United States Department of the Interior

NATIONAL PARK SERVICE

Yosemite National Park
P. O. Box 577
Yosemite, California 95389

IN REPLY REFER TO:
L7615(YOSE-PM)

Memorandum

To: Brian Mattos, Project Manager, Yosemite National Park

From: Superintendent, Yosemite National Park

Subject: NEPA and NHPA Clearance: 2015-032 Olmsted Point Perform Avalanche Monitoring And Hazard Analysis (61288)

The Executive Leadership Team has reviewed the proposed project and completed its environmental assessment documentation, and we have determined the following:

- There will not be any effect on threatened, endangered, or rare species and/or their critical habitat.
- There will be no adverse effect on historical, cultural, or archeological resources.
- There will not be serious or long-term undesirable environmental or visual effects.

The subject proposed project, therefore, is now cleared for all NEPA and NHPA compliance requirements as presented above. Project plans and specifications are approved and construction and/or project implementation can commence.

For the proposed project actions to be within compliance requirements during construction and/or project implementation, the following mitigations must be adhered to:

- The monitoring station is temporary; it will only be installed 30 days prior to the beginning of road opening procedures and removed once the road has opened for the season. The camera and monitoring station will be re-evaluated on an annual basis.
- Metal surfaces should be painted a dark flat color to blend with the surroundings, if feasible.

Recommendations for Conditions or Stipulations: None

For complete compliance information see PEPC Project 61288.

//Don L. Neubacher//
Don L. Neubacher

Enclosure (with attachments)

cc: Statutory Compliance File

The signed original of this document is on file at the Environmental Planning and Compliance Office in Yosemite National Park.

Categorical Exclusion Form

Project: 2015-032 Olmsted Point Perform Avalanche Monitoring And Hazard Analysis
PEPC Project Number: 61288
Project Description:

Opening Tioga Road is critical to providing access for recreational opportunities in Yosemite. El Nino predictions this winter may result in a heavy snow pack next spring, delaying the opening of Tioga Road and possibly risking employee safety without pertinent data on avalanche conditions. Installing a temporary weather station and automated remote camera to monitor snow and melt conditions at the Olmsted avalanche zone would provide the best data on avalanche conditions.

This project proposes to install a temporary weather station and time lapse camera to monitor avalanche conditions, inform snow removal strategies, and maximize worker safety. Specifically, this equipment will monitor a glide avalanche zone on Tioga Road near Olmsted Point. This glide avalanche path has damaged two tractors, killed one employee, and continues to threaten snow removal operations.

Glide avalanches occur when the entire snowpack slides as a unit on the ground, similar to a glacier. Glide occurs because melted water lubricates the ground and allows the overlying snowpack to slowly "glide" downhill. Research has shown that glide rates increase exponentially before a glide avalanche releases; thus monitoring changes in glide rates is essential for avalanche forecasting.

The installation of a portable, temporary weather station will provide data on air temperature, relative humidity, wind speed and direction, solar radiation, and snow depth. These measurements will be used in energy balance simulations to estimate the timing of snowmelt arrival at the base of the snowpack, which has been shown to trigger glide avalanches.

The temporary, remote camera will use time-lapse imaging to record all types of avalanche activity; this technique is especially useful for monitoring glide crack opening. From analysis of these measurements, consultants will identify meteorological conditions associated with rapid glide rates and provide recommendations for structural mitigation and spring road opening operations.

The weather station (approximately three meters tall) and camera (potentially strapped to a tree) will be temporarily placed shortly before the road closes in the fall and removed during spring opening, so impacts to the viewshed are minimized. While no major excavation is planned, stakes would be driven into soil or gravel to anchor the installations. Temporary anchors (straps/clamps) may also be placed in adjacent trees to secure monitoring equipment. The camera would be accessed remotely through a cellular satellite network or during winter field excursions. The system requires a high oblique angle to adequately monitor the Olmsted avalanche zone and the best camera location to achieve this requirement is in designated wilderness. The effectiveness of the installation will be reevaluated annually.

Project Locations:

Tuolumne County, CA

Mitigations:

- The monitoring station is temporary; it will only be installed 30 days prior to the beginning of road opening procedures and removed once the road has opened for the season. The camera and monitoring station will be re-evaluated on an annual basis.
- Metal surfaces should be painted a dark flat color to blend with the surroundings, if feasible.

CE Citation: C.5 Installation of signs, displays, kiosks, etc.

Decision: I find that the action fits within the categorical exclusion above. Therefore, I am categorically excluding the described project from further NEPA analysis. No extraordinary circumstances apply.

Superintendent: *//Don L. Neubacher//* **Date:** 5/4/16

Don L. Neubacher

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Extraordinary Circumstances:

If implemented, would the proposal...	Yes/No	Notes
A. Have significant impacts on public health or safety?	No	
B. Have significant impacts on such natural resources and unique geographic characteristics as historic or cultural resources; park, recreation, or refuge lands; wilderness areas; wild or scenic rivers; national natural landmarks; sole or principal drinking water aquifers; prime farmlands; wetlands (Executive Order 11990); floodplains (Executive Order 11988); national monuments; migratory birds; and other ecologically significant or critical areas?	No	
C. Have highly controversial environmental effects or involve unresolved conflicts concerning alternative uses of available resources (NEPA section 102(2)(E))?	No	
D. Have highly uncertain and potentially significant environmental effects or involve unique or unknown environmental risks?	No	
E. Establish a precedent for future action or represent a decision in principle about future actions with potentially significant environmental effects?	No	
F. Have a direct relationship to other actions with individually insignificant, but cumulatively significant, environmental effects?	No	
G. Have significant impacts on properties listed or eligible for listing on the National Register of Historic Places, as determined by either the bureau or office?	No	
H. Have significant impacts on species listed or proposed to be listed on the List of Endangered or Threatened Species, or have significant impacts on designated Critical Habitat for these species?	No	
I. Violate a federal, state, local or tribal law or requirement imposed for the protection of the environment?	No	
J. Have a disproportionately high and adverse effect on low income or minority populations (EO 12898)?	No	
K. Limit access to and ceremonial use of Indian sacred sites on federal lands by Indian religious practitioners or adversely affect the physical integrity of such sacred sites (EO 130007)?	No	
L. Contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area or actions that may promote the introduction, growth, or expansion of the range of such species (Federal Noxious Weed Control Act and Executive Order 13112)?	No	

ENVIRONMENTAL SCREENING FORM (ESF)

Updated Sept 2015 per NPS NEPA Handbook

A. PROJECT INFORMATION

Project Title: 2015-032 Olmsted Point Perform Avalanche Monitoring And Hazard Analysis
PEPC Project Number: 61288
Project Type: Other Study (STU)
Project Location:
County, State: Tuolumne, California **Geographic Marker:** Olmsted Point (Survey Marker)
Project Leader: Brian Mattos

B. RESOURCE IMPACTS TO CONSIDER:

Resource	Potential for Impact	Potential Issues & Impacts
Air Air Quality	None	
Biological Nonnative or Exotic Species	None	
Biological Species of Special Concern or Their Habitat	None	
Biological Vegetation	None	
Biological Wildlife and/or Wildlife Habitat including terrestrial and aquatic species	None	
Cultural Archeological Resources	None	
Cultural	None	

Cultural Landscapes		
Cultural Ethnographic Resources	None	
Cultural Museum Collections	None	
Cultural Prehistoric/historic structures	None	
Geological Geologic Features	None	
Geological Geologic Processes	None	
Lightscapes Lightscapes	None	
Other Human Health and Safety	Potential	This project provides an added safety precaution tool.
Other Operational	None	
Other Other	None	
Socioeconomic Land Use	None	
Socioeconomic Minority and low-income populations, size, migration patterns, etc.	None	
Socioeconomic Socioeconomic	None	
Soundscapes Soundscapes	None	
Viewsheds Viewsheds	Potential	The monitoring station is temporary; it will only be installed 30 days prior to the beginning of road opening procedures and removed once the road has opened for the season. Metal surfaces should be painted a dark flat color to blend with the surroundings, if feasible.
Visitor Use and Experience Recreation Resources	Potential	The monitoring equipment can help to reduce risks in providing a safe, more effective road opening. This could allow visitors to enjoy the high country at an earlier date.

Visitor Use and Experience Visitor Use and Experience	None	
Water Floodplains	None	
Water Marine or Estuarine Resources	None	
Water Water Quality or Quantity	None	
Water Wetlands	None	
Water Wild and Scenic River	None	
Wilderness Wilderness	Potential	While this camera will not provide benefits to wilderness character, the impacts of it are very small and the potential improvement in worker safety is significant. Its presence is therefore considered the minimum requirement to reduce the hazard of working in this avalanche zone.

Recommended:

Compliance Specialists	Date
*//Renea Kennec//* Compliance Specialist – Renea Kennec	4/20/16
//Madelyn Ruffner// Compliance Program Manager – Madelyn Ruffner	4/27/16
*//Randy Fong//* Chief, Project Management – Randy Fong	5/2/16

Approved:

Superintendent	Date
*//Don L. Neubacher//* Don L. Neubacher	5/4/16

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ASSESSMENT OF ACTIONS HAVING AN EFFECT ON HISTORIC PROPERTIES

A. DESCRIPTION OF UNDERTAKING

1. Park: Yosemite National Park

2. Project Description:

Project Name: 2015-032 Olmsted Point Perform Avalanche Monitoring And Hazard Analysis
Prepared by: Sara Dolan **Date Prepared:** 01/12/2016 **Telephone:** (209) 379-1308
PEPC Project Number: 61288

Area of potential effects (as defined in 36 CFR 800.16[d])
It is less than .1 acres within the view shed of the Tioga Road Historic District.

3. Has the area of potential effects been surveyed to identify historic properties?

___ No
X Yes
Source or reference: Mundy (1985)

4. Potentially Affected Resource(s):

5. The proposed action will: (check as many as apply)

No	Destroy, remove, or alter features/elements from a historic structure
No	Replace historic features/elements in kind
No	Add non-historic features/elements to a historic structure
No	Alter or remove features/elements of a historic setting or environment (inc. terrain)
No	Add non-historic features/elements (inc. visual, audible, or atmospheric) to a historic setting or cultural landscape
No	Disturb, destroy, or make archeological resources inaccessible
No	Disturb, destroy, or make ethnographic resources inaccessible
Yes	Potentially affect presently unidentified cultural resources
No	Begin or contribute to deterioration of historic features, terrain, setting, landscape elements, or archeological or ethnographic resources
No	Involve a real property transaction (exchange, sale, or lease of land or structures)
___	Other (please specify): _____

6. Supporting Study Data:
(Attach if feasible; if action is in a plan, EA or EIS, give name and project or page number.)

B. REVIEWS BY CULTURAL RESOURCE SPECIALISTS

The park 106 coordinator requested review by the park's cultural resource specialist/advisors as indicated by check-off boxes or as follows:

[X] 106 Advisor
Name: Kimball Koch
Date: 03/07/2016
Comments: Installation is temporary and outside the district boundary.

Check if project does not involve ground disturbance [ ]
Assessment of Effect: __ No Potential to Cause Effect __ No Historic Properties Affected _X_ No Adverse Effect __ Adverse Effect __ Streamlined Review
Recommendations for conditions or stipulations:

Doc Method: Park Specific Programmatic Agreement

[X] Archeologist
Name: Sara Dolan
Date: 02/02/2016

Check if project does not involve ground disturbance [X]
Assessment of Effect: _X_ No Potential to Cause Effect __ No Historic Properties Affected __ No Adverse Effect __ Adverse Effect __ Streamlined Review
Recommendations for conditions or stipulations:

[X] Historical Landscape Architect
Name: Kimball Koch
Date: 03/07/2016
Comments: The installation, as proposed, is temporary but may be visible within the context of the view from of the road. However, the location of the installation is, outside of historic road corridor (Tioga Road Historic District)

Check if project does not involve ground disturbance [ ]
Assessment of Effect: __ No Potential to Cause Effect __ No Historic Properties Affected _X_ No Adverse Effect __ Adverse Effect __ Streamlined Review
Recommendations for conditions or stipulations: Metal surfaces should be painted a dark flat color to blend with the surroundings, if feasible.

Doc Method: Park Specific Programmatic Agreement

No Reviews From: Curator, Historical Architect, Historian, Other Advisor, Anthropologist

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C. PARK SECTION 106 COORDINATOR'S REVIEW AND RECOMMENDATIONS

1. Assessment of Effect:

_____ No Potential to Cause Effects

_X_ No Historic Properties Affected

_____ No Adverse Effect

_____ Adverse Effect

2. Documentation Method:

[ ] A. STANDARD 36 CFR PART 800 CONSULTATION
Further consultation under 36 CFR Part 800 is needed.

[ ] B. STREAMLINED REVIEW UNDER THE 2008 SERVICEWIDE PROGRAMMATIC AGREEMENT (PA)

The above action meets all conditions for a streamlined review under section III of the 2008 Servicewide PA for Section 106 compliance.

APPLICABLE STREAMLINED REVIEW Criteria
(Specify 1-16 of the list of streamlined review criteria.)

[ ] C. PLAN-RELATED UNDERTAKING

Consultation and review of the proposed undertaking were completed in the context of a plan review process, in accordance with the 2008 Servicewide PA and 36 CFR Part 800.
Specify plan/EA/EIS:

[ ] D. UNDERTAKING RELATED TO ANOTHER AGREEMENT
The proposed undertaking is covered for Section 106 purposes under another document such as a statewide agreement established in accord with 36 CFR 800.7 or counterpart regulations.

1999 Programmatic Agreement

[ ] E. COMBINED NEPA/NHPA Document
Documentation is required for the preparation of an EA/FONSI or an EIS/ROD has been developed and used so as also to meet the requirements of 36 CFR 800.3 through 800.6

[ ] G. Memo to SHPO/THPO

[ ] H. Memo to ACHP

SHPO/THPO Notes:

3. Additional Consulting Parties Information:

Additional Consulting Parties: No

4. Stipulations and Conditions:

Following are listed any stipulations or conditions necessary to ensure that the assessment of effect above is consistent with 36 CFR Part 800 criteria of effect or to avoid or reduce potential adverse effects.

5. Mitigations/Treatment Measures:

Measures to prevent or minimize loss or impairment of historic/prehistoric properties:
(Remember that setting, location, and use may be relevant.)

No Assessment of Effect mitigations identified.

D. RECOMMENDED BY PARK SECTION 106 COORDINATOR:

Kimball Koch *//Kimball Koch//* **Date:** 4/22/16

E. SUPERINTENDENT'S APPROVAL

The proposed work conforms to the NPS *Management Policies* and *Cultural Resource Management Guideline*, and I have reviewed and approve the recommendations, stipulations, or conditions noted in Section C of this form.

Superintendent: *//Don L. Neubacher//* **Date:** 5/4/16

Don L. Neubacher

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Minimum Requirement Analysis

Olmsted Point Road Clearing

Step 1: Problem Statement: Each Spring NPS road crews clear the remaining winter snowpack from the Tioga Road to hasten opening of the road to the public. This requires working in a number of avalanche zones, the most dangerous being the section of road immediately NNE from Olmsted Point.

Step 2: Background: The road bed on this section is cut into a smooth granite slab. This slab is prone to avalanches all winter, but in the spring high temperatures and a heavy snowpack can combine to produce very destructive wet slab avalanches. Cutting away the toe of the snowpack with heavy equipment greatly increases the danger and puts park employees at risk.

Numerous tactics have been tried to reduce the risk on this section of road, including explosives and scattering charcoal to increase the melt rate. They are of limited effectiveness. In 1984 Congress designated all land beyond 200' from the centerline of the road as wilderness. The 1989 Yosemite Wilderness Management Plan allows helicopter use to spread charcoal "as a last resort if other means to clear the road prove infeasible" but says "The Park Service is committed to investigate and develop more innovative techniques having less impact on wilderness."

Before a slab of snow fails and becomes an avalanche it may show signs of deformation on the snow surface. These "wrinkles" in the snowpack are generally too subtle to discern, although in some cases they can become quite large. With digital photography the potential exists to discern otherwise imperceptible deformation ridges in the snowpack. This is an unproven method of assessing slab deformation, but it may prove useful as another forecasting tool.

Step 3: Consider Actions Outside of Wilderness: Standard safety precautions and avalanche forecasting methods are already employed in Tioga Road clearing. The slope in question cannot be adequately viewed from within the 400' non-wilderness corridor.

Step 4: Necessity for Action: No action is needed to preserve wilderness character. However, risk to employees could be reduced if another tool can be developed to help assess risk in the Olmsted Point avalanche zone.

Step 5: Alternatives: No Action: Standard avalanche risk assessment tools are now used during road clearing at Olmsted Point. Explosives and charcoal spreading are sometimes employed to speed the reduction of the snowpack but are usually ineffective.

Action alternative: A small camera will be mounted on a tree on a granite ridge opposite the slide zone; approximately a quarter mile from the road. This camera will be installed 30 days before plowing operations begin and will be removed when the road is opened to the public. If no useful information is gained during the first three seasons of operation, the need for this camera will be re-

assessed. If the camera proves to be a useful avalanche risk prediction tool, it will be installed seasonally according to the limits noted above.

Step 6: Effects on wilderness character: This camera will have a small negative effect on the undeveloped quality. Opportunities for primitive recreation will be negligibly affected. A small number of skiers come through the area prior to the arrival of the plows. They generally ski on the road or in the small valley between the road and the granite ridge. There is a small chance they could see light reflecting off the camera. Cumulative effects: There are numerous other cameras in the wilderness for researching wildlife populations, located on the west and north sides of the park.

Step 7: Effects on safety: If proven to be effective, this could provide another indicator of snowpack instability that could improve safety for park employees clearing the road.

Step 8: Conclusion: While this camera will not provide benefits to wilderness character, the impacts of it are very small and the potential improvement in worker safety is significant. Its presence is therefore considered the minimum requirement to reduce the hazard of working in this avalanche zone.

Reviewed By:

Ed Dunlavey 4/18/16

Wilderness Manager Date
(Attach any comments and conditions)

Ed Dunlavey 4/18/16

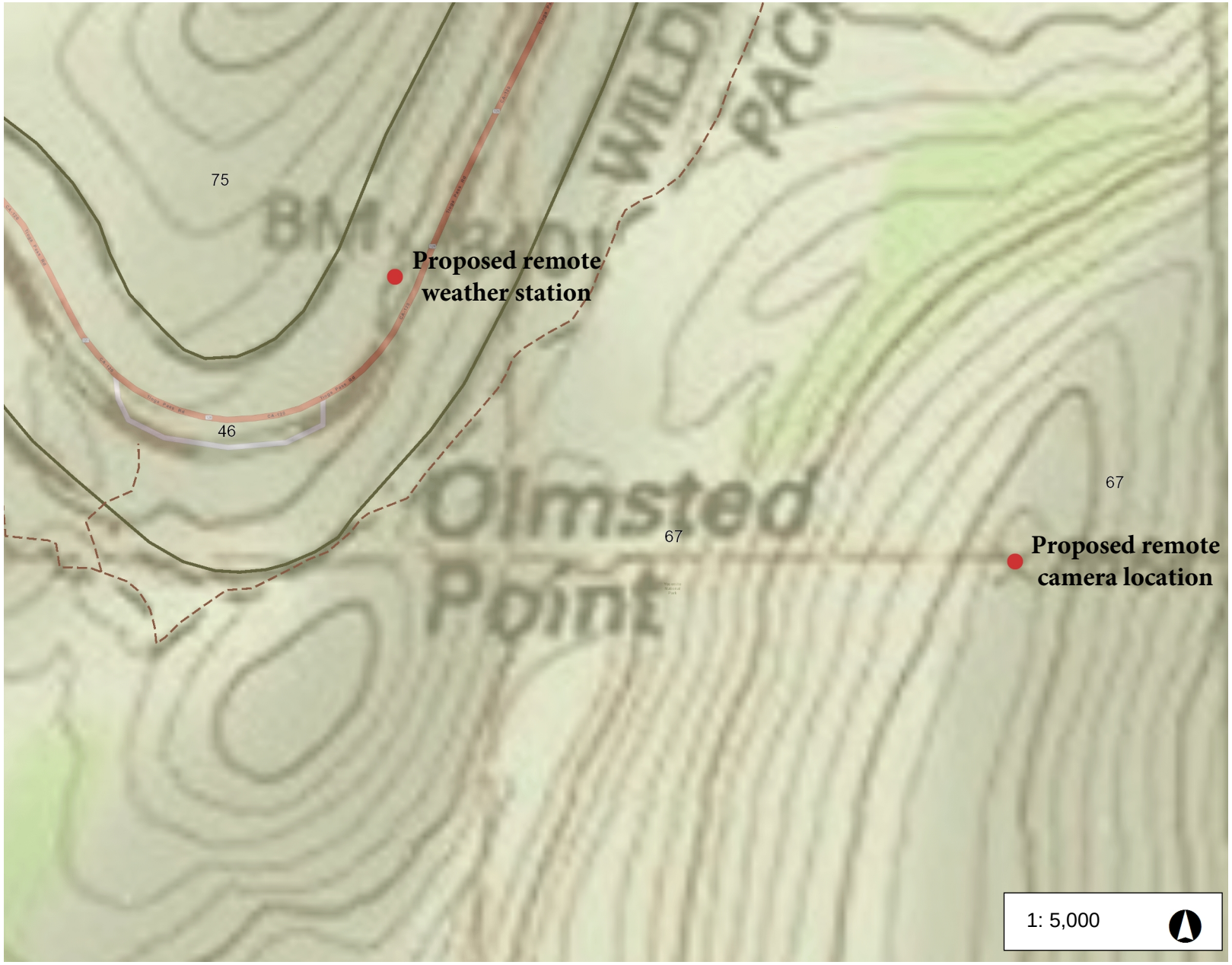
Chief Ranger (acting) Ed Dunlavey Date
(Attach any comments and conditions)

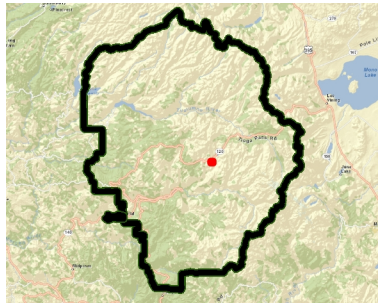
Approved By:

[signature] 4/18/16

Superintendent Date
(Attach any comments and conditions)

Olmsted Point Avalanche Monitoring Project





Legend

- Trails
- YOSE Wilderness boundary

Notes

1: 5,000

0.2 0 0.08 0.2 Miles

WGS_1984_Web_Mercator_Auxiliary_Sphere

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.
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