

MANAGEMENT PLAN
FOR
BOONE COUNTY FAIRGROUNDS



Sunrise Environmental Consulting

Dawning new light on resource planning

April 13, 2000

SUNRISE ENVIRONMENTAL CONSULTING

in cooperation with Boone County Parks and Recreation Commission
and the University of Missouri-Columbia

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INTRODUCTION

<u>SECTION</u>	<u>PAGE</u>
Introduction	1
Vision Statement	2
Mission Statement	2
Background	
History.....	2
Location	3
Site Analysis	3
Forest Inventory.....	5
Plant Inventory.....	11
Aquatic Inventory	12
Wildlife Inventory.....	17
Soil Inventory.....	21
Existing Structures	25
Boone County Demographics	27
Recreation Facilities Inventory	28
Community Recreation Needs	32
Site Analysis Summary.....	36
Land Use Considerations	37
Boone County Park	38
Boone County Fairgrounds	38
Northwest Property	39

Boone County Jail.....	40
General Considerations.....	41
Strategic Issues	
Issue 1 – Natural Resources.....	43
Issue 2 – Recreation	43
Programs	
Operational Plans and Budgets	
Issue 1 – Natural Resources.....	44
Native Prairie and Wildflower Area Establishment.....	45
Tree Landscaping.....	56
Stream Bank Stabilization.....	64
Nature/Fitness Trail	67
Issue 2 – Recreation	70
Roads and Parking	71
Baseball/Softball Complex	73
Neighborhood Park Establishment	78
Picnic Area and Shelters	81
Program Summary	84
Overall Management Plan Budget	85
Program Implementation, Support, and Management	88
Appendices	
Appendix A – Site Analysis Checklist.....	90

Appendix B – Common Weeds of Missouri.....	91
Appendix C – Wildlife Species Associated with Urban Areas (MoFWIS).....	94
Appendix D – Wildlife Habitat Assessment Guideline	97
Appendix E – Habitat GAP Analysis.....	99
Appendix F – BCFG Schedule	104
Appendix G – Windbreak Planting Scheme	106
Appendix H – Kiosk	107
References	108

INTRODUCTION

In 1999, Boone County purchased 134 acres north of the Boone County Fairgrounds (BCFG) to develop the area to meet the growing need for recreational areas and green-space in the county and surrounding areas of Columbia. To do this, the Boone County Parks and Recreation Commission (BCPRC) solicited our help, Sunrise Environmental Consulting (SEC), through a cooperative agreement with the University of Missouri-Columbia (MU).

SEC is an organization composed of senior undergraduate students in natural resources, grouped in two specialized divisions. Our recreational planning division is dedicated to the creation of sensible and user-friendly parks and recreational plans. The recreational planning division works in conjunction with our natural resources division to carefully consider the potential impacts of recreational activities on forestry, fish and wildlife populations.

Our planning horizon for the BCFG properties is five years. We feel this amount of time is sufficient to initiate our suggested programs. We also addressed future land use considerations and program maintenance and support beyond five years.

The Boone County Fairgrounds has much to offer the people of Boone County. The following plan was written for the BCPRC by incorporating the inherent beauty of native prairie and forest fauna to accent the BCFG and improve the fair experience. Based on the most recent Boone County surveys and the state and national standards, we developed a plan that, given the resources of BCFG, best meets the recreational needs and desires of the nearly 113,000 citizens (US Census 1990) of Boone County. We feel confident our plan will draw people and wildlife alike to enjoy the many wonders Boone County Fairgrounds has to offer.

VISION

SEC's vision is to establish a multi-use, year-round recreational area to benefit the increasing population of Boone County. We envision an area that will provide equal opportunity for diverse recreational interests while enhancing the heritage, natural integrity, and aesthetics of BCFG's property.

MISSION

SEC's mission is to develop a management plan that will continue to support current BCFG activities and use additional land for current and future recreational development.

BACKGROUND

History

The Boone County Fair was first held in 1835 in the eastern suburbs of Columbia. At 165 years old, it is the oldest fair west of the Mississippi (George June 28 1999). Run by the Boone County Agricultural and Mechanical Society, the fair underwent several site changes over the years. In 1992 the society established the Boone County Fair Board Inc. in order to purchase the present fairground properties on Oakland Gravel Road, the former site of E. W. "Cotton" Woods Memorial Airport (George June 28 1999). The Society paid Ron and Vicky Shy \$250,000 and relinquished the former fairground site at Clinkscales Road and Ash Street for the new site (George June 28 1999). This acquisition transformed the Society into year round operators. The Fair Board borrowed \$2.3 million from First National Bank to build the BCFG Coliseum as well as several other buildings to compensate for the increased operation (George June 28 1999). Boone Electric Corporation then made a one-time investment of \$200,000 in air-

conditioning and heating improvements in the Coliseum in exchange for a 50-year lease which grants the company six free days of use per year (George et al. 1999).

These financial loans along with high operating costs, maintenance costs, and a \$600 per day interest rate, led the Society into financial trouble. In May of 1999, with a \$2.6 million debt, the bank was ready to foreclose (George June 20 1999). The Boone County Commission saw the land with its opportune location as a valuable addition to the county. The county was prepared to purchase the site using \$800,000 from the general revenue fund and \$2 million from the Boone Hospital Center Profits (Klepper 1999). Currently, Boone County has spent \$2.59 million for the area (Shields 1999).

Location

The BCFG encompasses about 225 acres in central Missouri, just north of Columbia city limits, off of Highway 63, on Oakland Gravel Road (Figure 1). Sixty-five acres of this land, currently used for the fair, is zoned for commercial use and the remaining area, approximately 160 acres north of the commercial zone, is available for future plans.

SITE ANALYSIS

SEC conducted three site investigations of the BCFG area. We developed a field checklist (Appendix A) to identify areas of concern and document the overall condition of the property. We also analyzed available data from the University of Missouri-Columbia, Columbia Parks and Recreation, Boone County Parks and Recreation, Missouri Department of Conservation, Missouri Department of Natural Resources, U.S. Geological Survey, U.S. Department of Agriculture, and the U.S. Fish and Wildlife Service. Our research is reflected in the following site analyses': forest inventory, plant inventory, aquatic inventory, wildlife

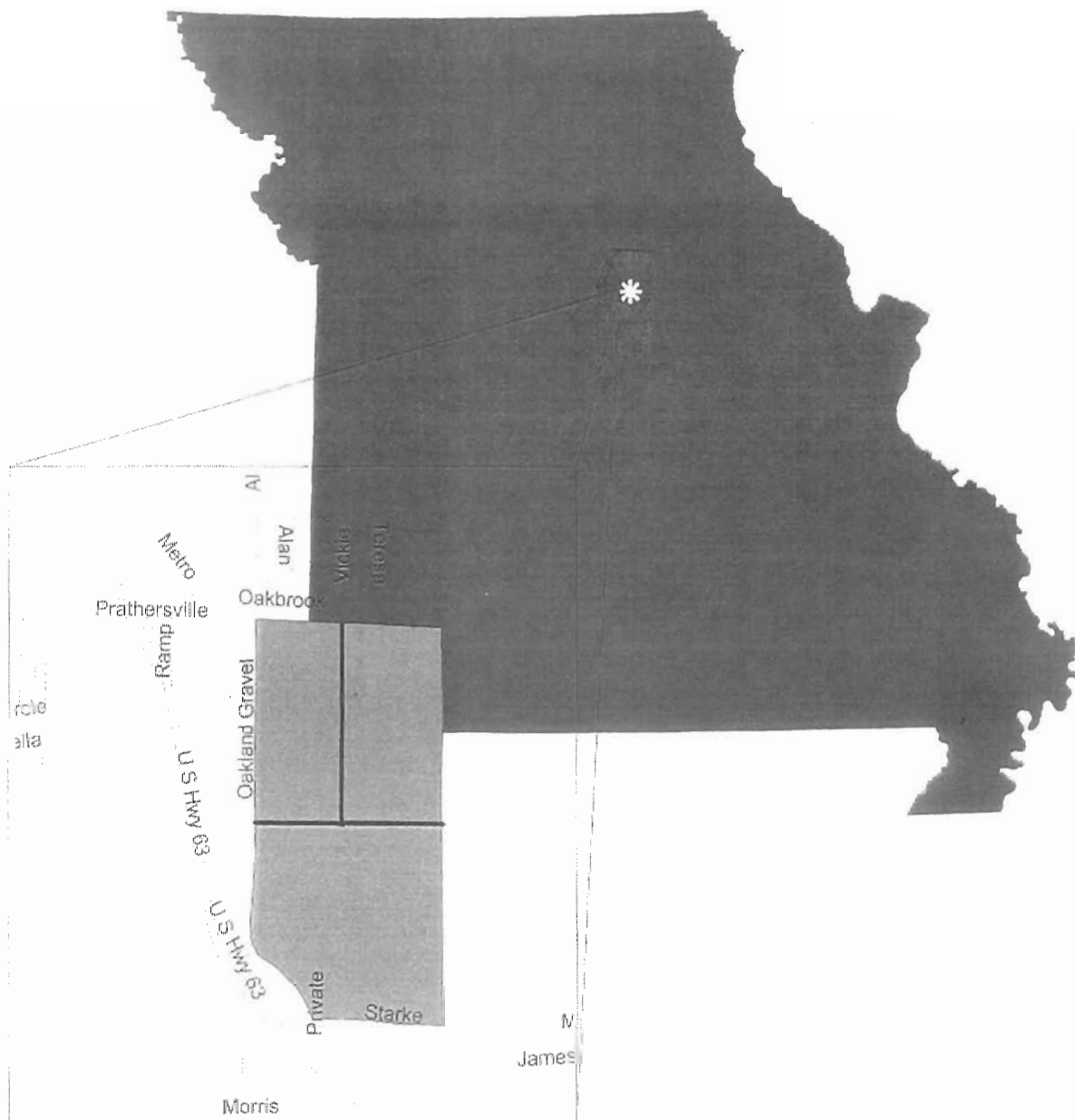


Figure 1: Location of the Boone County Fairgrounds

inventory, soil inventory, existing structure inventory, Boone County demographics, recreational facilities inventory, and community recreation needs.

Forest Inventory

All trees, 4-inch diameter or greater, was counted and identified on the BCFG property. Most forest cover occurs along stream corridors. The general health of the trees in the BCFG property is poor. Observations include severely exposed roots, evidence of disease, broken tops, and poor form. However, some of these trees provide potential benefits for wildlife habitat such as den trees and/or food sources.

Species providing wildlife mast (palatable fruit and/or seeds) were also identified. These species include: *Carya cordiformis*, *Carya ovata*, *Celtis laevigata*, *Celtis occidentalis*, *Diospiros virginiana*, *Juglans nigra*, *Maclura pomifera*, *Prunus serotina*, *Quercus alba*, *Quercus bicolor*, *Quercus imbricaria*, *Quercus macrocarpa*, *Quercus meuhlenbergii*, *Quercus rubra*, and *Quercus velutina*.

Relative density of each species and the Shannon Diversity Index (H') was calculated for each stand based on data collected. Shannon Diversity takes into account the number of individuals of a species related to the total number of species in a stand. This formula to measure species diversity is as follows:

$$H' = - \sum_{i=1}^k p_i \log p_i \text{ (Zar 1996)}$$

where k = # of species, p_i = proportion of total sample belonging to the i^{th} species. The diversity index was calculated as well as the maximum index possible (H'_{max}) for the given number of species in each stand as:

$$H'_{\text{max}} = \log_2 k$$

where k = # of species. The closer the value of the calculated diversity index to the maximum index possible, the more diverse the stand is considering its potential. A value lower than two is indicative of poor diversity (Muzika 1998).

Forest cover was divided into five stands (Eastern Tributary of Bear Creek, South Bear Creek, Adkins Tract—Southern Half, Adkins Tract—Northern Half, and Newton Tract) (Figure 2) (Tables 1A-E).



0.25 0 0.25 0.5 0.75 1 Kilometers

A Stand A

B Stand B

C Stand C

D Stand D

E Stand E

Stand Boundaries
Boone County Fairground Boundary

Figure 2: Forest Inventory Stands

Tables 1, A-E: Tree species' counts, relative densities, and Shannon diversity indices separated by location on the BCFG. Whether or not the species produces mast for wildlife is also listed.

Table 1A

STAND A – Eastern Tributary of Bear Creek					
Common Name	Scientific Name	Count	Relative Density	Wildlife Mast Producers	Shannon Diversity
Hackberry	<i>Celtis laevigata</i>	183	29.8%	X	-0.521
shingle oak	<i>Quercus imbricaria</i>	167	27.2%	X	-0.511
American elm	<i>Ulmus americana</i>	75	12.2%		-0.371
silver maple	<i>Acer sacharrinum</i>	51	8.3%		-0.298
black walnut	<i>Juglans nigra</i>	33	5.4%	X	-0.227
black cherry	<i>Prunus serotina</i>	23	3.7%	X	-0.178
bitternut hickory	<i>Carya cordiformis</i>	18	2.9%	X	-0.149
American sycamore	<i>Platanus occidentalis</i>	15	2.4%		-0.131
honey locust	<i>Gleditsia triacanthos</i>	11	1.8%		-0.104
green ash	<i>Fraxinus pennsylvanica</i>	10	1.6%		-0.097
Chinkapin oak	<i>Quercus muhlenbergii</i>	5	.8%	X	-0.057
sugarberry	<i>Celtis laevigata</i>	4	.7%	X	-0.047
black locust	<i>Robinia pseudoacacia</i>	4	.7%		-0.047
slippery elm	<i>Ulmus rubra</i>	4	.7%		-0.047
cottonwood	<i>Populus deltoides</i>	3	.5%		-0.038
Eastern red cedar	<i>Juniperus virginiana</i>	2	.3%		-0.027
persimmon	<i>Dyospiros virginiana</i>	2	.3%	X	-0.027
shagbark hickory	<i>Carya ovata</i>	1	.2%	X	-0.015
swamp white oak	<i>Quercus bicolor</i>	1	.2%	X	-0.015
boxelder	<i>Acer negundo</i>	1	.2%		-0.015
Eastern redbud	<i>Cercis canadensis</i>	1	.2%		-0.015

Stand A contains 21 species and has a total of 614 trees. The Shannon diversity index is 2.935 and the maximum Shannon diversity index is 4.392.

Table 1B

STAND B – South Bear Creek					
Common Name	Scientific Name	Count	Relative Density	Wildlife Mast Producers	Shannon Diversity
river birch	<i>Betula nigra</i>	70	34.8%		-0.530
green ash	<i>Fraxinus pennsylvanica</i>	30	15.4%		-0.416
silver maple	<i>Acer sacharrinum</i>	27	13.4%		-0.389
Northern catalpa	<i>Catalpa speciosa</i>	23	11.4%		-0.358
American elm	<i>Ulmus americana</i>	15	7.5%		-0.279
Eastern red cedar	<i>Juniperus virginiana</i>	8	4.0%		-0.185
American sycamore	<i>Platanus occidentalis</i>	6	3.0%		-0.150
black locust	<i>Robinia pseudoacacia</i>	5	2.5%		-0.133
hackberry	<i>Celtis occidentalis</i>	4	2.0%	X	-0.112
shingle oak	<i>Quercus imbricaria</i>	4	2.0%	X	-0.112
black cherry	<i>Prunus serotina</i>	3	1.5%	X	-0.091
cottonwood	<i>Populus deltoides</i>	2	1.0%		-0.066
black willow	<i>Salix nigra</i>	1	.5%		-0.038
Eastern redbud	<i>Cercis canadensis</i>	1	.5%		-0.038
bitternut hickory	<i>Carya cordiformis</i>	1	.5%	X	-0.038

Stand B contains 15 species and has a total of 201 trees. The Shannon diversity index is 2.937. The maximum Shannon diversity index is 3.907.

Table 1C

STAND C – Adkins Tract (southern half)					
Common Name	Scientific Name	Count	Relative Density	Wildlife Mast Producers	Shannon Diversity
Eastern red cedar	<i>Juniperus virginiana</i>	33	57.9%		-0.456
hackberry	<i>Celtis occidentalis</i>	9	15.8%	X	-0.420
black locust	<i>Robinia pseudoacacia</i>	8	14.0%		-0.398
white oak	<i>Quercus alba</i>	3	5.3%	X	-0.224
honey locust	<i>Gleditsia triacanthos</i>	2	3.5%		-0.170
slippery elm	<i>Ulmus rubra</i>	1	1.8%		-0.102
Osage orange	<i>Maclura pomifera</i>	1	1.8%	X	-0.102

Stand C contains 7 species and has a total of 57 trees. The Shannon diversity index is 1.872. The maximum Shannon diversity index is 2.807.

Table 1D

STAND D – Adkins Tract (Northern Half)					
Common Name	Scientific Name	Count	Relative Density	Wildlife Mast Producers	Shannon Density
hackberry	<i>Celtis occidentalis</i>	35	22.0%	X	-0.481
Northern red oak	<i>Quercus rubra</i>	19	11.9%	X	-0.366
white ash	<i>Fraxinus americana</i>	18	11.3%		-0.356
shagbark hickory	<i>Carya ovata</i>	16	10.1%	X	-0.333
American elm	<i>Ulmus americana</i>	16	10.1%		-0.333
American sycamore	<i>Platanus occidentalis</i>	12	7.5%		-0.281
Eastern redbud	<i>Cercis canadensis</i>	10	6.3%		-0.251
black cherry	<i>Prunus serotina</i>	9	5.7%	X	-0.235
burr oak	<i>Quercus macrocarpa</i>	7	4.4%	X	-0.198
shingle oak	<i>Quercus imbricaria</i>	6	3.8%	X	-0.178
white oak	<i>Quercus alba</i>	3	1.9%	X	-0.108
swamp white oak	<i>Quercus bicolor</i>	3	1.9%	X	-0.108
black walnut	<i>Juglans nigra</i>	2	1.3%	X	-0.079
Eastern red cedar	<i>Juniperus virginiana</i>	1	.6%		-0.046
Scotch pine	<i>Pinus sylvestris</i>	1	.6%		-0.046
green ash	<i>Fraxinus pennsylvanica</i>	1	.6%		-0.046

Stand D contains 16 species and has a total of 159 trees. The Shannon diversity index is 3.447. The maximum Shannon diversity is 4.000.

Table 1E

STAND E – Newton Tract					
Common Name	Scientific Name	Count	Relative Density	Wildlife Mast Producers	Shannon Diversity
honey locust	<i>Gleditsia triacanthos</i>	23	29.1%		-0.518
Osage orange	<i>Maclura pomifera</i>	20	25.3%	X	-0.502
American sycamore	<i>Platanus occidentalis</i>	12	15.2%		-0.413
Eastern red cedar	<i>Juniperus virginiana</i>	5	6.3%		-0.252
shingle oak	<i>Quercus imbricaria</i>	4	5.1%	X	-0.218
American elm	<i>Ulmus americana</i>	4	5.1%		-0.218
Northern catalpa	<i>Catalpa speciosa</i>	3	3.8%		-0.179
Northern red oak	<i>Quercus rubra</i>	3	3.8%	X	-0.179
black oak	<i>Quercus velutina</i>	2	2.5%	X	-0.134
sugarberry	<i>Celtis laevigata</i>	1	1.3%	X	-0.080
black cherry	<i>Prunus serotonia</i>	1	1.3%	X	-0.080
black locust	<i>Robinia pseudoacacia</i>	1	1.3%		-0.080

Stand E contains 12 species and has a total of 79 trees. The Shannon diversity index is 2.853. The maximum Shannon diversity is 3.585.

The stands ranked in order of highest to lowest diversity (H') relative to their potential (H'_{\max}) are:

- 1) Adkins Tract—Northern Half, 16 total species, 159 total trees, $H'=3.447$, $H'_{\max}=4.000$,
- 2) Newton Tract, 12 total species, 79 total trees, $H'=2.853$, $H'_{\max}=3.585$,
- 3) Adkins Tract—Southern Half, 7 total species, 57 total trees, $H'=1.872$, $H'_{\max}=2.807$,

- 4) South Bear Creek, 15 total species, 201 total trees, $H'=2.937$, $H'_{\max}=3.907$,
- 5) Eastern Tributary, 21 species, 614 total trees, $H'=2.935$, $H'_{\max}=4.392$.

Plant Inventory

Due to the difficulties associated with herbaceous plant inventories during the winter months, plant inventory of the BCFG was conducted on a presence-absence basis only. A more complete inventory would be more feasible during the summer when grasses and forbs have mature foliage and reproductive structures.

A list of grasses and legumes likely to be planted in a Missouri pasture was compiled (Barnes et al 1995), also, a list of broadleaf and grass weeds common to Missouri was obtained from the MU Agronomy Extension web page (Fishel 1997) (Appendix B). Species on both lists were marked as present when a specimen was positively identified. Data was randomly collected while surveying the property for other site analysis information. Emerging vegetative structures were used in identification as well as reproductive structures remaining from the last growing season.

The Adkins property, excluding the tree-covered areas, was primarily pasture managed and cut for hay (crop species unknown). Various weeds, forbs, and grasses, predominantly tall fescue, covered those areas not managed for hay. However, no calculations such as percent cover or relative density could be accurately computed from data available. Similarly, the Newton tract was mostly pastureland, but it is not managed for hay. Horses are grazed on the Newton property. Some evidence of over-grazing was noted, especially on the eastern side of the property, where there are deep erosion gullies. Pastures on the Newton tract were predominantly tall fescue, but other weeds, forbs, and grasses were also present.

Non-forested areas of the property currently used for the Boone County Fair and other events were mostly covered with tall fescue mowed during the growing season. Weeds, forbs, and other grass species were also present.

Table 2: Grasses commonly found in Missouri pastures. Shading indicates positive identification of BCFG (Barnes et al 1995).

GRASSES		
Scientific Name	Common Name	Comments
<i>Phleum pratense</i> L.	Timothy	cool season grass; not drought tolerant
<i>Bromus inermis</i>	Smooth Bromegrass	cool season grass
<i>Dactylis glomerata</i> L.	Orchardgrass	cool season grass; perennial
<i>Phalaris arundinacea</i> Schreb	Reed Canarygrass	cool season grass; habitat is poorly drained sites; not for grazing
<i>Festuca arundinacea</i> Schreb	Tall Fescue	cool season grass; perennial; forms dense sod; endophyte infected
<i>Poa pratensis</i> L.	Kentucky Bluegrass	cool season grass
<i>Andropogon gerardii</i> Vitman	Big Bluestem	native warm season grass
<i>Schizachyrium scoparium</i> (Michx.) Nash	Little Bluestem	native warm season grass
<i>Panicum virgatum</i> L.	Switchgrass	native warm season grass
<i>Sorghastrum nutans</i> (L.) Nash	Indiangrass	native warm season grass

Table 3: Legumes commonly found in Missouri pastures. Shading indicates positive identification (Barnes et al 1995).

LEGUMES		
Scientific Name	Common Name	Comments
<i>Trifolium pratense</i> L.	red clover	
<i>Trifolium repens</i> L.	white clover	habitat is moist soils
<i>Lotus Corniculatus</i>	birdsfoot trefoil	rhizobial and non-rhizobial varieties
<i>Kummerowia striata</i> (Thumb.) Schindler	annual lespedeza	warm season legume
<i>K. stipulacea</i> (Maxim.) Makino	Korean lespedeza	warm season legume
<i>Lespedeza cuneata</i> (Dum.-Cours.) G. Don	sericea lespedeza	warm season legume; perennial; does well on poor quality sites
<i>Medicago sativa</i> L.	alfalfa	warm season legume

Aquatic Inventory

The only historic sampling location on Bear Creek is near its confluence with Rocky Fork creek over two miles downstream of the BCFG (Winston 2000). This stream provides a physical habitat favored by many headwater and tributary fish species (Pflieger 1997). Two of which are

currently listed as species of conservation concern. The blacknose shiner (*Notropis heterolepis*) is ranked as a S2 species of concern (Missouri Natural Heritage Database 1999) and the topeka shiner (*Notropis topeka*) has been recently listed as endangered under the Endangered Species Act in December 1998 (USFWS 1998).

The aquatic resources of Bear Creek in the vicinity of the BCFG were sampled using a 2.5m X 1m X 5mm nylon seine and a 0.5m X 0.3m X 1mm nylon kick net. Kick nets were used to document the presence of fish and macro-invertebrates in riffle environments and typically sampled a 3-5 meter riffle length. The seine was used to sample fish and macro-invertebrates in pool environments and typically sampled a 7-10 meter pool with an average water depth of 0.3 meters. A small tributary branch of Bear Creek along the eastern boundary of the property was sampled in three locations above the bridge on Oakland Gravel Road. The main-stem Bear Creek was sampled in five locations (Figure 3).

The eastern tributary is a small intermittent stream that runs along the eastern border of the property. The substrate is a mixture of shale, cobble, gravel and sand. The banks are in fair to good condition with little erosion. A 10-20 meter riparian zone is intact along most of the stream's reach. It is likely that this stream is reduced to just a few pools during summer and dry periods.

Bear Creek proper is a small semi-permanent stream that runs along the western border of the property. The dominant substrate is silt, some cobble and sand. In the vicinity west of the RV park the substrate is mostly limestone ledges, sand and chert. There are three bridges on the property over Bear Creek. A 5-30 meter riparian zone is intact along most of the stream's reach. This stream may be impacted by the three sewage lagoons and a slag pile situated in the north end of the property and by a large rubbish heap adjacent to the Boone County equipment yard.



0.25 0 0.25 Kilometers

- Water Quality Samples
- Kick Net & Seine
- Boone County Fairground Boundary

Figure 3: Seine and Water Quality Sampling Sites

The water quality information supports this as seen in the water quality section below.

Sedimentation was noted in several areas due to poor land management practices.

Both kick net and seine samples in the eastern tributary yielded no macro-invertebrates or fish. We feel this is due to its intermittent status and a flushing event due to substantial rain a few days prior. Bear Creek proper was sampled in five locations using the aforementioned method and produced 8 fish, 4 macro-invertebrates, and one tadpole (Figure 3) (Table 4). Catch per unit effort was low (0.19 fish per cubic meter of water sampled). We feel this is a result of impacts to the stream in the way of recent drought, poor water quality and degradation of favorable fish habitat. The two ponds on the property were not sampled. Our observations were that these ponds were old, shallow and a poor habitat for fish.

Table 4: Location of seines or kick nets and organisms found at each location.

Sample	Location	Fish	Invertebrates
SN 1	E. Trib	None	none
KN1	E. Trib	None	none
SN2	E. Trib	None	none
KN2	E. Trib	none	none
SN3	Bear	1-OTD	1-Fingernail clam
KN3	Bear	none	none
SN4	Bear	1-BLG 1-GSF 3-CKB 1-COS 1-BTM	none
KN4	Bear	none	1-Amphopod 2-Stonefly
SN5	Bear	none	1-crayfish 1-tadpole
KN5	Bear	none	none
SN6	Bear	none	none
KN6	Bear	none	none
SN7	Bear	none	none
KN7	Bear	none	none

Key**Gear:**

SN- Seine net

KN- Kick net

Species:

OTD- Orangethroat darter (*Etheostoma spectabile*)

BLG- Bluegill (*Lepomis macrochirus*)

GSF- Green sunfish (*Lepomis cyanellus*)

CKB- Creek chub (*Semotilus atromaculatus*)

COS- Common shiner (*Luxilus cornutus mitchill*)

BTM- Blackstripe tipminnow (*Fundulus notatus rafinesque*)

Water Quality

Water samples were taken at five random locations along Bear Creek during normal stream flow conditions to document the general condition of the stream. An additional sample was taken on March 14 after a gentle rain to document the inputs of the BCFG watershed on Bear Creek. Sample locations, numbering one (the northern most site) through six (the southern most) are shown in Figure 3.

Water quality analysis was conducted on site for dissolved oxygen, temperature, and pH. Further analysis was conducted in the University of Missouri water quality lab (Table 5). All parameters were found to be in a normal range with the exception of sodium (Na) and dissolved oxygen (DO). Based on this observation, we determined the impacts of the lagoons on Bear Creek to be significant. Abnormally high levels of sodium (62.307 mg/L) were detected below the lagoons. Additionally DO is dramatically reduced to as low as 3.9 mg/l below the lagoon.

Table 5: Water quality characteristics of Bear Creek.

Site	D.O. mg/L	Air Temp °C	Instream Temp °C	Laboratory Temp °C	Conductivity uS/cm	pH	Alkalinity Mg/L as CaCO ₃	Ammonia Mg/L as Nitrogen	Turbidity NTU
1	13.3	18.8	8.3	23.2	693	7.98	196	0.0607	1.8
2	3.9	20.8	15.6	23.2	670	7.48	325	5.98	17
3	8.5	13.2	12.5	22.9	654	8.01	194	0.045	2
4	8.5	13.2	12.4	22.9	648	8.04	198	0.0856	11
5	12.6	20.8	12.6	22.6	1259	7.77	144	0.0783	16
6	13.9	26.5	18.3	22.9	1062	7.81	129	0.082	32.3

Wildlife Inventory

The wildlife assessment of the Boone County Fairgrounds was conducted using scent stations, a Wildlife Habitat Appraisal Guide (WHAG), track identification in muddy areas on the property, and a list of possible species from the Missouri Fish and Wildlife Information Systems (MOFWIS) (Appendix C) (MDC 2000). Ten scent stations were set up using sooted, corrugated metal sheets and sooted tin foil strips placed in the bottom of wooden enclosures. We placed sardines on the metal to attract wildlife. The stations were placed in various areas around the property on February 19, 2000 between the hours of 1600 and 1730 (Figure 4). On February 20 between 1300 and 1500, the stations were collected. Three stations showed evidence of wildlife. The first set of tracks identified belonged to a woodchuck (*Marmota monax monax*), the second tracks were those of a Virginia opossum (*Didelphis virginiana virginiana*), the third station contained a shed snakeskin, however the species of snake was unidentifiable.

Tracks found in the mud near a pond showed evidence of raccoon (*Procyon lotor hirtus*), Canada geese (*Branta canadensis*), and white-tailed deer (*Odocoileus virginianus*). On these visits to the fairgrounds several animals were spotted as well. On February 19 eleven white-tailed deer, one red fox (*Vulpes vulpes fulva*), and two mourning doves (*Zenaida macroura*



■ Scent Stations
— Boone County Fairground Boundary

Figure 4: Scent Station Sites

carolinensis) were seen. On February 20 we saw five European starlings (*Sturnus vulgaris vulgaris*) and two dozen wild turkeys (*Meleagris gallopavo silvestris*) on the northeast corner. We found evidence of a beaver (*Castor canadensis carolinensis*) in Bear Creek near the Cottonwood RV Park, and evidence of an eastern cottontail rabbit (*Silvilagus floridanus alacer*) in an open field area. On February 21, around 7:00 am, we saw a Northern cardinal (*Cardinalis cardinalis cardinalis*), a downy woodpecker (*Picoides pubescens pubescens*), a blue jay (*Cyanocitta cristata cristata*), and a white-breasted nuthatch (*Sitta carolinensis carolinensis*).

The quality of wildlife habitat has been raised in the planning process of the Boone County Fairgrounds and the adjacent properties. Using WHAG we conducted a habitat appraisal of the area to better understand the quality of the habitat available for wildlife. This type of assessment is commonly used by the Missouri Department of Conservation and the Natural Resources Conservation Service. This assessment involves walking the area and breaking up the different habitat types into categories such as cropland or woodland. The WHAG process uses checklists which list different habitat characteristics needed by a particular species found in Missouri (Appendix D). Based on presence and abundance of habitat features, a numerical value is assigned. The sum of these numbers is divided by the maximum value. This value then gives you a percentage that corresponds to a range designated to a habitat quality category. The habitat quality is then determined using four categories: Excellent 0.75-1.0, Good 0.50-0.75, Fair 0.25-0.50, and Poor 0-0.25.

Five species habitats were assessed in our site analysis (Figure 5). Habitat quality for white-tailed deer, eastern wild turkey, and fox squirrel were found to be good with WHAG values of .61, .52, and .53, respectively. Habitat quality for bobwhite quail

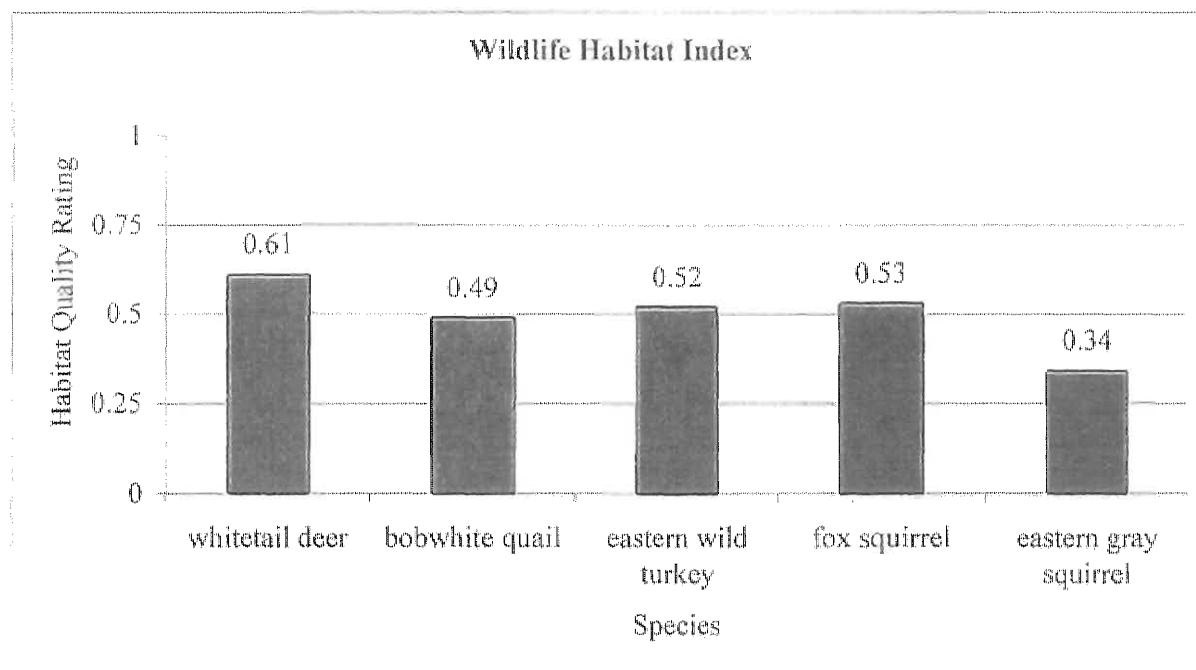


Figure 5: Habitat quality ratings for five common species of Missouri on the BCFG.

and Eastern gray squirrel was found to be fair with WHAG scores of .49 and .34 respectively.

To further support the habitat assessment, we used MOFWIS, which contains information on life history and distribution of Missouri's vertebrates. In addition, habitat associations were further identified and verified through the use of web resources and publication resources such as the Breeding Bird Atlas 1986-1992 (1997), Amphibians and Reptiles of Missouri (1997), Handbook of Amphibians and Reptiles of Kansas (1950), Birds of Missouri (1992), The Wild Mammals of Missouri (1981), Wild Mammals of North America (1982), journal articles and other scientific works.

Information from MOFWIS comes from the Gap Analysis Program (GAP). This program summarizes species distribution based on land cover types at the state, regional, and national levels (National GAP 2000). Spatial data was taken from the Missouri Spatial Data Information Service (MSDIS 2000). Each species was given a number that quantified the likelihood of a species presence or absence at a particular site. The number indicates how much of the species range is found at the location. A number of seven or above means that the location overlaps the species range so the species is likely to be found there. The higher the number, the greater the probability of presence on the site (Haithcoat 2000). The final list of species compiled by the GAP for the BCFG area contains 66 mammals, 164 birds, 74 reptiles, and 44 amphibians (Appendix E).

Soil Inventory

A review of the BCFG soils was conducted in cooperation with the U.S. Dept. of Agriculture, and Boone County Soil and Water Conservation District (Bowne 2000). The best-suited soils for construction are Hatton series soils, located in the NW corner of the Newton tract with several arms of Hatton extending SSW from the NW corner of the Adkins tract (Figure 6).

This soil type comprises 4.1% of the property (Table 6). The next best soil type for construction purposes are Mexico or Leonard series soils. These soils are found in conjunction with Hatton. Keswick series soils are the most abundant soil type (35.7%) found on the property. Keswick soils are found centered on the E. boundary of the Adkins tract and in the NW corner of the Newton tract. Haymond soil series are common soil types found along streams in central Missouri; the BCFG is no exception. Haymond is the primary soil type found in the vicinity of Bear Creek and its eastern tributary. Haymond soils comprise 15.1% of the soil types. Weller series soils are found in the vicinity of Cottonwoods RV Park and the two sewage lagoons in the Newton tract. The old airstrip and the current access road are built on Auxvasse soil series. Moniteau series soils are often found in areas that occasionally flood. On BCFG property, Moniteau soils are in the low-lying areas of Bear Creek. Tanglenook series soils are found in the SW corner of the original fairground property. They are currently used for an open play field and occasional parking. All identified soil types are common to Missouri and a description of their uses is listed in Tables 7, 8, and 9 (Bowne 2000).

Table 7: Characteristics of soil types found on BCFG.

Soil Name	Erosion Potential		Slope %	AWC inch/inch	Flooding Potential
	Rain (.05-.69, .05 best)	Wind (1-8, 8 best)			
Mexico	0.43	5		.16-.18	Rare
Keswick	0.4	6	2-5	.14-.19	None
Hatton	0.49	5		.18-.23	Occasional, brief, Jan-May
Leonard	0.37	6	5-9	.13-.18	None
Weller	0.37	7	2-6	.14-.17	None
Auxvasse	0.34	6	1-3	.13-.17	None
Moniteau	0.42	6		.20-.22	Occasional, brief, Nov-May
Tanglenook	0.34	6	1-3	.14-.19	Rare
Haymond	0.41	6	2-5	.17-.21	None

Table 8: Soil quality for vegetation found on BCFG.

Soil	Vegetation Potential					
	Grasses and legumes	Wild herbaceous plants	Hardwoods	Softwoods	Wetland plants	Shallow water area
Mexico	Good	Poor	Good	Good	Good	Fair
Keswick	Good	Good	Good	Good	Poor	Very poor
Hatton	Good	Fair	Good	Good	Poor	Poor
Leonard	Good	Fair	Good	Fair	Very poor	Poor
Weller	Good	Good	Good	Good	Poor	Very poor
Auxvasse	Good	Good	Good	Good	Poor	Very poor
Moniteau	Fair	Fair	Fair	Fair	Good	Fair
Tanglenook	Fair	Poor	Fair	Poor	Good	Good
Haymond	Good	Fair	Fair	Fair	Poor	Poor

Table 9: Soil quality for wildlife found on BCFG.

Soil	Wildlife Potential		
	Openland wildlife	Woodland wildlife	Wetland wildlife
Mexico	Fair	Good	Poor
Keswick	Good	Fair	Poor
Hatton	Good	Fair	Fair
Leonard	Fair	Fair	Good
Weller	Good	Good	Fair
Auxvasse	Good	Good	Very poor
Moniteau	Fair	Good	Very poor
Tanglenook	Poor	Good	Very poor
Haymond	good	Good	Very poor

We concluded that there are very few available soil types suitable for building site construction. Construction of roads or structures is further impeded by factors such as wetness, high shrink-swell potential, and low strength. These factors affect the traffic supporting capacity of the soils in this area (Bowne 2000).

Existing Structures

During the last five months, several events were held in the existing structures of the BCFG. These ranged from dog shows in the Coliseum to tractor pulls. Many of these events are also held annually at the Fairgrounds. In addition, the Fairgrounds/structures were used for private parties during the holiday seasons. A list of the activities held on the Fairgrounds in the existing facilities is provided in Appendix F.

Existing Structures Description

The general condition of the existing structures is good to fair (Figure 7). The horse barns are wood framed with aluminum siding, are in good condition, and equipped with hydrants. Fencing encloses the dirt arena on the south side of the Coliseum. The concession stands and restrooms are in good condition. All are wood framed with aluminum siding, with water and electricity. The maintenance area (M) is a steel framed building with steel siding connected to a balloon ride office. The shop (L) is a wood framed building with an office. Exhibition barn (I) is a pole barn used for FFA exhibits. The grandstands (O) are adjacent to an open dirt arena and in fair condition. The show palace (F) is a large open building, the second largest structure on the property. The coliseum is the largest enclosed structure on the property. Measurements are found in Table 10.

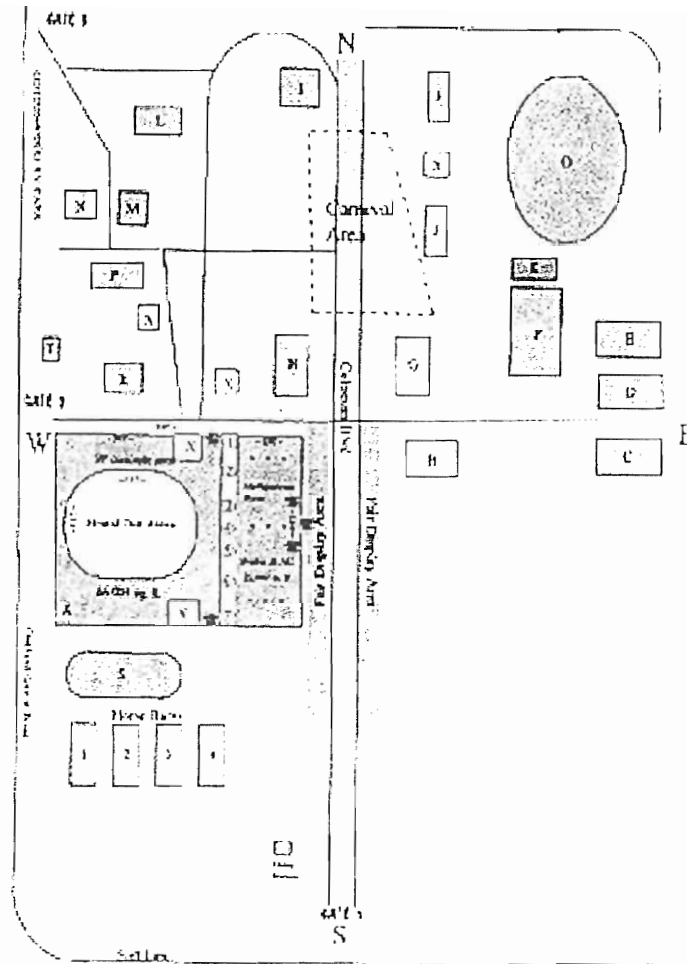


Figure 7: Location of structures (Boone County 2000).

Table 10: Dimensions and area of existing structures.

Symbol	Facility	Linear Dimension	Area (Square Feet)
1	Horse Barn	120 X 60	7,200
2	Horse Barn	120 X 60	7,200
3	Horse Barn	120 X 60	7,200
4	Horse Barn	120 X 72	8,640
A	Coliseum	400 X 220	88,000
B	4-H Foundation	25 X 40	1,000
C	Cow Palace	120 X 60	7,200
D	Hogs	120 X 72	8,640
E	Sheep	120 X 72	8,640
F	Show Palace	200 X 72	14,400
G	Optimist Concession	25 X 40	1,000
H	Pork Producers	25 X 40	1,000
I	FFA	25 X 40	1,000
J	Optimist Concession	25 X 40	1,000
K	Shower House	40 X 60	2,400
L	Shop	60 X 60	3,600
M	Hanger Building	225 X 72	16,200
O	Grandstands	approx. 400 X 290	116,000
P	Elks Concession	25 X 40	1,000
R	Concession	25 X 40	1,000
S	Outdoor Arena	300 X 100	30,000
T	Manager's Residence	unknown	-----
X	Restroom and Shower	25 X 40	1,000

Boone County Demographics

According to the 1990 US Census, the total population of Boone County was estimated to be 112,379 compared to 5,117,073 in the entire state of Missouri. Of the 112,379 people in Boone County, 100,055, or 89% of them were white, and 12,324, or 11% of them were minorities. The median household income for 1993 was \$32,372, up from \$25,647 in 1989. In 1990, 16,880 people, or 15% of the Boone County population, were categorized as being poor; and 2,334 of these people, or 13.8% of the poor, were between the ages of 5 and 17.

Dividing the population into age groups (non-school-aged children, less than 5 years; school-aged children, 5-9 years; teenaged children, 10-19 years; young adults, 20-34 years;

middle-aged adults, 35-55; and senior adults, 55+ years), young adults make up the greatest portion of the Boone County population (Table 11).

Table 11: Percent of population in each age group.

Age Group	Percentage of Total Population
Non-school	7.1%
School	6.6%
Teen	15.7%
Young	34.0%
Middle	22.4%
Senior	14.2%

The population of the Columbia area is expected to increase 32,684 between 1996 and 2020. Eighty-eight percent of this increase will occur within the city of Columbia (City of Columbia 1999).

Recreation Facilities Inventory

The number and types of public facilities currently available to Boone County citizens will have a great impact on the facilities and programs that should be provided at the BCFG. This inventory section summarizes tables summarizing the recreation facilities currently available to citizens of Boone County. The available facilities have been divided into city parks, school facilities, and state and federal areas.

A listing of major facilities for Ashland, Columbia, Centralia, Hallsville, and Sturgeon can be found in Table 12. This list was obtained from Parks and Recreation Departments in Columbia and Centralia, and city halls in the other three communities. In some communities exact facility counts are not available. These facilities have been marked with an “x”, to acknowledge their existence, instead of an exact count. Facilities available through public schools are listed in Tables 13 and 14. Facilities located at the University of Missouri-Columbia,

Stephens College, and Columbia College are found in Table 15. Local facilities provided by federal and state agencies are found in Table 16.

Table 12: City-owned facilities available within Boone County.

	Softball/ Baseball	Football/ Soccer	Tennis Courts	Basketball Courts	Volleyball Courts	Swimming Pools	Picnic Shelters	Picnic Tables	Play- grounds	Golf Courses
Ashland	1		x			1		x	?	
Columbia	16	23	27	14	17	4	31	379	26	2
Centralia	6		2	4	1		4	90	5	
Hallsville	1		1	4	2			5 areas	2	
Sturgeon			1	1			1		1	

Table 13: Facilities available through area schools.

School	Baseball/ Softball	Soccer/ Football	Track	Gym	Playground	General Comments
Centralia						Gyms are rented out. City has softball/baseball fields used by schools.
High School		X	X	X		
Middle School		X	X	X		
Elementary School				X	X	
Harrisburg						Will build new HS with track. Gym available with event approval.
High/Middle School	X			X		
Elementary School				X	X	
Hallsville						HS and MS share facilities. Gyms are rented out.
High School	X	X	X	X		
Middle School						
Elementary School				X	X	
Sturgeon						Available without rent. MS gym too small for full game.
High School	X			X		
Middle School	X			X		
Elementary School					X	
Ashland						Gyms rented. HS and MS share facilities. Community pool available to schools.
High School	X			X		
Middle School				X		
Elementary School				X	X	

Table 14: Columbia school facilities.

School	baseball/ softball	soccer/ football	practice soccer/football	track	tennis	Basketball Court	playground
Elementary Schools							
Benton Elementary						2 (gym/cafeteria)	1
Blue Ridge Elementary						2 (small gym)	1
Cedar Ridge Elementary						1 (gym/cafeteria)	1
Derby Elementary						2 (small gym)	1
Fairview Elementary						2 (small gym)	1
Eugene Field Elementary						1 (gym/cafeteria)	1
U.S. Grant Elementary						2 (gym/cafeteria)	1
Lee Elementary						1 (gym/cafeteria)	1
Midway Heights Elementary				1		1 (gym)	1
Mill Creek Elementary						(small gym)	1
New Haven Elementary						(gym)	1
Parkade Elementary						2 (small gym)	1
Ridgeway Elementary						1 (gym/cafeteria)	1
Rock Bridge Elementary						3 (small gym)	1
Russell Blvd Elementary						2 (small gym)	1
Shepard Blvd. Elementary						1 (small gym)	1
Two Mile Prairie Elementary						2 (gym/cafeteria)	1
Russell Blvd. Elementary						1 (small gym)	1
Middle Schools							
Lang						(small gym)	
Gentry						(small gym)	
Smithtom						(small gym)	
Jr. High Schools							
Jefferson Jr. High						1 (small)	
Oakland Jr. High						1	
West Jr. High						1 (small)	
High Schools							
Douglas High School						1 (small)	
Hickman high School	1	2		1	4 (lit)	1	
Rock Bridge High School	2	2	3	1	4	1	

Table 15: University facilities.

School	Basketball/ Volleyball	Jogging Track	Tennis Courts	Playfields	Picnic Facilities	Gymnasium	Soccer	Softball Fields
MU								
Indoor Facilities	13	1						
Outdoor Facilities	7	1	25	20	2 S; 2 T			
Stephens College								
Indoor Facilities	1							
Outdoor Facilities			6					
Columbia College								
Indoor Facilities						1		
Outdoor Facilities	1		1				1	1

Table 16: Agency, federal and state park facilities.

Agency/Park	Acres/ Other	Picnicking	Hiking Trails	Bicycle Trails	Wildlife Viewing	Playground	Nature Study
State Parks							
Finger Lakes State Park	1,132	x					
Katy Trail State Park	200 mi		x	x			
Rock Bridge State Park	1,873	x	x			x	
Dept. of Conservation							
Bennitt (Rudolf) Conservation Area	3,514		x				
Eagle Bluff Wildlife Area	3,656		x		x		
Hartsburg Access	30						
Hinkson Woods Conservation Area	70		x	x			
Lick Creek Conservation Area	317		x				
Providence Access	5						
Rocky Fork Lakes Wildlife Area	2,190	x	x				
Three Creeks Conservation Area	1,277		x	x			
Tri-City Community Lake	102		x				
Waters & C.B. Moss Wildlife Area	104		x				x
National Forests							
Cedar Creek District, Mark Twain National Forest	15,019	x	x				x

Community Recreation Needs

Survey Summary

We based the recreational needs and wants of Boone County citizens on surveys conducted for the Boone County Fairgrounds, Missouri's Statewide Comprehensive Outdoor Recreation Plan (SCORP), and the Columbia Community Survey done for the 1994 Columbia Parks, Recreation and Open Space Master Plan (CPROSMP). The SCORP was a survey given to measure recreational preferences of citizens across the state of Missouri in 1991. The BCGF Survey reached only citizens of Boone County not living in Columbia (Boone County 1999). The CPROSMP surveyed the citizens of Columbia (Columbia Parks 1994).

When designing a plan for the BCFG, one very important finding in the BCFG Survey should be noted. When asked, 77% of the respondents felt that the Boone County Fair should continue. Another important finding comes from the CPROSMP survey in which 83 % of the respondents felt that green space and green belts should be considered in long term planning.

In both the Columbia Master Plan and the BCGF surveys, respondents felt that indoor facilities were needed, preferred, and a priority. This is reflected in the CPROSMP by the top four responses to what the community needs more of: activities for teens (65%), indoor heated swimming pool (58%), gymnasium space (53%), and fitness equipment and space (52%). It is also represented by Columbia's priorities for the future, where a recreation center is the number one priority supported by 45% of the people. The same survey found that 70% of those surveyed showed some support for a multipurpose indoor recreation center with pool, gymnasium, fitness area, and classrooms. In the BCFG Survey, an ice skating complex, indoor aquatics center, and recreation community center all ranked in the top five recreational choices. These same facilities also ranked in the top 6 activities that would receive weekly or biweekly use.

Support can also be found for more trails in the Columbia and Boone County area. In 1994, 80% of people surveyed for CPROSMP showed support for additional trails; 51% for walking and 21% for biking. Twenty-five percent of the respondents felt that Columbia needed more trails. Nature and fitness trails ranked fifth and sixth on the list of top priorities for the future. In 1991, a survey done for the SCORP found that walking for pleasure was the number one outdoor activity across Missouri. In addition, the BCFG survey found that 19% of Boone county citizens would use trails on a weekly or biweekly basis, and 11% would use an outdoor fitness circuit. When respondents were asked to rank their top three recreational preferences, trails ranked fourth following an ice skating complex, water park and indoor aquatics center.

Golf courses make a frequent appearance on the surveys. According to the CPROSMP, 21% of the respondents feel that Columbia needs more golf courses. Golf courses also ranked tenth on the list of top priorities for Columbia parks and recreation. In addition, 25% of the people surveyed thought it was important for Columbia to have another golf course. However, 41% of those people favored the south part of town for a new course. Nine percent of the people surveyed about the BCFG said that they would use golf courses on a weekly or biweekly basis. Golf courses were sixth on Boone County's list of recreation preferences.

A need for playgrounds and picnic areas also appeared on several surveys. Thirty-seven percent of people in Columbia feel that more playgrounds for young children are needed and 31% feel that more park shelters are needed. Nine percent of the citizens of Boone County said that they would use a playground and picnic area on a weekly or biweekly basis. According to the SCORP survey, picnicking ranked fourth among outdoor activities for citizens of Missouri.

The CPROSMP and Boone County Fairground surveys provide support for tennis courts. Twenty seven percent of Columbia citizens surveyed for the CPROSMP said that Columbia

needs more tennis courts. Tennis courts also ranked fourteenth on the list of top priorities for the future. On the Boone County Fairgrounds survey, 5% of the respondents said that they would use tennis courts weekly or biweekly.

Sports fields including soccer, football, softball, baseball, and multi-purpose fields also appear on the surveys. In the CPROSMP survey, 20, 16, 15, and 12 percent of respondents said that Columbia needed more football, soccer, baseball, and softball fields, respectively. Soccer, softball, and football fields also appeared in Columbia's list of top priorities for the future. Additionally, outdoor multipurpose athletic fields rated seventh on the BCFG survey's recreation preferences.

A need for more basketball courts is evident from the CPROSMP. Forty-seven percent of those surveyed felt that the city needed more courts. Basketball courts also ranked thirteenth on the list of top priorities.

Fishing lakes also received recognition in the SCORP, CPROSMP, and Boone County Fairground surveys. Fishing lakes ranked seventh on the Columbia Master Plan's top priorities for the future. Seven percent of the respondents to the Boone County Fairgrounds Survey said that they would use fishing lakes on a weekly or biweekly basis. Fifty-two percent of respondents to the 1991 SCORP participated in fishing as an outdoor activity.

More than half of those surveyed for the CPROSMP swim at least occasionally. While indoors aquatic centers have been discussed in the indoor facilities section, outdoor swimming pools were also addressed in the surveys. Thirty-nine percent of Columbia citizens feel that Columbia needs more outdoor swimming pools. Sixteen percent of Columbia respondents placed swimming pools as top priorities for the future. Sixteen percent of Boone County respondents said that they would use an outdoor swimming pool on a weekly or biweekly basis.

Of those responding to the 1991 SCORP survey, 52.1% reported outdoor participation in swimming.

National and State Standards

Another important consideration for recreation planning is the adequacy of Columbia's current recreation facilities. The number of facilities recommended per capita by National Recreation and Park Association Standards and Missouri Department of Natural Resources Standards using the US Census Bureau's predictions for Columbia's 1998 population (78,915) is listed in Table 17. These numbers are compared with the current numbers of public recreation facilities managed by the Columbia Parks and Recreation Department. Deficiencies based on both standards can be found in the two right columns. Columbia's facilities were considered because of the city's close proximity to the fairgrounds.

Table 17: Summary of recreational facilities recommended by the National Recreation and Park Association Standards and the Department of Natural Resource Standards. Also shown in this Table are the facilities presently available and the number still needed.

Facility	NRPA	MDNR	Public Facilities	Deficit NRPA	Deficit MDNR
Badminton	16	NA	NA	NA	NA
Basketball	16	NA	14	-2	NA
Handball	4	16	0	-4	-16
Ice Rink	0	1.6	0	0	-1.6
Tennis	39.5	52.6	27	-12.5	-25.6
Volleyball	16	26	17	1	-9
Baseball	16	NA	7	-9	NA
Field Hockey	4			-4	0
Football	4	20	4	0	-16
Soccer	8	20	19	11	-1
Golf-Driving Range	1.6	NA		-1.6	NA
1/4 mile Running Track	4	NA		-4	NA
Softball	16	NA	9	-7	NA
Multi-Recreation Court	8	26	0	-8	-26
Baseball/Softball	NA	52.6	16	NA	-36.6
Archery Range	1.6	NA		-1.6	NA
Combination Skeet and Trap Field (8 stations)	1.6	NA		-1.6	NA
Golf	1.6 (18)	3	2	0.4	-1
Swimming Pools	4	63132 sq. ft. 4 pools	4291sq.ft.	0	-38841 sq. ft.
Beach Areas	NA		1	NA	1
Picnic Shelter	NA	39.5	31	NA	-8.5
Picnic Table	NA	631	379	NA	-252
Playground	NA	79	26	NA	-53
Multi-Use Trails	NA	26 miles	25.79 miles	NA	-.21 miles
Tent Camping	NA	263	0	NA	-263
Shuffle Board Court	NA	39.5	0	NA	-39.5
Horseshoe Court	NA	39.5	22	NA	-17.5
Boat Ramp	NA		0	NA	0
Amphitheater	NA	8	1	NA	-7
Horse Arena	NA	10.5		NA	-10.5

Site Analysis Summary

Based on our research and investigations, we conclude with the following. BCFG properties contain fish and wildlife species common to Mid-western urban and suburban areas. The habitat quality on the area for select wildlife is fair to poor. Headwater streams found on the site are favored habitats for the federally endangered Topeka shiner (*Notropis topeka*). Water quality and stream degradation should be considered. We determined that plant and forest communities are in fair condition. However, the degraded state of the property will not impede

the availability of recreational opportunities. The soil composition of the BCFG properties are not favorable for road or building construction. These soils are considered good to fair for native grasses and forbs. Existing structures currently receive regular. Recreation survey summaries showed a community interest for additional recreation facilities. State and national standards showed a deficiency of facilities in nearly every measured category based on the population of the Columbia area.

Excessive dumping and garbage throughout the BCFG properties is a concern of SEC. We feel it is important to clean up existing garbage, prior to implementation of our plan.

LAND-USE CONSIDERATIONS

The Boone County government has given much attention to long-term growth and development, recognizing a need for parks and recreation planning in the future. The BCFG property can be subdivided into five generally separate sites: the fairgrounds, the Newton and Adkins tracts, the County jail, and the northwest parcel. These five sites can be considered as completely separate development projects because each individual area has different relationships with surrounding locations. When viewed as individual sites, all have unique potential for development as well as controversy. We have examined possible outcomes associated with the development of each area and reached key conclusions:

1. Because of their proximity to existing fairground structures, the Newton and Adkins tracts, are most suited for park development and will be the focus of our recreation planning.
2. The BCFG should be studied during the fair and improved over time to achieve efficient fiscal operations.

3. To minimize controversy, public opinion information should be gathered prior to the development of the land around the jail. Also, the possibilities for inmate recreation programs and funding could be very complicated and requires more extensive research.

Boone County Park

The focus of our plan will be the expansion of the BCFG to include parks and recreation development. Further development should reflect continued research of the remaining properties.

The Boone County Fairgrounds

The Boone County Fair has historically been less than profitable (George 1999a). Sustaining the fair will require better financial operations. The most significant structure on the property, the Coliseum, may be a possible revenue source by continuing to use it for various outside events and charging a user fee. It will be important for the Boone County Government to develop policies that maximize available financial resources. Some suggestions for approaching this require further investigation of the following.

Obtain solid statistics on use, and user demographics including how far people travel to attend the fair, how far people travel to attend year round Coliseum events, how long tourists stay in town, and approximately how much they spend in Columbia. The tourism dollars brought to Columbia as a result of events at BCFG should be considered and researched.

Gain knowledge of fair operations and study the efficiency with guidelines such as circulation. Use of space, visitor survey, economic opportunities, additional usage provided by Boone County Park, degradation of the land from user interaction, and safety and liability concerns.

Based on information gathered along these research points, recommendations could be logically made to improve the operations of the fairgrounds. Recommendations should help redefine the use and efficiency of the site.

The Northwest Property

Many possibilities exist for this property. The location would be ideal to serve the growing population in the surrounding area with recreational opportunities. According to the BCFG User Survey Overview, some of the most desired recreation choices include: indoor aquatics center, recreation/community center, outdoor swimming pool, water park, and an indoor ice skating complex. Because of its immediate connection to the adjoining neighborhood, this property would seem ideal for many of these opportunities. However, it is important to consider the development of partnership opportunities as well as the progress of agencies within Boone County on similar projects.

Plans are underway to design an indoor community recreation center on the old fairground's location at Ash Street located across from Gerbes (City of Columbia Park Planner 2000). Future needs may warrant another recreation center at the BCFG location. Usage statistics will give a clear picture of these needs upon completion of Columbia's recreation center.

The city of Columbia is investigating possible partnerships with private companies to determine the viability of an indoor ice-skating complex (City of Columbia Park Planner 2000). If Columbia's Parks and Recreation Department elects to form a partnership for such a complex, the efforts of Boone County to operate a similar complex might conflict and prove inefficient. The Boone County Park Commission should pay close attention to the decisions made on this matter and the reasons supporting those decisions.

Partnerships between schools and recreation departments can provide opportunities like the Aquatics Center at Hickman High School. If a new school is built on the north side of town, a partnership for public aquatic facilities may be an option. The addition of a school was mentioned by Commissioner Stamper and widens the realm of potential partnerships between government agencies to provide aquatics facilities both indoor and outdoor.

The Boone County Fairground User Survey Overview reflects substantial public interest in the above stated recreational offerings, however patience in the development of large construction projects will prove beneficial. Failure to consider the development of other recreational offerings within the county can result in competition between tax funded resources.

The Boone County Jail

An abundance of land exists on the western side of Highway 63 stretching from the Boone County Jail to the Juvenile Justice Center. Development of park and recreation opportunities could prove inefficient if public opinion is not solicited regarding the location of a recreation area in close proximity to the two correction facilities. Surveys specifically designed to solicit opinions regarding this site should ask: is there a need for beautification of the area, will people visit a park located near the jail, how do people feel about using tax dollars for inmate recreation, and how do people feel about using tax dollars for juvenile inmate recreation?

There are also opportunities on the site for a variety of inmate recreation programs. To develop recreational offerings for inmates, similar programs should be researched to discover the probability of such a venture. Research considerations for these topics include various inmate recreation programs, possible limitations of such programs, trustees as a labor source to support recreation programming, and beautification programs using prisoners for labor.

Ultimately, development of this site depends in large part on public opinion. To avoid wasting resources, the development of this site as a possible recreation area would require strong support from Boone County residents.

General considerations

In addition to the many land use issues, the current status of the land itself is a primary concern. The site analysis evaluated several aspects of the property with respect to soils, topography, forestry, fisheries, wildlife, existing structures, and relationships between the aforementioned. Litter and other waste are not included in the site analysis. However, there are a number of locations throughout the current fairgrounds, and along the adjacent tracks of land that will require some clean up efforts. Figure 8 shows the location of these problem areas.



0.25 0 0.25 0.5 0.75 1 Kilometers

- Point Source Pollution
- + Trash Piles
- ∧ Boone County Fairground Boundary

Figure 8: Point Source and Trash Sites

STRATEGIC ISSUES

Issue 1 – Natural Resources

Population growth and urban sprawl have reduced the available green space and degraded the condition of natural resources in many areas. The BCFG could provide additional green space near the city limits of Columbia, however the poor condition of the site may preclude recreational use of the site without proper resource management.

Currently, forest cover only exists as narrow bands along stream banks with the exception of one broad area in the Northwest quarter of the property. The health of these trees is generally poor (indicated by dead snags, diseased trees, and trees with severely exposed roots along stream banks), and WHAG evaluations indicate that the present forest cover is not preferred/quality habitat for wildlife. Forestry management practices are needed to restore the health of the existing forest cover and to reforest areas along the streams for stream bank stabilization and wildlife considerations. Failure to do so will result in the further degradation of the property. Horticulture practices are needed to enhance the landscaping of the BCFG. There are virtually no shade trees planted on the property. Shade trees will improve walkways or other highly trafficked areas and rest areas. They would also improve parking facilities. Attaining these goals will result in more appealing green space.

Issue 2 - Recreation

Due to diversity of countywide recreational interests and established interest in the Boone County Fair and its future, it will be difficult to plan recreational facilities that satisfy the majority of Boone County citizens. Analysis of national and state standards, and of state, county, and city surveys, Boone County currently has a deficit of recreational facilities. Failure to provide a plan that considers all interests and their feasibility will result in inefficiently

meeting recreational needs of Boone County citizens. It is essential to provide programs that will satisfy the greatest number of tax paying citizens and their families.

PROGRAMS

Based on SEC's site analysis, we developed the following programs to effectively address the strategic issues previously identified. Our program recommendations maximize the use of the BCFG area to meet Boone County recreational needs and will restore the inherent natural beauty of Mid-Missouri.

Program Titles

- 1 Native Prairie and Wildflower Area Establishment
- 2 Tree Landscaping
- 3 Stream Bank Stabilization
- 4 Nature/Fitness Trail
- 5 Roads and Parking
- 6 Baseball/Softball Complex
- 7 Neighborhood Park Establishment
- 8 Picnic Area and Shelters

OPERATIONAL PLANS AND BUDGETS

ISSUE 1

Population growth and urban sprawl have reduced the available green space and degraded the condition of natural resources in many areas. The BCFG could provide additional green

space near the city limits of Columbia, however the poor condition of the site may preclude recreational use of the site without proper resource management.

Goals

1. Create an atmosphere that incorporates the natural resources of the area.
2. Develop a fitness/nature trail.
3. Restore natural areas, to include woodland, prairie, and native wildflower areas on the northern tracts of the site.
4. The condition of natural resources will be improved through mitigation activities.

Programs

- a. Native Prairie and Wildflower Area Establishment
- b. Tree Landscaping
- c. Stream Bank Stabilization
- d. Nature/Fitness Trail

NATIVE PRAIRIE AND WILDFLOWER AREA ESTABLISHMENT

PRAIRIE RESTORATION

Outcomes

As a result of this program, Boone County and the City of Columbia will receive an increase in quality green space. A native prairie will be restored within the Columbia metropolitan area. Not only will this be a factor that sets Columbia apart from other communities, but the native prairie will be a priceless interpretation resource for people of all ages.

Outcome Measures

Habitat restoration has been heralded as an important tool to ease the impact of humans on natural ecosystems. Residents of Columbia are environmentally conscious, as demonstrated by citywide recycling programs and the widespread use of many scenic trailways and parks. The number of citizens who attend educational events offered (e.g., prescribed burning) could measure the success and effectiveness of the program. Success would be achieved if citizens participate in the actual land restoration techniques.

Outputs

Initially, restore twenty acres of natural prairie to be used as a seed stock to restore a greater acreage of native grass prairie, depending on desired size and future park development.

Objectives

To establish a native grass prairie on the site of the BCFG site. Due to the planning and care required to accomplish restoration techniques, five years will be required to provide the successful establishment.

Strategies

The initial step to prairie restoration is site preparation. The success and sustainability of seeded grassland is closely correlated with soil type, slope, and moisture regimes (Duebbert et al 1981). A site suitable for tall, warm-season native grasses has been identified (Figure 9).






-  Boone County Fairground Boundary
-  Prairie
-  Wildflower Area

Figure 9: Prairie and Wildflower Areas

Late in fall the site will be plowed deep to eradicate established vegetation. It must be plowed shallow to kill new weed sprouts until planting time. It is essential to control competing vegetation, as inadequate weed suppression is the number one cause of seeding failure (Duebbert et al 1981). Although the tilled seedbed method is preferred for most seedings; the fine clay-silt soil, the BCFG has erosion problems. To combat this, growing a cultivated crop on the site for two years will kill the roots of cool-season grasses and provide a good seedbed for native grasses (MDC 1980). A crop such as wheat or oats would fulfill this goal. The vegetation will be mowed, leaving a 12 to 15-inch stubble for future planting (Duebbert et al 1981). As our site is susceptible to erosion, this technique is necessary to ensure the successful establishment of the seedbed. As this is a highly agricultural portion of the restoration technique, we will call upon local Boone County Future Farmers of America. The tilled land may be offered up for their planting. Provided that FFA seeds and farms the site, they will be allowed to keep profits obtained from the venture. In this way not, only are the seedbeds correctly established, but education and hands-on learning is obtained from the experience.

Once the site is prepared there are several planting methods to consider for prairie restoration. Planting, broadcasting, and haying are all acceptable methods. A rangeland drill or converted farm drill is an efficient method of planting native grasses. The Department of Conservation has a drill it loans to private individuals each year (MDC 1980). A whirlwind seeder or fertilizer spreader may be modified to plant many of the grasses, but then must be harrowed to cover the seed (MDC 1980). Haying is a very new technique for prairie restoration (Ryan 2000). However, we feel that is will provide the best possible seeding technique available.

As the haying of prairies is a new technique, the University of Missouri in cooperation with the Missouri Department of Conservation could be encouraged to join in this venture to produce a 20-acre experimental plot on the BCFG.

As our prairie restoration is on a smaller scale, it is reasonable to expect at most one fourth to one half of the natural species expected to be found in a native prairie remnant. Prairie seed should be of high quality and originate within 200 miles of the planting site (Robertson 1999). The haying technique fulfills this requirement, as it would be harvested from Tucker Prairie, a 145-acre virgin research prairie, owned by the University of Missouri. Other bonuses to the haying technique include: the introduction of a good variety of plants, a quicker than normal establishment time, and fewer tool requirements (Ryan 2000). It also provides the potential for grass, forb, and woody establishment all at once.

Management after seeding is fairly basic. During the first year close attention should be paid to ensure that weeds do not grow to more than a foot tall before mowing to a stubble of 4 inches (MDC 1980). Flash grazing, or brief on-and-off grazing can be used so that cattle will eat the weeds but do not graze on newly developing grasses. Students at the University of Missouri in the Wildlife Management Techniques class could engineer both the initial restoration and the upkeep. Students in Principles of Wildlife Management could use the prairie as a teaching field when topics of prairie restoration and flora and fauna are discussed.

If adequate ground litter has accumulated during the second year, a controlled burn in late March or early April will act as a natural weed control device and as a stimulant for native grasses (MDC 1980). This can be a learning/research method for students at the University of Missouri, perhaps in forestry fire ecology class. Students would write up burn plans, infusing their book-knowledge with actual implementation in the field, a priceless opportunity. It can

also be a community-learning event. Interpretive classes would be taught before the burn, to help inform the community of the necessity of a burn and the outcomes. Community members would then be allowed to witness the burn and see the management and science in action. If a burn is not feasible due to neighboring communities, light grazing or mowing can be used to accomplish the same purpose.

By the third year the stand should be nearly complete. Legumes may be added prior to the third year in January or February. Legumes will serve a dual purpose; increasing forage yields as well as providing a food source for prairie wildlife (MDC 1980).

Once the prairie has shown to be successfully established the plot can be hayed itself to produce a greater area covered by native prairie as desired. This can be accomplished over a 10-year scale.

Budget

Interpretive signs and bulletin board

Materials

Bulletin board	\$ 500.00
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Labor	\$ 0.00, Eagle Scouts
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Interpretive signs

6 aluminum signs, 080 gauge, 2'X3' with letters	\$ 720.00
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TOTAL	\$ 1220.00
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(Cambell 2000, Harris 2000)

Prairie restoration

Site Preparation

Plowing

\$10/acre * 20 acres * 2 years * 2 times/year	\$ 800.00
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Drilling Seed

Small Grain \$8.91/acre * 20 acres * 2 years	\$ 356.40
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Harvest (\$21.42/acre * 20 acres * 2 years)	\$ 856.80
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Prairie Haying

Mow, rake, bale, net wrap	
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\$13.00/bale * 40 bales	\$ 520.00
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Moving Bales	
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\$3.46/bale * 40 bales	\$ 138.40
Bale mulcher (2 days)	\$ 150.00 Soil Conservation Service
Man hours on mulcher (\$7.78/hr for 8-16 hours)	\$ 124.48
<hr/> TOTAL	<hr/> \$ 2946.08

(Mechlin 2000, Plain 1997)

WILDFLOWER AREA ESTABLISHMENT

Outcomes

A wildflower area establishment, approximately 10 acres in size, would increase aesthetics of the Boone County Fairgrounds by providing a natural backdrop for the currently barren landscape. A wildflower area would improve aesthetics, link the lower existing fairgrounds to new programs, provide and interpretive area, and improve habitat for prairie birds and wildlife.

Outcome Measures

Success will be measured by the number of citizens who participate in interpretive programs provided with the area.

Outputs

Outputs include ten acres of native wildflowers.

Objectives

A wildflower area will be planted, using native Missouri flowers and grasses (Tables 18 and 19), as a transition zone between the fairgrounds and the northern half of the park (Figure 9). The flower area will serve as an attractive link between the two halves of the park and provide a natural backdrop to increase the aesthetics of the area.

Table 18: Wildflowers found in Missouri prairies (MDC 2000).

Scientific Name	Common Name	Color	Height	Bloom Period
<i>Camassia scilloides</i>	Wild hyacinth	White	8-18 in	April-May
<i>Castilleja coccinea</i>	Indian paintbrush	Red	8-15 in	April-June
<i>Dodecatheon meadia</i>	Shooting star	Pink or white	1-2 ft	June
<i>Hypoxis hirsute</i>	Yellow star grass	Yellow	6 in	April-May
<i>Lithospermum canescens</i>	Hoary pucoon	Yellow	8-12 in	March-June
<i>Pedicularis canadensis</i>	Wood betony	Yellow	6-8 in	April-May
<i>Sisyrinchium campestre</i>	Blue-eyed grass	Blue	8-10 in	May
<i>Viola pedata</i>	Birdsfoot violet	purple	4 in	April-May

Table 19: Native plants, including grasses, used for landscaping (MDC 2000). Shading indicates species used in budget calculations.

Scientific Name	Common Name	Color	Height	Blooming Period	Cost
<i>Andropogon gerardii</i>	big bluestem	blue-purple then red-copper	5-8 feet	August-September	\$10.00/lb
<i>Schizachyrium scoparium</i>	little bluestem	blue-green then deep russet	2-4 feet	August-September	\$12.00/lb
<i>Sorghastrum nutans</i>	indian grass	yellow flowers	5-7 feet	August-September	\$10.00/lb
<i>Sporobolus heterolepis</i>	prairie dropseed	tan in winter	2-4 feet	August-September	\$3.50/pot
<i>Andropogon virginicus</i>	broomsedge	green then orange	2-3 feet	August-September	\$40.00/lb
<i>Andropogon elliptii</i>	Elliott's broomsedge	green then orange	2-3 feet	August-September	\$3.00/pot
<i>Andropogon ternarius</i>	splitbeard bluestem	green then deep russet	2-3 feet	August-September	\$3.50/pot
<i>Panicum virgatum</i>	switch grass	green then golden	2-3 feet	August-September	3.75/pot
<i>Tripasum dactyloides</i>	Eastern gama grass	green then pink/orange	4-8 feet	August-September	\$3.50/pot
<i>Buchloe dactyloides</i>	buffalo grass	green	1-2 feet	August-September	\$2.25/pot
<i>Buoteloua curtispindula</i>	sideoats grama	green	1-2 feet	August-September	\$10.00/lb
<i>Allium mutabile</i>	wild onion	pale pink	1-2 feet	May-June	
<i>Allium stellatum</i>	wild onion	pale pink	1-2 feet	September-October	\$.90/10-25 roots
<i>Amorpha canescens</i>	lead plant	lavender	1.5-3 feet	June-July	
<i>Asclepia incarnata</i>	swamp milkweed	rose	2-4 feet	June-July	\$125.00/1

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<i>Asclepia tuberosa</i>	butterfly weed	red-orange	1-2 feet	June-August	\$2.65/10-25 roots
<i>Aster spp.</i>	aster	white, blue, purple	2-4 feet	August-October	\$12.00/oz
<i>Baptista australis</i>	blue wild indigo	blue	2-3 feet	May	\$2.15/10-25 roots
<i>Baptista leucophaea</i>	cream wild indigo	cream	1-2 feet	May	\$90.00/lb
<i>Coreopsis spp.</i>	tickseed coreopsis	yellow	1-3 feet	May-August	
<i>Delphinium virescens</i>	larkspur	white	1-3 feet	June-July	
<i>Dodecatheon meadia</i>	shooting star	pink or white	1-2 feet	June	\$8.75/pot
<i>Echinacea pallida</i>	pale purple coneflower	lavender	2-3 feet	June	\$85.00/lb
<i>Echinacea paradoxa</i>	yellow conflower	yellow	2-3 feet	June	\$125.00/lb
<i>Eryngium yuccifolium</i>	rattlesnake master	green-white	3-4 feet	July	\$60.00/lb
<i>Helianthus maximilliani</i>	maximillian sunflower	yellow	3-5 feet	September	
<i>Helianthus mollis</i>	ashy sunflower	yellow	3-5 feet	August	
<i>Helianthus occidentalis</i>	Western sunflower	yellow	1-3 feet	August-October	\$.90/10-25 roots
<i>Liatris aspera</i>	rough blazing star	purple	4-6 feet	September-October	\$120.00/lb
<i>Liatris pycnostachya</i>	gayfeather	purple	3-6 feet	July-August	\$85.00/lb
<i>Liatris squarrosa</i>	blazing star	purple	1-3 feet	July-August	\$1.60/10-25 roots
<i>Monarda fistulosa</i>	bergamot	lavender	2-3 feet	July	\$1.00/10-25 roots
<i>Oenothera macrocarpa</i>	Missouri evening primrose	yellow	1-12 inches	June	\$150.00/lb
<i>Penstemon spp.</i>	beard-tongue	white, purple	1-2 feet	April-June	
<i>Petalostemon candidum</i>	white prairie clover	white	1-3 feet	July	\$145.00/lb
<i>Petalostemon purpureum</i>	purple prairie clover	purple	1-3 feet	July	\$145.00/lb
<i>Phlox pilosa</i>	prairie phlox	rose-purple	1-2 feet	May	\$3.50/pot
<i>Phlox spp.</i>	wild sweet william	rose-purple	1-2 feet	May	\$3.50/pot
<i>Ratibida pinnata</i>	grayheaded coneflower	yellow	3-5 feet	July-August	\$95.00/lb
<i>Rudbeckia hirta</i>	blackeyed susan	yellow	1-3 feet	June	\$25.00/lb
<i>Rudbeckia missouriensis</i>	Missouri coneflower	yellow	1-2 feet	July	\$120.00/lb

<i>Silphium integrifolium</i>	rosin weed	yellow	4-6 feet	July-August	
<i>Silphium laciniatum</i>	compass plant	yellow	4-8 feet	July-August	\$100.00/lb
<i>Silphium terebinthinaceum</i>	prairie dock	yellow	3-6 feet	July-September	\$100.00/lb
<i>Sisyrinchium campestre</i>	blue-eyed grass	blue	8-10 inches	May	
<i>Solidago spp.</i>	golden rod	gold	1-3 feet	August-October	
<i>Tephrosia virginiana</i>	goatsrue	creamy pink	1-2 feet	June	
<i>Tradescantia ochiensis</i>	spiderwort	blue	2-3 feet	May-June	\$3.25/pot
<i>Vervena canadensis</i>	rose verbana	purple	18-24 inches	April-November	\$2.85/pot

Strategies

An area approximately 10 acres at the north end of Coliseum drive (Figure 9) will be planted with a mixture of native Missouri wildflowers and grasses (75% wildflowers and 25% grasses). Wildflower seeds are sown at 8 lbs. per acre and native grasses are sown at 10 lbs. per acre, so a mix of 75% wildflower and 25% grass seed would be 6 lbs. of wildflower seed and 2.5 lbs. of grass seed.

To prepare the site for planting, all cool-season grasses must first be removed. This will be done by applying two applications of glyphosate (Round-Up) to the area in April or May when green-up occurs. The first application should be made at a rate of 2 qts. of glyphosate per acre when the new grass growth is about three to four inches high. Three weeks later, a second application of glyphosate should be made at a rate of 1 qt per acre to kill any more tillers that come up through the dead grass. In September or October, a prescribed burn will remove the dead grass.

Wildflower seeds will be drilled into the soil over the winter and the grass seeds will be drilled into the soil to a ½ inch depth in May, which is the optimum planting time for warm-

season grasses. No fertilizers are recommended because they encourage cool-season grasses and weeds more than they stimulate germination and growth of the wildflowers. Also, increases in nitrogen in the soil result in the decline of native prairie grass species.

The no-till methods described above for removing vegetation and exposing the soil are methods that do not disturb weed seeds in the soil. Tilling stimulates buried weed seeds to grow. Prescribed burns will be necessary about every third year to open the site and allow the wildflowers to sustain themselves. Prescribed burning is the preferred way of managing sun-loving native wildflowers and grasses (Missouri Wildflower Nursery 1997). Maintenance of the wildflower area using prescribed burns could potentially be carried out by MU student natural resource organizations.

Budget

Start-up Costs

Herbicide Application

Pass 1

Labor	\$ 100.00 MFA licensed applicator
Material	\$ 203.50 2 qts. Round-Up/acre, \$20.35/acre

Pass 2

Labor	\$ 100.00 MFA licensed applicator
Material	\$ 107.30 1 qt. Round-Up/acre, \$10.73/acre

Prescribed Burn

Equipment

Drip torch	\$ 120.00 Ben Meadows Company
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Equipment per man (4)

Shovel (4)	\$ 80.00 Ben Meadows Company
Extinguisher (4)	\$ 240.00 Ben Meadows Company

Labor

4 man hours	\$ 40.00
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Seeding

Equipment

Tractor (4 hours)	\$ 109.00
Drill	\$ 80.00, \$8.00/acre

Materials

Wildflower seed	\$ 6280.00, \$628.00/acre MO Wildflowers Nursery
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Native grass seed	\$ 410.00, \$41.00/acre MO Wildflowers Nursery
Labor	
2 man hours	\$ 20.00
TOTAL	\$ 7889.80

Maintenance Cost Estimation

Prescribed Burn

Every third year	\$ 40.00
Patch seeding (1 acre/3 years)	\$ 669.00
TOTAL	\$ 709.00, \$236.33 each year

Program support

We recommend BCPRC seek to establish a cooperative with the MU Agronomy extension, the MU Society of American Foresters (Forestry Club) and the MU Wildlife Society to reduce labor costs associated with the establishment and maintenance of the native prairie and wildflower areas.

TREE LANDSCAPING

Outcomes

As a result of the tree-landscaping program, people will experience a more comfortable and pleasant visit to the BCFG.

Outcome Measures

Success of the tree-landscaping program will be measured by observation of aesthetic improvements, and measured reductions in wind speed on the baseball fields.

Outputs

Visitors will have shaded areas for protection from the sun during fair events, baseball games, and while using the park picnic areas and playgrounds. Baseball players, softball players and spectators will be sheltered from gusty winds. A protective tree line will be added around each parking lot. Waste collection sites, will be hidden from view.

SHADE TREE PLANTING

Objective

Trees will be planted throughout the fairgrounds to provide protective shade for park visitors.

Strategies

Shade tree planting will be concentrated in areas where people are most likely to congregate (i.e. baseball/softball fields, playgrounds, picnic areas, and the fairgrounds) (Figure 10). Trees from the list in Table 20 are recommended as shade trees because of their growth form and resistance to storm damage. Trees with a large crown are desired for maximum shading and sturdy branches are necessary to avoid fallen or broken branches around highly trafficked areas. Six trees are recommended for planting around the ball fields (2 near the fields and 4 near the concession stand) where spectators will most likely watch the game. Twelve trees are recommended for planting around the playground and open play area in the northwest corner of the property. Twenty trees are planned for the picnic area near the RV park. Five trees are planned in front of the outdoor arena and eight in the fairground area. Two trees are recommended for the existing soccer field near the current fair entrance.

Site preparation and planting will be conducted in the spring. Tree planting will begin by removing sod, and manually excavating a hole. Mulch will be placed at the base of each tree to control weeds and retain soil moisture.



0.25 0 0.25 0.5 0.75 1 Kilometer

- ◆ Shade Tree Plantings
- Windbreak
- ▤ Boone County Fairground Bountary
- Prairie
- Wildflower Area

Figure 10: Tree Landscaping

Table 20: Shade trees for the BCFG (Starbuck 1997).

Common Name	Scientific Name	Maximum Height (feet)	Relative Growth Rate	Resistance To Storm Damage	Resistance To City Conditions	Cost Per Tree	Comments
Green ash	<i>Fraxinus pennsylvanica</i>	60	Excellent	Good	Good	\$8.10	Seedless variety available
White ash	<i>Fraxinus americana</i>	80	Good	Good	Good	\$8.10	Seedless variety available
Honey locust	<i>Gleditsia triacanthos var. inermis</i>	80	Excellent	Good	Good	\$8.10	Thornless variety
White oak	<i>Quercus alba</i>	80	Poor	Excellent	Good	\$8.10	
Red oak	<i>Quercus borealis</i>	70	Good	Excellent	Good	\$8.10	
Ginko	<i>Ginko biloba</i>	60	Poor	Excellent	Excellent	\$8.10	Male tree (does not drop fruit)
Linden	<i>Tilia spp.</i>	30-60	Good	Good	Excellent	\$8.10	

Budget

Start-up Costs

Equipment

Tractor \$ 169.00 per day, A-1 Rental

Trailer \$ 40.00 per day, A-1 Rental

Equipment per man

Shovel \$ 30.00 ACE Hardware

Post-hole digger \$ 40.00 ACE Hardware

Material

70 shade trees total \$ 567.00 Forrest Keeling Nursery

Tree stakes

Mulch \$ 0.00 Capen Park

Labor

8 man hours \$ 80.00

TOTAL \$ 926.00

Program support

We recommend the use of community service, prison labor, volunteers (ie. MU Forestry Club and Columbia Tree Keepers) to reduce labor costs. Tree stocks could be obtained through Columbia Parks and Recreation nursery at reduced costs if a cooperative venture is pursued.

WINDBREAK ESTABLISHMENT

Objective

A windbreak will be planted around the southern and western sides of the baseball fields to protect player and spectators from gusty winds.

Strategies

Site preparation for the windbreak, similar to that for shade tree planting, will begin the fall before the intended spring planting. The windbreak will be a U-shaped windbreak extending approximately 1000 ft along the southern and western borders of the baseball field complex, and it will be approximately 50 feet wide (three rows of trees and shrubs). A denser windbreak (more than three rows, and trees spaced closer together) would reduce wind speed more, but it also may lead to increased temperatures on the fields and eliminate ventilation. The innermost row of the windbreak will approximately 100 ft from the edge of the ball fields to ensure maximum performance of the windbreak. See Appendix G for recommended tree species, planting scheme, and tree spacing, and see Figure 10 for location of the windbreak. Species in each row will be mixed for aesthetics, protection against plant diseases and pests, and for optimum windbreak protection. A very fast growing species (silver maple, *Acer saccharinum*) is recommended for planting in the tall deciduous row so that an effective windbreak may be established sooner. However, since this species is also a relatively short-lived species, they are recommended to be spaced in a way that will lend them to complete removal by thinning out of

the row after approximately 15 years. The southern and western-most row, or the outer row, will be low-growing dense shrubs. The middle row will be medium-sized evergreen trees, and the northern and eastern-most row, or the inner row, will be tall deciduous trees.

Planting methods are the same as for the shade trees. Trees will be planted in the spring. Sod will be removed with a shovel where each tree will be planted. A posthole digger or shovel will be used for planting. Each tree will be staked for support, and mulch will be placed around the base of each tree for weed control and soil moisture retention

Budget

Start-up Costs

Equipment

Tractor	\$ 169.00 per day, A-1 Rental
Trailer	\$ 40.00 per day, ACE Hardware

Equipment per man

Shovel	\$ 30.00 ACE Hardware
Post-hole digger	\$ 40.00 ACE Hardware

Material

100 deciduous trees total	
40 red oak	\$ 324.00 Forrest Keeling Nursery
30 honey locust	\$ 243.00 Forrest Keeling Nursery
30 silver maple	\$ 243.00 Forrest Keeling Nursery
100 evergreens total	
50 red cedar	\$ 300.00 Poitter Nursery
50 arborvitae	\$ 1500.00 Poitter Nursery
200 shrubs	
70 spirea	\$ 2100.00 Superior Garden Nursery
Tree stakes	\$ 750.00 \$2.50 per stake, 3 per tree
Mulch	\$ 0.00 Capen Park

Labor

8 man hours	\$ 80.00
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TOTAL	\$ 9419.00
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Maintenance Costs (after fifteen years)

Equipment

Tractor	\$ 169.00 per day, A-1 Rental
Trailer	\$ 40.00 per day, ACE Hardware
Chainsaw	\$ 60.00 per day, ACE Hardware

Labor

16 man hours	\$ 160.00
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TOTAL	\$ 509.00
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PROTECTIVE TREE LINE PLANTING

Objective

A tree line will be planted around the edges of parking lots to shade and protect cars.

Strategies

A single line of trees will be planted around the southern and western edges of parking lots. Approximately 75 trees, spaced 15 feet apart, will be needed for the main parking lot near the entrance of the BCFG. Approximately 30 trees will be planted around the baseball complex parking lot, 20 trees will be planted around the parking lot in the northwest corner, and 40 trees will be planted around the parking lot across from the RV park. A mix of green ash (*Fraxinus pennsylvanica*) and linden (*Tilia spp.*) trees are recommended for these tree lines because of their growth form and resistance to air pollution from cars.

Planting methods for the protective tree line trees is the same as for the shade trees and windbreak trees. Planting will take place in the spring.

Budget

Start-up Costs

Equipment

Tractor	\$ 169.00 per day, A-1 Rental
Trailer	\$ 40.00 per day, ACE Hardware

Equipment per man

Shovel	\$ 30.00 ACE Hardware
Post-hole digger	\$ 40.00 ACE Hardware

Material		
75 shade trees total	\$ 607.50	Forrest Keeling Nursery
Tree stakes	\$ 562.50	
Mulch	\$ 0.00	Capen Park
Labor		
8 Man hours	\$ 80.00	
TOTAL	\$ 1320.00	

DISGUIISING PLANT BARRIER PLANTING

Objectives

An open ring of fragrant ornamental shrubs and evergreen trees will be planted around the main trash dump/storage to help mask any unpleasant odors and to keep the site out of view from park visitors.

Strategies

Lilacs and arborvitae shrubs are recommended to disguise the trash site of the BCFG. Lilacs provide a fragrant and decorative mask in the spring, and the arborvitae provides a year-round visual disguise of the site with its evergreen foliage. Approximately 18 arborvitae trees, planted five feet apart, are needed to close in three sides of a 30 X 30ft trash site. One side should be left open so that collection trucks may access the site. A second ring of shrubs, lilacs, will be planted around the ring of arborvitae.

Budget

Start-up Costs

Equipment		
Tractor	\$ 169.00 per day,	A-1 Rental
Trailer	\$ 40.00 per day,	ACE Hardware
Equipment per man		
Shovel	\$ 30.00	ACE Hardware
Material		
18 lilac bushes	\$ 540.00	Superior Garden Nursery
18 arborvitae shrubs	\$ 540.00	Poitte Nursery

Mulch	\$ 0.00 Capen Park
Labor	
2 man hours	\$ 20.00
TOTAL	\$ 1339.00

STREAM BANK STABILIZATION

Outcomes

Plant native tree species along Bear Creek and adjoining drainages to control erosion and improve water quality.

Outcome Measures

The success of this program will be simply measured by observation. After the trees have been planted and allowed to grow, stream bank and water quality will be monitored.

Outputs

With this program we hope to stabilize 1820 linear feet of Bear Creek and adjoining drainages to prevent erosion and to improve water quality.

Objectives

To stabilize stream banks with native tree species.

Strategies

Erosion problem areas should be identified (Figure 11) and planted with fast growing native species. We recommend using four different species: cottonwood (*Populus deltoides*), green ash (*Fraxinus pennsylvanica*), sycamore (*Platanus occidentalis*), and silver maple (*Acer saccharinum*). Bare rootstock will be used except for cottonwood where cuttings will be used. The trees should be placed approximately 8 feet apart in three rows to give approximately 25 feet of buffer. This will require approximately 684 seedlings. Each row will be staggered to fill in



Figure 11: Stream Bank Stabilization

spaces created by the previous row. Species will be distributed equally among planting areas. All trees will be planted using a quick and easy dibble bar process. Tree mats will be used to control competition from weeds that can rob seedlings of nutrients. The mats will be held down with large wire staples to prevent them from being blown or washed away. This process should not take more than a day and a half with a crew of four people. The mats lose their effectiveness after 2 years, and can be removed. The trees should be well established by this time. Other areas of the stream would need to be monitored for erosion. If problem erosion occurs, the same procedures should be implemented. This should stabilize soil in these areas and prevent further erosion. This program should be started immediately to prevent any further erosion damage.

Budget

Trees

171 cottonwood cuttings	\$ 34.20
171 green ash seedlings	\$ 34.20
171 sycamore seedlings	\$ 34.20
171 silver maple seedlings	\$ 34.20

Other materials

4 planting bars	\$ 99.80
700 tree mats	\$ 328.65
2800 tree mat staples	\$ 149.85

Labor

60 man hours	\$ 600.00
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TOTAL	\$ 1315.10
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Program Support For All Tree Related Programs

The labor for this plan could be gained in two ways. Prison labor should be considered. Another alternative is the use of community service laborers that are available through the Columbia Municipal Court and the Boone County Court house.

NATURE/FITNESS TRAIL

Outcomes

The proposed fitness trail outcome is to promote physical fitness within natural surroundings as well as linking parts of the BCFG. The trail design will combine running and individual exercises. The all-steel design conditioning course provides a total fitness program for beginners and advanced user groups.

Outcome Measures

To insure that the trails continually meet the needs of the users, we plan to place recommendation boxes at the trailhead.

Outputs

This trail will provide years of enjoyment and exercise for Boone County residents and visitors.

Objectives

A 10-ft wide leveled, 2.5-mile path will be constructed. Eight fitness stations will be placed along a ¾-mile stretch adjacent to Bear Creek.

Strategies

A contiguous network of trails will be developed. Trails should not exceed a 6% slope, with only short stretches having a 4-6% grade. The trail layout will be comprised of a large outer loop with several smaller integrated loops for individuals who cannot ride/walk the larger loop, or want a change of scenery. Signs and maps will be placed along the trail, telling the user where he/she is and the distance to major points. The Northeast loop (Figure 12) will be paved with concrete to comply with ADA regulations. The remaining trail length will be covered with



0.25 0 0.25 0.5 0.75 1 Kilometers






-  Trail
-  Stream Bank Stabilization
-  Shade Tree Plantings
-  Windbreak
-  Boone County Fairground Boundary
-  Prairie
-  Wildflower Area

Figure 12: Nature and Fitness Trails

chipped limestone and lined with railroad ties. There will be 3 major entrances to the trail (Figure 12), each of which are located near the 3 major parking lots on the Northern portion of the BCFG. Eight 16 X 16ft fitness stations, installed by a professional trail developer, will be located along Bear Creek. Each will have protective cushion tiles for safety. The fitness stations will be placed relatively equal distance apart on level ground. These 8 stations include the following exercises:

1. Step-up
2. Leg Lift
3. Body Curl
4. Beam Jump
5. Horizontal Loop Ladder
6. Sit-up
7. Push-up
8. Chin-up

A kiosk will also be placed at the major trailhead to inform visitors about the parks history (Appendix H). Within the scope of 5-10 years, an assessment involving visitors surveys needs to be conducted to determine maintenance needs.

Budget

Trail clearing/leveling	\$210000.00 (3000 hours @ \$70 per hour)
Fitness trail package	
Various signs throughout trail (26)	\$ 5299.00
Fitness trail package installation	\$ 2800.00
Extra signs (for two way traffic)	\$ 892.00
Cushion play tiles	\$ 20480.00
Concrete pavement	\$ 69734.00
Chipped limestone surface	\$ 24288.00

TOTAL	\$333493.00
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(Apac 2000, Henderson's 2000, Playworld Play Systems 2000)

OPERATIONAL PLANS AND BUDGET (contd.)

ISSUE 2

Due to diversity of countywide recreational needs and established interest in the Boone County Fair and its future, it will be difficult to plan recreational facilities that satisfy the majority of Boone County citizens. Analysis of national and state standards and of state, county and city surveys, Boone County currently has a deficit of recreational facilities. Failure to provide a plan that considers all interests and their feasibility will result in inefficiently meeting recreational needs of Boone County citizens.

Goals

1. To provide adequate parking and access to park facilities.
2. To provide a baseball/softball complex for open or limited (daylight only) league play.
3. To provide a neighborhood park to support the recreational needs of current and future residents on properties adjacent to the fairgrounds, as well as other park visitors.
4. To establish a picnic area for general community and fair usage.

Programs

- a. Roads and Parking
- b. Baseball/Softball Complex
- c. Neighborhood Park Establishment
- d. Picnic Area and Shelters

ROADS AND PARKING

Outcomes

The current exits from Highway 63 are satisfactory. However, to provide easier access and increase usage of the BCFG, Prathersville road must be extended. In addition, three parking lots will be constructed at various areas within the park (Figure 13).

Outcome Measures

Traffic will be monitored during high-use events to ensure adequate access, traffic circulation, and parking exists.

Outputs

The proposed road would link the northern and eastern sections of the BCFG and provide access to the Northeast ball fields trails, and picnic areas. The parking lots will aid in access to different parts of the park.

Objectives

1. Provide a chipped limestone road along the Northern section of the BCFG, continuing Prathersville road to the Northeast corner parking lot for access to ball fields, picnic areas, playgrounds and trail entrances on that side.
2. To provide parking lot on the Northeast corner, Northwest corner and the Southwest corner of the combined Newton and Adkins tracts of the BCFG.

Strategies

Excavate and level the future road and parking lots as needed. Install a standard 6-9 inch thick gravel road and parking lot made of chipped limestone. For the present time, the proposed road is recommended to be temporary for quick access and construction. In the 5-year plan, we recommend a paved road in conjunction to the Boone County Master Plan to continue



0.25 0 0.25 0.5 Kilometers

-  Access Road
-  Picnic Area Parking
-  Neighborhood Park Parking
-  Softball Complex Parking
-  Trail
-  Stream Bank Stabilization
-  Shade Tree Plantings
-  Windbreak
-  Boone County Fairground Boundary
-  Prairie
-  Wildflower Area

Figure 13: Roads and Parking

Prathersville road to Brown Station road. Maintenance inspections should be conducted on parking lots within the 5-year period. These parking lots should be assessed to determine if the space meets the demands for the park.

Budget

Road construction

Surface	\$ 54208.00
Labor	\$143500.00

Parking area

Construction/leveling	\$350.00
Surface	\$6345.70

TOTAL	\$204403.70
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(Apac 2000, Hendersons 2000)

Program Support for Trail and Road Programs

Innovative techniques for raising funds such as Adopt-A-Spot should be investigated.

BASEBALL/SOFTBALL FIELD COMPLEX

Outcomes

Provide three regulation size softball fields, one playground, and one concession stand with restrooms.

Outcome Measures

Usage can be measured by the number of reservations of each field. Our program will also be successful if the fields are used as part of a county fair tournament. Usage can also be measured by the number of residents using the fields during open play hours.

Outputs

The addition of baseball and softball opportunities to a community that lacks the recommended amount of ball fields per capita. Incorporation of a fair tournament will also help establish the BCFG as an important community center.

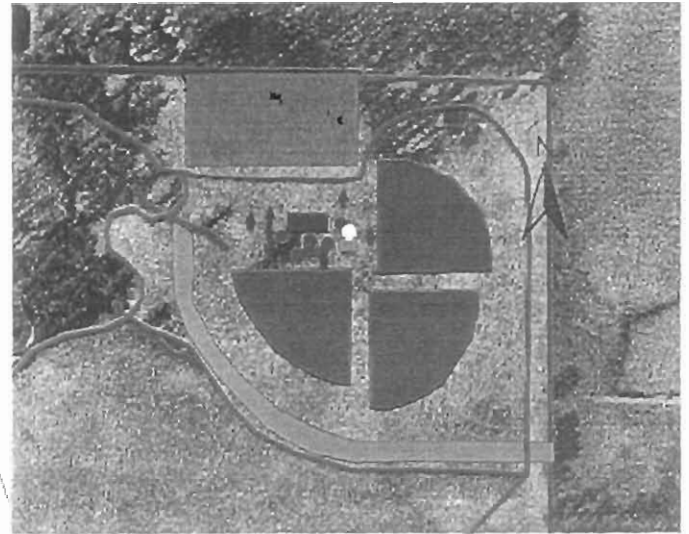
Objectives

1. To provide three baseball/softball fields in the Northeast corner of the Newton tract (Figure 14).
2. To provide a concession stand to support the baseball/softball complex during league play hours.
3. To provide a playground near the ball fields as a convenience for families using the complex.
4. To provide support facilities such as bleachers, walkways and picnic tables throughout the complex.
5. To use the ball complex for a fair tournament and other special events.
6. To establish quality turf grasses on baseball fields and open play fields in the park.

Strategies

Field preparation should begin by leveling the area as recommended for softball complex construction. Once the area is leveled, an irrigation system should be installed. Bids should also be requested and contracts awarded for the equipment and installation of the irrigation system. Fencing should be placed around the perimeter of all three fields. As the fields are 275 feet by 275 feet this should require approximately 2,690 feet of fencing. Basic field equipment should be purchased and installed. This equipment will include backstops and dugouts. Bases should also be purchased at this time.

During the first fall prior to season start, turf should be seeded in the outfields. To prepare the site for planting, bare soil must be exposed and it must be raked to break up any large soil clods that would lead to an uneven field surface. Fertilizer will be added and tilled into the root zone (top 4 inches) before initial raking takes place. Turf-type fescue is a hardy, cool season



0.1 0 0.1 0.2 Kilometers



- ◆ Shade Tree Plantings
- Picnic Tables
- Softball Complex Parking
- Softball Complex Playground
- Softball Complex Concessions and Restroom
- Softball Fields
- Access Road
- Picnic Area Parking
- Neighborhood Park Parking
- Softball Complex Parking
- Trail
- Stream Bank Stabilization
- Windbreak
- Boone County Fairground Bountary

Figure 14: Softball Complex

grass that resists the wear and tear of sports and is tolerant to heat, drought, sun, and shade.

Seeding should take place in the fall to benefit from fall precipitation and to allow the establishment of a good root system by the following spring.

Once established, the turf needs to be maintained at a height of 3-4 inches by mowing. Reseeding patches, fertilizing, and broadleaf weed control may be necessary on an annual basis. Broadleaf weed control, such as 2, 4-D, should not be applied to the newly established turf until it has been mowed two or three times.

During the initial leveling and field construction, a 20 X 15ft concession/restroom building should be provided in the Northwest quadrant of the softball complex. This would place the concession stand near both the fields and the parking area. The location will provide easy access from each of the three fields and allow users to purchase refreshments or use restrooms on the way into the complex. The concessions can provide revenue from weekend tournaments, fair tournaments, and special events in general.

During the early construction phase, a playground will be built to the east of the concession stand. This would put the playground in clear view of the concession stand as well as softball fields to provide for easy supervision. The playground equipment will be relatively “simple” consisting of a slide/jungle gym complex. Surfacing on the 35 X 35ft surface area will be wood carpet at a depth of 8 inches. This facility will meet current ADA guidelines.

During the first season, two sets of 8 ft, 4 row bleachers will be provided for each field. More bleachers may be purchased if necessary for future seasons. During the initial construction phase, approximately 1000 feet of concrete walkways will be provided between fields, concessions, playgrounds, and parking areas. The walkways will be 5 feet wide to meet ADA

guidelines. Eight picnic tables should be purchased and located near the concessions and playground areas.

To spark countywide interest in the fair, an annual softball tournament could be held in the complex during the fair week. This tournament might include one team from each of the local school districts and a fee could be charged to help offset the costs. Investigation should also be done to determine whether the complex could be used during the statewide Show-me games, Special Olympics and other events.

Budget

Concessions	\$ 30000.00 (based on \$100/sq.ft.)
Picnic Tables	\$ 2000.00 MMI 1997
Walkways	\$ 9520.00 \$17/sq.yd. for 560 yards
Playground	
Equipment	\$ 12400.00 MMI 1997
Surfacing	\$ 900.00 MMI 1997
Field preparation	
Equipment	
Tractor with seed rake	\$ 123.36, \$7.71/acre MU Agronomy Extension
Tractor with tiller	\$ 123.36, \$7.71/acre MU Agronomy Extension
Seed spreader	\$ 58.40, \$3.65/acre MU Agronomy Extension
Materials	
Seed	\$ 192.00, 8 lb./acre, 1.50/lb.
Fertilizers	\$ 1440.00, \$90.00/acre
Herbicides	\$ 244.00, \$15.25/acre
Labor	
Seedbed prep, 6 man hours	\$ 60.00
Seeding, 2 man hours	\$ 20.00
Fertilizer application	\$ 100.00, MFA licensed applicator
Herbicide application	\$ 100.00, MFA licensed applicator
Leveling	\$ 3440.00 MU Extension Services
Fencing	\$ 26880.00 \$10 per linear foot
Irrigation	\$ 1720.00 Travis Irrigation
Equipment	
Bases	\$ 600.00 MMI 1997
Backstop	\$ 16320.00 MMI 1997
Scoreboard	\$ 10890.00 MMI 1997
Bleachers	\$ 5400.00 MMI 1997
Maintenance Equipment	
Line Marker	\$ 138.00 MMI 1997
Drag	\$ 334.00 MMI1997

Yearly Maintenance Costs

Equipment	
Seed spreader	\$ 123.36, \$7.71/acre, MU Ag. Extension
Tractor with rake	\$ 58.40, \$3.65/acre, MU Ag. Extension
Materials	
Seed	\$ 96.00, 4 lb./acre, \$1.50/lb.
Fertilizer	\$ 1440.00, \$90.00/acre
Herbicides	\$ 244.00, \$15.25/acre
Labor	
Seeding, 2 man hours	\$ 20.00
Fertilizer application	\$ 100.00, MFA licensed applicator
Herbicide Application	\$ 100.00, MFA licensed applicator
TOTAL	\$130,024.88

NEIGHBORHOOD PARK ESTABLISHMENT

Outcomes

Build two basketball courts, two tennis courts, and a playground area.

Outcome Measures

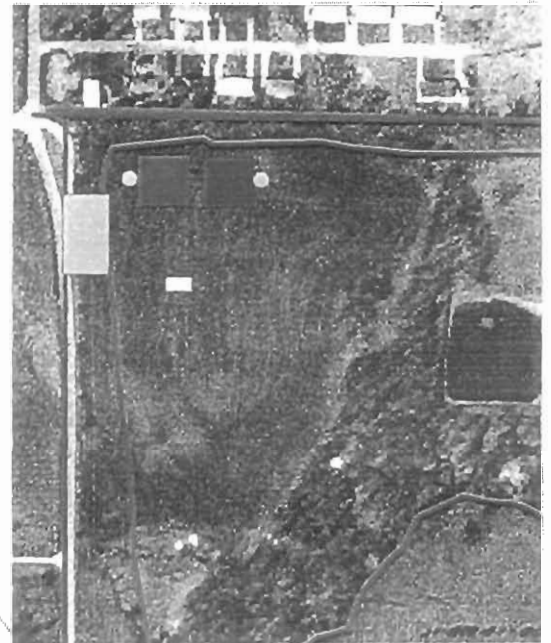
Usage over time will provide accurate measure of the value as a recreational area.


Outputs

A well placed recreation area (Figure 15) that serves the needs of the community and specifically provides easy access and incentive for maximized usage by the adjacent neighborhood.

Objectives

1. To create basketball courts to enhance recreational opportunities available to the area's youth.
2. To create tennis courts to appeal to a diversity of interests.
3. To develop a small playground to give children easy access to play equipment.



-  Neighborhood Playground
-  Picnic Tables
-  Benches
-  Tennis Courts
-  Basketball Courts
-  Access Road
-  Neighborhood Park Parking
-  Trail
-  Stream Bank Stabilization
-  Shade Tree Plantings
-  Boone County Fairground Bountary

0.05 0 0.05 0.1 0.15 0.2 Kilometers

Figure 15: Neighborhood Park

4. To provide benches and picnic tables throughout the park to aid enjoyment and ease of supervision.
5. To leave the remainder of the open field in the northwest corner of the Adkins tract for open space or free play activities.

Strategies

The basketball courts should be located in the northern section of the neighborhood park area within the view of houses in the current subdivision to aid in child supervision.

Construction of the courts could be done during the summer of 2000. The total court space will be 120 ft by 120 ft allowing for two full 50 foot by 94-foot basketball courts and a buffer between them. Four goals will be located on the courts. The surfacing should be asphalt, allowing for use by other activities such as roller hockey. Bids should be taken for equipment and installation and a contract awarded.

The tennis courts should be located to the east of the basketball courts and still within view of the subdivision for ease of supervision. The tennis courts could also be constructed during the summer of 2000. Total court space should be 120 ft by 120 ft to allow for two 36 ft. by 78 ft. courts and a buffer between them. The surfacing should be asphalt to allow for multiple uses. Bids should be taken for asphalt, fencing, poles, nets, and other equipment as well as installation. A contract should be awarded for these items and services.

The playground area should be located in the central portion of the neighborhood park, south of the basketball and tennis courts. This assures that the playground is not located next to a roadway. The playground should be installed during the same time period as the tennis and basketball courts. The playground area should be approximately 50 ft by 35 ft with a wood carpet surface to provide for low impact and accessibility. We recommend that playground

equipment include swings, climbers and slides that can be purchased from a number of companies.

Two four foot wooden benches will be provided adjacent to both the tennis and basketball courts. Two six foot picnic tables will be located near the playground to give users a place to picnic or parents a place to rest while watching their children.

After the courts and playground are completed, appropriate quality grasses must be re-established in the entire park area and on the approximately 5 acres of open space. The area should be kept mowed to a maximum height of 3-4 inches.

Budget

Basketball courts	\$26140.00 Southern Construction Mgmt. Inc
Tennis courts	\$46140.00 Southern Construction Mgmt. Inc
Playground	
Equipment	\$13080.00 MMI 1997
Surfacing	\$ 1290.00 MMI 1997
Benches	\$ 600.00 MMI 1997
Picnic tables	\$ 500.00 MMI 1997
Trash cans	\$ 900.00 MMI 1997
Turf management	\$ 2000.00 MU Agronomy Extension
TOTAL	\$90650.00

PICNIC AREA AND SHELTERS

Outcomes

One large picnic pavilion, three small shelters, and a large playground.

Outcome Measures

The effectiveness of the area will be measured by studying usage during fair events as well as the number of reservations made yearly.

Outputs

An area with shelters, picnic tables and a playground for fair goers and park visitors to enjoy.

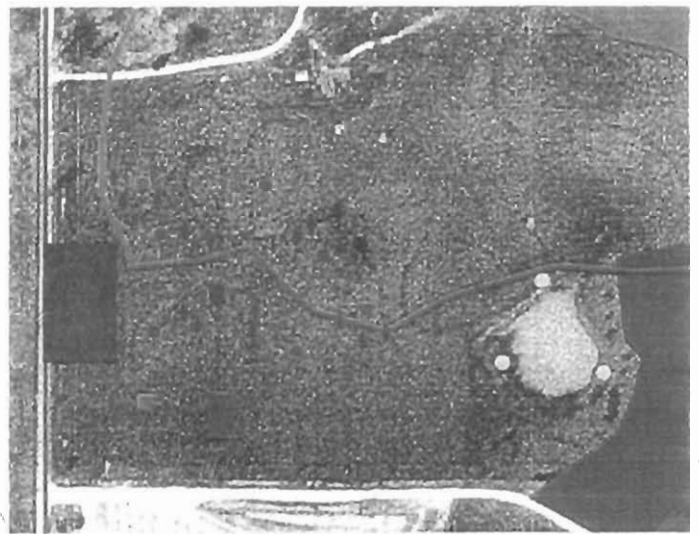
Objectives

1. To provide one large picnic pavilion and three smaller shelters.
2. To develop a large playground in this area to support the needs of picnickers, fair goers, and campground users.
3. To provide five movable 6-foot picnic tables throughout the picnic area and three benches around the existing pond.

Strategies

One 28 ft by 44 ft pavilion holding 18 six-foot tables should be provided directly to the west of the parking area. The wooden shelter will be set on a concrete pad and will include 2 grills and a trash receptacle (Figure 16). Three 16 ft by 20 ft. shelters capable of holding 6 six-foot picnic tables will be placed to the northwest and southwest of the parking area. These too will be wooden shelters set on a concrete foundation. One grill and trash receptacle will be provided per shelter. Materials and patterns for building the shelters, grills, trash receptacles and tables. The three shelters should be available for rent for a small fee. User fees will generate revenue to help cover maintenance costs. Both the benches and picnic tables can be acquired from private companies and installed by park staff.

The playground will be located in the central portion of the picnic area: south of the pavilion, west of the southernmost shelter and north of the campground. It will be easily viewable from most picnicking spots in the area. This should be a premier playground attracting



- ◆ Shade Tree Plantings
- Picnic Shelters
- Picnic Pavilion
- Picnic Area Playground
- Picnic Area Parking
- Picnic Tables
- Benches
- Picnic Area Parking
- ▲ Trail
- ▲ Boone County Fairground Boundary
- Prairie
- Wildflower Area

0.05 0 0.05 0.1 0.15 0.2 Kilometers



Figure 16: Picnic Area

not only nearby residents, but also those from across Boone County. There will be a wide diversity of equipment including climbers, bridges, slides, and swings located on a 50 ft by 40 ft surface of wood carpet (MMI 1997). Two benches will be provided nearby for supervision.

Budget

Shelter (28ft by 44ft)	\$20850.00 Kit from MMI 1997
Concrete	\$ 2329.00 (\$17/sq.yd)
Shelters (3, 16ft by 20 ft each)	\$ 8275.00 Kit from MMI 1997
Concrete	\$ 1836.00 (\$17/sq.yd)
Grills	\$ 1000.00 MMI 1997
Tables	\$10000.00 MMI 1997
Benches	\$ 750.00 MMI 1997
Playground	
Equipment	\$35000.00 MMI 1997
Surfacing	\$ 1290.00 MMI 1997
Trash receptacles	\$ 1500.00 MMI 1997
TOTAL	\$82830.00

Program Support for Recreational Structures

We suggest that professional contractors be used to construct all recreational facilities.

Labor costs associated with maintenance such as grass cutting, irrigation and litter control, can be reduced using prison labor and community service.

PROGRAM SUMMARY

To provide an aesthetic and functional recreation area for the citizens of Boone County our plan has recommended eight programs (Figure 17). These programs include: native prairie, wildflower area establishment, tree landscaping, stream bank stabilization, nature/fitness trail, roads and parking, baseball/softball complex, neighborhood park establishment, and picnic area and shelters.

The Native Prairie Restoration program will take approximately three years to complete. The program encourages a partnership with the FFA which will benefit both parties.

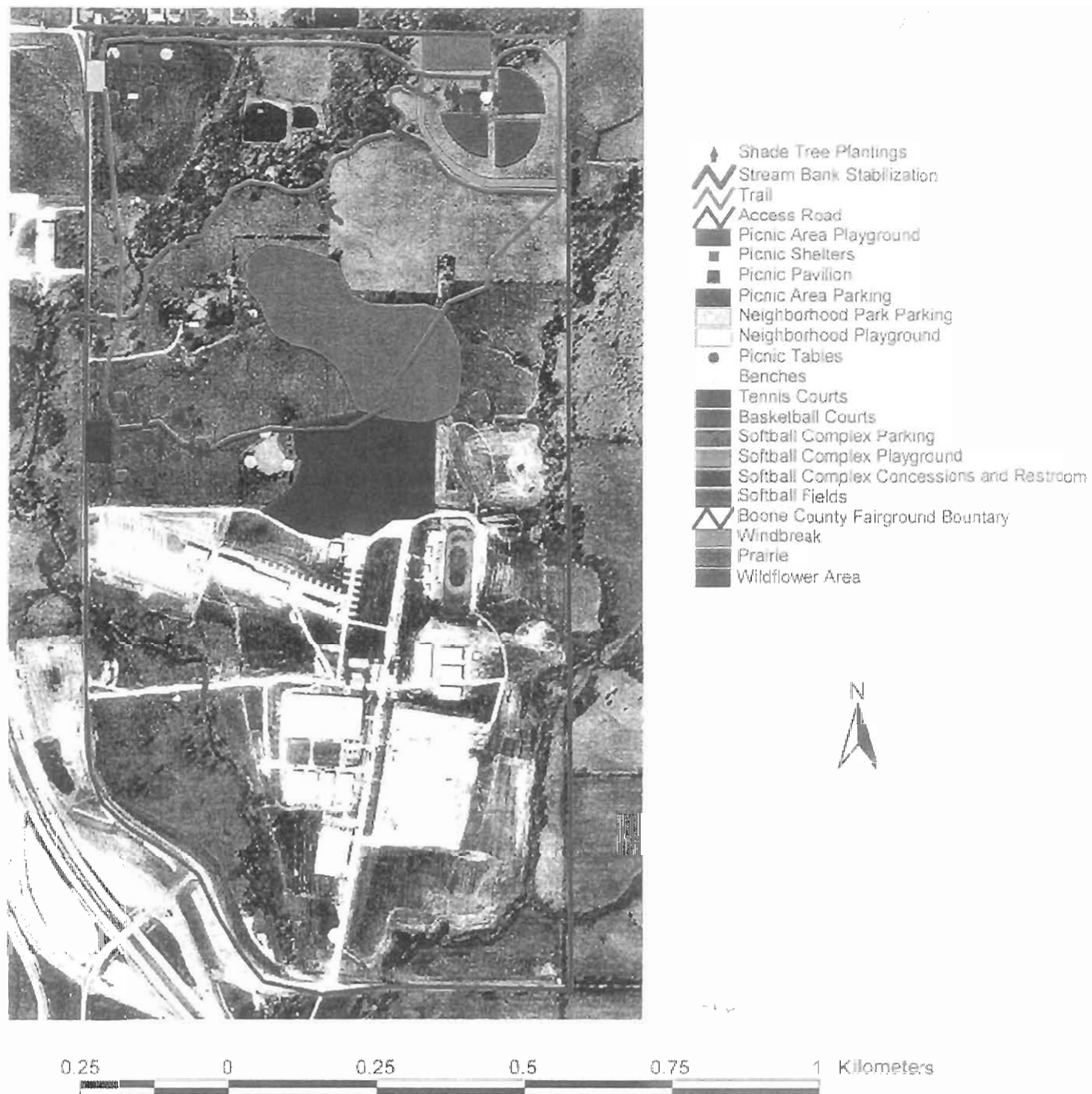


Figure 17: General Overview of the Boone County Fairgrounds Park

The strategy for creating a strong and sustainable seedbed for native prairie grasses will take two years; results will not be tangible or add to the aesthetics of the site until the third year.

Including a signage, materials, labor, and site preparation, the total budget for this program is **\$4166.08**.

A Wildflower Area Establishment program will blend the prairie restoration program with existing structures. Weed control techniques and a prescribed burn regimen are necessary to preserve the wildflowers and may be used as an interpretive event for the community.

Including the herbicide application, prescribed burning, and the seeding, the total budget for the wildflower program is **\$7889.80**.

The Tree Landscaping program provides a number of suggestions shading, buffering of eyesores and parking lots, and a wind break for the baseball fields. A variety of tree species totaling 381 individual plantings will be used throughout the park. Including equipment, labor, and materials the Tree Landscaping program budget is **\$12,875.00**.

The Stream Bank Stabilization program will be necessary to stop the continuous erosion along Bear Creek. This program uses basic forestry practices to stabilize the soil along the stream. Successful completion of this program should improve aesthetic characteristics along the creek as well as improved stream quality. A total of 684 trees will be planted along the stream bank. Including the cost of cuttings, seedlings, materials, and labor the total budget for the Stream Bank Stabilization program is **\$1315.10**

A Nature/Fitness Trail program should help meet the increasing demand for green space while allowing visitors to experience the natural beauty of the restored prairie and wildflower area. Combined with a fitness program, the trail offers an integration of natural settings and recreational opportunities. In its entirety, the trail will be 2.5 miles long which includes a ¼ mile

fitness loop. Including materials, labor, and construction fees the total budget for the Nature and Fitness Trail is **\$333,493.00**.

The Roads and Parking program provides access to the recreational facilities at the northern halves of the Newton and Adkins tracts. Addition of the access road will compliment the Boone County Master Plan that proposes a continuation of Prathersville Road to Brown Station Road. Additionally, the Roads and Parking program places three parking lots located near the planned recreation facilities. Including construction surfaces and labor, the road program budget is **\$204,403.70**.

The Baseball/Softball Complex program will provide three regulation size fields. In addition, a concession stand and playground are planned to accompany the facility. The playground and concession stand will compliment usage during daytime tournaments as well as a tournament held during the fair. Including all materials, labor, equipment, preparation, and construction the total budget for the Baseball/Softball facilities is **\$365,184.88**.

The Neighborhood Park Establishment program provides a variety of opportunities for park visitors. Located near the neighborhood adjacent to the northern part of the Newton tract, the park will include tennis, basketball, and playground facilities for Boone County citizens and especially youth living in close proximity. Including construction and materials the Neighborhood Park program budget is **\$90,650.00**.

The Picnic Area and Shelters will be provided for visitors wishing to eat or rest. Throughout the year, the picnic facility will be used for family reunions and other gatherings, with a play area where children can play in view of resting parents. Including a 28ft X 44ft pavilion, three 16ft X 20ft shelters, a total of 24 picnic tables, and five grills, the picnic area will

serve fairgoers and gatherings efficiently. Including all equipment, foundations, and shelters the total budget for the Picnic and Playground Area with Pavilion program is **\$82,830.00**.

OVERALL MANAGEMENT PLAN BUDGET

BCFG Park will serve a variety of recreational needs as well as compliment the annual fair events with the addition of aesthetic improvements and recreational facilities the total budget for implementation of all the program recommendations is:

Native Prairie	\$ 4166.08
Wildflower Area	\$ 7889.80
Tree Landscaping	\$ 12875.00
Stream Bank Stabilization	\$ 1315.10
Nature and Fitness Trail	\$ 333493.00
Road and Parking	\$ 204403.70
Baseball/Softball Complex	\$ 365184.88
Neighborhood Park	\$ 90650.00
Picnic and Playground	\$ 82,830.00
Total Budget	\$1,102,807.60

PROGRAM IMPLEMENTATION, SUPPORT AND MANAGEMENT

Following our programs, SEC has provided several recommendations for program support and management to help reduce costs. Below is a summary of organizations we have identified for possible cost-cutting partnerships and additional ideas BCPRC may wish to consider.

National, State, County and City Organizations

U.S. Army Reserve

Missouri National Guard

Prison Labor programs

Community Service programs

Volunteer Organizations

Boy Scouts of America

Future Farmers of America

4-H

The Wildlife Society

Missouri Stream Team

Forestry Club

Cooperative Ventures

Local Baseball Councils

Community Sponsorship

Columbia Parks and Recreation

Organize Local Programs

Adopt-a-spot

Friends group

Charity events

Solicit Donations

Memorial structures

APPENDIX A – SITE ANALYSIS CHECKLIST

BCFG Site Analysis Check List

Date _____

Name _____

Tract _____

Mark corresponding number on map provided

(Note: if multiple locations are noted use number letter combination *ie. 1a, 1b, 1c etc...*)

1. Hazardous Material or Polluted Areas (note the type *ie. Sewage, Oil spill etc...*)

2. Existing Structures (include all man-made structures and condition *ie. Fence, poor*)

3. Potential Locations for Facilities (recommendation and description *ie. Open field of high ground, ballfield*)

4. Changes in Vegetation (note details not seen on map *ie. Patch of short sparse grass*)

5. Animal sign (note tracks, scat, rubs, visual sighting etc... *ie Deer tracks 2-sets*)

6. Surrounding land use (*ie. grazing pasture, residential area etc...*)

7. Utilities (note power lines, fire hydrants, manholes etc...)

9. Sampling areas (note type and description *ie. Scent station-animal path or Seine-stream pool*)

10. Other (note anything you feel may be important and relevant details)

APPENDIX B – COMMON WEEDS OF MISSOURI (Fischel 1997)

Shading indicates positive identification.

Weeds Common To Missouri Pastures, Field Crops, Ornamentals, and Turfgrass	
Broadleaf weeds	
Scientific Name	Common Name
<i>Abutilon theophrasti</i>	velvetleaf
<i>Acalypha ostryaefolia</i>	hophornbeam copperleaf
<i>Amaranthus blitoides</i>	Prostrate pigweed
<i>Amaranthus palmeri</i>	palmer amaranth
<i>Amaranthus retroflexus</i>	redroot pigweed
<i>Amaranthus rudis</i>	Common waterhemp
<i>Ambrosia artemisiifolia</i>	Common ragweed
<i>Ambrosia trifida</i>	giant ragweed
<i>Ammannia coccinea</i>	purple ammannia
<i>Ampelamus albidus</i>	honeysuckle milkweed
<i>Anoda cristata</i>	spurred anoda
<i>Apocynum cannabinum</i>	hemp dogbane
<i>Asclepias syriaca</i>	Common milkweed
<i>Aster pilosus</i>	white heath aster
<i>Barbarea vulgaris</i>	yellow rocket
<i>Bidens bipinnata</i>	Spanish needles
<i>Brassica kaber</i>	wild mustard
<i>Campsis radicans</i>	trumpet creeper
<i>Cannabis sativa</i>	marijuana
<i>Capsella bursa-pastoris</i>	Shepherd's purse
<i>Carduus nutans</i>	musk thistle
<i>Cerastium vulgatum</i>	mouseear chickweed
<i>Chenopodium album</i>	Common lambsquarters
<i>Cicuta maculata</i>	waterhemlock
<i>Cirsium altissimum</i>	tall thistle
<i>Conium maculatum</i>	poison hemlock
<i>Convolvulus arvensis</i>	field bindweed
<i>Convolvulus sepium</i>	hedge bindweed
<i>Croton capitatus</i>	woolly croton
<i>Croton glandulosus</i>	tropic croton
<i>Cuscuta campestris</i>	field dodder
<i>Datura stramonium</i>	jimsonweed
<i>Daucus carota</i>	wild carrot
<i>Descurainia pinnata</i>	tansy mustard
<i>Dipsacus laciniatus</i>	cut-leaf teasel
<i>Erigeron annuus</i>	daisy fleabane
<i>Erigeron canadensis</i>	horseweed
<i>Euphorbia dentata</i>	toothed spurge
<i>Euphorbia humistrata</i>	Prostrate spurge
<i>Euphorbia marginata</i>	snow-on-the-mountian
<i>Euphorbia nutans</i>	nodding spurge

<i>Galinsoga ciliata</i>	hairy golinsoga
<i>Galium aparine</i>	catchweed bedstraw
<i>Geranium carolinianum</i>	Carolina geranium
<i>Helianthus annuus</i>	Common sunflower
<i>Helianthus tuberosus</i>	Jerusalem artichoke
<i>Hibiscus trionum</i>	venice mallow
<i>Ipomoea hederacea</i>	ivy leaf morningglory
<i>Ipomoea lacunosa</i>	pitted morningglory
<i>Ipomoea pandurata</i>	bigroot morningglory
<i>Ipomoea purpurea</i>	tall morningglory
<i>Kochia scoparia</i>	Kochia
<i>Lactuca scariola</i>	wild lettuce
<i>Lamium amplexicaule</i>	purple deadnettle, henbit
<i>Lamium purpureum</i>	dewberry
<i>Lepidium virginicum</i>	Virginia pepperweed
<i>Lithospermum arvense</i>	corn gromwell
<i>Lythrum salicaria</i>	purple loosestrife
<i>Malva neglecta</i>	Common mallow
<i>Matricaria matricaroides</i>	pineapple-weed
<i>Medicago lupulina</i>	black medic
<i>Mollugo verticillata</i>	carpetweed
<i>Myosurus minimus</i>	mousetail
<i>Oenothera lacinata</i>	cutleaf eveningprimrose
<i>Opuntia compressa</i>	prickly pear
<i>Oxalis stricta</i>	yellow woodsorrel
<i>Physalis subglabrata</i>	smooth groundcherry
<i>Phytolacca americana</i>	Common pokeweed
<i>Plantago lanceolata</i>	buckhorn plantain
<i>Plantago spp.</i>	broadleaf plantain
<i>Polygonum coccineum</i>	swamp smartweed
<i>Polygonum convolvulus</i>	wild buckwheat
<i>Polygonum cuspidatum</i>	Japanese knotweed
<i>Polygonum lapathifolium</i>	pale smartweed
<i>Polygonum pennsylvanicum</i>	Pennsylvania smartweed
<i>Polygonum persicaria</i>	lady thumb smartweed
<i>Portulaca oleracea</i>	Common purslane
<i>Proboscidea louisianica</i>	unicorn-plant
<i>Rhus glabra</i>	smooth sumac
<i>Rhus radicans</i>	poison ivy
<i>Rubus spp.</i>	Eclipta
<i>Rumex crispus</i>	curly dock
<i>Senna obtusifolia</i>	sicklepod
<i>Sesbania exaltata</i>	hemp sesbania
<i>Sida spinosa</i>	prickly sida
<i>Silphium integrifolium</i>	rosinweed
<i>Silphium laciniatum</i>	Compass plant
<i>Silphium perfoliatum</i>	cup plant
<i>Solanum carolinense</i>	horsenettle

<i>Solanum sarrachoides</i>	hairy nightshade
<i>Solidago spp.</i>	goldenrod
<i>Sonchus asper</i>	spiny sowthistle
<i>Stellaria media</i>	Common chickweed
<i>Taraxacum officinale</i>	Common dandelion
<i>Thlaspi arvense</i>	field pennycress
<i>Torilis japonica</i>	hedge parsley
<i>Tragopogon dubuis</i>	Western salsify
<i>Tribulus terrestris</i>	Puncture vine
<i>Triodanis perfoliata</i>	venuslookingglass
<i>Verbascum thapsus</i>	Common mullein
<i>Verbena hastata</i>	blue vervain
<i>Verbena stricta</i>	haory vervain
<i>Veronia spp.</i>	ironweed
<i>Veronica arvensis</i>	corn speedwell
<i>Vicia spp.</i>	Vetch
<i>Viola rafinesquii</i>	field pansy
<i>Xanthium strumarium</i>	Common cocklebur
GRASSES AND SEDGES	
Scientific Name	Common Name
<i>Echinochloa crus-galli</i>	Barnyardgrass
<i>Cynodon dactylon</i>	Bermudagrass
<i>Digitaria sanguinalis</i>	large crabgrass
<i>Digitaria ischaemum</i>	smooth crabgrass
<i>Commelina spp.</i>	Dayflower
<i>Setaria faberi</i>	giant foxtail
<i>Setaria viridis</i>	green foxtail
<i>Setaria glauca</i>	yellow foxtail
<i>Eleusine indica</i>	Goosegrass
<i>Elytrigia repens</i>	Quackgrass
<i>Ornithogallum umbellatum</i>	star-of-bethlehem
<i>Allium vineale</i>	wild garlic
<i>Allium canadense</i>	wild onion
<i>Bromus tectorum</i>	downy brome
<i>Panicum dichotomiflorum</i>	fall panicum
<i>Equisetum spp.</i>	field horsetail
<i>Hordeum jubatum</i>	barley foxtail
<i>Alopecurus carolinianus</i>	Carolina foxtail
<i>Sorghum halepense</i>	Johnsongrass
<i>Juncus spp.</i>	Rush
<i>Sorghum bicolor</i>	Shattercane
<i>Panicum capillare</i>	Witchgrass
<i>Eriochloa gracilis</i>	wooly cupgrass
<i>Cyperus esculentus</i>	yellow nutsedge

APPENDIX C – WILDLIFE SPECIES ASSOCIATED WITH URBAN AREAS

Species found in residential, commercial, and/or urban habitats according to the Missouri Fish and Wildlife Information System List.

	Common Name (Scientific Name)	Habitat		
		Residential	Commercial	Urban
Amphibians	toad, eastern American (<i>Bufo americanus americanus</i>)	X		
	toad, fowler's (<i>Bufo woodhousii fowleri</i>)	X		
Avian	cardinal, northern (<i>Cardinalis cardinalis cardinalis</i>)	X	X	X
	catbird, gray (<i>Dumetella carolinensis</i>)	X		
	chickadee, black-capped (<i>Parus atricapillus atricapillus</i>)	X		
	cowbird, brown-headed (<i>Molothrus ater</i>)	X		
	creeper, brown (<i>Certhia americana</i>)	X		
	cuckoo, yellow-billed (<i>Coccyzus americanus americanus</i>)	X		
	dove, mourning (<i>Zenaida macroura carolinensis</i>)	X		
	dove, rock (<i>Columba livia</i>)	X	X	X
	finch, house (<i>Carpodacus mexicanus</i>)	X		
	finch, purple (<i>Carpodacus purpureus purpureus</i>)	X		
	flicker, northern (<i>Colaptes auratus auratus</i>)	X		
	flycatcher, great crested (<i>Myiarchus crinitus</i>)	X		
	flycatcher, least (<i>Empidonax minimus</i>)	X		
	flycatcher, scissor-tailed (<i>Muscivora forficata</i>)			X
	gnatcatcher, blue-gray (<i>Poliophtila caerulea caerulea</i>)	X		
	goldfinch, American (<i>Carduelis tristis tristis</i>)	X		
	goose, Canada (<i>Branta canadensis</i>)	X		
	grackle, common (<i>Quiscalus quiscula</i>)	X		
	grosbeak, blue (<i>Guiraca caerulea caerulea</i>)	X		
	grosbeak, rose-breasted (<i>Pheucticus ludovicianus</i>)	X		
	hummingbird, ruby-throated (<i>Archilochus colubris</i>)	X		
	jay, blue (<i>Cyanocitta cristata cristata</i>)	X	X	
	junco, dark-eyed (<i>Junco hyemalis</i>)	X		
	kestrel, American (<i>Falco sparverius sparverius</i>)	X		
	killdeer (<i>Charadrius vociferus</i>)	X	X	
	kinglet, golden-crowned (<i>Regulus satrapa satrapa</i>)	X		
	kinglet, ruby-crowned (<i>Regulus calendula calendula</i>)	X		
	lark, horned (<i>Eremophila alpestris praticola</i>)	X		
	martin, purple (<i>Progne subis subis</i>)	X		
	mockingbird, northern (<i>Mimus polyglottos polyglottos</i>)	X		
	nighthawk, common (<i>Chordeiles minor</i>)	X	X	
	nuthatch, white-breasted (<i>Sitta carolinensis carolinensis</i>)	X		
	oriole, Baltimore (<i>Icterus galbula</i>)	X		
	oriole, orchard (<i>Icterus spurius</i>)	X		
	owl, barn (<i>Tyto alba</i>)	X		
	owl, eastern screech (<i>Otus asio asio</i>)	X		

	owl, long-eared (<i>Asio otus</i>)	X		
	pewee, eastern wood- (<i>Contopus virens</i>)	X		
	phoebe, eastern (<i>Sayornis phoebe</i>)	X		
	redstart, American (<i>Setophaga ruticilla</i>)	X		
	robin, American (<i>Turdus migratorius migratorius</i>)	X	X	X
	sapsucker, yellow-bellied (<i>Sphyrapicus varius</i>)	X		
	shrike, loggerhead (<i>Lanius ludovicianus migrans</i>)	X		
	sparrow, American tree (<i>Spizella arborea arborea</i>)	X		
	sparrow, chipping (<i>Spizella passerina passerina</i>)	X		
	sparrow, house (<i>Passer domesticus</i>)	X	X	X
	sparrow, lark (<i>Chondestes grammacus</i>)	X		
	sparrow, song (<i>Melospiza melodia melodia</i>)	X		
	starling, European (<i>Sturnus vulgaris vulgaris</i>)	X	X	X
	swallow, bank (<i>Riparia riparia riparia</i>)		X	
	swallow, barn (<i>Hirundo rustico</i>)	X		
	swallow, northern rough-winged (<i>Stelgidopteryx serripennis</i>)		X	
	swallow, tree (<i>Iridoprocne bicolor</i>)	X		
	swift, chimney (<i>Chaetura pelagica</i>)	X		
	thrush, gray-cheeked (<i>Catharus minimus</i>)	X		
	thrush, hermit (<i>Hylocichla guttata faxoni</i>)	X		
	thrush, Swainson's (<i>Hylocichla ustulata swainsoni</i>)	X		
	thrush, wood (<i>Hylocichla mustelina</i>)	X		
	titmouse, tufted (<i>Parus bicolor</i>)	X		
	veery (<i>Hylocichla fuscescens fuscescens</i>)	X		
	vireo, red-eyed (<i>Vireo olivaceus</i>)	X		
	vireo, warbling (<i>Vireo gilvus</i>)	X		
	warbler, black-throated blue (<i>Dendroica caerulescens</i>)	X		
	warbler, palm (<i>Dendroica palmarum</i>)	X		
	warbler, Tennessee (<i>Vermivora peregrina</i>)	X		
	warbler, yellow-rumped (<i>Dendroica coronata</i>)	X		
	warbler, yellow (<i>Dendroica petechia</i>)	X		
	woodpecker, downy (<i>Picoides pubescens pubescens</i>)	X		
	woodpecker, hairy (<i>Picoides villosus</i>)	X		
	woodpecker, red-bellied (<i>Melanerpes carolinus</i>)	X		
	woodpecker, red-headed (<i>Melanerpes erythrocephalus</i>)	X		
	wren, Bewick's (<i>Troglodytes bewickii bewickii</i>)	X		X
	wren, Carolina (<i>Thryothorus ludovicianus ludovicianus</i>)	X		
	wren, house (<i>Troglodytes aedon parkmanii</i>)	X		X
Mammals	bat, big brown (<i>Eptesicus fuscus fuscus</i>)	X		
	bat, evening (<i>Nycticeius humeralis humeralis</i>)	X		
	bat, hoary (<i>Nycteris cinerea cinerea</i>)	X		
	bat, red (<i>Nycteris borealis borealis</i>)	X		
	chipmunk, eastern (<i>Tamias striatus griseus</i>)	X		
	coyote (<i>Canis latrans frustror</i>)	X		
	deer, white-tailed (<i>Odocoileus virginianus</i>)	X		
	fox, gray (<i>Urocyon cinereoargenteus</i>)	X		

	fox, red (<i>Vulpes vulpes fulva</i>)	X		
	mole, eastern (<i>Scalopus aquaticus machrinoides</i>)	X		
	mouse, house (<i>Mus musculus domesticus</i>)	X	X	X
	myotis, little brown (<i>Myotis lucifugus lucifugus</i>)	X		
	opossum, Virginia (<i>Didelphis virginiana virginiana</i>)	X	X	X
	rabbit, eastern cottontail (<i>Sylvilagus floridanus alacer</i>)	X		
	raccoon (<i>Procyon lotor hirtus</i>)	X		
	rat, Norway (<i>Rattus norvegicus norvegicus</i>)	X	X	X
	skunk, striped (<i>Mephitis mephitis avia</i>)	X		
	squirrel, fox (<i>Sciurus niger rufiventer</i>)	X		X
	squirrel, gray (<i>Sciurus carolinensis carolinensis</i>)	X		X
	squirrel, southern flying (<i>Glaucomys volans</i>)	X		
	woodchuck (<i>Marmota monax monax</i>)	X		
Reptiles	kingsnake, prairie (<i>Lampropeltis calligaster calligaster</i>)	X		
	kingsnake, speckled (<i>Lampropeltis getula holbrooki</i>)	X		
	lizard, northern fence (<i>Sceloporus undulatus hyacinthinus</i>)	X		
	snake, eastern hognose (<i>Heterodon platirhinos</i>)	X	X	X
	snake, midland brown (<i>Storeria dekayi wrightorum</i>)	X		

APPENDIX D - WHAG SHEETS

WILDLIFE HABITAT APPRAISAL GUIDE - MISSOURI

Landowner: _____

Appraiser: _____

Location T _____ R _____ S _____

Date: _____

Total Acres Appraised: _____

County: _____

WHITE-TAILED DEER

Habitat Characteristics		Field No. Acres	Habitat Types																			
			Cropland				Past/Hay				Woodland				Old Field							
Edge Configuration and Border Extent																						
1. Irregular-Border around >50%	Irregular = <20 ac.		10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
2. Straight-Border around >50%	one side irregular		8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	5	5	5	5
3. Irregular-Border around 25-50%	or >20 ac.		6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	Score Edge Config.			
4. Straight-Border around 25-50%	two sides		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4				
5. Irregular-Border around 0-25%	irregular		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2				
6. Straight-Border around 0-25%			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
Vegetative Cover (% Ground covered by herbaceous and shrub canopy 6"-4')																						
1. >50%							5	5	5	5	10	10	10	10	5	5	5	5				
2. 20-50%							3	3	3	3	5	5	5	5	3	3	3	3				
3. <20%							1	1	1	1	1	1	1	1	1	1	1	1				
Woodland Size Class and Canopy Coverage																						
1. Sawtimber-Open Canopy (<50% Coverage)											10	10	10	10								
2. Reproduction-Open Canopy											8	8	8	8								
3. Sawtimber or Reprod.-Closed Canopy (>50% Coverage)											5	5	5	5								
4. Pole-Open Canopy											3	3	3	3								
5. Pole-Closed Canopy											1	1	1	1								
Woodland Tree Species																						
1. Oaks dominant with black oak group and white oak group 25-75% of trees											5	5	5	5								
2. Oaks dominant with >75% of trees in either black or white oak groups											3	3	3	3								
3. Other tree species dominant											1	1	1	1								
Forest Openings (% of stand)																						
1. 15-30%	Score 5 points if <40 ac.										5	5	5	5								
2. 5-15% or 30-45%	woodland										3	3	3	3								
3. <5% or >45%											1	1	1	1								
Number of Important Food Plants (See list)																						
1. >12											10	10	10	10	10	10	10	10				
2. 6-12											6	6	6	6	6	6	6	6				
3. <6											1	1	1	1	1	1	1	1				
Grazing or Haying Pressure (Degree of use)																						
1. None to Light	Moderate = 3"-6" over winter height CSG						5	5	5	5	10	10	10	10								
2. Moderate	8"10" over winter height WSG						3	3	3	3	1	1	1	1								
3. Heavy							1	1	1	1	1	1	1	1								
Legume Canopy Coverage (Percent)																						
1. 30-50%							10	10	10	10												
2. 5-30%							5	5	5	5												
3. <5% or >50%							1	1	1	1												
Cropping Practices																						
1. >4 ac. per 40 ac. food plot or unharvested grain			10	10	10	10																
2. 1-4 ac. per 40 ac. food plot or unharvested grain			7	7	7	7																
3. <1 ac. per 40 ac. food plot or unharvested grain			5	5	5	5																
4. Completely harvested little herbicide			3	3	3	3																
5. Completely harvested heavy herbicide			1	1	1	1																
Cropfield Management																						
1. No fall tillage, residues undisturbed; or winter wheat			10	10	10	10																
2. Chisel plowing once in fall			8	8	8	8																
3. Crop residues grazed, chopped or baled; or residues <3" tall			6	6	6	6																
4. Fall disking			4	4	4	4																
5. Fall moldboard plowing			1	1	1	1																
Distance to Woodland																						
1. <1/2 mi. ungrazed woodland			10	10	10	10	10	10	10	10									5	5	5	5
2. 1/2-1 mi. ungrazed woodland			5	5	5	5	5	5	5	5									3	3	3	3
3. <1 mi. to grazed woodland			2	2	2	2	2	2	2	2									2	2	2	2
4. >1 mi. to any woodland			1	1	1	1	1	1	1	1									1	1	1	1
Distance to Pasture/Hayland																						
1. <1/2 mi. light-moderate use, good plant diversity (Good plant diversity = grasses, forbs & legumes)			5	5	5	5					5	5	5	5	5	5	5	5	5	5	5	5
2. 1/2-1 mi. light-moderate use, good plant diversity			4	4	4	4					4	4	4	4	4	4	4	4	4	4	4	4
3. <1/2 mi. light-moderate use, moderate plant diversity			3	3	3	3					3	3	3	3	3	3	3	3	3	3	3	3
4. 1/2-1 mi. light-moderate use, moderate plant diversity			2	2	2	2					2	2	2	2	2	2	2	2	2	2	2	2
5. Heavy use; poor plant diversity; or >1 mi. to pasture/hayland			1	1	1	1					1	1	1	1	1	1	1	1	1	1	1	1
Habitat Planning Key																						
White-tailed Deer	○ - Existing ⊕ - Planned ● - Applied						27				48											

		Cropland				Past/Hay				Woodland				Old Field			
Subtotal						27				48							
Field No.																	
Acres																	
Habitat Characteristics																	
Distance to Cropland or Food Plot																	
1. <1/2 mi. No fall tillage or winter wheat						10	10	10	10	10	10	10	10	5	5	5	
2. 1/2-1 mi. No fall tillage or winter wheat						8	8	8	8	8	8	8	8	4	4	4	
3. <1/2 mi. Fall disced or chiseled						6	6	6	6	6	6	6	6	3	3	3	
4. 1/2-1 mi. Fall disced or chiseled						4	4	4	4	4	4	4	4	2	2	1	
5. >1 mi. to cropfield; or cropfield fall plowed						1	1	1	1	1	1	1	1	1	1	1	
Distance to Old Field																	
1. <1/2 mi.		5	5	5	5	5	5	5	5	5	5	5	5				
2. 1/2-1 mi.		3	3	3	3	3	3	3	3	3	3	3	3				
3. >1 mi.		1	1	1	1	1	1	1	1	1	1	1	1				
Percent Woodland within 2 Mile Wide Circle (2000 ac.)¹																	
1. 50-75% (1000-1500 ac.)		10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	
2. 25-50% (500-1000 ac.)		6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
3. 5-25 or >75% (100-500 ac. or >1500 ac.)		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
4. <5% (<100 ac.)		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Woodland Distribution within 2 Mile Wide (2000 ac.) Circle																	
(% woodland within 660' of any other habitat type)																	
1. 50-75%		10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	
2. >75%		8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	
3. 25-50%		6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
4. 10-25%		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
5. <10		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Woodland Use in 2 Mile Wide (2000 ac.) Circle																	
1. >75% woodland ungrazed		10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	
2. 50-75% woodland ungrazed		6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
3. 25-50% woodland ungrazed		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
4. <25% woodland ungrazed		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Existing Total						51				72							
Planned Total																	
Applied Total																	
Habitat Type Index =																	
Check Footnote																	
Total Actual Score		80	80	80	80	85	85	85	85	110	110	110	110	70	70	70	
Maximum Possible Score																	
Existing Index						.61											
Planned Index																	
Applied Index																	
Σ [Habitat Type Indexes x Acres]																	
Total Acres Appraised																	
Existing Farm = <u>.61</u> Planned Farm = _____																	
Index																	

NOTE:

1. If Percent Woodland in 2 Mile Wide Circle scores 1, enter .1 as Index.

Habitat Quality	Score Rating	0.75-1.0 Excellent	0.50-0.75 Good	0.25-0.50 Fair	0-0.25 Poor
Acres per Deer		<40	40-60	60-80	>80

IMPORTANT FOOD PLANTS

✓ Acorns
 Agricultural crops
 Asters
 Blackberries
 Black haw
 Bluegrass
 ✓ Cherries
 Cinquefoil
 Clovers
 ✓ Coral berry

— Crotons
 — Dogwoods
 — Elms
 — Fleabanes
 — Goldenrods
 — Grapes
 — Greenbriers
 — Hazelnut
 — Korean lespedeza
 — Lettuces

— Maples
 — Persimmon
 — Poison Ivy
 — Pokeweed
 — Roses
 — Sumacs
 — Spurge
 — Tick trefoils
 — Violets
 — Virginia creeper



Missouri Department of Conservation



U.S.D.A.
 Soil Conservation Service

JS-BIOL-13 (3)

3/88

APPENDIX E – HABITAT GAP ANALYSIS

Table : Likelihood of species range overlap with the Boone County Fairgrounds according to the GAP Analysis. The higher the number, the greater the location overlaps the specie's range.

Amphibians		GAP #
American Toad	<i>Bufo americanus</i>	8
Blanchard's Cricket Frog	<i>Acris crepitans blanchardi</i>	9
Bullfrog	<i>Rana catesbeiana</i>	18
Central Newt	<i>Notophthalmus viridescens louisianensis</i>	13
Crawfish Frog	<i>Rana areolata</i>	10
Dwarf American Toad	<i>B. a. charlesmithi</i>	6
Eastern Narrowmouth Toad	<i>Gastrophryne carolinensis</i>	7
Gray Treefrog	<i>Hyla versicolor</i>	9
Great Plains Narrowmouth Toad	<i>Gastrophryne olivacea</i>	8
Great Plains Toad	<i>Bufo cognatus</i>	6
Green Frog	<i>Rana clamitans melanota</i>	10
Marbled Salamander	<i>Ambystoma opacum</i>	5
Mudpuppy	<i>Necturus maculosus</i>	10
Northern Spring Peeper	<i>Hyla crucifer</i>	10
Pickereel Frog	<i>Rana palustris</i>	9
Plains Leopard Frog	<i>Rana blairi</i>	12
Plains Spadefoot	<i>Scaphiopus bombifrons</i>	8
Slimy Salamander	<i>Plethodon glutinosus</i>	8
Smallmouth Salamander	<i>Ambystoma texanum</i>	12
Southern Leopard Frog	<i>Rana sphenoccephala</i>	9
Spotted Salamander	<i>Ambystoma maculatum</i>	9
Tiger Salamander	<i>Ambystoma tigrinum</i>	10
Western Chorus Frog	<i>Pseudacris triseriata</i>	10
Wood Frog	<i>Rana sylvatica</i>	7
Avian		
Acadian Flycatcher	<i>Empidonax virescens</i>	7
American Crow	<i>Corvus brachyrhynchos</i>	11
American Goldfinch	<i>Carduelis tristis</i>	12
American Kestrel	<i>Falco sparverius</i>	8
American Redstart	<i>Setophaga ruticilla</i>	6
American Robin	<i>Turdus migratorius</i>	11
Bachman's Sparrow	<i>Aimophila aestivalis</i>	7
Baltimore Oriole	<i>Icterus galbula</i>	9
Barn Owl	<i>Tyto alba</i>	9
Barn Swallow	<i>Hirundo rustica</i>	14
Barred Owl	<i>Strix varia</i>	7
Belted Kingfisher	<i>Ceryle alcyon</i>	9
Bewick's Wren	<i>Thryomanes bewickii</i>	7
Black-Billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	7
Black-Capped Chickadee	<i>Parus atricapillus</i>	7
Blue Grosbeak	<i>Guiraca caerulea</i>	9
Blue Jay	<i>Cyanocitta cristata</i>	14

Blue-Gray Gnatcatcher	<i>Poliophtila caerulea</i>	8
Blue-Winged Warbler	<i>Vermivora pinus</i>	6
Boblink	<i>Dolichonyx oryzivorus</i>	7
Brown Thrasher	<i>Toxostoma rufum</i>	18
Brown-Headed Cowbird	<i>Molothrus ater</i>	9
Canada Goose	<i>Branta Canadensis</i>	8
Carolina Wren	<i>Thryothorus ludovicianus</i>	8
Cerulean Warbler	<i>Dendroica cerulea</i>	6
Chipping Sparrow	<i>Spizella passerina</i>	10
Chuck-Will's-Widow	<i>Caprimulgus carolinensis</i>	7
Common Grackle	<i>Quiscalus quiscula</i>	14
Common Yellowthroat	<i>Geothlypis trichas</i>	12
Cooper's Hawk	<i>Accipiter cooperii</i>	7
Dickcissel	<i>Spiza ameridana</i>	10
Eastern Bluebird	<i>Sialia sialis</i>	9
Eastern Kingbird	<i>Tyrannus tyrannus</i>	11
Eastern Meadowlark	<i>Sturnella magna</i>	11
Eastern Phoebe	<i>Sayornis phoebe</i>	8
Eastern Screech-Owl	<i>Otus asio</i>	9
Eastern Towhee	<i>Pipilo erythrophthalmus</i>	8
Eastern Wood-Pewee	<i>Contopus virens</i>	9
Field Sparrow	<i>Spizella pusilla</i>	12
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	9
Gray Catbird	<i>Dumetella carolinensis</i>	12
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	8
Great Horned Owl	<i>Bubo virginianus</i>	11
Greater Prairie-Chicken	<i>Tympanuchus cupido</i>	6
Hairy Woodpecker	<i>Picoides villosus</i>	7
Henslow's Sparrow	<i>Ammodramus henslowii</i>	7
Horned Lark	<i>Eremophila alpestris</i>	12
House Finch	<i>Carpodacus mexicanus</i>	8
House Sparrow	<i>Passer domesticus</i>	20
House Wren	<i>Troglodytes aedon</i>	10
Indigo Bunting	<i>Passerina cyanea</i>	12
Kentucky Warbler	<i>Oporornis formosus</i>	7
Killdeer	<i>Charadrius vociferus</i>	11
Lark Sparrow	Common Grackle	9
Loggerhead Shrike	<i>Lanius ludovicianus</i>	9
Lousiana Waterthrush	<i>Seiurus motacilla</i>	7
Mallard	<i>Anas platyrhynchos</i>	7
Mourning Dove	<i>Zenaida macroura</i>	13
Northern Bobwhite	<i>Colinus virginianus</i>	11
Northern Cardinal	<i>Cardinalis cardinalis</i>	12
Northern Flicker	<i>Colaptes auratus</i>	9
Northern Mockingbird	<i>mimus polyglottos</i>	9
Northern Parula	<i>Parula americana</i>	8
Orchard Oriole	<i>Icterus spurius</i>	8
Ovenbird	<i>Seiurus aurocapillus</i>	6

Pileated Woodpecker	<i>Dryocopus pileatus</i>	7
Pine Warbler	<i>Dendroica pinus</i>	8
Prarie Warbler	<i>Dendroica discolor</i>	8
Prothonotary Warbler	<i>Protonotaria citrea</i>	7
Purple Martin	<i>Progne subis</i>	14
Red-Bellied Woodpecker	<i>Melanerpes carolinus</i>	8
Red-Eyed Vireo	<i>Vireo olivaceus</i>	7
Red-Headed Woodpecker	<i>Melanerpes erythrocephalus</i>	9
Red-Tailed Hawk	<i>Buteo jamaicensis</i>	11
Red-Wingled Blackbird	<i>Agelaius phoeniceus</i>	10
Ring-Neck Pheasant	<i>Phasianus colchicus</i>	6
Rock Dove	<i>Columba livia</i>	18
Ruffed grouse	<i>Bonasa umbellus</i>	7
Savannah Sparrow	<i>Branta canadensis</i>	10
Sedge Wren	<i>Cistothorus platensis</i>	7
Sharp-Shinned Hawk	<i>Accipiter striatus</i>	9
Song Sparrow	<i>Melospiza melodia</i>	8
Spotted Sandpiper	<i>Actitis macularia</i>	8
SummerTanager	<i>Piranga rubra</i>	8
Tufted Titmouse	<i>Parus bicolor</i>	9
Turkey Vulture	<i>Cathartes aura</i>	11
Upland Sandpiper	<i>Bartramia longicauda</i>	7
Vesper Sparrow	<i>Poocetes gramineus</i>	6
Western Meadowlark	<i>Sturnella neglecta</i>	7
Whip-Poor-Will	<i>Caprimulgus vociferus</i>	9
Whip-Poor-Will	<i>Picoides pubescens</i>	9
White-Breasted Nuthatch	<i>Sitta carolinensis</i>	9
White-Eyed Vireo	<i>Vireo giseus</i>	8
Wild Turkey	<i>Meleagris gallopavo</i>	7
Willow Flycatcher	<i>Empidonax trailli</i>	8
Wood Duck	<i>Aix sponsa</i>	8
Wood Thrush	<i>Hylocichla mustelina</i>	7
Yellow Warbler	<i>Dendroica petechia</i>	8
Yellow-Billed Cuckoo	<i>Coccyzus americanus</i>	9
Yellow-Breasted Chat	<i>Icteria virens</i>	8
Yellow-Throated Vireo	<i>Vireo flavifrons</i>	7
Yellow-Throated Warbler	<i>Dendroica dominica</i>	6
Mammals		
American Beaver	<i>Castor canadensis</i>	8
Big Brown Bat	<i>Eptesicus fuscus</i>	16
Common Gray Fox	<i>Urocyon cinereoargenteus</i>	9
Common Raccoon	<i>Procyon lotor</i>	9
Coyote	<i>Canis latrans</i>	8
Deer Mouse	<i>Peromyscus maniculatus</i>	11
Eastern Cottontail	<i>Sylvilagus floridanus</i>	10
Eastern Fox Squirrel	<i>Sciurus niger</i>	10
Eastern Gray Squirrel	<i>Sciurus carolinensis</i>	9

Eastern Mole	Scalopus aquaticus	13
Eastern Pipistrelle	Pipistrellus subflavus	16
Eastern Red Bat	Lasiurus borealis	10
Evening Bat	Nycticeius humeralis	7
Fulvous Harvest Mouse	Reithrodontomys fulvescens	7
Gray Myotis	Myotis grisescens	7
Hispid Cotton Rat	Sigmodon hispidus	8
Hoary Bat	Lasiurus cinereus	7
Indiana Bat	Myotis sodalis	8
Keen's Myotis	Myotis keenii	12
Least Shrew	Cryptotis parva	10
Least Weasel	Mustela nivalis	7
Little Brown Bat	Myotis lucifugus	11
Long Tailed Weasel	Mustela frenata	9
Meadow Jumping Mouse	Zapus hudsonius	8
Meadow Vole	Microtus pennsylvanicus	7
Muskrat	Ondatra zibethicus	7
Northern Short-Tailed Shrew	Blarina brevicauda	10
Plains Harvest Mouse	Reithrodontomys montanus	6
Plains Pocket Gopher	Geomys bursarius	8
Prairie Vole	Microtus ochragaster	9
Rafinesque's Big-Eared Bat	Corynorhinus rafinesquii	7
Red Fox	Vulpes vulpes	11
Silver-Haired Bat	Lasiurus noctivagus	8
Southern Bog Lemming	Synaptomys cooperi	8
Southern Flying Squirrel	Glaucomys volans	9
Striped Skunk	Mephitis mephitis	12
Thirteen-Lined Ground Squirrel	Spermophilus tridecemlineatus	8
Virginia Opossum	Didelphis virginiana	10
Western Harvest Mouse	Reithrodontomys megalotis	8
White-Footed Mouse	Peromyscus leucopus	11
White-Tailed Deer	Odocoileus virginianus	11
Woodchuck	Marmota monax	13
Woodland Vole	Microtus pinetorum	11
Reptiles		
Blotched Water Snake	Nerodia erythrogaster transversa	8
Broadhead Skink	Eumeces laticeps	8
Bullsnake	Pituophis melanoleucus sayi	12
Coachwhip	Masticophis flagellum	8
Collared Lizard	Crotaphytus collaris	6
Common Garter Snake	Thamnophis sirtalis	11
Common Map Turtle	Graptemys geographica	12
Common Musk Turtle	Sternotherus odoratus	8
Diamondback Water Snake	Nerodia rhombifer	10
Eastern Hognose Snake	Heterodon platirhinos	20
Eastern Yellowbelly Racer	Coluber constrictor flaviventris	9
False Map Turtle	Graptemys pseudogeographica	13

Five-lined Skink	<i>Eumeces fasciatus</i>	10
Graham's Crayfish Snake	<i>Regina grahamii</i>	12
Great Plains Rat Snake	<i>Elaphe guttata emoryi</i>	9
Ground Skink	<i>Scincella lateralis</i>	7
Lined Snake	<i>Tropidocionion lineatum</i>	8
Midland Brown Snake	<i>Storeria dekayi wrightorum</i>	14
Mississippi Map Turtle	<i>Graptemys geographica kohnii</i>	14
Northern Fence Lizard	<i>Sceloporus undulatus hyacinthinus</i>	8
Northern Water Snake	<i>Nerodia sipedon</i>	11
Ornate Box Turtle	<i>Terrapene ornata ornata</i>	11
Osage Copperhead	<i>Agkistrodon contortrix</i>	7
Plains Garter Snake	<i>Thamnophis radix</i>	8
Prairie Kingsnake	<i>Lampropeltis calligaster</i>	12
Prairie Ringneck Snake	<i>Diadophis punctatus arnyi</i>	11
Prairie-lined Racerunner	<i>Cnemidophorus sexlineatus</i>	8
Rat Snake	<i>Elaphe guttata emoryi</i>	14
Red Milk Snake	<i>Lampropeltis triangulum</i>	21
Redbelly Snake	<i>Storeria occipitomaculata</i>	8
Red-eared Slider	<i>Trachemys scripta elegans</i>	11
Red-sided Garter Snake	<i>Thamnophis sirtalis parietalis</i>	10
Rough Earth Snake	<i>Virginia striatula</i>	7
Rough Green Snake	<i>Opheodrys aestivus</i>	8
Six-lined Racerunner	<i>Cnemidophorus sexlineatus</i>	8
Slender Glass Lizard	<i>Ophisaurus attenuatus</i>	13
Smooth Green Snake	<i>Opheodrys vernalis</i>	8
Smooth Softshell	<i>Apalone mutica</i>	17
Speckled Kingsnake	<i>Lampropeltis getulus holbro...</i>	10
Spiny Softshell	<i>Apalone spinifera</i>	19
Three-toed Box Turtle	<i>Terrapene carolina triunguis</i>	10
Timber Rattlesnake	<i>Crotalus horridus</i>	8
Western Earth Snake	<i>Virginia valeriae elegans</i>	10
Western Paint Turtle	<i>Chrysemys picta bellii</i>	13
Western Plains Garter Snake	<i>Thamnophis radix haydenii</i>	9
Western Ribbon Snake	<i>Thamnophis proximus</i>	20
Western Worm Snake	<i>Carphophis amoenus vermis</i>	10

APPENDIX F – BCFG SCHEDULE

1999-2000 BOONE COUNTY FAIRGROUND SCHEDULE

November 1999

5-7

Small Farm Today Trade Show

Ron Macher 1-800-633-2535

12-14

National Llama Show

Hank Kauffman or Jim Adkinson 573-875-1442

20

Craft Show

Kent Sapp 573-474-7976 or Tony Boussad 573-443-8632

20-21

Thunderbird Pow-Wow

National Annual Antique Tractor Pull

Vicki Crum 573-581-7430

December 1999

3

Private Christmas Party

8-9

Boone County Ambulance Training

11-12

Dean Smith Gun Show

Dean Smith 573-875-6717

17

Private Christmas Party

18

Private Christmas Party

January 2000

1-2

Show Me Classic Quarter Horse Sale

Robbie Rainer 660-263-8898 or 1-800 748-7837

8-9

Dean Smith Gun Show

Dean Smith 573-875-6717

14-15

It's A Gas Show & Auction

Mike Russell 573-442-6759

15

Dog Show

Helen Fletchall 573-442-1074

16

Missouri Bow Hunters Board Meeting

17-19

MFA Dealer Buyers Show

Dave Wobee 573-874-5111

28-29

Mid Missouri Farm Show & Big Boy Toys

Heartland Management, Inc. 573-474-5991

February 2000

11-12

Haflinger Sale

Heartland Management, Inc. 573-474-5991

15-19

Boone County Draft Horse & Mule Sale

Heartland Management, Inc. 573-474-5991

26-27

National Antique Tractor Pull

Vicky Crum 573-581-7430

March 2000

4-5

Missouri Deer Classic

Claudette Roper 573-760-8918

10-12

Columbia Kennel Club Dog Show

Carol Sonners 573-445-1180

18

World Foxtrotting Horse Sale

Ralph Van Kirk 573-364-1362 or 573-364-3662

25-26

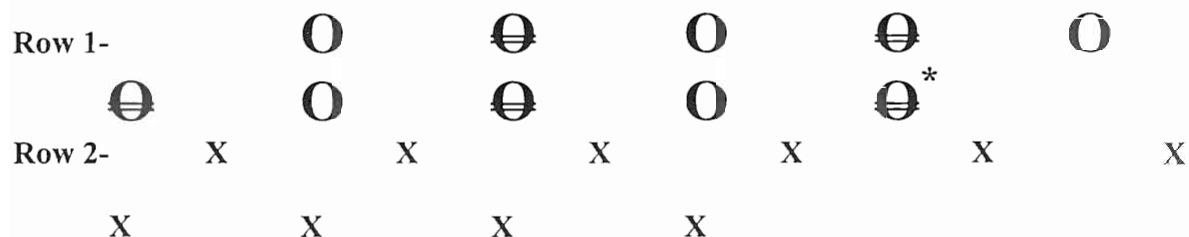
Show Me Discovery Series Horse Show

Lydia Bell 573-474-5991

APPENDIX G – WINDBREAK PLANNING SCHEME

(Slusher and Wallace 1997, Slusher 1997)

Tree Planting Scheme For Windbreak



Row 3-

*double-strikethrough indicates trees removed after 15 years

Where:

Distance between trees, Row 1 = 15 feet
Distance between trees, Row 2 = 15 feet
Distance between shrubs Row 3 = 7.5 feet

And:

Distance between Row 1--Row 2 = 20 feet
Distance between Row 2--Row 3 = 15 feet

And:

Row 1 = tall deciduous species
Row 2 = medium evergreen species
Row 3 = dense shrubs

Suggested Pattern of Species

Row 1 – R ~~H~~ R ~~S~~ H ~~R~~ R ~~S~~ H ~~S~~...pattern repeats

Row 2 – RC RC A RC RC A A RC A A ...pattern repeats

Row 3 – SP F F SP SP L F L L SP L F F SP SP L SP L L F...pattern repeats

Where:

Row 1 - R = red oak (*Quercus borealis*)

H = honey locust (*Gleditsia triacanthos*)

S = silver maple (*Acer saccharinum*)

Row 2- RC = Eastern red cedar (*Juniperus virginiana*)

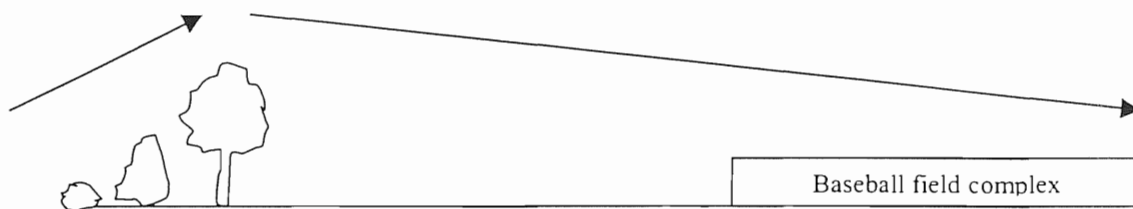
A = arborvitae (white cedar) (*Thuja plicata*)

Row 3 - SP = spirea (*Spirea* spp.)

F = forsythia (*Forsythia x. intermedia*)

L = common lilac (*Syringa vulgaris*)

Cross Section of Windbreak



APPENDIX H – KIOSK

Kiosk to be located at main trailhead.

Welcome to the
Boone County Fairgrounds

Home of the
Oldest Fair West of the Mississippi

The first Boone County Fair was held in October of 1835 when a group of Boone County farmers formed the Boone County Agricultural Society and sponsored a county fair. The fair was a first for Boone County, the state Of Missouri, and was a even the first fair west of the Mississippi!

The first fairground site was just east of the Stephens College Campus and was an unpretentious showing of livestock.

Many of the early settlers of Boone County were from the bluegrass regions of Kentucky and were avid horse racing fans. Soon, the whole fair was built around horse racing and the fair moved to an area enclosed by Rollins and College Avenue to accommodate a horse track.

It was here that “Crazy Jane” used to race. She was known as the fastest horse in the area and never lost a race if the jockey could get her started in the right direction.

The year 1876 saw an introduction of the beauty contest, believed to be the first in fair history. Women paid \$3 for the chance to be honored with the title of “Queen of Love and Beauty”.

The fair moved in 1897 to the present site of Hickman High School. Performers at the fair included Annie Oakely and her Wild West Show, and Buffalo Bill Cody who came with a parade including a three-herd group of elephants.

The fair of 1916 held one of the strangest races ever recorded. An ostrich, automobile, and a horse competed in a speed contest that the ostrich won.

The Boone County Fair closed in 1917 due to World War I, but reopened 30 years later and introduced the Boone County Ham Breakfast, still a fair event today. Located in the area where West Boulevard School now stands, the horse show was revived.

The success of this fair encouraged the Boone County Fair Board to sell shares of fair stock at \$10 a share to city residents. The money raised was used to purchase a home for the fairgrounds at the intersection of Ash and Clinkscapes Road.

The fair remained there until 1992 when it moved to its present home, former site of E.W. “Cotton” Woods Memorial Airport.

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