

*Sustainable CU: Environmental Improvement Initiative*  
*Sod Farm Funding Proposal*  
February 15, 2008

**1. Basic Organizational Information**

We are the Outdoor Services Division of Facilities Management. We are responsible for grounds maintenance and landscaping, trash removal, snow removal, organic waste recycling and irrigation system operation and maintenance for the general fund areas on campus. In addition we provide similar services for Parking Services, Research Properties and other 'recharge' customers under maintenance agreements. Outdoor Services currently employs 29 Full-Time Employees. During the growing season we employ 20-30 student employees.

**2. Primary Contacts**

Zac Cameron  
Assistant Turfgrass Manager  
Email: [Zachary.cameron@colorado.edu](mailto:Zachary.cameron@colorado.edu)  
Phone: 303-735-3635

Ryan Heiland  
Assistant Outdoor Services Manager  
Email: [ryan.heiland@colorado.edu](mailto:ryan.heiland@colorado.edu)  
Phone: 303-492-4955

**3. Project Description**

The Outdoor Services Turf Management team would like to create an "in-house" sod farm complete with dedicated irrigation. A proposed spot has already been selected. The area consists of a 50' x 50' section for our bluegrass/ryegrass mix and a 90' x 30' section for our Armadillo (long) turf mix. The sod farm will be maintained by the Outdoor Services Turf Management team and used for sod replacement in various general fund locations on campus. The proposed sod farm will be started from scratch and grown in by seed under the care of the turf managers.

Armadillo Long Turf Mix

The Armadillo turf mix is a turf that we have selected to use for areas where pure native turf does not provide the correct aesthetics values. The turn over of the Armadillo turf farm will not be as rapid as the sod farm so the need for a quickly available nitrogen source is not the same. In this situation we are going to go with an all natural approach using the nitrogen that will be released from the A-1 ProGro™ organic compost that will be incorporated into the soil. To help supplement the quick needs of young seeds we will

be using our soil amend product. This product contains fish emulsion, sea weed extract, Humic acid, and a wetting agent. We will apply the product as a foliar application during the initial germination stages and with the longer establishment time we can afford to allow the turf to mature naturally without causing a problem of availability. This Armadillo turf farm is going to also allow us to test other organic fertilizers for their efficacy and response.

Kentucky Bluegrass/Ryegrass

Unlike the Armadillo turf farm the KBG sod farm will be used frequently and will require rapid re-establishment. Since there will be a relatively high demand for use of this type of sod, there will be a need for regeneration through out the entire growing season. With this short time frame there is a large need for a quickly available nitrogen source, meaning we will not be able to use a slow release (organic) fertilizer on this plot. The time between establishment and maturity needs to be as short as possible to make sure we always have KBG sod available for any situation that may arise. Situations can come up relatively quick from a car doing donuts or damage from a vehicle driving off the sidewalk or even irrigation system failures. The difference is the Armadillo turf will be used in planned project design and prepared with an installation time that is far enough out to account for the added maturation time of using natural organic fertilizers.

**4&5. Project Scope & Timeline & Budget**

Facilities Management Outdoor Services Division will be the sole caretaker with this proposed project. Once funding is secured, our timeline will start almost immediately. We will demo existing site, add irrigation, and prep the soil. Once the soil is prepped we will then add our seed cultivars to the soil and begin to germinate seed. Throughout spring and summer, growth and density will be developed. By early fall the sod should be ready for use. Currently we have one student and one Full-Time Employee readily available to begin work on this project and to maintain it. Requested funding is as follows:

<i>Armadillo Turf seed (50 lbs.):</i>	<i>\$ 195.00</i>
<i>Irrigation parts &amp; supplies*:</i>	<i>\$ 2,149.00</i>
<i>Clean Fill Soil (415 cu. yds.):</i>	<i>\$ 6,700.00</i>
<i>Sod Cutter*:</i>	<i>\$ 4,200.00</i>
<i>A1 Organics ProGro Compost (32 cu. yds.):</i>	<i>\$ 952.00</i>
<i>Growth Tarps*:</i>	<i><u>\$ 1,088.00</u></i>
<b><i>Total Requested Funds</i></b>	<b><i>\$15,284.00</i></b>

\* See attachments A, B & C for additional details.

Once the sod farm is established, on-going maintenance of the sod farm will be funded through the turf management program. The sod farm will be put onto the regular cultural maintenance schedule for all turf on campus.

## 6. **Environmental Impact**

As stated in the Facilities Management Integrated Turf Management Plan, the edges around fields, light poles, tree rings, irrigation boxes, and next to sidewalks tend to be the hardest areas of turf to maintain without the use of herbicides and fertilizers. This is due to the fact that when you get close to an edge, it becomes increasingly difficult to use deep tine aerators, slit seeders, spreaders, and other equipment that are vital to a good cultural maintenance program. The inability to utilize this equipment effectively leads to soil compaction, uneven over-seeding, and less than optimal fertilization. Additionally, the edges of a turf area, particularly those adjacent to sidewalks, are most susceptible to damage from construction activity, snow removal efforts (plowing, Mag Chloride), and vehicle traffic, as well as the excessive heat radiated from hard surfaces such as concrete and stone.

As these areas are damaged or disturbed they become more hospitable to the establishment of weeds. As the edges become infested with weeds they become a source of weed seeds that then spread into other parts of the turf. Essentially, the edges are a nursery of sorts for thousands of weed seeds. If the decision is made to control weeds with herbicides it is also more difficult to spray near edges as we are very careful not to allow for overspray that may impact people, water, trees, and other vegetation.

The current approach to these disturbed edges is to over-seed the bare dirt in an attempt to reestablish turf. While this effort is successful in filling in the turf canopy, it is not timely enough to prevent new weeds from establishing themselves. In order to use sod in these areas, the campus would have to buy far more sod than is actually needed in order to have a vendor deliver to campus. As discussed previously, these edges require the use of synthetic pesticides to prevent the spread of weeds into other areas. By growing this sod farm on campus we will be eliminating most purchases of sod from outside vendors and improving our ability to combat weeds without the use of synthetic herbicides.

A review of the environmental benefits of this project is summarized below:

- Prevent establishment and spread of weeds in disturbed areas and areas close to objects (light poles, tunnel hatches, curbs, valve boxes, trees, memorial plaques, benches).
- Reduced pesticide use on campus through the prevention of weeds.
- Continual replacement of edges with new sod, regardless of a particular disturbance. All remaining sod will be installed annually before the end of September.
- In-house sod grown with fewer synthetic pesticides (at least 50% less) and fertilizers as well as using less toxic chemicals (reviewed by campus IPM coordinator) than commercial operations.
  - Armadillo sod can be grown using organic fertilizer.
- Will allow for experimentation with additional organic fertilizers and soil amendments, a major goal of the Integrated Turf Management Plan.
- In-house sod will be grown using the raw water irrigation system.
- Sod farm allows FM to grow varieties of turf that require less water and fertilizer that are not currently available commercially.

- Unlike commercial operations, the FM sod farm will not use Peat, a non-renewable resource, as a soil amendment. Instead we will use top soil and locally grown compost.
- Reductions in diesel truck traffic as sod deliveries are reduced.
- Improved aesthetics.

**7. CU Quality of Life**

By having this sod farm readily available, we will be able to reduce the use of synthetic pesticides that may be applied to weed infested areas that can otherwise be replaced with our home grown sod. Better quality of turf will enhance the beauty of the Boulder campus and will be beneficial to the overall landscape surroundings.

**8. Saving Money**

Our sod farm will, in the long run, save the university money. Instead of bringing in an outside contractor for a repair due to vandalism, snow plow damage, tire ruts, and/or construction impacts, the turf management team would prep the disturbed area and cut our own sod to install. In addition to repairing unplanned damage, other small planned projects could be done in-house as well.

**9. Project Longevity**

The sod farm will be permanently maintained through Outdoor Services, with students and/or full-time employees, once start-up funding is secured. The sod farm will cut costs associated with purchasing sod from outside vendors. The location was selected by the turf managers and the campus Landscape Architect. This location may be built out in the long-term future and if that occurs part of that project's construction cost will be to move the sod farm to a new location.

**10. Social and Environmental Equity and Justice**

Our goal is to continue to reduce synthetic chemical use within the Outdoor Services division and thereby further reduce exposure to frontline staff and student employees who are consistently working out in the field.

## Attachment A

### *Irrigation Materials*

<u>Material</u>	<u>Quantity</u>	<u>Cost</u>
10" X 1.5" saddle tap	2	\$300
1.5" class 200 pvc pipe	500'/25 sticks	\$560
Hunter 1-25 spray heads	4	\$240
Hunter 1-20 spray heads	8	\$204
1.5" Hunter Electric Valves	2	\$236
1.5" ball valves	2	\$40
1.5" fipt.X fipt. elbow	2	\$10
1.5" unions	2	\$94
1.5" mipt.X mipt. npls. 12"	2	\$15
1.5" mipt.X mipt. npls. 3"	6	\$20
1.5" mipt.X slip. adpt.	4	\$24
.5" swing pipe	1 roll	\$40
purple pipe primer	1 qt.	\$19
clear pvc glue	1 qt.	\$19
1.5" X 1.5" X .75" pvc tees	9	\$63
1.5" X 1.5" X 1.5" pvc tees	1	\$6
1.5" X 1.5" X 1" pvc tees	1	\$7
1.5" X 1" pvc elbows	3	\$14
1.5" X 1.5" pvc elbows	3	\$6
1" X .75" fipt. reducer	2	\$2
funny L's .75" X .5"	24/1 bag	\$24
Wire Nutz	4	\$2
Db connectors	4	\$13
Valve boxes	2	\$52
Round Valve box	1	\$14
Valve box Lids	2	\$22
Round Valve box Lid	1	\$7
Quick Coupler	1	\$55
Quick Coupler swing joint	1	<u>\$41</u>
	<b>GRAND TOTAL=</b>	<b>\$2149.00</b>

# Attachment B

## *Sod Cutter*

The sod cutter is a Ryan Jr. Sod Cutter that is sturdy, operator-friendly, and self-propelled.

**5.5-hp Model** 18" cutting width Jr. Sod Cutter

**MODEL #** 544945A

**Engine** 4-cycle Honda® GX160; recoil starter; on/off switch; low-oil alert

**Displacement** 9.9 cu. in. (163 cc)

**Oil Capacity** 0.63 qt. (0.6 L)

### Unit

**Clutch** Spring-loaded belt tightener

**Drive** A-section V-belt engine to gear case; double roller chain to blade eccentric shaft; gears and roller chain to traction wheels; transmission has separate dog clutches to engage cutting blade and traction drive

**Drive Wheels** Two 8 in. (203 mm) diameter, knob-tread; rubber-vulcanized to cast-iron hubs

**Lubrication** Oil splash in gear case

**Speed** Up to 135 ft./min. (41 m/min)

### Dimensions

**Cutting Width** 18 in. (457 mm)

**Cutting Thickness** Adjustable to 2.5 in. (64 mm)

**Overall Size** 19 in. W x 53 in. L x 39 in. H (0.5 m x 1.3 m x 1 m)

### WEIGHT

18 in. Model 356 lbs. (162 kg)

**Total Cost: \$4200**

## **Attachment C**

### ***Growth Tarps***

For our growth tarps we have chosen a product made by CoverMaster. The product is called the Evergreen Radiant Turf Blanket System.

Features:

- Allows air, water and sunlight to penetrate the cover.
- Lightweight and easy to install and remove in minutes.
- Promotes early and more rapid germination and stronger, deeper roots.
- Has a silver coating with the result that 25% more heat is radiated back into the turf.
- Can be cut to fit any shape or around any obstacle, without affecting the integrity of the whole cover. This is due to the unique patented construction of the covers which does not require hemming to keep the edges from falling apart.
- Delays dormancy of grass in the fall.
- Greatly reduces risk of winter kill.
- Custom fit for our unique areas.

The turf blanket is made of permeable material, is a uniquely woven, translucent polyethylene with a patented lace coating. UV treated, rot and mildew resistant, it will not show any significant wear or degradation by sunlight even after years of regular use.

Cost:

<b>Evergreen Radiant 50' x 50'</b>	<b>\$525.00</b>
<b>Evergreen Radiant 30' x 90'</b>	<b><u>\$563.00</u></b>
<b>Total</b>	<b>\$1088.00</b>