



Channel Migration Upper Sandy River House Committee

Agriculture and Land Use
April 25, 2019



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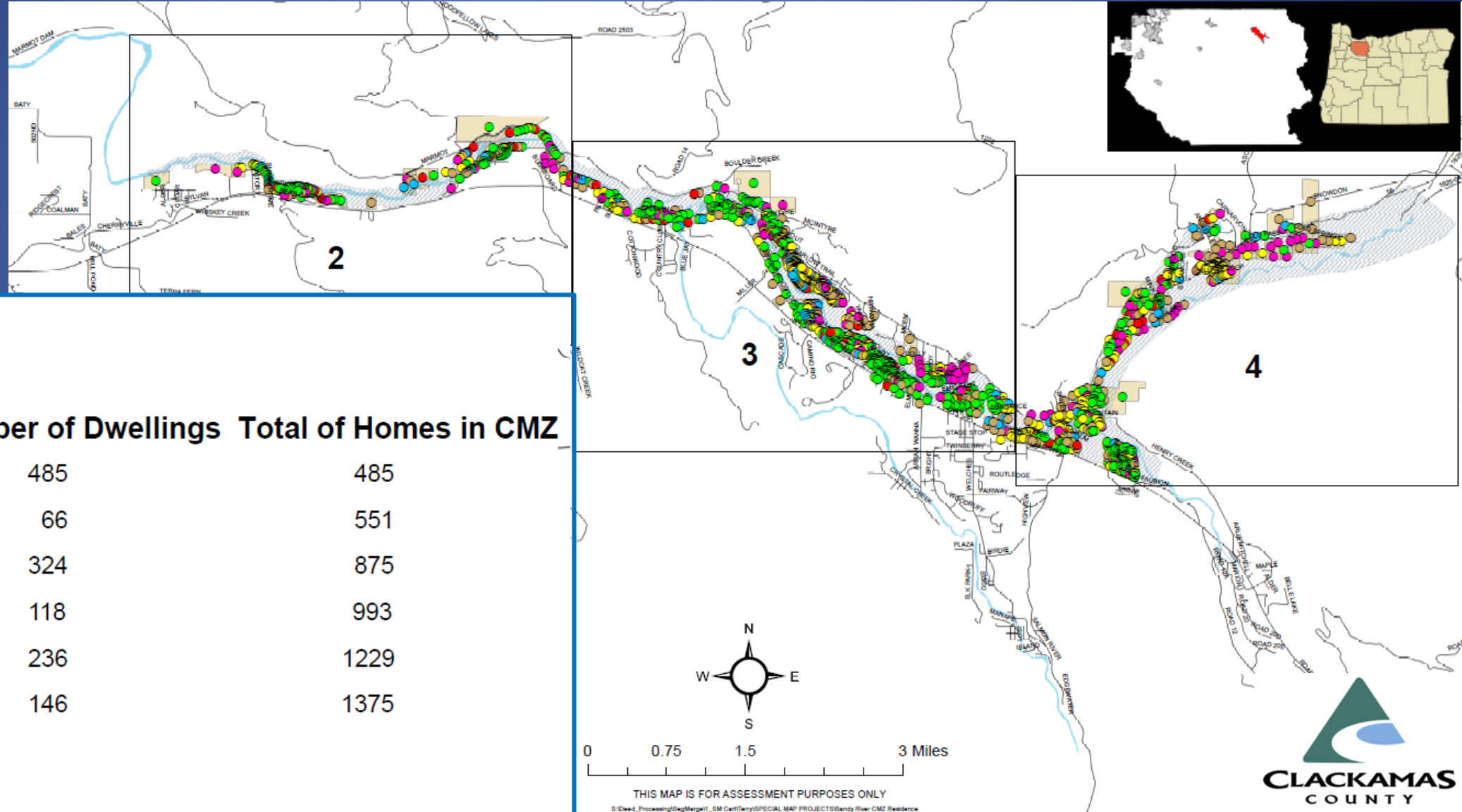
Photo: Oregonian

Outline and Purpose – CMZ Issues

- Historical Context – 1964 to Present
- Post - 2011 Flood Event CMZ Policy Issues
- Channel Migration Hazard & Risk Identification
- Timberline Rim – Case Study
- Potential CMZ Policy Considerations

Sandy River CMZ – Location of Residences

Age of Development – County Tax Assessor



CMZ_NSD_2015

TAXLOTS_CMZ

Actual Year Number of Dwellings Total of Homes in CMZ

● 1910 - 1964	485	485
● 1965 - 1969	66	551
● 1970 - 1979	324	875
● 1980 - 1989	118	993
● 1990 - 1999	236	1229
● 2000 - 2016	146	1375

Rivers
Streets

0 0.75 1.5 3 Miles

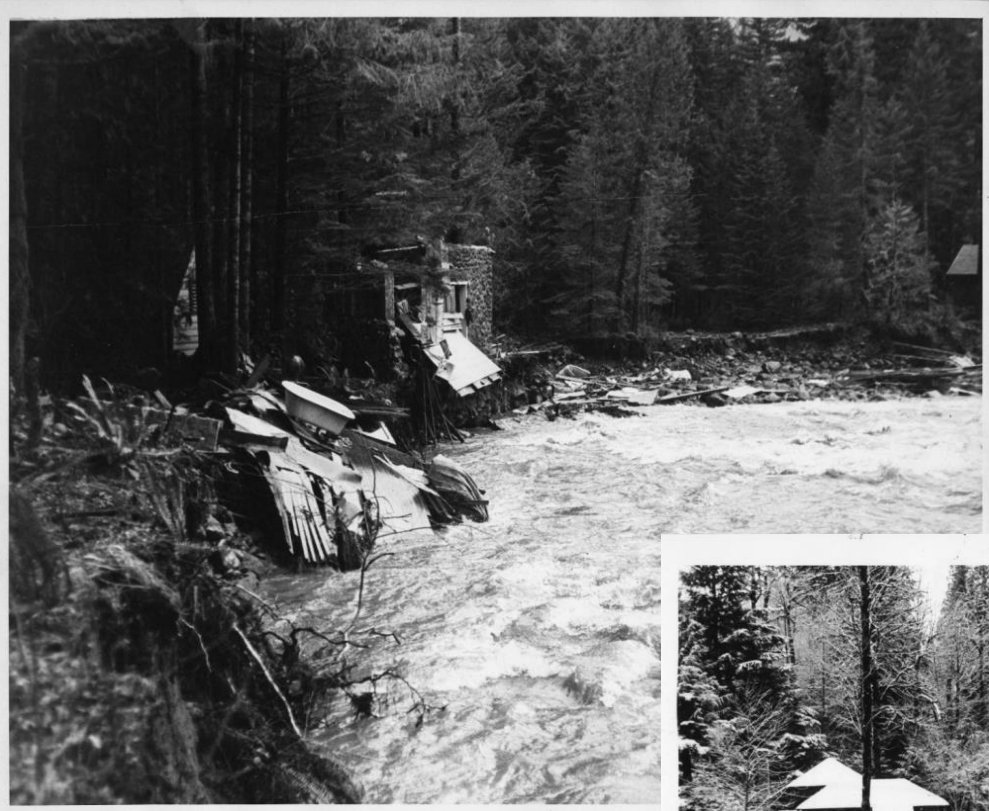
THIS MAP IS FOR ASSESSMENT PURPOSES ONLY

S:\Dead_Processing\SagMerge\1_5M CartTerry\SPECIAL MAP PROJECT\Sandy River CMZ Residence



Channel Migration Hazards

Upper Sandy River Basin – December 1964



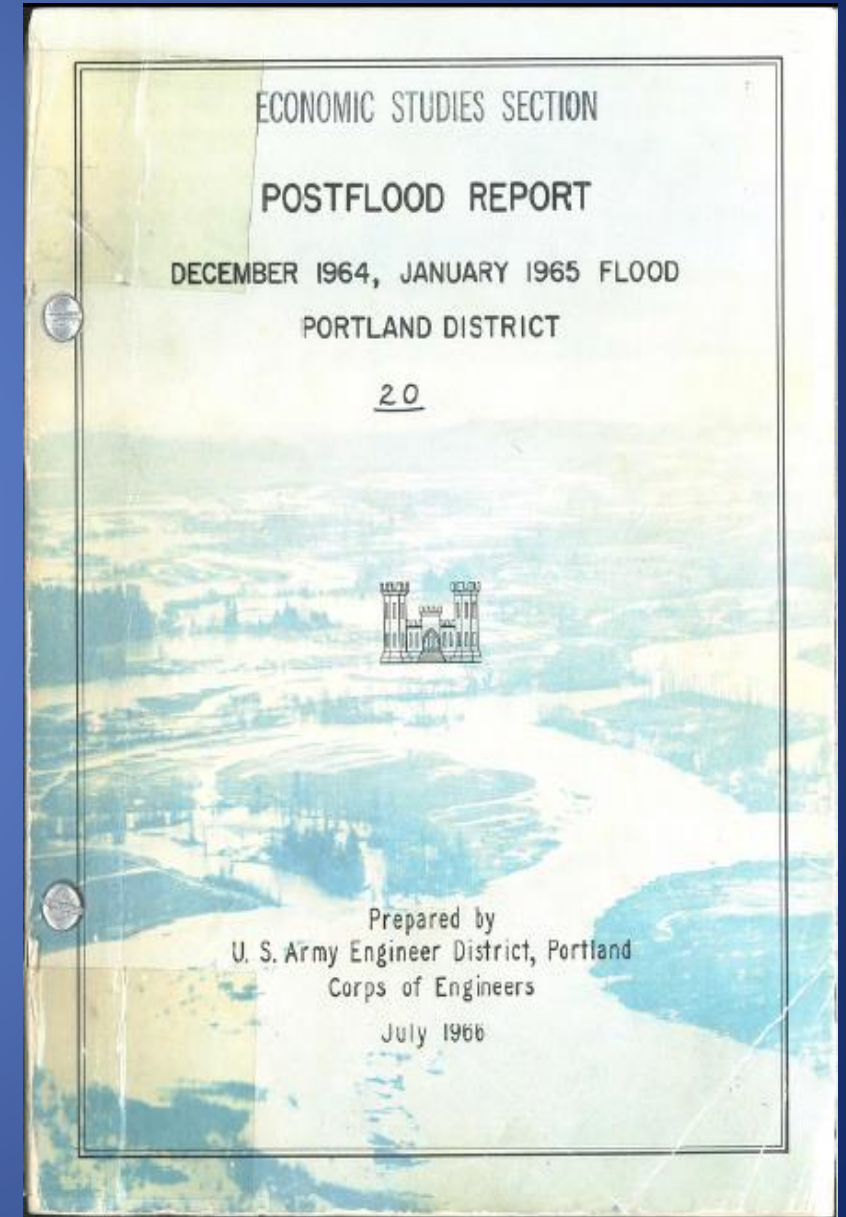
Private summer home damage along the Sandy River.

Photos: Mt. Hood National Forest
US Forest Service

1964-1965 Floods – US Army Corps of Engineers Report

The flood volume on the Sandy was the greatest of record. The river gradient is very steep, and the river bottom soil is a gravelly silt which offers little resistance to erosion. The result was an action on the valleys and lower slope that was glacier-like. Complete changes in appearance of the valley resulted in many places; for example, the north bank of the Sandy just upstream from Brightwood showed no indication of buildings, vegetation or topsoil where a group of 40 houses existed prior to the flood. These conditions were repeated to a lesser extent throughout the upper basin.

A total of 155 homes were completely destroyed in the Sandy Basin, with a great many more being damaged. Of these a majority were unoccupied summer homes, or loss of life would doubtless have been greater than the one reported.



Timberline Rim Area 1965

US Army Corps – Emergency Flood Control



Mountain Air – April 1965
Photo: James Arrigotti

Timberline Rim Area 1967
Channelized the Sandy River



Timberline Rim 1972

Development Encroaches on the Newly "Fixed" River





January 2011

Upper Sandy
River

Lolo Pass Road

Photo: Jay Wilson

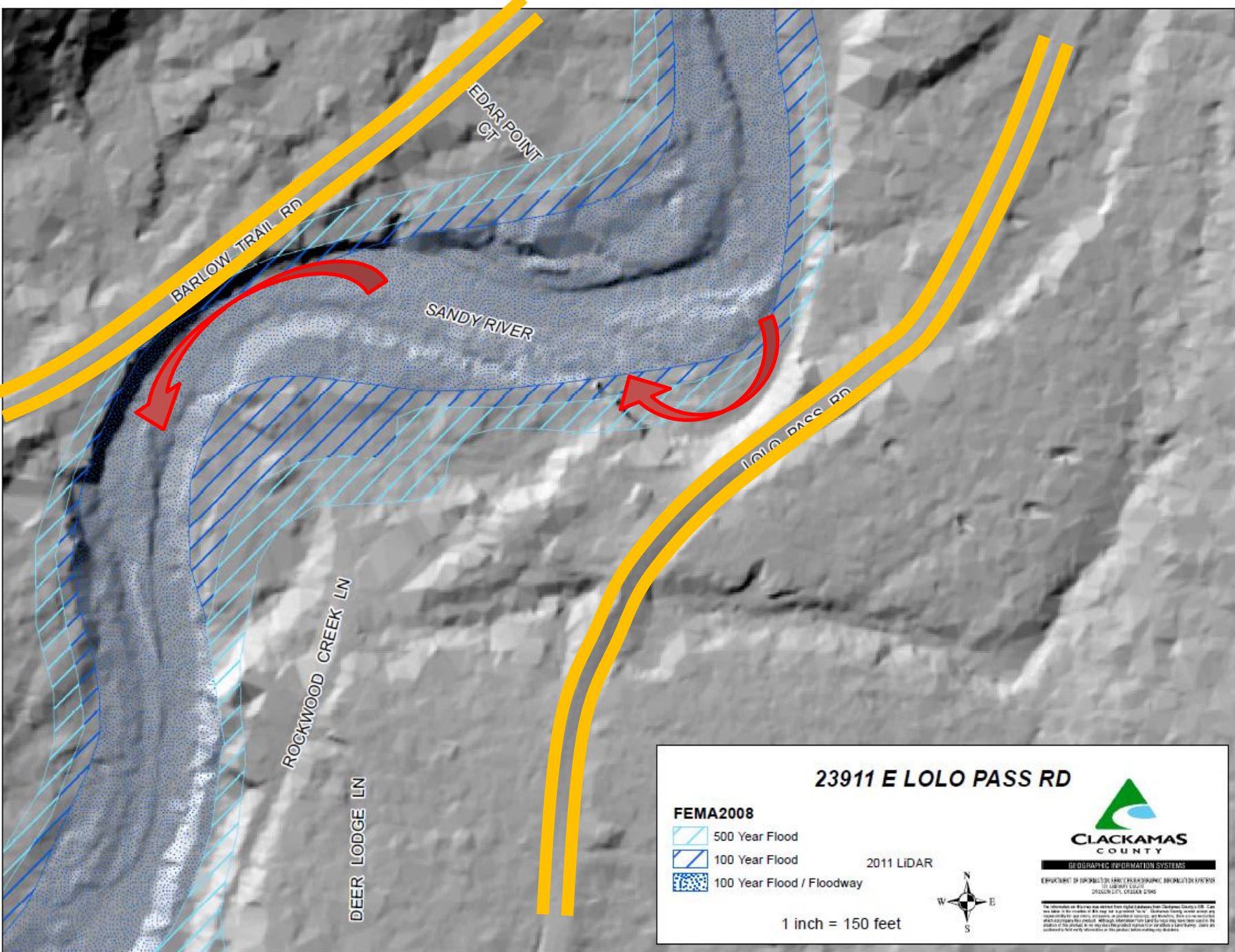


January 2011

Upper Sandy
River

Lolo Pass Road

Photo: Jay Wilson



BARLOW TRAIL RD

EDAR POINT CT

SANDY RIVER

LOLO PASS RD

ROCKWOOD CREEK LN

DEER LODGE LN

23911 E LOLO PASS RD

- FEMA2008**
-  500 Year Flood
 -  100 Year Flood
 -  100 Year Flood / Floodway

2011 LIDAR

1 inch = 150 feet



GEOGRAPHIC INFORMATION SYSTEMS
 DEPARTMENT OF INFORMATION SERVICES
 10000 NE MULTNOMAH ST., SUITE 200
 CLACKAMAS, OREGON 97015

The information on this map was derived from digital data from Clackamas County GIS. Care was taken to ensure accuracy, but we may not be perfect. Clackamas County makes no warranty for use, errors, omissions, or updates to existing data. Users are advised to verify the accuracy of the information on this product before making any decisions.



January 2011 - Lolo Pass Rd Channel Migration

Photo: PGE



**Damages resulting from
January 16, 2011 flood,
Zig Zag Village, Upper
Sandy River**

Bank of sand

River bed of boulders

Photo: Oregonian

CMZ Study: Upper Sandy River (2015, Natural Systems Design)

- River Bank is Softer than the River Bed
- Doesn't need to "Flood" to Cause Damage
- Historic protection (riprap) causes/exacerbates problems
- The Sandy River needs more room
- Hazard and habitat are overlapping

Timberline Rim 2007

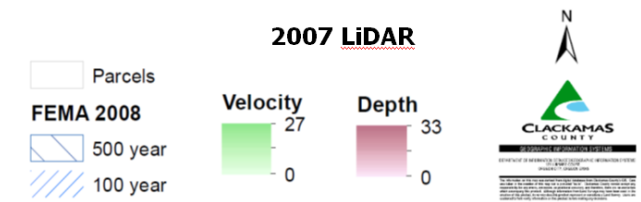
111 Feet of Channel Migration

Properties Lost in 1996 Flood

DRAFT FLOOD ZONES -
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Timberline Rim Area



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Timberline Rim 2011 – Post Flood

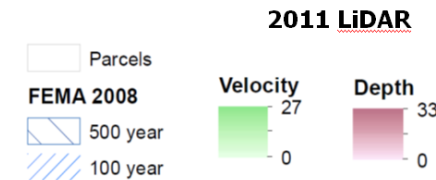
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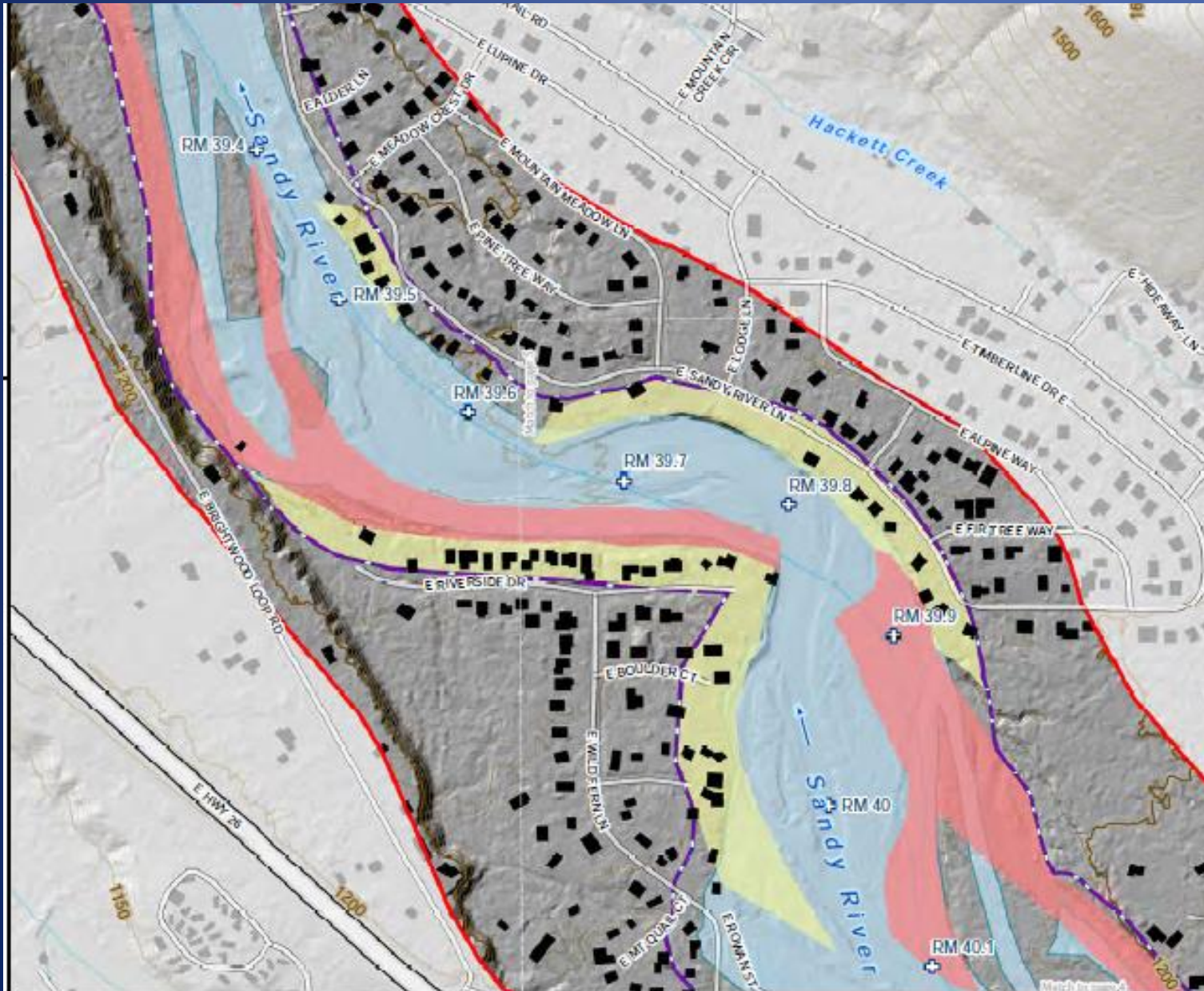
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Timberline Rim Area



Channel Migration Zone – Hazard Map - 2015



Legend

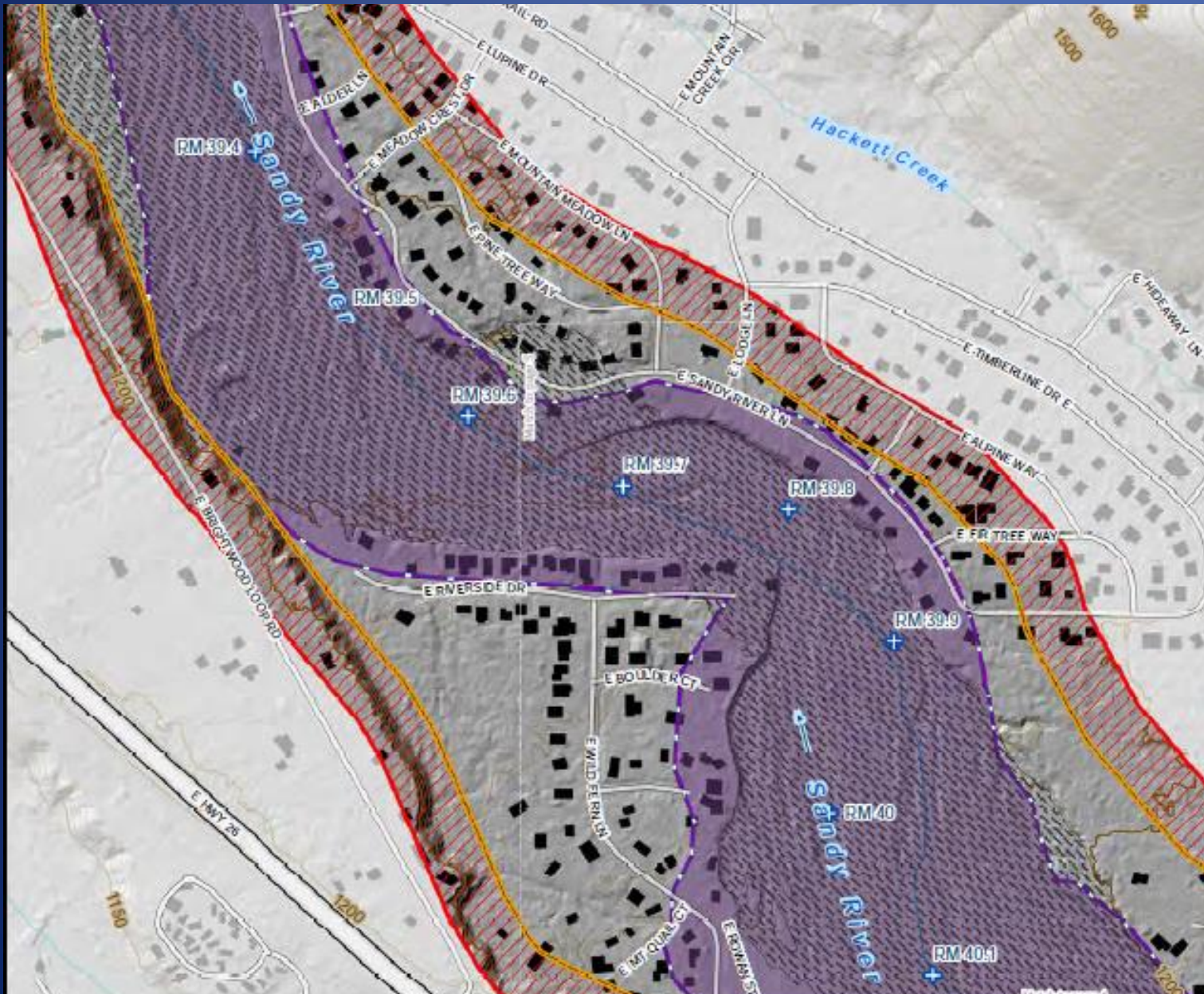
- USGS River Miles
- Streams (USGS NHD 2010)
- Roads (Clackamas Co.)
- Channel Migration Zone (CMZ)
- Emergency Protection Action Line (EPAL)
- HMZ + 100ft Buffer
- Historic Migration Zone (HMZ)
- Actively Eroding Trends
- Avulsion Hazard Zone (AHZ)
- Minimum CMZ Management Zone
- Area within 100 ft buffer
- FEMA 100 yr Flood Zone

Source: Oregon Department of Geology and Mineral Industries (DOGAMI). LiDAR data collected in:

2011 (upstream of Zigzag River) and 2012 (downstream of Zigzag River). CMZ, HMZ, AHZ, and EPAL delineated by Natural Systems Design, 2014. August 2011 FEMA FIRM Flood Zones obtained from DOGAMI

Timberline Rim

Channel Migration Zone – Risk Map - 2015



Legend

- USGS River Miles
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- Roads (Clackamas Co.)
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Timberline Rim

Channel Migration Zone – Potential Policy Considerations

- Characterize Hazard and Risk
- Mapping
- Notification and Disclosure
- New Development
- Existing Development
- Infrastructure/Public Assets
- Regulation
- Incentivizing CMZ Policy
- NFIP Alignment
- Bank Protection
- Code Enforcement
- Habitat Protection
- Legal/Liability
- Recovery Planning
- Special District
- Other Options

Thank You

Challenges = Opportunities

References:

- Clackamas County Board of Commissioners
 - [Clackamas CMZ Policy Letter to Oregon Solutions - July 2018](#)
- Upper Sandy River CMZ Report and Hazard/Risk Maps
 - <https://www.clackamas.us/dm/channelmigrationzoneresources.html>
- Clackamas County CMZ Videos
 - Clackamas County - Silver Jackets - CMZ Public Outreach
 - https://www.youtube.com/watch?time_continue=1&v=ESry1-JIBg4
 - 1964 Christmas Flood Documentary- Upper Sandy River
 - <https://www.youtube.com/watch?v=KZng0DmFU6E&index=2&list=PLZEzoOaZqnfrUHsjwAZaZq0e3ZCSTi6JD>

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