

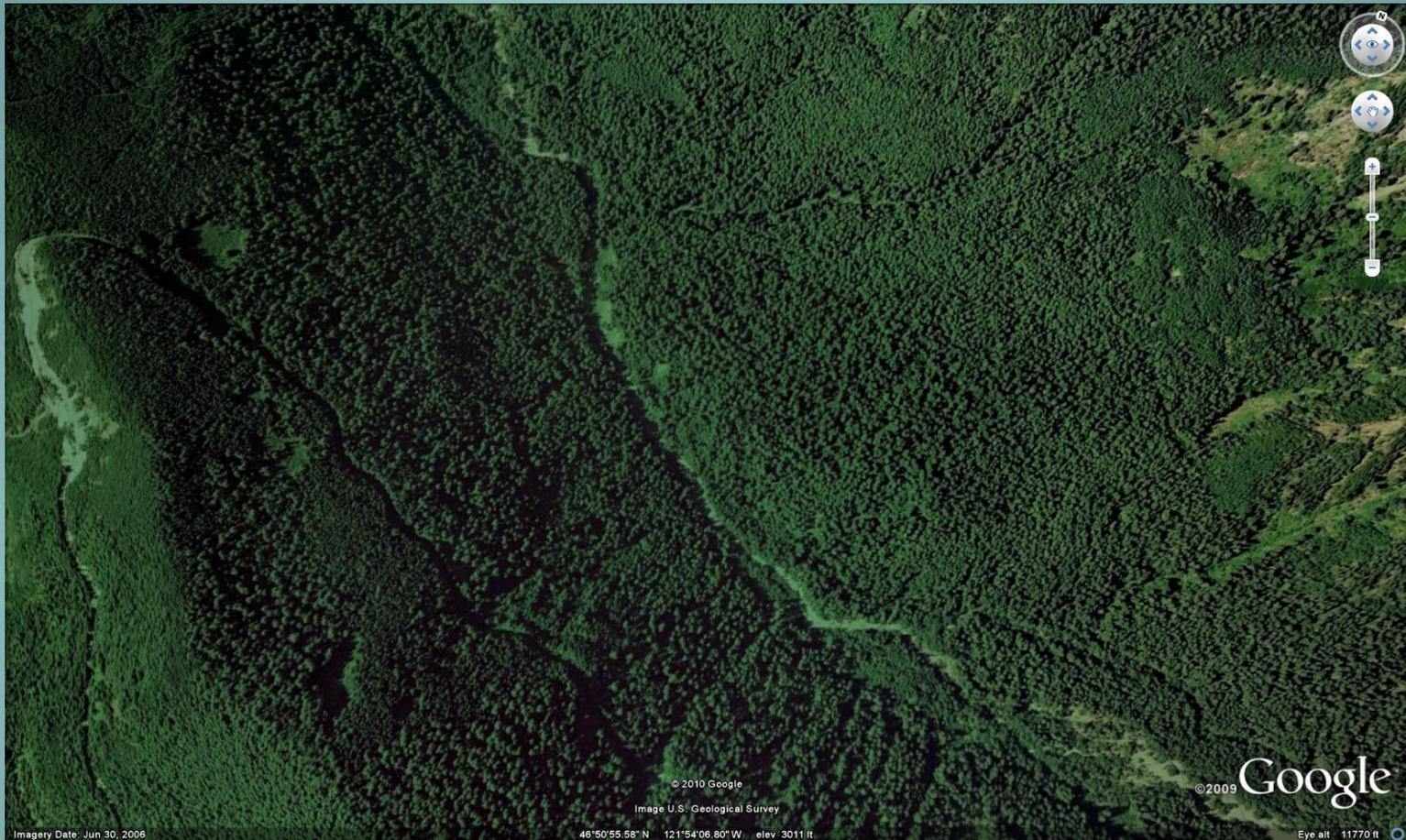
The Science Behind Marine Buffers

Carl Hadley
Cedarock Consultants

McDade et al. 1989

Source Distance for Woody Debris

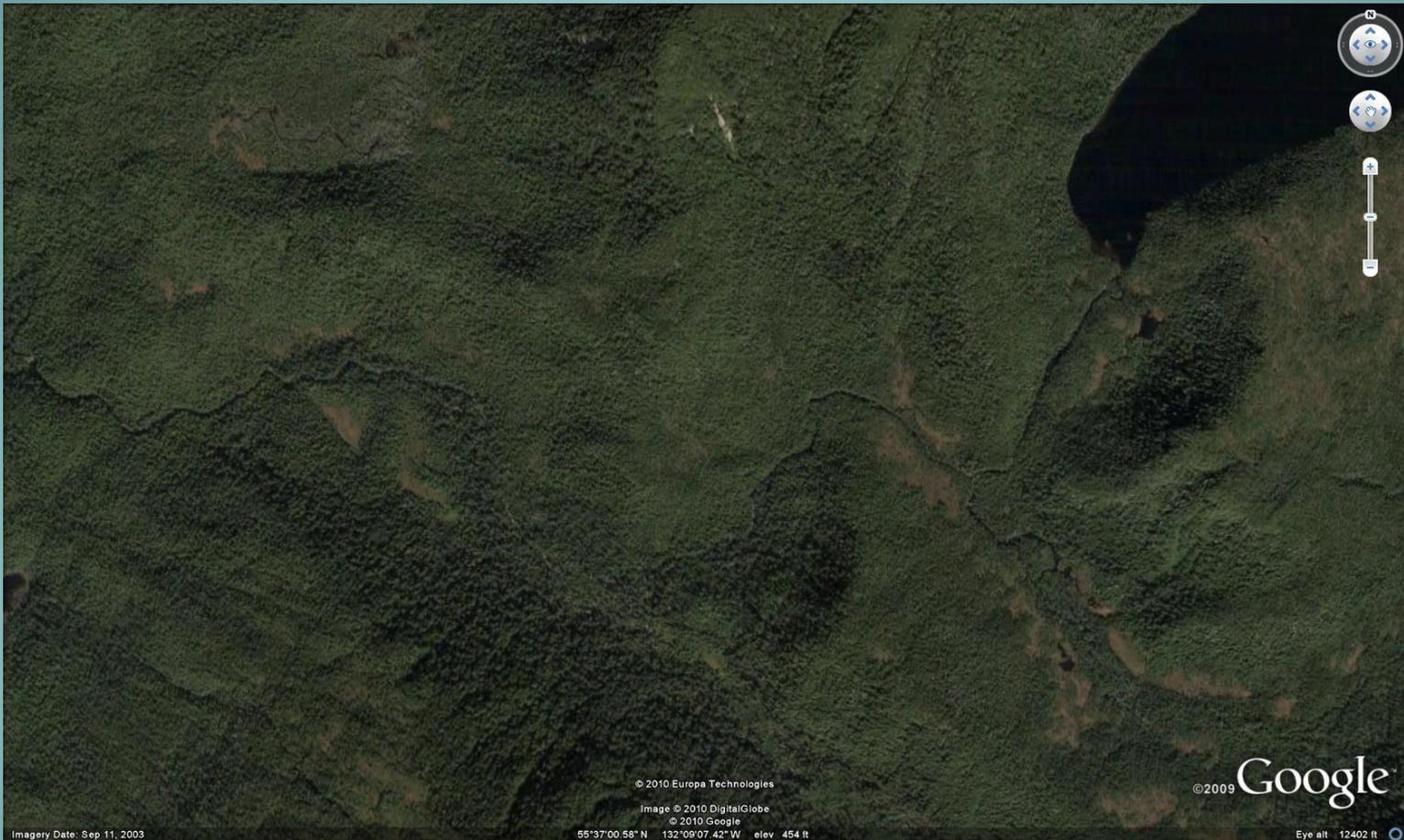
Mount Rainier, WA



Beschta et al. 1987
Shading
Oregon Coastal Range



Murphy and Koski. 1989
Woody Debris Input
Ketchikan, Alaska



Burien Marine Shoreline



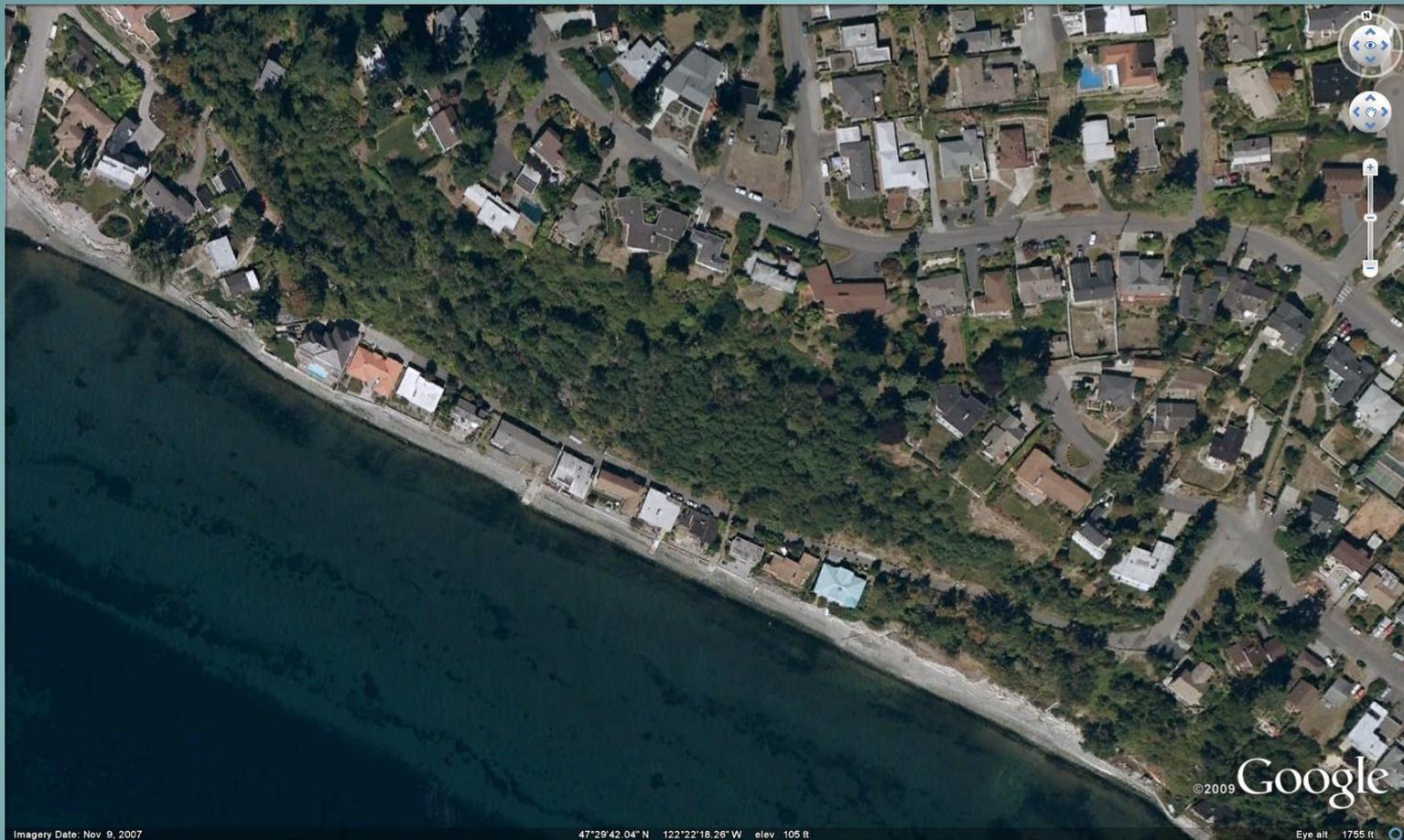
Imagery Date: Nov 9, 2007

47°27'05.08" N 122°22'36.13" W elev 97 ft

©2009 Google

Eye alt 2831 ft

Burien Marine Shoreline



Imagery Date: Nov 9, 2007

47°29'42.04" N 122°22'18.26" W elev 105 ft

Eye alt 1755 ft

Contrast Burien Conditions

- Five miles of marine shoreline in Burien
- 309 private lots
- 282 (92%) of the lots are developed with residences

Conclusion:

- The existing Burien shoreline has very little in common with the conditions studied for BAS

Shoreline Management Plan and No Net Loss

- The no-net loss standard is designed to stop new impacts to shoreline ecological functions resulting from new development.
- The existing condition of shoreline ecological functions need to remain the same (or improve).

Shoreline Ecological Functions

- Wood recruitment (downed trees)
- Wildlife habitat
- Bank stability
- Coarse sediment sources (beach replenishment)
- Water quality protection (pollutant and erosion control)
- Shade (temperature moderation)
- Nutrient input (leaf litter and insects)

Why Existing Buffer Science is Not Entirely Applicable to the Condition in Burien

- Native vegetation is key to providing buffer functions.
- The BAS references presume natural forested conditions without urban constraints.
- Examples of urban constraints include:
 - Populated areas with large numbers of private properties;
 - Existing buffers constrained by structure and infrastructure;
 - Extensive existing bulkheads;
 - Public safety (for example hazard trees or flooding);
 - Engineered water quality protection rather than via buffer function.

Shoreline Management Plan and Science

- What existing conditions affect ecological function of the marine shoreline?

Note: Seahurst Park (M2) is unique and should be treated separately.

Wood Recruitment

- 92 percent of the lots are developed and with a few exceptions there are no existing large trees waterward of existing homes
- Hazard tree situation
- Tree ordinance may be as effective



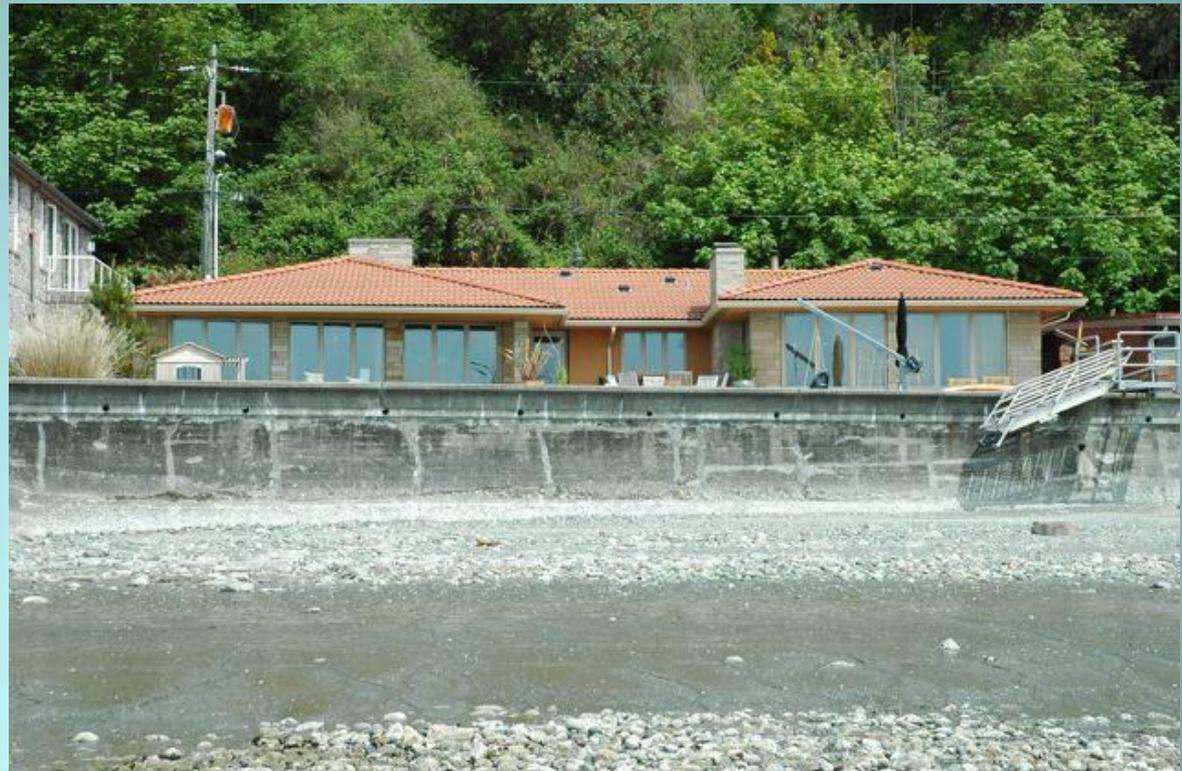
Wildlife Habitat

- 64% of homes within 50-feet of OHW
- In many cases the best habitat is on the hillslope behind existing homes



Bank Stability

- 92% of the bank is protected with some form of bulkhead



Conclusion

- Given: the SMP goal of achieving No Net Loss of ecological function of shorelines,
- And: the fact that the Burien marine shoreline is almost completely developed to MHHW,
- Then: large buffers will do almost nothing to preserve shoreline functions on existing developed lots

Alternatives

- Development and redevelopment can be better handled with code text to target specific habitat functions (e.g. tree preservation ordinance, bulkhead restrictions, herbicide and pesticide prohibitions, etc.)
- Trying to improve habitat quality on developed lots using buffers is inefficient and ineffective. Target Seahurst Park for functional habitat gains in City to offset any habitat losses.



05/27/2010