

2020 Morefield Fire

Burned Area Rehabilitation Plan

UNIT: Mesa Verde National Park (NPS-MVP)

LOCATION: Mesa Verde, Colorado

DATE: July 16, 2020

PREPARED BY: Stephen Matt Masonry Worker, Archaeologist/READ/REAF/FFT2. ARCH/READ for Morefield Fire. Andrew Spear, Bioscience Technician, READ for Morefield Fire.

Submitted By: **CLIFFORD SPENCER**
Superintendent

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FIRE LOCATION & BACKGROUND INFORMATION

Fire Name	Morefield Fire
Fire Number	532
Agency Unit	Mesa Verde National Park
Region	Upper Colorado Basin - 7
State	Colorado
County	Montezuma
Ignition Date/Cause	June 27 th , 2020/ Lightning Caused
Date Contained	July 1 st , 2020
Date Controlled	July 11 th , 2020
Total Acres	47
Total Cost	\$31,043.30

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Statement of Need

During fire suppression activities the Resource Advisors (READ) assigned to the Morefield wildfire conducted a field assessment of known archeological sites and incidental discoveries along the perimeter and handlines of the wildfire. This resulted in the identification of archeological sites receiving impacts from the fire. The need to fully understand the degree of impacts to known archeological sites within the wildfire's boundary requires a more extensive assessment. The mosaic of burn severity occurring to the natural resources (watersheds and drainages) varies from low to high, thus will cause loss of soil deposition requiring a need for surface mitigations. A follow-up report will also be required due to the mitigations required to stabilize these archeological sites and natural resource intervention. The proposal includes the following four specifications:

- Assess fire-caused threats to known archeological sites and incidental discoveries.
- Implement landscape treatments around cultural sites and within natural watersheds.
- Monitor treatments to impacted cultural sites and prepare a report outlining effectiveness.
- Treatments to control nonnative plant species.

Four Specifications: S-1-Archeological site assessments, S-2-Implement landscape treatments, and S-3-Prepare an archeological and natural resource monitoring report of site updates and treatments. S-4-Nonnative plant treatments.

Fire Background

A plume of smoke was reported within the southeastern area of Mesa Verde National Park on June 27th, 2020 at approximately 5:40pm. The fire was named the Morefield Fire after being located near Morefield canyon on Morefield Ridge. The next day the fire was reported to have burned 46 acres and was located approximately five miles southeast of Morefield Campground. During the initial attack of the fire on the evening of June 27, 2020, four Large Air Tanker retardant drops along with four Single Engine Air Tanker retardant drops were spread around the fire's perimeter. Four additional Large Air Tanker retardant drops were spread along the fire's perimeter on June 28th, 2020. After these retardant drops, the progress of the fire slowed, allowing for hand crews to establish control lines on the southeast and southwest sides of the fire. The north and east sides of the fire burned into the Bircher fire scar (2000) and portions of the fire's interior burned through the 1959 Morefield fire scar. On June 30th, 2020 the Morefield fire was given a 100% containment level with an addition of one acre burned reaching the total acreage burned at 47 acres. At the peak, 70 personnel were deployed to the fire, downsizing to 50 personnel on June 28th-30th, then to 10 personnel after the fire's IC downgraded the fire from a type 4 IC to a type 5 IC.

Management Recommendations

Cultural Resources

Assess previously known and incidentally discovered sites. The wildfire may have had detrimental effects on the archeological sites within the burn area.

or created new threats such as: gullying; soil movement; stump holes; root piping;

Assessments will be necessary to determine if treatments are required to preserve these sites. Successful

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protective site treatments in previous post-fire projects at Mesa Verde have included stabilization with excelsior matting, slowing water and debris flow with aspen wattles or log diverters, removing hazard trees [REDACTED]

Mesa Verde has archeologists on staff who have experience prescribing and carrying out protective treatments for archeological sites. We will incorporate the findings reported in the Chapin 5 (1996) and Bircher-Pony (2000) BAER monitoring assessments and treatment accomplishment reports. Both reports concluded that landscape treatments at Mesa Verde cultural sites were largely effective. They also include specific recommendations regarding appropriate use of each intervention type with our soils, topography, and cultural landscape.

Implement Landscape Treatments. Treatments are predicted to be extensive [REDACTED] [REDACTED] Areas of severe burn are estimated based on the density and type of pre-burn vegetation, consultation with Mesa Verde's Fire Management Officer Keith Krause, and the resource advisors assigned to the Morefield fire. [REDACTED]

[REDACTED] This 2020 fire, compared to fires at Mesa Verde over the last three years is in a location where the upper watershed was severely burned, while the previous fire's watersheds were not severely burned. [REDACTED]

[REDACTED] influencing our proposal for an upper watershed treatment using straw wattles/silt logs that will serve to slow slope runoff during rain events enough to minimize damage to these features. Also of significance is a [REDACTED] [REDACTED] that was identified during suppression tactics. Treatments are prescribed for this historic scar because it will funnel water, creating a second drainage channel within the landscape. We are currently in this year's monsoonal season, though given the extreme drought the Four Corners region is experiencing we likely will not receive enough moisture to severely erode sediments within the burn area. Mesa Verde also receives a substantial amount of snow during winter months. The proposed treatments to severely burned areas will help slow any expediated spring runoff.

Looking at previous landscape treatments in severely burned areas at Mesa Verde, these sites are likely to require excelsior silt logs or water diversion up slope. They may also require matting through sensitive areas, such as middens. Mesa Verde has in-house archeologists and masonry workers with the skills, certification, and experience required to install landscape treatments and fell hazard trees. Multiple known and incidental discovered sites require hazard tree mitigation and two of the sites will require log erosion barriers within the watersheds above the sites. The eight proposed straw wattle/silt log treatments [REDACTED]

[REDACTED] Cost estimates were made by comparing similar site protection projects in nearby fires. Per-site values are within the range of previous BAER projects.

Monitor and Report on the Effectiveness of Mitigation for Cultural Sites. Cultural sites within the burned area will be visited by Mesa Verde archeologists and reported on within one year of the fire ignition date. Effectiveness of site resource stabilization will be evaluated, with particular attention paid to continued post-fire erosion and the appropriateness/adequacy of specific landscape treatments. Monitoring will occur as the Cultural Resource division can allocate time and funding for recording the incidentally discovered sites over the next year.

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Natural Resources

Non-native Invasive Plant Management

In areas of the fire where burn severity was moderate, low or unburned, patches of non-native perennial grass, smooth brome (*Bromus inermis*) remain alive and healthy. This species is expected to thrive within the burn scar due to its aggressive rhizomatous characteristics. Assessments of post fire environments within Mesa Verde show that infestations can establish quickly, outcompete native forb and grass species, and severely impact species diversity and the ability for the native plant community to re-establish. Areas within the fire are vulnerable to infestations, particularly areas with no surviving vegetation and potential for high native seed bank fatality. Smooth brome found along the perimeter of the fire within retardant lines may be affected by the presence of ammonium phosphate, a fertilizer in the retardant which can stimulate the spread and vigor of the species.

The presence of smooth brome within the Morefield Fire is estimated at 1 acre within the interior and 2 acres along the perimeter. Herbicide treatments that can be conducted as early as possible will give the best chance at controlling the species within the burn scar and provide the best chance at promoting the recovery of the native plant community.

Summary of Activities and Costs

LINE ITEM	SPEC NO.	TITLE	UNIT	UNIT COST	NO. OF UNITS	WORK AGENT	COSTS
1		Emergency site assessment				Force	\$4,031.40
2		Landscape Treatments				Force	\$21,695.60
3		Site Monitoring and Report				Force	\$2,883.50
4		Non-Native Invasive Plant Management				Force	\$2,432.80
		TOTAL COSTS					\$31,043.30

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Individual Specification 1

TREATMENT/ACTIVITY NAME	Emergency site assessment	PART E SPECIFICATION #	S-1
NFPORS TREATMENT CATEGORY*		FISCAL YEAR(S) (list each year):	2020
NFPORS TREATMENT TYPE *		WUI? Y / N	N
IMPACTED COMMUNITIES AT RISK	None	IMPACTED T&E SPECIES	None

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

Number and Describe Each Task:
A. General Description: Emergency site visits to follow up on REAF notes from the fireline.
B. Location/(Suitable Sites): Morefield Fire [REDACTED]
C. Design/Construction Specifications: [REDACTED], assess potential for damage, prescribe treatment.
D. Purpose of Treatment Specifications: To mitigate the damage caused by fire effects to seven severely burned cultural sites.
E. Treatment Effectiveness Monitoring Proposed: Described in Individual Specification S-3

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST / ITEM
Pre-field Planning Masonry Worker WG7/3, 2 days (\$24.16 x 20 hrs) X 1 (FY20)	\$483.20
Pre-field Planning Archeologist GS11/1, 1 day (\$32.27 x 10 hrs) X 1 (FY20)	\$322.70
Fieldwork Archeologist GS9/1, 1 week (\$26.67 x 40 hrs) X 1 (FY20)	\$1,066.80
Fieldwork Masonry Worker WG7/3, 1 week (\$24.16 x 40 hrs) X 1 (FY20)	\$966.40
Post-field Reporting Archeologist GS9/1, 1 week (\$26.67 x 40 hrs) X 1 (FY20)	\$1,066.80
TOTAL PERSONNEL SERVICE COST	\$3905.90
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	COST / ITEM

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GSA 4x4 vehicle @ 400/month for .25 months +\$.17/mile for 150 miles X 1 (FY20)	\$125.50
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$125.50
TRAVEL AND CONTRACT COSTS	
	N/A
	\$4,031.40

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT

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SPECIFICATION COST SUMMARY

FISCAL YEAR	PLANNED INITIATION DATE (M/D/YYYY)	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COST
FY_20	8/3/20	9/30/20	Force		\$		
TOTAL							\$4,031.40

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	
3. Estimate supported by cost guides from independent sources or other federal agencies.	
4. Estimates based upon government wage rates and material cost.	P/E
5. No cost estimate required - cost charged to Fire Suppression Account.	

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT

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TOTAL COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
National Park Service		\$4,031.40
	TOTAL COST	\$4,031.40

Individual Specification 2

TREATMENT/ACTIVITY NAME	Landscape Treatments	PART E SPECIFICATION #	S-2
NFPORS TREATMENT CATEGORY*		FISCAL YEAR(S) (list each year):	2020
NFPORS TREATMENT TYPE *		WUI? Y / N	N
IMPACTED COMMUNITIES AT RISK	None	IMPACTED T&E SPECIES	None

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

Number and Describe Each Task:
A. General Description: Apply treatments prescribed in S-1 to applicable sites in the Morefield Fire area. B. Location/(Suitable Sites): Morefield Fire C. Design/Construction Specifications: Materials used: Excelsior logs, 2" wooden stakes, felling hazard trees. D. Purpose of Treatment Specifications: Mitigate post-fire erosion danger to sites and the watershed and prevent further destruction and soil movement. E. Treatment Effectiveness Monitoring Proposed: see S-3.

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST / ITEM
Pre-field Planning Masonry Worker WG7/3, 1 days (10-hour days) (\$24.16 x 10 hrs) X 1 (FY20)	\$241.60
Pre-field Planning Bioscience Tech GS7/3, 1 day (10 hour days)(\$22.10 x 10 hrs) X 1 (FY20)	\$221.00
Fieldwork Archeologist GS9/1, 2 PP (\$26.67 x 160 hrs) X 1 (FY20)	\$4,267.20
Fieldwork Masonry Worker WG7/3, 2 PP (\$24.16 x 160 hrs) X 1 (FY20)	\$3,865.60
Fieldwork Bioscience Tech GS7/3, 2 PP (\$22.10 x 160 hrs) X 1 (FY20)	\$3,536.00
Post-field Reporting Masonry Worker WG7/3, 2 days (\$24.16 x 20 hrs) X 1 (FY20)	\$483.20
	\$221.00

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Post-field Reporting Bioscience Tech GS7/3, 1 day (\$22.10 x 10 hrs) X 1 (FY20)	
TOTAL PERSONNEL SERVICE COST	\$12,835.60
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	COST / ITEM
GSA 4x4 vehicle @ 400/month for 1 months +\$.17/mile for 1000 miles	\$340.00
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$340.00
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	COST / ITEM
Excelsior Silt Log (12" x 20' wattles/\$32.00 each) (250 wattles @ \$32 each, 250 x \$32)	\$8,000.00
Stakes (6 per log) (25/bundle x 40 bundles, \$13/bundle x 40)	\$520.00
TOTAL MATERIALS AND SUPPLY COST	\$8,520.00
TRAVEL AND CONTRACT COST	COST / ITEM
TOTAL CONTRACT COST	\$21,695.60

SPECIFICATION COST SUMMARY

FISCAL YEAR	PLANNED INITIATION DATE (M/D/YYYY)	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COST
FY_20	8/3/20	9/30/20	Force		\$		\$21,695.60
TOTAL							\$21,695.60

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE OF COST ESTIMATE

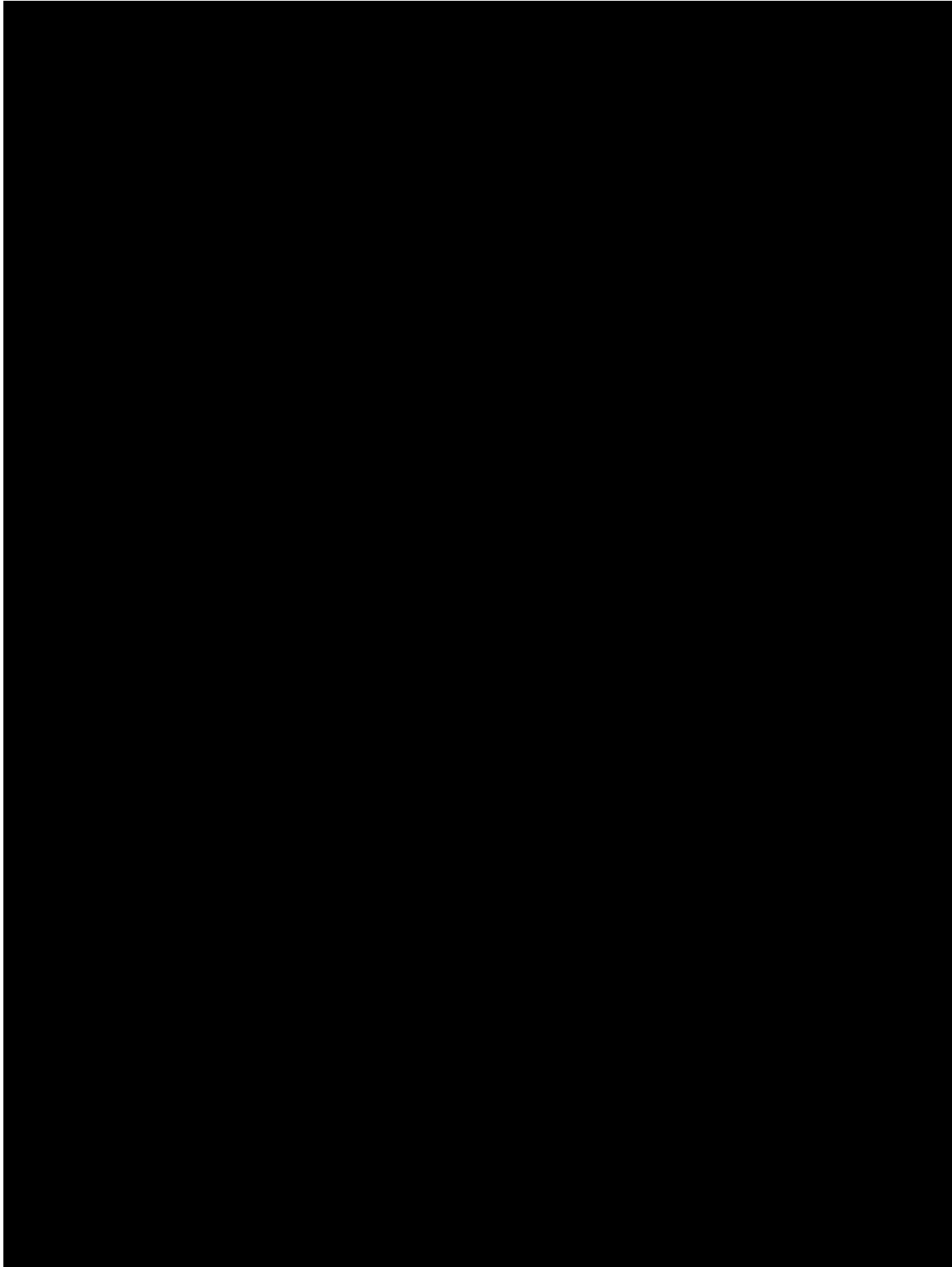
1. Estimate obtained from 2-3 independent contractual sources.	M
2. Documented cost figures from similar project work obtained from local agency sources.	
3. Estimate supported by cost guides from independent sources or other federal agencies.	
4. Estimates based upon government wage rates and material cost.	P/E/M
5. No cost estimate required - cost charged to Fire Suppression Account.	

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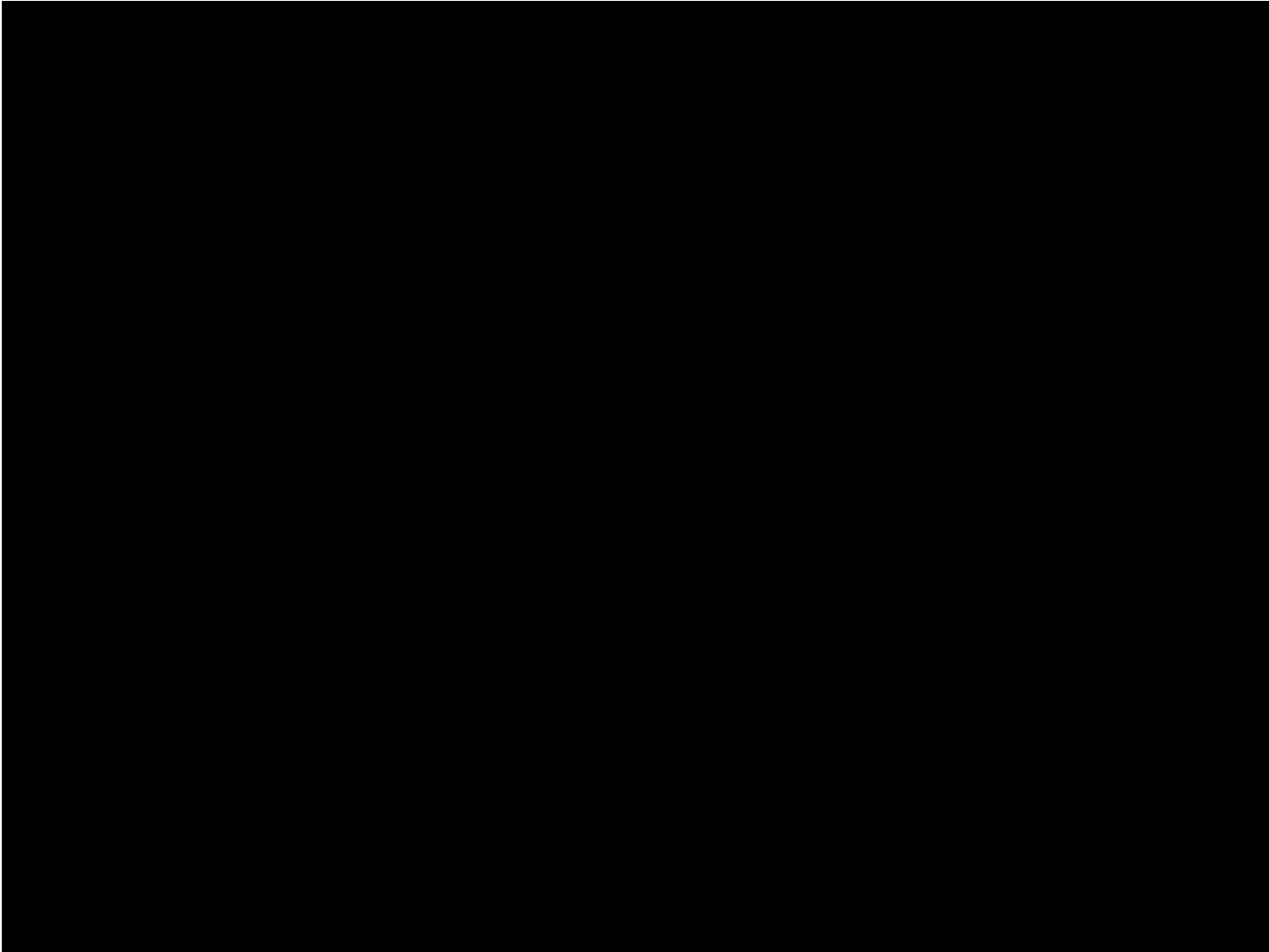
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RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT



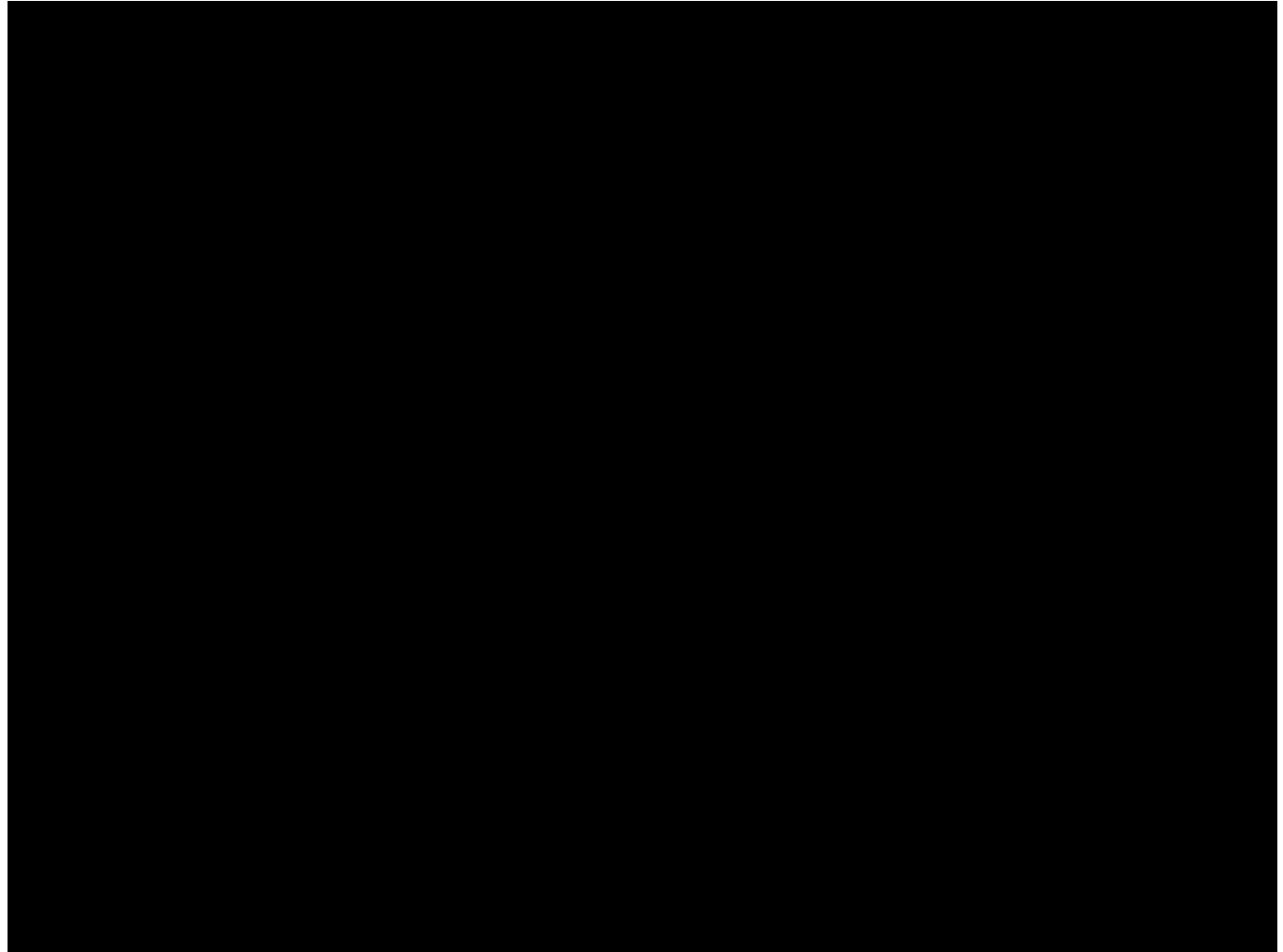
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[REDACTED]

[REDACTED]

TOTAL COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
National Park Service		\$21,695.60
	TOTAL COST	\$21,695.60

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Individual Specification 3

TREATMENT/ACTIVITY NAME	Site Monitoring and Report	PART E SPECIFICATION #	S-3
NFPORS TREATMENT CATEGORY*		FISCAL YEAR(S) (list each year):	2021
NFPORS TREATMENT TYPE *		WUI? Y / N	N
IMPACTED COMMUNITIES AT RISK	None	IMPACTED T&E SPECIES	None

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

Number and Describe Each Task:
A. General Description: Monitor treatments applied in S-2 to applicable sites in the Morefield Fire area.
B. Location/(Suitable Sites): Morefield Fire
C. Design/Construction Specifications: Return to sites in the Morefield Fire and evaluate treatment
D. Purpose of Treatment Specifications: N/A
E. Treatment Effectiveness Monitoring Proposed: N/A

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST / ITEM
Pre-field Planning Masonry Worker WG7/3, 1 day (\$24.16 x 10 hrs) X 1 (FY21)	\$241.60
Fieldwork Archeologist GS9/1 1 week (\$26.67 x 40 hrs) X 1 (FY21)	\$1066.80
Fieldwork Masonry Worker WG7/3 1 week (\$24.16 x 40 hrs) X 1 (FY21)	\$966.40
Post-field Reporting Masonry Worker WG7/3, 2 days (\$24.16 x 20 hrs) X 1 (FY21)	\$483.20
TOTAL PERSONNEL SERVICE COST	\$2,758.00
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	COST / ITEM
GSA 4x4 vehicle @ 400/month for .25 months +\$.17/mile for 150 miles	\$125.50
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$125.50

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TRAVEL AND CONTRACT COST	COST / ITEM
TOTAL CONTRACT COST	\$2,883.50

SPECIFICATION COST SUMMARY

FISCAL YEAR	PLANNED INITIATION DATE (M/D/YYYY)	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COST
FY_20,21	8/3/20	7/18/21	Force		\$		\$2,883.50
TOTAL							\$2,883.50

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	
3. Estimate supported by cost guides from independent sources or other federal agencies.	
4. Estimates based upon government wage rates and material cost.	P/E
5. No cost estimate required - cost charged to Fire Suppression Account.	

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT

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TOTAL COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
National Park Service		\$2,883.50
TOTAL COST		\$2,883.50

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Individual Specification 4

TREATMENT/ACTIVITY NAME	Non-native Invasive Plant Treatments	PART E SPECIFICATION #	S-4
NFPORS TREATMENT CATEGORY*		FISCAL YEAR(S) (list each year):	2020
NFPORS TREATMENT TYPE *		WUI? Y / N	N
IMPACTED COMMUNITIES AT RISK	None	IMPACTED T&E SPECIES	None

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

Number and Describe Each Task:
A. General Description: Apply spot treatments of herbicide using backpack sprayers to the surviving smooth brome population within the extent of the fire. B. Location/(Suitable Sites): Extent of Morefield Fire C. Design/Construction Specifications: N/A D. Purpose of Treatment Specifications: Prevent smooth brome infestations that are detrimental to the regeneration of the native plant community. E. Treatment Effectiveness Monitoring Proposed: N/A

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST / ITEM
4X MEVE Vegetation Management Crewmember, GS-05-07: \$100.00/hr x 20hrs	\$2,000.00
TOTAL PERSONNEL SERVICE COST	\$2,000.00
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	COST / ITEM
GSA 4x4 vehicle @ \$13/day (2 days) +\$.17/mile for 40 miles	\$32.80
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$32.80

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MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	COST / ITEM
Herbicide, Adjuvant, Dye	\$400.00
TOTAL MATERIALS AND SUPPLY COST	\$400.00
TRAVEL AND CONTRACT COST	COST / ITEM
TOTAL CONTRACT COST	\$2,432.80

SPECIFICATION OF COST SUMMARY

FISCAL YEAR	PLANNED INITIATION DATE (M/D/YYYY)	PLANNED COMPLETION DATE (M/D/YYYY)	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COST
FY_20	8/3/20	9/4/20	Force		\$		\$2,432.80
TOTAL							\$2,432.80

SOURCE OF COST ESTIMATES

1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	
3. Estimate supported by cost guides from independent sources or other federal agencies.	
4. Estimates based upon government wage rates and material cost.	P/E/M
5. No cost estimate required - cost charged to Fire Suppression Account.	

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT

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TOTAL COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
National Park Service		\$2,432.80
	TOTAL COST	\$2,432.80

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References used:

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2015 *142 Cold Brook Fire Burned Area Emergency Rehabilitation Plan*. National Park Service, Wind Cave National Park, South Dakota.

Anderson, J.

2000 *Chapin #5 Fire Burned Area Emergency Rehabilitation Accomplishment Report*. U.S. Department of the Interior, National Park Service, Mesa Verde National Park, Colorado. January 14, 2000.

Gasser, E.

1996 *Chapin #5 Fire Burned Area Emergency Rehabilitation (BAER) Plan*. U.S. Department of the Interior, National Park Service, Mesa Verde National Park, Colorado. September, 1996.

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2007 *Emergency Stabilization Plan: Goodman Fire (DPG4)*. Bureau of Land Management, Canyons of the Ancients National Monument, Colorado State Office.

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2003 *Bircher/Pony Fire Burned Area Emergency Rehabilitation Accomplishment Report*. Bureau of Indian Affairs, Ute Mountain Ute Tribe; Bureau of Land Management, San Juan Field Office; National Park Service, Mesa Verde National Park, Colorado. September 30, 2003.

Wienk, C.

2012 *Myrtle Fire Burned Area Emergency Rehabilitation Plan*. National Park Service, Wind Cave National Park, South Dakota.