	
PROJECT NO:	SHEET NO:

JAMES CREEK 30% DESIGN PLANT SCHEDULES (REACH 16) - FINAL

7/13/2016

Habitat Acres	Zone	Indicator	Square Feet	Acres	% Cover	Spacing	Plant Qty.
Upper Riparian	3	FAC-FACW	100024	2.30	40%	6	1111
Lower Riparian	2	FACW-OBL	200950	4.61	100%	3	22328
Lower Riparian (Toe)	2	FACW-OBL	8654	0.20	100%	3	962
Wetland	1	OBL	36883	0.85	100%	1	36883

SYMBOL	Scientific Name	Common Name	Indicator Status	Height at 20 years	Approx. Spread	Size / Form	Relative Cover (Percent of Mix)	See Notes Below	Total Quantity
ZONE 3 (C) - UPPER RIPARIAN									
ERI NAU	<i>Ancasteria nuseosus</i>	rubber rabbitbrush	UPL	5	5	40 CI	2.5%	*	28
JUN COM	<i>Juniperus communis</i>	common juniper	UPL	2	5	40 CI	2.5%	*	28
MAH REP	<i>Mahonia repens</i>	Oregon grape	UPL	1	2	40 CI	2.5%	*	28
PHY MON	<i>Physocarpus monogynus</i>	mountain ninebark	UPL	5	5	40 CI	2.5%	*	28
RIB CER	<i>Ribes cereum</i>	wax currant	UPL	5	5	40 CI	5.0%	*	56
RUB DEL	<i>Rubus deliciosus</i>	delicious raspberry	UPL	3	3	40 CI	2.5%	*	28
SYM OCC	<i>Symphoricarpos rotundifolius</i>	roundleaf snowberry	UPL	3	3	40 CI	5.0%	*	28
ACE GLA	<i>Acer glabrum</i>	Rocky Mountain maple	FACU	15	15	40 CI	2.5%	*	28
PIN PON	<i>Pinus ponderosa</i>	ponderosa pine	FACU	40	20	40 CI	2.5%	*	56
PRU AME	<i>Prunus americana</i>	American Plum	FACU	25	24	40 CI	2.5%	*	28
PRU VIR	<i>Prunus virginiana var. melanocarpa</i>	chokecherry	FACU	15	15	40 CI	5.0%	#	56
ROS WOO	<i>Rosa woodsii</i>	Wood's rose	FACU	3	3	40 CI	5.0%	#	56
RUB PAR	<i>Rubus parviflorum</i>	Thimbleberry	FACU	5	5	40 CI	2.5%	*	28
PIC PLUN	<i>Picea pungens</i>	Colorado blue spruce	FAC	20	10	40 CI	2.5%	*	28
POP ANG	<i>Populus angustifolia</i>	narrowleaf cottonwood	FAC	50	25	40 CI	50.0%	#	556
RIB AUR	<i>Ribes aureum</i>	golden currant	FAC	10	10	40 CI	5.0%	#	56
							100.0%	#	1111
ZONE 2 (B) - LOWER RIPARIAN									
POP ANG	<i>Populus angustifolia</i>	narrowleaf cottonwood	FAC	50	25	40 CI	20.0%	#	4466
ALN INC	<i>Alnus incana ssp. tenuifolia</i>	thinleaf alder	FACW	15	15	40 CI	10.0%	#	2233
BET OCC	<i>Betula occidentalis</i>	river birch	FACW	25	25	40 CI	5.0%	#	1116
SAL AMY	<i>Salix amygdaloides</i>	peachleaf willow	FACW	45	45	40 CI	5.0%	#	1116
SAL BEB	<i>Salix bebbiana</i>	Bebb willow	FACW	10	10	40 CI	10.0%	#	2233
SAL DRU	<i>Salix drummondiana</i>	Drummond's willow	FACW	10	10	40 CI	5.0%	#	1116
SAL EXI	<i>Salix exigua</i>	coyote willow	FACW	5	3	40 CI	10.0%	#	2233
SAL GEY	<i>Salix geyeriana</i>	Geyer's willow	FACW	10	10	40 CI	5.0%	#	1116
SAL IRR	<i>Salix irrorata</i>	bluestem willow	FACW	20	20	40 CI	10.0%	#	2233
SAL LUC	<i>Salix lucida</i>	shining willow	FACW	10	10	40 CI	10.0%	#	2233
SWI SER	<i>Cornus sericea</i>	red-osier dogwood	FACW	5	5	40 CI	5.0%	#	1116
SAL MON	<i>Salix monticola</i>	mountain willow	OBL	10	10	40 CI	5.0%	#	1116
							100.0%	#	22,328
ZONE 2 (B) - TOE TREATMENT									
POP ANG	<i>Populus angustifolia</i>	narrowleaf cottonwood	FAC	50	25	40 CI	20.0%	#	192
ALN INC	<i>Alnus incana ssp. tenuifolia</i>	thinleaf alder	FACW	15	15	40 CI	10.0%	#	96
BET OCC	<i>Betula occidentalis</i>	river birch	FACW	25	25	40 CI	5.0%	#	48
SAL AMY	<i>Salix amygdaloides</i>	peachleaf willow	FACW	45	45	40 CI	5.0%	#	48
SAL BEB	<i>Salix bebbiana</i>	Bebb willow	FACW	10	10	40 CI	10.0%	#	96
SAL DRU	<i>Salix drummondiana</i>	Drummond's willow	FACW	10	10	40 CI	5.0%	#	48
SAL EXI	<i>Salix exigua</i>	coyote willow	FACW	5	3	40 CI	10.0%	#	96
SAL GEY	<i>Salix geyeriana</i>	Geyer's willow	FACW	10	10	40 CI	5.0%	#	48
SAL IRR	<i>Salix irrorata</i>	bluestem willow	FACW	20	20	40 CI	10.0%	#	96
SAL LUC	<i>Salix lucida</i>	shining willow	FACW	10	10	40 CI	10.0%	#	96
SWI SER	<i>Cornus sericea</i>	red-osier dogwood	FACW	5	5	40 CI	5.0%	#	48
SAL MON	<i>Salix monticola</i>	mountain willow	OBL	10	10	40 CI	5.0%	#	48
							100.0%	#	962
ZONE 1 (A) - WETLAND									
CAR MIC	<i>Carex microptera</i>	small-winged sedge	FACU	-	1	10 CI	5.0%		1844
JUN CON	<i>Juncus confusus</i>	Colorado rush	FAC	-	1	10 CI	10.0%		3688
POA PAL	<i>Poa palustris</i>	fowl bluegrass	FAC	-	1	10 CI	10.0%		3688
DES CES	<i>Deschampsia cespitosa</i>	tufted hairgrass	FACW	-	1	10 CI	5.0%		1844
CAL CAN	<i>Calamagrostis canadensis</i>	bluejoint reedgrass	FACW	-	1	10 CI	5.0%		1844
JUN BAL	<i>Juncus balticus</i>	Baltic rush	FACW	-	1	10 CI	15.0%		5532
PAN VIR	<i>Panicum virgatum</i>	switchgrass	FACW	-	1	10 CI	5.0%		1844
CAR AQU	<i>Carex aquatilis</i>	water sedge	OBL	-	1	10 CI	5.0%		1844
CAR NEB	<i>Carex nebrascensis</i>	Nebraska sedge	OBL	-	1	10 CI	10.0%		3688
CAR PEL	<i>Carex pellita</i>	woolly sedge	OBL	-	1	10 CI	5.0%		1844
CAR UTR	<i>Carex utriculata</i>	beaked sedge	OBL	-	1	10 CI	10.0%		3688
ELO PAL	<i>Eleocharis palustris</i>	creeping spikerush	OBL	-	1	10 CI	5.0%		1844
SCI MIC	<i>Scirpus microcarpus</i>	Red-tinge bulrush	OBL	-	1	10 CI	5.0%		1844
GLY STR	<i>Glycena striata</i>	fowl mannagrass	OBL	-	1	10 CI	5.0%		1844
							100.0%		36883

Notes:
 * indicates plants that may be substituted/interchanged with other plants on these tables that may not be available or contract grown.
 # indicates plants that are tolerant of deep planting. Data on the tolerance of riparian species list above (not indicated with a #) has not been developed.
 Bold type indicates dominant species.
 Table sorted by indicator status

JAMES CREEK 30% DESIGN SEED SCHEDULES (REACH 16) - FINAL

6/15/2016

* Seeds per SF
 * Acres

100
 1.00

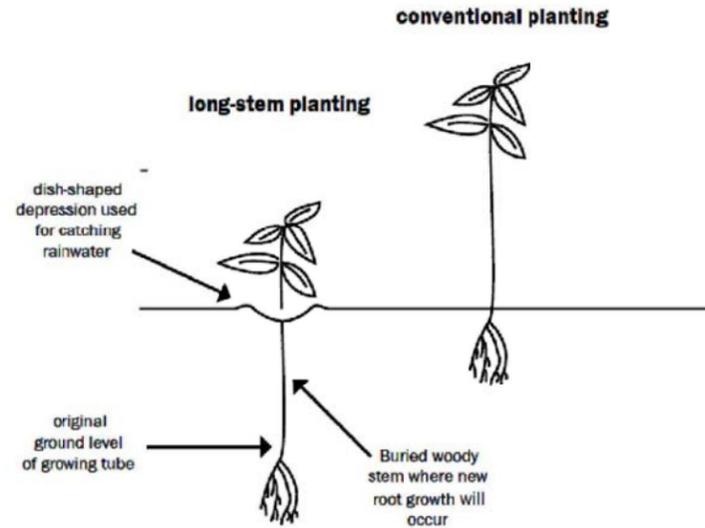
Scientific Name	Common Name	Seasonality	* Percent of Mix	Seeds per SF	Seeds per AC	* Seeds per LB	* LBS/PLS per AC	Drill Seeding Total LBS	Broadcast Seeding Total LBS
<i>Acnatherum hymenoides</i>	Indian ricegrass	C	3.0%	3.0	130680	141,000	0.93	0.93	1.85
<i>Bouteloua curtipendula</i>	side-oats grama	W	3.0%	3.0	130680	191,000	0.68	0.68	1.37
<i>Bouteloua gracilis</i>	blue grama	W	10.0%	10.0	435600	825,000	0.53	0.53	1.06
<i>Elymus trachycalus</i>	slender wheatgrass	C	10.0%	10.0	435600	159,000	2.74	2.74	5.48
<i>Festuca idahoensis</i>	Idaho fescue	C	5.0%	5.0	217800	450,000	0.48	0.48	0.97
<i>Glycena striata</i>	fowl mannagrass	C	3.0%	3.0	130680	180,000	0.73	0.73	1.45
<i>Hesperostipa comata</i>	Needle and Thread	C	3.0%	3.0	130680	115,000	1.14	1.14	2.27
<i>Juncus balticus</i>	Baltic rush	C	10.0%	10.0	435600	10,900,000	0.04	0.04	0.08
<i>Juncus torreyi</i>	Torrey's rush	C	5.0%	5.0	217800	12,300,000	0.02	0.02	0.04
<i>Koeleria macrantha</i>	prairie junegrass	C	5.0%	5.0	217800	2,315,000	0.09	0.09	0.19
<i>Muhlenbergia montana</i>	mountain muhly	W	3.0%	3.0	130680	1,500,000	0.09	0.09	0.17
<i>Nassella viridula</i>	green needlegrass	C	5.0%	5.0	217800	181,000	1.20	1.20	2.41
<i>Panicum virgatum</i>	switchgrass	W	5.0%	5.0	217800	389,000	0.56	0.56	1.12
<i>Pascopyrum smithii</i>	western wheatgrass	C	10.0%	10.0	435600	110,000	3.96	3.96	7.92
<i>Poa palustris</i>	fowl bluegrass	C	5.0%	5.0	217800	3,156,000	0.07	0.07	0.14
<i>Poa secunda</i>	Sandberg bluegrass	C	5.0%	5.0	217800	1,000,000	0.22	0.22	0.44
<i>Pseudoroegneria spicata</i>	bluebunch wheatgrass	C	5.0%	5.0	217800	140,000	1.56	1.56	3.11
<i>Schizachyrium scoparium</i>	little bluestem	W	5.0%	5.0	217800	260,000	0.84	0.84	1.68
			100.0%	100.0			15.87	15.87	31.73

Companion Crop

Scientific Name	Common Name	Seasonality	* Percent of Mix	Seeds per SF	Seeds per AC	* Seeds per LB	* LBS/PLS per AC	Drill Seeding Total LBS	Broadcast Seeding Total LBS
<i>Triticum aestivum x Secale cereale</i>	QuickGuard Sterile Triticale	C	100.0%	100.0	4356000	18,000	20.00	20.00	40.00

Data Sources:
 Ecoregions of Colorado.
 Native Plant Revegetation Guide for Colorado - Foothills Grasslands, Mixed Foothills Shrubland and Ponderosa Pine Woodland and Savanna
 Boulder County Native Seed Mixes
 USDA Plants Database
 Granite Seed
 AECOM, James Canyon Planting Details

DEEP PLANTING DETAIL:



SOURCE: AUSTRALIAN PLANT SOCIETY, THE LONGSTEM PLANTING GUIDE, APRIL, 2010

NOTES

- DIG HOLES THAT ARE DEEP ENOUGH TO ALLOW THREE-QUARTERS OF THE PLANT TO BE BURIED, BUT NO DEEPER THAN THE TOP OF THE CAPILLARY FRINGE (I.E., SOIL SATURATED BY GROUND WATER/ALLUVIAL INTERFLOW)
- POUR APPROXIMATELY 1 GALLON OF WATER INTO THE HOLE AND ALLOW IT TO SOAK IN
- PRUNE SIDE BRANCHES AND/OR LARGE LEAVES FROM THE LOWER PORTION OF THE STEM THAT IMPEDE PLACEMENT OF THE SEEDLING IN THE HOLE WHEN PLANTING.
- PLACE THE PLANT IN THE HOLE AND BACKFILL CAREFULLY USING SOIL AND WATER ALTERNATELY TO ENSURE THAT NO AIR POCKETS ARE LEFT. THIS IS IMPORTANT TO PREVENT THE ROOTS FROM DRYING OUT.
- CREATE A DISH-SHAPED DEPRESSION OR SAUCER AROUND THE STEM OF THE PLANT AND ADD THE REMAINING WATER. THE DEPRESSION WILL ASSIST IN CATCHING PRECIPITATION.
- FILL SAUCER WITH WOOD MULCH.

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CALL UTILITY NOTIFICATION CENTER OF COLORADO
 CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

NO.	DATE	REVISION DESCRIPTION:



LEFTHAND WATERSHED OVERSIGHT GROUP
 DESIGNED: CAD: CHECKED: DATE: 7/12/2016

JAMES CREEK PLANTING DETAILS (6 OF 6)
 PROJECT NO: SHEET NO: