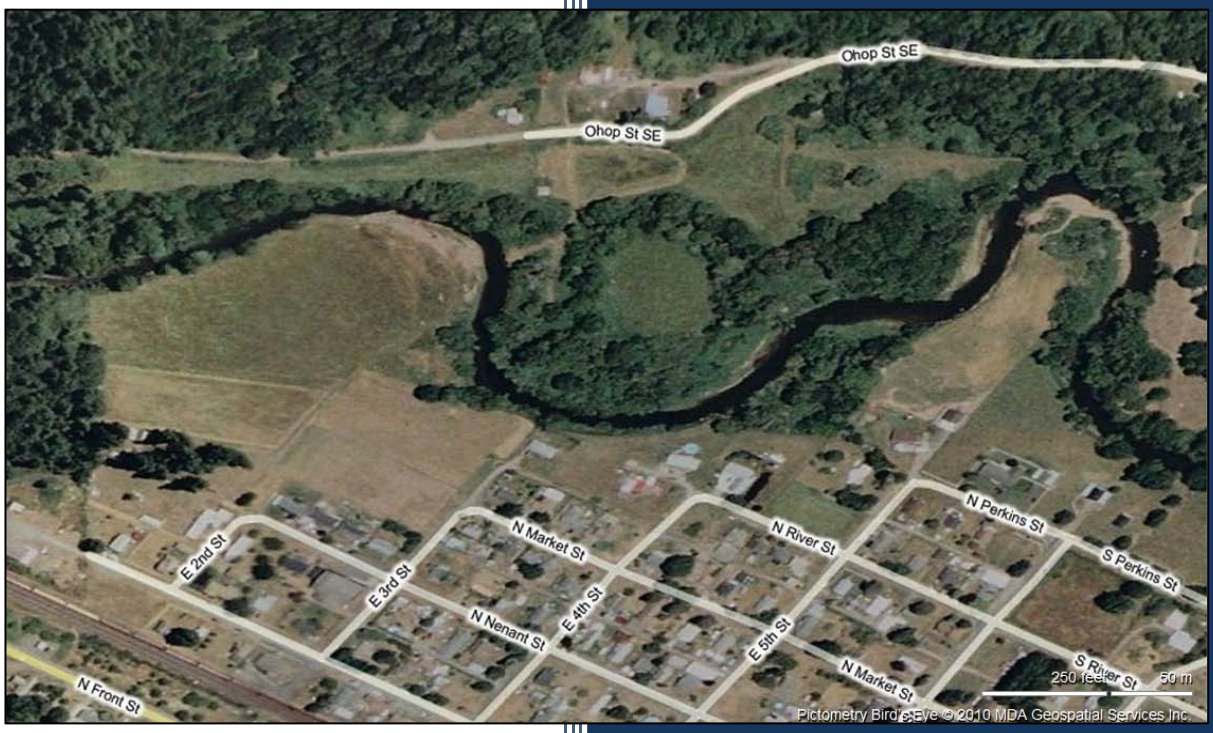
FINAL
August 2011

Shoreline Restoration Plan
Town of Bucoda



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About This Report

Consistent with Governor Gregoire's Plain Talk Executive Order 05-03 (2005), this report is written in a manner that is brief and to-the-point, uses non-bureaucratic language and features a clean design that promotes fast scanning and reading.

Scientific and legal references are kept to a minimum, replaced by a full list of sources in the report appendix.

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I. Introduction

A. Background

This report is the proposed restoration plan for the Town of Bucoda and its urban growth area. The document has been prepared to comply with the state's Shoreline Master Program guidelines for restoration planning (WAC 173-26-201(2)) and is meant to provide a planning-level framework to understand how and where shoreline ecological functions can be restored in the Town and its urban growth area.[1] The plan is not a regulatory document or a set of regulatory requirements, and is meant only to be used as a resource for shoreline restoration planning within the Town.

Guidelines for the creation of Shoreline Master Programs state that, in the creation of master programs, it is not enough to simply prevent further loss of ecological functions; master programs provisions must *"…achieve overall improvements in shoreline ecological functions over time when compared to the status upon adoption of the master program.*[2]*"* A visual depiction of this overall improvement or restoration of shoreline ecological functions is displayed within Figure 1.

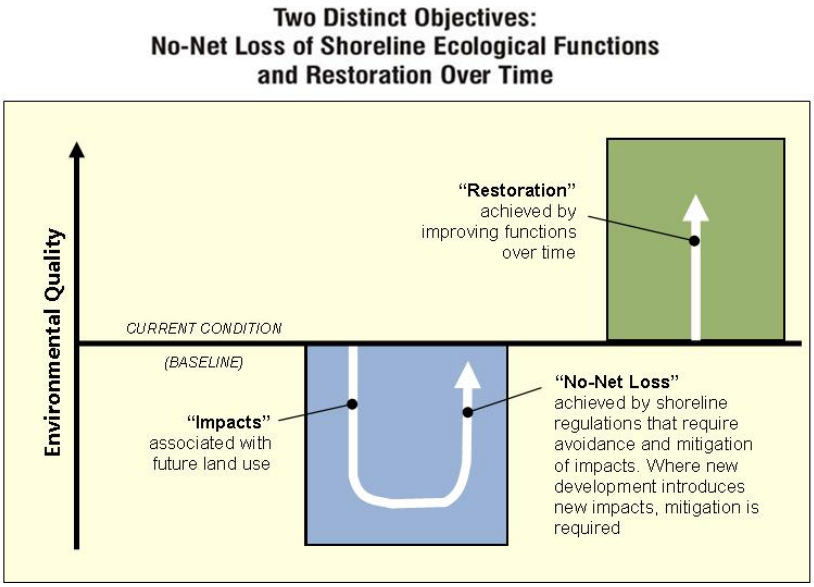

Figure 1: Conceptual view of the Objectives of the Shoreline Management Act (Source, WA Department of Ecology)

To achieve this overall improvement, the guidelines recommend that restoration plans:

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[1] Restoration is defined under the shoreline guidelines as "reestablishment or upgrading of impaired ecological shoreline processes or functions." It is important to note that, for the purposes of shoreline management, the term does not imply returning shoreline areas to aboriginal or pre-European settlement conditions.

[2] The mandate to improve ecological functions over time provides the basis for restoration planning and creates a distinction between project-related mitigation and environmental restoration in the context of the SMP. Under the Shoreline Management Act, applicants for shoreline permits must fully mitigate new impacts caused by their proposed development, but are not required to restore past ecosystem damages as a condition of permit approval. Project applicants are also not required to implement the restoration measures identified in this plan as mitigation for project-related impacts, except in those instances where restoration is deemed appropriate. The two white arrows within Figure 1 display this distinction; the upward portion of the left white arrow represents project-related mitigation, while the right white arrow displays restoration.

- Identify degraded areas, impaired ecological functions, and sites with potential for restoration;
- Establish overall goals and priorities for restoration of degraded areas and impaired ecological functions;
- Identify existing and ongoing projects and programs that are currently being implemented, or are reasonably assured of being implemented (based on an evaluation of funding likely in the foreseeable future), which are designed to contribute to local restoration goals;
- Identify additional projects and programs needed to achieve local restoration goals, and implementation strategies, including identifying prospective funding sources for those projects and programs;
- Identify timelines and benchmarks for implementing restoration projects and achieving local restoration goals; and
- Appropriately review the effectiveness of the projects and programs in meeting the overall restoration goals.

Each of these items has been considered as part of the creation of this plan.

B. Context

The restoration plan has been created as part of the Town of Bucoda Shoreline Master Program update and is included in Phase 4 of the process. A timeline for the complete Shoreline Master Program (SMP) update is shown below:

TABLE 1: TIMELINE FOR THE SHORELINE MASTER PROGRAM UPDATE FOR THE TOWN OF BUCODA

PHASE	UPDATE SCHEDULE	TIMELINE
1	· Meet with Planning Commissions · Determine what shorelines are regulated under the act · Conduct an inventory of all existing and available data for shorelines	Fall 2009
2	· Analyze and characterize shoreline conditions	Winter 2010
3	· Characterize each shoreline segment into shoreline environment designations, each with a different set of rules · Develop draft rules and policies	Spring - Fall 2010
4	· Analyze the cumulative impacts of expected shoreline development and redevelopment · Develop a restoration (and preservation) plan, including public access	Winter- Spring 2011
5	· Conduct public hearings · Planning Commission Recommendation · Town Council Action	Summer - Fall 2011
6	· Ecology Review · Ecology Action · Final Adoption by Ecology and the Town Council	Winter- Spring 2012

II. Restoration Objectives

A. Goals and Policies

This restoration plan builds upon the identification of degraded areas, impaired ecological functions, and sites with the potential for ecological restoration as identified in the *Shoreline Inventory and Characterization for Bucoda* conducted in Phase 1 of the SMP update and the following restoration goals found within Section 5.6 of the Shoreline Master Program:

1. Improve impaired shoreline ecological functions and/or processes through voluntary and incentive-based public and private programs and actions that are consistent with the Shoreline Master Program and other approved restoration plans.

2. Provide fundamental support to restoration work by various organizations by identifying shoreline restoration priorities, and by organizing information on available funding sources for restoration opportunities.

3. Target restoration and enhancement towards improving habitat requirements of priority and/or locally important wildlife species.

B. Priorities

The plan also builds on the priorities for restoration projects identified in Policy 8.5(A)(5) of the Town of Bucoda *Proposed Shoreline Master Program – July 2011*. This policy states that restoration actions and stand alone projects are prioritized in the following order:

1. Create dynamic and sustainable ecosystems.

2. Restore connectivity between stream/river channels, floodplains and hyporheic zones.

3. Restore natural channel-forming geomorphologic processes.

4. Mitigate peak flows and associated impacts caused by high stormwater runoff volume.

5. Reduce sediment input to streams and rivers and associated impacts.

6. Improve water quality.

7. Restore native vegetation and natural hydrologic functions of degraded and former wetlands.

8. Replant native vegetation in riparian areas to restore functions.

9. Remove obsolete and no longer needed shoreline modifications.

A number of the projects identified in the *Shoreline Inventory and Characterization* can address these goals and restoration priorities. In addition to above, jurisdictions often seek to address projects located on publicly owned park property. While restoration projects should be evaluated on a case by case basis, those projects located on public parks should be prioritized over those on private sites.

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III. Issues and Restoration Opportunities at the Reach Scale

Restoration opportunities, along with a short description of a potential project on the opportunity site, and the restoration priority that the project would address are presented within Table 2. The location of these projects is shown in Maps 1 and 2 in the Map Folio (found at the back of this document).

Of these potential projects, the highest potential priorities on pubic parks are: Opportunity Sites H (Volunteer Park) and Site G (Penitentuary Park). On private property, Opprotunity Site A is the most significant potential project in the Town, with Opprotunity Site B in unicodportate Thurston County. These priority projects are summariezed after the table below.

TABLE 2: POTENTIAL RESTORATION PROJECTS IN BUCODA AND UGA.

Shoreline	Opprotunity Sites	Potential Project Description	Restoration Priority
Skookumchuck - Reach 1	Site A (Private in Town)	Plant riparian vegetation/ create a natural fence to capture flood debris and dissipate flood energy	-Mitigate peak flows (Priority 4) -Replant native vegetation in riparian areas to restore functions (Priority 8)
Skookumchuck – *East Shore & in the County*	Site B (Private in County)	Reconnect the river through a historic ox-bow to create new side channel habitat, and provide some upland habitat enhancement	-Restore connectivity between stream/river channels, floodplains and hyporheic zones (Priority 2) -Replant native vegetation in riparian areas to restore functions (Priority 8)
Skookumchuck - Reach 1	Site C	Habitat enhancement, potentially in combination with a trail to the water's edge	-Replant native vegetation in riparian areas to restore functions (Priority 8)
	Site D	Habitat enhancement	-Replant native vegetation in riparian areas to restore functions (Priority 8)
Skookumchuck – Reach 2	Site E	Habitat enhancement	-Replant native vegetation in riparian areas to restore functions (Priority 8)
	Site F	Habitat enhancement	-Replant native vegetation in riparian areas to restore functions (Priority 8)
	Site G (Penitenturary Park)	Habitat enhancement, potentally in combination with some education or historic signage	- Publicly owned -Replant native vegetation in riparian areas to restore functions (Priority 8)
Skookumchuck - Reach 3	Site H (Volunteer Park)	Remove invasive species and replant with native vegetation potentally in combination with some education or historic signage	- Publicly owned -Replant native vegetation in riparian areas to restore functions (Priority 8)

Priority 1: **Opportunity Site H** (see Map 3)

Opportunity Site H is the Town of Bucoda's Volunteer Park. This site provides an opportunity to restore habitat quality at the edge of the river through the planting of additional riparian vegetation. Bucoda owns approximately 800 feet of shoreline associated with the park and, while the quality of the riparian vegetation varies widely along the strip, the park contains several areas that could be targeted to provide improved habitat functions.

For example, within the most used portion of the park, the area features a large area that is landscaped with grass (including some invasive reed canary grass), blackberries and a relatively small band of old trees, many of which do not provide shade to the river. This habitat could be enhanced through additional plantings, including trees that would replace the older specimens over time and trees that could potentially shade the river and shade out the reed canary grass. This planting could be achieved in a manner that still allowed individuals access to the river (the site is currently used for swimming and other access to the river), while enhancing the area's overall habitat function. Additionally, the portion of the park east of Tono Road, which currently contains no designated public use beyond the collection of cut organic plant material, could also be restored to remove any invasive species and provide a wide strip of riparian habitat within the area.

Figure 2: Volunteer/RV Park
(Photo by WDOE, 2010)

Priority 2: Opportunity Site G (see Map 4)

Opportunity Site G is the Town of Bucoda's Penitentary Park. It is smaller than Volunteer Park, being only about 1.5 acres in size with a shoreline length of 100 feet. This site provides an opportunity to restore habitat quality at the edge of the river through the planting of additional riparian vegetation.

The site condtions resemble those found in Volunteer Park. Refer to that discussion for the potential restoration details.

Figure 3: Penitentiary Park
(Photo provided courtesy of WDOE 2010)

Priority 3: Opportunity Site A (see Map 5)

Opportunity Site A provides an opportunity to create a "natural fence" that would catch debris associated with flood waters and potentially add some riparian vegetation along the river. The project would involve planting a number of dormant black cottonwood trees that had been cut into large segments, which would be expected to reroot and grow as shown in Figure 3. Once planted these trees would capture the sediment and debris associated with a flood, thereby limiting the impacts of floods and flood water scouring of the adjacent farm field. The use of natural fences has a significant advantage over structural means of shoreline amrmoring, such as bulkheads or dikes, since natural fences are less expensive than these structural options and do not involve the movement a large amount of soil or rocks. See Figure 5 for a conceptual view of how a natural fence or flood fence works.

These black cottonwoods would also begin to reestablish riparian vegetation along the river. Riparian vegetation would increase as the black cottonwoods sprouted and grew and additional vegetation would grow naturally near the trees. Planting of an additional strip of riparian vegetation beyond the natural fence including some large Douglas firs that were planted with a tree spade (to provide a sufficient size to withstand the impacts of the flooding in the short term) could also occur.

Figure 4: A Planted Natural Fence (From Aldrich, 2011)

Like Opportunity Site B, the ownership at this site is a combination of former river channel owned by the State of Washington and private property. Some vacated streets and street ends owned or by the Town also exist in the area. Strategies to pursue the project would include the acquisition of a conservation easements on the private property, or fee simple acquisition of the privately-owned lands.

A Comparision of a Cleared Riparian Zone and a Flood Fence

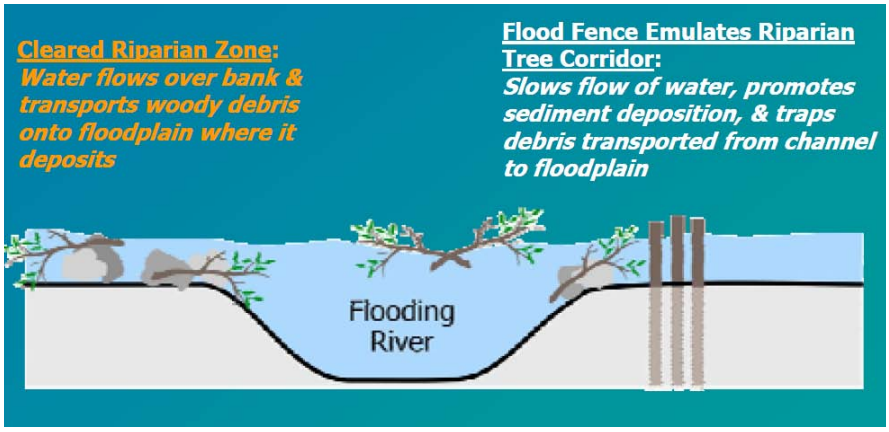

Figure 5: Conceptual View of a Flood Fence
(From Aldrich, 2011)

If a natural fence and riparian vegetation were added to the site, the project would meet several of the restoration priorities specified by the Town. These priorities would include improvement of the overall health of the ecosystem and the mitigation of the impacts associated with peak flood volumes, especially the impacts associated with large debris floating downstream during a flood. The project would also restore some of the ecological functions along the shoreline through the reestablishment of native riparian vegetation along the river.

Priority 4: Opportunity Site B (see Map 6)

Opportunity Site B is not located within the Town, but provides the most significant possibility to restore habitat functions near Bucoda. The site consists of a former ox-bow of the river, which could be utilized to create a new side channel, provide off-channel habitat for salmon and other species, and add cross-sectional area within the stream channel to provide some additional flood storage capacity. The project may lower the elevation of the historic stream channel to reestablish stream flow in the area and possibly include some other habitat restoration efforts, such as the installation of large woody debris and planting of riparian vegetation. If completed, the project would meet the Town's restoration priorities of: improved ecosystem health along the river; restoration of connectivity between stream/river channels, floodplains and hyporheic zones; and minor mitigation of peak flows and the associated impacts caused by high stormwater runoff volume.

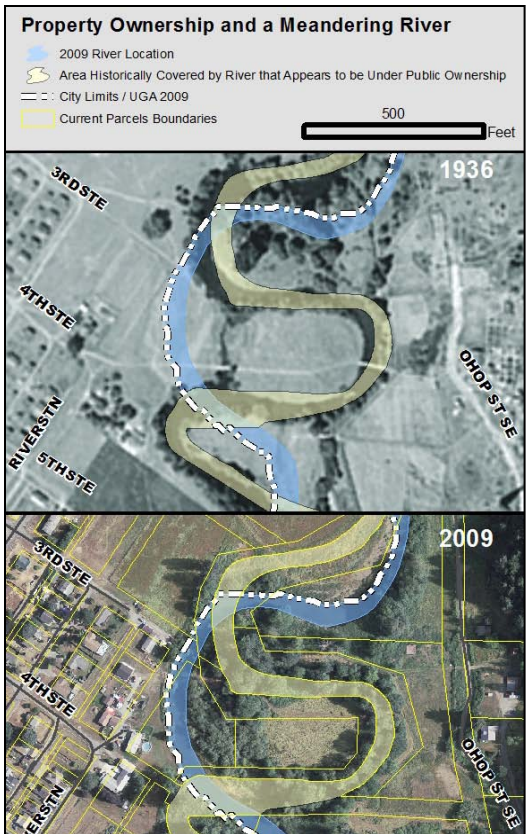

Figure 6: Property Ownership of Opportunity Site B

Changes in parcel boundaries appear to not have kept pace with changes to the river's boundaries. This proposal means reconnection of the oxbow (shown in the middle of the photos in yellow,) a historic channel, with the current river..

The site is a combination of private and possibly public ownership in the form of the former river channel. When Bucoda was originally platted, the Town was platted up to the west bank of the Skookumchuck River but did not include the channel. Since the river has moved west due to channel migration, there is now dry land to the east of the current channel that is believed to be owned by the State of Washington. A project using the historic channel would require authorization from the State of Washington.

To conduct the project, the private property in the ox-bow would need to be acquired (either through fee simple purchase or purchase of a conservation easement) with the appropriate method of acquisition determined by the site's long-term owner and manager. Collaboration between the Town and adjacent property owners would also be necessary. Arrangements must be made for construction or temporary easements, long term access to the site, and a determination of the appropriate management entity.

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IV. Implementation Strategies

These restoration projects may be implemented in a number of ways, but the most likely method of implementation will be a close collaboration between the Town of Bucoda, a non-profit organization, and a willing land owner (if the Town of Bucoda does not currently own the land). Recognizing this likely collaboration, the identification of potential partners and the nature of their work is essential.

A. Primary Restoration Partners

Of all the potential restoration partners that could assist with these projects, the four primary partners that can assist the Town of Bucoda in restoration efforts along the Skookumchuck are: the Thurston Conservation District, the Heernet Foundation, the Capital Land Trust and the Chehalis Basin Land Trust. These groups are described below in Table 3.

TABLE 3: PRIMARY RESTORATION PARTNERS.

Group	Description	Restoration Activities
Thurston Conservation District	The Thurston Conservation District (TCD) promotes voluntary stewardship among private landowners in Thurston County. A Conservation Districts are governmental entities that administer programs to conserve or restore natural resources.	The TCD oversees and participates in various restoration projects throughout Thurston County. It works to restore riparian habitats; and is involved with agricultural assessments, education and outreach.
Heernet Foundation	The Heernett Environmental Foundation is located in South Thurston County. It targets the Chehalis Basin, and frequently works in the Skookumchuck and Scatter Creek watersheds. The foundation's mission is to protect and preserve native wildlife, plants, and streams systems throughout the Chehalis basin.	The foundation owns approximately780 acres in the upper Scatter Creek watershed and performs a number of restoration efforts including education, outreach, land acquisition, and habitat enhancement. The foundation is interested in conserving and managing additional habitat lands within the Skookumchuck watershed.
Capital Land Trust	The Capital Land Trust conserves wildlife habitat and natural areas by accepting donations of conservation easements and gifts of land, and working with partners to purchase land. Since 1989, Capitol Land Trust has helped to permanently conserve 2,957 acres in Mason, Grays Harbor and Thurston Counties.	The Capitol Land Trust has not preserved any land within the Skookumchuck watershed
Chehalis Basin Land Trust	The Chehalis Basin Land Trust conserves wildlife habitat and natural areas by accepting donations of conservation easements and gifts of land, and by working with partners to purchase lands.	The Chehalis Basin Land Trust has conducted no known projects within the Skookumchuck watershed

B. Additional Potential Restoration Partners

Additional restoration partners beyond these two organizations, include a number of government and non-profit groups that work in the Chehalis River Basin and/or provide funding for restoration projects. Several of these organizations are listed in Table 4.

TABLE 4: ADDITIONAL POTENTIAL RESTORATION PARTNERS

Group	Description	Restoration Activities
Chehalis Basin Education Consortium	The Chehalis Basin Education Consortium (CBEC) is an education and outreach partnership comprised of Educational Service District 113, school districts, natural resource agencies, Grays Harbor College, the Chehalis River Council and other nonprofit agencies within the Chehalis watershed.	The Chehalis Basin Education Consortium supports the stewardship of the Chehalis basin through environmental education geared to students located within the watershed. The consortium however has also done some riparian restoration projects. The Rochester School District is a participant in the consortium.
Chehalis Basin Fisheries Task Force	The Chehalis Basin Fisheries Task Force was established to bring diverse interest groups together with the common goal of enhancing fisheries resources. The Task Force works to produce salmon for sport and commercial fisheries; enhance Steelhead and Cutthroat trout resources; and restore, enhance and protect stream habitat critical to these species.	The Chehalis Basin Fisheries Task Force functions as a funding agency, a coordinator of technical resources and a provider of public education. The Task Force also supports some habitat restoration activities.
Chehalis Basin Partnership	The Chehalis Basin Partnership was formed in 1998, as part of the Watershed Management Act, to provide a framework for local citizens, interest groups, and government organizations to work collaboratively to identify and solve water-related issues in the Chehalis Basin. Interested towns and cities are able to participate in the organization, but at this point Bucoda is not involved.	The Chehalis Basin Partnership conducts watershed planning for the Chehalis basin and conducts information and advocacy outreach efforts focused on: • Improvement of water quality • Management of water resources • Reduction of the effects of flooding • Increase in recreational opportunities and • Increase in watershed awareness through education. The group also has work groups that pursue restoration projects within the basin.
Chehalis River Council	Education and Advocacy Non-Profit	The Chehalis Basin Partnership publishes Drops of Water, which reports on water-related issues throughout the Chehalis River Basin. The publication has been in print (available for free within local newspapers), but is shifting to a primarily online presence with some printed material still available.

These partners have their own distinct capacities (whether fundraising, land acquisition or habitat enhancement) and could be asked to provide technical assistance or support to any of the projects identified. Additionally, individuals that live within the Town or the surrounding area that possess these or similar capacities could also be identified and solicited to support restoration efforts.

C. Funding Opportunities

Opportunities for funding these or other restoration projects within the Skookumchuck watershed are limited. The most relevant funding sources have been listed below with county sources listed first and then followed by state grants.

TABLE 5: POTENTIAL FUNDING OPPORTUNITIES

Funding Source	Description	Restoration Activities
Thurston County Conservation Futures	Started in 1990, Conservation Futures fund parks and opens pace lands. This can include the acquisition of habitat lands by fee-simple or a conservation easement. The funds are allocated via a ranking systemfrom Thurston County. Projects which include both restoration and acquisition components may require a combination of funding sources.	Conservation Futures funds can be spent on a wide range of projects in Thurston County. To date, there have been no Conservation Futures funded projects within the Skookumchuck watershed.
Salmon Recovery Funding Board (SRFB)	Created in 1999 by the Washington State Legislature, the Salmon Recovery Funding Board (SRFB) provides grant funds to protect or restore salmon habitat and assist in related activities. These funds are administerd thorugh the Recreation and Conservation Office (RCO) formerly Interagency Committee for Outdoor Recreation (IAC). The RCO works closely with local watershed groups known as lead entities. The SRFB board is composed of five citizens appointed by the Governor and five state agency directors.	The SRFB Board supports salmon recovery by funding habitat protection and restoration projects. It also supports programs and activities that produce sustainable and measurable benefits for fish and their habitat. The SRFB has helped finance over 900 projects, but there are no known projects along the main stem of the Skookumchuck River.
Flood Control Assistance Account Program (FCAAP)	The FCAAP program is designed to address Flood Damage Prevention Projects and is managed by the WA department of Ecology. This may be possible fundjing source for Opprotunity Site A and/or B, if the projects can be designed to to have a major flood prevention component.	Statewide completion for these funds is very high. Funding similar to FCAAP is supporting the US Army Corps flood studies for Centralia and Chehalis which lie downstream of Bucoda in Lewis County.
Aquatic Lands Enhancement Account (ALEA)	The Aquatic Lands Enhancement Account funds are handled through the WA Department of Natural Resopurces (WDNR). These may be a funding source for projects which include a portion of a former river channel.	There have been no known ALEA funded projects within the Skookumchuck watershed.
Washington Wildlife and Recreation Program (WWRP)	The Washington Wildlife and Recreation Program is a state grant program that provides funding to protect habitat, preserve working farms and create new local and state parks. It is administered by the Recreation and Conservation Office (RCO). WWRP is funded by the legislature in the state's capital construction budget.	A WWRP - Trails and a WWRP - Parks project have been funded along the Skookumchuck in Centralia.

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V. Other Restoration Measures

Beyond the restoration opportunities listed above, the restoration of shoreline ecological functions will also occur as a result of the mitigation of projects, and the creation of standards that are based on the environmental characteristics of the shoreline environment. The *Proposed Shoreline Master Program – July 2011* acknowledges that these factors will contribute to the enhancement of shoreline functions within Policy 6 of the Shoreline Enhancement and Restoration section, which states that the Town should "recognize that restoration and enhancement may result from: mitigation of impacts from new development, and adoption of shoreline setbacks which are based upon shoreline ecological functions and processes."

Mitigation and mitigation sequencing requirements can be found throughout the proposed master program, especially where an impact to the shoreline environment is anticipated as a result of development. In most instances this mitigation is meant to alleviate the impacts of development, however in some instances mitigation and the consideration of mitigation sequencing will improve the overall functioning of the environment. For instance, if an individual sought to enlarge a home that was a nonconforming use under the Shoreline Master Program, the addition would have to expand landward and would "require the restoration of degraded shoreline ecological functions as mitigation for adding square footage to a residential structure" (see Policy 7.9). If this occurred, most of the impact from the expansion would be away from the shore (where less impact to shoreline functions was likely) and the restoration would likely occur near the shoreline (where it is anticipated that a higher level of shoreline ecological functions would be possible). If this were done, the mitigation would mitigate the potential impacts of the additional building square footage, while potentially providing some additional restoration value, as depicted within Figure 1.

Required setback standards and vegetation retention standards within the Shoreline Master Program further ensure that shoreline functions will be enhanced over time. As plants grow, age and die, they naturally improve shoreline ecological functions by adding vegetation of several different ages, shading the river, and eventually create large woody debris that provides shoreline habitat. Vegetation retention standards also may, over time, allow plants to naturally restore the understory vegetation, and contribute to a more diverse vertical habitat structure in the shoreline environment.

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VI. Conclusion

When considering current conditions, the standards articulated within the *Proposed Shoreline Master Program – July 2011*, and the potential restoration partners and projects that are available along the Skookumchuck River, it is clear that the enhancement of shoreline functions compared with current ecological conditions is likely. The Town of Bucoda has several areas that have some potential for habitat restoration. This includes two areas that are publicly owned and would be the highest priority. It also includes two sites which have high restoration potential, but are located on private property.

This plan is an attempt to provide a conceptual framework for future restoration and identify projects which have the highest likelihood for success. The completion of these potential restoration projects will not be easy, but with the strength of the potential partners in the Chehalis River basin, partial or existing public ownership, and potential benefits of the projects, the possibility of successful implementation is promising.

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VII. Resources

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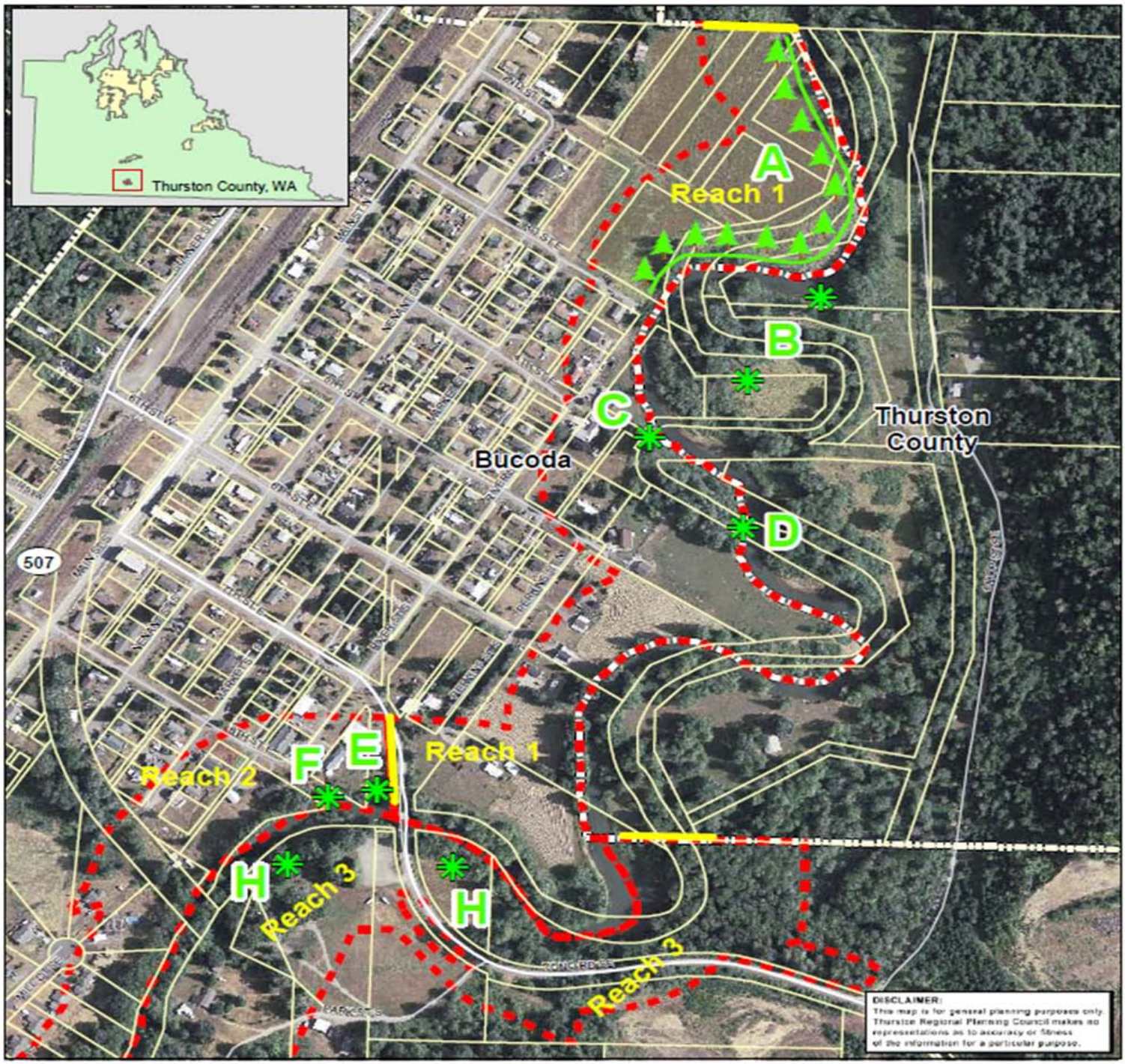
VIII. Map Folio



Opportunity Sites - North

Aerial Photos Flown: 2009

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Town Limits / UGA

Minimum Jurisdiction

Parcel Lines

Reach Breaks

Opportunity Sites

200 100 0 200 Feet

Printing Date: Monday, March 21, 2011
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Figure 1

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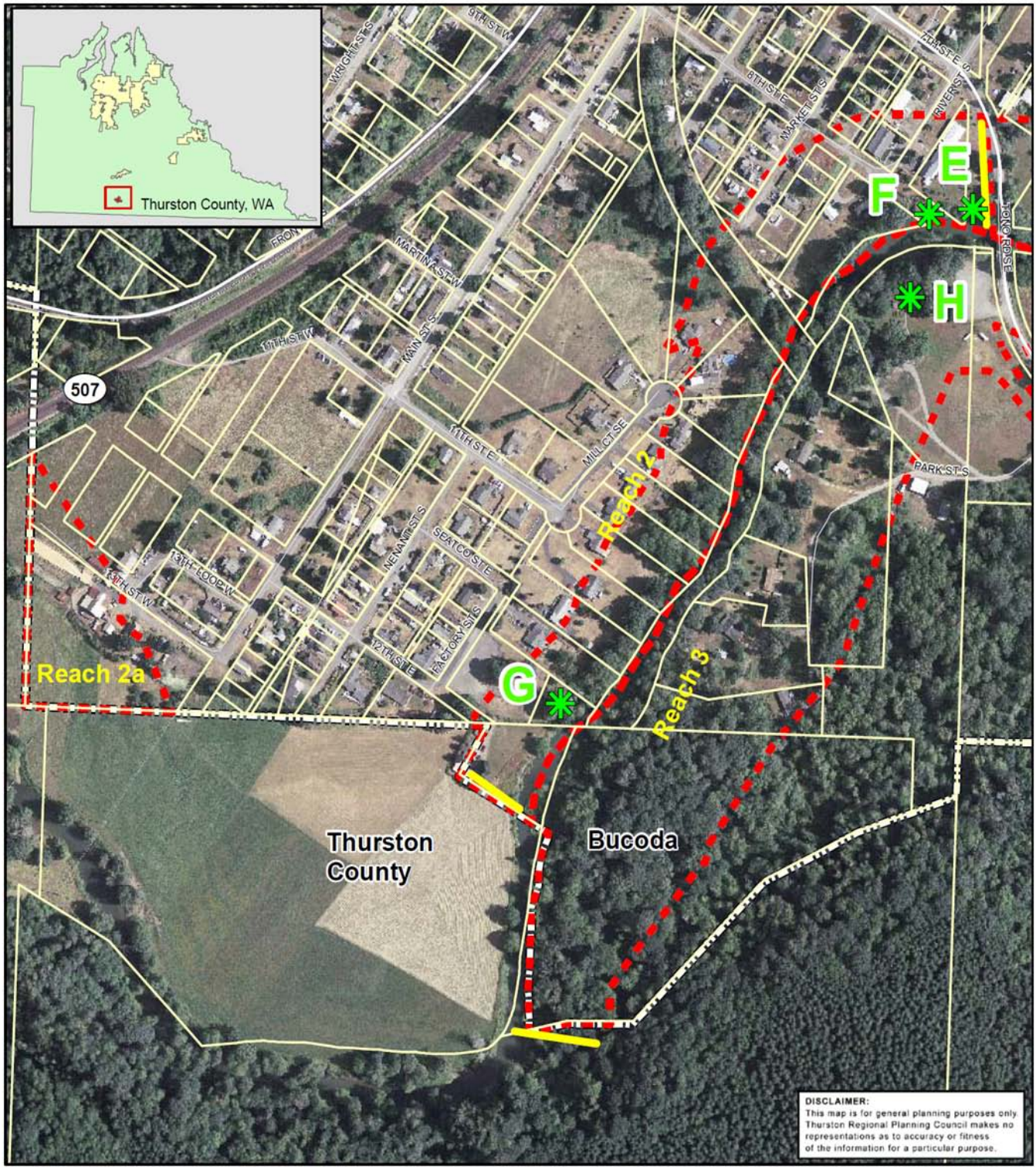

Opportunity Sites - South

Town Limits / UGA

Minimum Jurisdiction

Parcel Lines

Reach Breaks

Opportunity Sites

200 100 0 200 Feet

Printing Date: Monday, March 21, 2011
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Map 2

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Opportunity Site H: Volunteer Park
Potential Areas for Riparian Habitat Restoration

DISCLAIMER:
This map is for general planning purposes only. Thurston Regional Planning Council makes no representations as to accuracy or fitness of the information for a particular purpose.

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Opportunity Site G: Penitentiary Park
Potential Areas for Riparian Habitat Restoration

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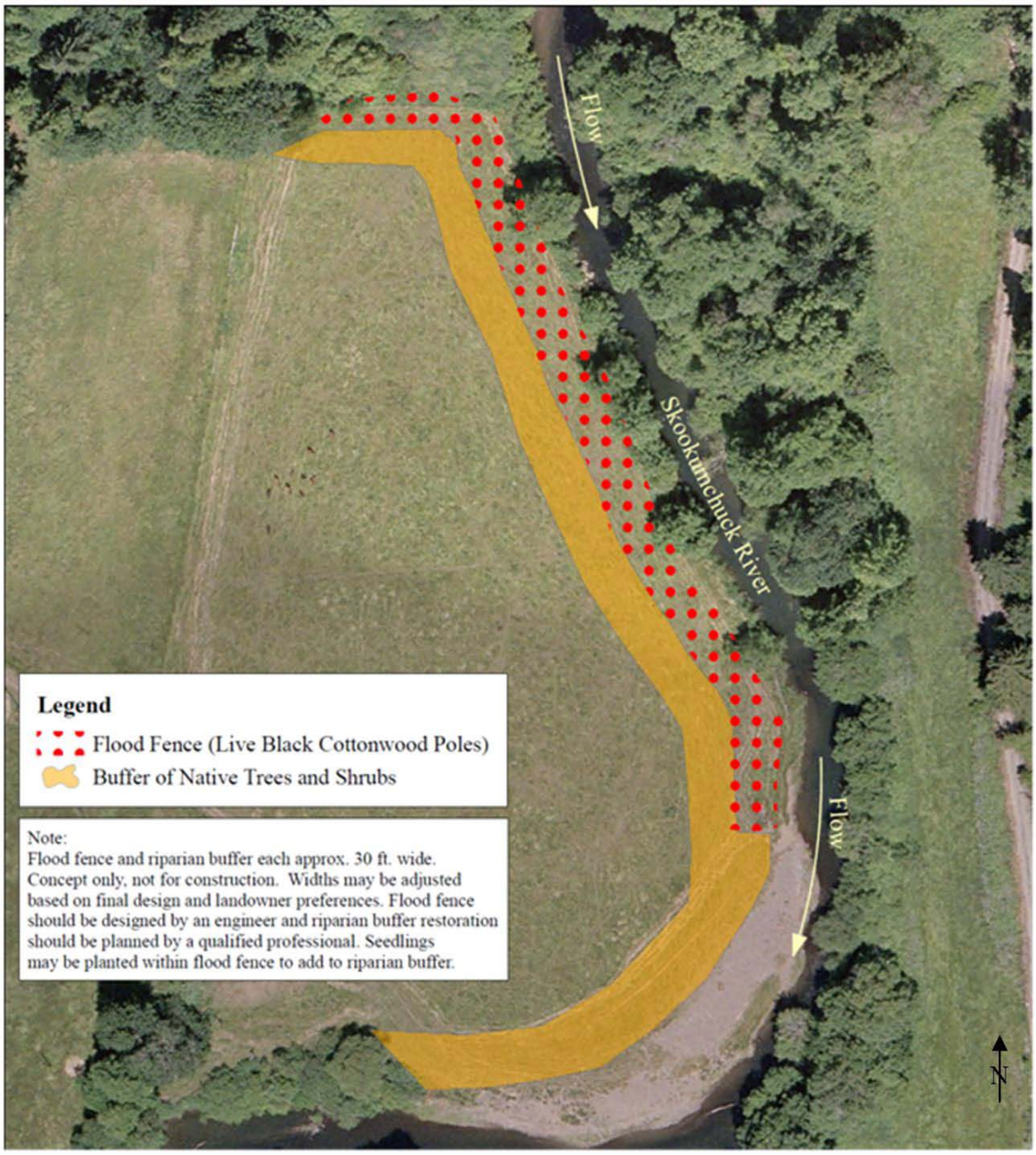
Opportunity Site A:
Conceptual Flood Fence and Riparian Buffer



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[3] This map was produced by Mike Kuttel Jr. a Habitat Specialist at Thurston Conservation District for this report.

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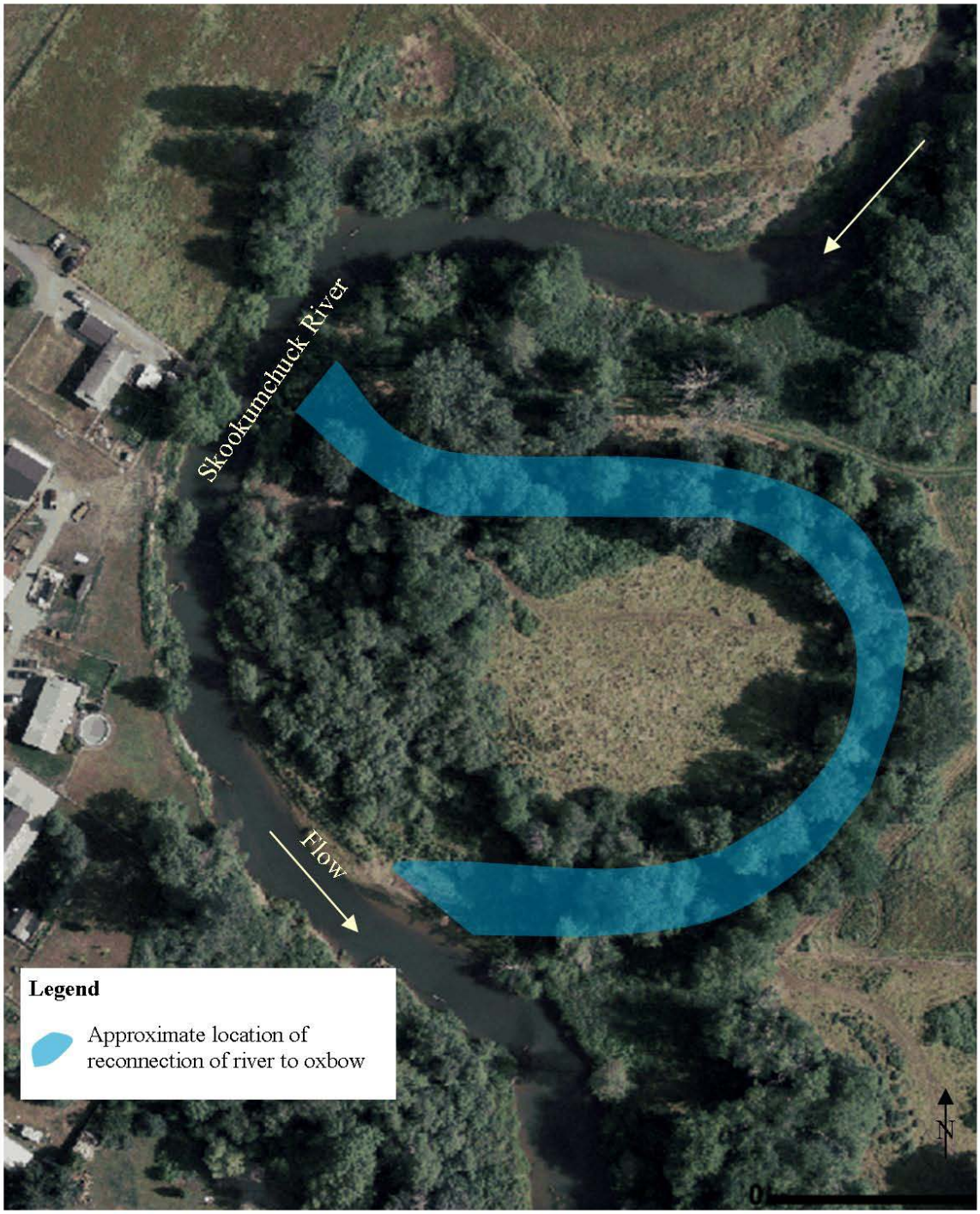
Opportunity Site B:
Conceptual Location for Connection of River to Historic Oxbow



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