United States Department of the Interior

U. S. GEOLOGICAL SURVEY
Reston, VA 20192

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WATER MISSION AREA MEMORANDUM NO. 13.03

Subject: SAFETY— Policy and Recommended Actions to Further Minimize the Potential for Aircraft Accidents at Cableways

This memorandum provides background information concerning an aviation accident involving a USGS cableway; reiterates Water Mission Area (WMA) (formerly Water Resources Discipline) policy related to Federal Aviation Administration (FAA) requirements for cableway structures; and describes ongoing and advised actions regarding general cableway safety, including risk reduction related to potential threat of cableways to low-flying aircraft. A previous memorandum (Water Resources Division Memorandum 2000.13) outlines requirements for USGS seeking FAA review for cableways with aircraft warning markers that had previously been installed, and provides additional historical perspective to the cableway/aircraft safety issue.

BACKGROUND

On June 30, 2012, a helicopter struck a USGS cableway over the Verde River in Arizona. All four occupants were killed. The cable was approximately 40 feet above the River in a relatively narrow canyon, was in active use, well maintained, and recently inspected. FAA regulations did not require aircraft-warning safety markers and none were present. An internal USGS accident investigation team found no evidence that the USGS was at fault in any aspect of this accident. Preliminary NTSB findings indicate that the pilot failed to maintain a safe altitude, as required by the FAA.

Since 1964, there have been 11 aviation accidents involving USGS cableways, resulting in 15 fatalities. Most of these accidents occurred because the pilot did not maintain a safe altitude, as required by FAA regulations—usually 500 feet. However, numerous legitimate aircraft operations permit an altitude of less than 500 feet. Examples include search and rescue operations, firefighting activities, air-assisted logging operations, wildlife surveys, and military operations.

POLICY REGARDING FAA NOTIFICATION AND MARKING REQUIREMENT CRITERIA

It is USGS WMA policy to comply with FAA recommendations regarding notification of cableway locations and use of aircraft warning markers at cableways. Figures 1 and 2 show examples of cableways with aircraft warning markers. Congress has charged the FAA with the responsibility to promote the safety of aircraft and the efficient use of navigable airspace. The regulatory framework that governs the conduct of the FAA's obstruction evaluation program is Title 14, Code of Federal Regulations, part 77.

As a part of the obstruction evaluation program, the FAA makes recommendations on notification and marking structures that are considered obstructions to air navigation.

The obstruction standards set forth in part 77 that pertain to cableways include height and proximity to airports. Any structure that exceeds an overall height of 200 feet above the surrounding terrain should normally be marked. The FAA may also recommend marking a structure of lesser height located within 20,000 feet of an airport or 5,000 feet of a heliport. Any construction or alterations which may affect navigable airspace require that a **Notice of Proposed Construction or Alteration** (Form 7460-1) be filed with the FAA. The FAA provides an online **Notice Criteria Tool** to provide a quick determination if the structure in question requires FAA notification: https://oeaaa.faa.gov/oeaaa/external/gisTools/gisAction.jsp?action=showNoNoticeRequiredToolForm.

For cableway structures that neither exceed the height standard nor encroach upon airport proximity limits, there are no requirements for FAA notification and no requirements for aircraft warning markers. In a few cases, USGS cooperating agencies have recommended (or required) that USGS install warning markers on specific cableways, even though FAA regulations would not normally require markers in those particular cases because the locations are recognized to be in an area where pilots might fly (whether justified, or not) at very low altitudes. In these cases or in other cases where the USGS has independently determined that the installation of warning markers would be prudent, there are neither FAA restrictions preventing the installation nor requirements to notify the FAA of the installation.

Existing cableway structures that require warning markers because of FAA requirements should already have markers installed (see Water Resource Memorandum 2000.13). The construction of any new cableway systems that would require FAA notification and installation of warning markers generally is discouraged if there are reasonable alternate discharge-measurement locations or other measurement methods that would not require a cableway.

ACTIONS

In the interest of general cableway safety and as a service to the general public, the aviation community, and other government agencies, the Water Mission Area has initiated and advises the following actions:

1. **Development of a Cableway Management System**—A Cableway Management System (CMS) has been developed and is integrated with the Station Information Management System (SIMS). Similar to the SIMS Station Levels tracking system, the CMS interface will help manage information regarding cableway status and inspection schedules (http://sims.water.usgs.gov/updates.html). Many Water Science Centers (WSCs) have begun verifying and updating the SIMS CMS database (fig. 3).

2. **Immediate Review of Cableway Status and Necessity**—As part of the process of populating and updating station information for the SIMS CMS, WSCs will immediately review and evaluate the status (active/inactive, inspection date, etc.) of each cableway**,** including the actual necessity of each cableway. **The review should be completed by March 29, 2013**. If an existing cableway can be replaced by a bank-operated system or by some other alternate means of streamflow measurement, these options should be considered.

3. **Inactive Cableways with Intact Cables**—An inactive cableway is defined as not in service and not expected to be used or remediated in the near future. **For any inactive cableway that still has a suspended cable, the cable should be dropped and immediately removed no later than April 30, 2013**. In addition, all deferred-maintenance issues involving cableways should be considered a high WSC priority for remedial action. Cable removal will be assigned high priority for limited funding available from WMA headquarters (see item 5).

4. **Cableway Aircraft Warning Markers**—During the cableway review process (item 2) WSCs should determine, on a case-by-case basis, if essential cableways need to be retrofitted with aircraft warning markers—this refers to all cableways, not just cableways that require markers due to FAA requirements. A review of history of USGS cableway accidents does not provide definitive clues as to factors that might make certain cableways more susceptible to aircraft accidents. WSC local knowledge and consideration of factors listed below will help prioritize cableways that need warning markers:
   - Length of cable span.
   - Height of cable above water surface.
   - Presence of A-frames, or supporting structures that are concealed or obscured.
   - Scenic river reach, sightseeing area, possible search and rescue activity.
   - Area of military training or activity.
   - Area with logging, or oil and gas operations.
   - Area of activity for scientific studies by other agencies.

   Aircraft warning marker retrofit is not mandatory, however, WMA encourages a retrofit for essential cableways that will continue to be operated and are considered by the WSCs as a potential safety risk to low-flying aircraft. For technical information and specifications for warning marker installation, please contact USGS Cableway Specialists Steve Holnbeck (holnbeck@usgs.gov) or Jon Hortness (hortness@usgs.gov).

5. **Funding for Cableway Projects**—Limited funding, specifically for cableway removal or improvements, is available through the Discontinued Station-Capital Improvement (DS-CI) Program. Cableway safety issues, particularly installation of aircraft warning markers, will be given the highest priority for funding consideration. Contact DS-CI program administrator Darwin Ockerman (ockerman@usgs.gov), with questions about funding.

REFERENCES

Federal Aviation Administration—Obstruction Evaluation – Notice Criteria Tool, accessed December 27, 2012 at https://oeaaa.faa.gov/oeaaa/external/gisTools/gisAction.jsp?action=showNoNoticeRequiredToolForm

Federal Aviation Administration— Contact Information for FAA Airports Regional and District Offices, accessed December 27, 2012 at http://www.faa.gov/airports/news_information/contact_info/?section=all_regions#western-pacific

Federal Aviation Administration—Form FAA 7460-1 – Notice of Proposed Construction or Alteration, accessed December 27, 2012 at http://www.faa.gov/forms/index.cfm/go/document.information/documentID/186273

U.S. Geological Survey Water Resources Division Memorandum 2000.13—SAFETY–Policy on Use of Aircraft-Warning Marking at Cableways, accessed December 27, 2012 at http://water.usgs.gov/admin/memo/policy/wrdpolicy00.13.html

U.S. Geological Survey—SIMS – Site Information Management System, What's New in SIMS: SIMS Safety – Cableway Interface, accessed December 27, 2012 at http://sims.water.usgs.gov/updates.html

U.S. Government Printing Office—Electronic Code of Federal Regulations—Title 14: Aeronautics and Space, Part 77 – Safe, Efficient Use, and Preservation of the Navigable Airspace, accessed December 27, 2012 at http://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&sid=f7780e4d527cd2a76a520fe6606ebc9d&rgn=div5&view=text&node=14:2.0.1.2.9&idno=14#14:2.0.1.2.9.1

Figure 1. Cableway at Missouri River at Virgelle, Montana (station 06109500).

Figure 2. Cableway at St. Mary River at International Boundary (station 05020500).

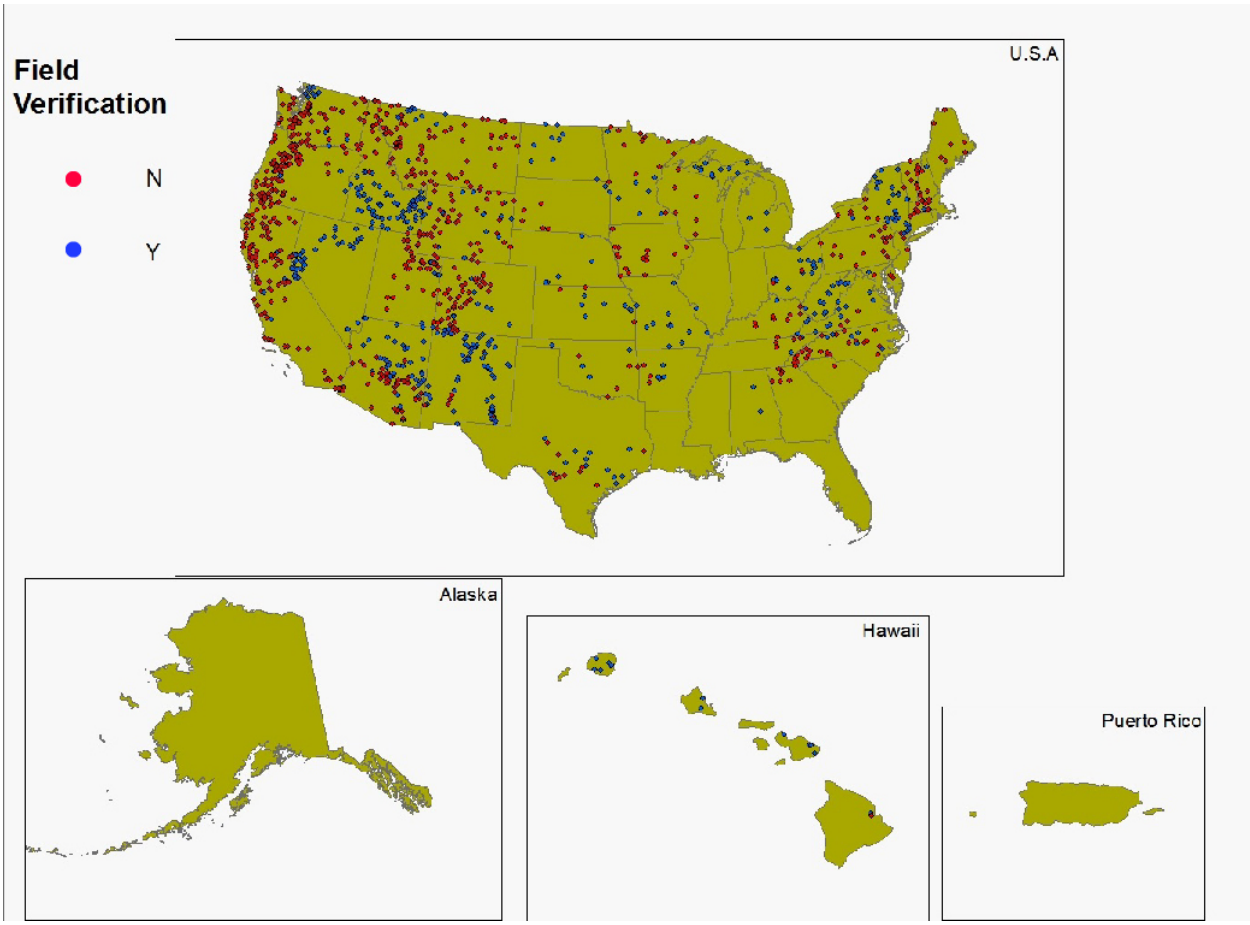

Figure 3. Screenshot of SIMS Cableway Management System interface showing locations of USGS cableways and the status of user updates effective February 1, 2013.