ST. JOHNS LANDFILL

CONSTRUCTION DOCUMENTS

Prepared for:

METROPOLITAN SERVICE DISTRICT
SOLID WASTE DEPARTMENT

Prepared by:

FISHMAN ENVIRONMENTAL SERVICES

St. Johns Landfill

CONSTRUCTION DOCUMENTS FOR
SUBAREA (1) SITE PREPARATION AND SEEDING

Prepared for:

Metropolitan Service District
Solid Waste Department

Prepared by:

Fishman Environmental Services with
Mark Wilson, Horticulturist
Mike Faha and Associates, Landscape Architects
Wes Jarrel, Ph.d

August 1992

VEGETATION PLAN
SUB-AREA 1 TEST PLOT
SOIL PROFILES

TYPE PLANTING	SOIL PROFILE	SOIL TYPE I	SOIL TYPE II	SOIL TYPE III	SOIL TYPE IV
Mesic Prairie	C Sand B Subsoil A Topsoil Total Depth		1.0' 9" - 6" Existing topsoil plus 6" new subsoil 6" - 3" Compost disced into top 3" 2.25' subsoil	1.5' 9" - 6" Existing topsoil plus 6" new subsoil 6" - 3" Compost disced into top 3" 2.75' subsoil	
Xeric Prairie	C Sand B Subsoil A Topsoil Total Depth		1.5' 6" - 8" New subsoil 4" - 2" Compost disced into top 2" 2.33' subsoil	1.5' - 3" New subsoil - 3" Compost disced into top 3" 2.0' subsoil	
Valley Bottoms	C Sand B Subsoil A Topsoil Total Depth				1.0' 18"-15" Existing topsoil plus 6" imported subsoil 6" - 3" Compost disced into top 3" 3.0' subsoil
"Regreen" and Existing Spec Areas	C Sand B Subsoil A Topsoil Total Depth	1.5' 6"- 6" Existing topsoil 6" - 3" Imported subsoil 3" compost disced 2.5' 6" deep	1.5' 6"- 6" Existing topsoil 6" - 3" Imported subsoil 3" compost disced 6" 2.5' deep	1.5' 6"- 6" Existing topsoil 6" - 3" Imported subsoil 3" compost disced 6" 2.5' deep	

PH:jc
vegplan.tbl

Enclosure 2

TABLE OF CONTENTS

1. GENERAL

A. LIST OF ARTICLE TITLES

1.01 DESCRIPTION OF WORK
1.02 SEQUENCING PLAN

1.01 DESCRIPTION OF WORK

A. The work covered by this contract includes furnishing of labor, materials and equipment for construction of the following:

1. St. Johns Landfill Subarea 1: Ground surface preparation, slope stabilization log placement and seeding.

1.02 SEQUENCING PLAN

A. Before starting work, submit to the Engineer a proposed construction schedule showing the proposed order of work and indicate the time required for completion of the major items of work. The schedule shall be realistic and definitive as to the amount of work which is to be accomplished within the time indicated and shall be updated weekly to reflect actual work progress. In the event that the proposed schedule does not meet the criteria as set forth herein as determined by the Engineer, resubmit until the criteria is met. Working schedules shall be used as an indication of the sequence of the major construction operations and as a check on the progress of the work and may, at the sole discretion of the Engineer, be employed by the Engineer in determining delays and time extensions, but does not become a part of the Contract.

B. Contractor will make no changes in the schedule of the work unless, to the extent possible, he provides two (2) weeks advance notice to the Engineer or secures the Engineer's approval prior to performing such changes.

C. Engineer's review of original schedule shall not constitute a warranty or representation by Owner that Contractor can perform the work according to such schedule.

D. The Contractor shall schedule construction activities to conform to the following general requirements:

August 1992:

1. * Order specified seed and submit downpayment to vendors. Request delivery no later than 9/1/92. Submit seed invoices or source verification to project manager.
2. * Place old stripped temporary cover soil on top of sand layer in all areas of Subarea 1 as specified by FES.**
3. * Complete FES specified placement and grading of imported soil on all areas of Subarea 1.**
4. Submit soil samples to project manager for nutrient analysis.
5. Incorporate compost in top 4" of final cover soil/Disc to mix.

September 1992:

1. Add fertilizers as specified/Disc top 4" of soil.
2. Prepare seedbeds in all areas of Subarea 1 with disc and harrow.
3. Layout test plots as specified.

September 20 - October 10, 1992:

1. Seed all test plots as specified using the following equipment and methods: Broadcast seed / track, double stage hydroseeding and brillion seeding (see plan for method).
2. Place slope stabilization logs in test plots then seed erosion control test plot areas using double stage hydroseeding method.
3. Seed FES specified Regreen cover crop on remainder of Subarea 1 areas using a brillion seeder.
4. * Implement erosion control specifications.

October 1992 - February 15, 1993 (weather dependent)

1. Monitor vegetation a minimum of once monthly / Repair erosion and or reseed with cover crop as necessary.

February 15 - March 15 (weather dependent)

1. Reseed all areas as necessary to meet warranty. Follow initial seeding specifications.

* Not in this contract (included for reference and coordination).

** Refers to St. Johns Landfill Cover Vegetation Plan report by Fishman Environmental Services (FES).

End of Section

SECTION 02920
SITE PREPARATION

1. GENERAL

A. LIST OF ARTICLE TITLES

1.01 DESCRIPTION OF WORK

A. The work covered in this section consists of furnishing all labor, materials and equipment for preparation of soil as shown on the drawings and as specified.

1.02 RELATED SECTIONS

A. Section 02930 - Seeding

1.03 QUALIFICATIONS

A. All soil preparation work shall be done under the supervision of a Contractor having experience in landscape construction. All work shall be done in accordance with good horticultural practices.

1.04 SUBMITTALS

A. Submit sample of compost for acceptance.

B. Submit guaranteed analysis of fertilizer mixes.

1.05 PRODUCT DELIVERY AND STORAGE

A. Store fertilizer in a dry place and protect from intrusion of moisture.

1.06 SEQUENCING AND SCHEDULE

A. See sequencing plan (Section 01010)

1.07 ENVIRONMENTAL CONDITIONS

A. Prepare soil only when topsoil is not in a wet or muddy condition. Take all precautions to prevent runoff of topsoil and fertilizers.

1.08 PROTECTION

A. Provide protective cover and barriers as necessary to prevent damage and staining to all site improvements and of site structures, trees, facilities and property.

1.09 HERBICIDE APPLICATION QUALIFICATION

A. No herbicide shall be used on this project.

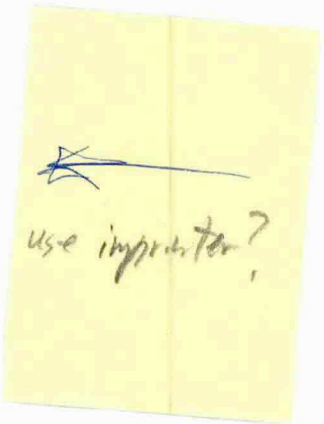
1.10 SOILS TESTING

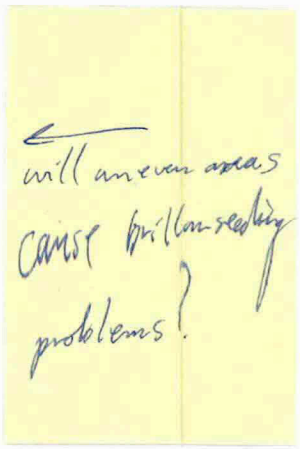
A. Send five representative soil samples to an approved soil testing laboratory for complete analysis and fertilizer / amendment recommendations. Results shall be sent to Owner's Representative.

B. Obtain approval of soil sample locations from the Owner's Representative and provide flagging / markers that shall remain throughout construction.

1.11 FIELD QUALITY CONTROL

A. Finish grading: Inspected and approved by the Owner's Representative prior to seeding operations.


use importer?


will anyone assess
cause brilliance-seeking
problems?

2. PRODUCTS

2.01 TOPSOIL

A. Topsoil shall be existing topsoil in place.

2.02 COMMERCIAL FERTILIZER

A. Commercial fertilizer shall be approved brands conforming to applicable state fertilizer laws, uniform in composition, dry, free flowing, delivered to the site in original unopened containers, each bearing the manufacturer's guaranteed analysis.

B. Nurtrient analysis and application rate shall be determined by Owner's Representative based on soil analysis.

2.03 COMPOST

A. "Garden Care" sludge compost, available from North American Soils, Inc. 5303 N. Columbia Boulevard, Portland, Oregon.

2.04 WATER

A. Water shall be suitable for irrigation, free from oil, acid, alkali, salt or other substances harmful to plant life.

3. EXECUTION

3.01 INSPECTION

A. Flag each test plot area with temporary markers for approval by Owner's Representative.

B. Examine the entire site for conditions that will adversely affect execution, permanence and quality of work, and survival of plant materials, and grass.

C. Verify that rough grades and slopes of areas to be seeded and planting areas are correct prior to commencing work of this section. If the site is not suitable for seeding operations, the Contractor shall perform necessary corrective work.

3.02 GENERAL PREPARATION OF GROUND SURFACES

A. Eliminate uneven areas and low spots, remove lumber, stones, sticks, mortar, concrete, rubbish, debris, contaminated soil and any material harmful to plant life, in areas to be seeded.

B. Eliminate existing grasses by disking the soil to a depth of four (4) inches where they occur.

3.03 SOIL PREPARATION FOR SEEDED FIELDGRASS AREAS

A. Apply three (3) inches of compost to all areas to be seeded.

B. Apply fertilizer at rates recommended by Owner's representative

C. Disk the compost and fertilizer into the top four (4) inches of soil. Make as many passes with the equipment as necessary to thoroughly blend the compost with the soil. The disking shall continue until clod size is less than one inch in diameter. Final disking shall be with the contour of the slope.

D. Immediately before seeding, harrow and rake, to remove stones, clods, sticks, and other foreign matter larger than 1-inch in largest dimension from top 1-inch of soil; establish smooth, fine textured seed bed.

3.04 CLEANUP

A. Keep project site reasonable free from accumulation of debris, top-soil, other material.

B. At completion of each area of work, remove debris, equipment and surplus materials.

C. Any paved area or surfaces stained or soiled from landscaping materials shall be cleaned with a power sweeper using water under pressure.

End of Section


Utility grade?
Old growth?

FES-453

SECTION 02925
SLOPE STABILIZATION
LOG PLACEMENT

1. GENERAL

A. LIST OF ARTICLE TITLES

1.01 DESCRIPTION OF WORK

A. The work covered in this section consists of furnishing all labor, materials and equipment for placement of slope stabilization logs as shown on the drawings and as specified.

1.02 RELATED SECTIONS

A. Section 02920 - Site preperation

1.03 SUBMITTALS

A. Provide copy of log purchase order from source to Engineer.

1.04 PRODUCT DELIVERY AND STORAGE

A. Store logs in area designated by Engineer.

1.05 SEQUENCING AND SCHEDULE

A. See sequencing plan (Section 01010)

1.06 ENVIRONMENTAL CONDITIONS

A. Place logs only when topsoil is not in a frozen or muddy condition.

2. PRODUCTS

2.01 LOGS

A. The contractor shall provide forty logs for slope stabilization.

B. Logs shall be utility grade Douglas Fir. Burn marks are allowable.

C. The length of the logs shall be a a minimum of 26' and a maximum of 30'.

D. The diameter of the logs shall be between 24" and 40".

E. Logs are available from Weyerhauser-Longview (Bob Bishop at 206-425-2150)

3. EXECUTION

3.01 INSPECTION

A. Flag each test plot area with temporary markers for approval by Owner's Representative.

B. Examine the entire site for conditions that will adversely affect execution, permanence and quality of work.

C. Verify that rough grades and slopes of areas are correct prior to commencing work of this section. If the site is not suitable for log placement operations, contact the Engineer.

3.02 LOG PLACEMENT

A. The Engineer shall stake the location of the logs.

B. Logs shall be placed parallel with the slope contour.

C. Logs shall be firmly embedded into the ground surface. All logs shall be placed one third (1/3) of their diameter into the ground. Redistribute excavated material at base of log to anchor log in place.

End of Section

SECTION 02930
SEEDING

1. GENERAL

A. LIST OF ARTICLE TITLES

1.01 DESCRIPTION OF WORK

A. Work consists of providing all labor, material and equipment for installing field grass as indicated below.

1. Plant and establish field grass mixture as shown on drawings.

1.02 RELATED SECTIONS

A. Section 02920 - Topsoil Placement and Soil Preparation

1.03 QUALIFICATIONS

A. Work performed as described in this section shall be done under the supervision of a contractor having experience in landscape construction.

1.04 REFERENCE STANDARDS

A. United States Department of Agriculture (USDA).

1.05 SUBMITTALS

A. Guaranteed analysis of field grass seed mixture.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver grass seed in original containers showing analysis of seed mixture, percentage of pure seed, percentage of weed and crop seed, year of production, net weight, date of packaging and location of packaging. Damaged packages are not acceptable.

B. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

1.07 JOB CONDITIONS

A. See sequencing plan (Section 01010)

B. Weather conditions: Seeding is not permitted during the following conditions:

1. Cold weather: When air or ground temperature is less than 32 degrees F.

2. Hot weather: When air temperature is greater than 90 degrees F.

3. Wet weather: when ground becomes saturated.

4. Windy weather: When wind velocity is greater than 30 mph.

2. PRODUCTS

2.01 SEED MIXTURE

A. General

1. Seed species shall be provided by Owner.

2. Contractor shall be responsible for mixing seed.

B. Application rates

	SPECIES	SEEDING RATE
1.	Covercrop Test Plots	28 acres total area
	"Regreen" Covercrop	25 lb/acre
2.	Xeric Prairie Test Plots:	4.5 Acres total area
	Festuca idahoensis	8 lb/ac
	Poa sandbergii	2 lb/ac
	Sitanion hystrix	2 lb/ac
	Stipa comata	1 lb/ac
	Covercrop-Regreen	10 lb/ac
	Balsomarhiza sagittata	1/2 lb/ac
	Eriogonum umbellatum	1/2 lb/ac
	Lupinus sericeus	3 lb/ac
3.	Mesic Prairie Test Plots:	4 acres total area
	Bromus carinatus	2 lb/ac
	Elymus glaucus	6 lb/ac
	Festuca idahoensis	6 lb/ac
	Festuca rubra v. rubra	4 lb/ac
	Covercrop-Regreen	8 lb/ac
	Achillea millefolium	1 oz/ac
	Aster chilensis	2 oz/ac
	Eriophyllum lanatum	1 oz/ac
	Eschscholzia californica	4 oz/ac
	Lupinus bicolor	2 lb/ac
	Lupinus polyphyllus	2 lb/ac
	Solidago canadensis	4 oz/ac

2.02 WATER

A. Water shall be free from oil, acid, alkali, salt and other substances harmful to growth of grass, and shall be from a source approved prior to use.

2.03 WOOD-CELLULOSE FIBER MULCH

A. Wood-cellulose fiber mulch for use with the hydraulic application of grass seed and fertilizer shall consist of specially prepared wood-cellulose fiber processed to contain no growth or germination-inhibiting factors and dyed an appropriate color to facilitate visual metering of application of materials. The mulch material shall be supplied in packages having a gross weight not in excess of 100 pounds. The woodcellulose fiber shall contain not in excess of 10% moisture, air-dry weight basis. The wood-cellulose fiber shall be manufactured so that after addition and agitation in slurry tanks with fertilizers, grass seeds, water and any other ap-

proved additives, the fibers in the material will become uniformly suspended to form a homogeneous slurry and that when hydraulically sprayed on the ground, the material will form a blotter-like ground cover impregnated uniformly with grass seed and which, after application, will allow the absorption of moisture and allow rainfall or mechanical watering to percolate to the underlying soil. Suppliers shall be prepared to certify that laboratory and field-testing of their product has been accomplished and that their product meets all of the foregoing requirements based upon such testing.

2.04 SOIL STABILIZER

A. Soil stabilizer shall be capable of penetrating soil surface and binding soil particles; shall provide an adhesive to hold seed and wood-cellulose fibers together and bond them to the soil; and shall be made from naturally occurring and biodegradable materials, such as "aquatain" or equal.

2.05 SPECIAL SEEDING AND MULCHING EQUIPMENT

A. Hydraulic equipment used for the application of fertilizer, seed and slurry of prepared wood-cellulose fiber shall have a built-in agitation system with an operating capacity sufficient to agitate, suspend and homogeneously mix the slurry specified. The slurry distribution lines shall be large enough to prevent stoppage. The discharge line shall be equipped with a set of spray nozzles that will provide even distribution of the slurry on the various slopes.

3. EXECUTION

3.01 PREPARATION

A. Verify that grading has been completed correctly.

1. Notify Engineer of any discrepancies; do not proceed with work until discrepancies have been resolved.

B. Notify Engineer at least 24 hours prior to planting or seeding operations. Engineer will inspect soil preparation and finish grading.

3.02 DUAL STAGE HYDROSEEDING

A. See plan for areas designated for this method of seeding.

B. Seed shall be broadcast with approved hydraulic seeding equipment, in combination with wood-cellulose fiber mulch, soil stabilizer and fertilizer, as specified herein at the rate specified in Paragraph 2.01B. Seed shall be distributed uniformly over designated areas. Half of seed shall be sown with sower moving

in one direction, and the remainder with sower moving at right angles to first sowing. Seed shall not be broadcast during windy weather. The wood-cellulose fiber shall be applied at the ate of 2000 pounds per acre. The soil stabilizer shall e applied at the rate of 60 pounds per acre minimum on slopes greater than 30% and 50 pounds per acre minimum on slopes less than 30%. Agitate slurry mix periodically as necessary to insure an even mix of ingredients. When area to be seeded adjoins a structure, care shall be taken not to apply seed to structure. Any seed so applied shall be removed before soil stabilizer sets.

C. Clean slurry tank and all hoses off site before loading grass/wildflower mix. Insure that no other type of seeds are present in the application equipment.

D. Hydroseed all areas in a two stage process: First apply all seed and 10% of the mulch, secondly; track over seed/mulch with a cat or similarly cleated machinery parallel with slope contours, thirdly; apply the remaining 90% of the mulch over the top of the initial application.

3.03 BROADCAST / TRACK SEEDING

A. See plan for areas designated for this method of seeding.

B. Sow seed at the rate specified in paragraph 2.01 B.

C. Seed broadcasting shall be done with a hand seeder able to be calibrated for sowing very small wildflower seed, such as a Cyclone seeder.

D. Seed shall be uniformly distributed over designated areas. Divide seed in equal parts, apply one half in north-south direction and the other half in east-west direction.

E. Track over seed with a cat or similarly cleated heavy equipment, cleat marks shall be parallel with the slope contours.

3.04 BRILLION SEEDING

A. Seeding with a brillion seeder applies to all seeded areas on plan not specified for dual stage hydroseeding or broadcast/track seeding.

B. Sow seed at the rate specified in paragraph 2.01 B.

C. Seed shall be uniformly distributed over designated areas. Apply seed using notched roller-type brillion seeder, placing seed in top one half inch of soil.

3.05 PERMANENT MARKING

A. The contractor shall provide permanent markers that deliniate the test plots.

B. Markers shall be either wood or plastic, height shall be 36" above finish grade.

C. Markers shall be placed at 50' intervals along all test plot boundries and all corners.

D. Markers shall be labled permanently per Engineer's direction.

3.06 WARRANTY AND MAINTENANCE

A. The contractor shall guarantee a satisfactory stand of the hydroseeded groundlayer. A satisfactory stand is defined as:

1. Ninety percent or more of the ground covered with grasses and wildflowers.
2. No bare spots larger than six inches square.

The contractor shall reseed all areas that do not meet these requirements between February 15 and March 15, 1993. Reseeding shall meet the original specifications.

End of Section

TEST PLOT 4

TEST PLOT 1

TEST PLOT 2 & 3

NOTE:
FIELD LOCATE LEACHATE SEEP #SP-1

BROADCAST/TRACK

DUAL STAGE HYDROSEED

DUAL STAGE HYDROSEED (EROSION CONTROL PLOTS ONLY)

BROADCAST/TRACK

DUAL STAGE HYDROSEED

BROADCAST/TRACK

DUAL STAGE HYDROSEED

I

II

III

IV

T-1

T-2

T-3

LEGEND

PLANT COMMUNITIES

- BIO-SWALE
- RIPARIAN WOODLAND
- FOREST WETLAND
- REGREEN
- MESIC PRAIRIE
- XERIC PRAIRIE

SOILS

- I — TYPE 1 - PER EXISTING SPEC.
- II — TYPE 2 - PER FES SPEC.
- III — TYPE 3 - PER FES SPEC.
- IV — TYPE 4 - PER FES SPEC.

- EROSION CONTROL PLOT (PLACE LOGS ON HALF OF PLOT)
- TEST PLOTS (TRANSECTS)
  - T-1 — ROSA NUTKANA, SYMPHORICARPOS ALBUS
  - T-2 — AMELANCHIER ALNIFOLIA, SALIX SCOULERIANA
  - T-3 — AMELANCHIER ALNIFOLIA, SALIX SCOULERIANA

NOTES

1. ALL REGREEN AREAS SHALL BE SEEDED WITH A BRILLION SEEDER.
2. ALL SEEDED AREAS NOT SPECIFIED FOR BROADCAST/TRACK SEEDING OR DUAL STAGE HYDROSEEDING (SEE THE NOTES ON THE DRAWING ABOVE) SHALL BE SEEDED WITH A BRILLION SEEDER.

0 25 50 100

NORTH

MAP SOURCE:
DAVID C. SMITH & ASSOCIATES
PARAMETRIX, INC.

METROPOLITAN SERVICE DISTRICT
SOLID WASTE DEPARTMENT

FISHMAN ENVIRONMENTAL SERVICES

MARK G. WILSON - HORTICULTURIST • WES JARRELL • MIKE FAHA & ASSOCIATES - LANDSCAPE ARCHITECTS

SUBAREA 1 TEST PLOT PLAN

ST. JOHNS LANDFILL COVER VEGETATION PLAN

METRO

2000 SW First Avenue
Portland, OR 97201-5398
(503) 221-1646
Fax 241-7417

August 27, 1992

L & H Grading, Inc.
8765 Portland Road NE
P. O. Box 9220
Salem, OR 97305

Attention: Jim Beck

RE: Request for Proposal; St. Johns Landfill Cover Vegetation Plan - Sub-Area 1 Test Plot Plan (Proposed Change Order #4)

Dear Jim:

Enclosed please find construction documents for Sub-Area 1 Site Preparation and Seeding and supporting documents required to execute the Sub-Area 1 Test Plot Vegetation Plan.

Soil profiles will be constructed for the various test plots according to the two Table of Soil Profiles at Enclosure 2. Location of the test plots are as shown on the drawing Sub-Area 1 Test Plot Plan included at the end of Enclosure 1. Please note that Test Plot 4; Transects T-1, T-2 and T-3; Plant Communities, Bioswale, Riparian Woodland and Forest Wetland will not be a part of this contract even though they are shown on the drawing.

Specification 02930 Paragraph 2.01B is in error in that the "Regreen" cover crop area will cover approximately 28 acres rather than 12 acres. See Enclosure 3.

Drawing Sub-Area 1 Test Plot Plan outlines the areas for three different planting techniques; Broadcast Track, Dual Stage Hydroseeding and Brillion Seeder. The Brillion Seeder will be used for all areas shown on the drawing for "Regreen", for the slopes east of Haul Road "D" and for the area south of project boundary adjacent to the PLC Sand Stockpile. It will also be used for the portion of Type II, III and IV

Soil Areas north of Haul Road "F": and west of Haul Road "D" which are not designated as Erosion Control Plots. The Erosion Control Plots will have logs placed in them and are most easily seeded by the Dual Stage Hydroseed technique as shown.

Please review these documents and finalize your cost proposal as soon as possible. We stand ready to assist you and answer any questions you might have to speed this process.

Sincerely

Peter J. Hillmann
Construction Coordinator

cc: George Drake, Parametrix
Paul Fishman, Fishman Environmental Services
Dennis O'Neil, Senior Solid Waste Planner
Jim Morgan, Senior Regional Planner

Enc.: 1) Construction Documents, Fishman Environmental Services, August 1992
2) Table: Sub-Area 1 Test Plot Soil Profiles
3) Plant Cover Areas

PH:clk
s:\hill\letters\L&H0827.ltr

PLANT COVER AREAS

SPECIES	AREA
*1. Regreen Cover Crop	
a. Original Regreen Area	12 acres
b. Remainder of Project Area	14.5 acres
c. Area South of Boundary Adjacent to PLC Stockpile	1.5 acres
Total	28 Acres
2. Xeric Prairie Test Plots	4.5 acres
3. Mesic Prairie Test Plots	4.0 acres
GRAND TOTAL	36.5 acres

*Specification 02930 - 2.01B is in error for total area required for "Regreen Cover Crop".

Enclosure 3