It is impossible to construct a city without using natural aggregate – sand, gravel, and crushed stone.

Notice the riparian habitat

AGGREGATE USED IN ONE HOUSE

229 tons

Basement Foundation 39 tons

Drain around Foundation 22 tons

Basement Floor 25 tons

Sidewalk 14 tons

Driveway 19 tons

Garage Floor 10 tons

Half the street in front of the house 100 tons

HOW MUCH AGGREGATE IS USED ON YOUR BEHALF?

To visualize the 10 tons of aggregate used for each person in the United States each year, imagine stopping by your local home supply center to pick up a 50-pound bag of landscaping rock, every day of the week for 365 days. At the end of one year you'd still be 35 bags short.

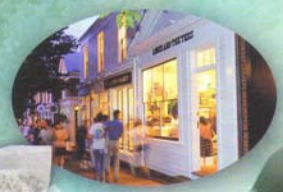


Fig. 7

AGGREGATE USE PROJECTION

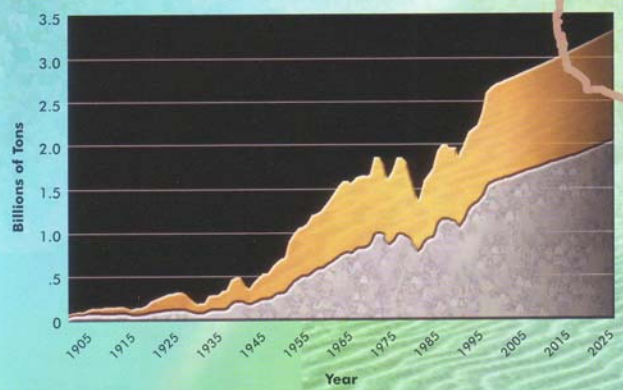


Fig. 7. It is projected that we will use as much aggregate in the next 25 years as we have used in the previous 100 years.

Society has created a continuing demand for high quality aggregate, which must be obtained without causing unacceptable environmental impacts. The aggregate industry can make use of reclamation, recycling, and environmental risk management to help protect the environment while meeting this demand. However, to ensure a ready supply of aggregate, government, industry, and the public must accept the responsibility to identify and resolve legitimate concerns, by constructively contributing to a decision-making process that addresses a wide range of objectives and interests.

Reclamation

Mined-out aggregate pits and quarries are converted into second uses that include home sites, wildlife refuges, golf courses, watercourses, botanical gardens (Fig. 33), and wetlands. Restoration to the original condition is seldom possible. We do not yet have the level of information and skill required to return ecosystems exactly to their original structure nor is the same amount of excavated material available to fill a pit and return it to the original ground contours. In addition, the new land is environmentally unstable, and exotic species invade disturbed sites. Many native organisms do not return or fill the same ecological niche.

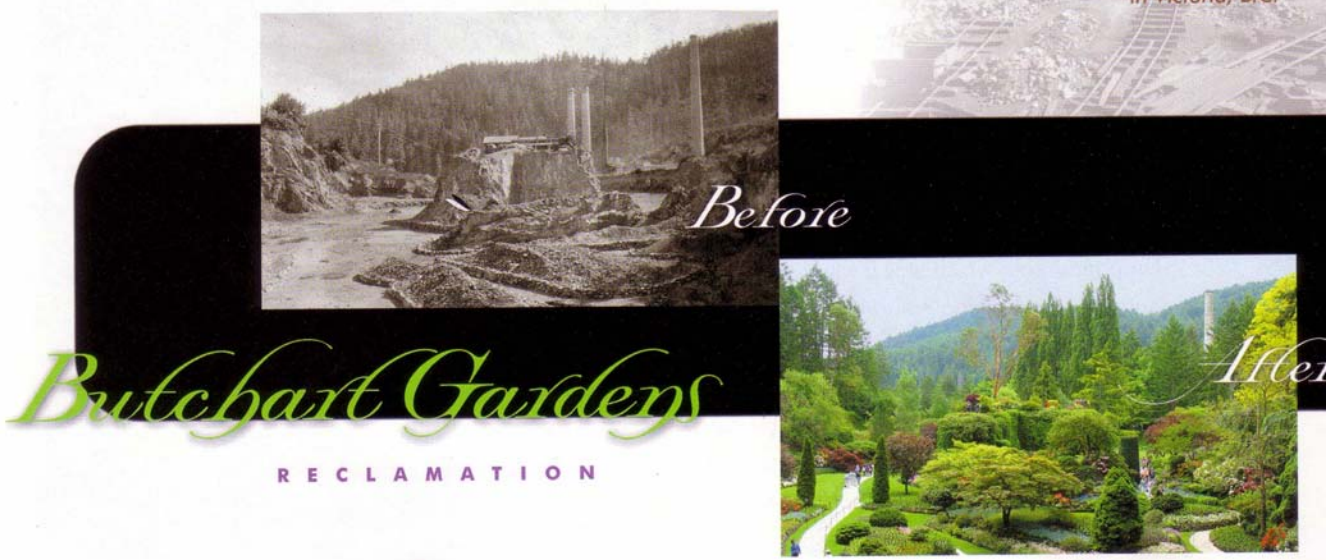
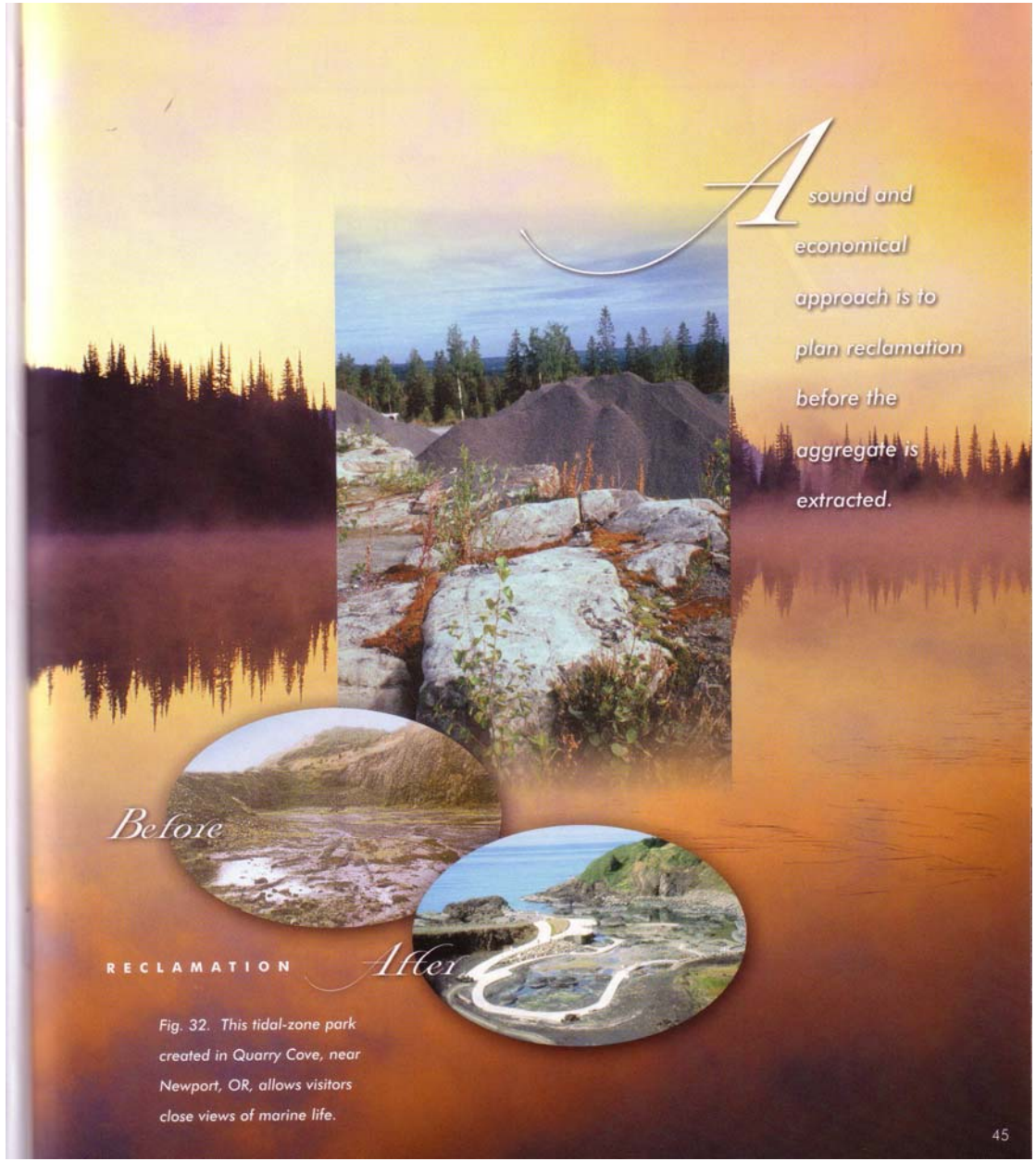


Fig. 33. Vancouver Portland Cement Company's chimneys in 1910 are now within the Sunken Garden at Butchart Gardens in Victoria, B.C.

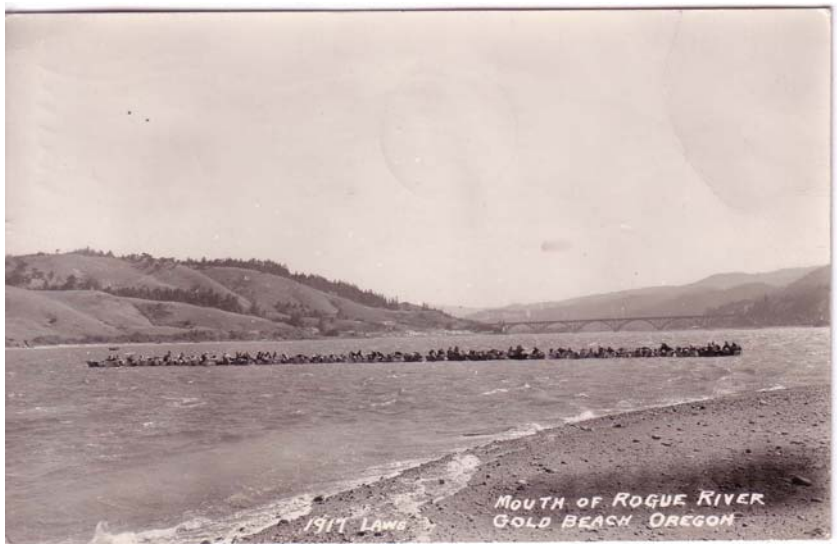
Instead of returning an area to its original condition, a more-realistic approach is to approximate the new habitat as closely as possible to its original function and to recapture the landscape character.



Aquatic Habitat

Are we increasing or decreasing Habitat Acres?

1941



2005

Estuaries Restoration Act of 2000

Purposes are -

to promote the restoration of estuary habitat;

to develop a national estuary habitat restoration strategy and to establish new partnerships between the public and private sectors;

to provide Federal assistance; and

to develop and enhance monitoring and research .

The goal of the Estuary Habitat Restoration Strategy shall be the restoration of 1,000,000 acres of estuary habitat by the year 2010.

As of July 2005 no projects have been completed under this Act. https:/neri.noaa.gov tracks projects completed under this Act.

Regulatory and Reviewing Agencies

- **US Army Corps of Engineers** Section 10 of the Rivers and Harbors Act (1899). Section 4 of the Clean Water Act (amended 1977); five-Year Permit w/ public involvement.
- **Oregon Department of State Lands** (ORS 196); one-year permit. **Oregon Department of Environmental Quality** Section 4 of the Clean Water Act (amended 1977).
- **Oregon Department of Geology and Mineral Industries** (OSR 517).
- **Counties** (Oregon of Land Conservation and Development Department; Chapter 5 & Division 23; Zoning and Conditional Use Permits); three-year permit w/ public involvement.
- **MSHA/OSHA**
- NOAA Fisheries
- US Fish and Wildlife Service
- Federal Emergency Management Agency
- Oregon Department of Fish and Wildlife

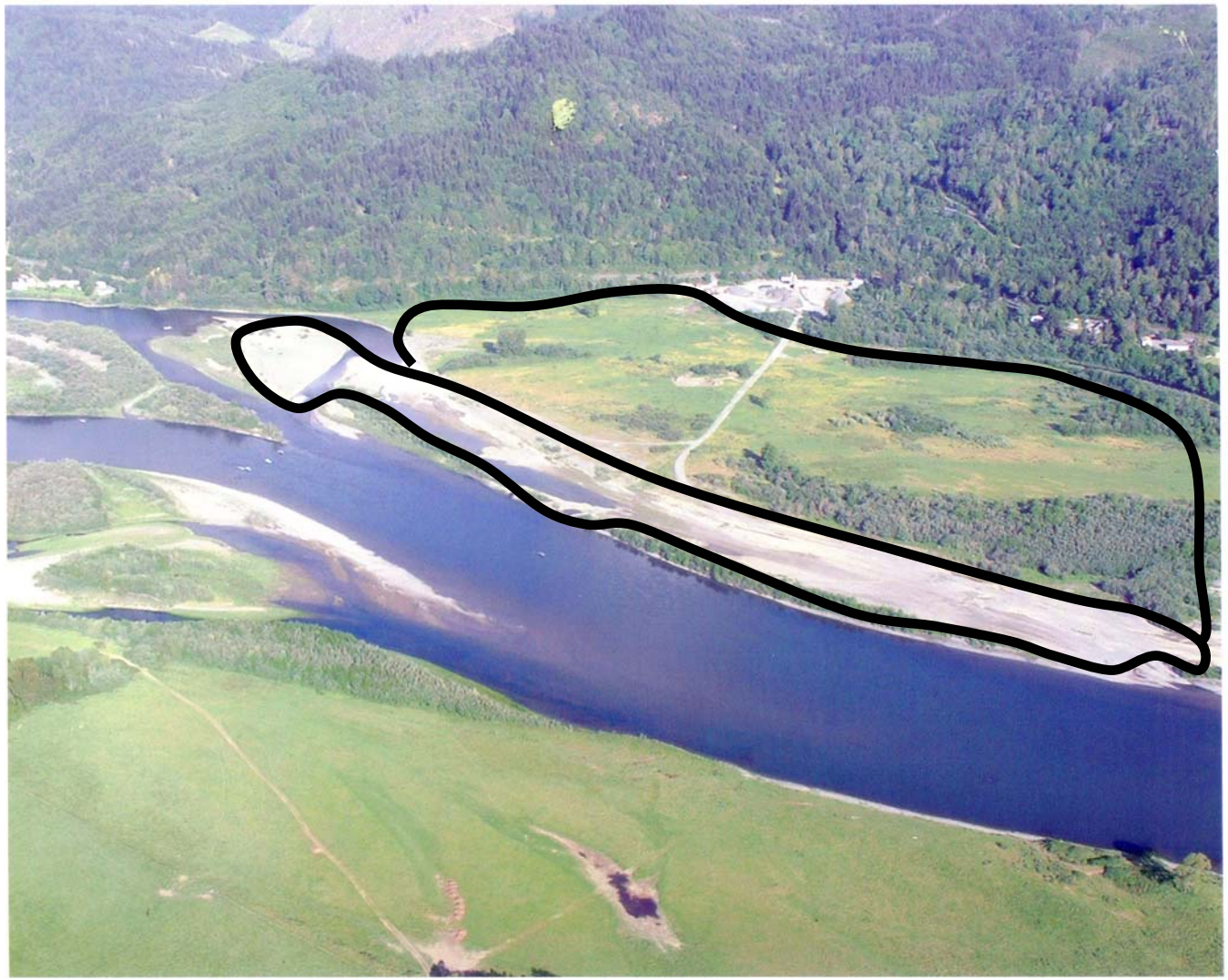
Social Issues

Many urban and rural areas grow without any consideration to the presence of a resource or an analysis of the impact of its loss. It is common for residence to object to the dust, noise, and truck traffic associated with an aggregate operation. A CUP of COE permit renewal/modification triggers a public involvement process. This process organizes the local neighbors and develops a “not in my back yard” syndrome.

Effects such as dust, noise, and truck traffic are typical of construction projects. These impacts commonly can be controlled, mitigated or kept at tolerable levels. Where the challenge comes in is at the public meetings when these issues become very emotional. It is always best to view these issue in the field and away from public meeting forums.

Any gain by a local community from stopping resource management is at the expense of the greater public, the greater environment, and the region. A question to be considered when a political entity is evaluating whether or not to manage the resource is: What are the short and long term benefits to the community.

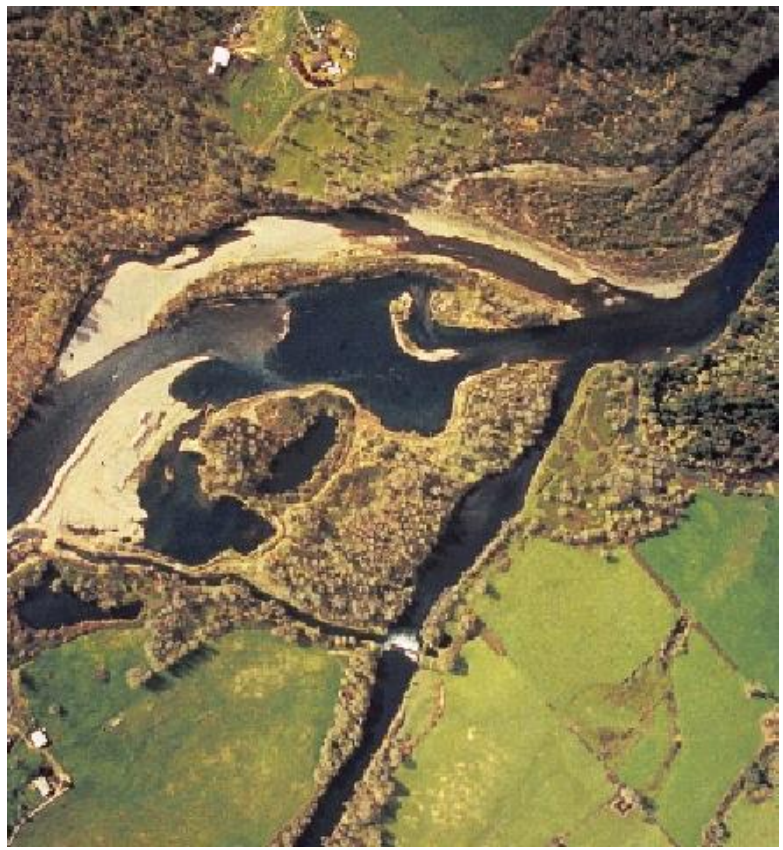
Jurisdiction Example



This 1998 aerial photo shows the Green Pit on the McKenzie River in western Oregon. This shallow gravel pit was captured during the 1996 flood. It now provides good fisheries habitat.

During 1996 and 1997, Oregon experienced flooding on a scale not seen in many years. Some gravel pits located near rivers experienced erosion. In several cases, breaches occurred between the gravel pit and the river. Initial evaluation of several sites that experienced these breaches showed that impacts to the river system were complex and varied significantly from site to site. The impacts to the adjacent river system may be viewed as positive and negative. Several flood-plain-mining sites in Oregon located in areas of historic river flow reverted to active riverbeds.

We need to integrate sites into the fluvial system during and after sand and gravel removal operations to achieve floodplain widening, restoration, and/or enhancing floodplain complexity. Sand and gravel removal integrated with the fluvial system is another way of replacing lost floodplain habitat and complexity. our desired minimize

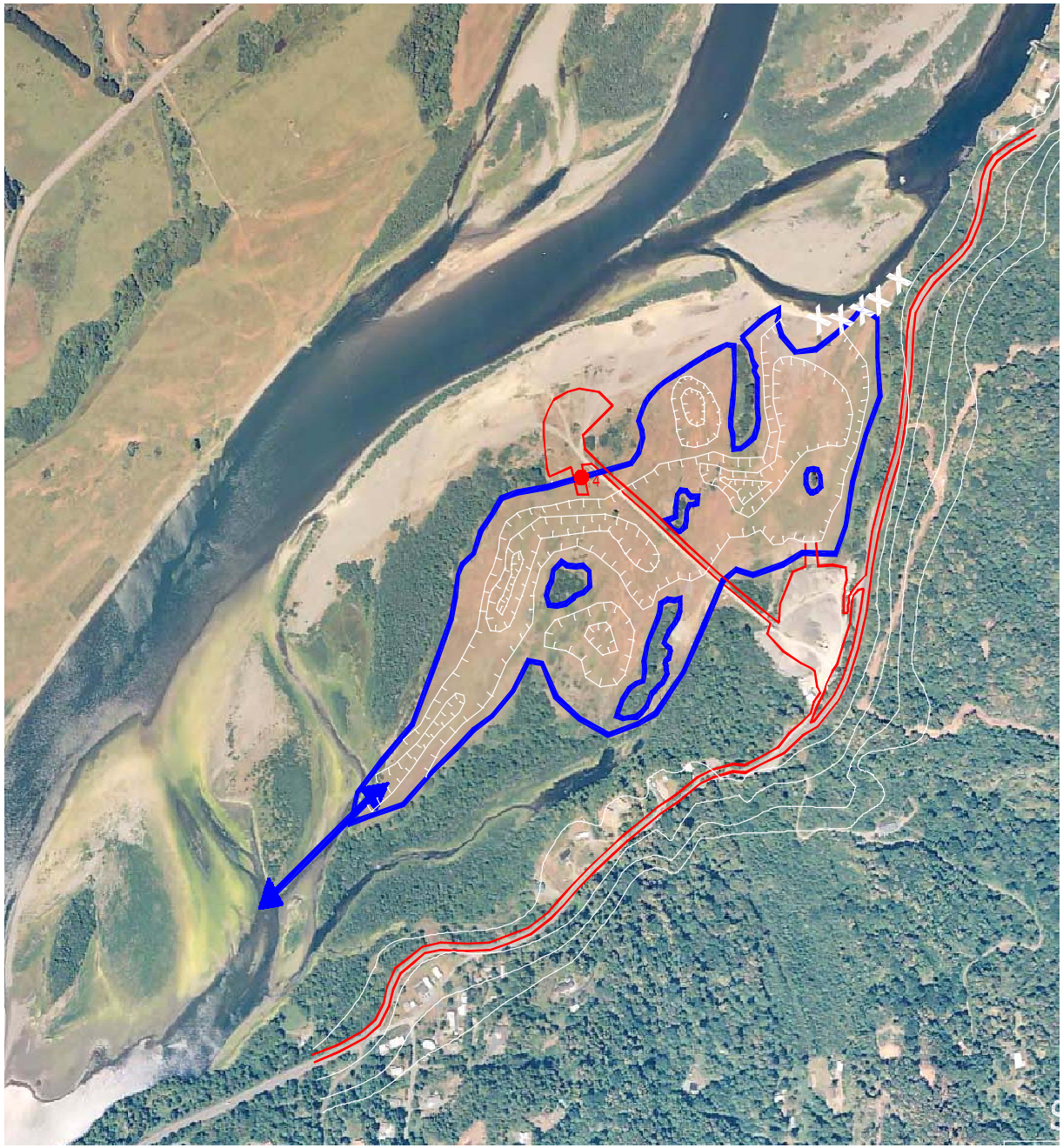


Willamette River Alcove: Fall 2003

Vegetation at the site had previously consisted of thick Scotch broom, blackberry, exotic grasses, and about 15 cottonwood trees that were 25 years old. Info from 2005 Monitoring Report from Chip Andrus.

Restoration Planning; and Design

An Example



Proactive verses Reactive

The Oregon Plan seeks to accomplish what an ESA listing alone cannot accomplish. An ESA listing enables the federal government to regulate landowner activities to prevent them from completing activities that may "take" a listed species. No authority exists to require watershed restoration or fish habitat that may be critical to the survival of the species. Restoration; as well as protection, is needed to improve existing conditions and counter the trend of historical constraint and control. If properly planned and completed, floodplain sand-and-gravel removal activities may contribute to meaningful habitat restoration.

Given the loss of floodplain habitat during the last century, carefully planned and design habit conditions through sand and gravel removal operations is a good way of improving existing floodplain conditions. Limited data is being collected regarding the value of building or restoring off-channel habitat using sand and gravel removal sites. Preliminary analysis indicates salmonids have benefited when shallow off-channel habitat is accessible.

We need that Balance between Ecology and Economy