



## Park Facility Management Division

### Conservation Corps Project Analysis, Fall 2012

The National Park Service (NPS) Park Facility Maintenance Division (PFMD) conducted a project analysis to determine how the costs of engaging a conservation corps to accomplish cyclic maintenance activities at national parks compared with the costs of using contractor or NPS crews. The project analysis determined that, **on average, using conservation crews instead of NPS crews saved 65% with the minimum savings just 3% and the maximum savings 87%**. The analysis found that the **savings using conservation corps instead of contractor crews were even more significant with average savings of 83% and over \$130,000 per project**.

The NPS PFMD together with the Public Lands Service Coalition (PLSC) performed an earlier analysis in the summer of 2011 which investigated the costs and potential savings from utilizing conservation corps crews to accomplish cyclic maintenance activities at national parks. Utilizing crew composition and costs provided by one typical conservation corps and some high level assumptions about the type of work in the NPS 5-year cyclic work plan, the analysis found that using conservation corps crews could save up to 44% over using NPS crews. The conservation corps are continually faced with the issue of being able to defensibly describe the benefits of corps projects so additional analysis that utilized specific projects to estimate savings was performed. With actual completed project information and costs provided by the PLSC, estimates for performing the same project work using contractor and NPS crews were completed using the NPS Cost Estimating Software System (CESS). The CESS is based on published, industry standard cost data from R.S. Means, built on an industry standard platform known as Timberline Estimating, relies on a robust database of over 65,000 line items and 9,000 assemblies, and can be used to estimate small and large projects of a wide range of types.

The final results analyzed 15 geographically dispersed projects ranging in complexity with general focus on trail related projects. **On average, using conservation corps crews instead of NPS crews saved 65% with the minimum savings just 3% and the maximum savings 87%**. The analysis found that the **savings using conservation corps instead of contractor crews were even more significant with average savings of 83% and over \$130,000 per project**. In general, the conservation corps crews were consistently the least expensive alternative. **In dollars, for all 15 selected projects the average savings was over \$50,000 over NPS crew costs (or \$131,000 over contractor crews) with a minimum savings of just \$237 and a maximum savings over \$224,000**. See Table 1 for a summary.

**TABLE 1: PROJECT SAVINGS**

Projects	Amount of savings	Minimum	Average	Maximum
2, 3, 5, 7, 8, 12, 13	Savings less than \$15,000	\$237	\$6,826	\$13,746
4, 10, 11, 15, 16	Savings between \$15,000 and \$100,000	\$20,360	\$49,783	\$77,002
6, 9, 14	Savings greater than \$100,000	\$114,551	\$151,486	\$224,172
2 through 16		\$237	\$50,077	\$224,172

Generally, there were three different groupings of projects based on the savings:

- Projects with savings less than \$15,000
- Projects with savings between \$15,000 and \$100,000
- Projects with savings greater than \$100,000

The three groupings based on savings matched the breakdown by complexity: small, medium and large projects. As expected, the contracted cost was always greater than the NPS cost due to the higher labor costs for the contracted crews. A summary of the contractor, NPS and Corps costs can be reviewed at the end of the document in Table 2: Summary Project Data | Corps, Contracted and NPS Cost Comparison. Two additional tables at the end of the document provide additional information by breaking down the Contracted and NPS costs into the assemblies and line items that were utilized to build the estimate. See Table 3: Contractor Cost by Assembly and Project and Table 4: NPS Cost by Assembly and Project for these details. There were a total of 13 different assemblies and one line item for downed tree removal utilized for the project cost estimates.

### **Methodology**

The steps outlined below defined the methodology used for this analysis.

1. **Collect Sample Projects.** A selection of three actual projects provided the starting point for analysis as the project team elected to run through the process from start to finish for a small sample size to determine what would work and what would need to be refined for roll-out to additional conservation corps. Only one project was eliminated from consideration because of anomalies in the data provided and the lack of information necessary for proper follow-up.
2. **Create Estimates in CESS using data from Sample Projects.** Cost estimates in CESS were developed by matching the project descriptions and task work to individual line items and cost assemblies from the database. Initially three estimates were created, one for the contracted cost, one for the NPS cost and one for the conservation corps. It was determined that only the contracted and NPS CESS cost estimates would be necessary as the information provided by the conservation corps were the actual costs to the NPS for actual projects the conservation corps completed at national parks.
3. **Analyze estimates and determine final requirements for data collection.** Once all three projects had been estimated in the NPS CESS, a detailed data collection document was created that highlighted the most commonly used trails line items and assemblies and the required data elements necessary to generate proper estimates in the system.
4. **Collect larger sample size.** The data collection document was utilized to collect project data for an additional 13 actual completed projects representing nine different conservation corps.
5. **Determine cost savings.** Using the project data and the NPS CESS, two estimates per project were created and summarized in Excel. The total cost savings was determined by comparing the NPS and contractor crew estimates to the actual cost to the NPS for engaging the conservation corps to complete the projects.

Table 2: Summary Project Data | Corps, Contracted and NPS Cost Comparison

Proj. #	Corps	Corps		Park	PA	PCODE	Date	Contractor			Lowest	Savings (Max - Min)
		Code	Desc.					Corps Cost	Est.	NPS Est.		
2	Southwest Conservation Corps	SCC	Fencing for Horse Protection	Mesa Verde NP	MEVE	P404	June 2012	\$6,000	\$11,910	\$6,237	Corps	\$237
3	Southwest Conservation Corps	SCC	Trail Rehabilitation	Great Sand Dunes	GRSA	P402	June 2012	\$24,000	\$68,584	\$37,746	Corps	\$13,746
4	Southwest Conservation Corps	SCC	Mosca Pass Trail	Great Sand Dunes NP	GRSA	P402	June 2012	\$12,000	\$61,156	\$32,360	Corps	\$20,360
5	Northwest Youth Corps	NYC	Pumice Flat Trail	Crater Lake NP	CRLA	P219	August 2012	\$25,000	\$72,540	\$37,734	Corps	\$12,734
6	Conservation Corps North Bay	CCNB	Annual PLC Trail Maintenance	Point Reyes National Seashore	PORE	P415	December 2012	\$77,000	\$639,462	\$301,172	Corps	\$224,172
7	Montana Conservation Corps	MCC	Grinnell Glacier and Grinnell Lake Trails	Glacier National Park	GLAC	P162	August 2012	\$17,200	\$32,240	\$17,805	Corps	\$605
8	Utah Conservation Corps	UCC	Chicken Creek Nature and Historic Quarry trails	Fossil Butte National Monument	FOBU	P042	July 2012	\$8,550	\$24,360	\$10,018	Corps	\$1,468
9	Nevada Conservation Corps	NCC	Trail Maintenance	Great Basin National Park	GRBA	P409	August 2012	\$69,863	\$397,837	\$184,414	Corps	\$114,551
10	Conservation Corps MN & IA	CCMI	Voyageurs National Park (P12AC100208)	Voyageurs National Park	VOYA	P005	September 2012	\$20,876	\$128,171	\$70,166	Corps	\$49,290
11	Conservation Corps MN & IA	CCMI	Apostle Islands National Lakeshore_(P12AC100258)	Apostle Islands National Lakeshore	APIS	P090	August 2012	\$21,000	\$139,098	\$70,552	Corps	\$49,552
12	Coconino Rural Environment Corps	CREC	Lava Flow Trail Project	Sunset Crater	SUCR	P111	October 2012	\$22,000	\$53,279	\$35,024	Corps	\$13,024
13	Conservation Corps MN & IA	CCMI	Youth – Isle Royale National Park_(P12AC30197)	Isle Royale National Park	ISRO	P070	September 2012	\$21,420	\$56,372	\$27,389	Corps	\$5,969
14	Rocky Mountain Youth Corps, NM	RMYC	Bandelier National Monument	Bandelier National Monument	BAND	P343	October 2011	\$25,000	\$337,639	\$140,736	Corps	\$115,736
15	Rocky Mountain Youth Corps, NM	RMYC	Bandelier National Monument	Bandelier National Monument	BAND	P343	September 2012	\$36,000	\$175,511	\$88,711	Corps	\$52,711
16	Southwest Conservation Corps	SCC	Sand Creek Trail	Great Sand Dunes	GRSA	P402	July 2012	\$12,000	\$172,469	\$89,002	Corps	\$77,002

Table 3: Contractor Cost by Assembly and Project

Assembly	Desc	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16
G2040.910-N050	Campground, Veg. Clearing/Replanting		\$3,052													
G2040.930-N020	Trail, Retainer Bar, Timber		\$128	\$559			\$123	\$13,706	\$28,136							
G2040.930-N021	Trail Steps, Stone				\$6,995				\$10,150					\$1,800	\$200	
G2040.930-N100	Trail, Existing Brush Clearing		\$19,197	\$27,923	\$17,260	\$166,229	\$138			\$53,511	\$72,567	\$402	\$31,715		\$28,661	\$46,979
G2040.930-N105	Trail, New Brush Clearing		\$735				\$8				\$14					
G2040.930-N805	Stone Retaining Wall		\$3,675						\$30,009		\$5,676	\$29,573				
G2040.930-N911	Trail, Water Bar - Timber		\$690	\$330					\$977					\$4,263	\$15,492	
G2040.930-N912	Trail, Water Bar - Stone		\$969	\$761	\$16,556		\$10,765		\$3,593					\$8,016	\$2,481	
G2040.930-N913	Trail, Water Bar - Swale					\$6,640									\$1,375	
G2041.100-N003	Boardwalk, Typical on grade									\$18,599						
G2050.100-N010	Landscape Planting Activities		\$194													
MG2040 N215	Trail- Existing, Repair Tread Surface		\$9,947			\$186,896	\$7,105		\$150,954					\$175,880	\$50,534	\$26,526
MG2040 N170	Fencing	\$6,701														
3113.1320.3100	Downed Tree Removal			\$4,834												\$23,527
	Design Contingency (Std 20%)	\$1,340	\$7,717	\$6,881	\$8,162	\$71,953	\$3,628	\$2,741	\$44,764	\$14,422	\$15,651	\$5,995	\$6,343	\$37,992	\$19,749	\$19,406
	Add-ons (G&A, Overhead, Profit)	\$3,869	\$22,282	\$19,868	\$23,566	\$207,743	\$10,474	\$7,914	\$129,242	\$41,639	\$45,189	\$17,309	\$18,314	\$109,690	\$57,018	\$56,030
	<b>Project Totals</b>	<b>\$11,911</b>	<b>\$68,586</b>	<b>\$61,156</b>	<b>\$72,539</b>	<b>\$639,461</b>	<b>\$32,241</b>	<b>\$24,362</b>	<b>\$397,825</b>	<b>\$128,171</b>	<b>\$139,097</b>	<b>\$53,279</b>	<b>\$56,372</b>	<b>\$337,641</b>	<b>\$175,510</b>	<b>\$172,469</b>

Table 4: NPS Cost by Assembly and Project

Assembly	Desc	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16
G2040.910-N050	Campground, Veg. Clearing/Replanting		\$1,981													
G2040.930-N020	Trail, Retainer Bar, Timber		\$68	\$303			\$56	\$5,636	\$14,938							
G2040.930-N021	Trail Steps, Stone				\$3,744				\$5,387					\$988	\$110	
G2040.930-N100	Trail, Existing Brush Clearing		\$11,591	\$14,073	\$8,131	\$69,601	\$74			\$25,994	\$36,574	\$254	\$15,409		\$17,282	\$23,678
G2040.930-N105	Trail, New Brush Clearing		\$369				\$6				\$11					
G2040.930-N805	Stone Retaining Wall		\$2,082						\$19,737		\$3,108	\$19,451				
G2040.930-N911	Trail, Water Bar - Timber		\$400	\$184					\$545					\$2,377	\$10,075	
G2040.930-N912	Trail, Water Bar - Stone		\$557	\$430	\$9,355		\$6,187		\$2,030					\$4,607	\$1,426	
G2040.930-N913	Trail, Water Bar - Swale					\$2,688										\$557
G2041.100-N003	Boardwalk, Typical on grade									\$13,482						
G2050.100-N010	Landscape Planting Activities		\$160													
MG2040 N215	Trail- Existing, Repair Tread Surface		\$4,027			\$97,152	\$3,693		\$61,116					\$71,207	\$20,459	\$10,749
MG2040 N170	Fencing	\$3,509														
3113.1320.3100	Downed Tree Removal			\$3,217												\$15,656
	Design Contingency (Std 20%)	\$702	\$4,247	\$3,641	\$4,246	\$33,888	\$2,003	\$1,127	\$20,751	\$7,895	\$7,939	\$3,941	\$3,082	\$15,836	\$9,982	\$10,017
	Add-ons (G&A, Overhead, Profit)	\$2,026	\$12,262	\$10,513	\$12,259	\$97,842	\$5,784	\$3,254	\$59,911	\$22,795	\$22,920	\$11,378	\$8,898	\$45,721	\$28,819	\$28,920
	<b>Project Totals</b>	<b>\$6,237</b>	<b>\$37,744</b>	<b>\$32,362</b>	<b>\$37,735</b>	<b>\$301,171</b>	<b>\$17,803</b>	<b>\$10,018</b>	<b>\$184,415</b>	<b>\$70,166</b>	<b>\$70,552</b>	<b>\$35,024</b>	<b>\$27,389</b>	<b>\$140,736</b>	<b>\$88,710</b>	<b>\$89,020</b>
	<b>Corps Network Project Totals</b>	<b>\$6,000</b>	<b>\$24,000</b>	<b>\$12,000</b>	<b>\$25,000</b>	<b>\$77,000</b>	<b>\$17,200</b>	<b>\$8,550</b>	<b>\$69,863</b>	<b>\$20,876</b>	<b>\$21,000</b>	<b>\$22,000</b>	<b>\$21,420</b>	<b>\$25,000</b>	<b>\$36,000</b>	<b>\$12,000</b>
	<b>Estimated Savings using Corps Crews</b>	<b>\$237</b>	<b>\$13,744</b>	<b>\$20,362</b>	<b>\$12,735</b>	<b>\$224,171</b>	<b>\$603</b>	<b>\$1,468</b>	<b>\$114,552</b>	<b>\$49,290</b>	<b>\$49,552</b>	<b>\$13,024</b>	<b>\$5,969</b>	<b>\$115,736</b>	<b>\$52,710</b>	<b>\$77,020</b>