

**RiskMAP**  
Increasing Resilience Together

**Using LiDAR Data to Support Letters of Map Amendment (LOMAs): What Submitters Need to Know**

Presented by:  
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**LOMA: Letter of Map Amendment**

- A letter from FEMA stating that an existing structure or parcel of land that has not been elevated by fill would not be inundated by the 1-percent-annual-chance flood
- FEMA removes subject from the Special Flood Hazard Area (SFHA) and removes federal requirement for flood insurance
- Lender can still require flood insurance

**Submitting a Standard LOMA**

Required documents:

- Copy of effective FIRM panel showing property accurately plotted
- Tax Assessors map
- Copy of recorded deed or plat
- Elevation Form
  - In lieu of certificate
- Property Information Form

FEMA responds within 60 days – after notification that ALL information has been received.

**LiDAR LOMA Program Standard # 627**

Letter of Map Amendment (LOMA) Program Standard

For Letters of Map Amendment (LOMAs), submitters may use elevation data (typically LiDAR) to document the lowest adjacent grade for a structure or lowest lot elevation for a parcel of land that complies with the USGS National Geospatial Program LiDAR Base Specification Quality Level 3 (QL3) or better and is provided by a federal, state or local government agency.

**Light Detection and Ranging (LiDAR)**

- Remote sensing technology
- Efficiently creates accurate topographic data
- Large Scale

**New February 2018 Program Standard**

- Modeled after Minnesota
- Allows applicants to submit a LiDAR exhibit to meet the elevation requirements for LOMA
- Assist with removals in areas where structures are definitely above BFE by elevation. Where comparison in close, certified elevations required.



### LiDAR LOMA: Updated Standard SID 199

**Original:**

- LOMC submittals must include certifications by a licensed professional authorized to certify the data under state law


**Updated:**

- LOMC submittals must include certifications by a licensed professional authorized to certify the data under state law, except when LiDAR is provided to satisfy the lowest adjacent grade (LAG) requirements for LOMAs.



4

### USGS LiDAR Base Specification



- Quality Level 3 was selected
- to help ensure the LiDAR data is accurate without being so restrictive that most existing data sets cannot be used
- As to not invalidate much LiDAR purchased by FEMA previously



<https://pubs.usgs.gov/tm/11b4/pdf/tm11-B4.pdf>

5

### What Submitters Need to Know: LiDAR Exclusions



- Requests involving fill
- Conditional requests
- Requests involving subjects mapped in the regulatory floodway
- Requests involving Coastal High Hazard Areas
- Requests involving Zones AO, AR, or A99 Zones
- Requests involving PVs as identified through LOMC process
- Requests involving physical changes to the flooding source/SFHA that require revision to the FIRM
- eLOMA requests
- Requests to supersede LOMCs based on certified elevation data

6

### What Submitters Need to Know: Exhibit Requirements

- The applicant requesting that a LOMA determination be evaluated based on LiDAR data must submit an exhibit that displays either:
  - an overlay of the LiDAR contours
  - an overlay of the LiDAR points
  - both of which must be with an accurate aerial image of the structure/property in question.
- Exhibit must also contain:
  - Vertical Datum
  - Address or Parcel Number for PIQ, and PIQ clearly identified
  - Name & Organization of map creator (with contact info)
  - Date LiDAR was collected
  - Source of the LiDAR data
  - LiDAR accuracy information (Accuracy Report)
  - Location of the data archive or metadata file (must be available for independent verification through a publicly available website or metadata)
    - LiDAR must be publicly available & accessed free of charge on web
    - Data owner must be a Federal, State, Local or Tribal Government entity

7

### Contour Exhibits

**Calculating the Lowest Adjacent Grade (LAG)**

1. Determine the lowest contour immediately adjacent to the building footprint.
2. Subtract the smallest LAG interval factor (1 ft in the example) to determine the applicable LAG or Lowest Labeled Elevation (LLE).

Zone AE Lake BFE = 796.2

- Identify the lowest contour immediately adjacent to the subject but not going through it
- Subtract ½ the contour interval or 1 foot (whichever is greater) from this identified contour to get LAG / LLE
- Compare to BFE
- Non-removal = request elevations

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### Point Cloud Exhibits

- The analyst will identify the lowest point immediately adjacent to the structure or on the property
- Subtract two feet to determine the LAG or the LLE.
- Compare to BFE
- Non-removal = request elevations

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### Accuracy Report

Pierce County, Washington

**LiDAR Completeness & Accuracy Report**

December, 2017

Omaha COE  
Colorado Watersheds

**LiDAR Mapping Report**  
State of Colorado


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### Exhibit Sample

FEMA Floodplain LOMA Map

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### LIDAR LOMA Report



**Requester LIDAR Record Link for projects in LOMA Flood Zone**

LIDAR Year and ID (shown in blue)

LIDAR Year and ID (shown in red)

Year and ID (shown in green)

**Requester:** MSU DNR position for administering the RFD on Lake Superior & Lake Superior and the Boundary High Water Line (LWL) or Region Recreated Water Line (RWL) and/or other project.

**Year and ID:** LIDAR Year and ID (shown in blue)

**Year and ID:** LIDAR Year and ID (shown in red)

**Year and ID:** Year and ID (shown in green)

#### Certification of Minnesota LIDAR Data Quality

**Project Area:** Classified Region

**County/ies:** Carlton, Cook, Lake and St. Louis

**Date of acquisition:** April 22 to June 2, 2012

**Horizontal Positional Accuracy:** All these data products were acquired at 2000 meters above mean sea level (MSL) and have a horizontal accuracy of 1.40 meters, with a contour point spacing of 2.5 meters.

**Vertical Positional Accuracy:** Accuracy of the dataset was verified by a vertical point of ground control points provided and listed by the State of Minnesota. The Commissioned Vertical Accuracy (CVA) of the data as stated by the State of Minnesota of all the data categories covering the 3-year dataset not defined by ASPRS and NAD83 were used in this evaluation. The vertical RMSE, the 95% confidence level and standard error per acquisition category block is listed by the State of Minnesota as follows: Block 1, 0.10m (RMSE), 0.10m (95%), 0.10m points, Block 2, 0.12m (RMSE), 0.12m (95%), 50 points, Block 3, 0.10m (RMSE), 0.10m (95%), 100 points, Block 4, 0.12m (RMSE), 0.12m (95%), 100 points, Block 5, 0.10m (RMSE), 0.10m (95%), 250 points, Block 6, 0.12m (RMSE), 0.12m (95%), 100 points, Block 7, 0.10m (RMSE), 0.10m (95%), 250 points. Block 8 encompasses the City of Duluth and the North Shore of Lake Superior in Cook County. Block 9 is the northern portion of Cook County and northern Lake County. Block 5 and 6 of Cook County and the eastern and northeastern portion of Lake County encompass the North Shore. Block 4 and 6 of Carlton County and the western portion of St. Louis County and western portion of Lake County. Block 8 is the central portion of St. Louis County.

This is to certify that the work summarized above was completed in accordance with stated and accepted surveying practices and meets the accuracy requirements in the ASPRS color Guidelines and Best Practices.

**Project Director:** Jeff Lund  
**Address:** 1001 Water Street  
**Project:** MSU DNR LIDAR  
**Requester:** MSU DNR Range RFD  
**Requester Address:** 1001 Water Street  
**Requester City:** Duluth, MN  
**Requester State:** MN  
**Requester Zip:** 55812


Minnesota Department of Transportation

**MSU Certified LIDAR Data**  
 Certified January 2012  
 MSU ID:

- Building Footprint (Red Delineation)
- Boundary Line (Blue Delineation)
- Zone 4 - RWL (Green Delineation)
- Zone 5 - RWL (Green Delineation)
- Zone 6 - RWL (Green Delineation)
- Zone 7 - RWL (Green Delineation)
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- Zone 100 - RWL (Green Delineation)

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### Resource: USGS 3D Elevation Program (3DEP)



**USGS Classified Lidar Point Cloud - Quality Level**

<https://www.usgs.gov/media/images/lidar-point-cloud-lp-3dep-quality-level>

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## Questions?

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