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# Lake Level Dynamics and the Ordinary High Water Mark

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Coastal Zone Management Project #:08-309-13*

Private Shoreline  
Development  
and  
Access Demands

Struggle Between

Natural Characteristics  
of  
Great Lakes Shorelines

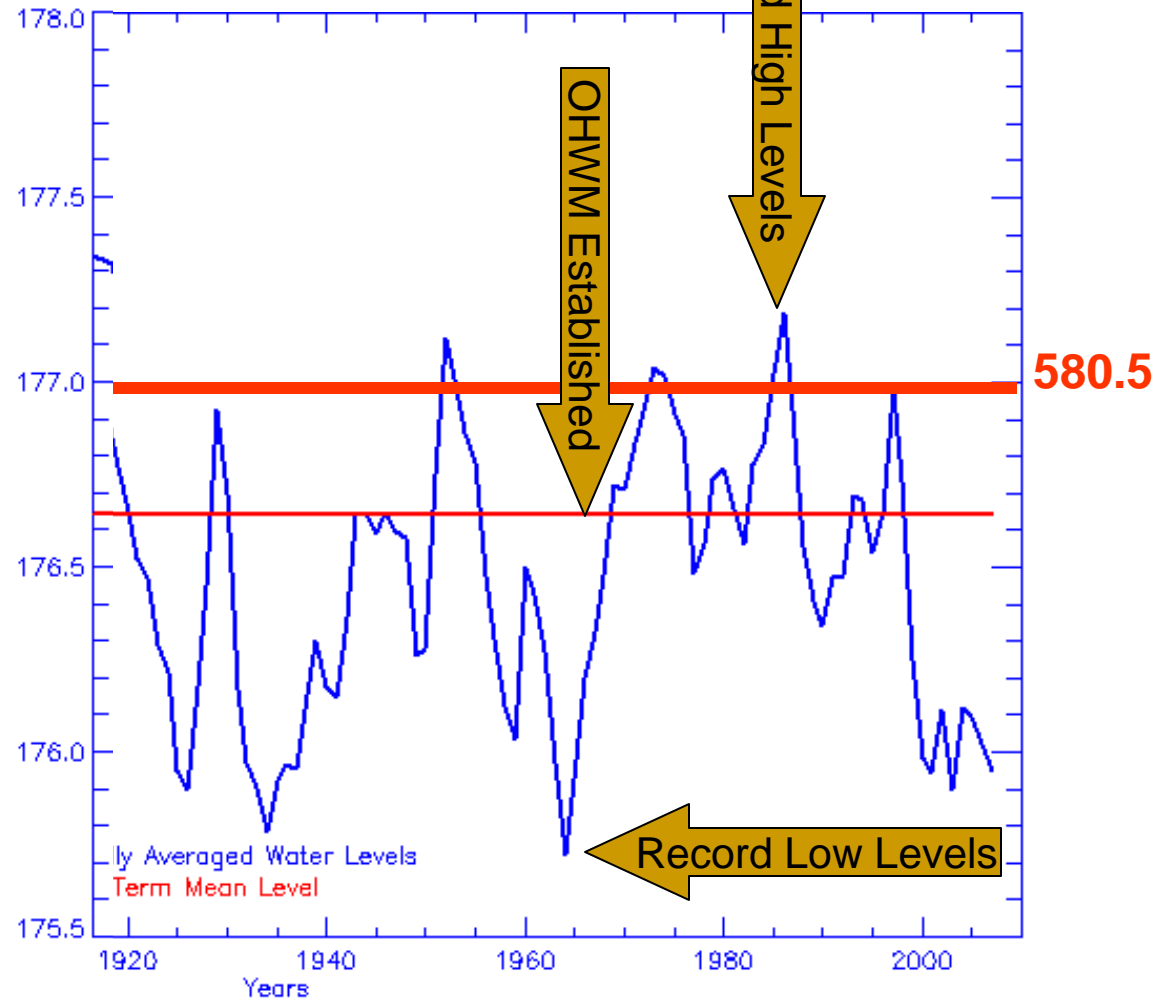


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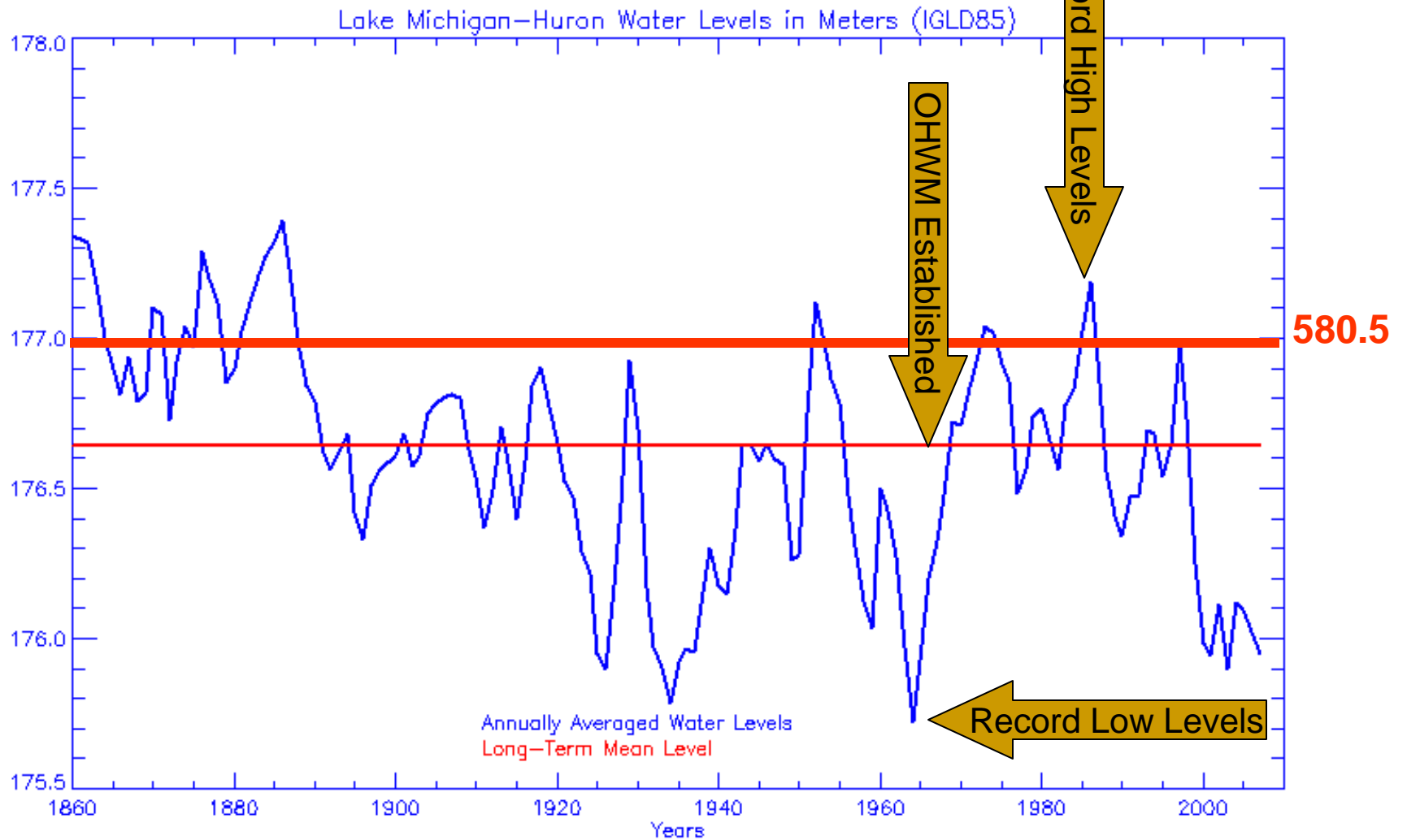
# Ordinary High Water Mark

- The line between upland and bottomland which persists through successive changes in water levels, below which the presence and the action of the water is so common or recurrent that the character of the land is marked distinctly from the upland and is apparent in the soil itself, the configuration of the soil and the vegetation [MCL 324.30101(h)]
- Determined in the mid-1960's to correspond to the elevation of 580.5 ft (IGLD 1985).

# Great Lakes Water Levels

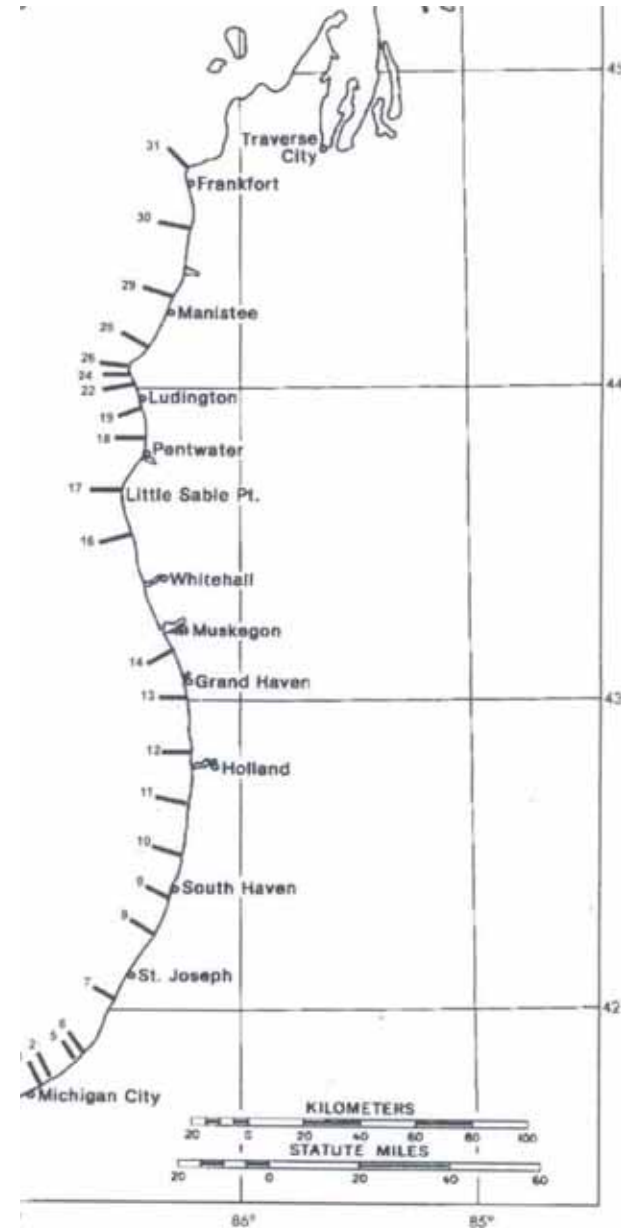


# Great Lakes Water Levels



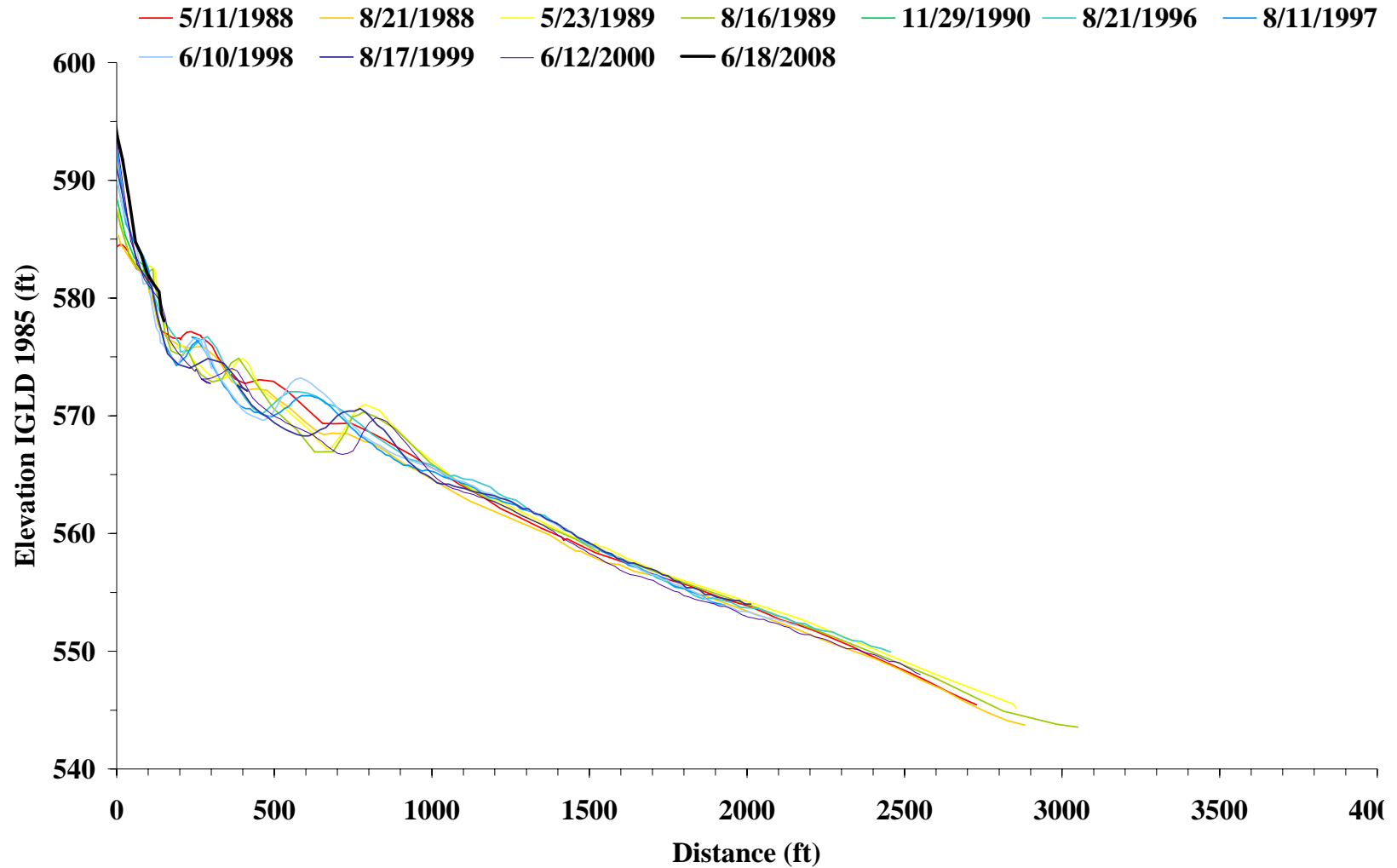
# Historic Survey Data

- 45 Survey Sites
- 31 on Lake Michigan
- 1988-2008 (periodically)
- Primarily MDEQ & U of M funded
- Referenced to known bench marks (vertically and horizontally)



# Sample Survey Data

UM 18 - SUMMIT



# The 1988 Beach

Summit Township Park



# The 1988 Beach

Chikaming Township Park



October 28, 2008

University of Michigan

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# The 1988 Beach

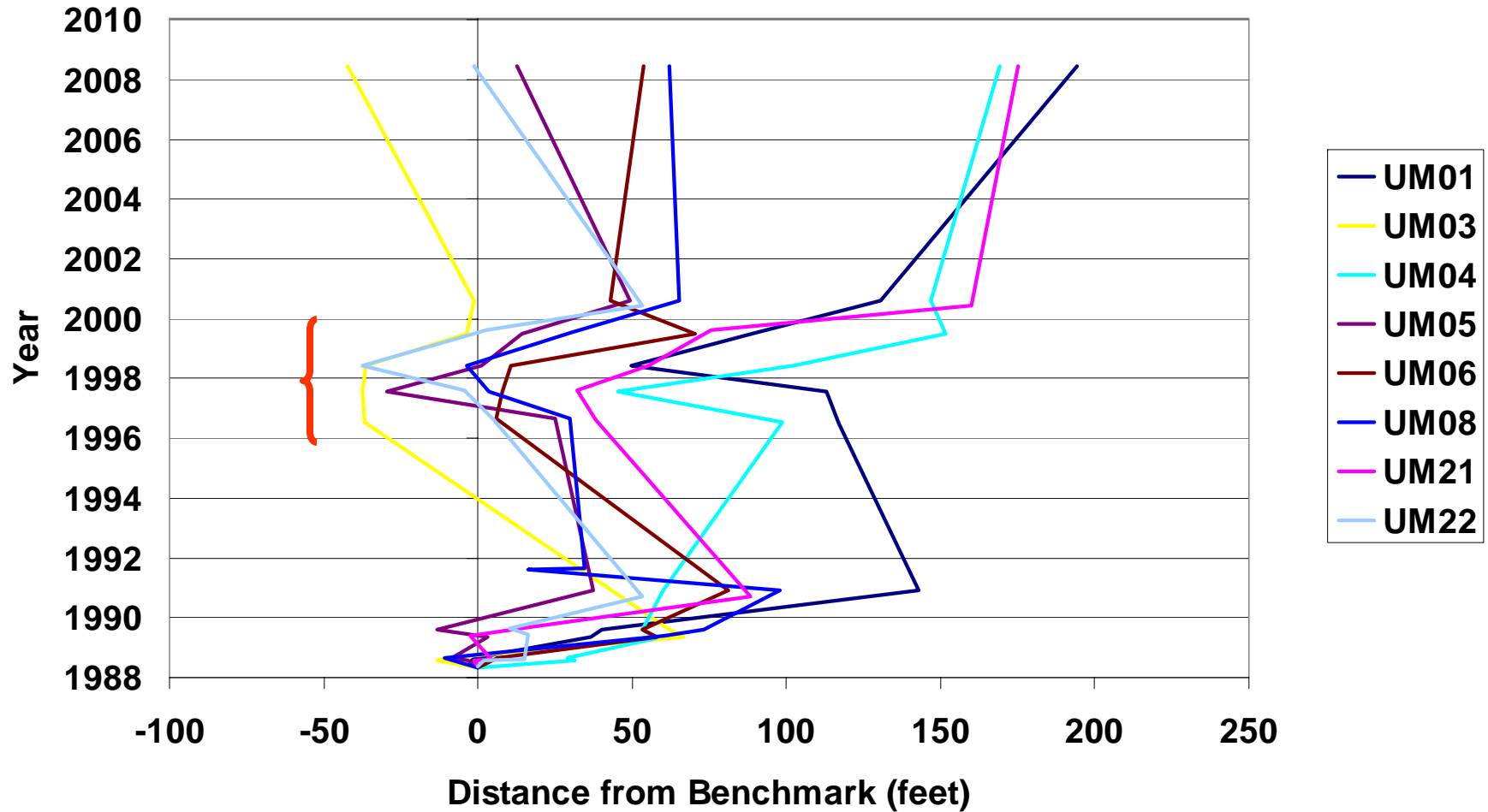


# The 1988 Beach

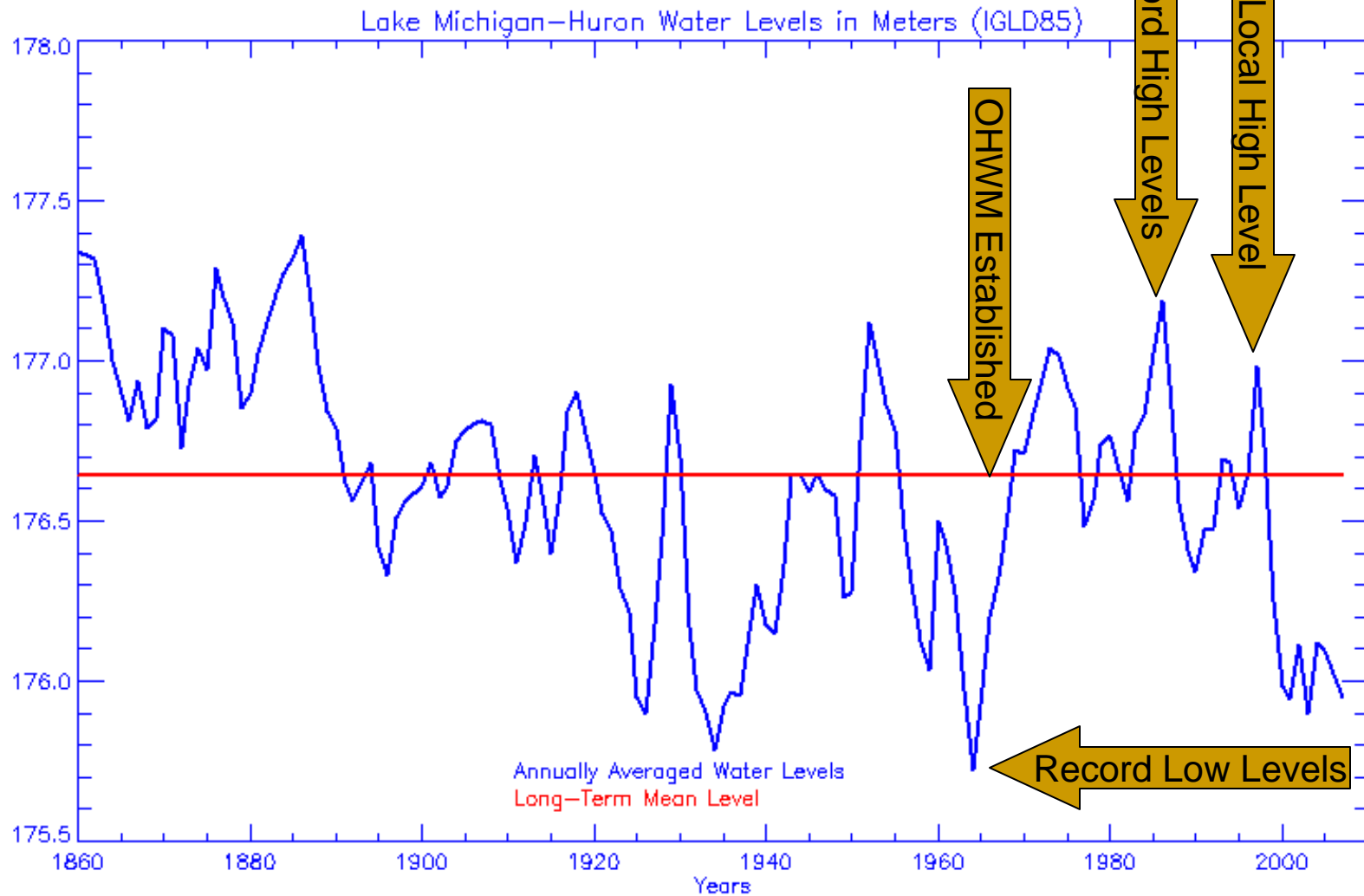


# OHWM Location with Time - “Soft” Sites

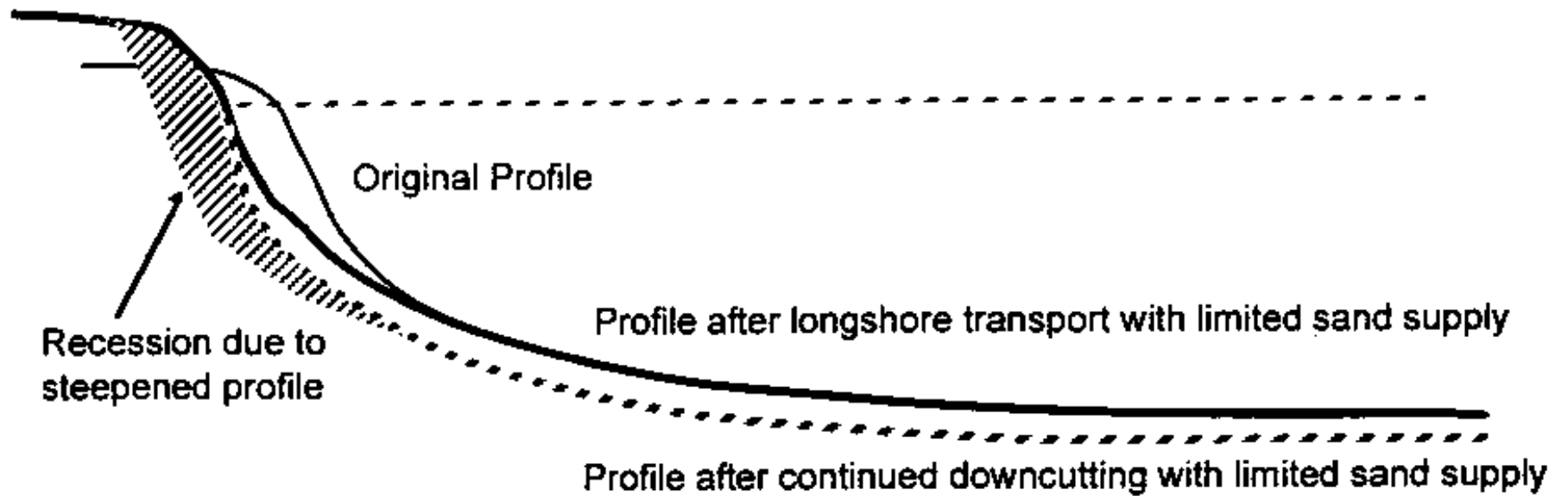
580.5 Intersection with Land



# Great Lakes Water Levels

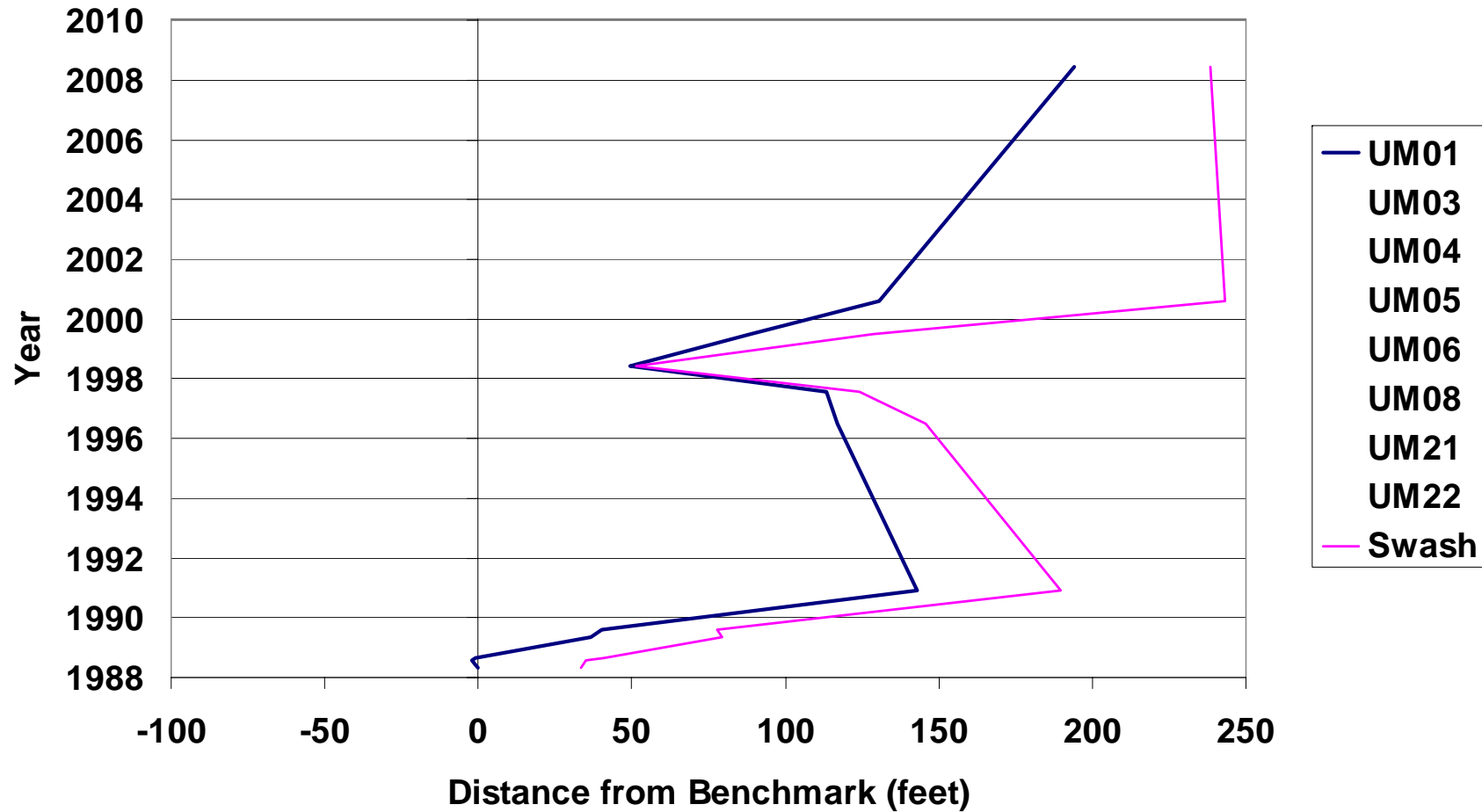


# Why so much loss?

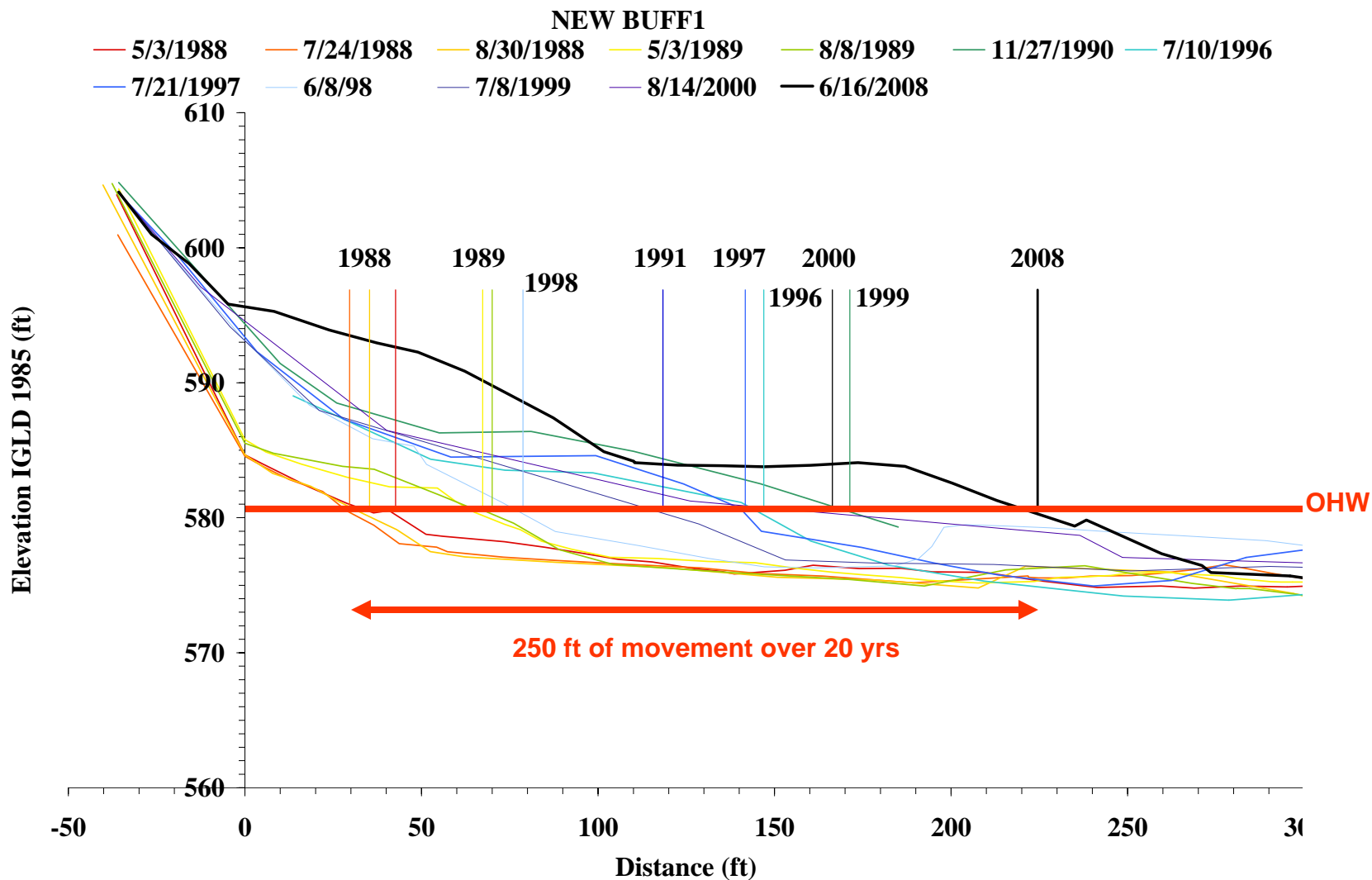


# UM01 Case Study

## 580.5 Intersection with Land



# UM01



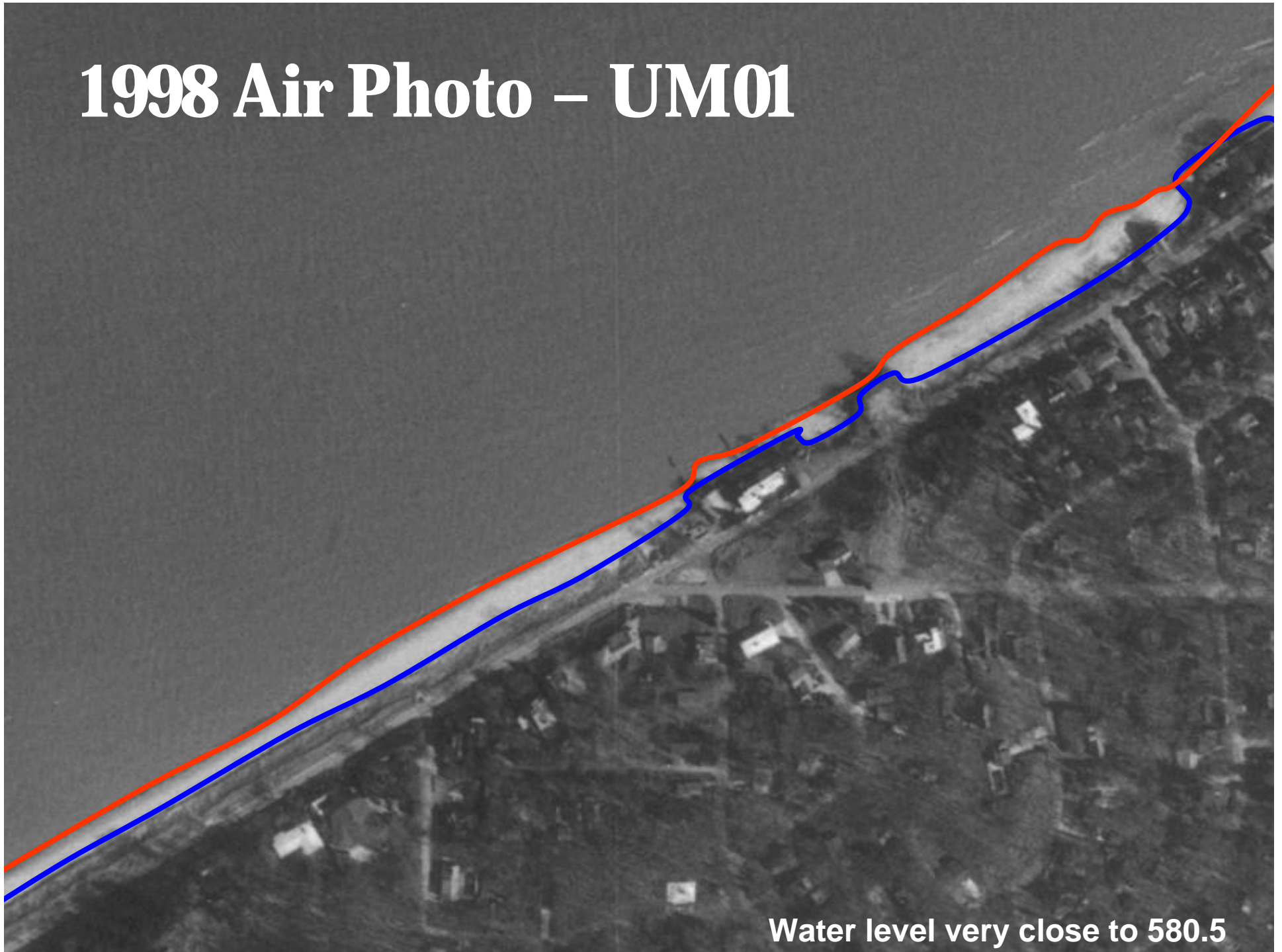
# The 1988 Beach



# 2008 Beach

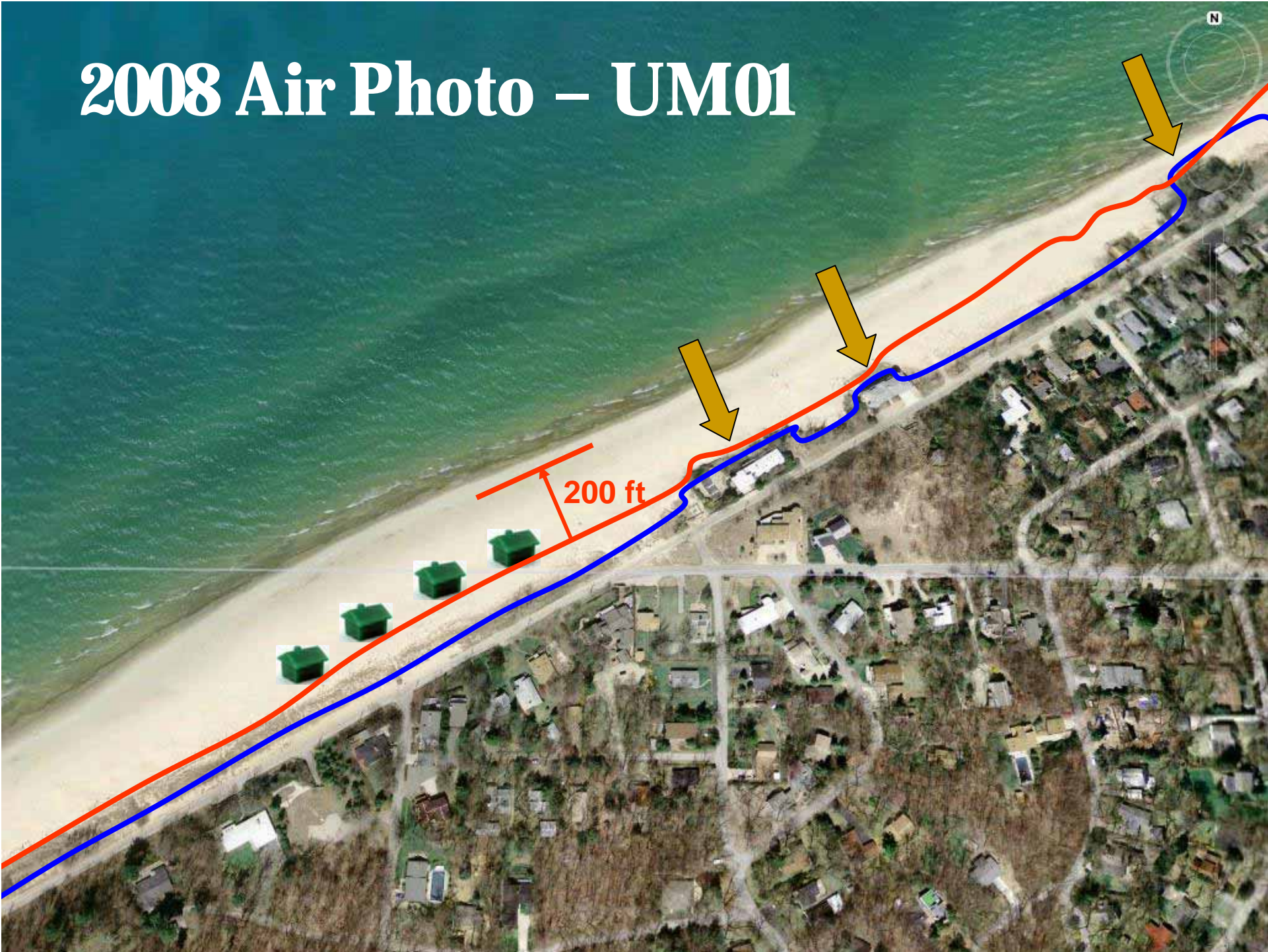


# 1998 Air Photo – UM01



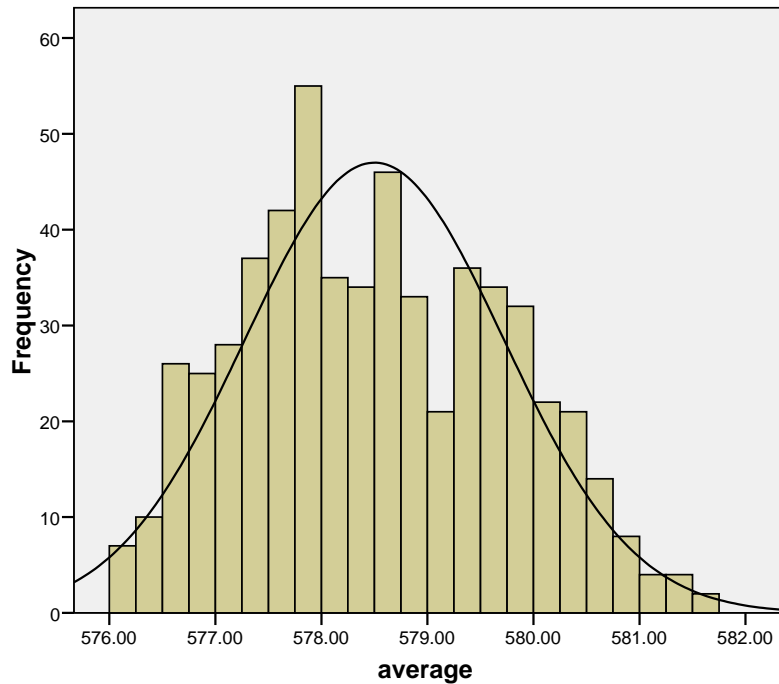
Water level very close to 580.5

# 2008 Air Photo – UM01



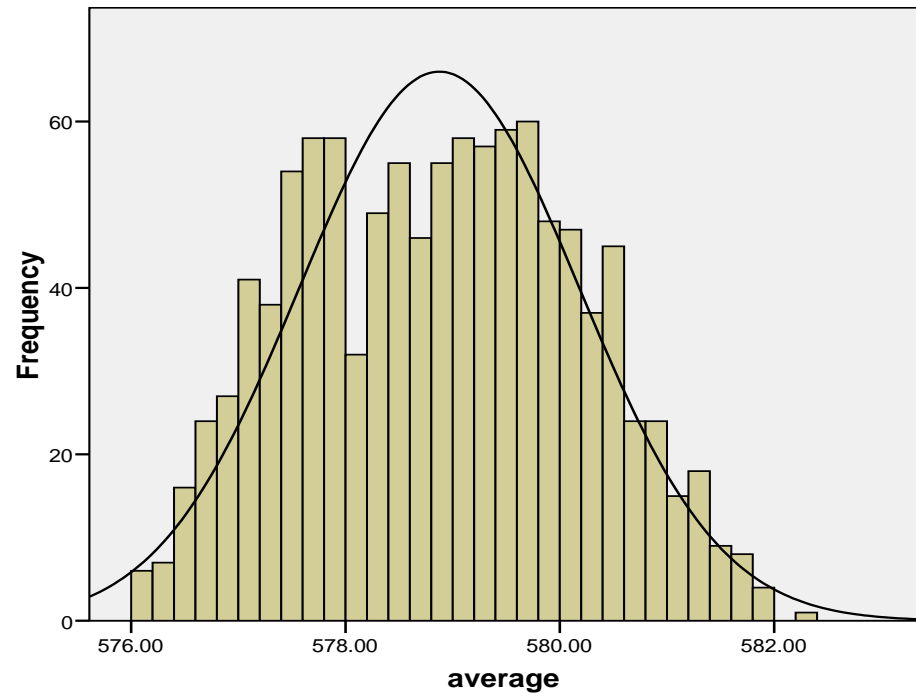
# Water Levels – Then and Now

1918-1965



5.6% of time water exceeds 580.5

1918-2007



11.8% of time water exceeds 580.5

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# Conclusions

- A “mark” determined by elevation is not useful in a dynamic setting such as the Great Lakes
- A “line” can be determined based on a set of criteria that define the active beach – Needs to:
  - Balance interests for effective management tool with less litigation
  - Effectively handle highly disturbed and historically protected sites
- Any determination must be subject to change as the Great Lakes respond to climatic variability and global change.



<http://www.epa.gov/glnpo/image/vbig/190.jpg>