

STEWARDSHIP INCENTIVES PLAN

for

TOM BENNETT
1297 South One Hundred Fourth Street
Broomfield, CO 80020
(303) 666-0141

S1/2 NW1/4 NE1/4 SE1/4, Sec 16, T1S, R69W, S.P.M.
(5.2 Acres)

Prepared By:

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January 7, 1997

This management plan has been prepared at my request to guide my Stewardship management activities which I voluntarily apply on my property. I believe that activities recommended in this plan are appropriate to meet my objectives and will benefit the natural resources on my property. I intend to apply the recommended practices and to maintain them for a period of at least ten years, thus helping me to be a good steward of the forest and associated resources entrusted to me on my property.

Tom Bennett

January 7, 1997

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OBJECTIVE

To create a windbreak to protect the house and visual screens to block the view from nearby industrial sites to the south and west. To create wildlife shelters and food sources and to improve the aesthetic qualities of the yard.

DESCRIPTION

The property is located 0.2 miles west side of 104th Street and 0.4 miles north of Dillon Road.

The site is currently occupied by two houses and a shed/shop. Existing plantings surround the buildings, but are aging and in need of maintenance and interplanting. There is a heavy grass sod on the site which is level.

The bedrock is Laramie shale, a formation of late Cretaceous age. The site is located on Broadway alluvium, a gravel deposit of late Pleistocene (Pinedale) age. This is capped by a well-developed Nunn soil.

Nunn Soil Series¹

The Nunn series is made up of deep, well-drained soils. These soils formed on terraces and valley side slopes in loamy alluvium. Slopes are 0 to 9 percent. Elevations are 4,900 to 5,500 feet. The native vegetation is mainly short and mid grasses. Annual precipitation is 12 to 18 inches. Mean annual air temperature is 48° to 52° F., and the frost-free season is about 140 to 155 days.

In a representative profile the surface layer is grayish-brown clay loam about 10 inches thick. The subsoil, about 20 inches thick, is brown and very pale brown clay that grades to clay loam. It is noncalcareous in the upper part, but contains soft lime segregations in the lower part. The substratum is strongly calcareous, very pale brown clay loam extending to a depth of 60 inches or more. In the surface layer, soil reaction is neutral. In the upper part of the subsoil, it is mildly alkaline, and in the lower part of the subsoil and in the substratum it is moderately alkaline.

¹Moreland, Donald E. and Moreland, Ronald C., Soil Survey of Boulder County Area, Colorado, USDA - Soil Conservation Service, Denver, 1975.

Nunn soils have slow and moderately slow permeability. Available water capacity for the profile is high. Roots can penetrate to a depth of 60 inches or more.

The acreage for these soils is used mainly for irrigated and dry-land crops and for pasture.

Representative profile of Nunn clay loam, 0 to 1 percent slopes, located 1,320 feet east and 1,000 feet north of center of sec. 7, T. 2 N., R. 69 W.:

- Ap - 0 to 10 inches, grayish-brown (10YR 5/2) clay loam, very dark grayish brown (10YR 3/2) when moist; weak, medium subangular blocky structure that parts to weak, fine, granular; hard, firm; neutral; clear, smooth boundary.
- B21t - 10 to 18 inches, brown (10YR 4/3) clay, dark brown (10YR 3/3) when moist; moderate, medium, prismatic structure that parts to strong, medium and fine, angular and subangular blocky; very hard, very firm; thin, continuous clay films on ped faces; mildly alkaline; clear, wavy boundary.
- B22tca - 18 to 23 inches, brown (10YR 5/3) clay, brown (10YR 4/3) when moist; moderate, medium, prismatic structure that parts to moderate, medium, subangular blocky; very hard, very firm; thin, nearly continuous clay films on ped faces; strongly calcareous, with few, fine and medium, prominent, white (10YR 8/2) lime segregations; moderately alkaline; clear, wavy boundary.
- B3tca - 23 to 30 inches, very pale brown (10YR 7/3) clay loam, brown (10YR 5/3) when moist; weak, coarse, prismatic structure that parts to moderate, medium, subangular blocky; hard, firm; few, patchy clay films on ped faces; strongly calcareous, with few, fine and medium, prominent, white (10YR 8/2) lime segregations; moderately alkaline; gradual, wavy boundary.
- Cca - 30 to 60 inches, very pale brown (10YR 7/4) clay loam, yellowish brown (10YR 5/4) when moist; massive; slightly hard, friable; strongly calcareous; moderately alkaline.

The A horizon ranges from 6 to 14 inches in thickness and from sandy clay to clay loam in texture. The B2t horizon ranges from 4 to 15 inches in thickness and from heavy clay loam to clay in texture. Depth to calcium carbonate accumulation ranges from 14 to 30 inches. The C horizon ranges from heavy loam to clay loam

in texture. Typically the sand and gravel substratum is below a depth of 60 inches, but in places it is between depths of 40 and 60 inches. As a result of excessive irrigation in some areas, a water table is present at a depth of between three and five feet.

WILDLIFE

Though not a primary purpose, wildlife use of the property is an important secondary purpose of this planting. Small game and non-game birds are desired.

PLANTING PROJECTS

WINDBREAK:

Planting A:

Purpose: To protect the houses from westerly winds, especially during the winter.

Description: This is a three-row planting. It is 363 feet long, 16 feet wide (36 feet with buffers), occupies 0.3 acres and benefits 3.3 acres. This component runs from along the entire west edge of the property on the west side of and in gaps in the existing windbreak.

The outer row will require 90 shrubs on a four-foot spacing. Workable species include American plums, cottonasters, lilacs, three-leaf sumacs, Nanking cherries, and caraganas.

The middle row will require 60 medium-sized trees on a six-foot spacing. Workable species include Rocky Mountain juniper and eastern red-cedar for year-round protection, and caragana, and Russian-olive for summer only protection.

The inside row will require 45 tall-growing trees on an eight-foot spacing. Suitable species include ponderosa pine, Siberian or Chinese elms, or eastern or plains cottonwoods.

Within a particular gap in the existing planting, each new row should consist of a single species only. Species mixing, which is unavoidable in this planting, will result in suppression of some trees and resulting "holes" as older trees eventually decline and die.

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At least one of the three rows needs to be a conifer to provide winter protection.

This component will also require 1089 feet of weed barrier (6-foot width minimum, 8-foot width preferred) and 1200 6-inch, 11-gauge wire staples (Square ends are easier to place.).

Cost summary for Planting A:

Seedlings:

90 shrubs @ \$21.00/50:	\$ 37.80
60 Rocky Mtn. junipers @ \$28.20/30:	56.40
<u>45 ponderosa pines @ \$28.20/30:</u>	<u>42.30</u>
195 Sub-Total:	\$ 136.50
Bulk Discount (0%):	<u>0.00</u>
SEEDLING TOTAL:	\$ 136.50
Sales Tax (4.15%):	<u>5.66</u>
TOTAL, SEEDLINGS:	\$ 142.16

Materials:

1200 Staples @ \$54.00/1000:	\$ 64.80
1089' Weed Barrier @ \$108.00/300':	<u>392.04</u>
Sub-Total:	\$ 456.84
Sales Tax (6.9%):	<u>31.52</u>
TOTAL, MATERIALS:	\$ 488.36

Labor:

195 Seedlings planting @ \$2.00 ea.:	\$ 390.00
363 Yards weed barrier @ \$1.08/yd.:	<u>392.04</u>
TOTAL, LABOR:	\$ 782.04

GRAND TOTAL*	\$1412.57
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Planting B:

Purpose: To protect the houses northwesterly winds, especially during the winter.

Description: This is a three-row planting. It is 400 feet long, 16 feet wide (36 feet with buffers), occupies 0.3 acres and benefits 3.7 acres. This component runs along the northwest edge of the property at its western end.

The outer row will require 100 shrubs on a four-foot spacing. Workable species include American plums, cottonasters, lilacs, three-leaf sumacs, Nanking cherries, and caraganas. These shrubs should be of a single species.

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The middle row will require 66 medium-sized trees on a six-foot spacing. Workable species include Rocky Mountain juniper and eastern red-cedar for year-round protection, and caragana, and Russian-olive for summer only protection.

The inside row will require 50 tall-growing trees on an eight-foot spacing. Suitable species include ponderosa pine, Siberian or Chinese elms, or eastern or plains cottonwoods.

As with Planting A, species-mixing should be avoided as much as possible; however, with older trees already established, some mixing will occur.

At least one of the three rows needs to be a conifer to provide winter protection.

This component will also require 1200 feet of weed barrier (6-foot width minimum, 8-foot width preferred) and 1400 6-inch, 11-gauge wire staples (Square ends are easier to place.).

Cost summary for Planting B:

Seedlings:

100 shrubs @ \$21.00/50:	\$ 42.00
66 Rocky Mtn. junipers @ \$28.20/30:	62.04
<u>50 ponderosa pines @ \$28.20/30:</u>	<u>47.00</u>
216 Sub-Total:	\$ 151.04
Bulk Discount (0%):	<u>0.00</u>
SEEDLING TOTAL:	\$ 151.04
Sales Tax (4.15%):	<u>6.27</u>
TOTAL, SEEDLINGS:	\$ 157.31

Materials:

1400 Staples @ \$54.00/1000:	\$ 75.60
1200' Weed Barrier @ \$108.00/300':	<u>432.00</u>
Sub-Total:	\$ 507.60
Sales Tax (6.9%):	<u>35.02</u>
TOTAL, MATERIALS:	\$ 542.62

Labor:

216 Seedlings planting @ \$2.00 ea.:	\$ 432.00
400 Yards weed barrier @ \$1.08/yd.:	<u>432.00</u>
TOTAL, LABOR:	\$ 864.00

GRAND TOTAL*	\$1563.93
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Thicket Plantings:

Purpose:

To provide cover and a food source for non-game wildlife.

Description: There will be two thickets: one in the northwest corner of the windbreak and one along the south property line at its west end. The north one is triangular in shape and extends 93 feet along the windbreaks; it is 135 feet along the diagonal.

The northwest planting will be an American plum or Nanking cherry thicket, containing 272 seedlings on a '4'X4' spacing. It will require 4800 square feet of weed barrier (2.67 6'X300' rolls) and 900 6" staples.

The southwest planting will be a ponderosa pine thicket, containing 68 seedlings on an 8'X8' spacing. It will be a rectangle, 135'X32'. It will also require 4800 square feet of weed barrier and 900 6" staples.

Costs are shown for each thicket separately:

Northwest (Plum) Thicket (C):

Seedlings:

272 shrubs @ \$21.00/50:	\$ 114.24
Sales Tax (4.15%):	<u>4.74</u>
TOTAL, SEEDLINGS:	\$ 118.98

Materials:

900 Staples @ \$54.00/1000:	\$ 48.60
800' Weed Barrier @ \$108.00/300':	<u>288.00</u>
Sub-Total:	\$ 336.60
Sales Tax (6.9%):	<u>23.23</u>
TOTAL, MATERIALS:	\$ 359.83

Labor:

272 Seedlings Planting @ \$2.00 ea.:	\$ 544.00
266 Yards weed barrier @ \$1.08 ea.:	<u>287.28</u>
TOTAL, LABOR:	\$ 831.28

GRAND TOTAL*	\$1310.09
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Southwest (Pine) Thicket (D):

Seedlings:

68 ponderosa pines @ \$28.20/30:	\$ 63.92
Sales Tax (4.15%):	<u>2.65</u>
TOTAL, SEEDLINGS:	\$ 66.57

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Materials:

900 Staples @ \$54.00/1000:	\$ 48.60
800' Weed Barrier @ \$108.00/300':	<u>288.00</u>
Sub-Total:	\$ 336.60
Sales Tax (6.9%):	<u>23.23</u>
TOTAL, MATERIALS:	\$ 359.83

Labor:

68 Seedlings Planting @ \$2.00 ea.:	\$ 136.00
266 Yards weed barrier @ \$1.08 ea.:	<u>287.28</u>
TOTAL, LABOR:	\$ 423.28

GRAND TOTAL* \$ 849.68

*Based on 1996 prices. Prices are approximate and subject to change. Bulk rates are available if you do several projects at once and order enough trees. If two or three projects are done at the same time, the leftovers from each can be consolidated and the order reduced slightly.

MAINTENANCE

The use of weed barrier just about eliminates the need for maintenance, if it can be placed by mid-June (preferably June 1st). The only thing needed is an occasional inspection tour to re-anchor weed barrier that comes loose. Watering will increase survival and growth, but it is not needed.

You can expect about 15% loss during the first year a planting is in the ground. One year after planting, seedlings usually look terrible, but are recovering from shock by the end of the third year. Rabbit guards may be needed to protect the seedlings from our furry friends. By the third year, transplant losses should no longer be a problem. A seedling is considered established after surviving five years.

The wall-to-wall weed barrier approach will minimize grasshopper problems, but to be sure, you should mow the grass and weeds around the plantings during the early part of each season. After mid-July, quit mowing so that weeds can come up and provide some protection from winter winds.

Grass is a vigorous competitor with tree seedlings. It drinks up water and adds compounds to soil to poison competition. Seedlings grow much better if they don't have to fight it.

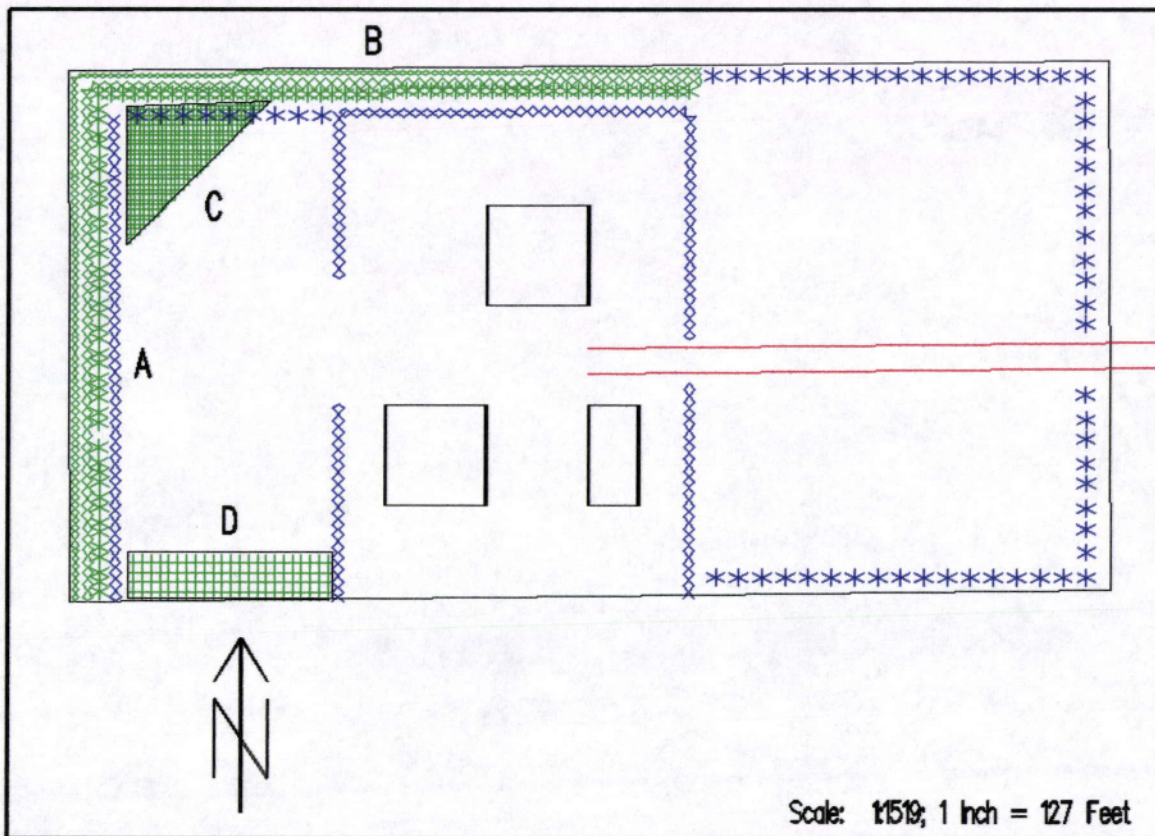
Weed barrier is a woven plastic cloth. It kills grass. Laid around tree seedlings, it provides needed relief from competition.

Maintenance is the landowner's responsibility. The above prices do not include things like re-anchoring weed barrier after a storm, or watering seedlings should drought threaten the planting during the first summer (Although, this can be arranged.).

Respectfully Submitted By:



Douglas J. Stevenson
Assistant District Forester



Tom Bennett

S1/2 NW1/4 NE1/4 SE1/4, Sec 16, T1S, R69W, S.P.M.

—	Property Line	~~~~~	Shrubs
==	Road	~~~~~	Junipers
□	House	~~~~~	Trees
~~~~~	Existing Plantings	~~~~~	Plum Thicket
***	Existing Saplings	~~~~~	Pine Thicket

Drawn By: Douglas J. Stevenson on PC ARC/INFO

December 18, 1996