

### Colorado Open Lands

#### Calculating the Stewardship Endowment

##### Introduction

The Model CE Costs Spreadsheet has been created by Colorado Open Lands to calculate our Stewardship Endowment for each conservation easement. COL uses this spreadsheet to justify the suggested donation. This worksheet is organized into four parts. Part A, the assumptions, is the hard part. Most cells should be changed to reflect the specific conservation easement. Once the assumptions have been entered for the particular property, the numbers are automatically calculated in Parts B (formulas), C (Annual Expenses), and D (Endowments Needed to Fund Annual Expenses). Each formula in parts B, C, and D list the assumptions that are used for each calculation. As a result, the estimate of the annual monitoring costs and the size of the endowment needed both to produce the income to fund those costs and to maintain funds in the endowment in order to keep pace with inflation is calculated.

##### Basic Premise

The key to this worksheet is that each land trust has either full or part time staffing and an office. Even if a land trust does not have staff or an office now, it may in the future. If, in the unfortunate case, the land trust does not continue, the easement will be transferred to another land trust that may have staff and an office. Therefore, estimate the costs of monitoring an easement by including the staff and overhead costs.

##### The Assumptions

The assumptions are the basis for calculating the stewardship endowment. Some of the assumptions are very straightforward, such as annual salary, reimbursement per mile, and hours worked per year. Some involve some experience and additional calculations, such as staff hours to complete post-monitoring record keeping and the overhead per staff member per hour.

Other assumptions can be more complicated. For example, calculating the costs of approving a reserved right or the chances that there will be a potential violation can be done. These events occur infrequently, but they do happen and

each land trust needs to budget for them. It is easy to see that the Stewardship Endowment needs to produce a steady income stream to pay for monitoring costs and to account for the effects of inflation. But, if a reserved right costing \$300 is exercised in 2004, the Endowment cannot be expected to produce \$300 additional in that one year alone. Therefore, it is necessary to take a few extra steps to calculate additional costs.

### Risk Analysis

In risk analysis, two things are calculated: the cost of the event and the likelihood the event will happen. For example, a car insurance company will determine from a driver's age, gender, and driving record how often the driver is likely to total a car and what replacing the car will cost. Dividing the cost of replacing the car by the estimated frequency of the accident, they add a specific amount to each premium that, over time, will reimburse the company for the costs of replacing your car.

The same concept applies to conservation easements. For example, what is the estimated cost of approving a reserved right and how often will the land trust have to do this? Assume that it costs \$300 in staff and travel time to approve a reserved right and this event is estimated to occur once in 20 years. For this example, divide \$300 by 20 years. Each year, the Endowment needs to produce \$15 extra to compensate the land trust for the time and effort expended when that event occurs. When a land trust has enough easements, like the car insurance company with enough automobile insurance policies, the revenues generated from the endowment will average out, because not all easements are likely to need special, time-consuming attention at the same time.

### Summary

The Model CE Costs Spreadsheet provides a consistent way to calculate endowment needs. It is tailored to each individual conservation easement and provides justification for a donation request. It should be updated annually for the CPI and 30-year T-bill interest rates (see "Updating the CPI and 30 Year T-bill Interest Rate"). These numbers do not come out until April or May; however, the numbers do not vary too much from year to year so the lag time in updating the spreadsheet should not make a significant difference. The spreadsheet

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will help calculate the needs of the Stewardship Endowment to ensure a stable conservation easement stewardship and legal defense program over the long term.

### Name of Land Trust

Worksheet Calculating the Costs of Stewardship and Defense of a Conservation Easement and the Endowment Need ed to Support it

Line numbers and column letters have been left in to aid in tracking the formulas if desired.

[Name of] Conservation Easement

### A. Assumptions

Commentary: The numbers in Section A are designed specifically for this easement specifically and are called the Assumptions. These assumptions are estimates drawn from experience.

#### 1. Staff and Overhead Costs

Annual salary (single parent, two children)	\$41,000.00
Hours worked per year (50 wks x 40 hrs/wk less 7 holidays x 8 hrs/day)	1,944
Salary per hour (annual salary / hours worked per year)	\$21.091
Overhead / staff member / hour (benefits, rent, typing, phone, computer)	\$10.000

#### 2. Travel Costs for a Site Visit

Reimbursement per mile (as of 01.01.01 per IRS)	\$0.375
Average miles for a round trip (office to property and return)	100
Average vehicular speed for entire trip	45
Reimbursable travel expenses (lodging, parking, airplane flyover)	\$0.00

#### 3. Monitoring Costs

Hard costs	
Film purchase and developing costs	\$16.00
Cost of annual supplies	\$3.00
Average long distance telephone costs/year	\$4.00

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Staff time for Monitoring	
Average pre-monitoring time	1
Average time spent monitoring	2
Average post-monitoring time	3

### 4. Frequency of Exercise of Reserved Rights, Management Plan updates etc.

How often will reserved rights etc. be exercised in a 20 year period?	1
Therefore the likelihood of exercise of reserved right etc. in any one year is:	5%
Average staff hours needed for exercise of reserved rights etc. per time	20
Number of site visits required to review change per time	1

### 5. Annual Landowner Relations

Staff time needed for annual landowner relations	2
Likely hard costs per landowner per year (e.g. newsletter, postage, etc.)	\$5.00

### 6. Easement Violations

Negotiations prior to obtaining counsel	
How often will negotiations be anticipated in a 20 year period?	1
Therefore likelihood of negotiations in a 20 year period is	5%
Average staff hours needed for negotiations to head off violation	20
Number of site visits required to head off (stop) a violation	1

### 7. Costs of defending an easement

Commentary: These numbers are estimates. See Section E. below for explanation.

Staff time needed to defend an easement	60
Costs of obtaining legal counsel	\$40,000.00
Additional costs (e.g. expert witnesses etc.)	\$5,000.00

### 8. Endowment Assumptions Commentary:

The derivation of these numbers is shown on the last page of this spreadsheet.

Average 30 year Treasury Bond rate of return	7.76%
Average inflation rate	3.17%
Therefore the Treasury Bond rate less the inflation rate is:	4.58%

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### B. Formulas Commentary:

The following computations are used to calculate the overall expenses for certain rates or activities used in the final calculation. Assumptions from Section A above are used in the formulas.

#### 1. Hourly staff rate (including overhead)

Salary costs per hour	21.091
Overhead costs per staff member per hour	<u>10.000</u>
Total: Hourly staff rate	31.091

#### 2. Travel Costs for Each Site Visit

Commentary: Only those costs associated with travelling to and from an easement have been calculated here.

Mileage reimbursement: mileage x reimbursement rate	\$37.50
Staff costs for travel time:	
hourly staff rate x (mileage divided by average vehicular speed)	\$69.090
Reimbursable travel expenses	<u>\$0.00</u>
Total: Travel Costs for Each Site Visit	\$106.59

### C. Annual Expenses

Commentary: The following summary of expenses adds up to the annual cost of monitoring an easement based on the assumptions and formulas above. Please refer back to the assumptions in Section A or the formulas in Section B above for clarification.

#### 1. Annual Monitoring Expenses

Pre-monitoring staff costs: hourly staff rate x staff time needed	\$31.09
Monitoring staff costs: hourly staff rate x staff time needed	\$62.18
Monitoring: hard costs	\$23.00
Post-monitoring staff costs: hourly staff rate x staff time needed	\$93.27
Travel costs for each site visit (see formula #2 above)	<u>\$106.59</u>
Total Annual Monitoring Expenses	\$316.13

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### 2. Annual Landowner Relations Costs

Costs of staff time: hourly staff rate x hours needed	\$62.18
Costs of supplies	<u>\$5.00</u>
Total Annual Landowner Relations Costs	\$67.18

### 3. Per Year Cost of Exercise of Reserved Rights

Staff costs: hourly staff rate x hours needed	\$621.81
Travel costs for each site visit (see formula #2 above)	<u>\$106.59</u>
Costs of exercise of reserved right every 20 years	\$728.40
x percentage likelihood of right being exercised within 20 years	<u>5%</u>
Total: Per year cost of exercise of reserved right	\$36.42

### 4. Per Year Cost of Negotiations Over Violations:

Staff costs: hourly staff rate x hours needed	\$621.81
Travel costs for each site visit (see formula #2 above)	<u>\$106.59</u>
Cost of one negotiations over violations ever 20 years	\$728.40
x percentage likelihood of negotiations within 20 years	<u>5%</u>

Total: Per year cost of negotiations	\$36.42
Total Annual Expenses	\$456.15

### D. Endowment Needed to Fund Annual Expenses

Commentary: The following calculation gives the size of the endowment necessary to spin off enough interest to:

- pay for the annual monitoring costs
- reinvest sufficient monies so the endowment will grow sufficiently to compensate for the effects of inflation. Assume that a secure investment will produce 9.4% in interest each year. In this example, you only need 4.0% interest to fund your monitoring program. The remaining 5.2% interest will be plowed back into your investments in order to compensate for the historical effects of inflation. See attached page for illustration.

Total Annual Costs (see above)	\$456.15
divided by the difference between Treasury Bond rate and the interest rate (see assumption above where $4.0\% = .040$ )	<u>0.046</u>
Total: Endowment Needed	\$9,953.18

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### E. Costs of Defending an Easement

Commentary: The better the relationship between the landowner and the land trust, the less likely the two parties will ever have to go to court. Each land trust must, however, recognize that even with the best efforts, sometimes it is necessary to go to court.

From the assumptions it costs almost \$50,000 to defend an easement. To be on the safe side, the land trust ought to set aside almost \$60,000 in the Easement Defense Fund. If a land trust holds 30 easements, then \$2,000 per easement ought to be set aside to build up the Easement Defense Fund.

Staff time needed to defend an easement x hourly staff rate	\$1,865.43
Costs of obtaining legal counsel	\$40,000.00
Additional costs	\$5,000.00
Total: Cost of Defending an Easement	
Maximum Defense Fund	\$60,000.00
divided by 30 easements	<u>30</u>
Total: Contribution needed to Defend an Easement	\$2,000.00

### F. Total Funds Needed to Accept, Monitor, and Defend the Easement

Total: Stewardship Endowment Needed to Fund Annual Costs	\$9,953.18
Total: Costs of Defending an Easement	<u>\$2,000.00</u>
Total: Funds needed to accept, monitor and defend the easement	\$11,953.18

Commentary:

Demonstration that endowment does not diminish with time.

Average 30 year Treasury Bond rate of return:	7.76%
Average inflation rate for a 20 year period:	3.17%
Difference between average Treasury Bond and interest rate	4.58%
Annual payout needed each year	\$456.15

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Year	Beginning Endowment	Total Annual Earned Interest	Annual Monitoring Costs	Annual Return to Endowment	Ending Endowment
2003	9,953	772	456	316	10,269
2004	10,269	797	471	326	10,595
2005	10,595	822	486	336	10,931
2006	10,931	848	501	347	11,278
2007	11,278	875	517	358	11,636
2008	11,636	903	533	369	12,006
2009	12,006	931	550	381	12,387
2010	12,387	961	568	393	12,780
2011	12,780	991	586	406	13,185
2012	13,185	1,023	604	419	13,604
2013	13,604	1,055	623	432	14,036
2014	14,036	1,089	643	445	14,481
2015	14,481	1,123	664	460	14,941
2016	14,941	1,159	685	474	15,415
2017	15,415	1,196	706	489	15,904
2018	15,904	1,234	729	505	16,409
2019	16,409	1,273	752	521	16,930
2020	16,930	1,313	776	537	17,467
2021	17,467	1,355	801	554	18,022
2022	18,022	1,398	826	572	18,594
2023	18,594	1,442	852	590	19,184
2024	19,184	1,488	879	609	19,793
2025	19,793	1,535	907	628	20,421
2026	20,421	1,584	936	648	21,069
2027	21,069	1,634	966	669	21,738
2028	21,738	1,686	996	690	22,428
2029	22,428	1,740	1,028	712	23,140
2030	23,140	1,795	1,060	734	23,874
2031	23,874	1,852	1,094	758	24,632
2032	24,632	1,911	1,129	782	25,414
2033	25,414	1,971	1,165	807	26,220
2034	26,220	2,034	1,202	832	27,053
2035	27,053	2,098	1,240	859	27,911
2036	27,911	2,165	1,279	886	28,797
2037	28,797	2,234	1,320	914	29,711
2038	29,711	2,305	1,362	943	30,654
2039	30,654	2,378	1,405	973	31,627
2040	28,797	2,234	1,320	914	29,711
2041	29,711	2,305	1,362	943	30,654
2042	30,654	2,378	1,405	973	31,627
2043	31,627	2,453	1,449	1,004	32,631



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### Investment Return Analysis

30 Yr US    Consumer Price Index

Year	Treasury Bond Yield	Urban Consumers	Difference
1983	11.2%	3.2%	8.0%
1984	12.4%	4.4%	8.0%
1985	10.8%	3.5%	7.3%
1986	7.8%	1.9%	5.9%
1987	8.6%	3.7%	4.9%
1988	9.0%	4.1%	4.9%
1989	8.4%	4.8%	3.6%
1990	8.6%	5.4%	3.2%
1991	8.1%	4.2%	3.9%
1992	7.7%	3.0%	4.7%
1993	6.6%	3.0%	3.6%
1994	7.4%	2.6%	4.8%
1995	6.9%	2.8%	4.1%
1996	6.7%	3.0%	3.7%
1997	6.6%	2.3%	4.3%
1998	5.6%	1.6%	4.0%
1999	5.9%	2.2%	3.7%
2000	5.9%	3.4%	2.5%
2001	5.5%	2.8%	2.7%
2002	5.4%	1.6%	3.9%
Average	7.76%	3.17%	4.58%

Sources: Treasury Bond Data:

Federal Reserve Board

Consumer Price Index (not seasonally adjusted): Bureau of Labor Statistics