

Using Mitigation Sequencing Within A Landscape Context



Whatcom County
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Mitigation Sequencing

- Emphasizes avoidance first
- Then minimization
- And finally mitigation on-site

In many cases avoidance or mitigation on-site can result in a loss of functions.

Problems with Mitigation Sequencing

- In some cases avoidance can decrease functions of existing wetlands



Problems with Mitigation Sequencing

- Avoidance can decrease functions of existing wetlands



How Other Countries Have Dealt With This Problem

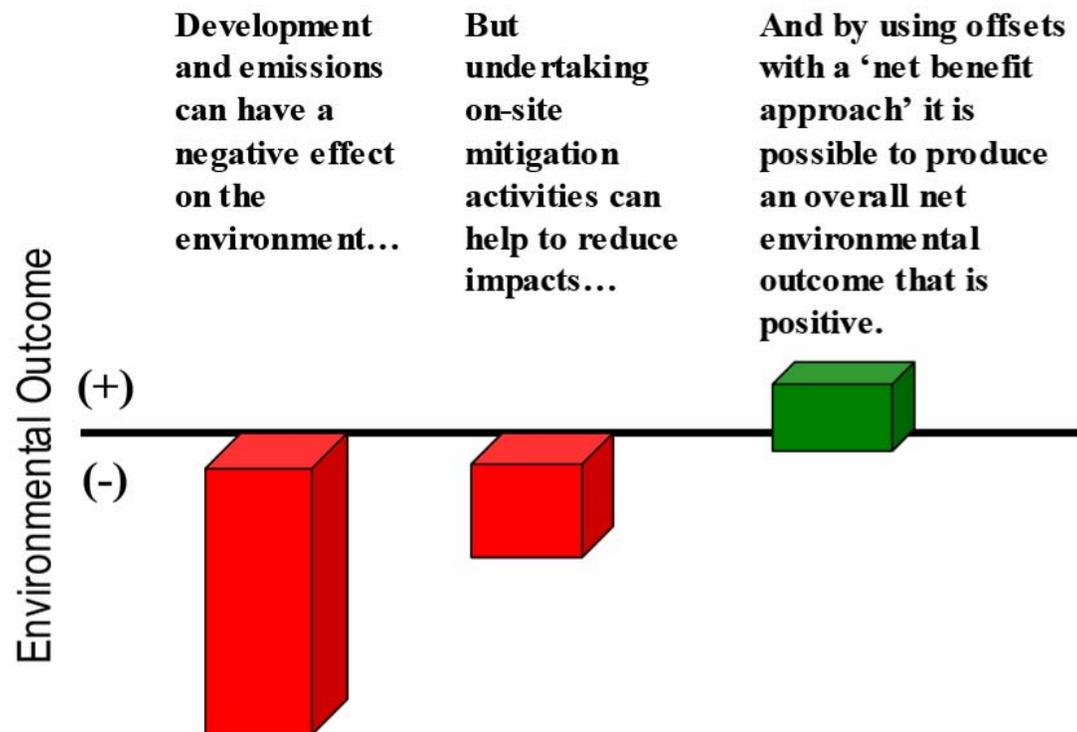
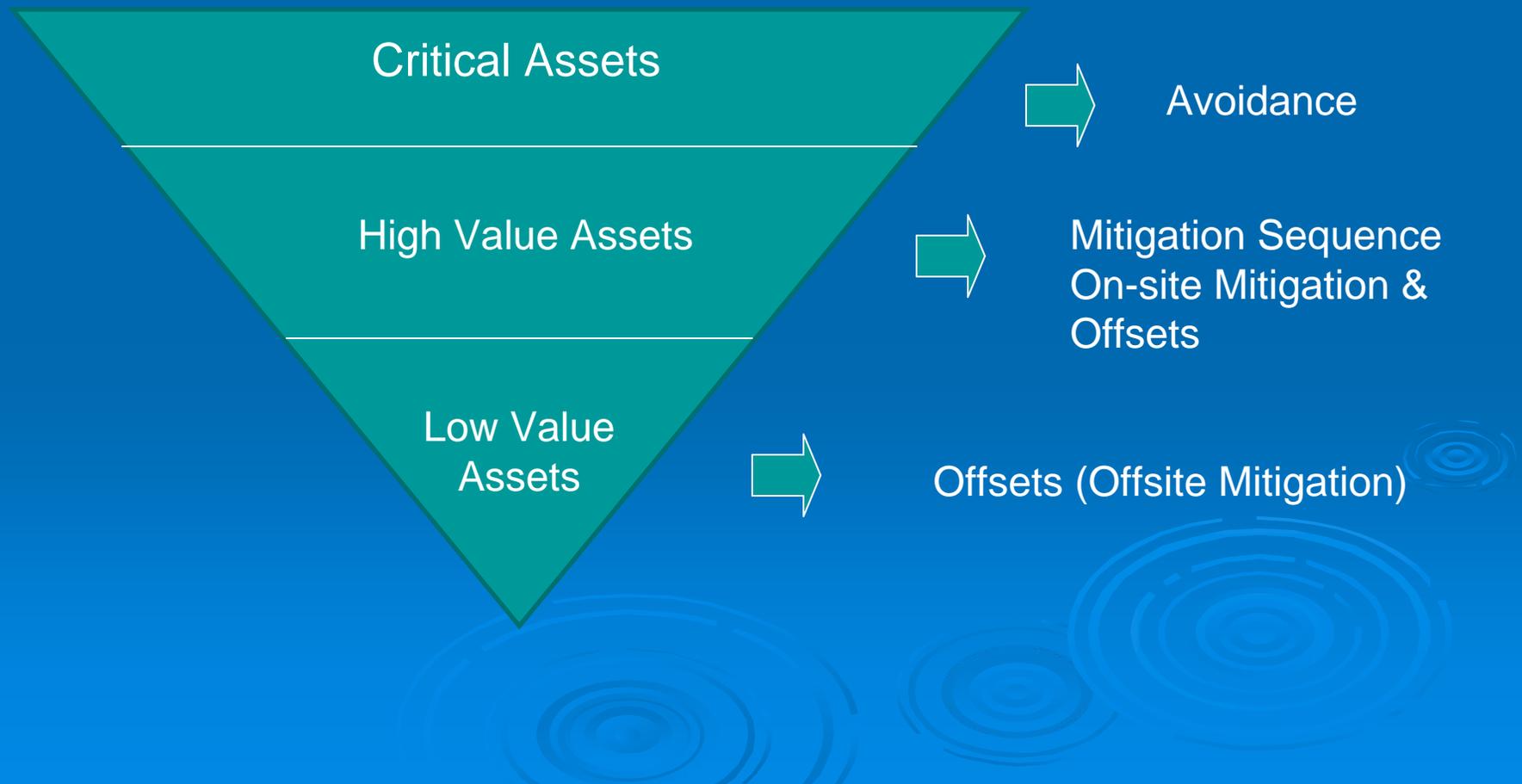


Figure 1: The purpose of a 'net environmental benefit' goal is to achieve a positive environmental outcome from new development or emissions. Adapted from NSW EPA (2002).

Mitigation Framework in Western Australia

Inventory and Assess Environmental Assets



Mitigation Framework in Western Australia

Offset Package (Offsite Mitigation)

Direct Offsets:

Restoration
Rehabilitation & Re-establishment
Acquisition

Contributing Offsets

Protection
Banking – credit trading
Removal of Threats
On-going Management

Offsets must be:

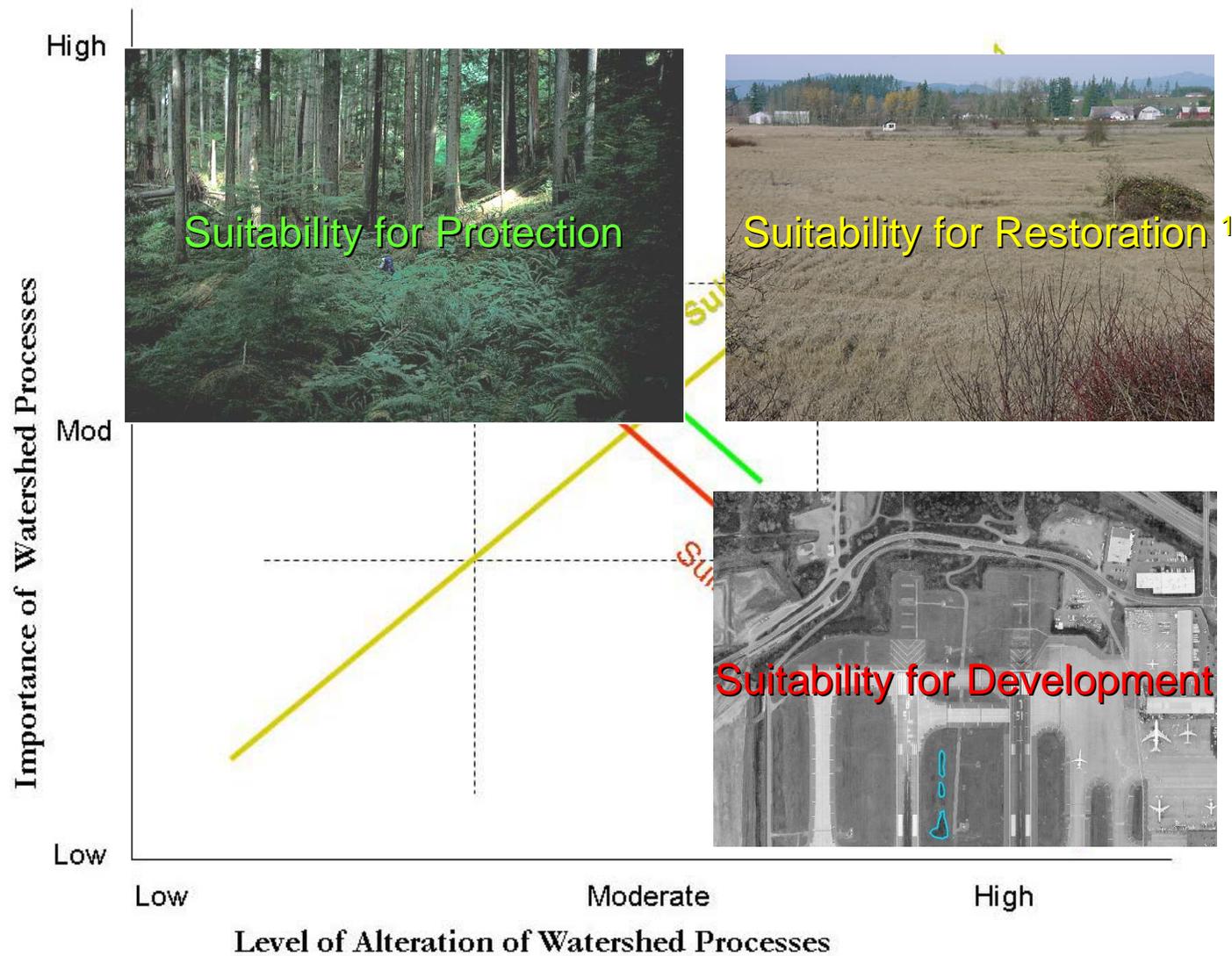
**Clearly defined,
enforceable**

**Provide long lasting
benefit**

**Developed through a
robust assessment
process**

Watershed Characterization & Analysis

Setting Priorities for Protection & Restoration of Sub-basins at a Watershed Scale

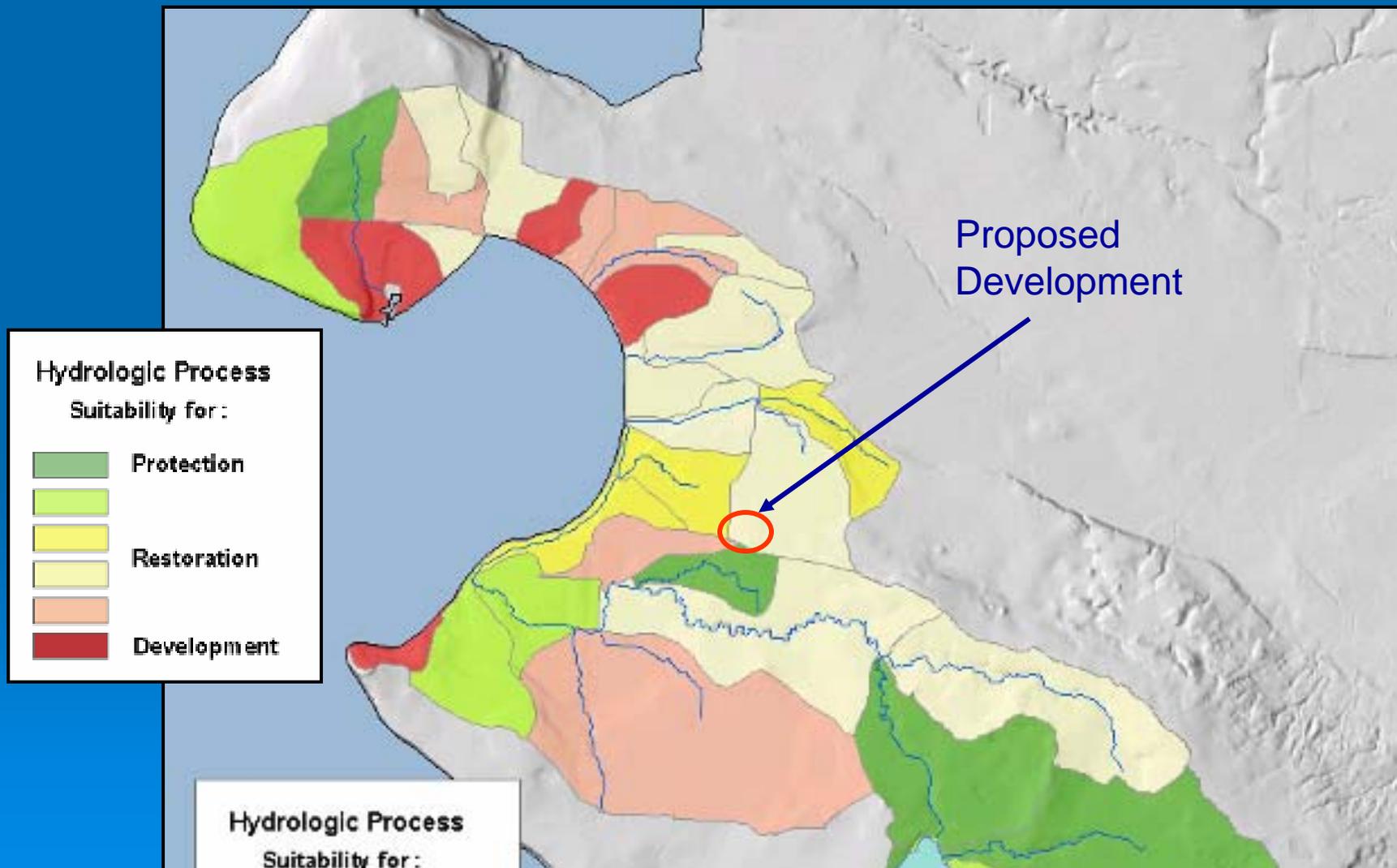


1 = restoration strategies are modified for urban areas

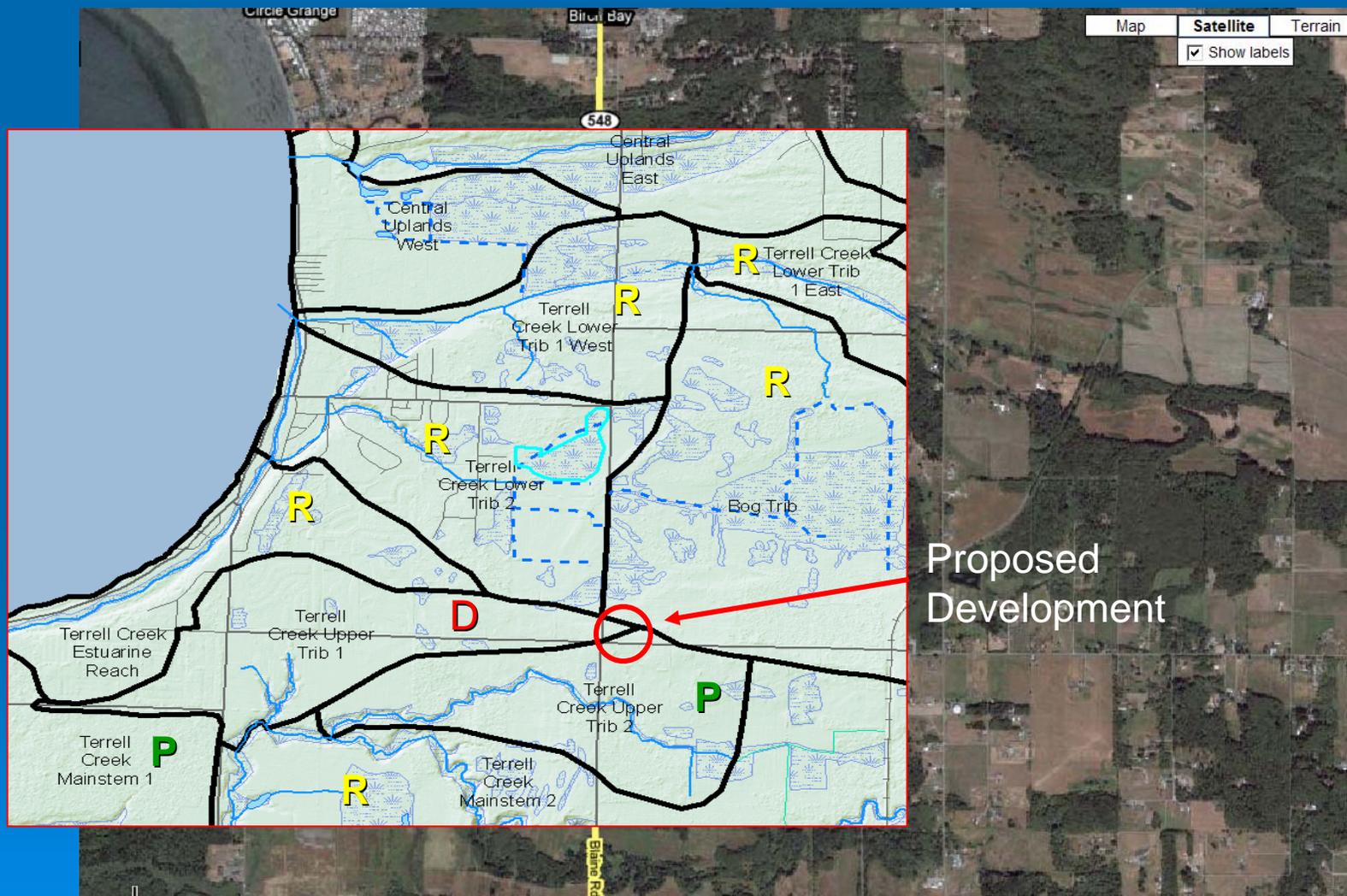
Example of Applying Watershed Based Mitigation Approach in Birch Bay



Location of Proposed Development Relative to Characterization Results

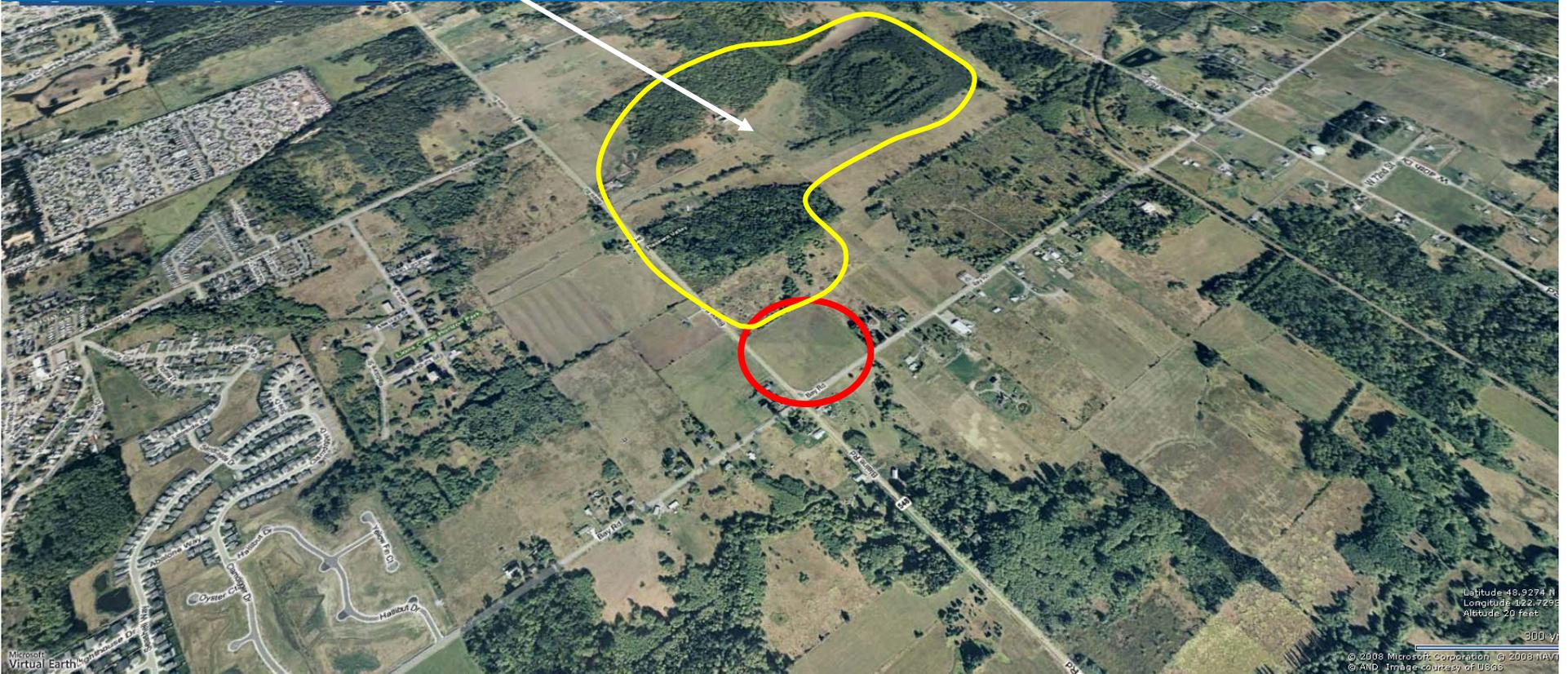


Wetlands Inventory & Characterization Results



Surrounding Uses

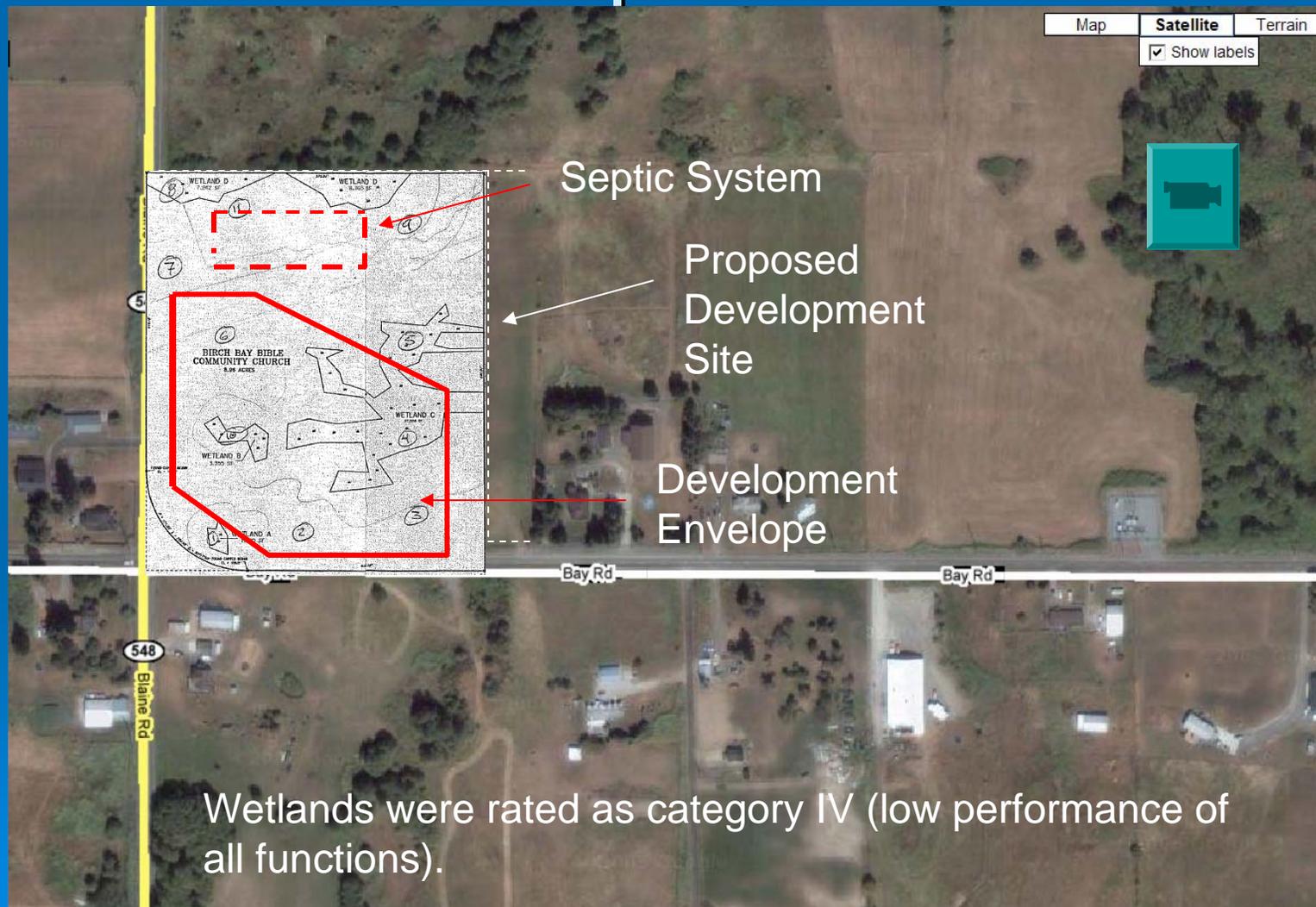
Offset Area



Surrounding Uses

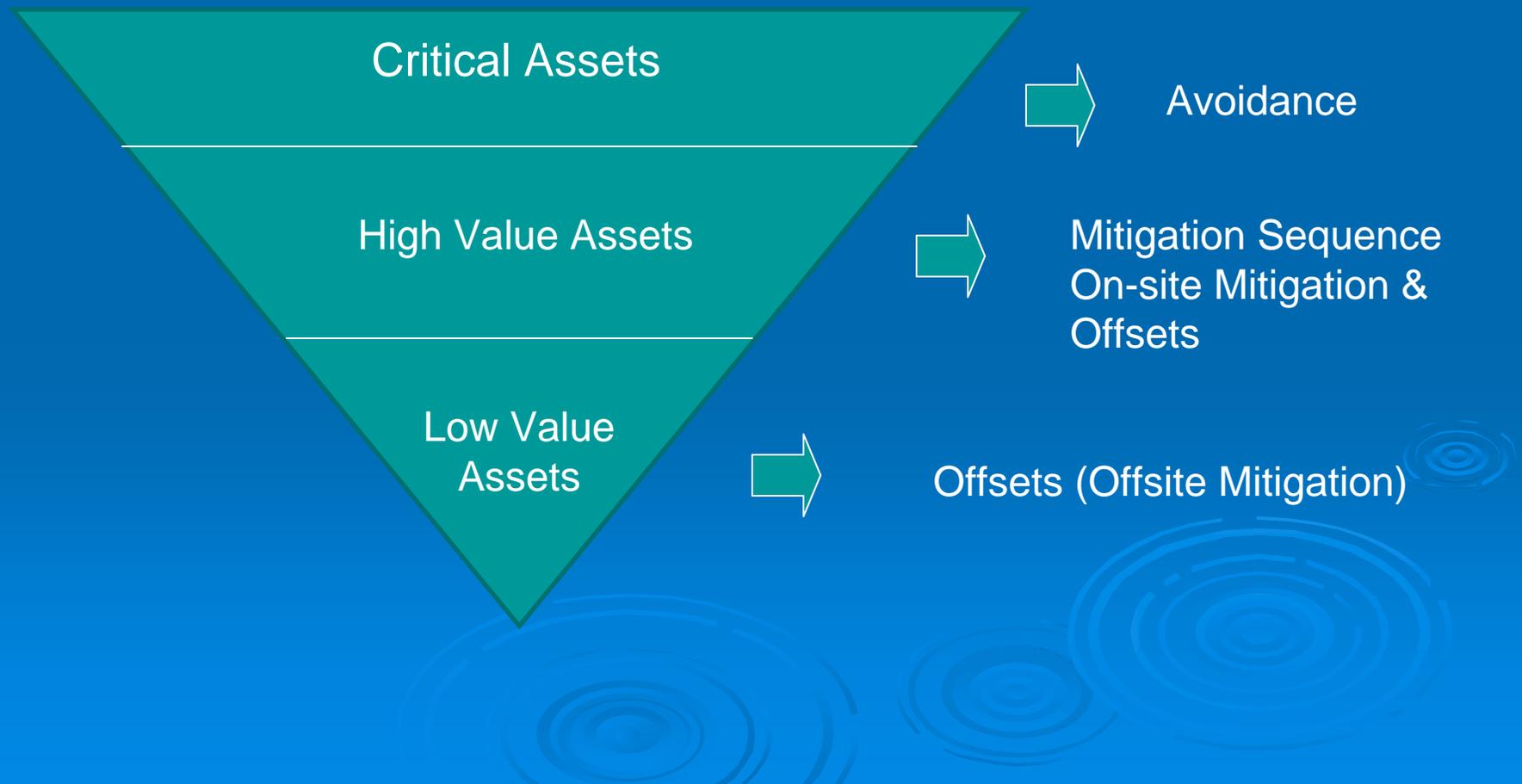


Site Conditions & Development Impacts



Mitigation Framework in Western Australia

Inventory and Assess Environmental Assets



Recommended Mitigation Based on Watershed Conditions and Analysis



- Offset Area - Restore (rehabilitation and re-establishment) and enhance

Information on Offsets

- http://www.epa.wa.gov.au/docs/1863_PS9.pdf
- <http://www.environment.gov.au/epbc/publications/draft-environmental-offsets.html>
- <http://www.environment.gov.au/biodiversity/publications/series/paper10/pubs/elix.pdf>

Summary: How a Watershed Approach Helps Mitigation Decisions

