Port of Port Townsend

Eco-Industrial Park Feasibility Study

August 2011

PORT OF PORT TOWNSEND

General Limiting Conditions

Every reasonable effort has been made to ensure that the data contained in this report are accurate as of the date of this study; however, factors exist that are outside the control of AECOM and that may affect the estimates and/or projections noted herein. This study is based on estimates, assumptions and other information developed by AECOM from its independent research effort, general knowledge of the industry, and information provided by and consultations with the client and the client's representatives. No responsibility is assumed for inaccuracies in reporting by the client, the client's agent and representatives, or any other data source used in preparing or presenting this study.

This report is based on information that was current as of August 1, 2011 and AECOM has not undertaken any update of its research effort since such date.

Because future events and circumstances, many of which are not known as of the date of this study, may affect the estimates contained therein, no warranty or representation is made by AECOM that any of the projected values or results contained in this study will actually be achieved.

Possession of this study does not carry with it the right of publication thereof or to use the name of "AECOM" in any manner without first obtaining the prior written consent of AECOM. No abstracting, excerpting or summarization of this study may be made without first obtaining the prior written consent of AECOM. Further, AECOM has served solely in the capacity of consultant and has not rendered any expert opinions. This report is not to be used in conjunction with any public or private offering of securities, debt, equity, or other similar purpose where it may be relied upon to any degree by any person other than the client, nor is any third party entitled to rely upon this report, without first obtaining the prior written consent of AECOM. This study may not be used for purposes other than that for which it is prepared or for which prior written consent has first been obtained from AECOM. Any changes made to the study, or any use of the study not specifically prescribed under agreement between the parties or otherwise expressly approved by AECOM, shall be at the sole risk of the party making such changes or adopting such use.

This study is qualified in its entirety by, and should be considered in light of, these limitations, conditions and considerations.

Contents

Acronyms and Abbreviations ..... **vi**
1 Executive Summary **1**
Key Findings and Recommendations 2
Project Background 8
Eco-Industrial Park Goals 9
Method of Study and Public Process 11
Document Organization 13
2 Market Analysis **15**
Eco-Industrial Parks 15
Local Economic Base And Industrial Market Conditions 21
Projected Demand 39
3 Existing Conditions **47**
Property Overview 47
Land Use and Regulatory Considerations 48
Environmental Conditions 62
Infrastructure 63
4 Conceptual Site Design **67**
General Constraints and Assumptions 68
Conceptual Site Design 70
Conceptual Site Design Development Cost Estimates 76
5 Economic Feasibility Analysis **85**
Development Concept 85
Financial Feasibility 87
Conclusions 90
6 Recommendations and Next Steps **93**
Financing 94
Utility and Site Engineering 94
Permitting and Environmental Issues 96
Design and Development Standards 96
Marketing 98
Conclusions 99

Figures

Figure 1-1. Vicinity Map....3
Figure 1-2. Site Plan Rendering....5
Figure 1-3. Perspective Rendering 1....6
Figure 1-4. Perspective Rendering 2....7
Figure 1-5. Perspective Rendering 3....8
Figure 1-6. Project Site....9
Figure 2-1. Unemployment Rate, Jefferson County and WA State 1991 to 2010....26
Figure 2-2. Growth in Employment and Average Wage, Jefferson County 1990 to 2009....27
Figure 2-3. Distribution of Total Employment by Sector, Jefferson, Clallam, Kitsap Counties and WA State....28
Figure 2-4. Average Wage by Sector, Jefferson, Clallam, Kitsap Counties and WA State....29
Figure 3-1. Airport Layout Plan....49
Figure 3-2. Topography....51
Figure 3-3. Zoning....52
Figure 3-4. Critical Aquifer Recharge Areas....59
Figure 3-5. Seismic Hazard Area....60
Figure 3-6. Wetland Reconnaissance....63
Figure 3-7. Soils....64
Figure 4-1. Conceptual Site Design....69
Figure 4-2. Street Cross-Section....74
Figure 4-3. Water and Stormwater Design 1....77
Figure 4-4. Water and Stormwater Design 2....79
Figure 4-5. Wastewater Design 1....81
Figure 4-6. Wastewater Design 2....82
Figure 5-1. Base Case Projected Cumulative Cash Flow....90
Figure 5-2. Sensitivity Analysis for Alternative Assumptions, Internal Rate of Return....91
Figure 5-3. Sensitivity Analysis for Alternative Assumptions, Projected Cumulative Cash Flow....92

Tables

Table 1-1. Industrial Park Advisory Committee Participants..... 12
Table 2-1. Characteristics of Selected Eco-Industrial Parks..... 18
Table 2-2. Private and Public-Sector Positions by Core Area, Washington 2009..... 19
Table 2-3. Private-Sector Green Jobs by Industry, Washington 2009.....20
Table 2-4. Private-Sector Green Jobs by Industry, Washington 2008-2018.....21
Table 2-5. Jefferson County Employment 2009..... 23
Table 2-6. Jefferson County Industrial Employment.....24
Table 2-7. Employment – Olympic Consortium 2009, Jefferson, Clallam and Kitsap Counties.....25
Table 2-8. Employment Projections – Olympic Consortium Jefferson, Clallam, Kitsap Counties..... 30
Table 2-9. Employment Projections – Industrial Sectors Jefferson, Clallam, Kitsap Counties..... 32
Table 2-10. Joint Economic Development Planning Existing Conditions Report - Strengths and Weaknesses..... 33
Table 2-11. Joint Economic Development Planning Existing Conditions Report - Opportunities and Threats.....34
Table 2-12. Industrial Land Jefferson County.....36
Table 2-13. Existing Business and Industrial Parks.....37
Table 2-14. Tenant Profiles.....41
Table 4-1. Impervious Area Assumptions and Calculations.....72
Table 4-2. Phase 1 and Full Build-out Site Development Cost Estimate Summary..... 83
Table 5-1. Estimate of Probable Construction Cost.....86
Table 5-2. Operating Costs.....88
Table 5-3. Discounted Cash Flow Analysis - Base Case.....89
Table 5-4. Alternative Cases and Assumptions.....91

Appendices (included separately on CD)

Appendix A: Memorandum of Understanding between Port of Port Townsend, Jefferson County, and City of Port Townsend
Appendix B: Amendments to Text of Jefferson County Code Chapter 18.15
Appendix C: Wetland Reconnaissance Letter
Appendix D: Access Alternatives and Cost Estimates Memorandum
Appendix E: Wastewater Treatment Summary
Appendix F: Preliminary Site Alternatives Memorandum
Appendix G: Preferred Alternative Opinion of Probable Construction Costs
Appendix H: Water, Stormwater, and Wastewater Designs
Appendix I: January 19, 2011 Port Staff Kick-off Meeting Notes
Appendix J: January 19, 2011 IPAC Meeting Agenda, Presentation, and Notes
Appendix K: May 25, 2011 IPAC Meeting Agenda, Presentation and Notes
Appendix L: Example Design Guidelines

Acronyms and Abbreviations

AASHTO	American Association of State Highway and Transportation Officials
AE	Architect/Engineer
AEPF	Airport Essential Public Facilities
ALP	Airport Layout Plan
BMP	Best Management Practice
CARA	Critical Aquifer Recharge Area
CC&Rs	Covenants, Conditions, and Restrictions
CERB	Community Economic Revitalization Board
CZM	Coastal Zone Management
DNS	Determination of Nonsignificance
DS	Determination of Significance
Ecology	Washington State Department of Ecology
EDA	Economic Development Administration
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ESCP	Erosion and Sedimentation Control Plan
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulations
FTE	Full-Time Equivalent
IPAC	Industrial Park Advisory Committee
ITE	Institute of Transportation Engineers
JARPA	Joint Aquatic Resources Permit Application
JCC	Jefferson County Code
JCIA	Jefferson County International Airport
JPUD	Public Utility District Number 1 of Jefferson County
LID	Low Impact Development
MDNS	Mitigated Determination of Nonsignificance
MOU	Memorandum of Understanding
NMFS	National Marine Fisheries Service
NoaNet	Northwest Open Access Network
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NWP	Nationwide Permit
OSS	On-Site Sewage Systems
PRV	Pressure Reduction Valve

PSE	Puget Sound Energy
PUD	Public Utility District
PVC	Polyvinyl Chloride
SARPA	Special Aquifer Recharge Protection Area
SEPA	State Environmental Policy Act
sf	square foot
SR	State Route
SUSC	Susceptible Aquifer Recharge Area
SWMMWW	Stormwater Management Manual for Western Washington
SWPPP	Stormwater Pollution Prevention Plan
TDM	Transportation Demand Management
TES	Touchstone EcoServices
TRB	Transportation Research Board
UDC	Unified Development Code
UIC	Underground Injection Control
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
WAC	Washington Administrative Code
WSDOT	Washington State Department of Transportation

1

Executive Summary

The Jefferson County International Airport Eco-Industrial Park Feasibility Study is intended to assess the economic and design feasibility of developing an ecologically friendly light industrial park on an undeveloped 24-acre parcel owned by the Port of Port Townsend, adjacent to the Jefferson County International Airport (JCIA), as shown on Figure 1-1.

In 2010, the Port obtained a Financial Assistance Award from the U.S. Department of Commerce Economic Development Administration (EDA) under its Economic Adjustment Assistance Program to fund, in part, the development of this feasibility study. The primary purposes of the study are to:

- Assess the demand for use of a light industrial facility at this site.
- Develop profiles of likely facility users.
- Formulate a conceptual design of future site development.

The Port selected a consultant team to help prepare the feasibility study. The consultant team consists of AECOM, Property Counselors, Reid Middleton, Chris Webb and Associates, Touchstone EcoServices, and atelierjones. The Port also formed an Industrial Park Advisory Committee (IPAC), consisting of local government and industry stakeholders, to provide input throughout the process.

Key Findings and Recommendations

This section summarizes the key findings and recommendations of the feasibility study.

General

- The project requires a high initial investment, due to infrastructure requirements, and a long break-even period; however, the project is feasible under baseline assumptions regarding the use of grant funding and the projected absorption rate.
- The ecological goals of this project can most feasibly be met through the use of Low Impact Development (LID) site planning and through the recruitment of local, green industries.
- The conceptual site plan:
  - Creates 11, 1-acre lots.
  - Retains 9 acres of native forest vegetation.
  - Minimizes impervious surface with narrow roads and shared parking, driveways, and truck maneuvering.
  - Protects water quality through the use of LID.
  - Creates an attractive, master planned campus with a rural aesthetic.
- The Port can further the ecological goals through the use of design guidelines and lease terms that encourage green building and resource sharing in future tenant development.

Development Restrictions

Jefferson County approved a rezone in 2009 that sets limitations on the types of uses that may locate on the site as well as site development standards, as set forth in Chapter 18.15 of the Jefferson County Code (JCC). The amended text of JCC Chapter 18.15 is contained in Appendix B. Chapter 18.15 establishes the following:

- Uses are limited to aviation-related uses that are allowed in the Airport Essential Public Facilities (AEPF) zone and limited non-aviation-related rural light industrial uses.
- Impervious surface is limited to a maximum of 25% of the site.
- Building footprints are limited to a maximum of 10,000 square feet.
- Building heights are limited to a maximum of 35 feet.
- A 50-foot vegetated buffer is required around the perimeter of the site.
- Vegetation retention is required to the maximum extent practicable.
- LID stormwater management techniques are required to the maximum extent feasible.

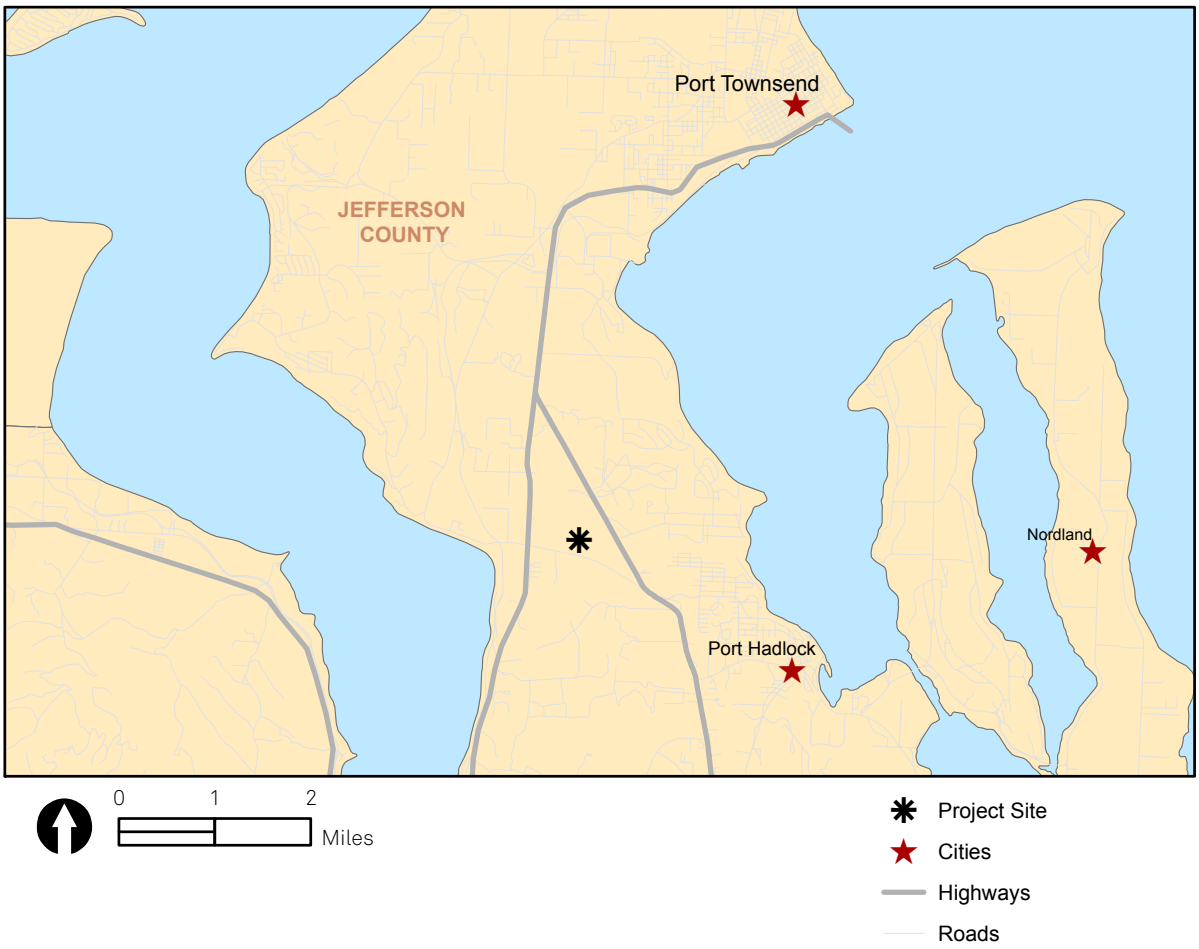


Figure 1-1. Vicinity Map.

Eco-Industrial Park Definition

The consultant team and Port staff explored the concept of an eco-industrial park, and ecologically friendly development in general, to establish goals and guiding principles for this project. It was agreed that for the purposes of this project, the following characteristics should be used to define the concept of an eco-industrial park:

- Tenant businesses that produce environmentally friendly products or services.
- Tenant businesses that incorporate environmentally sound business practices and operations.
- Low impact and environmentally sound site development and buildings.

Market Analysis

Property Counselors conducted a market analysis, presented in Chapter 2, to assess the demand for the Eco-Industrial Park. The significant conclusions of the analysis are:

- Industrial employment in Jefferson County totals fewer than 1,000 jobs, with limited overall projected growth.

- Primary sites for general industrial development in Jefferson County are Glen Cove, representing a low-cost, limited service setting, and the Port Townsend Business Park, representing a higher cost, full service setting.
- The proposed eco-industrial park could be positioned between the two as a higher amenity setting with affordable lease rates.
- The project would not meet the prototype of an eco-industrial park with an anchor tenant and symbiotic firms utilizing byproducts. It could, however, accommodate tenants with shared interests in the physical setting, systems, and resources.
- Given Jefferson County's isolation and slow historical absorption, it is likely that tenants would be local firms with expansion needs. Promising uses include construction, fabrication/light manufacturing, and food processing/services.
- Market performance of the project is speculative because of the small market and limited growth. If the park is opportunistic in responding to the needs of specific expanding businesses, it might prelease approximately one-third of the sites in the park, with full lease-up in 10 years or more.

Conceptual Site Design

After consideration of several alternatives, the Port Commission chose a conceptual site design as the preferred alternative. Colored renderings depicting what full build-out of the site might look like are shown on Figures 1-2, 1-3, 1-4, and 1-5. This design has the following characteristics:

- 11 approximately 1-acre lots.
- An internal loop road.
- Native vegetation within a central green space, perimeter buffer, and other areas.
- Pockets of shared, on-street parking.
- Shared driveways and truck maneuvering areas.
- Vegetated bioretention areas for stormwater treatment.
- An off-site stormwater detention pond.
- An off-site community septic drainfield.

The site design meets the goals of the project by:

- Retaining nearly 9 acres (38% of site) of native forest vegetation in common areas.
- Minimizing impervious surfaces (24% of site) by using narrow roads, shared parking, driveways, and truck maneuvering areas.
- Protecting water quality through the use of LID, including a roadside bioretention swale, and dispersed, small-scale bioretention cells on individual lots.
- Creating a master-planned campus setting with a rural aesthetic by facing all lots toward a central green space.

Figure 1-2. Site Plan Rendering.

1 Perspective Rendering Views

A Native Forest Retention

B Shared On-Street Parking

C Bioretention Swale

D Bioretention Cell ("Rain Garden")

E Shared Driveway, Parking, and Truck Maneuvering

Figure 1-3. Perspective Rendering 1.

Estimates of site development construction costs were developed based on the conceptual design. It is estimated that development of Phase 1 will cost approximately $2.8 million, while full build-out will cost approximately $3.8 million. A significant initial investment is needed to provide basic infrastructure that will serve full build-out of the site.

Economic Feasibility

Based on the estimated site development costs, Property Counselors conducted a financial feasibility analysis to consider the likely financial performance of the project and whether it would meet the Port's objectives. The conclusions of the financial feasibility analysis include the following:

- The project is feasible, although speculative, under baseline assumptions.
- The availability of grant funding is a key determinant of feasibility.
- Even with grant funding, the investment would require a long break-even period. The industrial park does not become revenue neutral until 2020. From 2013 to 2020, the industrial park would require supplementary funding of approximately $1.2 million from other Port sources.
- Assuming that the Port would know whether it has secured grants or not before committing hard construction dollars, the other downside risks may be manageable.

Figure 1-4. Perspective Rendering 2.

Recommendations and Next Steps

Given the feasibility analysis presented in this study, the Port must evaluate the projected return of the project against its financial expectations. Assuming that the Port chooses to move forward with the project, a number of steps should be taken to verify the assumptions used in the study, gather more information, move the design and permitting of the project forward, and ensure that future development meets project goals. This study provides recommendations that broadly touch on the following:

- Identifying and securing funding, including grant funding and other sources.
- Conducting more in-depth, site-specific utility and transportation analyses.
- Determining land use and environmental permitting requirements and beginning the permitting process.
- Developing design guidelines and implementation mechanisms to guide future tenant development.
- Marketing the project and recruiting potential tenants.

Figure 1-5. Perspective Rendering 3.

Project Background

In 2002, the Port of Port Townsend acquired 24 acres of undeveloped land adjacent to the Port-owned JCIA, as shown on Figure 1-6. The Port identified the need for more industrial land to further their economic development and job creation mission. To this end, the Port included the property in its 2002 Airport Layout Plan (ALP). The parcel, zoned Rural Residential under the JCC, required a rezone to allow for industrial development. The Port negotiated a rezone with the County and, in 2009, the County approved the rezone with conditions, creating an AEPF Airport Overlay III zoning designation that applies solely to the property. This new zoning designation allows for rural-scale light industrial development subject to certain development standards and conditions associated with the rezone. The intention of these additional development standards is to ensure compatibility of the site with adjacent rural uses and promote a more ecologically friendly type of development. Specific development standards are described in detail in Chapter 3.

In 2010, the Port, Jefferson County, and the City of Port Townsend entered into a Memorandum of Understanding (MOU) for the purpose of promoting cooperation and coordination among the parties for purposes of economic development. The MOU, included in Appendix A, clarifies what non-aviation-related uses are allowable in the Airport Overlay III designation and places limitations on the relocation of existing marine-related industries outside the city. The MOU states that "the Port will enter into lease agreements with marine trades uses at the expanded JCIA/EPF only when such uses may not be reasonably accommodated upon existing and available sites located on Port owned properties within the City." It further states that "the Port will not seek to create any economic incentives for marine trades uses to relocate to the JCIA," such as through an artificially low lease rate.

In 2010, the Port obtained a Financial Assistance Award from the EDA to fund, in part, the development of this feasibility study, and subsequently selected a consultant team to complete the study, as described above.

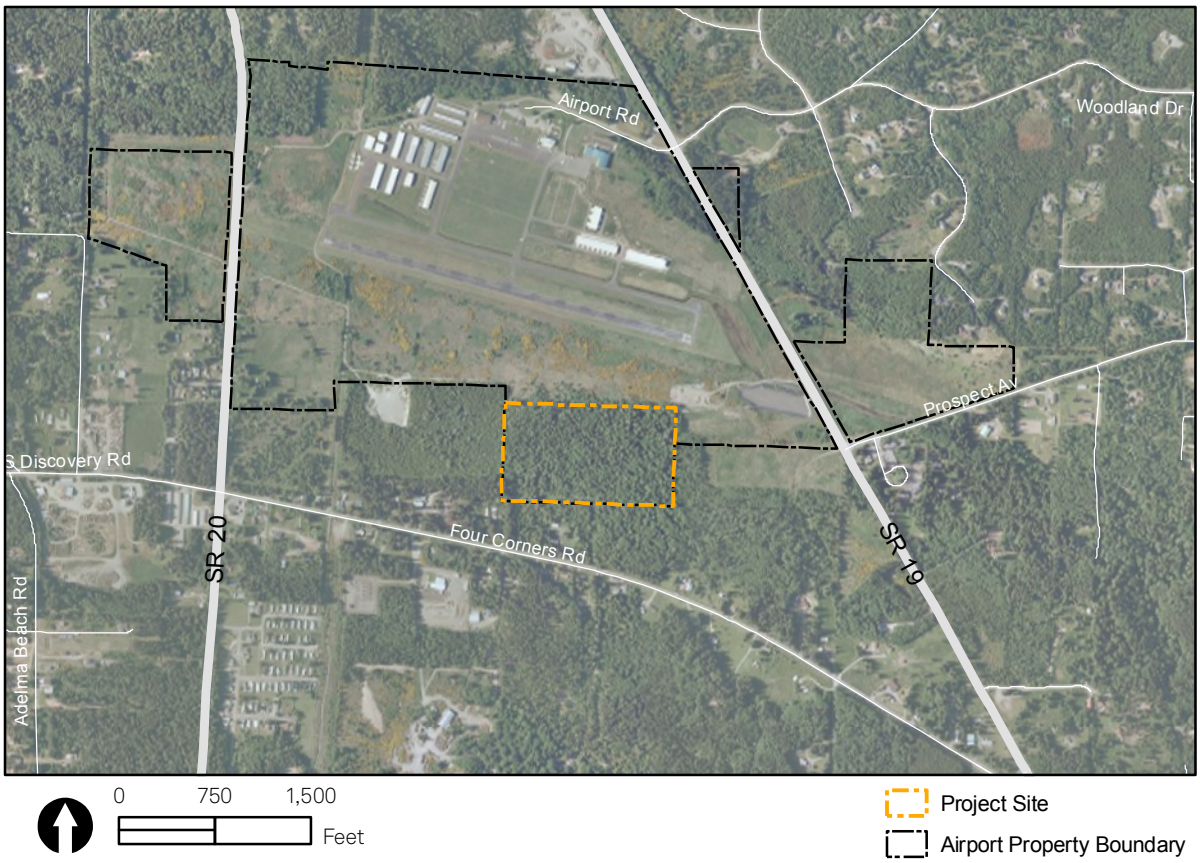


Figure 1-6. Project Site.

Eco-Industrial Park Goals

At the outset of the feasibility study process, the Port articulated the overall goal of the JCIA Eco-Industrial Park, which is to develop a light industrial park that will contribute to the economic development of Jefferson County by attracting new businesses and providing space for existing businesses to expand, consistent with the Port's mission of promoting sustainable economic growth.

This broad goal was further refined through discussions with the Port, the IPAC, and the consultant team, in consideration of market conditions, local industry needs, and the regulatory context. The result of these discussions was a vision for what the character of the park should be, what niche it should occupy in the local market, and how the park should be designed and marketed.

The Eco-Industrial Park will be designed and marketed as a fully serviced, higher amenity park, with coordinated infrastructure and low-impact site design in a lower density non-urban setting.

The Eco-Industrial Park will offer the following distinguishing features:

- Master planned park with consistent quality, look, and feel.
- Low impact site and infrastructure design.
- Utility systems available to accommodate initial needs and expansion of tenant businesses.
- Competitive prices to appeal to start-up and expanding businesses.
- Opportunities for smaller or larger sites available as leasehold properties at market rates.
- Conditions of development specified in lease or associated documents that ensure the project's LID and aesthetic goals are met.

The Port's goal to promote an ecologically friendly development consistent with the zoning conditions resulted in the direction to create an "eco-industrial park"; however, the concept of an eco-industrial park is not necessarily well-defined. In research prepared for this feasibility study, several characteristics were identified that might qualify a development as an eco-industrial park. These concepts are described in more detail in Chapter 2.

Example of Bioretention Cell

Based on a review of literature on the topic, one definition of an eco-industrial park is an industrial park where businesses cooperate with each other and with the local community to reduce waste and pollution, efficiently share resources (such as information, materials, water, energy, infrastructure, and natural resources), and help achieve sustainable and environmentally sensitive development. The ideal vision of an eco-industrial park would generally be one in which there is an anchor tenant that produces some byproduct (e.g., water, waste heat, waste materials) that could be used as an input for other industries. Examples

of such developments are few and far between and are more difficult to realize, especially given the current economic conditions and the rural location of the subject site.

For this study, several characteristics were identified and agreed upon that should be used to define the Port of Port Townsend's Eco-Industrial Park as an ecologically friendly development:

- Tenant businesses that produce environmentally friendly products or services (e.g., solar panels, "green building" contractor).
- Tenant businesses that incorporate environmentally sound business practices and operations (e.g., efficient use of resources, use of sustainably produced raw materials).
- Low impact and environmentally sound site development and buildings.

The intent is to incorporate all three of the above characteristics into the proposed industrial park. The Port will recruit environmentally oriented businesses and businesses that promote environmentally sound business practices as potential tenants. The site development will incorporate LID stormwater management techniques and will retain existing site vegetation. Lease agreements will contain conditions to ensure the environmentally sound development of individual sites and buildings.

Method of Study and Public Process

The project's scope of work called for the examination of environmental, infrastructure, and regulatory existing conditions; a market analysis; the development of a conceptual site design; and a financial feasibility analysis based on estimated site development costs. The scope of work also called for a public process that engaged local stakeholders through the formation of the IPAC, and through presentations to the Port Commission. The following section describes the methods used by the consultant team and the public process.

Consultant Team Scope of Work

The EDA Financial Assistance Award stipulated that the Port:

> *....will conduct feasibility study to determine the economic viability of an ecologically friendly light industrial park. The scope of work will include, but is not limited to:*
>
> - *Assessing demand for facility use*
> - *Formulation of conceptual design*
> - *Development profiles of likely facility users*

To fulfill the purposes of the study, the Port's consultant team performed the following steps:

- Facilitated a public involvement process that included meetings with the IPAC, the Port Commission, and Port staff.

- Conducted a market analysis to assess the demand for an eco-industrial park.
- Produced an inventory and assessment of existing conditions, including physical and environmental site conditions, utility and transportation infrastructure, and applicable regulatory and design parameters.
- Developed conceptual site design alternatives that met the goals for the park and addressed relevant environmental, physical, regulatory, and aesthetic design considerations.
- Estimated site development costs and infrastructure requirements.
- Assessed the financial feasibility of a conceptual site design.
- Proposed recommendations for future development at the site and next steps.

Industrial Park Advisory Committee

The public involvement process was designed and implemented to fulfill the purpose and requirements of the Port as a public entity as well as to receive valuable insight from key stakeholders. An advisory committee, the IPAC, was formed consisting of representatives from Port staff, the Port Commission, Jefferson County, the City of Port Townsend, and local industry representatives. Table 1-1 lists the IPAC participants.

Table 1-1. Industrial Park Advisory Committee Participants.

Participant	Title or Role
Richard Bothel	President & CEO of Atlas Technologies
Larry Crockett	Executive Port Director, Port of Port Townsend
Chris Grace	Consultant/Developer
Mark Grant	President of Grant Steel Buildings & Concrete Systems
BJ Hallinan	Owner of Port Townsend Aircraft Services
Jim Jackson	Jackson Building Solutions
Mike Mullen	Owner of Mullen Construction Company
Jim Parker	Manager, Jefferson County PUD #1
Jim Pivarnik	Deputy Port Director, Port of Port Townsend
Al Scalf	DCD Director, Jefferson County
Rick Sepler	DCD Director, City of Port Townsend
Judy Surber	Senior Planner, City of Port Townsend
Dave Thompson	Port Commissioner, District 2
Eric Toews	Planning Analyst, Port of Port Townsend

A series of IPAC meetings were held to present information regarding the study and to receive input and direction. Meetings included a January 2011 kick-off meeting that presented an introduction and background for the project and invited opinions regarding desired goals for the project and the facility needs, and preferences of industry representatives.

A May 2011 report-back meeting presented findings of the market analysis and two conceptual site design alternatives and estimated site development costs.

In August 2011, the IPAC will convene again to review and discuss the conclusions of the final feasibility study.

Port Commission

The Port Commission was involved throughout the process. The Commission heard presentations from staff and the consultant team, which included updates on the progress of the study and summaries of interim work products and findings. The Commission also provided input and guidance, including the selection of a preferred conceptual site design. Upon completion of the feasibility study, the Commission will vote on official adoption of the feasibility study document.

Document Organization

This study documents the process outlined above and presents the resulting findings and recommendations. The document is organized as follows:

Chapter 1: Executive Summary

Chapter 1 provides an overview of the feasibility study, its purpose, the process and methodology used to develop the study, and a discussion of the overall goals for the project.

Chapter 2: Market Analysis

Chapter 2 presents a market analysis that analyzes current economic and market conditions relevant to Jefferson County, identifies likely users of the proposed eco-industrial park, identifies the likely land absorption rate, and estimates the rents that the park could achieve.

Chapter 3: Existing Conditions

Chapter 3 describes physical, environmental, utility, and transportation infrastructure site conditions, and examines relevant regulatory constraints.

Chapter 4: Conceptual Site Design

Chapter 4 presents a preferred conceptual site design along with documentation of the assumptions used in the development of the concept, a demonstration of how the concept meets the relevant design parameters, and estimates of site development costs.

Chapter 5: EconomicFeasibility Analysis

Chapter 5 assesses the financial feasibility of the development of the preferred conceptual site design, based on estimated development costs, market conditions, and other assumptions.

Chapter 6: Recommendations and Next Steps

Chapter 6 presents the recommendations for future site development, including LID and other ecologically friendly design options, and next steps that the Port should take to move this project forward in a timely and successful manner.

Appendices

The appendices, which are included separately on CD, contain supporting documentation relied upon or developed during the feasibility study process. The appendices are:

Appendix A: Memorandum of Understanding between Port of Port Townsend, Jefferson County, and City of Port Townsend

Appendix B: Amendments to Text of Jefferson County Code Chapter 18.15

Appendix C: Wetland Reconnaissance Letter

Appendix D: Access Alternatives and Cost Estimates Memorandum

Appendix E: Wastewater Treatment Summary

Appendix F: Preliminary Site Alternatives Memorandum

Appendix G: Preferred Alternative Opinion of Probable Construction Costs

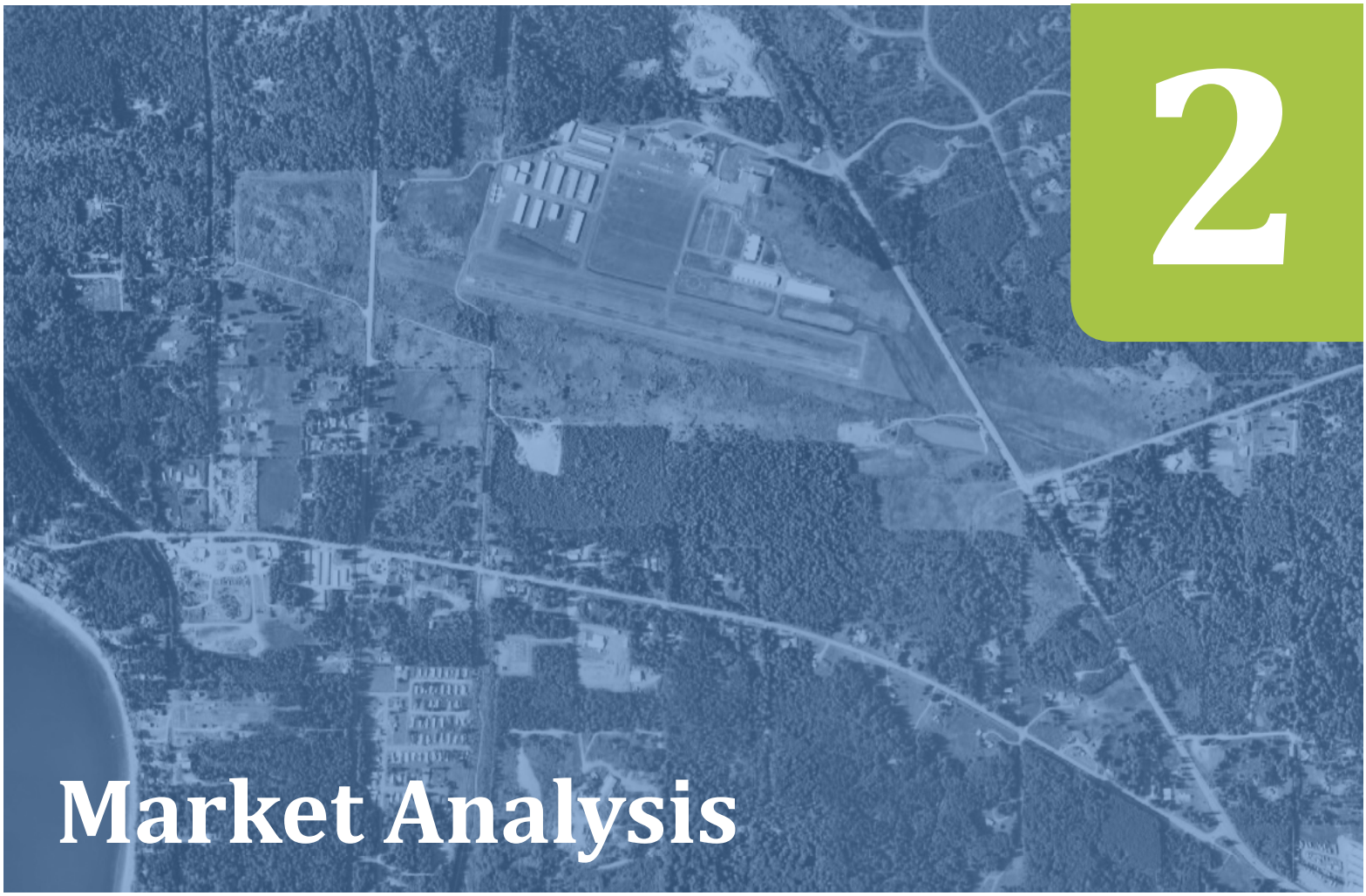
Appendix H: Water, Stormwater, and Wastewater Designs

Appendix I: January 19, 2011 Port Staff Kick-off Meeting Notes

Appendix J: January 19, 2011 IPAC Meeting Agenda, Presentation, and Notes

Appendix K: May 25, 2011 IPAC Meeting Agenda, Presentation and Notes

Appendix L: Example Design Guidelines



2

Market Analysis

Chapter 2 presents a market analysis conducted specifically for the Port of Port Townsend Eco-Industrial Park. It is based entirely on a stand-alone report prepared in April 2011 by Property Counselors, under contract with AECOM. The purpose of the market analysis is to identify the likely projected users of an eco-industrial park, the likely rate of absorption of land, and the prices/rents that the park could achieve. The chapter includes a description of other existing or proposed eco-industrial parks, an analysis of baseline local economic market conditions, and an assessment of projected demand in the region for the park project.

Eco-Industrial Parks

The Port's proposed industrial park is referred to as an eco-industrial park, a term used to describe a range of facilities and operating characteristics. The concept is described in this section, both to clarify the nature of a potential park in Jefferson County and to provide a basis for identifying potential tenant types and market performance. This section is organized in three subsections:

- Overview
- Case Studies
- Sectors and Businesses

Overview

In the most general sense, an eco-industrial park is a physical facility and tenant businesses that attempt to achieve sustainable development through the efficient use of resources and environmentally sensitive design and operation. In its purest form, an eco-industrial park offers both shared systems (such as wastewater treatment or distributed/district energy) and resources (including green purchasing blocks), as well as reuse of byproducts of some businesses by others. The organizational relationships among the tenants and park operators become as important as the physical systems themselves.

The term is also used in a narrower sense to describe the infrastructure and other development features. Eco-industrial parks feature LID and green building practices. An eco-industrial park in Jefferson County can incorporate elements of both definitions.

The most frequently referenced eco-industrial facility is the community-wide system in Kalundborg, Denmark. A coal-powered power plant is the anchor business. Surplus heat is used throughout the community, and surplus steam is sold to local manufacturers. Byproducts are sold to other businesses, including gypsum to a wallboard manufacturer and fly ash for cement production. The relationship among the businesses evolved over time in response to environmental regulations, compliance requirements, and pressure to reduce cost.

The concept of eco-industrial parks became popular in the US in the 1990s. The Environmental Protection Agency (EPA) created the Environmental Technology Initiative project, which encouraged many demonstration projects. Eighteen of these projects repeatedly show up in the literature, including two in Washington – Skagit County Environmental Industrial Park and Raymond Green Industrial Park. However, these proposals, as well as many of the others, were never realized.

Canada has a high level of interest in eco-industrial parks. Examples of greenfield developments are described later in this section, as well as redevelopment of existing facilities and cooperative ventures among existing businesses.

Case Studies

As described earlier, there are far fewer actual eco-industrial parks than proposed ones. The ones that do exist vary widely in scale and concept. Devens in north central Massachusetts and the Pearson Eco-Business Zone in Toronto are examples of existing large-scale enterprises. In addition, the Fairfield Alternative and Renewable Energy Project is now under construction in Baltimore, Maryland.

Devens is a 4,400-acre former US Army base selected for closure in 1991, with 2,600 acres planned to remain undeveloped and 600 acres of the rest remain to be developed. As of 2006, the community supports approximately 80 businesses. Development and operation of the park are overseen by a quasi-public economic development and real estate agency. Businesses participate voluntarily in the EcoStar program. Program accomplishments include energy efficiency and conservation, material reuse, recycling, and water conservation. The project has benefited from the existing assets in place at the time of base closure, and the support and funding of the state and federal governments.

The Pearson Eco-Business Zone is Canada's largest employment area with 30,000 acres, 12,500 businesses, and 355,000 employees around Toronto's Pearson Airport. The zone was created by the regional conservation authority and airport authority to assist businesses to reduce resonance use, and solve operational challenges in a green and cost-effective manner. The Partners in Project Green Program was initiated in 2009 to promote business-to-business collaboration. Specific programs include eco-efficiency assessments, green building retrofits, sustainable transportation, green purchasing blocks, byproduct exchange, green rate initiatives, and education and networking. The Eco-Business Zone represents an effort that extends beyond a single property or development. It features an area-wide economic development focus, as well as an ongoing organizational effort to facilitate the cooperative activity of individual businesses.

Planned for many years, the Fairfield Alternative and Renewable Energy Project is finally under construction. The project is being developed on a 90-acre former chemical company site on the Baltimore harbor. The alternative and renewable energy plant will recover metals and produce processed refuse fuels, generate electricity, and recover additional metals and product aggregate from bottom ash. The plant offers a compact example of the industrial symbiosis at work in Kalundborg. The Alternative and Renewable Energy Project will be the anchor of an eco-industrial park. Satellite industries might include:

- Metal Smelter
- Paper Mill
- Hydroponics Farming
- Tire Recycling
- Biofuels Production
- Concrete and Concrete Products
- Pharmaceutical Industry
- Asphalt Plant
- High Energy Using Plants

In contrast to these larger projects, several of the smaller parks in operation or development are more similar in scale and scope to the proposed park in Jefferson County. The characteristics of four such parks are summarized in Table 2-1, with the experience of each described further below.

Cape Charles Sustainable Technology is often cited as a successful example of an eco-industrial park. The park began as a demonstration project for a prototype park on a brownfield site. The first building was completed in 1999, with an energy R&D and manufacturing firm as a tenant. A solar panel manufacturer followed. The headquarters office for a wind power generator company announced plans to build. Such businesses represented a strong cluster of energy-related businesses. Unfortunately, the initial successes were not sustained. After 5 years, the only tenant in the existing building is a biochemical company.

Table 2-1. Characteristics of Selected Eco-Industrial Parks.

	Cape Charles	Londonderry	Innovista	TaigaNova
Location	Cape Charles, Virginia	Londonderry New Hampshire	Hinton, Alberta	Fort McMurray, Ontario
Size	130 Acres	90 Acres	108 Acres	130 Acres
Tenant Mix	Solar Panel Energy Recovery Chemicals	Gas-fired Power Plant Medical Supply Heating Technology		Construction Industrial Laundry Concrete
Parcel Sizes		4.0 to 14 acres	0.5 to 8.0 acres	0.83 to 5.52 acres
Number of Parcels			27	26
Sale or Lease	Building for lease	Sites for Sale	Sites for sale	
Status	Only one tenant remaining 2/3 empty	Appr. 75% built-out	Fully serviced, uncleared.	3 tenant buildings
Eco Features		Shared resources and programs	Utility easements Central stormwater	Utility corridors Stormwater treatment Grey water reuse

The Londonderry Eco-industrial Park is located near the Manchester Boston Regional Airport in New Hampshire. The park is anchored by the AES Granite Ridge Gas-Fired Power Plant. There are three vacant parcels ranging from 4 to 13 acres, owned by separate parties. The area is designated as an economic revitalization zone and a free trade zone. The Town of Londonderry is leading the effort to recruit appropriate businesses for the properties designated as the park. Promotional efforts stress the use of byproducts, shared resources and processes, and joint purchasing.

The Innovista and TaigaNova are green-build projects currently under development. While TaigaNova is sold out and home to three businesses, neither park has an anchor tenant at this time. Both advertise their eco-friendly site features rather than specific resource sharing opportunities. The planning consultant involved in each of these projects identifies several attributes of such parks:

- Lot Sizes
  - Small tenant: 0.5 to 2 acres
  - Medium tenants: 2 to 10 acres
  - Large tenants: over 10 acres
- Lot Coverage: 20 to 60%
- Integrated design is key
- District energy systems are challenging, particularly for smaller projects.

A project in Washington state may be instructive for the planning and valuation of the proposed Jefferson County facility. The Blue Mountain States is a proposed 28-acre organic food processing facility, to be developed by the Port of Columbia. The Port has advertised for bids for the first phase of infrastructure, consisting of utilities and internal circulation. The project would ultimately include a public market, community kitchen, and other shared facilities. The Port has not secured any tenants at this time, and is investing in the site infrastructure to demonstrate a commitment to the project and to offer ready-to-build sites for prospective tenants.

Sectors And Businesses

The primary underlying concepts of the eco-industrial park in its purest form are resource conservation, sharing, and efficiency. These concepts also underlie the emerging green economy and green jobs. An understanding of the size and scope of the Green Economy provides a basis for identifying potential users of an eco-industrial park. The Washington State Department of Employment Security has coordinated surveys of green jobs in 2008 and 2009 and provided a report that characterizes green economy jobs in the state.

Green jobs are primarily engaged in one of four core areas:

- Increasing energy efficiency.
- Producing renewable energy.
- Preventing and reducing environmental pollution.
- Providing mitigation or cleanup of environmental pollution.

Table 2-2. Private and Public-Sector Positions by Core Area, Washington 2009.

Core Area	Private Sector Positions	Public Sector Positions	Total
Increasing Energy Efficiency	34,035	4,859	38,894
Producing Renewable Energy	3,166	298	3,464
Preventing and Reducing Environmental Pollution	30,622	15,382	46,004
Providing Mitigation or Cleanup of Environmental Pollution	8,928	2,689	11,617
TOTAL	**76,751**	**23,228**	**99,979**

Note: Employers may have reported more than one core area for some green jobs, so the sum of positions across core areas may exceed the number of green jobs.

Source: Washington State Green Jobs Survey, Employment Security Department Labor Market and Economic Analysis, 2009

The survey identified 76,000 private sector and 23,000 public sector green jobs in 2009, as shown in Table 2-2.

As shown, Preventing and Reducing Environmental Pollution was the largest core area, followed by Increasing Energy Efficiency. The public sector positions are heavily concentrated in the Preventing and Reducing Environmental Pollution area.

Table 2-3. Private-Sector Green Jobs by Industry, Washington 2009.

Industries	Private-Sector Green Jobs	Percent of All Private-Sector Green Jobs	Private-Sector Jobs as a Percent of All Industry Employment
Agriculture	12,027	15.8%	10.8%
Utilities	461	0.6%	9.3%
Construction	29,410	38.6%	15.2%
Manufacturing	5,739	7.5%	2.0%
Wholesale Trade	4,494	5.9%	3.5%
Retail Trade	125	0.2%	0.2%
Transportation and Warehousing	1,708	2.2%	2.0%
Information	363	0.5%	0.3%
Finance and Insurance	19	0.0%	0.0%
Real Estate, Rental, and Leasing	46	0.1%	0.1%
Professional Services	10,914	14.3%	6.8%
Administrative, Support, and Waste Management	9,414	12.4%	6.3%
Other Services (except Public Administration)	1,419	1.9%	1.2%
Total Private-Sector Green Jobs	*76,137*	*100.0%*	*3.1%*
Total Private-and Public-Sector Green Jobs	*99,319*		*3.3%*

Source: Washington State Green Jobs Survey, Employment Security Department Labor Market and Economic Analysis, 2009

Green jobs are widely distributed across industry sectors, as shown in Table 2-3. The largest sector is construction with almost 40% of total green jobs. Agriculture is the second largest sector, followed by Professional Services, and Administrative, Support, and Waste Management. Green jobs in construction represent 15% of all construction jobs in the state. Overall, green jobs represent 3.1% of total private employment and 3.3% of total employment in the state.

The 2009 Green Job Survey showed a 32.4% increase in private sector green jobs over survey results in 2008. There are some issues with comparability of the data for the two years, and the underlying populations differ slightly. It is also possible that employers are changing their perceptions of the nature of their work. Regardless, it is clear that the number of green jobs is increasing, dramatically.

The 3-county Olympic Consortium (Jefferson, Clallam, and Kitsap Counties) supports an estimated 3,327 green jobs. This represents 3.1% of total employment, slightly less than the 3.3% figure for the state as a whole. The breakout of green jobs in the Olympic Consortium is as follows:

- Increasing Energy Efficiency 1,370
- Producing Renewable Energy 64
- Preventing and Reducing Pollution 1,666
- Providing Mitigation or Clean-up 242

The state prepared an addendum to the study in March 2011. Among other analyses, the addendum provided projections of growth in green jobs by sector. Table 2-4 summarizes the projected growth in green jobs over the period 2008 to 2018. These sectors represent logical candidates for eco-industrial park tenants.

Table 2-4. Private-Sector Green Jobs by Industry, Washington 2008-2018.

Industry Title	2009 Estimated Green Jobs	2008-2018 Average Annual Growth
Electrical Equipment Manufacturing	1,429	4.2%
Management and Technical Consulting Services	1,216	3.0%
Services to Buildings and Dwellings	6,771	2.9%
Software Publishers	476	2.9%
Waste Collection	1,025	2.7%
Remediation and Other Waste Services	3,264	2.5%
Scientific Research and Development Services	2,202	2.2%
Architectural and Engineering Services	7,949	1.7%
Electronic Markets and Agents and Brokers	2,575	1.6%
Water, Sewage, and Other Systems	373	¼%
Petroleum Merchant Wholesalers	490	1.2%
Elementary and Secondary Schools	1,852	1.1%
Colleges and Universities	755	1.1%
Community Colleges	581	1.1%
Commercial Equipment Merchant Wholesalers	306	1.0%

Source: Washington State Green Jobs Survey, Employment Security Department Labor Market and Economic Analysis, 2011

Local Economic Base And Industrial Market Conditions

An eco-industrial park in Jefferson County will serve the economic base of the community and compete within the local industrial market. This section describes the characteristics of the economic base and industrial market.

Jefferson County Economic Base

Local Employment

Jefferson County's economic base is strongly determined by several geographical conditions:

- It is somewhat isolated from the Puget Sound economy, separated by the Sound itself and Hood Canal.
- The Olympic Mountains divide the east portion of the county from the west, blocking direct transportation connections between the two.

- The extensive forests support the local forestry and wood products industries.
- Its protected harbor supports an industrial concentration of marine trades.
- The combination of its natural amenities as well as its historic and cultural amenities makes it a popular visitor destination.

The major employers in the area include the Port Townsend Paper Mill, marine manufacturers and service businesses, public agencies, and retail businesses.

The employment figures for the county are summarized in Table 2-5. The largest individual sectors are government, accommodations and food service, retail trade, health care, and manufacturing, in that order. The average private annual wage is $27,400. The highest average wages for private businesses are for utilities, manufacturing, information, wholesale trade, finance and insurance, construction, and professional technical services. Private firms are small on average, at 6 employees per firm. Manufacturing firms are the largest on average, at 12.5 employees.

Table 2-6 provides similar data at a more detailed level for the industrial sectors. In many cases, the data are suppressed for confidentiality purposes. Overall, the industrial sectors support 91 firms, with a total of 913 jobs. While the paper mill's employment is reported in the "other industries" sector to maintain confidentiality of data, the marine-related trades within transportation manufacturing is the next largest sector shown, and has the next highest average wage rate.

Employment growth in Jefferson County was fairly stable in recent years until 2006, as shown in Figure 2-1. Employment declined slightly in 2007 and 2008, but fell by 9% in 2009. This pattern is also reflected in the county's unemployment rate, which fell steadily until 2006 and grew dramatically in 2009, as shown in Figure 2-2. The rate was slightly higher than the rate for the state as a whole through 2002, but has closely tracked the state rate since then.

Olympic Consortium

Jefferson County is combined with Clallam and Kitsap counties for some employment initiatives and reporting purposes. Clallam County shares many of the natural features as Jefferson County. Kitsap County is also separated from the center of the Puget Sound region, but it is more accessible, and is not as dependent on resource industries and the visitor industry. Table 2-7 summarizes the key employment factors for each county. Figures 2-3 and 2-4 compare employment and wage data for the three counties by sector.

As shown, Jefferson County is by far the smallest of the three counties in terms of employment. The average wage for both Jefferson and Clallam counties is much lower than that for Kitsap.

The makeup of the employment base for each sector is compared graphically for the three counties and the state as a whole in Figure 2-3, and the average wage is compared in Figure 2-4. Employment in Jefferson County is relatively high compared to the other counties in the construction, manufacturing, accommodations and food services, and local government sectors. The average wage is comparable to that for Clallam County, but is lower in most cases than that of the state.

Table 2-5. Jefferson County Employment 2009.

Industry	Average Firms	Average Employment	Avg. Employment per Firm	Average Annual Wage
Private				
Agriculture, forestry, fishing and hunting	22	120	5.5	$24,248
Mining	*	*		*
Utilities	6	54	9.0	79,307
Construction	149	446	3.0	35,715
Manufacturing	57	715	12.5	46,466
Wholesale trade	35	150	4.3	38,328
Retail trade	119	959	8.1	23,287
Transportation and warehousing	16	59	3.7	26,977
Information	18	139	7.7	38,467
Finance and insurance	23	172	7.5	36,197
Real estate and rental and leasing	43	142	3.3	17,603
Professional and technical services	79	238	3.0	34,788
Management of companies and enterprises	*	*		*
Administrative and waste services	39	146	3.7	27,836
Educational services	24	143	6.0	20,165
Health care and social assistance	79	924	11.7	25,651
Arts, entertainment, and recreation	19	128	6.7	16,250
Accommodation and food services	111	1,030	9.3	13,527
Other services, except public administration	173	493	2.8	21,966
All Private	**1,012**	**6,058**	**6.0**	**27,379**
Government				
Federal Government	8	176	22.0	57,043
State Government	19	259	13.6	45,306
Local Government	20	1,697	84.9	41,663
All Government	**47**	**2,131**	**45.3**	**43,396**
Not Elsewhere Classified	5	31	6.2	44,272
All Employment	**1,062**	**8,221**	**7.7**	**31,591**

Source: Washington Department of Employment Security Workforce Explorer.

Table 2-6. Jefferson County Industrial Employment.

Industry	Average Firms	Average Employment	Avg. Employment per Firm	Average Annual Wage
Manufacturing				
Food manufacturing	3	52	17.3	19,225
Beverage and tobacco product manufacturing	3	18	6.0	15,423
Textile mills	*	*		*
Textile product mills	*	*		*
Apparel manufacturing	*	*		*
Leather and allied product manufacturing	0	0		0
Wood product manufacturing	*	*		*
Paper manufacturing	*	*		*
Printing and related support activities	4	43	10.8	18,016
Petroleum and coal products manufacturing	0	0		0
Chemical manufacturing	*	*		*
Plastics and rubber products manufacturing	*	*		*
Nonmetallic mineral product manufacturing	*	*		*
Primary metal manufacturing	*	*		*
Fabricated metal product manufacturing	9	55	6.1	32,123
Machinery manufacturing	*	*		*
Computer and electronic product manufacturing	*	*		*
Electrical equipment and appliance manufacturing.	0	0		0
Transportation equipment manufacturing	11	127	11.5	41,614
Furniture and related product manufacturing	5	18	3.6	23,782
Miscellaneous manufacturing	*	*		*
Other industries	22	403	18.3	58,787
All Manufacturing	**57**	**715**	**12.5**	**46,466**
Transportation and Warehousing				
Air transportation	0	0		0
Rail transportation	0	0		0
Water transportation	*	*		*
Truck transportation	5	15	3.0	22,475

Transit and ground passenger transportation	0	0		0
Pipeline transportation	0	0		0
Scenic and sightseeing transportation	*	*		*
Support activities for transportation	*	*		*
Postal service	*	*		*
Couriers and messengers	4	30	7.5	35,453
Warehousing and storage	*	*		*
Other industries	8	14	1.8	13,640
All Transportation and Warehousing	**16**	**59**	**3.7**	**26,977**
Information				
Publishing industries, except Internet	10	86	8.6	$47,755
Motion picture and sound recording industries	3	34	11.3	8,966
Broadcasting, except Internet	0	0		0
Internet publishing and broadcasting	0	0		0
Telecommunications	*	*		*
ISPs, search portals, and data processing	0	0		0
Other information services	*	*		*
Other industries	5	19	3.8	49,212
All Information	**18**	**139**	**7.7**	**38,467**
All Industrial Sectors	**91**	**913**	**10**	**43,989**

**Not disclosed for confidentiality reasons; either fewer than three businesses, or one with a dominant share.*

Source: Washington Department of Employment Security Workforce Explorer.

Table 2-7. Employment – Olympic Consortium 2009, Jefferson, Clallam and Kitsap Counties.

County	Total County Employment	Average Wage
Jefferson	8,221	$31,600
Clallam	22,033	$33,100
Kitsap	81,890	$42,100
Total	**112,144**	**39,600**

Source: Washington Department of Employment Security

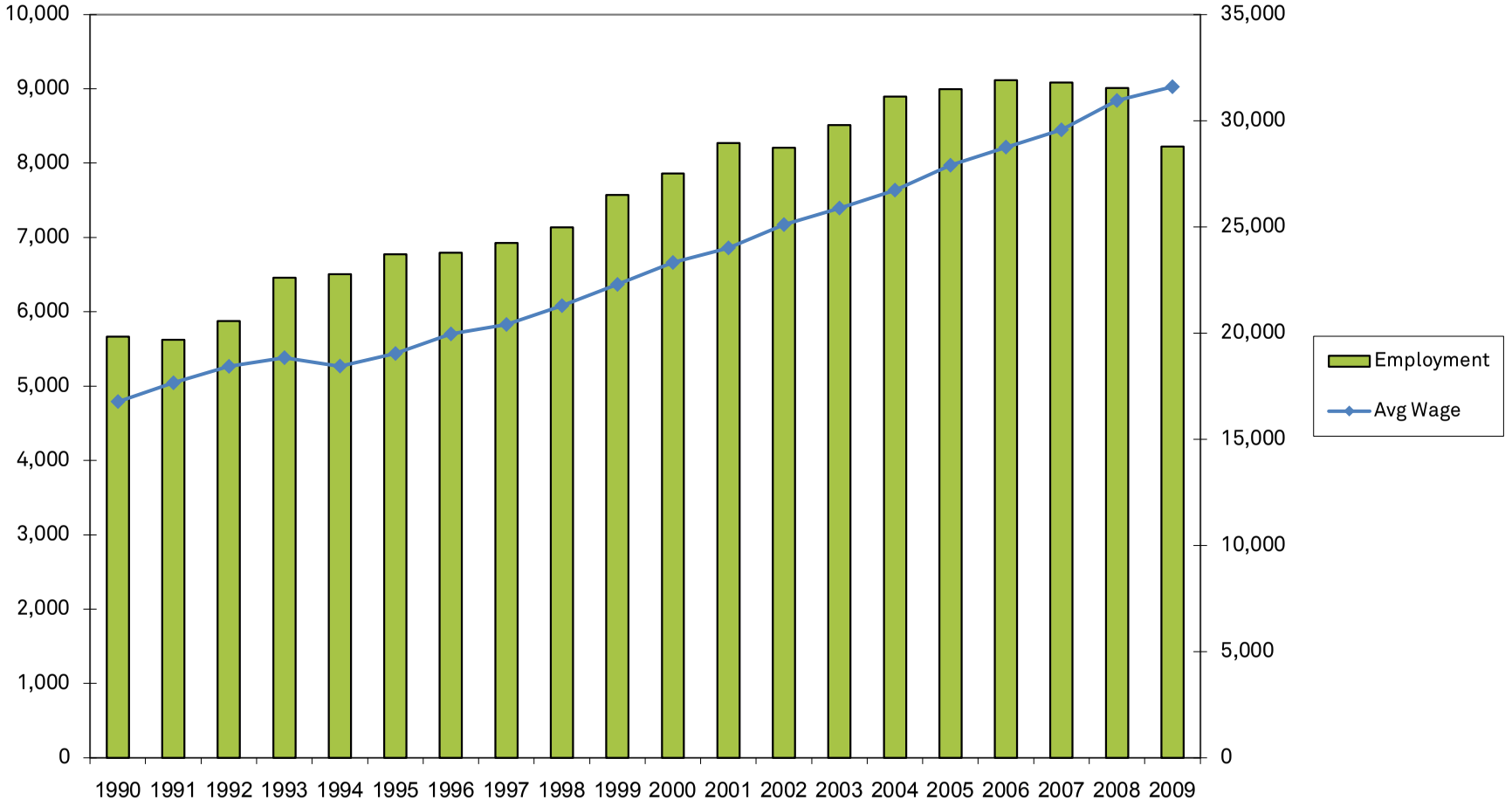


Figure 2-1. Unemployment Rate, Jefferson County and WA State 1991 to 2010.

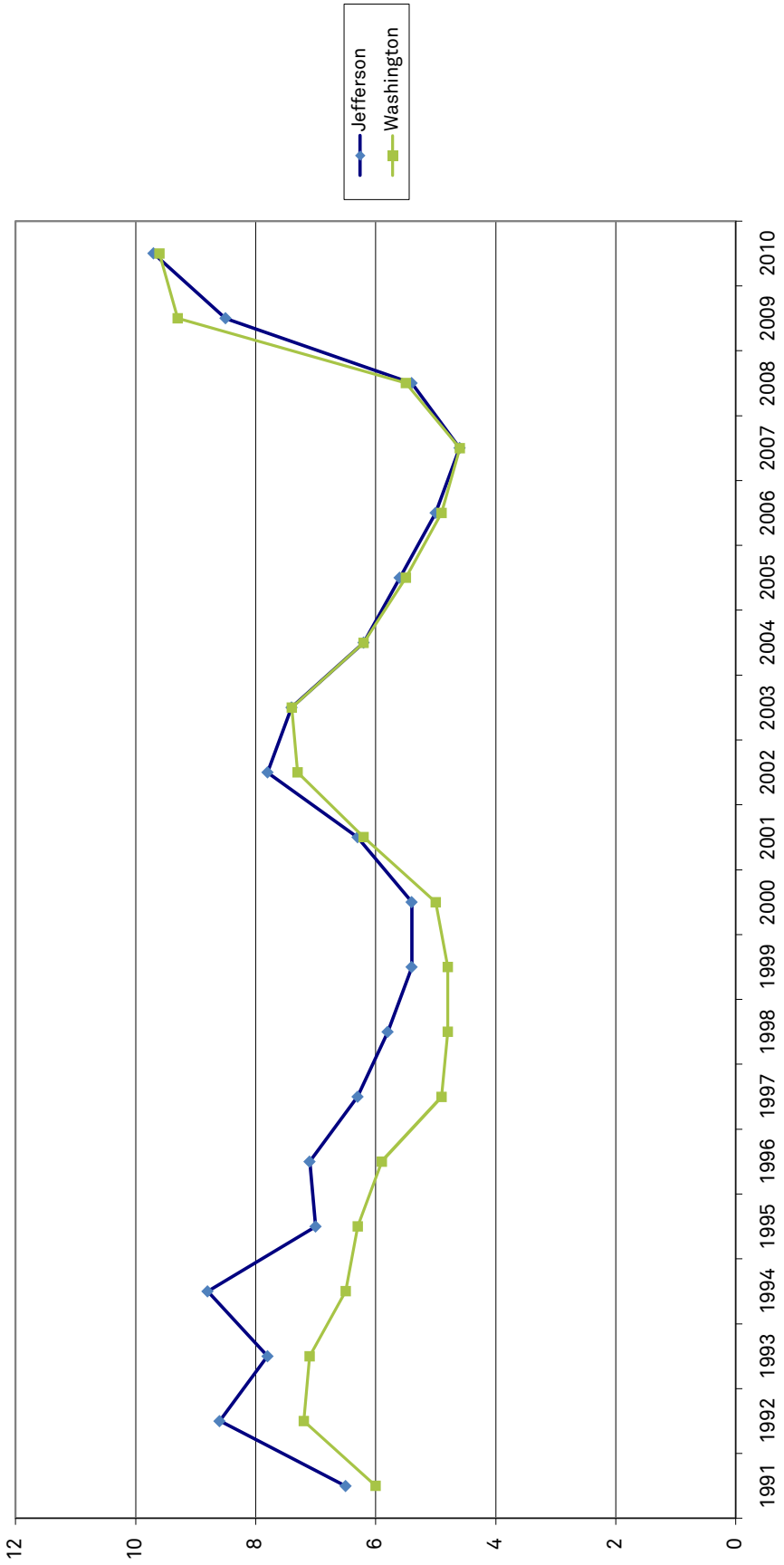


Figure 2-2. Growth in Employment and Average Wage, Jefferson County 1990 to 2009.

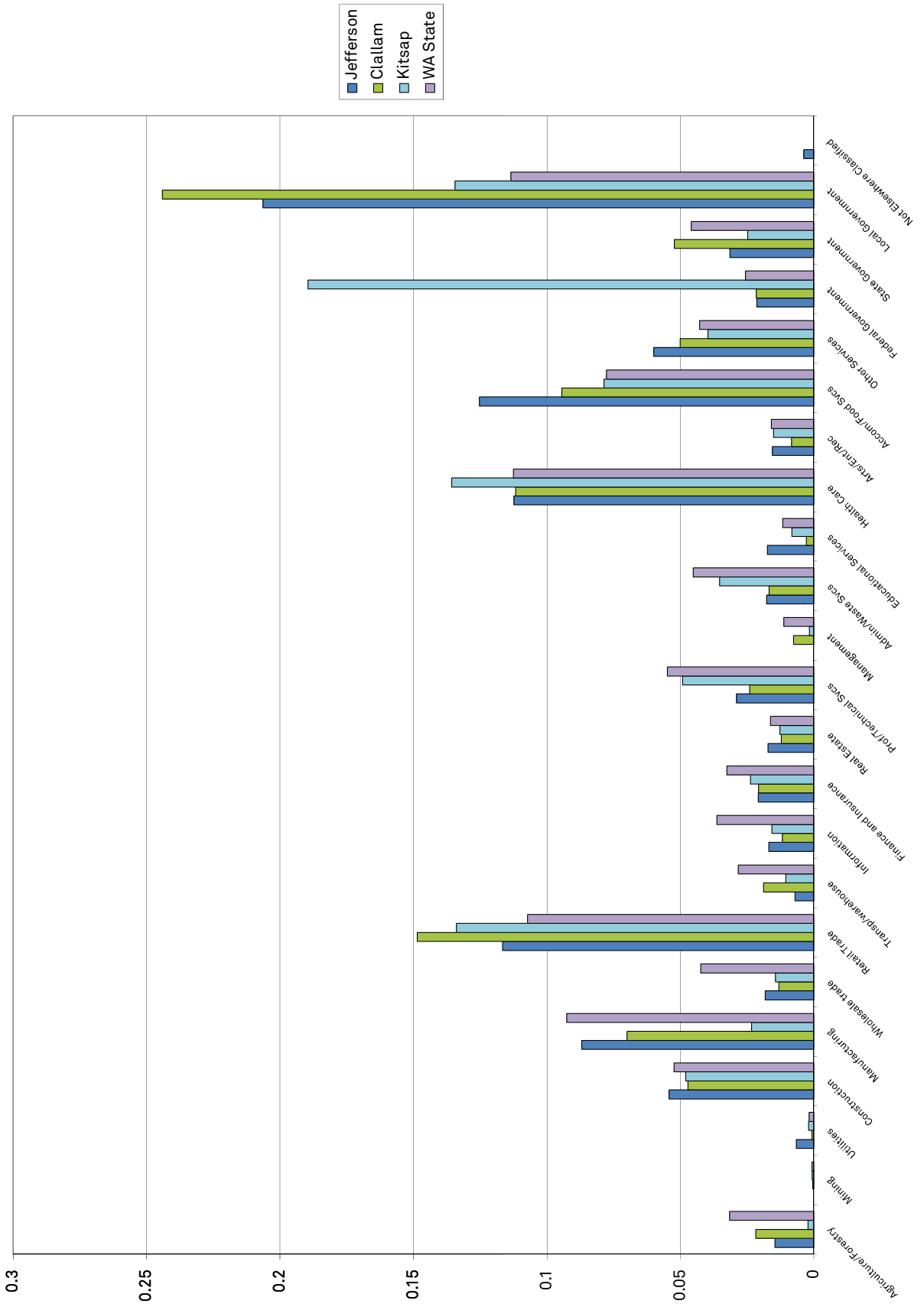


Figure 2-3. Distribution of Total Employment by Sector, Jefferson, Clallam, Kitsap Counties and WA State.

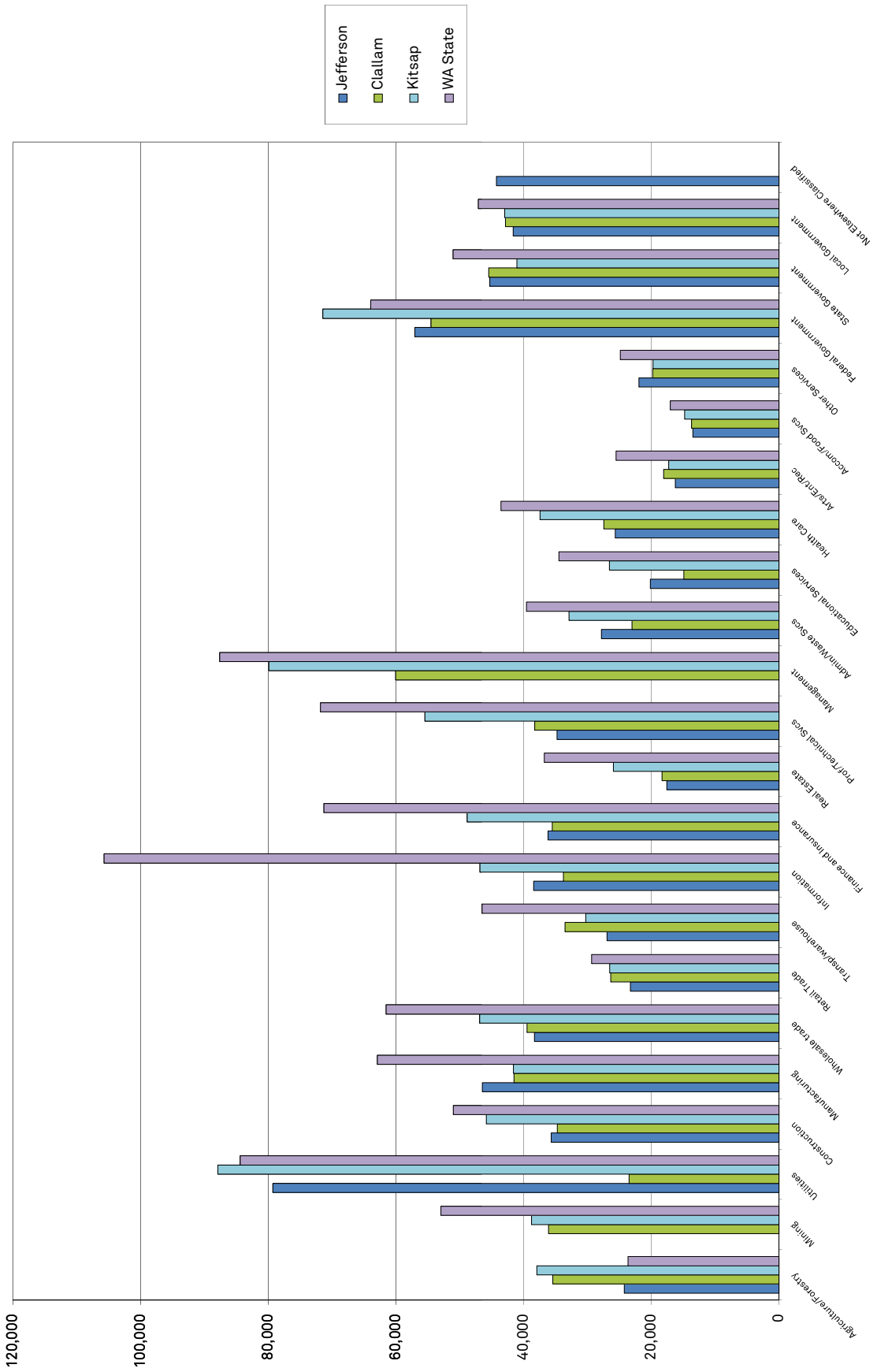


Figure 2-4. Average Wage by Sector Jefferson, Clallam, Kitsap Counties and WA State.

The state provides projections of employment by industry and occupation for the Olympic Consortium for the period 2008 through 2018, as shown in Table 2-8. As described above, Jefferson County and, to a lesser extent, Clallam County have a much smaller employment base than Kitsap County, so long-term influences in Jefferson County may not be accurately reflected in the three-county forecasts. However, within individual industries, the projections may be instructive. The projections in industrial-related sectors are summarized in Table 2-9.

Table 2-8. Employment Projections – Olympic Consortium Jefferson, Clallam, Kitsap Counties.

Industry	Est. Emp. 2008	Est. Emp. 2013	Est. Emp. 2018	Avg. Annual Growth Rate 2008-2013	Avg. Annual Growth Rate 2013-2018
Natural Resources And Mining					
Logging	400	300	300	-5.6%	0.0%
Mining	100	100	100	0.0%	0.0%
Subtotal	**500**	**400**	**400**	**-4.4%**	**0.0%**
Construction	7,900	6,300	7,000	-4.4%	2.1%
Manufacturing					
Durable Goods					
Wood Products	500	500	500	0.0%	0.0%
Nonmetallic Mineral Products	200	200	200	0.0%	0.0%
Fabricated Metal Products	200	200	300	0.0%	8.4%
Machinery Manufacturing	100	100	100	0.0%	0.0%
Computer and Electronic Products	100	100	100	0.0%	0.0%
Other Transportation Equipment	1,000	1,200	1,100	3.7%	-1.7%
Other Durable Manufacturing	900	900	1,000	0.0%	2.1%
Subtotal	**3,000**	**3,200**	**3,300**	**1.3%**	**0.6%**
Non-Durable Goods					
Food Manufacturing	200	300	300	8.4%	0.0%
Paper & Paper Products	500	400	300	-4.4%	-5.6%
Printing & Related Support	100	100	100	0.0%	0.0%
Other Non Durable	400	400	400	0.0%	0.0%
Subtotal	**1,200**	**1,200**	**1,100**	**0.0%**	**-1.7%**
Total Manufacturing	**4,200**	**4,400**	**4,400**	**0.9%**	**0.0%**
Wholesale Trade	1,900	1,700	1,800	-2.2%	1.1%
Retail Trade					
Food and Beverage Stores	2,100	2,000	2,000	-1.0%	0.0%
Motor Vehicle and Parts Dealers	3,500	3,000	2,800	-3.0%	-1.4%
Other Retail	11,000	11,700	12,900	1.2%	2.0%

Subtotal	16,600	16,700	17,700	0.1%	1.2%
Transportation, Warehousing And Utilities					
Utilities	300	200	200	-7.8%	0.0%
Transportation And Warehousing	1,500	1,400	1,400	-1.4%	0.0%
Subtotal	1,800	1,600	1,600	-2.3%	0.0%
Information					
Software Publishers	200	200	300	0.0%	8.4%
Other Publishers	800	600	600	-5.6%	0.0%
Other Information	900	900	1,000	0.0%	2.1%
Subtotal	1,900	1,700	1,900	-2.2%	2.2%
Financial Activities					
Finance & Insurance	2,900	2,800	2,900	-0.7%	0.7%
Real Estate And Rental Leasing	1,700	1,700	1,800	0.0%	1.1%
Subtotal	4,600	4,500	4,700	-0.4%	0.9%
Professional And Business Services					
Professional, Scientific and Technical Services	4,800	5,500	5,800	2.8%	1.1%
Management Of Companies and Enterprises	300	300	400	0.0%	5.9%
Other Professional Services	3,600	3,900	4,700	1.6%	3.8%
Employment Services	500	600	700	3.7%	3.1%
Subtotal	9,200	10,300	11,600	2.3%	2.4%
Education and Health Services					
Private Education Services	1,500	1,600	1,800	1.3%	2.4%
Health Care & Social Assist. Private	14,900	16,400	18,900	1.9%	2.9%
Subtotal	16,400	18,000	20,700	1.9%	2.8%
Leisure And Hospitality					
Arts, Entertainment, and Recreation	1,700	1,600	1,800	-1.2%	2.4%
Accommodation and Food Services	10,300	10,700	11,200	0.8%	0.9%
Subtotal	12,000	12,300	13,000	0.5%	1.1%
Other Services	**4,800**	**4,700**	**4,800**	**-0.4%**	**0.4%**
Government					
Federal Government	15,500	16,100	16,700	0.8%	0.7%
State & Local Government Other	12,500	13,200	13,900	1.1%	1.0%
Government Educational Services	**9,400**	**9,600**	**10,000**	**0.4%**	**0.8%**
Subtotal	37,400	38,900	40,600	0.8%	0.9%
TOTAL	**119,200**	**121,500**	**130,200**	**0.4%**	**1.4%**

Source: Washington Department of Employment Security Workforce Explorer

Table 2-9. Employment Projections – Industrial Sectors.

	Est. Emp. 2008	Est. Emp. 2013	Est. Emp. 2018	Avg. Annual Growth Rate 2008-2013	Avg. Annual Growth Rate 2013-2018
Construction	7,900	6,300	7,000	-4.4%	2.1%
Manufacturing					
Durable Goods	3,000	3,200	3,300	1.3%	0.6%
Non Durable Goods	1,200	1,200	1,100	0.0%	-1.7%
Total Manufacturing	4,200	4,400	4,400	0.9%	0.0%
Wholesale Trade	1,900	1,700	1,800	-2.2%	1.1%
Transportation Utilities	1,800	1,600	1,600	-2.3%	0.0%
Information	1,900	1,700	1,900	-2.2%	2.2%
Prof & Bus. Services					
Prof., Scientific And Tech. Services	4,800	5,500	5,800	2.8%	1.1%
Total	**22,500**	**21,200**	**22,500**	**-1.2%**	**1.2%**

Source: Washington Department of Employment Security Workforce Explorer

As shown, no growth is projected for the combined selected sectors over the next 10 years, although there is some growth in durable goods manufacturing.

Local Economic Initiatives

Jefferson County, the City of Port Townsend, and the Port of Port Townsend are participating in a Joint Economic Development Planning Process being conducted somewhat in parallel with the feasibility study. ED Hovee and Company LLC prepared an Existing Conditions Report for the Joint Planning Team in October 2010. In addition to identifying existing economic data and data gaps, the report provided a preliminary assessment of Strengths, Weaknesses, Opportunities and Threats (SWOT). The Strengths and Weaknesses, and Opportunities and Threats are shown in Tables 2-10 and 2-11, respectively. As related to this study, the primary market opportunities for industrial space identified are:

- Advanced Technology
- Going Green
- Industrial/Incubation Property Development

Table 2-10. Joint Economic Development Planning Existing Conditions Report-Strengths and Weaknesses.

Strengths	Weaknesses
Countywide	
◦ High quality of life appeal (in extraordinary natural setting)	◦ Relatively high & growing service sector needs (especially as local population ages)
◦ Proximate to but removed from Seattle metro	◦ Long travel time to Puget Sound urban centers
◦ Recognized visitor destination	◦ Vulnerability to transportation disruptions (ferry service cuts, Hood Canal Bridge repairs)
◦ High proportion of non-locally based income (only 30% dependent on wages & salaries)	◦ Relatively low wage economy (with high housing cost)
City of Port Townsend	
◦ Historic heritage (distinct Victorian seaport identity)	◦ Difficulty integrating new development (minority share of county population & growth)
◦ Distinct downtown & neighborhood commercial (with destination Main Street appeal)	◦ Small local market area & retail sales leakage (for price & comparison sensitive shoppers)
◦ Fort Worden (as an anchor historic & visitor resource)	◦ Challenge of ongoing heritage maintenance (both cost & marketing to the next generation)
Unincorporated Jefferson County	
◦ Distinctive rural villages (including master planned resorts)	◦ Disconnect between urban area & rest of county (with long travel times outside of east county)
◦ Substantial public lands ownership (national/state park & forest lands)	◦ Less local control over land use (with majority federal & state ownership)
◦ Designated industrial & commercial sites (to meet locally generated business needs)	◦ Current lack of UGA sewer capacity (limiting business to low intensity septic use)
Port of Port Townsend	
◦ Diverse & well-used facility portfolio (marinas/RV/boat launches, airport)	◦ Lack of scheduled commuter air service (for convenient Seattle access)
◦ Focused marine trades emphasis (a working harbor with 60 businesses)	◦ Deferred harbor facility maintenance (boatyard improvements lag behind needs)
◦ Diverse revenue base covering operations & debt (facility user + renters, property tax augmented)	◦ Revenue vulnerability to recession (inadequate to fund all planned improvements)

Source: E.D. Hovee & Company, LLC for Jefferson County, City of Port Townsend and Port of Port Townsend: Jefferson County Joint Economic Development Planning – Existing Conditions Report

Table 2-11. Joint Economic Development Planning Existing Conditions Report-Opportunities and Threats.

Opportunities	Threats
Countywide	
◦ Value-added visitor services (historic, festival, arts & environmental themed)	◦ Potential over-dependence on mature travelers (need to cultivate the next generation)
◦ Retirement cluster (active communities & premium services)	◦ Added retiree demand on public services (with limited added non-residential tax base)
◦ Advanced technology with broadband capacity (start-up trade sector manufacturing & services)	◦ Distance from markets & direct client contact (constraining options for business expansion)
◦ Going green (food & farm, development, business ethic)	◦ Added costs/uncertainties of green development (& need for broad customer/client acceptance)
City of Port Townsend	
◦ Fort Worden Collaborative (an emerging arts & creative cluster)	◦ Fort Worden long-term sustainability challenge (ongoing non-user funding & image freshening)
◦ Downtown & neighborhood business districts (next steps for visit/shop/work/live integration)	◦ Historic structure costs & code challenges (especially for adaptive reuse & upper levels)
◦ Maritime investment at Port Hudson/Boat Haven (niches for competitive, authentic marine trades)	◦ Potential market shrinkage & global competition (with need to maintain distinct non-metro niche)
Unincorporated Jefferson County	
◦ Advanced technology & manufacturing growth (small to medium firms on sites with sewer)	◦ Cost of providing fully served, shovel-ready sites (& unpredictable or prolonged permitting)
◦ Food & farm market diversification (managed & branded fresh, organic, sustainable)	◦ Needed capital & marketing support for local agriculture (also need to preserve working farmland)
◦ Sustainable, full-service rural village living (a mix of resort & year-round resident options)	◦ Conflicts over development versus preservation (& need to re-invent maturing developments)
Port of Port Townsend	
◦ Planned harbor improvements implementation ($8.4 million in 5 years/$52.2 million in 20)	◦ Lack of full resources for harbor improvements (leading to potential project deferral or cutbacks)
◦ Airport master plan development program (3 phases totaling $9.3 million over 20 years)	◦ Potential for declining generation aviation activity (but majority of improvements federally funded)
◦ More individual/incubator property development (land and/or building space)	◦ Speculative risk with property development (unless phased in synch with user needs)
◦ Diversified economic development options (e.g. other regional visitor destination facilities)	◦ Potential concern with private sector competition (unless focused where there is no private interest)

Source: E.D. Hovee & Company, LLC for Jefferson County, City of Port Townsend and Port of Port Townsend: Jefferson County Joint Economic Development Planning – Existing Conditions Report

In another economic development initiative underway in a parallel process, Team Jefferson (the local economic development coordinating organization) has identified nine industry clusters with opportunities for economic growth in Jefferson County:

- Technology-Information Economy
- Arts/Culture
- Marine Industries
- Food and Farming
- Health and Wellness
- Lifelong Learning
- Tourism
- Fisheries/Shellfish
- Stewardship/Restoration

As identified in the SWOT concept by Hovee, the industrial-related opportunities are in technology, marine industries, and food/farming.

Industrial Market Conditions

Jefferson County

Both unincorporated Jefferson County and the City of Port Townsend have land zoned for industrial development. Table 2-12 provides an overview of general industrial land in Jefferson County based on Jefferson County Assessor data. The presence of some vacant parcels does not indicate that they are either suitable or available, but the data provide a summary measure of the inventory of land. The figures do not include lands in the unincorporated county designated for resource industrial use, or lands in the city designated for marine-related uses at Boat Haven and Point Hudson. There are approximately 30 acres of land at Boat Haven fully built-out and 24 acres at Point Hudson.

There are approximately 1,000 acres of industrially zoned land for general industrial uses, with approximately 25% of that classified as vacant.

- The Heavy Industry (HI) zoned land is around the Port Townsend Paper Mill.
- The Light/Industry/Commercial (LI/C) and Light Industry include the Glen Cove Industrial Park.
- The Light Industry/Manufacturing (LI/M) is located in Quilcene.
- The Urban Growth Area (UGA) Light Industrial is in Port Hadlock and Irondale.
- The Mixed Commercial/Light Manufacturing is located in the western portion of Port Townsend.

As shown in the table, the areas with the greatest amounts of land designated as vacant are the heavy industrial zone around the mill, the light industrial zoned land at Glen Cove, and the mixed-commercial light manufacturing lands in the City of Port Townsend.

Table 2-12. Industrial Land Jefferson County.

Zoning	Total Acres	Vacant Acres
Heavy Industry (HI)	182.0	115.5
Light Industry/Commercial (LI/C)	75.0	27.7
Light Industry (LI)	58.5	37.8
Light Industry/Manufacturing (LI/M)	34.0	8.4
UGA Lightt Industrial	26.3	6.5
Mixed Commercial/Light Manufacturing (MC)	58.4	42.5
Essential Public Facilities-Airport	286.2	0.6
Essential Public Facilities-Waste Management	259.4	16.0
Total	**979.8**	**255.0**

Excludes Resource Industrial and Marine-Related Uses.
Sourrce: Jefferson County Assessor, Property Counselors

The Glen Cove Industrial Park and the Port Townsend Business Park are the two primary sites available for light industrial business in the county. The characteristics of these parks are summarized in Table 2-13.

The Glen Cove Industrial Park, located along SR 19, is an older park with few amenities. The park lacks curbs or gutters, some streets are not paved, and sewage systems are on-site septic. The light industrial commercial zoning is generally to the south. The land is flatter, the parcels are larger, and the zoning allows for larger buildings. Approximately one-third of the LI/C zoned land is identified as vacant, while two-thirds of the LI zoned land is identified as vacant.

Requirements for septic systems are a detriment to development in some cases. While the soils are generally good in the area, many lots are small, and property assembly may be required.

The pace of development has been slow over the 30+ year life of the park. The absorption has averaged approximately 2 acres per year, with few recent land sales. Earlier in the decade, sales ranged from $0.50 to $1.50 per square foot; recent asking prices of $2.40 to $5.00 per square foot have not attracted buyers.

Rents for non-owner occupied buildings are $0.30 to $0.40 per square foot for warehouse space and $0.55 to $0.60 per square foot for office space.

The Port Townsend Business Park is a fully served park in the City of Port Townsend and includes city sewer, paved streets, and curbs and gutters. The first phase of the park was opened in 1994. Absorption has been slow at approximately one-half acre per year. Existing tenants include offices, some industrial space, institutional uses, and public storage. The

Table 2-13. Existing Business and Industrial Parks.

	Glen Cove Industrial Park	Port Townsend Business
Total Acres (excl. streets and open space)	LI/C: 75 LI: 58.5 **Total: 133.5**	24.3
Vacant Acres	LI/C: 27.7 LI: 37.8 **Total: 65.5**	16
Improved parcels as % of Total	LI/C: 51% LI: 23%	47%
Parcel Sizes	.4 to 1.5 acres	.2 to .6 acres
Utilities	On-site septic Water and electric	Sewer, water & electric
Development Regulations Building Height Maximum Building Size	 35' (50' w/ Type 3 review) LI: 10,000 (20,000 w/ Type 3) LI/C: 20,000 (40,000 w/ Type 3)	 35' FAR 2.0
Uses		Light ind. Office and ret.
Topography	Some slope to east	Flat
Current Development	Miscellaneous Lt. Industry Public Storage	Goodwill Miscellaneous Lt. Industry Public Storage
History	Over 30 years. Avg. 2 ac/yr	1st division in 1994, next in 2010. Avg .5 ac/yr
Current Land Prices	**$2.40 to $5.00 asking**	**$5.00 to $7.00 asking**

lots are small to medium sized, ranging from 0.2 to 0.6 acres. Several of the existing buildings cover two or more lots. The second phase of the park is now available, with asking prices of $5.00 to $7.00 per square foot depending on the size.

Both parks allow for larger buildings than the 10,000 square foot maximum allowed at the Port property under the development standards for the Airport Overlay III zone.

The two parks represent two ends of a development spectrum. Glen Cove represents a low-cost, limited service setting, while the Port Townsend Business Park is a higher cost, full-service setting. Absorption has been slow at both locations, but particularly slow at the Port Townsend Business Park. The overall performance can be explained as follows.

- Overall growth in industrial employment has been modest.
- Tenants are sensitive to the high prices of a full-service park.
- The market is not large enough to support significant investment in speculative multi-tenant buildings. This limits the opportunity for small and start-up businesses.

Kitsap And Clallam Counties

Kitsap and Clallam counties are included with Jefferson County in some of the employment programs and analyses. Industrial conditions in those counties provide some insights into competitive conditions at the regional level.

West Kingston features several industrial developments at the intersection of SR 104 and Bond Road. These developments are located between Jefferson County and the Central Puget Sound area, along a major transportation link between the two. The area includes three industrial developments:

- Kennedy Business Park (8 acres)
- Grabin Gewinn (23 acres)
- West Kingston (12 acres)

The properties have generally built out over 20 years. Some of the non-owner occupied space is vacant, and rents are as low as $0.30 per square foot. Land prices are approximately $3 per square foot.

Twelve Trees Business Park is located off Highway 3, south of the Hood Canal Bridge. The100-acre park includes approximately 480,000 square feet of building area, and the park is approximately one-half built out. While some sites were sold to owner users, much of the development is buildings for rent. Rents are relatively high at $0.90 to $1.00 per square foot for office space and $0.60 for industrial space. The developer identifies the keys to success of his development as concern with aesthetics and ability to offer buildings for lease.

The Port of Bremerton's Olympic View Industrial Park is located across SR 3 from the Bremerton Industrial Airport. The 348-acre park hosts 45 companies with 500,000 square feet of space. The Port has traditionally leased ground. Phase I of the Northeast Campus is currently for lease. Three of the seven parcels are leased, but no new leases have come on board since 2005. Land lease rates for existing tenants are $12,000 per acre per year, equivalent to a 9% return on $3 per square foot land. The Port developed Business Park Building #1; 13,000 square feet remains vacant. Rental rates are $0.65 per square foot.

Clallam County is similar to Jefferson County in its isolation from the central Puget Sound area. While its overall employment is several times that of Jefferson County, it too has a relatively small general industrial base. The largest industrial park is the 110-acre North Airport Industrial Park at the Fairchild International Airport. The Port of Port Angeles is currently developing the Edgewood Industrial Park to the south of the runway. Recent appraisals for the Port identified land values of $2.00 to $2.50 per square foot for large lots and $4.00 for small lots. The other major industrial park is the 80+ acre Carlsborg Industrial Park in Sequim. The Lincoln Center in Port Angeles is a 6,500 square foot incubator facility. The center is currently threatened by a shortage of tenants, funding, and board representation.

Overall, Kitsap and Clallam counties include a range of industrial land and buildings similar to that of Jefferson County, with lower priced land without sewers, as well as higher amenity parks. The public ports at Bremerton and Port Angeles both report that restrictions on land sales have reduced the pool of potential tenants at their parks. The largest parks in Kitsap County report that the strongest demand is for leased buildings rather than land.

Projected Demand

The market performance of the eco-industrial park will be determined by the level of demand reflected in the mix of tenants, the price they pay, and the rate of absorption. The projected demand is presented and explained in this section in terms of:

- Competitive Position
- Likely Sectors
- Tenant Profiles
- Projected Absorption and Price

Competitive Position

Given the existing competitive conditions both locally and regionally, as well as the economic outlook for employment in the area, the eco-industrial park should be positioned to offer the following features:

- Master-planned park with consistent quality, look, and feel.
- Utility systems available to accommodate the initial needs and expansion of tenant businesses.
- Competitive price to appeal to start-up and expanding businesses.
- Opportunities for small sites, larger sites, and buildings for lease.

The park can be marketed as a higher amenity setting, with coordinated infrastructure at an affordable price. In effect, the park would be positioned between the available lands at Glen Cove and the Port Townsend Business Park.

Such a park matches the definition of an eco-industrial park in two or more respects. It could accommodate growing businesses in sectors with green products and services. It would support other businesses in the local community. However, its potential to feature symbiotic processes is somewhat limited due to its size and market conditions. It would be advantageous if the park could attract an anchor tenant that would provide the symbiosis for a prototypical industrial park, as well as create a strong preleasing environment. We have not identified any likely use such as the renewable energy plant of Fairfield in Baltimore. In the absence of such an eco-park anchor, the likely common theme for the tenant mix is a shared interest in the physical setting and systems, and the potential to cooperate in resource use and site utilization.

The restriction on sale of property typically makes such a park most attractive to smaller companies with less capital or access to capital. Such tenants often prefer to lease buildings rather than land, again as a way of reducing capital investment. As described in the previous section, port districts elsewhere on the Olympic Peninsula have found resistance to long-term ground leases. In Kitsap County, the two largest industrial parks, Twelve Trees and Olympic View Industrial Park, both report that their successes are related to their ability to offer buildings for lease rather than land for sale or lease.

Likely Sectors

The likely tenants for the eco-industrial park are existing businesses whose needs are not being met in the area currently, or growth in key sectors where the area has a competitive advantage. As described in the Local Economic Base and Industrial Market Conditions section, no growth in industrial employment is projected in the Olympic Consortium (three-county area) over the next 10 years. Statewide, however, growth is projected for green jobs. Table 2-4 listed the 15 projected highest growth industries in the state over the next 10 years. Of those, seven industries would be appropriate for an industrial setting. The projected growth rates for such jobs would indicate 5,300 new green jobs statewide over the period. Jefferson County currently represents 0.3% of total private employment within the state and a similar percentage of manufacturing employment. Such a share of the new green jobs would be only 16 jobs.

Given the area's relative isolation, the slow historic industrial absorption, and the likely small share of new green jobs statewide, it is likely that new tenants would be local firms rather than ones relocating from outside the area. Within the area, three categories of businesses have unmet needs as well as green characteristics compatible with an eco-industrial park: construction companies, manufacturing and fabrication, and food processing and services. Table 2-14 provides profiles of these three potential tenant categories.

Construction Companies

Companies that build energy-efficient and low environmental impact products represent the largest category of green businesses in absolute terms, and one of the fastest growing as well. Jefferson County is home to several construction companies that provide green products and services. Powertrip is a solar panel installer. Greenpod is a designer and builder of compact, energy-efficient modular homes. Both companies require land and buildings for material storage, fabrication, finishing, and administration. Powertrip recently purchased a 1-acre site in Glen Cove.

Manufacturing And Fabrication

These firms provide specialty parts and assemblies for a variety of industries and types of equipment. J&S Fabrication is a machine shop and custom fabricator with 15 employees. They recently bought an existing 8,000 square foot building on a 2-acre site in Glen Cove. This facility meets the foreseeable needs. Atlas Technologies designs and develops vacuum-related parts and assemblies. With development of a new product for storage of flowers in a vacuum chamber, they are outgrowing their current 6,000 square foot building on a 0.6-acre site in Glen Cove. They envision the need for a 40,000 square foot building. They have 20 employees. H2Out builds a filter to remove water from fuel lines. With expected new contracts, they will require expanded facilities. If they secure the contracts they are currently negotiating, they would expand. They have identified a site with a 13,000 square foot existing building across SR 19. Employment could reach 17 by year end.

These businesses can expand quickly as they develop new technologies, processes, and products. Their infrastructure needs are similar, and they could realize the mutual benefits of co-location, with custom fabricators serving small manufacturers, and both requiring specialty services. J&S sometimes requires a specialty provider for powder coating. Atlas uses a Sequim-based contractor for explosion bonding of parts.

Table 2-14. Tenant Profiles.

Construction	
Typical Tenants:	General contractors, specialty contractors for energy systems, low impact development, modular products
Markets:	Regional
Growth Outlook:	Very strong
Typical Tenant Size (Employment):	5-20
Typical Building Requirements:	4,500 to 5,000 sq ft
Typical Site Area Requirements:	½ acre to 2 acres
Utilities or Infrastructure Needs:	Power, Water/Sewer, Domestic water, Broadband
Ability to Pay:	Moderate (cost-conscious)
Fabrication/Light Manufacturing	
Typical Tenants:	Machine Shops, Specialty Fabricators, Light Manufacturing, Assembly
Markets:	National/International
Growth Outlook:	Strong
Typical Tenant Size (Employment):	10-40
Typical Building Requirements:	5,000 to 20,000 sq ft. Could be multiple buildings
Typical Site Area Requirements:	½ acre to 2 acres
Utilities or Infrastructure Needs:	Power: 3-Phase, 480-Volt Service Water/Sewer: Domestic water
Ability to Pay:	Relatively High (less cost-conscious)
Food Processing And Service	
Typical Tenants:	Cold storage, processing, sales
Markets:	Regional/national/international
Growth Outlook:	Strong
Typical Tenant Size (Employment):	5 to 10.
Typical Building Requirements:	2,500 to 10,000 sq ft
Typical Site Area Requirements:	0.5 to 1 acre
Utilizes or Infrastructure Needs:	Power Water/Sewer: Process water as much as 110,000 gallons for microbrewery and 25,000 gallons for specialty cheese.
Ability to Pay:	Moderate (very cost-conscious)

Food Processing And Services

Food/farming is one of the clusters identified by Team Jefferson. Several organizations in the community are working to preserve farmland, encourage local production, stimulate value-added processing, provide necessary support facilities, and offer marketing opportunities. Team Jefferson identified several specific needs and opportunities.

- Mt. Townsend Creamery has immediate need for an additional 800 square feet of cold storage.
- Panne D'amore is looking for storage capacity for 1 year's organic wheat harvest to save distribution costs.
- Finn River needs cold storage for cider and dry storage for wheat.
- Several grass-fed beef growers require cold storage.
- 20 small value-added businesses need a community commercial processing facility.

Shared processing, cold storage, and distribution facilities could serve as the anchor tenant for a food processing and food service-related eco-industrial park. However, these kinds of shared facilities typically require grant funding to be financially feasible. In eastern Washington, state and federal funds have been secured for beef and poultry processing facilities. Without such grant funding, it is unlikely that Port investment would be feasible, or that the facility would be marketable.

Projected Absorption And Price

The future performance of an eco-industrial park will depend upon its competitive characteristics and external economic events. For purposes of an initial projection, we identify the key characteristics of the park to be:

- Master planned park with consistent quality, look, and feel.
- Utility systems available to accommodate initial needs and expansion of tenant businesses.
- Competitive pricing to appeal to start-up and expanding businesses.
- Opportunity for smaller sites, larger sites, and buildings for lease.

Projected Absorption

The current employment base and historical industrial absorption do not suggest a robust rate of future absorption county-wide. Currently, Jefferson County represents approximately 1,000 jobs in sectors that typically occupy industrial-type facilities. Employment in these sectors is expected to remain constant over the next 10 years. While growth is projected in green sectors, the number of jobs statewide in industrial categories is projected to grow by 5,300. If Jefferson County captured its historical share of 0.3%, that would amount to 16 new jobs over ten years.

These figures are based on averages across sectors and for the county as a whole. A new industrial park could outperform these figures if it provides a product not currently available in the marketplace. In particular, a park that meets the needs of existing tenants whose current facilities are no longer adequate could build out without net growth in local employment. Such a situation is still beneficial to the economy as a whole, if it allows current businesses to remain in the community, rather than relocate.

This analysis did not include a survey of expansion needs of existing businesses. We did contact those businesses that were identified as having outgrown their existing facilities and needing new sites. Atlas Technologies, H2Out, and Tolly Gardens are all located in Glen Cove and would like to move. Their needs are similar at 20,000 to 40,000 square feet of building area. In most cases, they cannot expand at their current sites. Atlas Technologies and Tolly Gardens both seek sites that would allow them to provide larger buildings. H2Out is looking at an existing building. None of these businesses identified the eco-industrial park as a match for its needs. In particular, both Atlas and Tolly identified the 10,000 square foot maximum building site imposed by the zoning for the site as conflicting with their needs.

Looking to the future, it is possible that the Port could get a commitment from one or two such companies before initiating the development. Such tenants might represent 5 to 7 acres of initial occupancy. On an ongoing basis, it is likely that there will be additional businesses with expansion needs with the ebb and flow of the general economy and the fortunes of individual enterprises. If one new company emerges each year as a strong growth candidate, over a 3-year period of discussion and planning, there will always be three or more candidate companies in search of a 2- to 5-acre site. While some of these companies may never go through with their expansion plans, and several may choose a lower cost site or one that is available for purchase, it is possible that the eco-industrial park could lease up in a period of 10 years. It is also possible that a company from outside the area is attracted because of the personal interest of its owner or CEO. Alternatively, the park could experience the slower absorption that the Port Townsend Business Park has experienced after an initial flurry of sales.

For purposes of this analysis, realistic absorption rates for assessing the feasibility of park development would be:

- Pre-lease of 5-7 acres.
- Lease-up in 10 years or more.

Projected Price

The property at the eco-industrial park is assumed to be available for long-term ground lease. The lease rate will be determined by a market-based percentage of the market value of the land. The Port's existing ground leases are based on a 9% return on value. This factor is assumed to be applicable to the eco-industrial park.

The values for the eco-industrial park lands will fall within a range determined by values of competitive properties. The values of those properties differ for properties with sewer service and those requiring on-site septic systems. This difference is dictated by the combination of the additional land required and the cost of the on-site systems.

- *Properties with Sewer Service*
  The Port currently leases land at the Boat Haven at rates of $0.63 per square foot per year. This is equivalent to 9% of $7 per square foot land use. This land value is at the upper end of the asking price range of sites in the Port Townsend Business Park.

  Existing leases of sites with sewer service at the Port of Bremerton's Olympic View Industrial Park have annual rents of $12,000 per acre, equivalent to $3 per square foot at a 9% return. Adopted rates for new leases of vacant sites are higher, but the park has not entered into any leases for vacant sites since 2005. The Twelve Trees Industrial Park in north Kitsap County sold land at a value of $20 per square foot of permitted building, equivalent to $5 per square foot of land.

- *Properties without Sewer Service*
  Properties at Glen Cove are representative of values of property without community sewer systems. While there is a site with an asking price of $5 per square foot, actual sales prices have been much lower. The property now occupied by J&S Fabrication sold for $1.10 per square foot in March 2005. A parcel to the south was offered at $2.40 per square foot in 2010.

  The industrial parks in West Kingston have current land value of approximately $3 per square foot. The Port of Port Angeles recently had appraisals for un-sewered sites south of Fairchild Airport at $2.00 to $2.50 per square foot for large lots and $4.00 for small lots.

As an attractive master-planned facility, the eco-industrial park should command a higher land value than Glen Cove, or the West Kingston industrial parks. With a community sewer system, the park should command prices (values) at the upper end of the range in Jefferson County.

Supportable land prices are projected to be:

- Without community sewer: $4/sq ft.
- With community sewer: $6/sq ft.

Associated ground lease sites would be 9% of these values annually.

Building Leases

If the Port, or a master lessee, were to develop one or more industrial buildings in the park, it would expand the range of potential tenants to include smaller start-ups or expansion firms. As presented earlier, both the Port of Bremerton and Twelve Trees Business Park have expressed that the strongest demand has been for building leases rather than land leases. Even a single speculative building could set a standard for development in the park. The Port or master lessee could build additional buildings as demand warranted.

A new building could support rents at the upper end of the market in the area, at $0.50 to $0.60 per square foot per month triple net (tenant pays operating expenses).

Management And Operating Enhancements

As noted in the Eco-Industrial Parks section, ongoing cooperative relationships among tenants are an important feature of an eco-industrial park. Whether the park is a symbiotic system like the park in Denmark or the proposed Fairfield facility, or a park with efficient and ecological design features; there is still the opportunity for coordination of resource use, and sharing of facilities. This cooperation can be achieved on a voluntary basis or through the terms of the leases. Such cooperation furthers the objectives of efficient resource use and LID, and will distinguish the parks from traditional industrial facilities.

3

Existing Conditions

This chapter describes the existing conditions applicable to the project site. For this study, relevant existing conditions examined include land use and regulatory considerations that affect the type and intensity of development that can occur on the site, physical and environmental conditions of the site and vicinity, and the ability of available infrastructure to serve the site.

Property Overview

The subject property of this feasibility study is a 23.34-acre (1,016,663 square feet [sf]) parcel, parcel number 001331005, located in Jefferson County, in the Northeast Quarter of Section 33, Township 30 North, Range 1 West of the Willamette Meridian, at 603 Four Corners Road, Port Townsend, Washington, 98368 (see Figure 1-6). The parcel is owned by the Port of Port Townsend and lies south of the Jefferson County International Airport (JCIA). The parcel is included in the Airport Master Plan, as shown on Figure 3-1. The property is under the jurisdiction of Jefferson County, is zoned Airport Essential Public Facilities (AEPF), and is subject to the Airport Overlay III zoning overlay. The site is north of the Tri-Area (Port Hadlock, Irondale, and Chimacum), south of the city of Port Townsend, west of Puget Sound, and east of Discovery Bay.

The subject property is currently undeveloped forested land. The parcel is rectangular, with dimensions of approximately 780 feet by 1,319 feet. The majority of the site lies at an elevation of 141 feet above sea level, with uneven topography within a narrow elevation range, as shown on Figure 3-2. The northeastern third of the site

slopes gently down to the northeast, with the low point at the northeast property corner, at approximately 132 feet above sea level. Off site to the east and north are moderately steep slopes approximately 30 feet in height that slope down to an elevation of approximately 105 feet above sea level, which is the general elevation of the airport.

There are no structures on site. A well in the southwest portion of the site was drilled by the Jefferson County Public Utility District (PUD), subsequently capped, and is not currently in service.

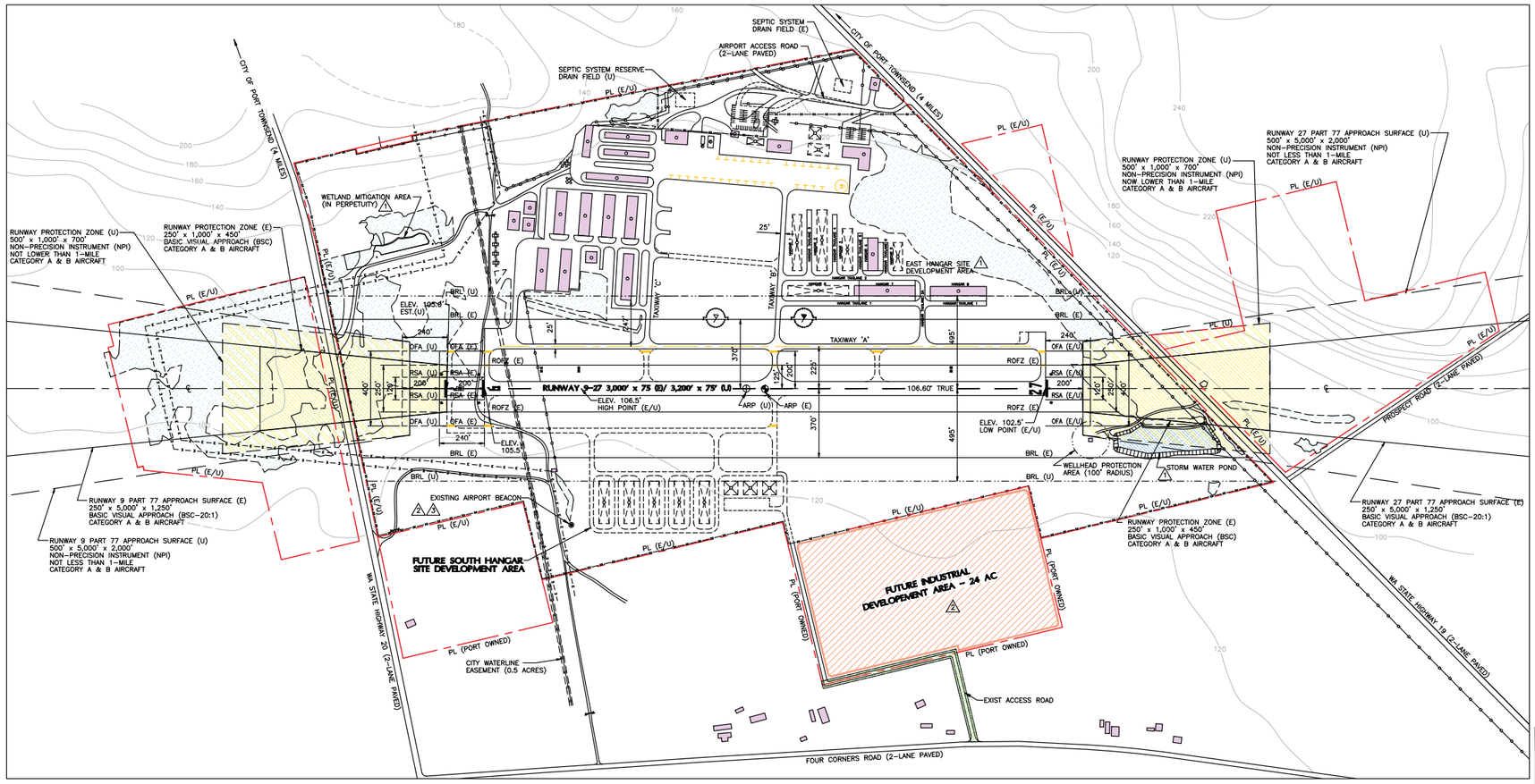
The site is not currently accessed by any paved roadways; however, a 45-foot road easement lies along the southern property boundary and connects the site to Four Corners Road to the south. An unpaved access road currently occupies this easement. Major roadways in the vicinity include State Route (SR) 19 to the east and SR 20 to the west. A trailhead for the planned and partially constructed Larry Scott pedestrian and bicycle trail is proposed at the intersection of SR 20 and Four Corners Road southwest of the site.

Land Use and Regulatory Considerations

Existing Land Uses

The site is currently undeveloped forested land. Adjacent to the north part of the site is the JCIA. To the northeast of the site are several Port-owned parcels with a stormwater detention pond and access road. To the west, south, and east of the site are privately owned parcels that are either undeveloped or occupied by low-density rural residential uses. The majority of parcels in the immediate vicinity of the site (i.e., within approximately ½ mile) are in rural residential use; however, some other land uses do exist. Commercial forest land, resource-based industrial, and some general highway commercial uses exist in the vicinity of the site.

AIRPORT LAYOUT PLAN



MODIFICATION TO STANDARDS

THERE ARE NO MODIFICATIONS TO AIRPORT DESIGN STANDARDS.

GENERAL NOTES

THERE ARE NO RUNWAY OBSTACLE FREE ZONE (ROFZ) OBJECT PENETRATIONS.

THERE ARE NO THRESHOLD SITING SURFACE (TSS) OBJECT PENETRATIONS FOR RUNWAY 9. THE TSS FOR RUNWAY 27 IS ENCROACHED UPON BY NATURAL TERRAIN FEATURES TO THE EAST MEASURING 87 FEET OF PENETRATION. REFER TO SHEET NO. 4 FOR FURTHER DETAILS.

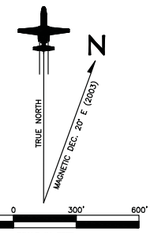
AFTER FURTHER STUDY IT WAS DETERMINED THAT, DUE TO MULTIPLE TERRAIN OBSTRUCTIONS ENCROACHING UPON FAR PART 77 AND THRESHOLD SITING SURFACES (TSS), STRAIGHT-IN AND CIRCLING NON-PRECISION INSTRUMENT (NPI) APPROACH NIGHT OPERATIONS IS NOT A FEASIBLE OPTION. HOWEVER, THE POSSIBILITY EXISTS TO ESTABLISH A STRAIGHT-IN NPI APPROACH WITH VISIBILITY MINIMUMS > 1 STATUTE MILE (DAY ONLY) TO EITHER RUNWAY 9 OR 27, WHICHEVER MIGHT PRESENT THE MOST FAVORABLE APPROACH CONDITIONS. ACCORDINGLY, IT IS RECOMMENDED THAT A STRAIGHT-IN OR CIRCLING NPI APPROACH (1-MILE) DURING DAY TIME ONLY BE EXPLORED AS A POSSIBLE OPTION FOR ESTABLISHING NPI APPROACH CAPABILITIES AT JCIA.

FUTURE PROJECTIONS ARE PROVIDED FOR PLANNING PURPOSES ONLY. THE RATE OF ACTUAL BUILD-OUT EXPERIENCED AT THE AIRPORT WILL OCCUR BASED UPON MARKET FACTORS CONSISTENT WITH THE PROVISIONS OF THE PLAN.

AIRPORT DATA TABLE

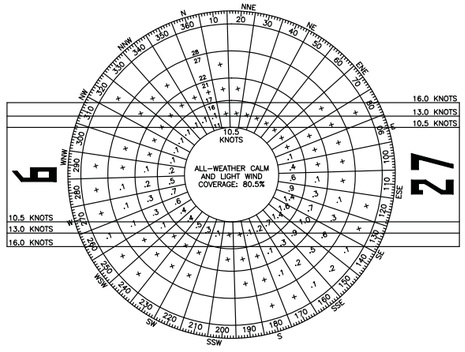
		EXISTING	ULTIMATE
AIRPORT REFERENCE POINT	NORTH LATITUDE	N 48° 03' 17.33"	N 48° 03' 17.55"
COORDINATES	WEST LONGITUDE	W 122° 48' 34.60"	W 122° 48' 35.94"
MEAN MAXIMUM TEMPERATURE OF HOTTEST MONTH		76.8° F (JULY)	76.8° F (JULY)
AIRPORT ELEVATION – MEAN SEA LEVEL (MSL)		107'	106.5'
AIRPORT ELECTRONIC NAVIGATIONAL AIDS		NONE	GPS
AIRPORT REFERENCE CODE (ARC)		B-I	B-I
TAXIWAY LIGHTING		BLUE REFLECTORS	MITL
CRITICAL AIRCRAFT		RAYTHEON/ BEECHCRAFT B-58 "BARON"	RAYTHEON/ BEECHCRAFT KINGAIR C90B
NPIAS SERVICE ROLE		GENERAL AVIATION	GENERAL AVIATION
AERONAUTICAL STUDY NO.		2003-ANM-0609-NRA	

AIRPORT REFERENCE POINT COORDINATES REFLECT FAA FORM 5010 INFORMATION DATED 10/03/02 IN NORTH AMERICAN DATUM (NAD83) AND NORTH AMERICAN VERTICAL DATUM (NAVD 88). ULTIMATE ARP COORDINATES REFLECT GEO83A GEODETIC CALCULATIONS (NAD83).



REVISIONS:

NO.	DATE	DESCRIPTION
1	8/6/2008	ADDED EAST HANGAR SITE DEVELOPMENT, POND AND WETLAND MITIGATION AREA. REID MIDDLETON, INC
2	2/26/2009	ADDED FUTURE SOUTH DEVELOPMENT AREA, ACCESS RD, FUTURE BEACON AND PROPERTY LINE ADJUSTMENT. REID MIDDLETON, INC
3	1/8/2010	ADDED ROTATING BEACON. REID MIDDLETON, INC



WIND ROSE ANALYSIS

ALIGNMENT	WIND VELOCITY	ALL-WEATHER WIND COVERAGE
RUNWAY 9-27	10.5-KNOTS (ARC A-I & B-I)	93.50%
	13.0-KNOTS (ARC A-II & B-II)	96.54%
	16.0-KNOTS (ARC A-III, B-III & C-I TO D-III)	98.55%

NATIONAL CLIMATIC DATA CENTER (NCDC), ASHEVILLE, NC; NAS WHIDBEY ISLAND (1992-2001)
ALL-WEATHER WIND OBSERVATIONS = 82,438

CALM WIND OBSERVATIONS (0-3 KNOTS): 22,729 OBS. ==> 27.5%
LIGHT WIND OBSERVATIONS (3-10.5 KNOTS): 43,667 OBS. ==> 52.9%
CALM AND LIGHT WINDS (0-10.5 KNOTS): 66,396 OBS. ==> 80.5%
STRONG WINDS (GREATER THAN 10.5 KNOTS): 16,042 OBS. ==> 19.4%

DECLARED DISTANCE TABLE

EXISTING					ULTIMATE				
RUNWAY	TORA	TODA	ASDA	LDA	RUNWAY	TORA	TODA	ASDA	LDA
9	3,000'	3,000'	3,000'	3,000'	9	3,200'	3,200'	3,200'	3,200'
27	3,000'	3,000'	3,000'	3,000'	27	3,200'	3,200'	3,200'	3,200'

RUNWAY LENGTHS BASED ON GEO83A COORDINATE CALCULATION PROGRAM IN NORTH AMERICAN DATUM (NAD83) AND NORTH AMERICAN VERTICAL DATUM (NAVD 88). DECLARED DISTANCES IN ACCORDANCE WITH AC 150/5300-13, CHANGE #7.

RUNWAY DATA TABLE

	RUNWAY 9-27			
	EXISTING		ULTIMATE	
APPROACH CATEGORY/DESIGN GROUP	B-I		B-I	
RUNWAY LENGTH/WIDTH	3,000' x 75'		3,200' x 75'	
RUNWAY LIGHTING	MIRL		MIRL	
RUNWAY TYPE/MARKINGS	BASIC VISUAL (BSC)		NON-PRECISION INSTRUMENT (NPI)	
EFFECTIVE RUNWAY GRADIENT (%)	0.01%		0.01%	
PAVEMENT MATERIAL	ASPHALT		ASPHALT	
PAVEMENT STRENGTH (LBS.)	12,500 (SWG)		12,500 (SWG)	
RUNWAY SAFETY AREA (RSA) LENGTH	3,480' (240' BEYOND RWY END)		3,680' (240' BEYOND RWY END)	
RUNWAY SAFETY AREA (RSA) WIDTH	120'		120'	
OBJECT FREE AREA (OFA) LENGTH	3,480' (240' BEYOND RWY END)		3,680' (240' BEYOND RWY END)	
OBJECT FREE AREA (OFA) WIDTH	400'		400'	
OBSTACLE FREE ZONE (OFZ) LENGTH	3,400' (200' BEYOND RWY END)		3,600' (200' BEYOND RWY END)	
OBSTACLE FREE ZONE (OFZ) WIDTH	250'		250'	
HOLDING POSITION	125'		200'	
TAXIWAY WIDTH	25'		25'	
TAXIWAY MARKING/ LIGHTING	REFLECTORS		MITL	
	9	27	9	27
INSTRUMENT APPROACH AIDS	NONE	NONE	GPS	GPS
VISUAL APPROACH AIDS	PAPI-2L/REILS	PAPI-2R/REILS	PAPI-2L/REILS	PAPI-2R/REILS
RUNWAY VISIBILITY MINIMUMS	VISUAL	VISUAL	1-MILE	1-MILE
FAR PART-77 APPROACH SLOPE	20:1	20:1	20:1	20:1
TOUCHDOWN ZONE ELEVATION (TDZE)	106.5'	106.5'	106.5'	106.5'

(SWG)=SINGLE WHEEL GEAR

RUNWAY END AND TOUCHDOWN ZONE ELEVATIONS REFLECT PRIOR APPROVED JCIA ALP DATED 07/23/94.

RUNWAY END COORDINATES

RUNWAY END	LAT/LONG	EXISTING	ULTIMATE
RUNWAY 9	NORTH LATITUDE	N 48° 03' 21.50"	N 48° 03' 22.10"
	WEST LONGITUDE	W 122° 48' 55.70"	W 122° 48' 58.50"
RUNWAY 27	NORTH LATITUDE	N 48° 03' 13.10"	N 48° 03' 13.10"
	WEST LONGITUDE	W 122° 48' 13.40"	W 122° 48' 13.40"

EXISTING RUNWAY END COORDINATES FOR RUNWAY 9-27 REFLECT **CORRECTIONS, IN NORTH AMERICAN DATUM (NAD83)** AND NORTH AMERICAN VERTICAL DATUM (NAVD 88), FROM PRIOR APPROVED ALP DATED 07/23/94. ULTIMATE RUNWAY END COORDINATES REFLECT GEO83A CALCULATIONS, IN NORTH AMERICAN DATUM (NAD83) AND NORTH AMERICAN VERTICAL DATUM (NAVD 88).

LEGEND

EXISTING	ULTIMATE	
		FACILITIES
		BUILDINGS/STRUCTURES
PL(E)	PL(U)	AIRPORT PROPERTY LINE
		AVIGATION EASEMENTS
BRL(E)	BRL (U)	BUILDING RESTRICTION LINE (BRL)
RSA/OFA(E)	RSA/OFA(U)	RUNWAY SAFETY AREA (RSA)/OBJECT FREE AREA (OFA)
RPZ(E)	RPZ(U)	RUNWAY PROTECTION ZONE (RPZ)
OFZ(E)	OFZ(U)	OBSTACLE FREE ZONE (OFZ)
		AIRPORT REFERENCE POINT (ARP)
		ROTATING BEACON
		PRECISION APPROACH PATH INDICATORS (PAPI-2L)
		HOLD POSITION MARKING
		LIGHTED WIND CONE & SEGMENTED CIRCLE
		RUNWAY THRESHOLD LIGHTS
		RUNWAY END IDENTIFIER LIGHTS (REIL)
		GROUND CONTOUR (USGS MAP)
		FENCING
		PAVED/GRAVEL/DIRT ROADWAY
		CREEK/INTERMITTENT DRAINAGE
		OVERHEAD POWERLINE(S)/ POLE(S)
		WATER LINE UTILITY
		STORMWATER DETENTION POND/BODY OF WATER
		ABOVE GROUND OIL/GAS WELL/PUMP STATION
		BURIED POWER LINE(S)
		DELINEATED WETLANDS AREA

FEDERAL AVIATION ADMINISTRATION
NORTHWEST MOUNTAIN REGION
APPROVAL BLOCK

FAA OFFICIAL: DATE:

OFFICIAL TITLE: MANAGER, SEATTLE AIRPORTS DISTRICT OFFICE APPROVAL LETTER DATE:

"THE PREPARATION OF THESE DOCUMENTS WAS FINANCED, IN PART THROUGH A PLANNING GRANT FROM THE FEDERAL AVIATION ADMINISTRATION AS PROVIDED UNDER SECTION 505 OF THE AIRPORT AND AIRWAY IMPROVEMENT ACT OF 1982. AS AMENDED. THE CONTENTS DO NOT NECESSARILY REFLECT THE OFFICIAL VIEWS OR POLICY OF THE FAA. ACCEPTANCE OF THESE DOCUMENTS BY THE FAA DOES NOT IN ANY WAY CONSTITUTE A COMMITMENT ON THE PART OF THE UNITED STATES TO PARTICIPATE IN ANY DEVELOPMENT DEPICTED HEREIN NOR DOES IT INDICATE THAT THE PROPOSED DEVELOPMENT IS ENVIRONMENTALLY ACCEPTABLE IN ACCORDANCE WITH APPROPRIATE PUBLIC LAWS."

PORT OF PORT TOWNSEND, WASHINGTON
APPROVAL BLOCK

PORT OFFICIAL:

OFFICIAL TITLE: DATE:

PORT OF PORT TOWNSEND, WASHINGTON
JEFFERSON COUNTY INTERNATIONAL AIRPORT
AIRPORT LAYOUT PLAN

JOB NO. 2002-107	DESIGNED BY: MAW	DATE: 10/24/02	REVISIONS:
DRAWING NO. TWO	DRAWN BY: MAW	DATE: 10/24/02	
SCALE AS SHOWN	CHECKED BY: PLH	DATE: 04/15/04	
SHEET: 2 OF 9			

Figure 3-1. Airport Layout Plan.

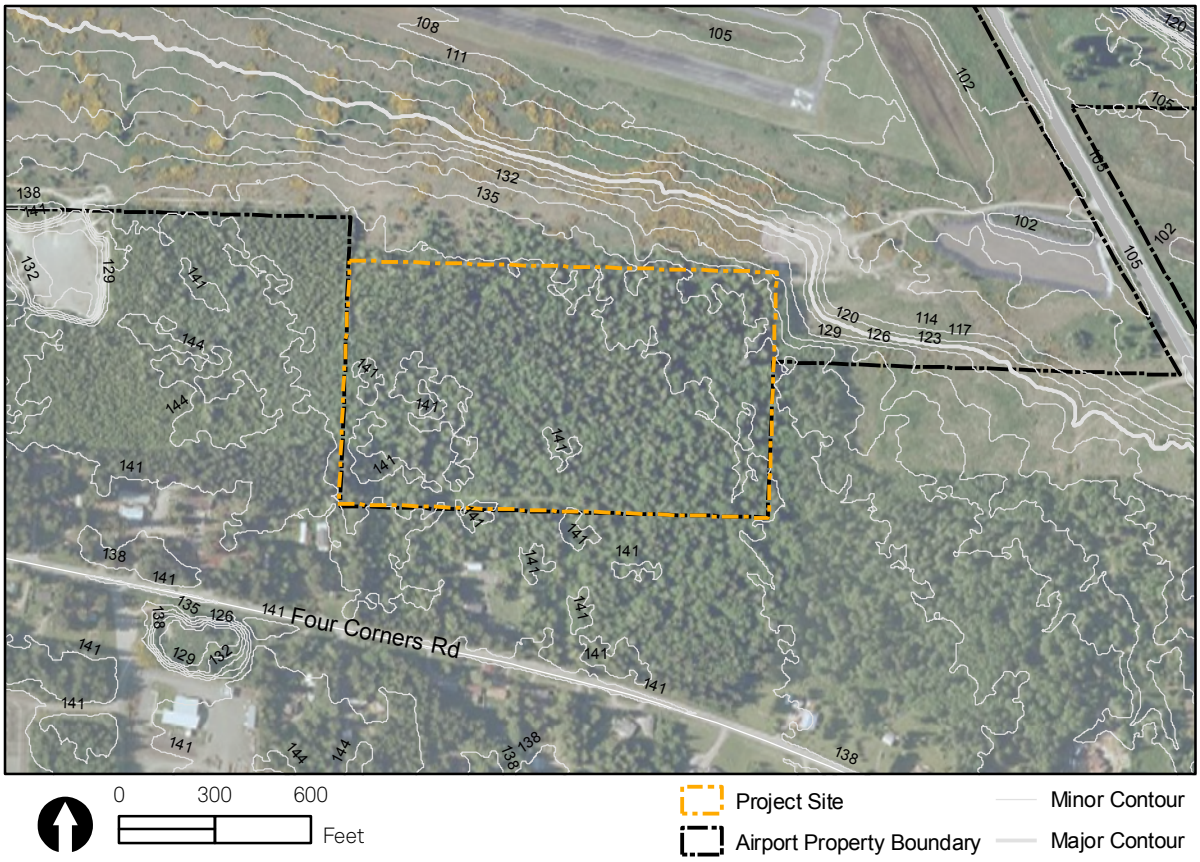


Figure 3-2. Topography.

Zoning

The subject property is under the land use jurisdiction of Jefferson County. Title 18 of the JCC contains the Unified Development Code (UDC), which comprises the majority of relevant local land use regulations affecting the site. The site is zoned AEPF, Airport Overlay III, as shown on Figure 3-3. The Airport Overlay III was created by an amendment to Chapter 18.15 of the JCC pursuant to the rezone approved by Jefferson County. The overlay establishes regulations concerning allowed uses and other site development standards in addition to those under the base zoning designation. The development standards applicable to the subject property are summarized below.

Use Restrictions

The AEPF zone restricts land uses to aviation support facilities (e.g., hangars, taxiways) or aviation-related light industrial/manufacturing (JCC 18.15.1110 et seq.). A restaurant is considered a permitted aviation support use.

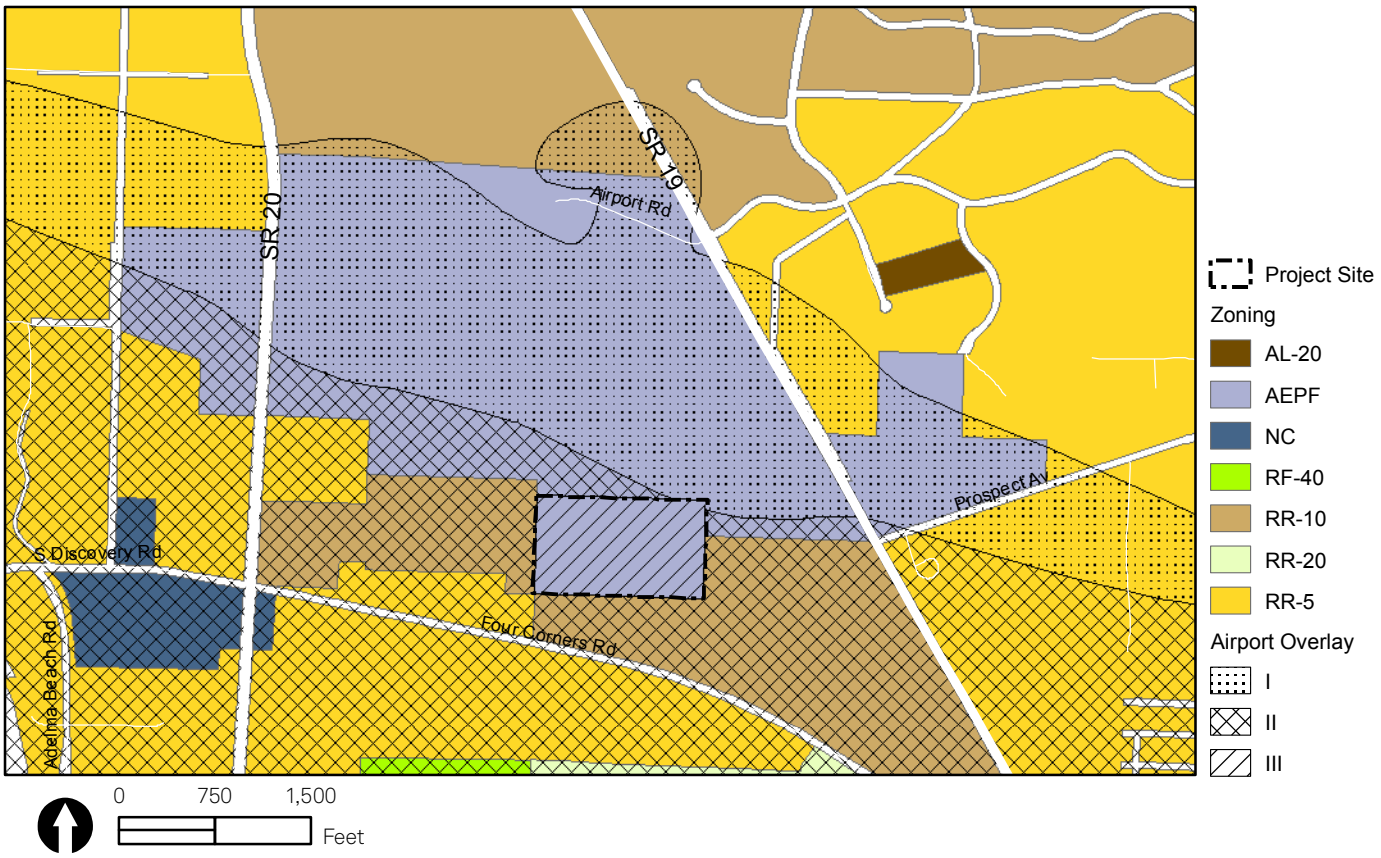


Figure 3-3. Zoning.

Permitted aviation-related light industrial/manufacturing uses include (JCC 18.15.1116):

- Aircraft repair facilities.
- Aircraft manufacturing.
- Airborne freight facilities.

Due to the proximity to the airport, certain uses are prohibited, including those that (JCC 18.15.1122):

- Release airborne substances, such as steam, dust, or smoke.
- Attract concentrations of birds, waterfowl, or other wildlife.
- Are determined to pose a hazard to the safe operation of the airport as an aviation facility.

The Airport Overlay III broadens the allowable uses to include "a limited range of non-aviation-related rural light industrial uses that foster the Port's ability to assure the long-term financial viability of the AEPF" (JCC 18.15.405 and 18.15.453).

JCC 18.10.120 defines "Light Industrial" as:

> *...a use involving: (1) basic processing and manufacturing of materials or products predominantly from previously prepared materials; or (2) finished products or parts, including processing, fabrication, assembly, treatment, packaging, incidental storage, sales, and distribution of such products, but excluding basic processing of raw materials except food products.*

The JCC does not define "rural light industrial" uses, although a Rural Industrial land use category with a specific Light Industrial/Manufacturing zoning district does exist. This zoning district does not apply to the subject property, but may provide some insight to the intent of the rural light industrial use restrictions of the Airport Overlay III. Per JCC 18.15.015(3)(a), "The light industrial uses and activities associated with this district are intended to be compatible with the rural character."

JCC 18.10.180 defines "Rural Character" as:

> *...a quality of the landscape dominated by pastoral, agricultural, forested, and natural areas interspersed with single-family homes, limited economic development, and farm structures. Rural character refers to the patterns of land use and development established by the Comprehensive Plan:*
>
> *(a) In which open space, the natural landscape, and vegetation predominate over the built environment;*
>
> *(b) That foster traditional rural lifestyles, rural-based economies, and opportunities to both live and work in rural areas;*
>
> *(c) That provide visual landscapes that are traditionally found in rural areas and communities;*
>
> *(d) That are compatible with the use of the land by wildlife and for fish and wildlife habitat;*
>
> *(e) That reduce the inappropriate conversion of undeveloped land into sprawling, low density development;*
>
> *(f) That generally do not require the extension of urban governmental services; and*
>
> *(g) That are consistent with the protection of natural surface water flows and groundwater and surface water recharge and discharge areas. (cf. RCW 36.70A.030(14).)*

Permitted uses in the Light Industrial/Manufacturing zone include (JCC 18.15.040):

- Small equipment repair, sales, and rental services.
- Construction contractor, commercial.
- Food and beverage stands.
- Lumber yards/building supply and materials.
- Light industrial/manufacturing.

- Food or beverage bottling and/or packaging.
- Outdoor storage yards.
- Warehouse/wholesale distribution center.
- Public works maintenance/equipment storage shops.
- Aquatic plant and animal processing and storage.

Prohibited uses in the Light Industrial/Manufacturing zone include:

- Most commercial uses.
- Asphalt and concrete batch plants.
- Heavy industrial, resource-based.

Marine-Related Industry

As set out in the MOU among the Port, Jefferson County, and the City of Port Townsend (see Appendix A), described in Chapter 1, the Port will enter into lease agreements with marine trades uses at the expanded JCIA only when such a tenant that does not require a water-side location cannot be reasonably accommodated upon existing and available sites on Port property within the City.

Bulk and Dimension Standards

The Airport Overlay III contains several specific bulk and dimension standards applicable to the site (JCC 18.15.453(4)(a) and (b)). There are no specific bulk or dimension standards applicable to the AEPF zone, beyond those for the Airport Overlay III.

Impervious Surface Coverage – "Total impervious surface coverage shall not exceed 25%."

Given a lot area of 1,016,663 sf (23.34 acres), the total allowable impervious surface coverage is 254,166 sf (5.83 acres). This maximum impervious area will be divided between buildings, roads, parking, truck loading and turning, and laydown space, and will thus constrain the number of building sites that can be developed. LID techniques such as pervious pavement and green roofs could be used to reduce total impervious surface, and allow for more building sites. Impervious surface and developable area assumptions are described in more detail in Chapter 4.

Building Size – "No structure shall exceed 10,000 square feet in size."

Building Height – "Notwithstanding JCC 18.15.1130, in no instance may structures exceed 35' in height."

Vegetation Retention and Buffers –

> *Existing vegetation should be maintained to the maximum extent practicable in order to reduce soil erosion, provide habitat for wildlife, screen light industrial uses from view, and maintain the pre-development hydrologic regime. Additionally, the Port shall maintain*

a minimum 50' wide buffer along the outer perimeter of each ownership parcel (i.e., not leasehold parcels created through a future binding site plan process) within the overlay to screen industrial uses from view and maintain the unincorporated rural aesthetic values of the locale.

Setbacks – There are no specific setback standards for the AEPF zone or the Airport Overlay III; however, Table 6-1 in JCC 18.30.050 contains setback standards for other zones, including the Rural Industrial zones. The required front setback from a private road and ingress/egress easement for all zones is 20 feet. Side and rear lot setbacks for the Rural Industrial zones (excluding Heavy Industrial) are 10 feet.

Other Site Development Standards

Low Impact Development

The Airport Overlay III standards contained in JCC 18.15.453(4)(c) require the incorporation of LID site development techniques to the maximum extent feasible:

Development occurring within the Airport Overlay III shall incorporate low impact development practices to the maximum extent feasible. The most recent edition of the Low Impact Development Technical Guidance Manual for Puget Sound (May 2005), Developed by the Puget Sound Action Team in collaboration with the Washington State Department of Ecology, shall be used as a primary source by the county in reviewing and mitigating development occurring within the overlay district.

Airport Compatibility

JCC 18.15.1124 et seq. contains several provisions specific to development within the AEPF zone. The provisions limit electrical emissions and lighting that would interfere with aircraft navigation, and references Federal Aviation Regulations (FAR), Part 77, with respect to building heights.

JCC 18.20.220 contains several provisions relating specifically to industrial uses. These provisions allow for retail uses that are incidental to the primary industrial use of a property provided that those operations are contained within the primary structure on the site, do not occupy more than 15% of the total building square footage, and that no sales or display of merchandise occurs outside the structure.

Road Standards

JCC 18.30.080(1)(m) requires an easement width of 60 feet for private roads providing access to or circulation within subdivisions.

Road construction is required to be designed to the standards contained in a number of publications, adopted by reference in the JCC. These publications are:

- American Association of State Highway and Transportation Officials (AASHTO), A Policy on Geometric Design of Highways and Streets, Standard Specifications for Highway Bridges, and Roadside Design Guide.

- Washington State Department of Transportation (WSDOT) Local Agency Guidelines, Highway Design Manual, Bridge Manual, Construction Manual, Highway Runoff Manual, Hydraulics Manual, Plans Preparation Manual, Standard Specifications for Road, Bridge, and Municipal Construction, and Standard Plans for Road, Bridge, and Municipal Construction.
- Washington Department of Ecology Stormwater Management Manual.
- Federal Highway Administration Manual on Uniform Traffic Control Devices.
- Institute of Transportation Engineers (ITE) Trip Generation Manual.
- Transportation Research Board (TRB) Highway Capacity Manual, Special Report No. 209.

Parking

JCC 18.30.100 contains standards for off-street parking. For all industrial uses (with the exceptions of heavy equipment rental services, recycling centers, and solid waste handling facilities), the required number of off-street parking spaces is one space per employee plus one space per 300 square feet of any associated retail space. Parking requirements may be varied if the applicant submits a study prepared by a qualified professional that demonstrates a reduced demand for parking based on the proposed use. A standard parking space is 9 feet by 18 feet with aisle widths of 23 feet for one-way traffic, or 26 feet for two-way traffic.

Off-street Loading

JCC 18.30.110 contains provisions for off-street loading spaces. Every warehouse, manufacturing, or storage use requires one off-street loading space for each building containing at least 7,500 square feet of floor area. A standard loading space is 10 feet by 25 feet, with an unobstructed vertical clearance of 14 feet, 6 inches.

Landscaping and Screening

JCC 18.30.130 contains provisions for landscaping and screening. Three levels of landscape screening are defined: Screen-A, Screen-B, and Screen-C, with Screen-A being the highest level of screening and functioning as a "visual barrier," Screen-B functioning as a "visual separator," and Screen-C functioning as a "see-through screen." Existing vegetation, topography, or other natural features may be considered to meet the screening requirements. Ten feet of Screen-B landscaping is required along street frontages for industrial developments.

Environmental Regulations

JCC 18.22 contains provisions regulating development in environmentally critical areas, including Critical Aquifer Recharge Areas (CARAs), geologic hazard areas, fish and wildlife habitat areas, and wetlands.

Wetlands

JCC 18.22.290 et seq. contains regulations for development in or near wetlands, including required buffers. Buffer widths are determined based on the wetland rating, based on the methodology contained in the 2004 Washington State Department of Ecology's Wetland Rating System for Western Washington (Ecology Publication No. 04-06-025), and by the intensity of land use proposed adjacent to the wetland. Land use intensity can be low, moderate, or high. Low impact land uses include unpaved trails, utility corridors without a maintenance road, landscaping, and gravel driveways. Moderate impact land uses include paved trails, utility corridors with a maintenance road, and passive recreation areas. High impact land uses include industrial development and public roads.

Tables 18.22.330(1), (2), and (3) in the JCC summarize the required buffer widths. A 50-foot buffer is required for a high impact land use adjacent to a Category IV wetland. A high impact land use adjacent to a Category III wetland would result in a buffer of 80 to 150 feet, depending on the habitat value of the wetland.

Certain limited uses may be allowed in wetland buffers, such as pervious trails and stormwater conveyance swales, if no other upland alternative locations are available. Swales used for detention may only be located in the outer 25% of a buffer for a Category III wetland.

Buffers may be reduced or averaged per JCC 18.22.330(8) and (9) if it can be demonstrated that such reduction will not adversely affect the existing functions and values of the wetland. For Category III and IV wetlands, the buffer shall not be reduced to less than 75% of the prescribed width or 25 feet, whichever is greater.

Where impacts on a wetland are unavoidable, compensatory mitigation must be provided. Table 18.22.350 in the JCC contains ratios of mitigation to impact, depending on the type of mitigation provided and the category of wetland being impacted. Mitigation ratios for a Category IV wetland range from 1:1 for re-establishment and creation to 6:1 for enhancement. The ratios for Category III wetlands range from 1:1 for re-establishment and creation to 8:1 for enhancement.

Federal and State Wetland Regulations

Impacts on wetlands may also be subject to federal and state regulations. Filling greater than 1/10 of an acre of a wetland that falls under the jurisdiction of the U.S. Army Corps of Engineers (USACE) requires a Section 404 permit. Wetlands under the jurisdiction of the USACE are any wetlands that have a hydrologic connection to navigable waters. Those that do not have a hydrologic connection are called isolated wetlands. A determination of whether a wetland is isolated requires the input of a professional wetland scientist, with any final determination to be made by the USACE.

If the proposed fill would impact endangered species, the USACE must consult with the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) and the applicant must prepare a biological evaluation. Because of this, the time required to obtain a Section 404 permit varies greatly, and can take anywhere from 6 months to 2 years.

If a Section 404 permit is required, the project proponent will also need to obtain a Section 401 Water Quality Certification and a Coastal Zone Management (CZM) certification from

the Washington State Department of Ecology (Ecology). The issuance of these certifications runs concurrent with the Section 404 process. In Washington State, applications for these state and federal permits can be made using a consolidated application form, the Joint Aquatic Resources Permit Application (JARPA).

Critical Aquifer Recharge Areas

JCC 18.22.100 contains provisions regulating development in CARAs. The JCC defines three classes of CARAs, two of which are applicable to the site, as shown on Figure 3-4: susceptible aquifer recharge areas (SUSC) and special aquifer recharge protection areas (SARPA).

Certain uses are prohibited in these aquifer recharge areas, including:

- Chemical manufacturing and reprocessing.
- Creosote/asphalt manufacturing or treatment.
- Electroplating and metal coating activities.
- Hazardous waste treatment, storage, and disposal facilities.
- Petroleum product refinement and reprocessing.
- Underground storage tanks for petroleum products or other hazardous materials.
- Recycling facilities as defined in this code.
- Solid waste landfills.
- Waste piles as defined in Chapter 173-304 of the Washington Administrative Code (WAC).
- Wood and wood products preserving.
- Storage and primary electrical battery processing and reprocessing.

The JCC contains a number of protection standards for development in aquifer recharge areas, including requirements to employ Best Management Practices (BMPs) for the management of stormwater and on-site sewage disposal.

Geologically Hazardous Areas

The site is located within a designated seismic hazard area, as shown on Figure 3-5, and is subject to the provisions of JCC 18.22.160 et seq. Seismic hazard areas are defined as areas subject to a severe risk of earthquake damage from ground shaking, slope failure, surface faulting, and liquefaction, due to the presence of certain soil conditions.

The JCC contains protection standards for development in a seismic hazard area, including standards for drainage and erosion control, clearing and grading, and vegetation retention. These provisions require the preparation of drainage and erosion control and clearing and

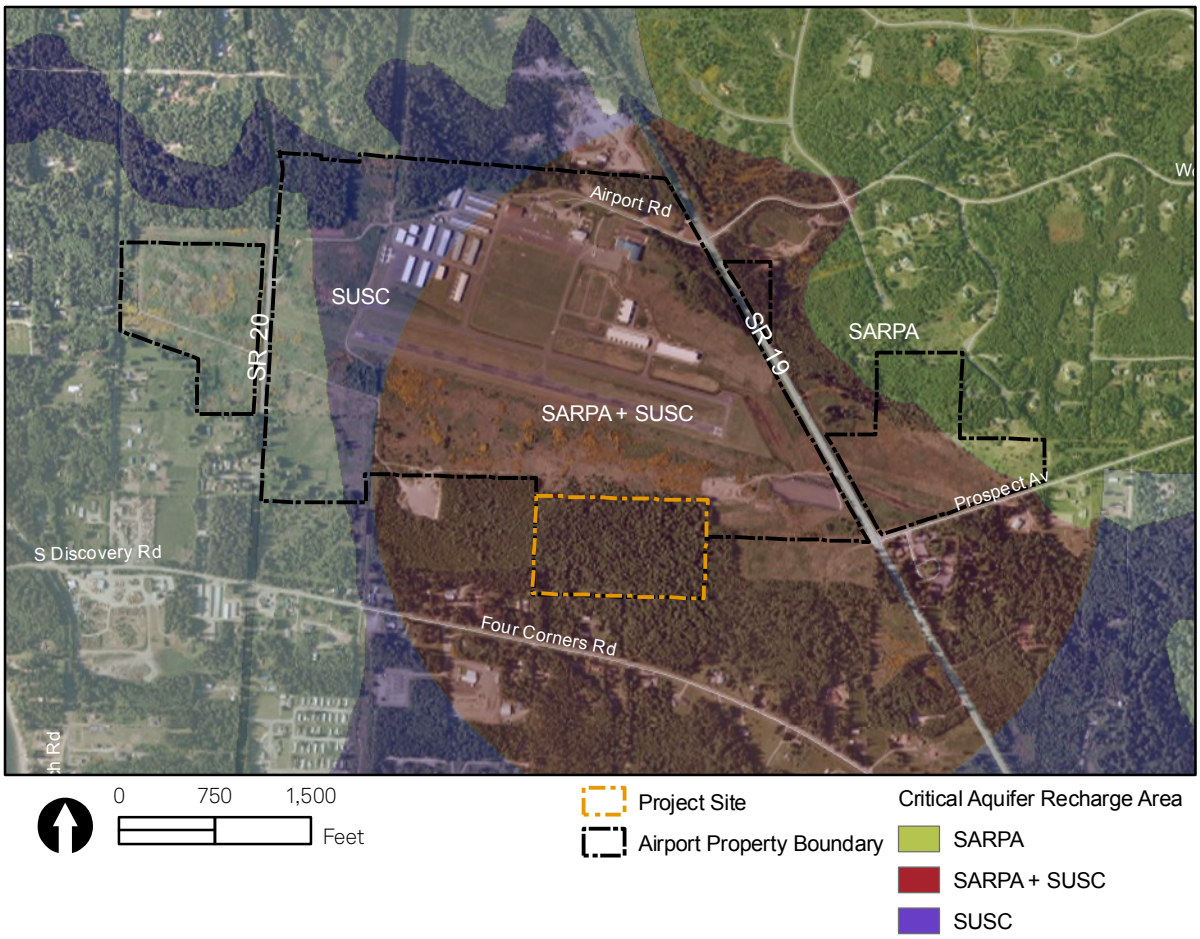


Figure 3-4. Critical Aquifer Recharge Areas.

grading plans that identify clearing limits and BMPs. Clearing is only allowed from April 1 to November 1, unless the applicant can demonstrate that such clearing is not contrary to the protection standards.

Stormwater and Grading Regulations

Grading and excavation and stormwater management are regulated by JCC 18.30.060 and JCC 18.30.070, respectively. Stormwater management follows the standards and requirements in the most recent edition of the Stormwater Management Manual for Western Washington (SWMMWW), published by Ecology. Development of this site will require a stormwater management permit from Jefferson County, the submittal of a stormwater site plan and construction stormwater pollution prevention plan, and implementation of BMPs identified in the SWMMWW.

Additionally, the Airport Overlay III requires the use of LID to the maximum extent feasible, as noted above. The Low Impact Development Technical Guidance Manual for Puget Sound

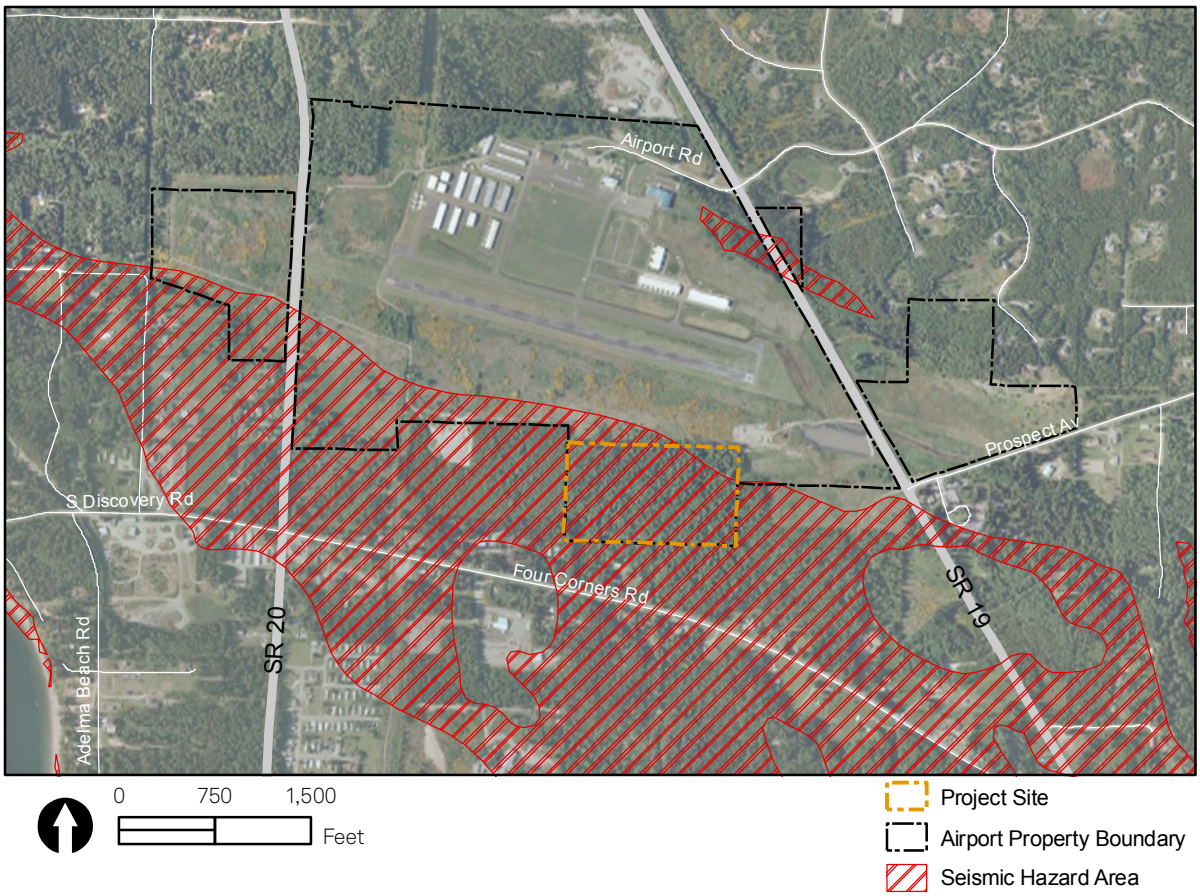


Figure 3-5. Seismic Hazard Area.

published in 2005 by the Puget Sound Partnership (formerly the Puget Sound Action Team) contains guidance on the use of LID in stormwater management and descriptions of specific practices and concepts. The manual is currently being updated; the most recent version should be referenced at the time of site design.

The Technical Guidance Manual defines LID as:

> *...a stormwater management and land development strategy applied at the parcel and subdivision scale that emphasizes conservation and use of on-site natural features integrated with engineered, small-scale hydrologic controls to more closely mimic pre-development hydrologic functions.*

LID aims to meet its hydrologic goals through conservation and retention of native vegetation, soils, and natural drainage features and patterns; site planning that facilitates such conservation and minimizes impervious surfaces; and distributed and integrated, small-scale management practices that reduce reliance on traditional conveyance and pond technologies. Typical LID BMPs include infiltration facilities such as rain gardens, bioswales for water quality treatment, pervious pavements, and green roofs.

Example of LID for Water Quality Treatment

Sewage Disposal Regulations

On-site sewage disposal is governed by the regulatory and design requirements of both state law (WAC 246-272A) and local ordinance (JCC 8.15). A permit from Jefferson County Public Health is required for all on-site sewage disposal systems.

An on-site sewage systems (OSS) is not required to be located on the parcel originating the sewage; however, per JCC 8.15.080(17): "Any OSS not located entirely on the property originating the sewage must be secured by appropriate easements and/or a covenant recorded with the Jefferson County auditor's office prior to issuance of the permit..."

Permitting Considerations

The division of land for sale or lease for industrial uses, where the applicant proposes a unified scheme of development, will require a binding site plan. A binding site plan ties future development to an approved set of conditions and site layout. JCC 18.35.450 et seq. contains provisions for the review and approval of binding site plans. A binding site plan is processed as a Type III land use decision, pursuant to JCC 18.40. A Type III decision requires a public hearing before the Hearing Examiner, prior to granting of preliminary approval. Final binding site plan approval is only given after the applicant has satisfied all conditions of preliminary approval, including the installation of all improvements, or the provision of adequate guarantees or assurances for the future installation of such improvements.

JCC 18.35.490 contains the approval criteria for a binding site plan. To approve a binding site plan, findings must be made that the proposal complies with all applicable zoning, environmental, and health regulations; provides utilities and public services necessary to serve the plat; that the proposal will not have an unacceptable adverse effect on the quality of the environment; and that the proposal has made adequate provision for the public health, safety, and general welfare.

A binding site plan will also require compliance with the State Environmental Policy Act (SEPA). Compliance with SEPA can be achieved concurrent with the review of the binding site plan application. A SEPA environmental checklist must be completed that identifies relevant environmental conditions and possible impacts on the environment caused by the proposal. After review of the checklist, the County may issue a Determination of Nonsignificance (DNS), Mitigated Determination of Nonsignificance (MDNS), or Determination of Significance (DS). A DNS or MDNS satisfies SEPA requirements and may result in conditions or required mitigation for environmental impacts. A DS triggers the requirement for completion of an Environmental Impact Statement (EIS). The County's SEPA procedures are contained in JCC 18.40.700 et seq.

Other approvals or special supporting documentation may be required, depending on the specifics of the proposal. These may include environmental documentation (such as a wetland delineation report or geotechnical report), or other approvals (such as a variance approval if the applicant is seeking relief from specific County code provisions).

Subsequent to binding site plan approval, other permits will be needed. Site development, including construction of roads and utilities, that disturbs greater than 1 acre will require the preparation of an Erosion and Sedimentation Control Plan (ESCP), a Stormwater Pollution Prevention Plan (SWPPP), and will require a National Pollutant Discharge Elimination System (NPDES) Construction Stormwater General Permit from Ecology. The development of individual building sites may require other local permits, including grading and building permits.

Environmental Conditions

Touchstone EcoServices (TES) conducted a site reconnaissance in April 2011 to determine whether wetlands are present on the site or in the vicinity of the existing unpaved access road. Refer to the Wetland Reconnaissance Letter in Appendix C for a detailed description of wetland issues. TES found no wetlands present on the site, and two small Category IV wetlands south of the site along the unpaved access road, as shown on Figure 3-6. Any impacts on these wetlands associated with the construction of an access road at this location would be subject to the environmental regulations described above, including permitting, buffer, and mitigation requirements.

Two soil units are mapped on the site by the US Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS). As shown on Figure 3-7, these soil units are Cassolary sandy loam and Agnew silt loam. The NRCS soil survey describes the Cassolary series as moderately well drained with slow to medium runoff and moderate permeability in the upper horizons. The Agnew series is described as somewhat poorly drained with slow runoff and moderately slow to slow permeability.

As noted above, the site is within a mapped CARA and a mapped Seismic Hazard Area. Regulations concerning these designations are described above.

ATTACHMENT 2
Proposed Eco-Industrial Park Access Road – Wetland Reconnaissance

Site Reconnaissance Date: April 3, 2011
Touchstone EcoServices

Note: Wetland boundaries are based on a brief reconnaissance. Boundaries shown are only estimates. A formal wetland delineation would be necessary to determine the exact wetland location and boundaries.

Figure 3-6. Wetland Reconnaissance.

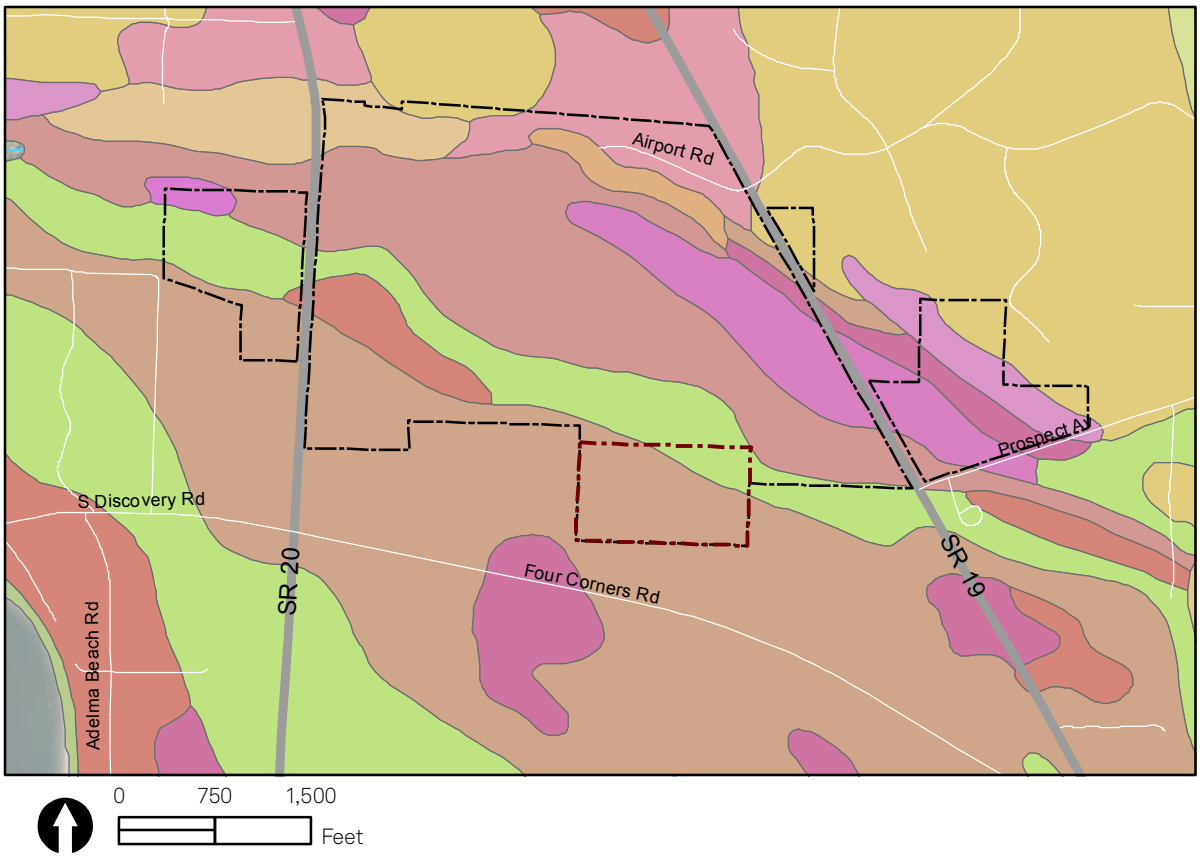
Infrastructure

Water

Public Utility District Number 1 of Jefferson County (JPUD) provides water for both domestic and fire protection service to the JCIA. A system of 8-inch and 10-inch diameter polyvinyl chloride (PVC) water mains provides water service to that portion of the airport north of the main runway. This portion of the JPUD system is fed by the Glen Cove South water tank located to the northeast of the airport on the east side of SR 19. The overflow elevation for the 300,000 gallon reservoir is at 410 feet.

As part of a previous project to extend electrical service to flight control equipment on the south side of the main runway, a sleeve was installed beneath and near the west end of the runway. The sleeve is sized to accommodate future extension of the water system from the north side to future development sites on the south side of the main runway. The point of connection is roughly 2,000 feet northwest of the northwest corner of the project site.

An inactive 8-inch diameter PVC water main also exists in the panhandle access parcel extending from the south boundary of the project site south to Four Corners Road. The main was installed in conjunction with the drilling of a well near the southwest corner of the project site, but was never made operational. The main connects to a 6-inch diameter asbestos-



Soil Types

- AgB (Agnew Silt Loam)
- Bk (Belfast Silt Loam)
- CFC (Cassolary Sandy Loam 0 - 15% Slope
- CfD (Cassolary Sandy Loam 15 - 30% Slope)
- CmC (Clallam Gravelly Sandy Loam 0 - 15% Slope)
- CmD (Clallam Gravelly Sandy Loam 15 - 30% Slope)
- Co (Coastal Beaches)
- DcC (Dick Loamy Sand)
- HuC (Hoypus Gravelly Loamy Sand 0 - 15% Slope)
- HuD (Hoypus Gravelly Loamy Sand 15 - 30% Slope)
- HvC (Hoypus Gravelly Sandy Loam)
- SaB (San Juan Gravelly Sandy Loam)
- Swantown Gravelly Sandy Loam
- SuB (Swantown Gravelly Loam)
- WhC (Whidbey Gravelly Sandy Loam)

Figure 3-7. Soils.

concrete water main in Four Corners Road. This portion of the JPUD system is fed by a one million gallon tank and a two million gallon tank located in the Tri-Area to the southeast of the project site. The overflow elevation for these two tanks is at 291 feet.

Stormwater

The existing project site is forested with second and third growth tree cover. There are no improvements, including stormwater collection and treatment, on the site other than the aforementioned well and the water main and powerline leading to it. The site slopes gently from the southwest to the northeast. The USDA NRCS Soil Survey has mapped the soils on

site as primarily Agnew Silt Loam with some Cassolary Sandy Loam and Swantown Gravelly Sandy Loam to the northeast. These soils are in hydrologic Soil Groups C, C, & D, respectively, indicating that near surface infiltration potential is low, which is consistent with observations by wetlands scientists who have visited the site. The surficial soils have been observed to be hummocky and so stormwater from smaller events is likely retained on site in shallow depressions and evapotranspirated by the vegetation; during larger events, the stormwater likely runs off down toward the airport. It has been reported that there may be large gravelly deposits below a till mantle in the vicinity of the project.

Stormwater management for the existing airport facilities consists of water quality measures employed at individual development sites, with stormwater detention provided by a detention pond at the southeast corner of the airport property (near the northeast corner of the project site). The detention pond was designed and built in compliance with the 2005 SWMMWW as adopted by Jefferson County and with Federal Aviation Administration (FAA) guidelines for the management of birds and wildlife in airport environments. The pond was sized to accommodate full build-out of the north side of the airport as depicted on the current Airport Master Plan, but is not designed to accommodate the industrial park project.

Wastewater

Currently a municipal sewer system does not extend to the area surrounding the airport including the project site. Existing facilities in the area are served by small individual or community septic systems. As a result, this project would require its own decentralized wastewater collection, conveyance, treatment, and disposal system.

Electrical Power

Puget Sound Energy (PSE) currently provides electrical power to the JCIA. JPUD will own and operate the power distribution system starting April 2013. Three-phase power has been extended to the existing JPUD water well at the east end of the main runway and is one potential source for extension of electrical power onto the project site. A more likely source of power is a three-phase power line extending from Four Corners Road north along the project site access panhandle, originally intended to serve the well on the project site that never became operational.

Communications

Telephone service in the vicinity of the project is provided by Qwest, which is soon to be Century Link. Telephone service would be extended to the site either from Four Corners Road or from SR 19.

The Port of Port Townsend, City of Port Townsend, Jefferson County, and JPUD are currently working with the Northwest Open Access Network (NoaNet) to extend broadband services into the Port Townsend area. NoaNet will be starting engineering on the extension in September or October of 2011 with right-of-way coordination to follow over the course of the next approximately 6 months. Construction is currently scheduled to occur in the summer of 2012.

4

Conceptual Site Design

This chapter describes the conceptual site design selected as the preferred alternative by the Port Commission. The purpose of developing a conceptual site design is to determine what type, scale, and intensity of development might be possible on the site, given the existing environmental conditions, infrastructure, regulatory constraints, and overall goals of the project. The conceptual site design also provides the basis for developing estimates of site construction costs for the economic feasibility analysis in Chapter 5.

During the course of the conceptual design process, the consultant team considered a variety of site design options, based on constraints and assumptions identified in this study. Two preliminary site design alternatives evolved after discussions among the Port, the IPAC, and consultant team members. Appendix F contains the two preliminary site alternatives. Each of these alternatives responds to the overall project goals established by the Port and IPAC, works within existing site constraints, and creates an efficient and flexible development scheme that can be phased to maximize the Port's return on investment. The Port Commission reviewed both options and selected one design as the preferred alternative, which is described in this chapter and shown in Figure 4-1.

General Constraints and Assumptions

The conceptual site design of the Eco-Industrial Park is intended to meet several overarching goals, including:

- Provide building lots of sufficient size and configuration to meet the needs of potential light industrial tenants.
- Create a unique and desirable character reflective of environmental values and the values of the greater Port Townsend community.
- Incorporate environmentally sound design to the maximum extent feasible.

Any configuration must take into consideration site constraints, including the need to meet the development standards imposed by the JCC, and to provide for stormwater management, potable water, sanitary sewer, and potential future road connections to SR 19 and SR 20.

Jefferson County Code

The Airport Overlay III contains a number of restrictions on development. Overall impervious surface is limited to 25% of the site. Building footprints cannot exceed 10,000 square feet. A 50-foot vegetated buffer is required to be maintained around the perimeter of the site, native vegetation is to be retained as much as feasible, and LID stormwater management techniques are to be used to the maximum extent feasible.

Stormwater Management

The JCC requires that the Airport Overlay III incorporate LID stormwater management techniques to the maximum extent feasible. The proposed stormwater management system is based on the following assumptions:

- The existing stormwater detention pond that serves the airport cannot be expanded to accommodate storm flow from the project site. A separate stand-alone stormwater detention facility will be required.
- New stormwater detention facilities will be required to meet FAA and WSDOT Aviation Division requirements for design and construction of stormwater detention facilities in airport environments (i.e., wet ponds will not be allowed).
- New stormwater detention facilities will be required to be designed in accordance with Jefferson County regulations.
- Based on available soil information, significant near surface on-site infiltration of stormwater is not feasible.

Bioretention facilities will be used to provide water quality treatment. Internal streets will be designed with roadside swales to treat the runoff from the street, and individual lots will provide small bioretention facilities to treat runoff from the individual building sites.

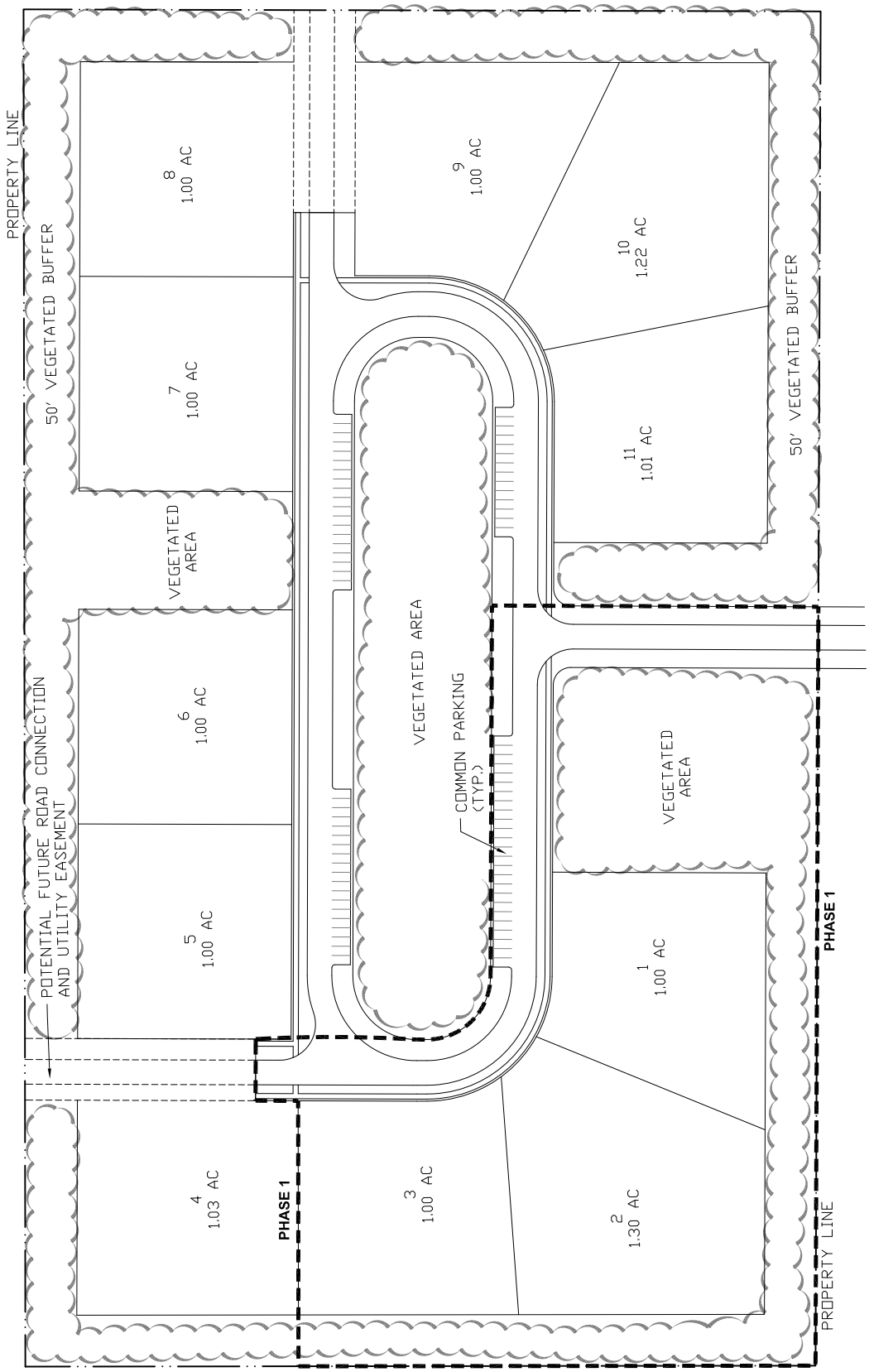


Figure 4-1. Conceptual Site Design.

Given the limited knowledge of local soils, it is assumed that on-site infiltration of stormwater is not the most cost-effective way to address stormwater flow control, necessitating the construction of an off-site detention facility to handle the additional runoff.

It should be noted that on-site soil testing should be conducted prior to design. The results of such tests may alter these assumptions.

Potable Water

Potable water is available via a connection to an existing 8-inch water main at the southern property boundary, with a loop through the site to another connection northwest of the site.

Sanitary Sewer

It is assumed that sanitary wastes will be accommodated by individual septic systems, utilizing an off-site drainfield. Further analysis, including soil testing, is needed to identify the location of the off-site drainfield and to determine the most cost-effective septic system. Alternative treatment and disposal systems that were considered are described in Appendix E.

Future Road Connections

The conceptual site design provides options for future road connections to SR 19 and SR 20. Streets will only be built to the extent needed to serve the development, with easements reserved for potential future connections. The easements will also be used to provide off-site utility connections.

Phasing

It is assumed that development will occur in at least two phases, with the first phase consisting of three lots.

Conceptual Site Design

The conceptual site design helps fulfill the overall project goals, including the site development characteristics of an eco-industrial park, as outlined in Chapter 1. The site design accomplishes this by:

- Retaining nearly 9 acres of native forest vegetation in common areas.
- Minimizing impervious surfaces by using narrow roads, shared parking, driveways, and truck maneuvering.
- Protecting water quality through the use of LID, including a roadside bioretention swale, and dispersed, small-scale bioretention cells on individual lots.
- Creating a master-planned campus setting with a rural aesthetic by facing all lots toward a central green space.

The conceptual site design was based upon assumptions with regard to lot sizes, building sizes, parking requirements, and truck maneuvering, within the context of the impervious surface and building size limitations imposed by the JCC. These assumptions are:

- Lot sizes are 1 acre or larger.
- Buildings are assumed to be built to the maximum allowable footprint of 10,000 square feet.
- Each lot is assumed to require 20 parking spaces.
- Each lot is assumed to require one truck loading space and maneuvering area.

The 1-acre lot size was used as an agreed-upon typical lot size after discussion with Port staff and the IPAC. Accommodating 1-acre lots in the conceptual design would allow for further subdivision or aggregation of lots in the future, should a potential tenant have the need for a lot of a different size. The number of parking spaces assumed for each lot was based on the number of employees for a typical construction or light manufacturing business that might locate on this site, per the market analysis in Chapter 2, and based on the JCC requirement for one parking space per employee. The 10,000 sf building footprint is the maximum allowable in the Airport Overlay III, and the one truck loading space is required by the JCC.

Using these assumptions, calculations were made as to how much impervious area would be needed for each lot and, given the impervious area needed for roads, how many lots could be created. It was determined that 11 lots could be created, while meeting the 25% impervious area limitation. To make efficient use of impervious area, the road is no wider than necessary to accommodate light truck and emergency vehicle traffic, common on-street parking areas, and shared driveways, parking, and truck maneuvering areas are proposed for pairs of lots. Table 4-1 outlines the area assumptions and impervious surface calculations.

The conceptual site design proposes 11 approximately 1-acre lots arrayed around a central green space, with pockets of shared on-street parking. The central green space as well as the vegetated areas along each side of the entrance road will retain native vegetation as much as feasible. The internal loop road will have a 24-foot roadway with pockets of shared, head-in parking, a bioretention swale along the outside, and a 5-foot sidewalk along the outside, as shown on Figure 4-2. It is assumed that pairs of lots will share driveways and truck maneuvering areas. Phase 1 will consist of lots 1–3.

Providing shared on-street parking creates efficiency with respect to impervious surface because the roadway doubles as the parking aisle. By providing 77 common parking spaces, on-site parking requirements are reduced, resulting in a higher lot count than if all parking is required to be provided on each lot. On-site impervious area is more efficiently used in a similar fashion by sharing driveways, on-site parking, and truck maneuvering. The 1-acre lots could be divided further or combined depending on the needs of future tenants.

Water

Water service to provide domestic water and fire protection to the project will be extended from the north side of the main runway, passing through the sleeve under the west end of the runway mentioned in Chapter 3, Existing Conditions. The 8-inch PVC main will then turn east

Table 4-1. Impervious Area Assumptions and Calculations.

Item	Calculation	Resulting Assumption
Site Assumptions		
Site Area		1,016,663 square feet
Proposed Street Section		24' roadway, 8.5' swale, 5' sidewalk, common head-in parking areas
Proposed Lot Configuration		Pairs of lots share driveway, parking, & truck turning
Parking		
Total Parking Needed	20 x 11 (20 Parking Spaces x 11 Lots)	220 parking spaces
On-Street Parking Spaces Provided		77 parking spaces
Additional Parking Needed	220 – 77 (Total Parking – On-Street Parking)	143 parking spaces
Parking Spaces per Lot	143/11 (Additional Parking/# Lots)	13 parking spaces
Impervious Areas		
Maximum Impervious Area	1,016,663 x 0.25 (Site Area x 25%)	254,000 square feet
Street Impervious Area	(street width x length of street)	70,313 square feet
Lot Impervious Area Budget	254,000 – 70,313 (Maximum Site Impervious – Street Impervious)	183,687 square feet
Parking Impervious Area per Space	9 x 31 (width x (depth + aisle))	279 square feet
Parking Impervious Area per Lot	279 x 13 (Parking Impervious x Parking per Lot)	3,627 square feet
Driveway Impervious Area	(1/2 of shared driveway)	361 square feet
Truck Turning Impervious Area	(1/2 of shared truck turning)	2,183 square feet
Building Impervious Area	(maximum building footprint allowed)	10,000 square feet
Total Impervious Area per Lot	3627 + 361 + 2183 + 10,000 (Parking + Driveway + Truck + Building)	16,171 square feet
Maximum Number of Lots	183,687/16,171 (Lot Impervious Budget/Impervious per Lot) [rounded down]	11 Lots
Impervious Area Subtotal	16,171 x 11 (Lot Impervious x # Lots)	177,881 square feet
Total Site Impervious	70,313 + 177,881 (Street Impervious + Impervious Subtotal)	248,194 square feet (24% of site)

The conceptual site design was based upon assumptions with regard to lot sizes, building sizes, parking requirements, and truck maneuvering, within the context of the impervious surface and building size limitations imposed by the JCC. These assumptions are:

- Lot sizes are 1 acre or larger.
- Buildings are assumed to be built to the maximum allowable footprint of 10,000 square feet.
- Each lot is assumed to require 20 parking spaces.
- Each lot is assumed to require one truck loading space and maneuvering area.

The 1-acre lot size was used as an agreed-upon typical lot size after discussion with Port staff and the IPAC. Accommodating 1-acre lots in the conceptual design would allow for further subdivision or aggregation of lots in the future, should a potential tenant have the need for a lot of a different size. The number of parking spaces assumed for each lot was based on the number of employees for a typical construction or light manufacturing business that might locate on this site, per the market analysis in Chapter 2, and based on the JCC requirement for one parking space per employee. The 10,000 sf building footprint is the maximum allowable in the Airport Overlay III, and the one truck loading space is required by the JCC.

Using these assumptions, calculations were made as to how much impervious area would be needed for each lot and, given the impervious area needed for roads, how many lots could be created. It was determined that 11 lots could be created, while meeting the 25% impervious area limitation. To make efficient use of impervious area, the road is no wider than necessary to accommodate light truck and emergency vehicle traffic, common on-street parking areas, and shared driveways, parking, and truck maneuvering areas are proposed for pairs of lots. Table 4-1 outlines the area assumptions and impervious surface calculations.

The conceptual site design proposes 11 approximately 1-acre lots arrayed around a central green space, with pockets of shared on-street parking. The central green space as well as the vegetated areas along each side of the entrance road will retain native vegetation as much as feasible. The internal loop road will have a 24-foot roadway with pockets of shared, head-in parking, a bioretention swale along the outside, and a 5-foot sidewalk along the outside, as shown on Figure 4-2. It is assumed that pairs of lots will share driveways and truck maneuvering areas. Phase 1 will consist of lots 1–3.

Providing shared on-street parking creates efficiency with respect to impervious surface because the roadway doubles as the parking aisle. By providing 77 common parking spaces, on-site parking requirements are reduced, resulting in a higher lot count than if all parking is required to be provided on each lot. On-site impervious area is more efficiently used in a similar fashion by sharing driveways, on-site parking, and truck maneuvering. The 1-acre lots could be divided further or combined depending on the needs of future tenants.

Water

Water service to provide domestic water and fire protection to the project will be extended from the north side of the main runway, passing through the sleeve under the west end of the runway mentioned in Chapter 3, Existing Conditions. The 8-inch PVC main will then turn east

Figure 4-2. Street Cross-Section.

to parallel the runway along an alignment designed to best accommodate future development on the south side of the runway as shown in the current master plan. The water main will enter the project site at the road stubbed to the north boundary. The main will be looped around the inner ring road of the industrial park and connected at the south boundary to the existing 8-inch main in the access panhandle. Isolation valves are planned at strategic locations along the water main alignment, and seven fire hydrants are planned for fire protection within the bounds of the project. Pressure reduction valves (PRVs) will be required at each building water service to reduce pressure from the higher pressure zone feeding the site from the north. Each lot will require a domestic water service and water for the buildings fire sprinkler system from the new main. Figures 4-3 and 4-4 show a schematic design for the water system.

Stormwater Management

LID will be implemented to realize a sustainable approach to stormwater management. LID techniques, as defined in Chapter 3, include bioretention swales and rain gardens, reduction of impervious surfaces, retention of native vegetation, and disconnection and dispersal of impervious surfaces. Applicable stormwater regulations require the project to address water quality and water quantity (peak flow and duration) standards.

For water quantity, the apparently limited deep infiltration capacity on-site soils and the limited allowable clearing constrain the use of infiltration BMPs for flow control. Therefore, flow control likely will need to be met with the use of a conventional detention/flow control facility, such as a pond likely off site on an adjacent parcel.

For water quality treatment, LID holds great promise and should be used for all of the required water quality treatment needs. For the roads, the plan incorporates the use of a linear bioretention cell, or swale, along each of the site roads. To maintain aerobic conditions, these cells should be provided with an underdrain because of the slow infiltrating soils. The cells should have an overflow to handle storm events larger than the water quality storm event; however, the cells should be designed to provide some of the bioretention soil below and adjacent to the underdrain. This zone will both allow incidental infiltration and an alternating aerobic/anaerobic condition hastening treatment performance.

On individual parcels, stormwater quality should also be met with LID techniques such as bioretention cells. Additionally, sites could be provided with rainwater catchment systems or green roofs, compost amended soils, and possibly pervious pavement; however, the feasibility and cost effectiveness of pervious pavement will be constrained by the slowly infiltrating soils and the industrial uses. Additionally, as the lots develop they should be encouraged or required to disconnect their impervious surfaces and use sheetflow and conveyance swales as much as possible and discourage the connection of all impervious surfaces in a “tightline” system. These approaches can greatly enhance the stormwater retention capability of the site and reduce the size of required stormwater detention facilities.

Lastly, bioretention cells for stormwater treatment can be integrated with site landscaping, making them the most cost-effective stormwater treatment approach available.

The remaining stormwater generated on the site that is not retained or re-used will be directed off site through a storm system main extended east from the northeast corner of the interior loop road along an easement to the east boundary of the industrial park, as shown on Figure

4-4. The main would continue east, and then turn north to discharge into a stormwater detention pond located slightly to the south and west of the existing stormwater detention pond. Conservatively assuming no on-site retention, reuse, or applying any of the LID flow control credits, a volume of approximately 125,000 cubic feet is required for the proposed stormwater detention pond. This conservative estimate has been designed to accommodate runoff from the interior roadway and from impervious surfaces comprising 25% of the site in accordance with Jefferson County regulations. The proposed pond would discharge in the vicinity of the discharge of the existing pond, with care taken to avoid conflicts with existing buried power lines along the alignment of the proposed discharge pipe. It is assumed that during design this volume can be reduced somewhat by applying the flow control credits available for using LID BMPs.

Alternately, a till cap puncture stormwater approach has been discussed and is considered infeasible due to the presence of a groundwater protection zone for a public water supply well.

Wastewater

An on-site wastewater collection, conveyance, treatment, and subsurface dispersal system will manage the wastewater for this project. The collection and conveyance system will utilize an effluent (partially treated wastewater) sewer system. Each lot will have a two-compartment septic tank. The septic tanks will provide the initial primary treatment for the entire system, retaining the majority of the solids in the tank and discharging only effluent into the collection system. Depending on grades, the septic tanks may discharge by gravity or they may have a small pump that discharges into the collection system. Effluent will be conveyed from each lot via small-diameter pressure sewer lines or a smaller gravity-type sewer, or a combination of both. The partially treated effluent will be conveyed to a community treatment system, as shown on Figures 4-5 and 4-6. The treatment system will consist of additional primary (settling) treatment, flow equalization, and secondary (aerobic) treatment. The secondary-treated effluent will be pumped to a subsurface drip irrigation system drainfield for final treatment and dispersal.

Conceptual Site Design Development Cost Estimates

The consultant team developed site development cost estimates for Phase 1 and full build-out of the conceptual site design. The estimates are summarized in Table 4-2 below. The estimates include costs for temporary erosion control, earthwork, water, sanitary sewer, stormwater management, site paving, and site electrical. The estimates also include an allowance for design, permits, inspections, contractors' conditions, overhead and profit, contingencies, and sales tax. The estimates do not include construction costs of individual buildings, nor do they account for any environmental mitigation, should that be needed for wetland impacts.

The assumptions for sanitary sewer described above and in Appendix E note the uncertainty with respect to a suitable drainfield location. A contingency of $250,000 is included to account for the possibility that suitable soils will not be available in proximity to the site and a more remote drainfield site may be necessary, resulting in a higher cost for conveyance. The sanitary sewer, general design, and construction contingencies were added to produce

CONNECT TO
EXISTING WATERMAIN

POTENTIAL FUTURE ROAD CONNECTION
AND UTILITY EASEMENT

PROPERTY LINE

50' VEGETATED BUFFER

PHASE 1

VEGETATED AREA

COMMON PARKING
(TYP.)

4 1.03 AC
5 1.00 AC
6 1.00 AC
7 1.00 AC
8 1.00 AC
9 1.00 AC
3 1.00 AC
2 1.30 AC
1 1.00 AC
11 1.01 AC
10 1.22 AC

VEGETATED AREA
VEGETATED AREA

50' VEGETATED BUFFER

PROPERTY LINE

PHASE 1

WELL

R100'

DETENTION
420'

POND

30'

54"

12"
TYP

APPROXIMATE VOLUME
125,500 CU. FT.

54"

EXISTING AIRPORT POND

STORM
UNDER
POWER

72"

18"

72"

18"

72"

BURIED POWER
VERIFY DEPTH
AND LOCATION

CONTROL CONTROL CB
CB 60"ø
60"ø

BURIED POWER
VERIFY DEPTH
AND LOCATION

SCALE: 1"=300'

0 150' 300' 600' 900'

Figure 4-3. Water and Stormwater Design 1.

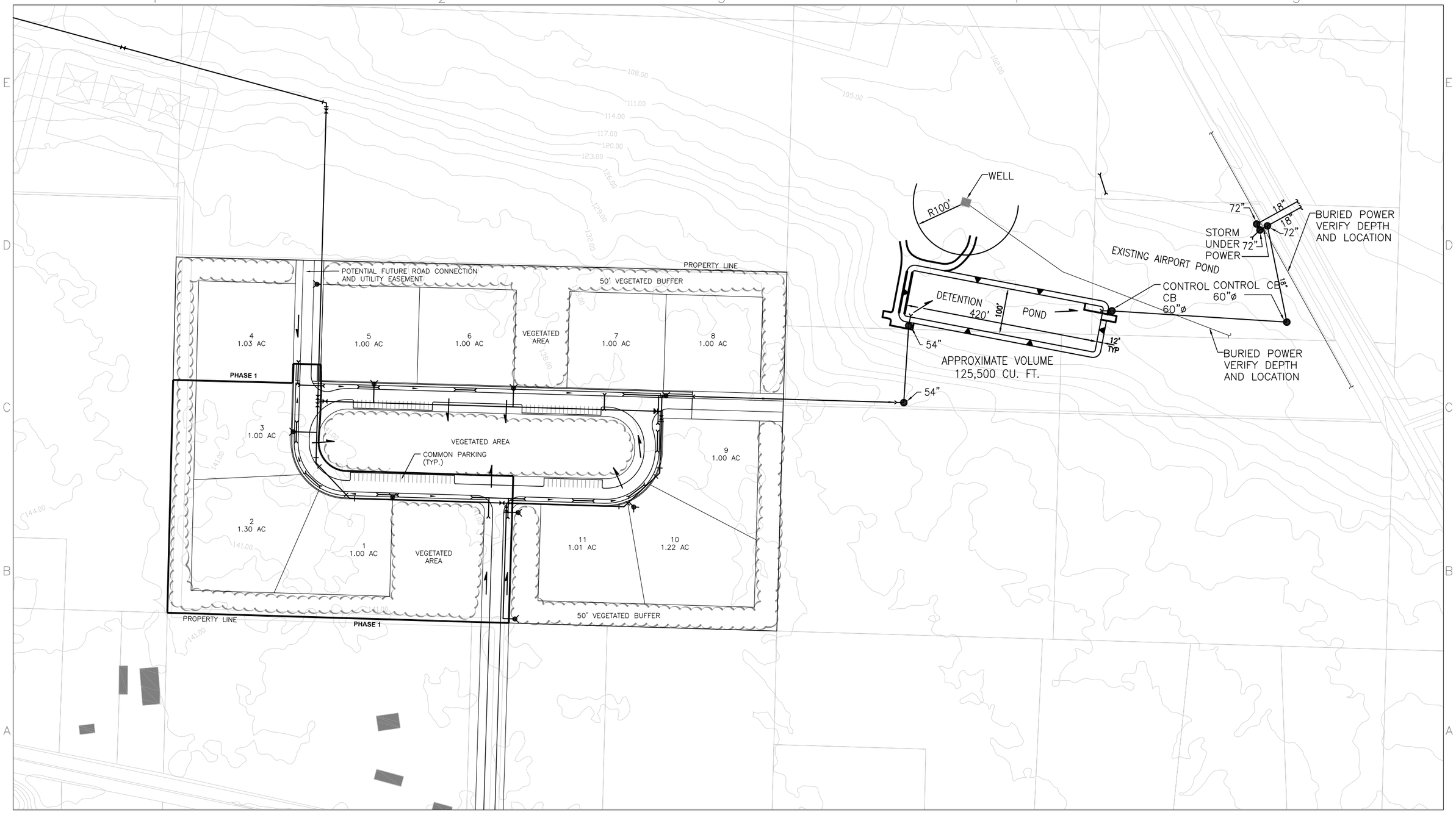


Figure 4-4. Water and Stormwater Design 2.

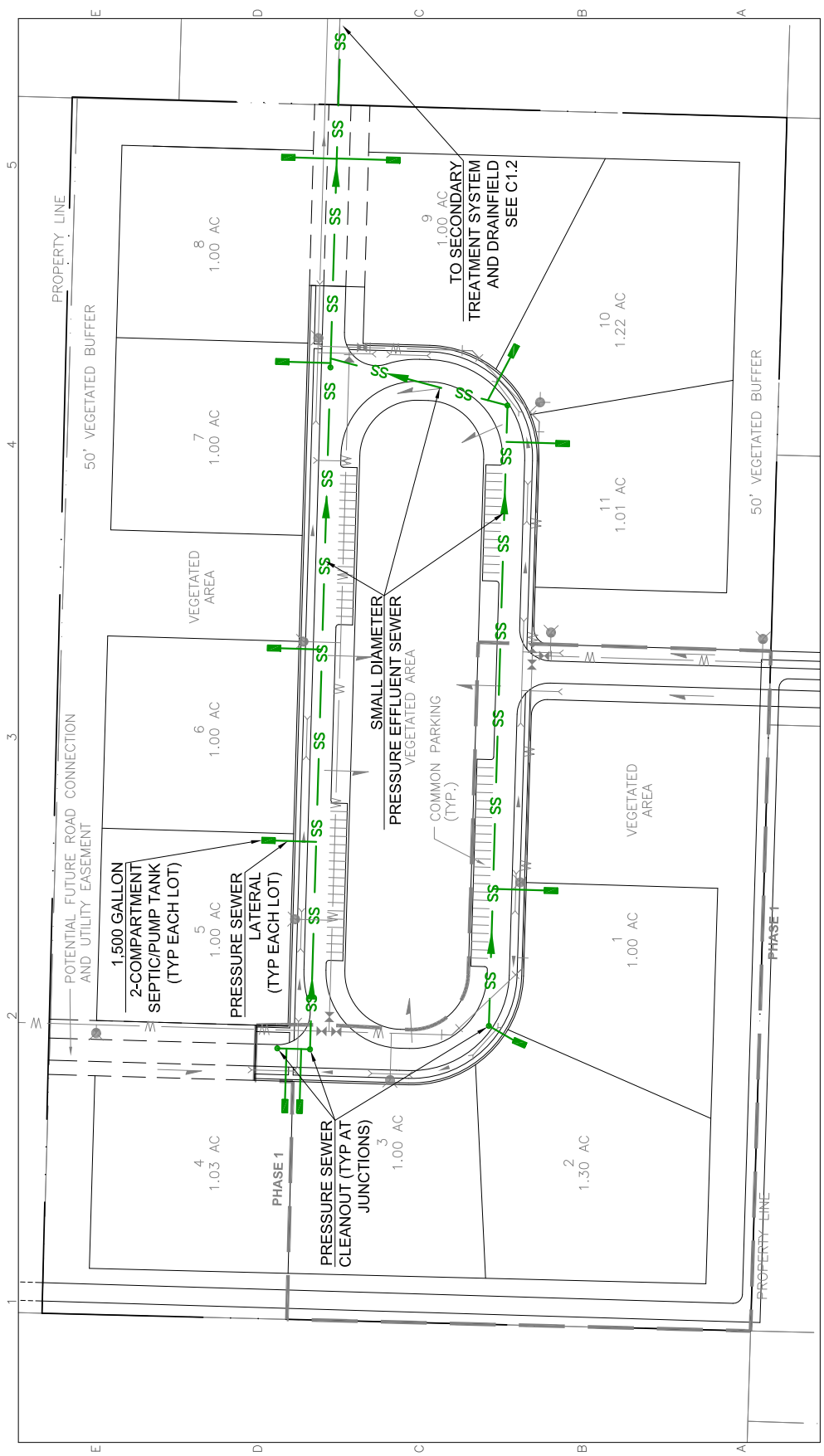


Figure 4-5. Wastewater Design 1.

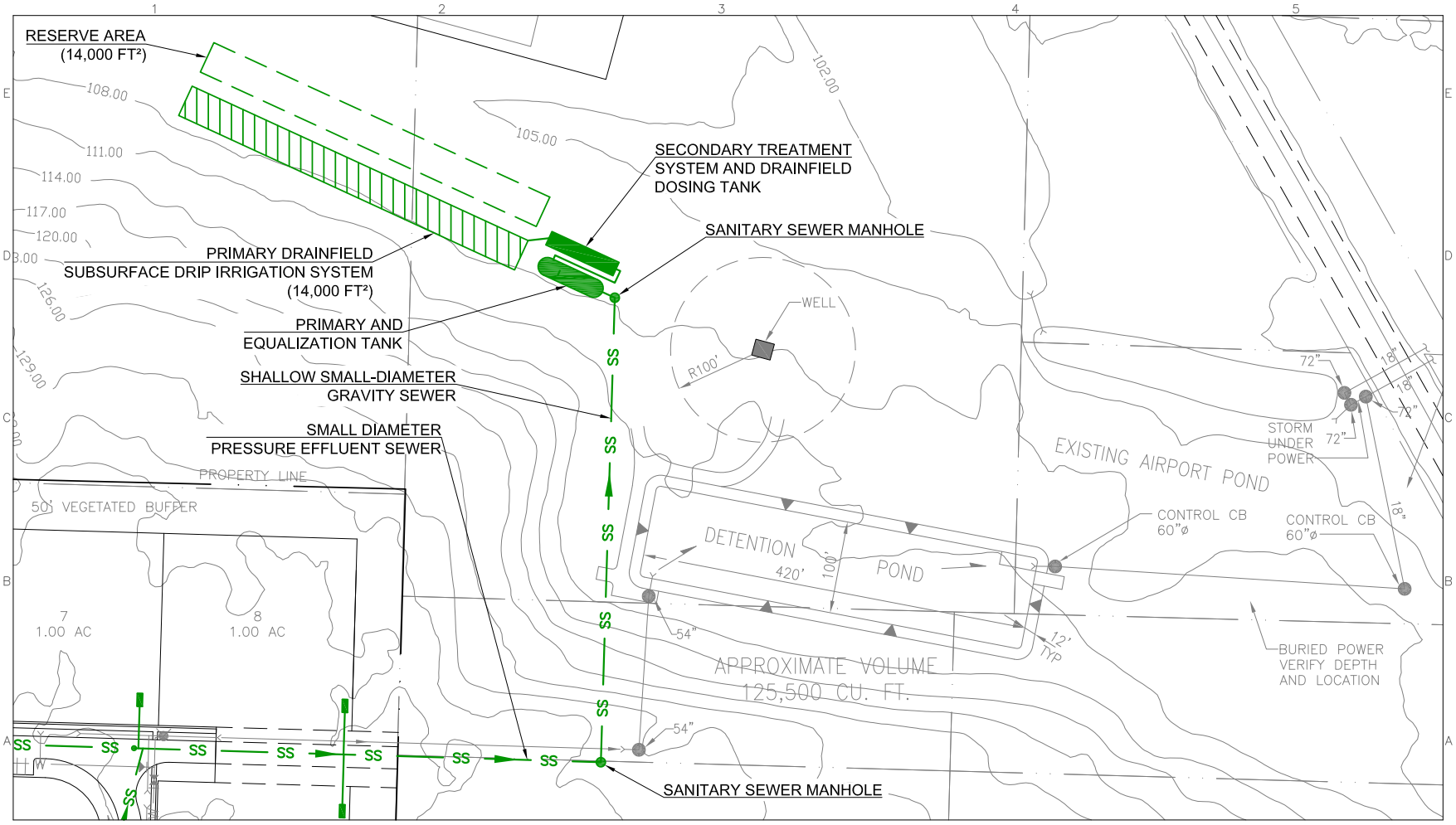


Figure 4-6. Wastewater Design 2.

a conservative estimate, which is the accepted approach at the conceptual design stage, given all of the uncertainties. The Port should take steps to address these uncertainties. One important step is conducting testing of on- and off-site soils to determine the feasibility of certain stormwater management techniques, including on-site infiltration, and to identify a suitable location for a septic system drainfield.

Table 4-2. Phase 1 and Full Build-out Site Development Cost Estimate Summary.

Item	Phase 1	Build-out
Temporary Erosion Control	$33,000	$114,700
Earthwork	$120,100	$120,100
Water System	$246,300	$399,200
Sanitary Sewer System	$589,800	$618,200
Storm Drainage	$169,800	$249,200
Site Paving	$87,800	$190,900
Site Electrical	$20,300	$39,000
Subtotal	$1,267,100	$1,731,300
Engineering, Permits, Inspection, Design Contingency (30%)	$380,130	$519,390
Construction Subtotal	$1,647,200	$2,250,700
General Conditions (15%)	$247,080	$337,605
General Contractor's OH&P (15%)	$247,080	$337,605
Construction Contingency (25%)	$411,800	$562,675
Current Cost Subtotal	$2,553,160	$3,488,585
Sales Tax (9%)	$229,784	$313,973
Total Construction Cost	**$2,782,944**	**$3,802,558**

Observations

In the early stages of the study, it was hoped that a small, first phase could be inexpensively constructed, allowing the Port to begin generating a return on its investment, while "priming the pump" for future tenant demand. However, an examination of the site development cost estimates reveals that a 3-lot first phase will require a significant up-front investment of more than 2/3 the cost of full site build-out. This is the result of the infrastructure improvements needed to serve even one lot on the site. Because the site contains no useable infrastructure, utility lines must be brought some distance from existing connections. Domestic water service and fire flow require extending a water main to the site, and looping it through the site to another point of connection, requiring 3,800 linear feet of pipe. Once this is in place for the first three lots, serving the remaining lots requires relatively less additional pipe. Similar circumstances exist for the other utilities. Compounding this difficulty is the uncertainty regarding a suitable location for a wastewater drainfield, as noted above.

Conceivably, the Port could extend a road onto the site and provide a single well and septic system to serve one lot for less expense. But the investment in this minimal infrastructure would not serve for any expansion of the development. As the Port decides to serve more lots, it becomes more cost-effective in the long run to provide shared infrastructure, which requires a high initial investment.

5

Economic Feasibility Analysis

Chapter 5 presents an economic feasibility analysis conducted specifically for the Port of Port Townsend Eco-Industrial Park. It is based entirely on a stand-alone report prepared in April 2011 by Property Counselors, under contract with AECOM. The purpose of the feasibility analysis is to identify the likely financial performance of the proposed project and consider whether it meets the Port's financial objectives. The report is organized in three sections.

- Development Concept
- Financial Feasibility
- Conclusions

Development Concept

Market Performance

The eco-industrial park would occupy a niche between the available lands at Glen Cove and the Port Townsend Business Park. The park would have a master plan and offer a consistent quality, look, and feel. Utility systems would accommodate initial needs and expansion of tenant businesses. Opportunities would be available for small sites, larger sites, and buildings for lease. Prices would be competitive to appeal to start-up and expand-

ing businesses. The park can be marketed as a fully serviced, higher amenity park, with coordinated infrastructure, and a lower density non-urban setting.

The market analysis for the project identified the potential performance of the project to be:

- Supportable land prices of $6/sf. The associated ground lease rate would be 9% of this value annually.
- Assumed pre-lease of 3 net acres with full lease-up in 10 years.

Site Plan

A preliminary site plan was prepared by the team and is shown in Figure 4-1. The key elements of the site plan are the following:

- 11.56 net acres of land are available for lease.
- The parcels are approximately 1 acre each but could be divided or aggregated depending on the needs of tenants.
- An initial phase with basic utilities and entry roads is identified with three development parcels at the southwest corner of the park.

Cost Estimate

The team has prepared an estimate of probable cost for the development as summarized in the Table 5-1.

Table 5-1. Estimate of Probable Construction Cost.

(Constant $2011)

Item	Phase 1	Build-out
Temporary Erosion Control	$33,000	$114,700
Earthwork	$120,100	$120,100
Water System	$246,300	$399,200
Sanitary Sewer System	$589,800	$618,200
Storm Drainage	$169,800	$249,200
Site Paving	$87,800	$190,900
Site Electrical	$20,300	$39,000
Subtotal	$1,267,100	$1,731,300
Engineering, Permits, Inspection, Design Contingency (30%)	$380,130	$519,390
Construction Subtotal	$1,647,200	$2,250,700
General Conditions (15%)	$247,080	$337,605
General Contractor's OH&P (15%)	$247,080	$337,605
Construction Contingency (25%)	$411,800	$562,675
Current Cost Subtotal	$2,553,160	$3,488,585
Sales Tax (9%)	$229,784	$313,973
Total Construction Cost	**$2,782,944**	**$3,802,558**

Operational Model

It is the Port's policy to maintain ownership of the underlying land and common area improvements. Accordingly, it is assumed that the parcels in the park will be available for long-term ground lease. Buildings could be developed for lease by either the Port or a master lessee. It is assumed for this analysis that the Port's role would be development and lease of land only. The Port would maintain the common areas and pass the associated expenses on to the lessees.

Financial Feasibility

Method and Assumptions

The performance of the proposed eco-industrial park was evaluated using a discounted cash flow model. Annual cash flows were estimated for development, financing, leasing, and operations over a typical development horizon. Cash flows from subsequent years are reflected as a residual value in the final year. Several performance measures can be determined:

- The breakeven period can be determined as the number of years necessary for the cumulative cash flow to become positive.
- The net present value of the cash flow reflects the value to the Port of its investment given its opportunity cost of funds (cost of long-term borrowing). If the net present value is positive, the return meets the Port's threshold.
- The internal rate of return is the discount rate at which the net present value is zero. It is a measure of rate of return that reflects the timing and size of all cash flows.

The capital cost estimates are presented above. For the base case analysis, it is assumed that 30% of this cost would be funded through grants, although no specific grant sources are identified at this time. The Port would fund the planning efforts with equity, and borrow the balance.

The Port's operating costs will cover common area maintenance and allocated administrative and general costs, as summarized in Table 5-2. These costs were extrapolated from the Port's operating experience at Port Townsend Boat Haven and Point Hudson.

Staffing is estimated as 0.6 full-time equivalents (FTEs). The major direct general and administrative item is insurance. Utilities and maintenance cover the roads, landscaped areas, and sewer system.

Revenues are estimated for ground lease payments and common area charges. The common area charges are included in the estimates above, but are independently estimated for roads/grounds maintenance, security, and sewer system maintenance. Team members have estimated annual maintenance of the sewer system to be $12,500. Roads and grounds costs are estimated as $25,000 according to the experience of the Twelve Trees Business Park in Poulsbo. Security is estimated as 0.1 FTE. Total reimbursable expenditures are equivalent to $45,000, or $0.09 per square foot annually.

Debt service is calculated for 20-year tax exempt bonds at 4.5% annual interest. The outstanding debt is subtracted from the capitalized value of the future income stream in the last year of the investment period to determine the residual value. The capitalized value is calculated as the final year operating income divided by a capitalization rate of 9%.

The discount rate for the net present value analysis is assumed at 5%. This is intended to represent the Port's cost of funds, a slight premium over the long-term cost of debt. This rate also serves as the feasibility threshold for the internal rate of return comparison.

Table 5-2. Operating Costs.

Item	Cost
Personnel	$30,000
Direct General & Administrative	$10,000
Utilities	$5,000
Maintenance	$5,000
Subtotal Direct Expense	$50,000
Indirect (% of Revenue)	
Reserve for Replacement	3.0%
Allocated Administrative and General	14.9%

Results

The projections for the base case are presented in the Table 5-3. The cumulative cash flow is shown graphically in Figure 5-1. The project would incur negative cash flow until its eighth year. The cumulative cash flow does not become positive until the final year reflecting the recognition of the residual value, a lump sum equivalent to the value of future years' cash flows. The maximum cumulative negative cash flow of $1.2 million would have to be funded from other Port sources of revenue. The internal rate of return of 6.4% exceeds the Port's long-term cost of funds. Given this measure, the investment can be assumed to be feasible, although speculative.

The results are dependent upon assumptions about future events and conditions. To the extent that future conditions differ from the assumptions, the performance of the project can differ significantly from these results. To better understand the relationship between key assumptions and performance measures, we conducted a sensitivity analysis for key variables. The results of that analysis are described in the following section.

Sensitivity Analysis

Several variables were considered in the sensitivity analysis as summarized Table 5-4.

The comparison of the performance of each case is shown in the last column of Table 5-4 and summarized in Figure 5-2 in terms of internal rate of return. As shown in the figure, a combination of favorable assumptions could increase the internal rate of return from 6.4% for the base case to 14.8%. The most sensitive assumption on the positive side is the assumption of lease-up for Phase 2. If the Port can pre-lease all the Phase 2 land, the internal

Table 5-3. Discounted Cash Flow Analysis - Base Case.

Operating Income		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Revenue													
Ground Lease			$82,375	$82,375	$82,375	$82,375	$170,225	$170,225	$251,285	$251,285	$251,285	$344,859	$344,859
Building Lease													
Expense Pass Throughs													
Common Area Charges			13,729	14,004	14,284	14,570	28,371	28,938	43,573	44,444	45,333	57,476	58,626
Misc. Revenue													
Subtotal			96,104	96,379	96,659	96,945	198,596	199,163	294,857	295,729	296,618	402,335	403,485
Vacancy	5.0%		4,805	4,819	4,833	4,847	9,930	9,958	14,743	14,786	14,831	20,117	20,174
Total Revenue			91,299	91,560	91,826	92,097	188,666	189,205	280,114	280,942	281,787	382,219	383,311
Expense													
Personnel	$30,000		$25,469	$25,978	$26,498	$27,028	$34,461	$35,150	$35,853	$36,570	$37,301	$38,047	$38,808
Direct General & Admin	10,000		8,490	8,659	8,833	9,009	11,487	11,717	11,951	12,190	12,434	12,682	12,936
Utilities	5,000		4,245	4,330	4,416	4,505	5,743	5,858	5,975	6,095	6,217	6,341	6,468
Maintenance	5,000		4,245	4,330	4,416	4,505	5,743	5,858	5,975	6,095	6,217	6,341	6,468
Subtotal Direct Expense	$50,000		42,448	43,297	44,163	45,046	57,434	58,583	59,755	60,950	62,169	63,412	64,680
Indirect (% of Rev.)													
Reserve for Replacement	3.0%		2,739	2,794	2,850	2,907	2,965	3,024	3,085	3,146	3,209	3,273	3,339
Allocated Admin. And Gen.	14.9%		13,558	13,829	14,106	14,388	14,676	14,969	15,268	15,574	15,885	16,203	16,527
Subtotal Indirect			16,297	16,623	16,955	17,294	17,640	17,993	18,353	18,720	19,094	19,476	19,866
Total Expense			58,745	59,920	61,119	62,341	75,075	76,576	78,108	79,670	81,263	82,888	84,546
Operating Income			**$32,554**	**$31,640**	**$30,708**	**$29,757**	**$113,591**	**$112,629**	**$202,007**	**$201,273**	**$200,524**	**$299,330**	**$298,765**
Cash Flow													
Operating Income			32,554	31,640	30,708	29,757	113,591	112,629	202,007	201,273	200,524	299,330	298,765
Equity Investment		419,093				186,622							
Debt Service			132,891	132,891	132,891	132,891	192,074	192,074	192,074	192,074	192,074	192,074	192,074
Residual Value													
Capitalized Income @	9.0%												3,319,607
Oustanding Debt													1,539,017
Net Residual Value													1,780,590
Net Cash Flow		($419,093)	($100,338)	($101,252)	($102,184)	($289,757)	($78,483)	($79,445)	$9,933	$9,198	$8,450	$107,256	$1,887,280
Cumulative Cash Flow		($419,093)	($519,431)	($620,683)	($722,867)	($1,012,623)	($1,091,106)	($1,170,551)	($1,160,618)	($1,151,420)	($1,142,970)	($1,035,714)	$851,566
Net Present Value @	5.0%	$127,724											
Internal Rate of Return		6.4%											

rate of return would increase from 6.4% to 10.5%. More favorable assumptions about the rate of increase of capital costs and the amount of the lease payment would have lesser but still significant impacts.

Cases five through eight show the impacts of less favorable assumptions. A combination of less favorable assumptions could drive the return from 6.4% for the base case to negative 35.4%. The most sensitive assumption is the portion of the project that is funded by grants. If the Port does not secure any grant funding, the return would drop from 6.4% to negative 9.2%. Less favorable assumptions about the rate of increase of capital costs and the amount of lease payments would have lesser, but still significant impacts.

The impact is also reflected in the cumulative cash flow over time as compared in Figure 5-3. As shown, even the most favorable cases do not break even until the recognition of a residual value. The cases with no grant funding may never break-even.

Conclusions

The conclusions of the economic feasibility analysis include the following:

- The project is feasible, although speculative, under baseline assumptions.
- Availability of grant funding is a key determinant of feasibility.
- Even with grant funding, the investment would require a long break-even period. The industrial park does not become revenue neutral until 2020. From 2013 to 2020, the industrial park would require supplementary funding from other Port sources contributions totaling approximately $1.2 million.
- Assuming that the Port would know whether it has secured grants or not before committing hard construction dollars, the other risks may be manageable.

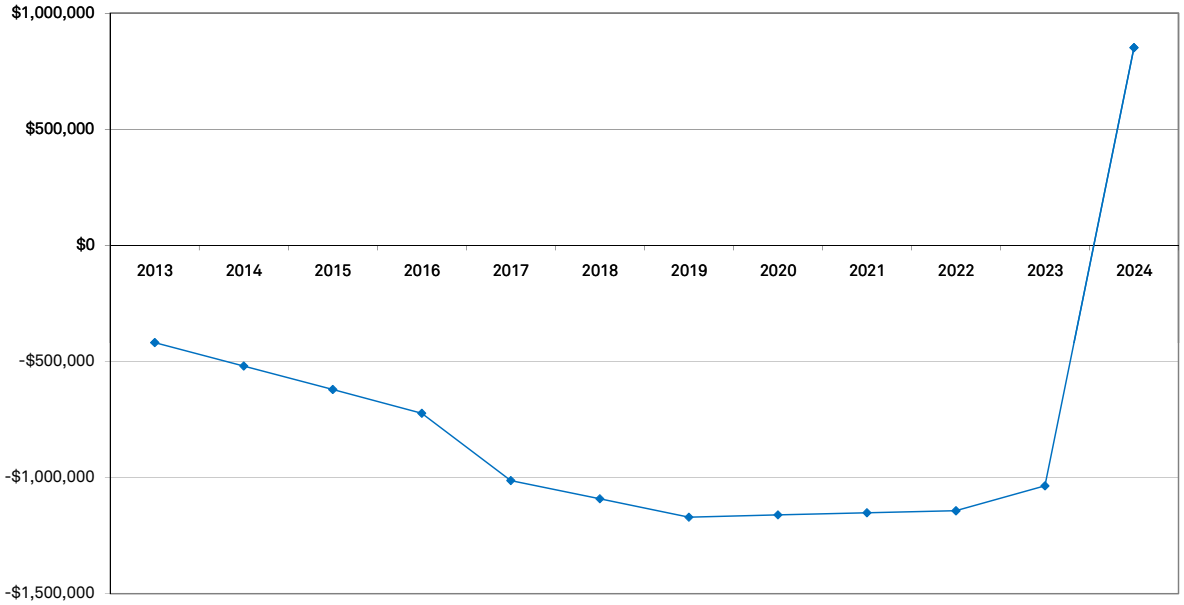


Figure 5-1. Base Case Projected Cumulative Cash Flow.

Table 5-4. Alternative Cases and Assumptions.

	Lease Rate	Absorption	Phase 2	Cost Escalation	% Grant Funding	Estimated IRR
Base Case	$0.54	10 years	2017	5.0%	30%	6.4%
Case 1: Higher Lease Rate	$0.59	10 years	2017	5.0%	30%	9.1%
Case 2: Faster Absorption	$0.54	5 years	2017	5.0%	30%	10.5%
Case 3. Lower Cost Escalation	$0.54	10 years	2017	3.0%	30%	9.6%
Case 4. High Lease, Fast Absorp, Low Escal.	$0.59	5 years	2017	3.0%	30%	14.8%
Case 5. No Grants	$0.54	10 years	2017	5.0%	0%	-9.2%
Case 6. Lower Lease Rate	$0.49	10 years	2017	5.0%	30%	3.4%
Case 7. Later Phase 2.	$0.54	10 years	2020	5.0%	30%	1.6%
Case 8. No Grant, Low Lease, Later Ph. 2.	$0.54	10 years	2020	5.0%	0%	-35.4%

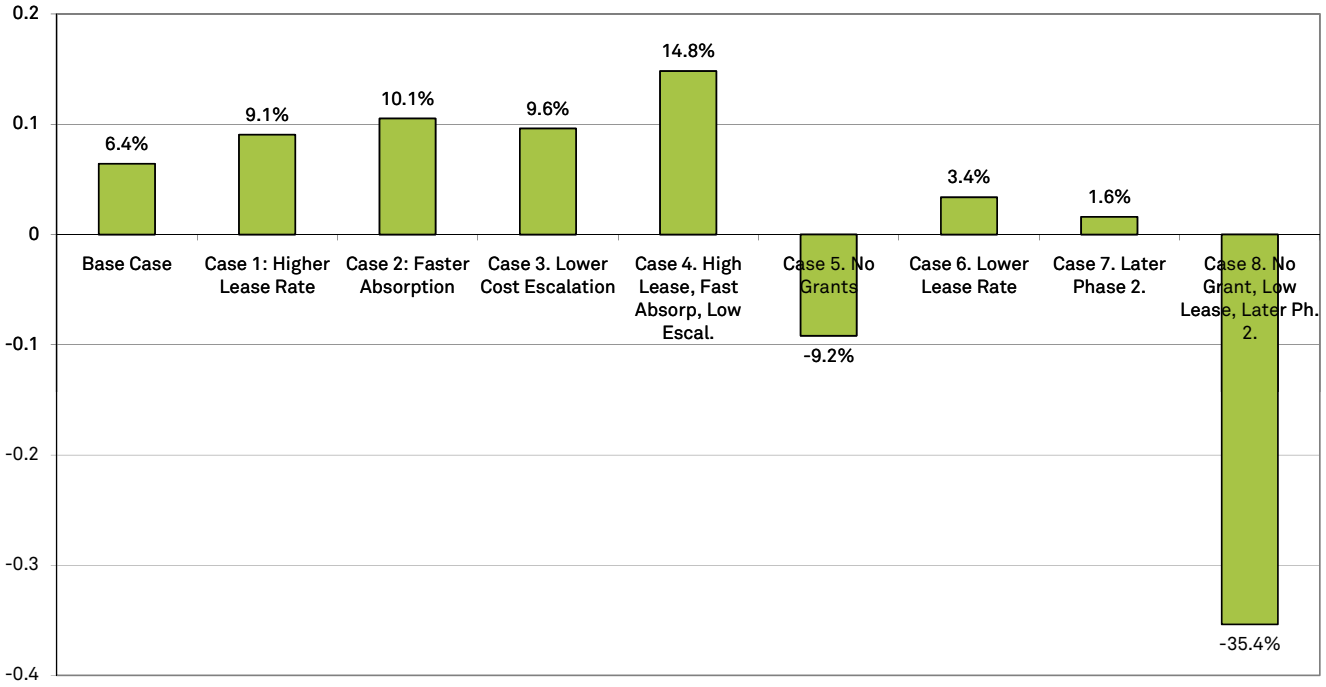


Figure 5-2. Sensitivity Analysis for Alternative Assumptions, Internal Rate of Return.

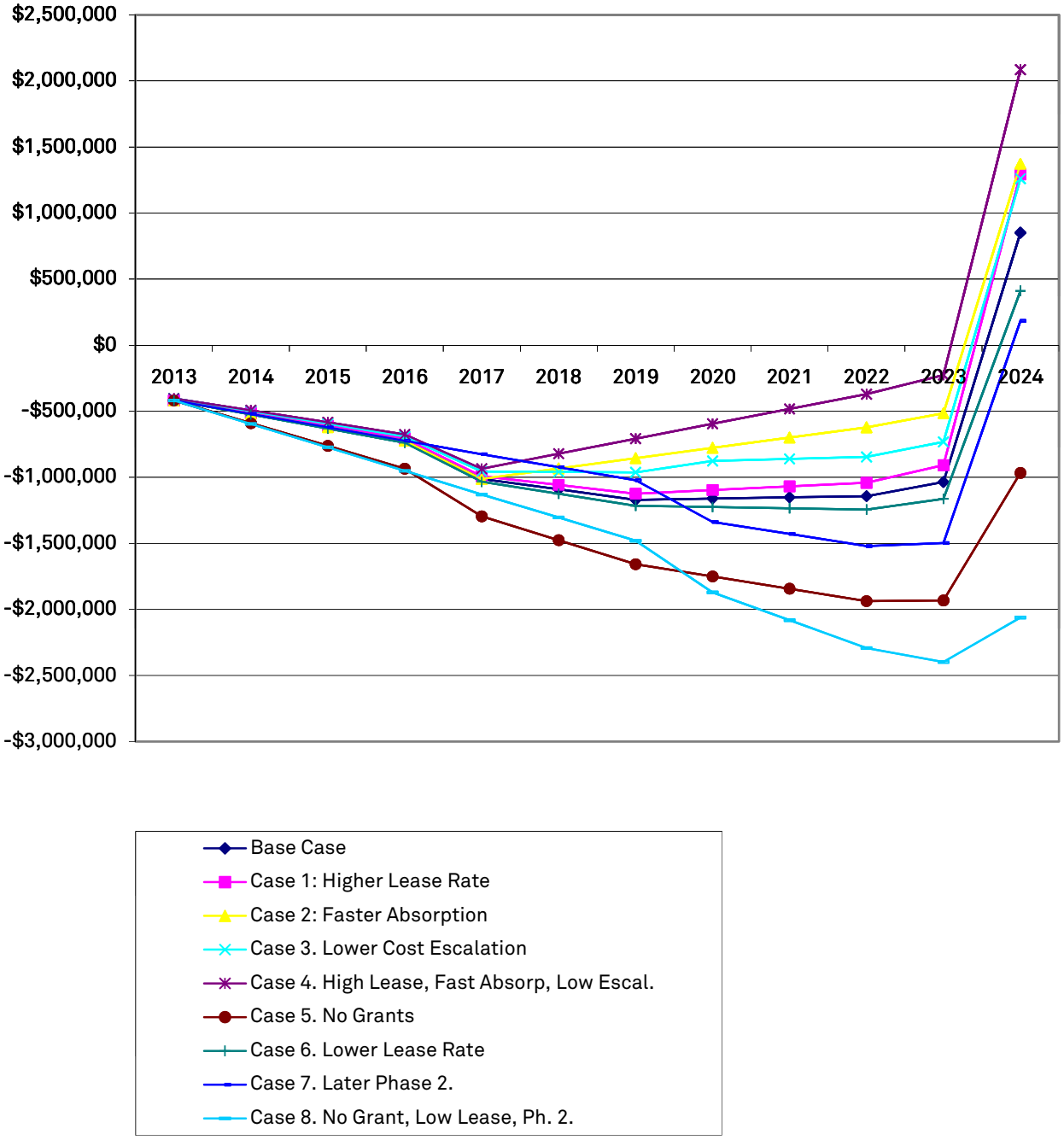


Figure 5-3. Sensitivity Analysis for Alternative Assumptions, Projected Cumulative Cash Flow.

6

Recommendations and Next Steps

The previous chapters of this study have presented a feasibility analysis of the potential Eco-Industrial Park at the Port-owned, 24-acre parcel adjacent to the JCIA. The Port now faces decisions of whether and how to move forward with this project.

This chapter presents ideas for future consideration regarding the financing, engineering, permitting, design, and marketing of the project. It also presents recommendations for next steps, should the Port choose to move forward with the Eco-Industrial Park project. These recommendations include the next steps the Port should take to verify assumptions and reduce uncertainties associated with the conceptual site design, necessary design and permitting steps, and recommendations for ensuring that build-out of the project meets the established project goals.

Some of the preliminary steps identified here could result in a "no go" decision by the Port, for instance if a suitable location for wastewater disposal cannot be found. However, the majority of the recommendations in this chapter assume that the Port chooses to move forward with the project.

Recommendations are provided for the following elements of your project:

- Financing
- Utility and Site Engineering
- Permitting and Environmental Issues
- Design and Development Standards
- Marketing and Recruitment

Financing

Identifying and securing adequate funding for this project is the first and most critical step the Port should take to move the project forward. As noted in Chapter 5, the acquisition of grant funding is critical to making the project pencil out in the long run. The assumption is that 30% of site development costs could come from grants. Grants may also be available to help with design and permitting. During the break-even period, the Port will need to identify other supplementary sources of funds.

Several potential sources of grant funding should be explored, in particular those related to economic development and infrastructure. The State of Washington's Community Economic Revitalization Board (CERB) is one such source. The program favors projects with identified tenants. The US EDA has number of infrastructure-related grant programs as well. The U.S. Environmental Protection Agency (EPA) has funding programs for water systems.

Recommended Steps:

1. Evaluate projected return and risk against Port financial expectations.
2. Identify potential grant sources for site development.
3. Identify potential grant sources for other costs (i.e., design and permitting).
4. Prepare grant application(s) and secure funding.
5. Identify and secure supplementary funding from other Port sources.
6. Secure construction financing and initiate construction upon commitments of initial tenants.

Utility and Site Engineering

The conceptual site design was based on a number of assumptions, as described in Chapter 4. The Port should verify these assumptions or determine the feasibility of other options. For example, on-site infiltration of stormwater was not considered feasible based on the mapped soil types. Soil and infiltration testing may reveal different conditions that would make on-site infiltration feasible and cost-effective. Subsequent steps include those needed to begin preliminary engineering of the project.

Recommended Steps:

1. Conduct a geotechnical soils investigation, including assessing the site for a "till cap puncture" type stormwater approach using underground injection control (UIC) wells.
2. Conduct an investigation to find a suitable location for on-site sewage disposal for the project.
3. Identify potential sites for off-site sanitary sewage disposal if an on-site option cannot be found.

4. Determine preferred wastewater collection, conveyance, treatment, and disposal systems.
5. Confer with the FAA on the acceptability of a second independent stormwater detention pond in the location shown on the water and stormwater plan (Figure 4-4).
6. Confirm the optimum location of a water main extension to best serve future airport-related development.
7. Coordinate with potential broadband service purveyors to ensure that future routing and placement of broadband facilities are conducive to servicing the Eco-Industrial Park.
8. Locate underground utilities and perform a detailed topographic survey.
9. Conduct a traffic analysis of likely impacts to Four Corners Road and the intersections with SR 19 and SR 20.
10. Confer with Jefferson County and WSDOT regarding the feasibility of future road connections for SR 19 or SR 20.
11. Contract with an Architect/Engineer (AE) team to begin preliminary site design and engineering.

Example of Green Roof

Permitting and Environmental Issues

Prior to beginning construction, a variety of land use, construction, and environmental permits will be required, as described in Chapter 3. Assuming that access to the site will come from Four Corners Road, as shown on the conceptual site design, a formal wetland delineation should be performed for the small wetlands south of the site. A Biological Evaluation or No-Effect Letter should be prepared and submitted to the USACE and a jurisdictional determination obtained. Further wetland permitting or mitigation requirements should be determined. These wetland permitting steps would not be required if an alternate access is used that avoids the wetlands. A SEPA checklist should be prepared and local binding site plan permitting process should begin.

Recommended Steps:

1. Conduct a formal wetland delineation and prepare a delineation report.
2. Determine wetland permits required and mitigation options.
3. Prepare a Biological Evaluation or No-Effect letter as part of the Nationwide Permit (NWP) submittal to USACE.
4. Prepare a JARPA.
5. Confer with the USACE regarding a jurisdictional determination for the wetlands.
6. Hold a pre-application conference with Jefferson County staff to identify local permitting requirements, substantive issues, and any special studies or coordination needed.
7. Prepare a SEPA checklist.
8. Submit the preliminary binding site plan application.

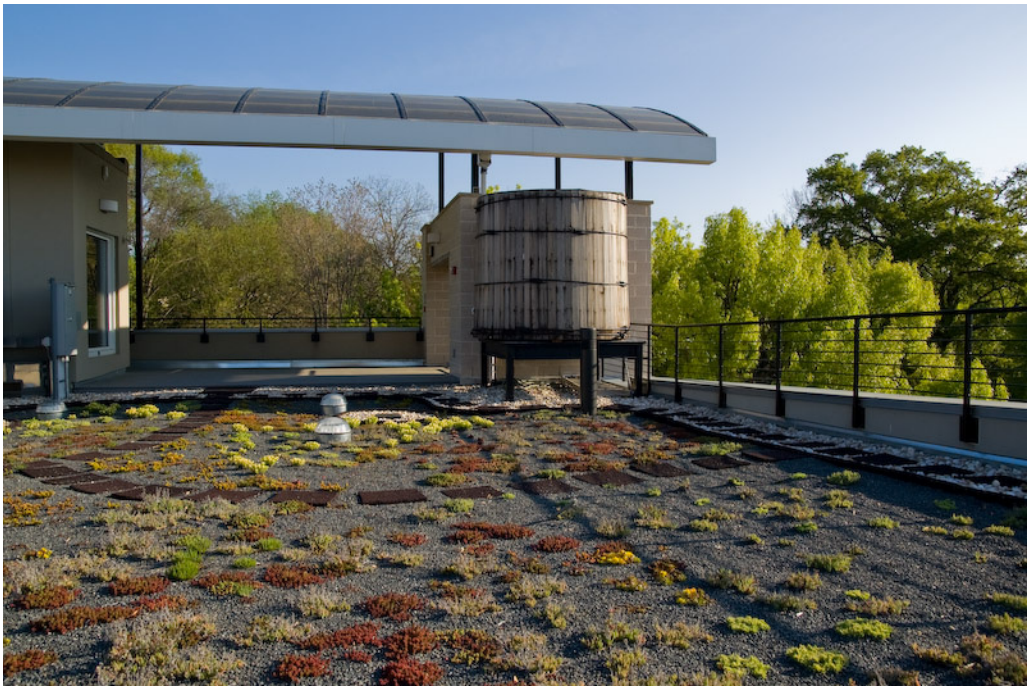
Design and Development Standards

While the Port will be responsible for overall site development, tenants will be responsible for the development of individual lots and buildings in most, if not all cases. To ensure that build-out of the site meets project goals, the Port should set design and development standards and guidelines for tenants to follow. Options include green building and other architectural techniques that the Port could incorporate into buildings it constructs, if the Port chooses to construct buildings, or which could provide the basis for design guidelines that would promote the master planned and environmentally sound type of development intended for the site. The recommendations here also include other LID site development techniques that were not part of the conceptual site design due to uncertainties, or cost factors, but which could potentially be incorporated into a future design.

The Port could employ one or more mechanisms for ensuring the future development meets project goals. The first is to include terms in lease agreements, similar to covenants, conditions, and restrictions (CC&Rs), that spell out specific standards that a tenant must meet in

site or building construction or in business operations. This approach provides certainty to the Port that individual lots and buildings will be constructed in a certain way. A potential drawback is that if the terms are too restrictive, it can discourage tenants from locating at the park and potentially limit creativity in design.

Another approach is to develop design guidelines that are voluntary, providing a menu of options for a prospective tenant. An effective approach is likely a balance between certain lease requirements and other voluntary measures. The Port can require that a tenant demonstrate that they have met the intent of the design guidelines. This would allow the Port to reject a design that does not support project goals, while allowing design flexibility.



Example of Green Roof and Rainwater Capture Cistern

Appendix L provides an example of what such design guidelines may contain. The guidelines would address such elements as:

- Site design, including energy efficient lighting, and the use of native, drought-tolerant landscaping.
- Building design, including provision of light and air and use of locally sourced, sustainably produced materials.
- Architectural standards that are compatible with the intended rural scale.
- Building performance, including energy efficiency, water conservation, and natural ventilation.

Another component of the design guidelines may be the establishment of impervious surface budgets. This would set a limit on the amount of impervious surface that can be created on any individual site, with credits given for certain design features that reduce runoff (e.g., green roofs).

The Port may also consider providing or encouraging sustainable operational strategies or other amenities. These may include:

- Ensuring that recycling and composting service is available.
- Providing bicycle parking.
- Implementing a Transportation Demand Management (TDM) program, including providing information and resources for carpooling or ridesharing.
- Identifying the feasibility of bringing transit or shuttle services to the park.
- Providing common outdoor areas such as lunch/picnic areas with basic amenities.
- Providing a connection with the Larry Scott trail to and through the site.
- Identifying the potential for additional resource sharing and other synergies as tenants begin to occupy the site (e.g., use of waste materials from one tenant as material inputs for another tenant).

Recommended Steps:

1. Evaluate potential mechanisms for implementing the design concepts.
2. Develop design guidelines and standards.
3. Establish impervious surface budgets.
4. Evaluate the feasibility of a Larry Scott trail connection.
5. Evaluate transit feasibility.
6. Evaluate the feasibility of a TDM program.
7. As tenants occupy the park, identify potential synergies.

Marketing

The Port will need to consider how to market the project, and will need to begin recruiting potential tenants. The marketing should promote the distinguishing characteristics of the park identified in Chapter 1 (e.g., master planned feel, green site development). Potential tenants should be targeted within the sectors identified in Chapter 2, in particular, green industries.

Recommended Steps:

1. Create marketing strategy based on overall goals.
2. Develop a website and other marketing materials.
3. Provide open houses to local business community and businesses in the target sectors. Follow up with all interested firms to explore needs and requirements.

4. Reach out to non-local firms through articles in the Daily Journal of Commerce and regional business press. Promote the site through regional site selection resources like Choose Washington.

Conclusions

The Jefferson County International Airport Eco-Industrial Park Feasibility Study was prepared for the Port of Port Townsend to assess the economic and design feasibility of an ecologically friendly light industrial park on an undeveloped 24-acre parcel adjacent to the JCIA.

This study presents a conceptual site design that is intended to work within the regulatory constraints imposed by the Jefferson County Code and meet the ecological and design goals of the project. The study recommends that the Port promote the project's ecological goals by recruiting local, green industries and businesses engaged in environmentally sound business practices and operations, and by establishing lease terms and design guidelines to promote progressive, green building and site development by future tenants.

Due to the lack of infrastructure on the site, any level of development, whether limited or full build-out, requires significant initial capital investment. Site development costs were conservatively estimated at $2.8 million for an initial phase of 3 lots, with full build-out of 11 lots estimated at $3.8 million. The analysis from this study finds that development of this project could become revenue neutral in 2020 and break even in 2024 under the baseline scenario. The baseline scenario makes assumptions regarding lease rates, capital costs, and land absorption rates, and assumes that 30% of the initial capital costs are funded through grants. The availability of grant funding is a key determinant of feasibility. Without grant funding, the project may never break even.

The conclusion from this study is that it is feasible for the Port of Port Townsend to develop an Eco-Industrial Park adjacent to the JCIA. However, this conclusion assumes the Port obtains adequate funding from grants and other Port sources, and assumes a favorable projected land absorption rate through 2024. Under this scenario, the Port could feasibly construct an eco-industrial park that meets the needs of local green industries, works within existing physical and regulatory constraints, meets ecological and design goals, and fulfills the Port's job creation mission.

AECOM

Property Counselors

ReidMiddleton

CHRIS WEBB & ASSOCIATES, INC. PS

atelierjones, llc
architecture | ecodesign | planning

TES Touchstone EcoServices