

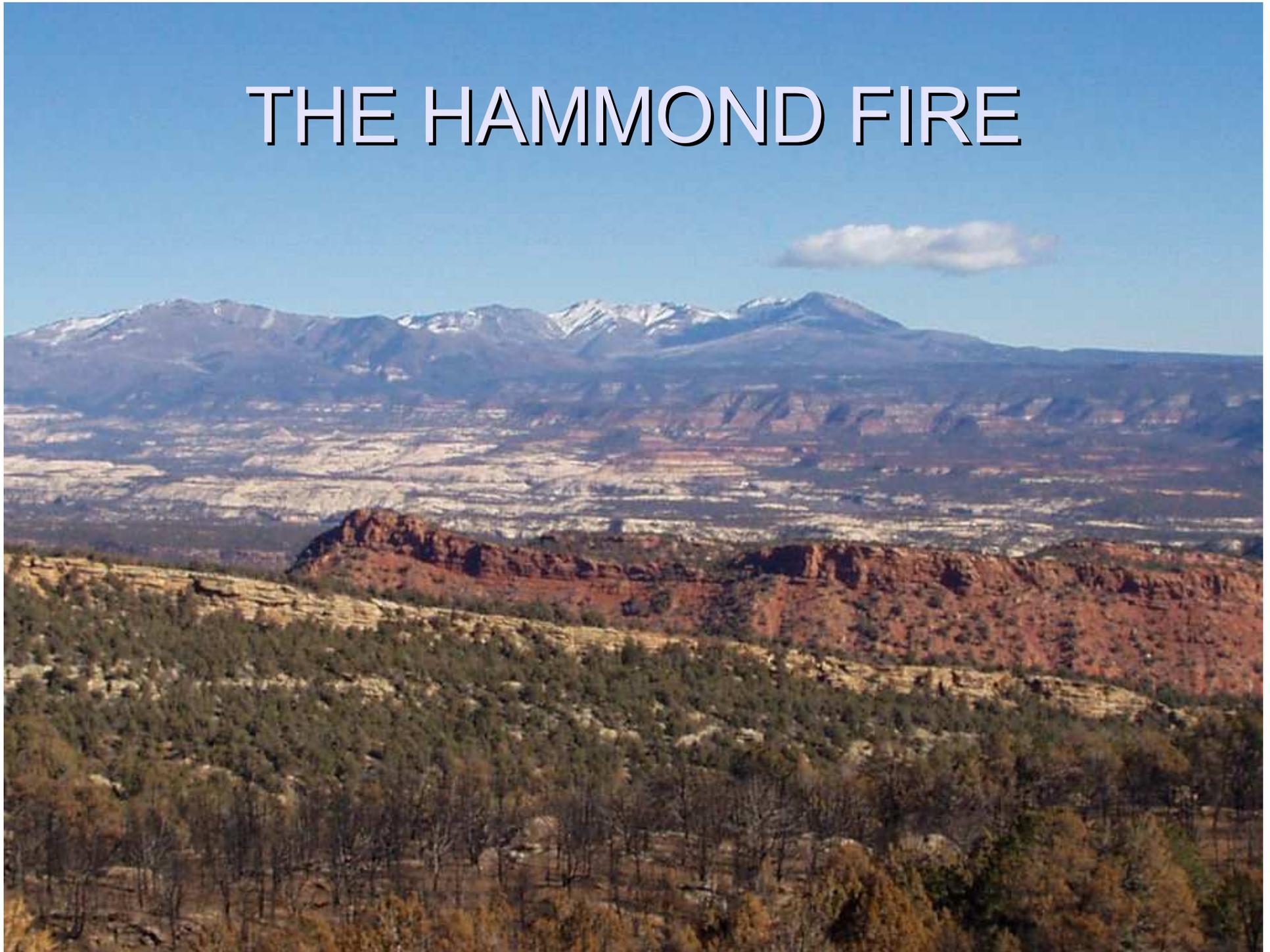
The Effects of Fire



On Cultural Resources



THE HAMMOND FIRE

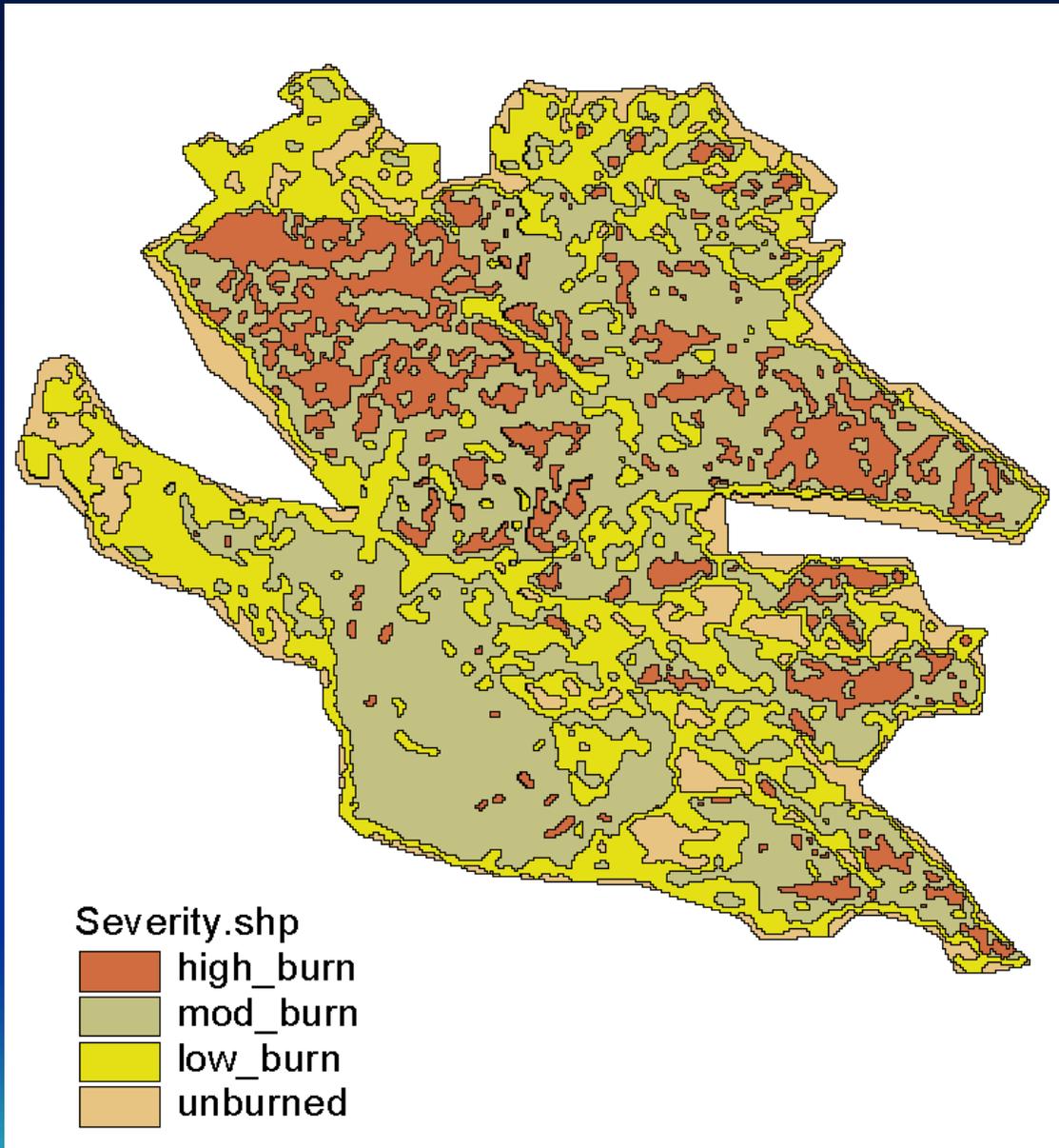


SUMMARY OF FIRE

- Hammond Fire burned 3800 acres on Elk Ridge between July 15 and 25, 2002
- Fire extended from Milk Ranch Point to Hammond Canyon, eastward toward the Cream Pots
- Three vegetation communities involved
 - Ponderosa Pine in the northern and western areas
 - Pinyon and Juniper along the eastern extent
 - Mountain shrub on in the southern portion of the fire



Fire Severity



THE HAMMOND FIRE BAER PROJECT



THE HAMMOND BAER PROGRAM

- Initial assessment
- Implementation of emergency rehabilitation



Initial Assessment

- BAER Team
 - Katherine Foster, Team Leader, Hydrologist
 - Donald Irwin, Archaeologist
 - Jimmie Forrest, Range
 - Greg Montgomery, Silviculture
- Initial Findings
 - Cultural Resources and invasive species encroachment are values at risk
 - Approximately 260 previously known archaeological sites in fire area
 - Need to implement a program to evaluate and rehabilitate individual sites

Implementation of BAER Program

- Site Assessment
- Fire Effects Assessment
- Prescription and Treatment

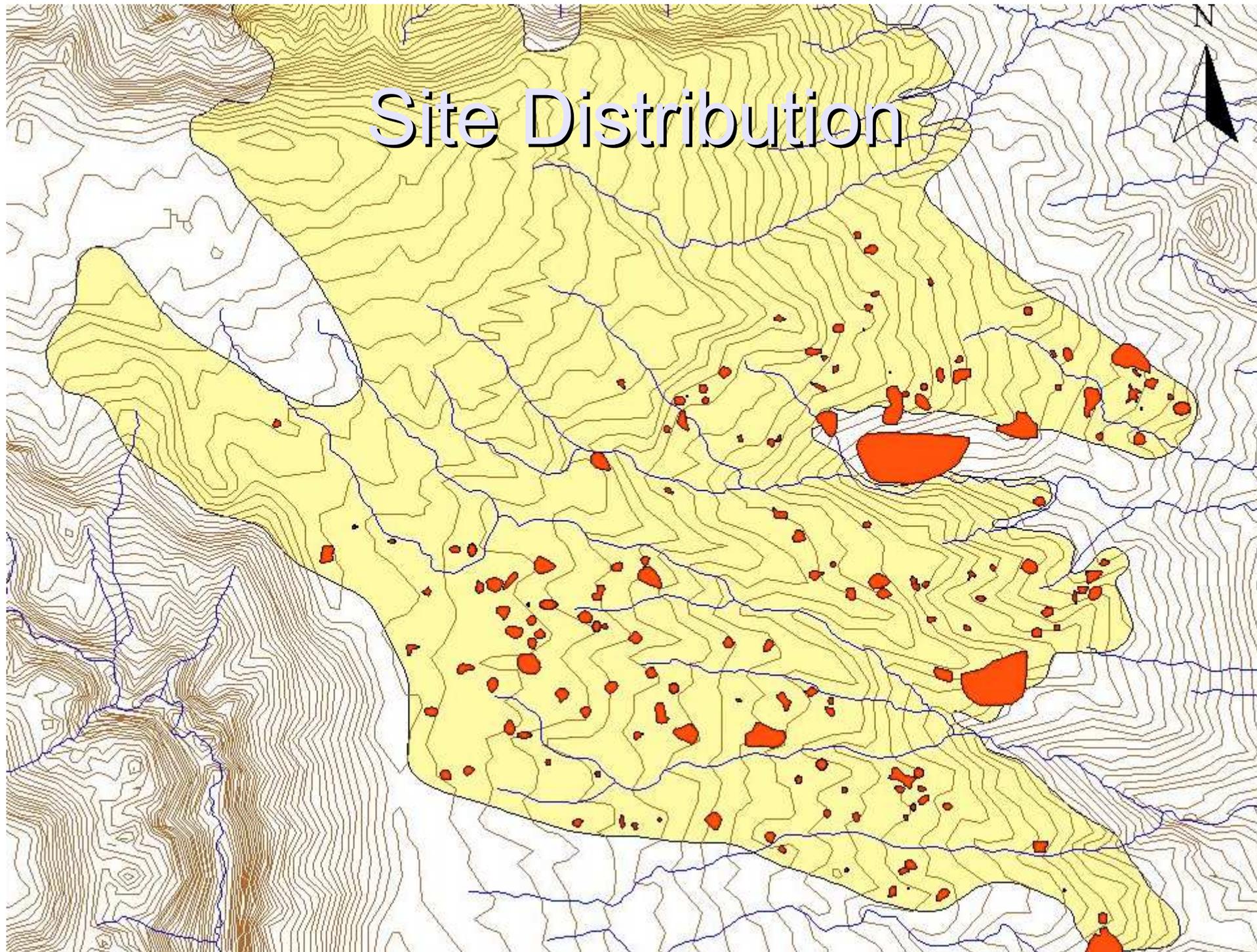


Summary of Archaeological Assessment

- Number of sites
 - 260 sites initially anticipated
 - 165 Sites assessed
- Site distribution
 - Sites are primarily found within the mountain shrub and pinyon/juniper areas
 - Sites in low slope areas on Milk Ranch, but many in moderate slope areas east of the Elk Ridge rim
- Site types
 - Wide range of site types
 - Architectural sites, isolated features, artifact scatters



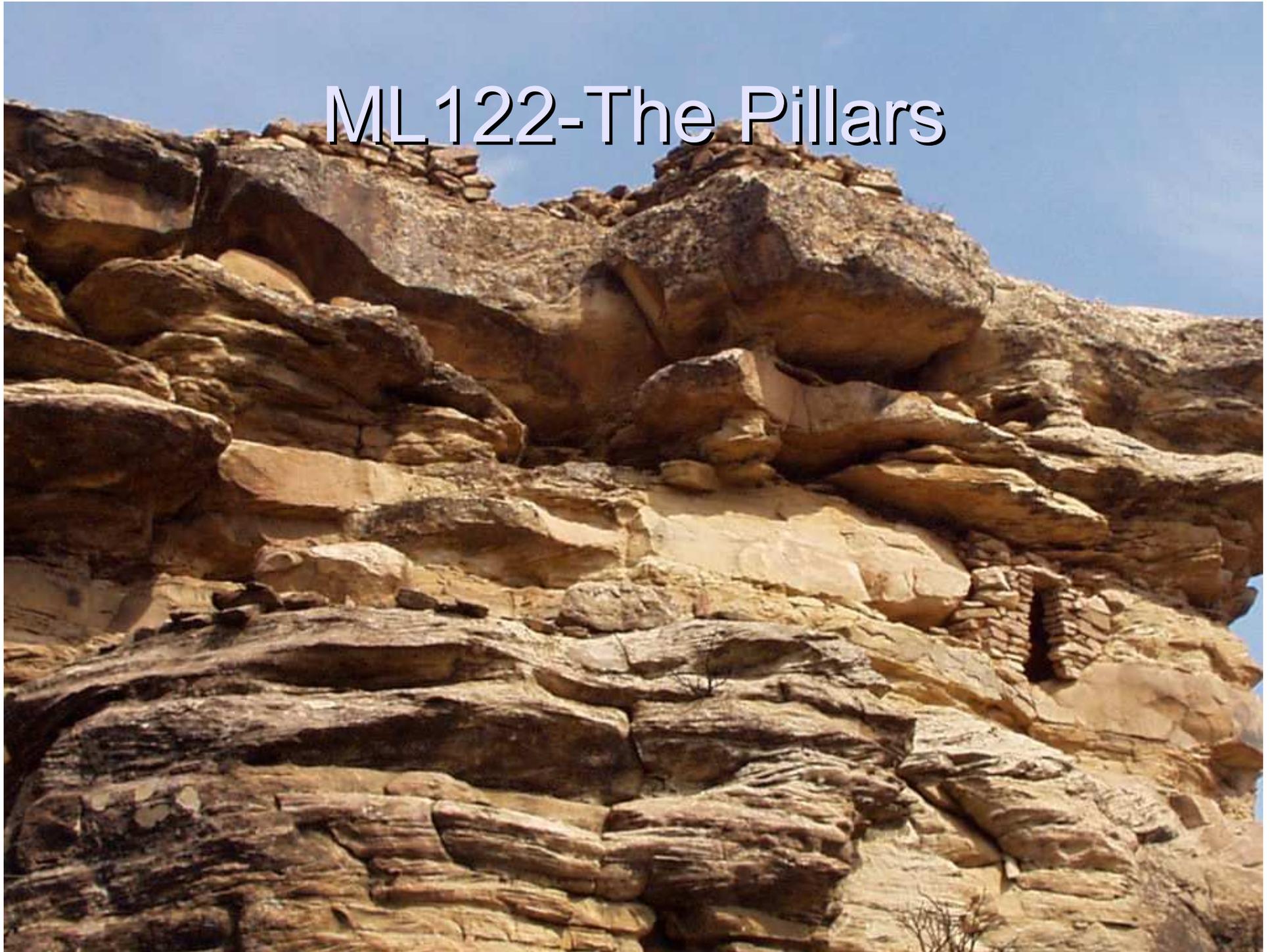
Site Distribution



Site Types



ML122-The Pillars



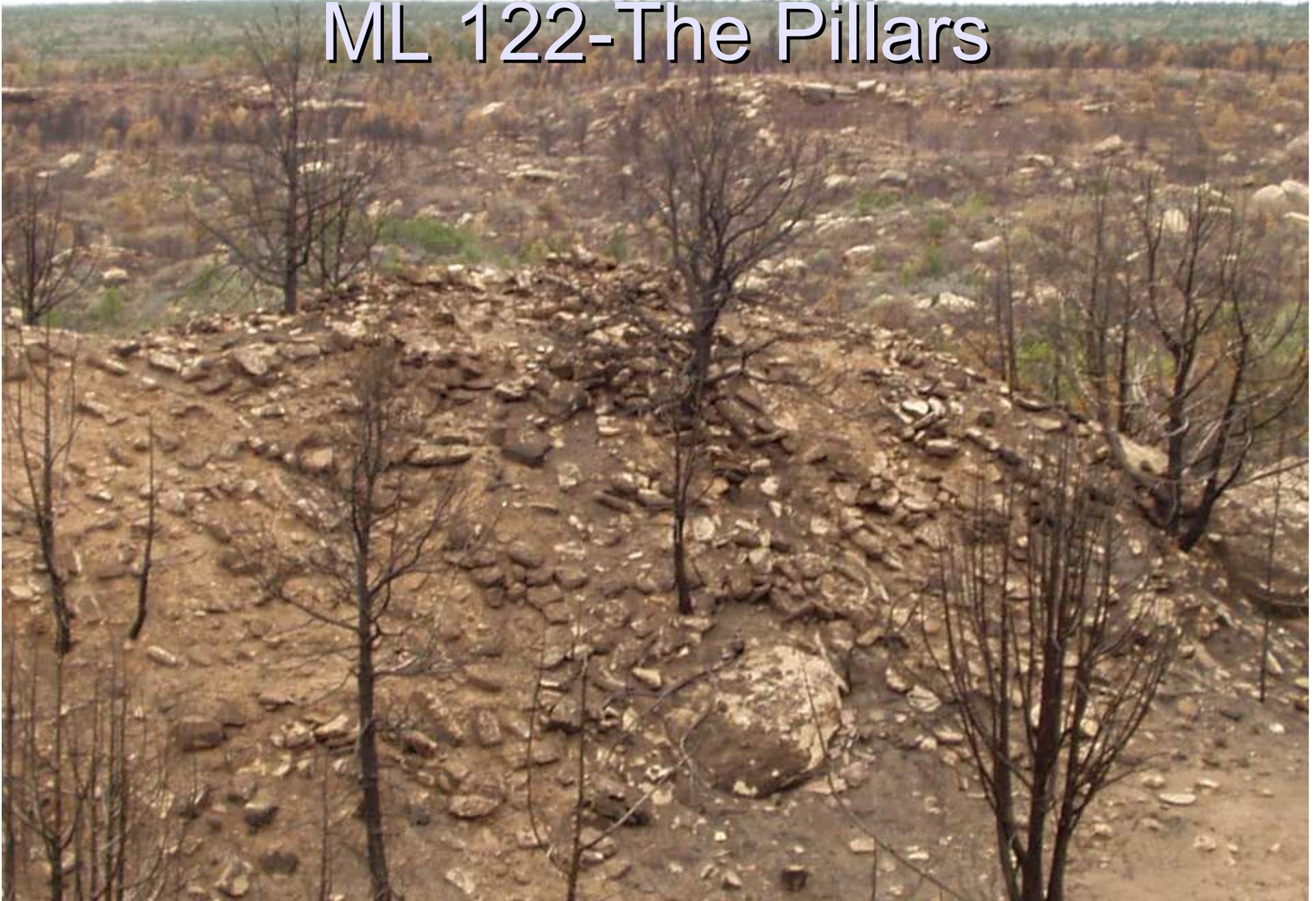
ML 122-The Pillars



MI 122-the Pillars



ML 122-The Pillars



ML 122-The Pillars



ML968-Raven House



ML968-Raven House



ML1016



ML998



ML967



ML 967



ML975



ML74



Summary of Fire Effects Assessment

- Damage to features
 - Spalling, cracking, reddening, blackening
 - 77 percent exhibit alterations of architectural stone
- Damage to cultural materials
 - Thermal alterations to artifacts
 - 97 percent of sites show some degree of alteration
- Erosion
 - 90 percent of sites exhibit active erosion, either alluvial or aeolian



SUMMARY OF PRESCRIPTION AND TREATMENT

- Direct effects of fire
- Indirect effects of fire



DIRECT EFFECTS

- Damage to features
- Damage to cultural materials



Damage to Features

- Loss of architectural timbers
- Reddening and spalling of architectural stone
- Drying and chemical alteration of architectural stone and adobe
- Loss of rock art
- Loss of visibility of cultural deposits and creation of “features”
- Loss of flammable features (corrals, cabins, etc)
- Hazard trees effects through falling and uprooting



Spalling of rock at ML122



Thermally altered architectural stone



Reddening and Blackening of Architectural Stone



Burned Pictograph



Damage to Cultural Materials

- Loss of organic materials
- Contamination of cultural deposits
- Damage to surface materials
 - Color changes
 - Spalling and shattering
 - Pot lid fracturing
 - Loss of organic paints on pottery



Discolored Sherds

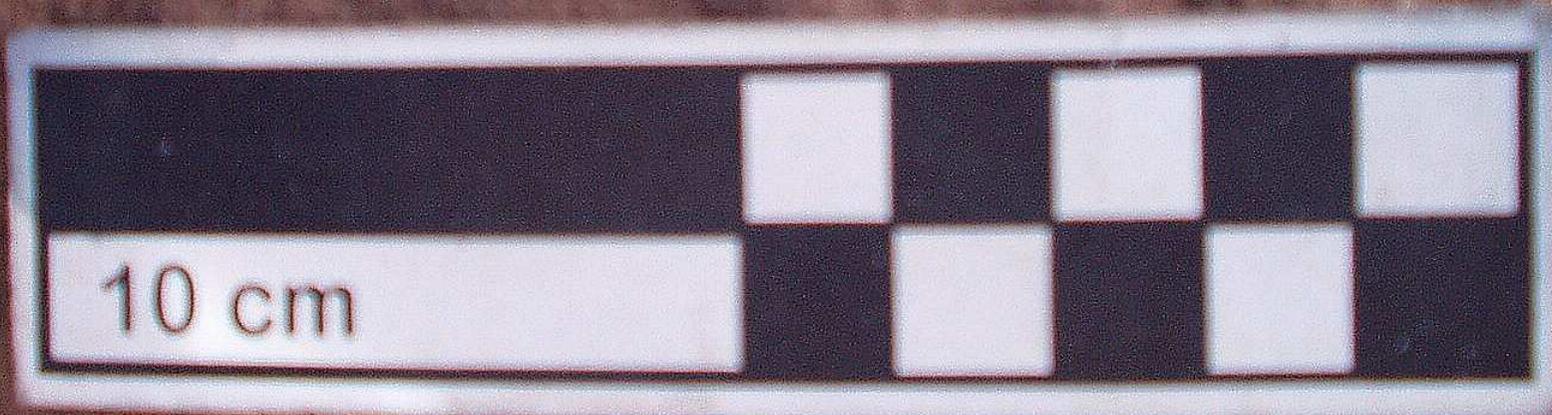
10 cm



Burned sherds



Altered Lithic Artifacts



Blackened and spalled lithic



Burned Organic Material



INDIRECT EFFECTS

- Supression
 - Handlines
 - Dozer lines
 - Other impacts
- Erosion
 - Aeolian processes
 - Alluvial processes
- Hazard Trees
 - Uprooting
 - Falling



Suppression

- Only one impact from mop-up
 - Small segment of hand line in upper portion of feature at ML988



Suppression Impacts at ML988



EROSION

AND

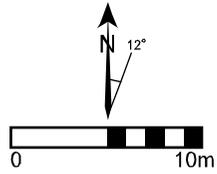


TREATMENT

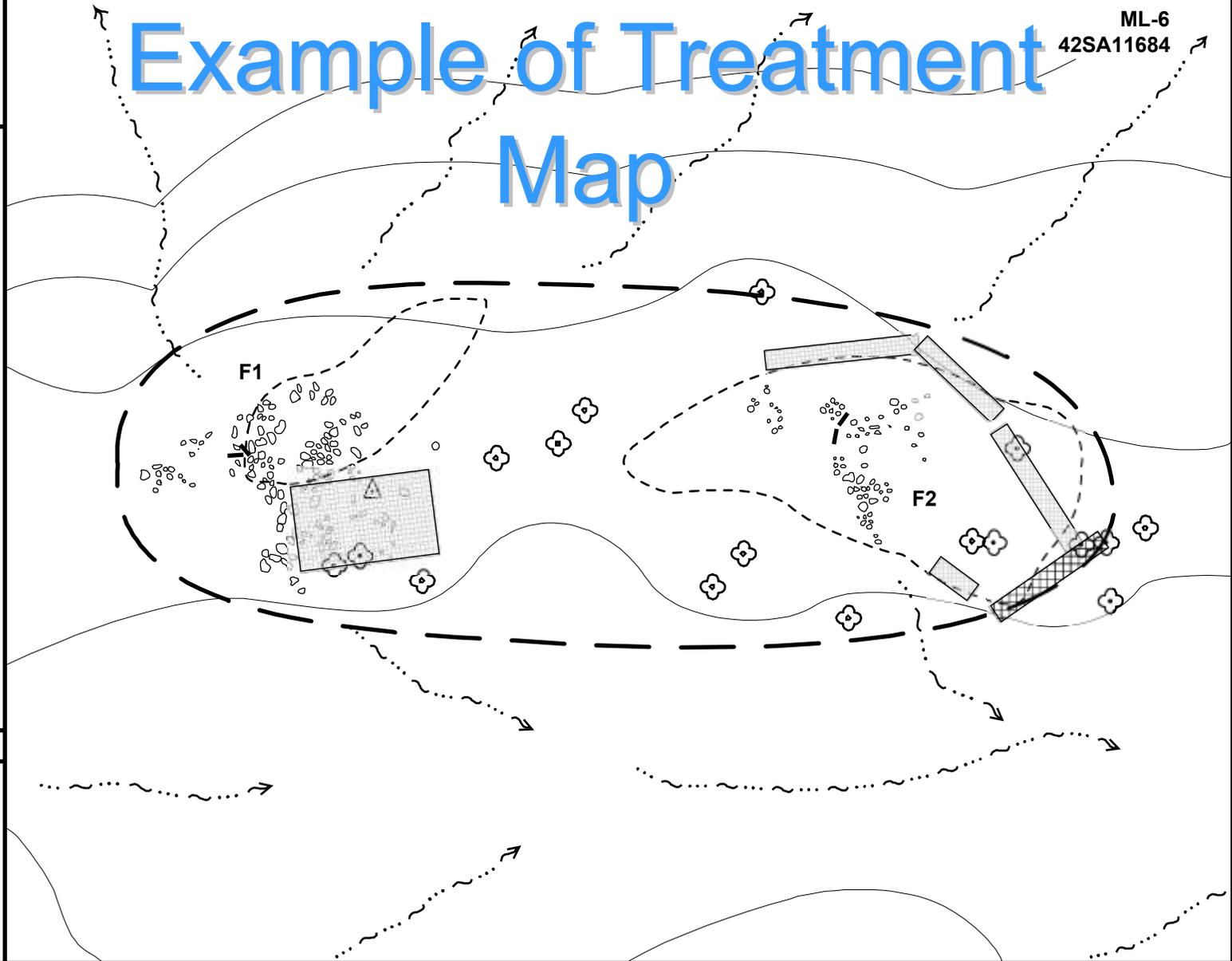


Example of Treatment Map

ML-6
42SA11684



-  Site Datum
-  Site Boundary
-  Drainage/Wash
-  Masonry
-  Upright Slabs
-  Artifact Concentration
- F#** Feature
-  Prominent Tree
-  Contour Line



Treatment Key

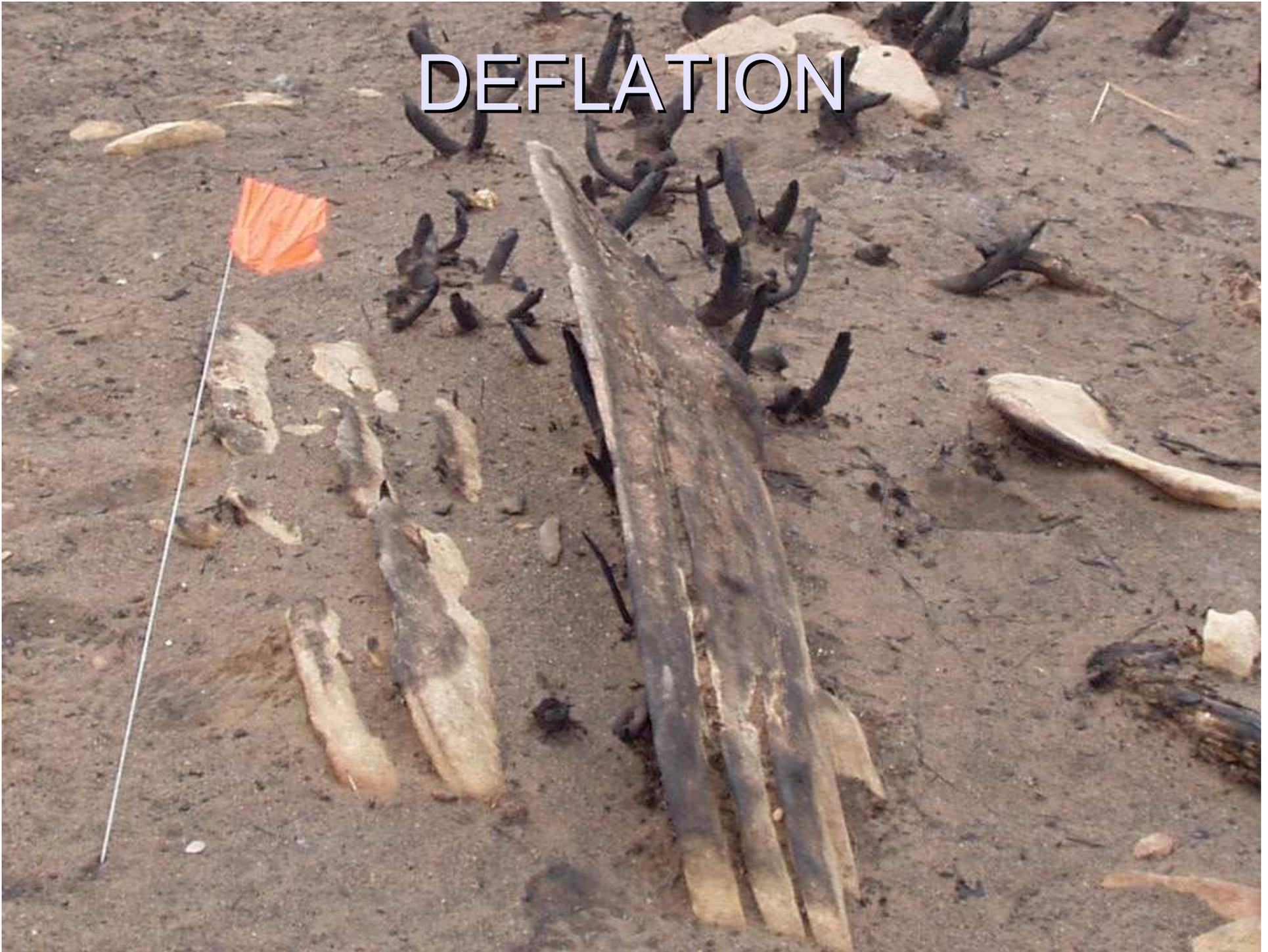
-  Hazard Tree
-  Early Excelsior
-  Present Day Excelsior
-  Diverter Tree

Aeolian Processes

- Deflation
- Deposition



DEFLATION



Deflation



DEPOSITION



Deposition



Alluvial Processes

- Rilling and gullying
- Raindrop impact and sheet wash
- Sedimentation



Rilling



Sheetwash and rilling



Gully forming at ML 122



Gullying at ML 122



Gullying and Sedimentation



Sedimentation



TREATMENT OF AEOLIAN PROCESSES

- Deflation
- Deposition
- Treatment options
 - Matting
 - Mulching



Deflation at ML 35



Deposition at ML 35



Deflation at ML1022



ML 35 - Use of matting



ML 33

Matting with aeolian deposition



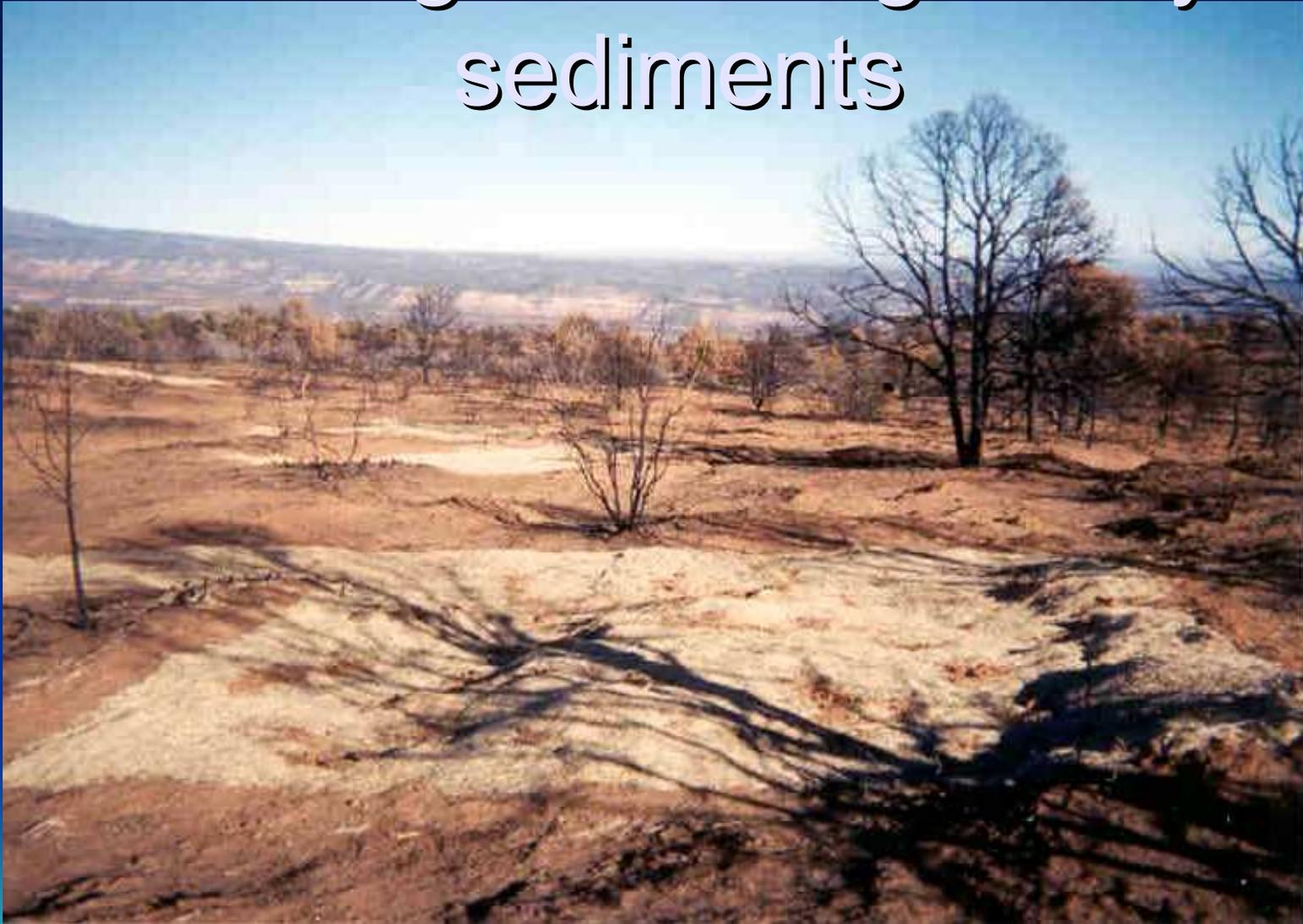
ML 20-Extensive use of matting



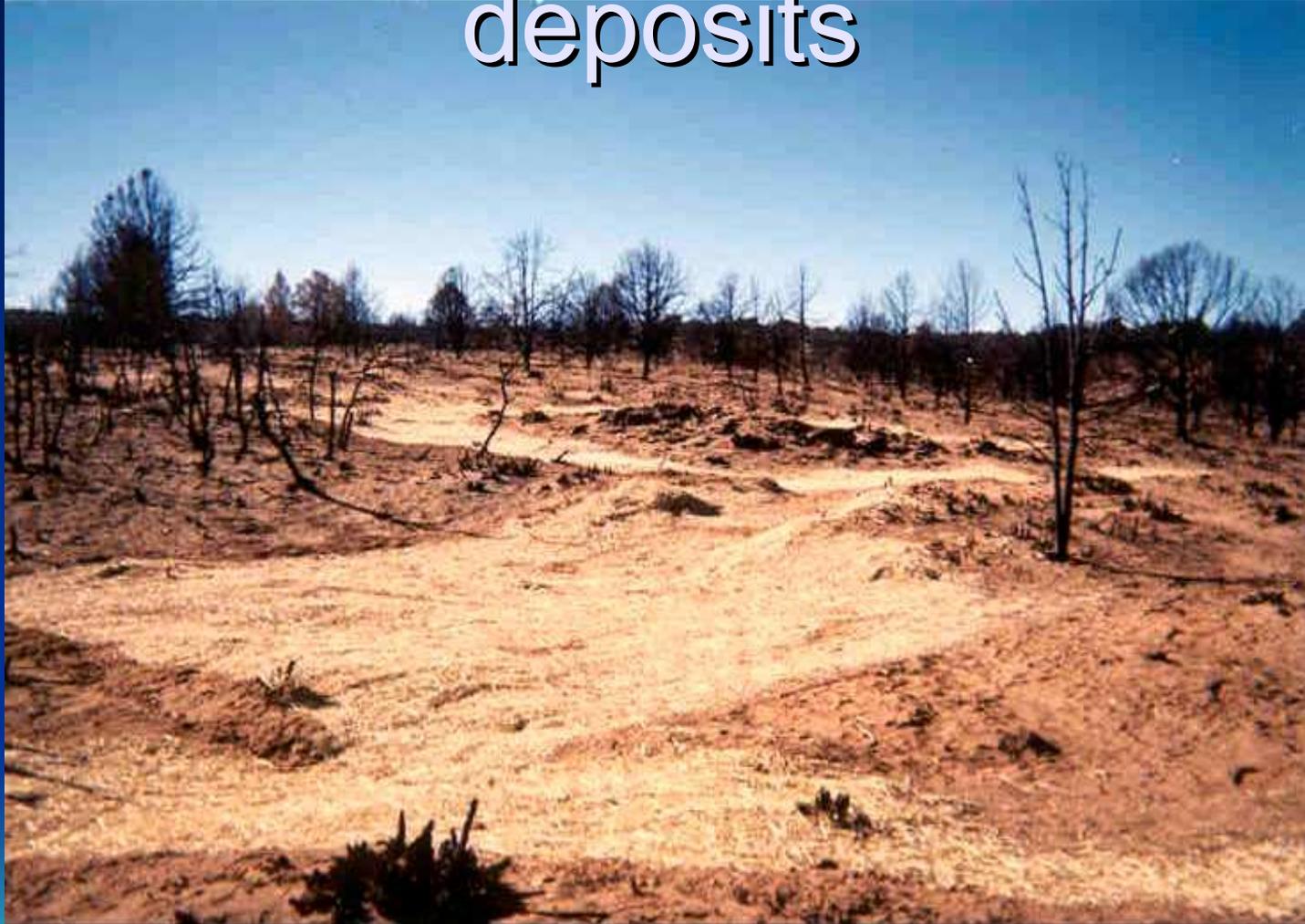
Use of matting to stabilize deposits around feature



Matting stabilizing sandy sediments



Matting stabilizing midden deposits



TREATMENT OF ALLUVIAL PROCESSES

- Rilling and gullying
 - Treatment options
 - Diverters
 - Matting
 - Other options
- Raindrop impact and sheetwash
 - Treatment options
 - Matting
 - Mulching



ML 988



Gullying at ML988



Rilling at ML988



Rilling in Kiva at ML988



Sediments Re-deposited in Kiva at ML988



Sediment Movement at ML988



Matting in gullied area at ML988



Matting covering vandal hole
and midden at ML 988



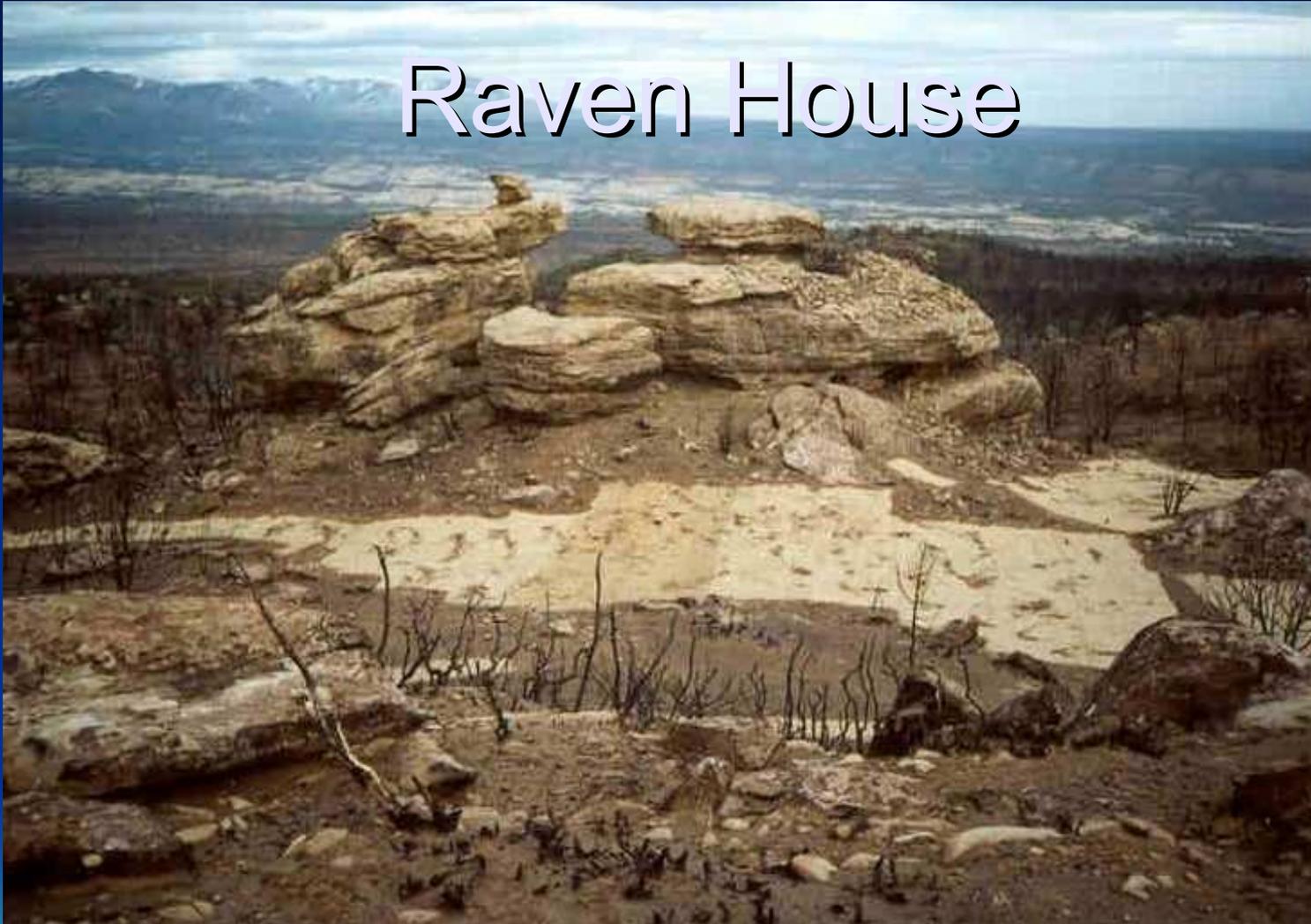
Matting applied to kiva at ML988



Matting used on midden at ML988

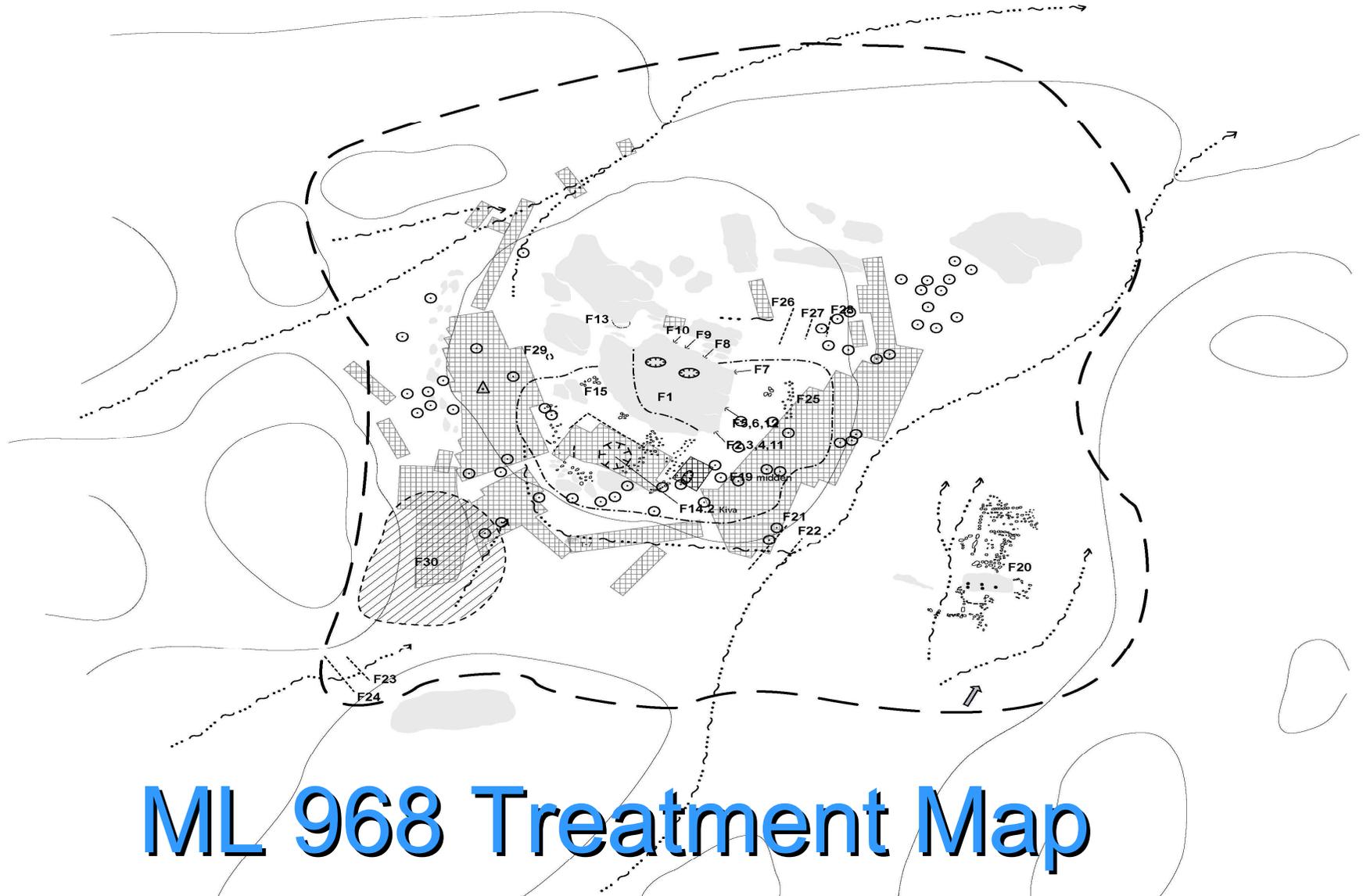


Raven House



Deflation from sheetwash

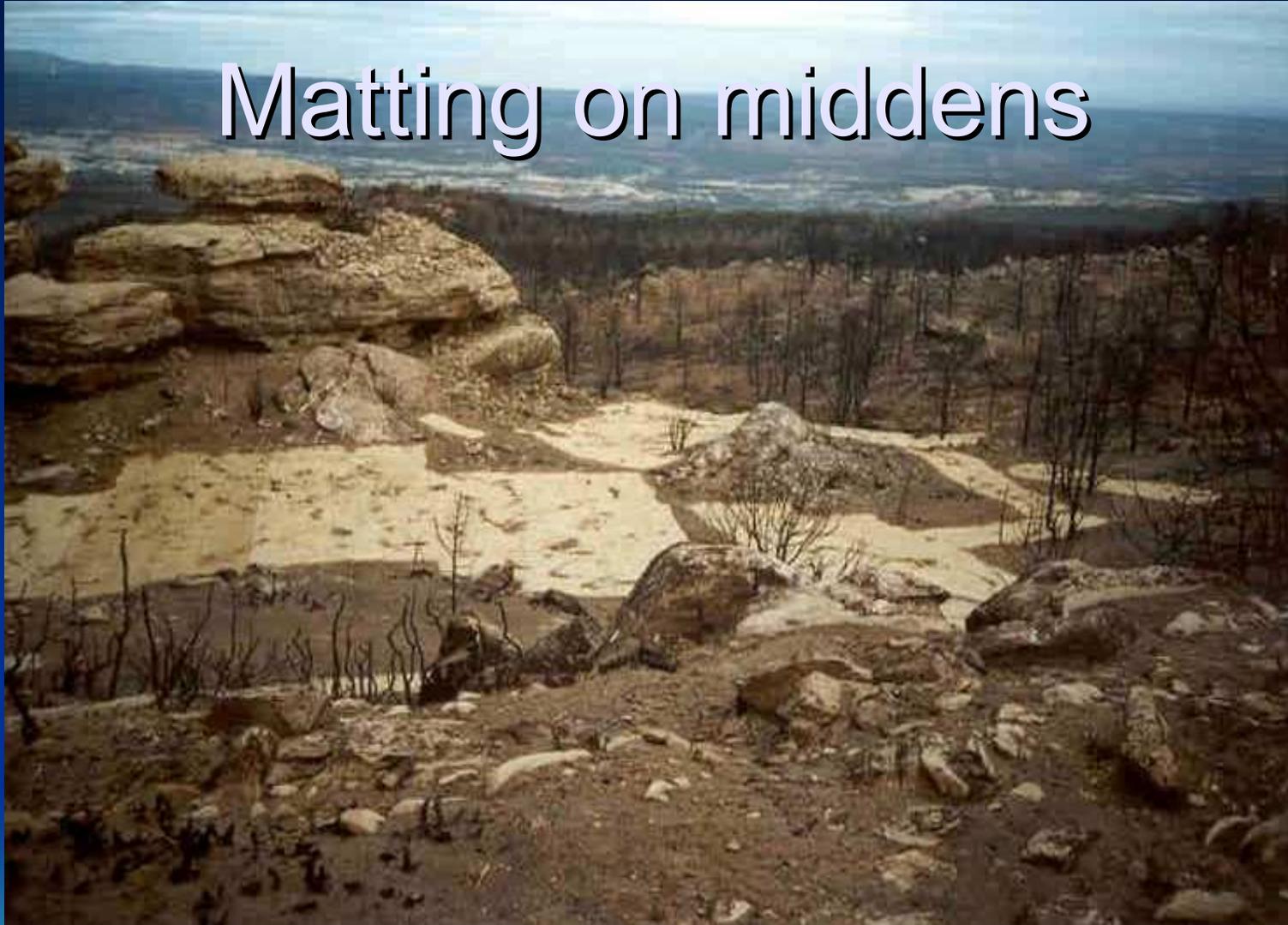




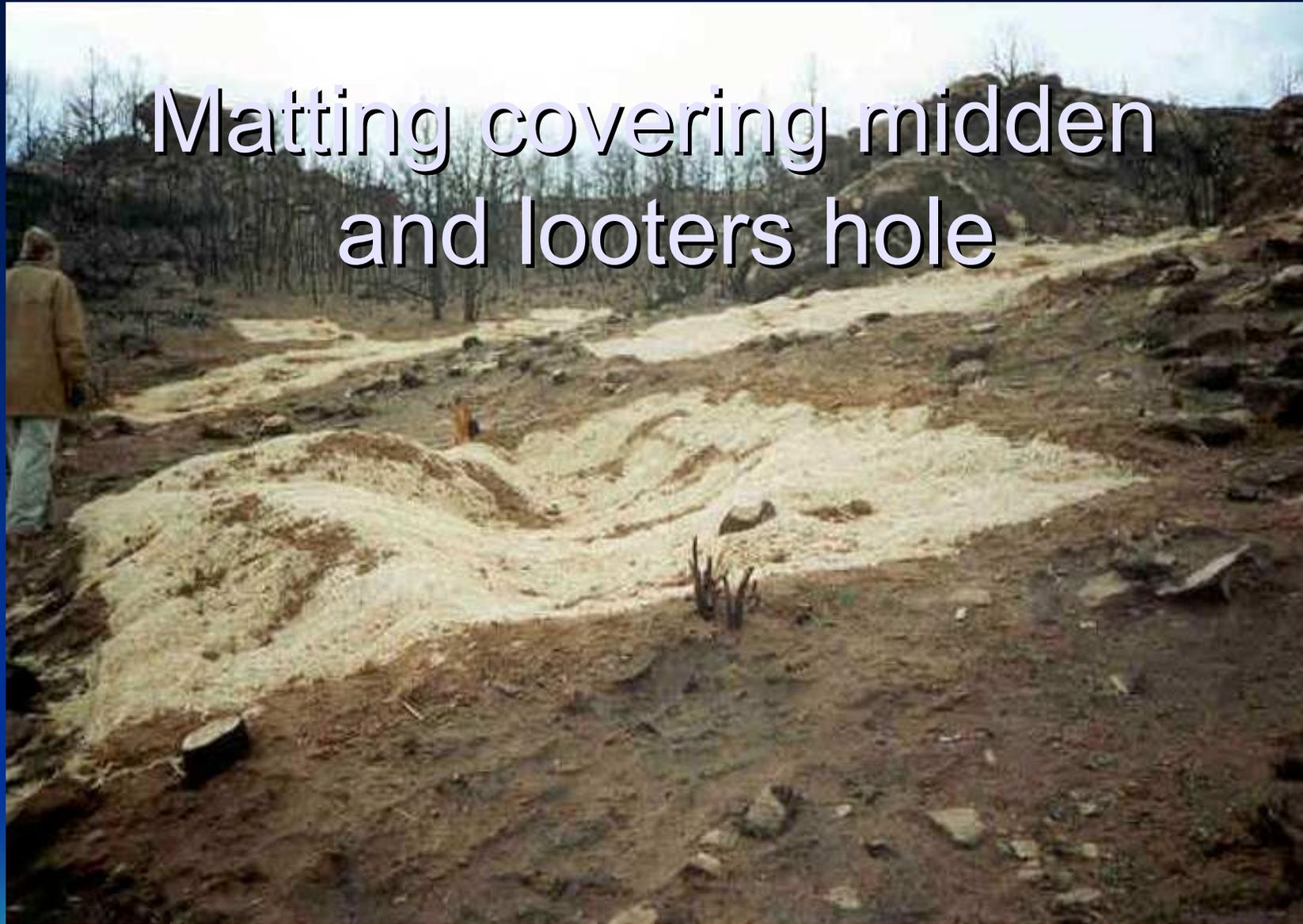
ML 968 Treatment Map

	Site Datum Site Boundary Prominent Boulder Drainage/Wash Masonry Upright Slabs Depression	Inferred Alignment Rubble Concentration Midden Area F# Feature T-# Tool Looter Pit Grinding Slick	Posthole Contour Line	Treatment Key Hazard Tree Excelsior
--	-------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------	--------------------------	--------------------------------------------------

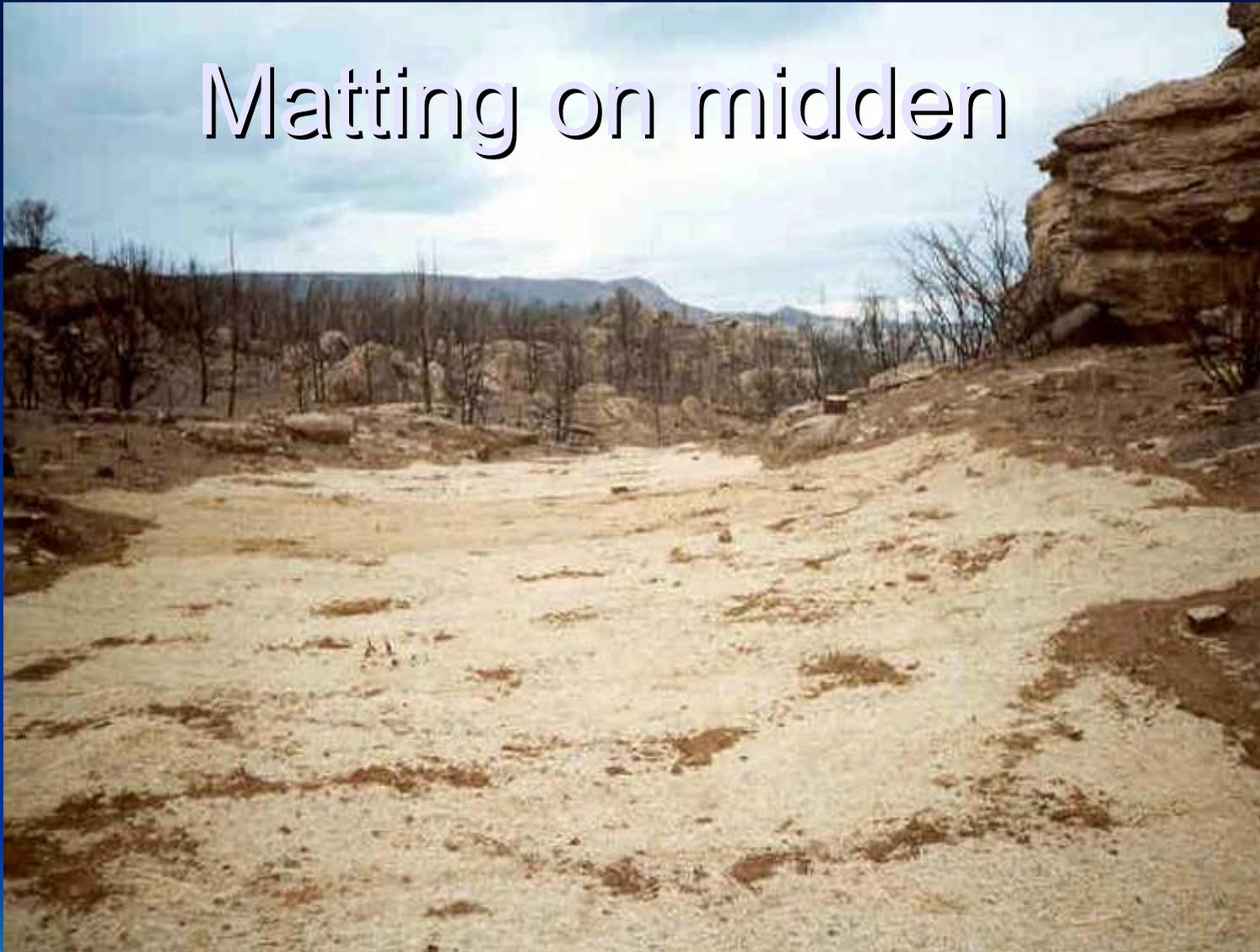
Matting on middens



Matting covering midden and looters hole



Matting on midden

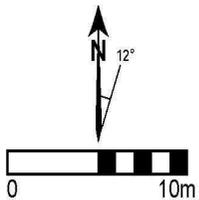


ML 1015



Treatment Map of ML1015

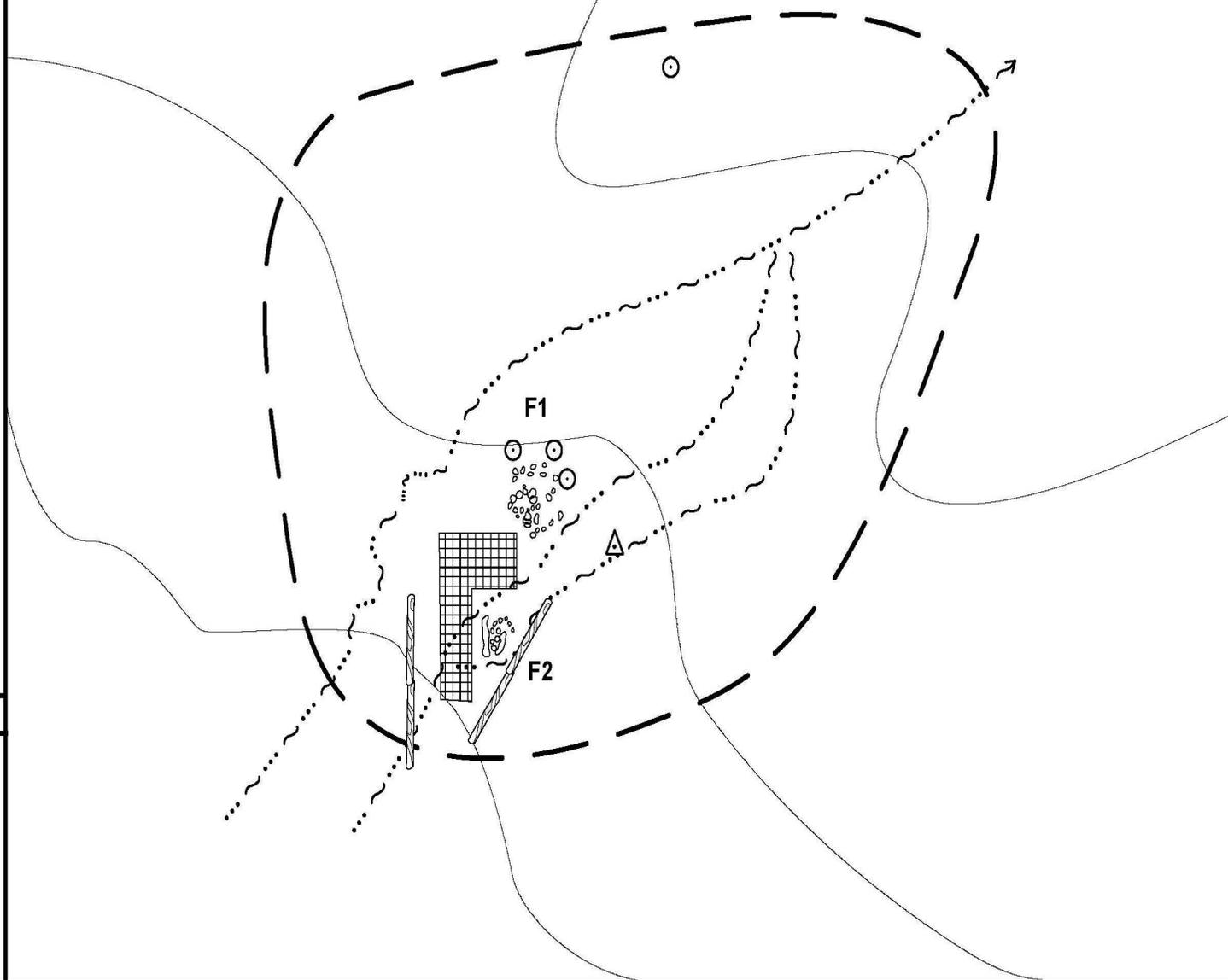
ML-1015
42SA12652



-  Site Datum
-  Site Boundary
-  Drainage/Wash
-  Masonry
- F#** Feature
-  Contour Line

Treatment Key

-  Hazard Tree
-  Excelsior
-  Diverter



Diverter and Matting at ML1015



Hazard Trees

- Falling on features
- Uprooting



Fallen tree on slab feature at
ML1033



Hazard tree in slab-lined feature at ML1039



Hazard tree at ML74



ML 81

Cut hazard tree



Other Considerations

- Visibility
 - High visibility near roads
 - Response was to lessen the visual impact of treatments by covering with branches
- Visitation
 - Open visitation-area not closed to public
 - ohvs, four wheelers, hunters and hikers visiting sites and looking for sites in burn
- Vandalism
 - Old vandalism evident
 - No new vandalism
 - Actions taken
 - BAER funding for protection patrols
 - Impetus to hire LEO

Matting with branches

