SUPPORTING INFORMATION
for
Recommended North Macadam Plan

October 1, 2002

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INTRODUCTION

North Macadam is a subdistrict of the Central City. The northern boundary parallels the Interstate 5 freeway and the Marquam Bridge, the eastern boundary is the Willamette River, the western boundary generally follows the Interstate 5 freeway, and the southern boundary generally follows Hamilton Street. The district has about 140 acres of land and approximately 6,500 linear feet of riverbank along the Willamette River.

The Bureau of Planning has developed three separate but interrelated documents as proposals for the North Macadam District that were revised and modified by the Planning Commission and Design Commission. These documents will be forwarded to City Council for their consideration, revision, and adoption:

- *Recommended North Macadam Plan* (*Plan*)
- *Recommended Zoning Code for North Macadam*
- *Recommended North Macadam Design Guidelines* and *Greenway Design Guidelines for North Macadam*

These documents represent a synthesis of the work of many individuals and organizations over the past several years. Once City Council has adopted the documents, the cumulative effect will be to amend the *Central City Plan*, *North Macadam Design Guidelines* and *Greenway Design Guidelines for North Macadam,* and *Portland Zoning Code* for the North Macadam District, per City Council Resolution # 35742.

This document, *Supporting Information for Recommended North Macadam Plan,* provides data, analysis and descriptions that support the above three documents. Some of this information represents new thinking about North Macadam that has emerged in the last year and some represents earlier work done for the area before the current proposal was developed. The data and analyses help provide the underlying foundation for the recommended amendments for the North Macadam District.

Note: This document represents an updated version of a previous document, *Supporting Information for Proposed North Macadam Plan* (6/18/02). A few new sections have been added and sections that appeared in the previous version have been revised to be consistent with the Planning Commission and Design Commission recommendations.

LAND USE
AND
URBAN FORM

LAND USE AND URBAN FORM

Introduction

This section provides the following information that supports Section C (Land Use and Urban Form) of the *Recommended North Macadam Plan*. The Design Advisory also supports the *Recommended Zoning Code for North Macadam* and the *Recommended North Macadam Design Guidelines* and *Greenway Design Guidelines for North Macadam*.

- The **Proposed Land Allocation** section describes the approximate amount of land area within North Macadam proposed for dedication to streets, greenway, other open spaces and the remaining net developable area.
- The **Science and Technology in North Macadam** section describes the critical role North Macadam could play in developing a Science and Technology Quarter within Portland.
- The **Floor Area Analysis** section assesses the potential floor area or development potential available in North Macadam within the existing *Zoning Code* and the *Recommended Zoning Code for North Macadam*.
- The **Design Advisory for the North Macadam District** was developed by the Design Commission to advise the Planning Commission and Bureau of Planning staff on key design issues and principles to consider in developing the *Recommended North Macadam Plan, Recommended Zoning Code for North Macadam* and *Recommended North Macadam Design Guidelines* and *Greemway Design Guidelines for North Macadam*.

Proposed Land Allocation

The North Macadam area includes approximately 140 acres of land. The table below shows how this total area would be allocated among various land uses, under the *Recommended North Macadam Plan*. The calculation is based on the following assumptions and parameters:

- The figures are for reference purposes only and are subject to change.
- All numbers are rounded to the nearest whole number.
- The preferred street plan, as shown on page E2 of the *Recommended North Macadam Plan*, is used.
- The numbers are based on a 100-foot deep greenway area (the default minimum required under the plan).
- The open space acreage does not include land within the greenway area.
- The dimensions used here may not reflect the final on-the-ground dimensions of the rights-of-way, greenway area and development parcels.

	Total Acres	Percent of Total
Total North Macadam area	142	100 %
Land area used by streets	37	26 %
Land area within greenway area	16	11 %
Land area within open space	8	6 %
Publicly-owned Moody property	5	3 %
Developable land	76	54 %

(Figures are rounded to the nearest whole number)

Science and Technology in North Macadam

Introduction

The Bureau of Planning recently conceptualized a Science and Technology Quarter that includes Marquam Hill, the University District, South Downtown, South Waterfront (North Macadam), and portions of the Central Eastside (see diagram). The quarter currently includes six scientific or academic institutions: Oregon Health and Science University (OHSU), Portland State University (PSU), the Veterans Administration Hospital, the Northwest College of Naturopathic Medicine, the Oregon Museum of Science and Industry, and the Portland Community College Workforce Center. It has approximately 170 net developable or re-developable acres, with proximity to downtown professional services and access to the regional transportation system.

The Science and Technology Quarter is envisioned as a hub for medical and scientific research and bioscience industries. It can accommodate the expansion of existing institutions, as well as spur private sector investment in the development of commercial applications that would benefit from their proximity to the institutions' research facilities. Over the next two to three decades, the quarter could accommodate up to 30,000 new jobs, as well as a robust supply of housing and other urban uses. The City of Portland believes this combination of redevelopment potential and economic growth is a very real opportunity for Portland and the larger region.

Several related actions are coming together to support the Science and Technology Quarter.

- Last year, OHSU combined with the Oregon Graduate Institute, forming a powerful new collaboration between computer technology and medical research.

- Through the Oregon Opportunity Fund, the Oregon Legislature has earmarked $200 million for the construction of facilities and the recruitment of researchers to help meet OHSU's critical need for nearly 1.5 million square feet of additional research space. OHSU will provide matching funds of up to $300 million, for a total combined program value of $500 million.

- North Macadam Investors, a consortium of several regional development firms, is assembling land in the North Macadam District near the base of the Ross Island Bridge. The consortium envisions dense, mixed-used development that will include housing, retail uses, offices, a hotel/conference facility, and flexible research space.

The Role of North Macadam

North Macadam is the cornerstone of the Science and Technology Quarter because it is centrally located and has the most available land in large parcel sizes. The expansion of OHSU into North Macadam is expected to foster the growth of job-intensive "incubator" and spin-off businesses. In winter 2001/2002, the Bureau of Planning commissioned three reports regarding OHSU's growth plans and their relation to the North Macadam District: *Building Bioscience in Portland; Marquam Hill Plan Alternative Location Analysis;* and *Transportation Peer Review Panel Report*. The following discussion is based on the findings of those reports.

Building Bioscience in Portland

OHSU is one of Portland's largest employers, with more than 10,000 employees currently working at the topographically constrained Marquam Hill campus. The organization has established an impressive record as one of the nation's leading intellectual centers for the advancement of medical technology. While the recent development of a leukemia drug, Gleevec, has gained wide media attention, less known is OHSU's success in attracting research funding from the National Institutes of Health (NIH). NIH research awards are allocated through rigorous scientific evaluation, and OHSU's success rate is far above the national norm. While about 20 percent of proposals are typically funded, OHSU's success rate is close to 45 percent. OHSU's overall NIH annual research funding is nearing $200 million, double the amount it received in 1997 and four times the amount it received in 1989.

Building Bioscience in Portland describes several important aspects of OHSU's needs. Among the most critical is the need for flexible research space within about 15 minutes' travel time from the center of the campus. When facilities for patient care, education, and research are clustered, they can foster important collaborative ties among researchers, medical practitioners, and entrepreneurs. When provided adequate space and access to seed capital, start-up technology firms are also likely to develop close to such campuses.

The report finds that Portland is well positioned to succeed in the bioscience fields, as a result of OHSU's demonstrated success and several other factors. The region's livability, relatively affordable housing and strong neighborhoods and diversity of transportation options, continue to attract highly qualified professionals, even with a currently depleted employment market. The report states:

> *Already a leader in the digital revolution of electronics, computers, communications, and informatics, Portland and Oregon possess the potential to become leaders in important 'niches' of the 'bio revolution' as well.*

Marquam Hill Plan Alternative Location Analysis

OHSU has expressed a strong desire to retain its primary facilities in Portland, though its "West Campus" in Hillsboro (300 acres on relatively flat terrain) is a viable alternative. The *Marquam Hill Plan Alternative Location Analysis* describes three general areas where OHSU expansion has been seriously considered within the Central City:

- South Downtown, or the area immediately east of Portland State University
- Northern Corbett-Terwilliger-Lair Hill neighborhood
- North Macadam District

The analysis evaluated and quantified each area's redevelopment potential, based on a number of criteria, including average lot size, zoning configuration, land vacancy rates, and land value. The North Macadam District was the clear preference in successively more detailed analyses that were performed by three different review bodies: the Citizen/Technical Advisory Group (CTAG), an Internal Coordination Group, and Bureau of Planning staff. North Macadam was preferred because of the relative simplicity of redevelopment and few development constraints (large land parcels, few owners, and little existing development) and potential for direct transit between sites.

OHSU's tax-exempt status means that its investments would not necessarily contribute to the tax increment financing of the district. However, its front-end investment would generate significant related bioscience development, as well as housing and other mixed uses.

Transportation Peer Review Panel Report

North Macadam is well situated to form a Central City transit hub, similar to the distributor function the Rose Quarter plays. North Macadam could be a connection point between radial transit service to/from downtown, the Portland Streetcar, light rail transit (eventually), and a suspended cable transportation system. This would dramatically improve access to and from Marquam Hill, where transportation constraints are well documented. The Transportation Peer Review Panel also recommended consideration of a Barbur Boulevard tie-in to the potential suspended cable transportation system; if found cost-effective, this would further enhance the system's functionality and expand its usefulness to a broader constituency.

Examples of Bioscience Development

Jurisdictions in many parts of the country are pursuing bioscience development. As shown by the following examples, such development, rather than being spread out in larger low-rise buildings, is often contained in vertical office-towers with fairly compact floor plates ("floor plate" refers to the square footage of each floor of a building).

- San Francisco is redeveloping aging port facilities in its Mission Bay project. The 303 acres are expected to yield 6,000 new homes; a new research campus for the University of California – San Francisco; a new Corporate, Science, and Technology Campus; and 45 acres of parks and recreational areas. Nine acres are allocated to new research facilities, which will be vertically oriented buildings using relatively small floor plates.

- Chicago's Northwestern University is constructing the new Lurie Medical Center, a 12-story research facility that will employ 700 people.

- The University of Massachusetts at Worcester has just completed its Research Laboratory Building, which allocates one-third of its 300,000 square feet to research and laboratory support space. The 10-story building is located in a campus setting.

North Macadam Investors and River Campus Investors

These investor groups have proposed a phased development of approximately 28 North Macadam "blocks," south and east from the intersection of SW Moody Avenue and Gibbs Street. The current proposal includes condominium, apartment, hotel, and research/administrative functions. Although the layout is preliminary, the research/ administrative buildings are envisioned as narrow floor plate office towers and are likely to be height-intensive. This vertically-oriented development form is able to use land more efficiently and better preserve views through the development. As stated in *Building Bioscience in Portland,* the clustering of uses within an urban research park can "serve as a link between the university enterprise and other academic institutions, bioscience businesses, and city residents."

Conclusions

The findings of these studies lead to the following conclusions about OHSU's growth plans and its relationship to North Macadam.

- OHSU's 30-year expansion plan is achievable, but requires an additional site.

- North Macadam is a viable location for OHSU expansion.

- Building on the existing biotechnology base, OHSU, PSU, and other nearby institutions can help spur spin-off economic growth.

- Seed capital, through both the Oregon Opportunity Fund and private funds, is necessary for early entrepreneurial development projects.

- Education system funding is a critical component in making the most of these opportunities.

Floor Area Analysis

Purpose
The purpose of this analysis is to assess the potential floor area available in North Macadam to accommodate the area's targets of 10,000 jobs and 3,000 residential units by the year 2019. The analysis calculates available floor area under two scenarios:

- Existing development standards, 1996 *North Macadam District Street Plan* and parks and open space proposed in the *North Macadam District Framework Plan* (1999).
- *Recommended North Macadam Plan* development standards, recommended transportation concept and parks and open space recommended in the *Recommended North Macadam Plan* (2002).

Floor Area Ratios
Floor area ratio (FAR) is defined as the amount of floor area in relation to the amount of site area, expressed in square feet. For example, a 2 to 1 or 2:1 FAR means that two square feet of floor area can be built for every square foot of site area. The *Zoning Code* counts all area between the ground and the roof as floor area.

Floor area regulations are intended to limit the amount of development within an area to correspond with the vision and policies for that area and to respond to existing and anticipated investments in transportation and other infrastructure. Throughout the Central City, these ratios also limit and step down building bulk to the Willamette River, residential neighborhoods, and historic districts. While consistent with these stated purposes, the FARs within the Central City are also intended to be the largest in the Portland region.

The floor area calculations of this analysis include portions of the district within the proposed greenway area because the code allows these areas to be included in overall site calculations of floor area.

Floor area bonuses (additional floor area allowed in a building in exchange for provision of a desired amenity) are offered as incentives to encourage facilities and amenities such as provision of affordable housing, additional open space, ecoroofs and water features. Bonus floor area is allowed up to a maximum regulated amount.

Available Floor Area Under Existing Standards
Maximum FARs for the Central City are regulated by the *Zoning Code*. The existing FAR limitations for North Macadam are shown in the *Recommended North Macadam Plan* on page C-11 and on Map 510-2 of the *Zoning Code*. Three distinct areas are delineated, with lower floor area ratios and height limits near the Willamette River.

- The area adjacent to the I-5 freeway has a base FAR of 6:1, with a 250-foot height limit.

- The middle area (east of Bond and west of River Parkway) has a base FAR of 4:1, with a 125-foot height limit.

- The area adjacent to the Willamette River has a base FAR of 2:1, with a 75-foot height limit.

These FARs were established to accommodate development as it was envisioned two decades ago. It was anticipated that most buildings throughout North Macadam would be between 75 feet and 150 feet tall. Buildings of up to 250 feet tall have been allowed in the western part of the district since 1991.

Under current *Zoning Code* provisions, increases in FAR are allowed up to 3:1 above the base FAR provisions. A development must first earn a floor area bonus by providing residential units before it can use any other floor area bonuses.

Table 1 calculates allowable floor area in the plan area, based on existing development standards, the 1996 *North Macadam District Street Plan* and the parks and greenway proposed in the *Framework Plan*. After the area allocated to streets, accessways, parks and open spaces is deducted, the total developable base floor area for North Macadam is 16,430,000 square feet. When the FAR from proposed parks and greenway is added back and the maximum total FAR bonuses are included, the maximum developable floor area allowed in North Macadam is 30,805,000 square feet.

Table 1: Allowable Floor Area
Existing Development Standards and 1996 Street Plan

Estimated net developable area	**Base FAR** (2:1, 4:1, 6:1)	**Transferred FAR from proposed parks and greenway**	**Bonus FAR** (limit 3:1)	**Maximum allowable FAR**
3,890,000	**16,430,000**	2,705,000	11,670,000	**30,805,000**

Notes:
All numbers in square feet
Estimated net developable area = all lands (surface area) less ROW, open space and the greenway
Transferred FAR from proposed parks and greenway = transferable square footage from proposed parks and the greenway (at the base FAR)
Calculations are rounded to the nearest 1,000.

Available Floor Area Under Recommended Plan

The *Recommended North Macadam Plan* identifies two distinct mapped areas within the district (see page C-11 of the recommended plan):

- The southeast area (south of Gibbs and east of Riverparkway to Bancroft) has a recommended base FAR of 5:1. The entire area south of Bancroft also has a recommended base FAR of 5:1.

- The recommended base FAR for the rest of the plan area is 6:1.

Floor area bonuses may be used to earn up to 2:1 additional FAR on sites throughout North Macadam. Buildings that take advantage of additional floor area are allowed bonus height under many circumstances. The combination of allowable height and floor area will permit a wide range of buildings that accommodate residential, commercial and science and technology uses.

Bonuses are carefully targeted to provide for amenities that support the vision of a vital urban neighborhood connected with and enriched by a clean and healthy river. Bonuses are provided for amenities that include additional greenway width beyond the 100-foot minimum, ecoroofs, water features, larger residential units, affordable housing and payment into an open space fund. Properties along the river, north of Lowell, must first earn a greenway floor area bonus before they can use any other bonus options.

Table 2 calculates allowable floor area in North Macadam, based on the *Recommended North Macadam Plan* development standards, the proposed transportation concept and proposed parks and greenway. After the area allocated to streets, accessways, parks and open spaces is deducted, the total developable base floor area for the plan area is 19,191,000 square feet. When the FAR from proposed parks and greenway is added back and the maximum total FAR bonuses are included, the maximum developable floor area allowed in the district is 33,717,000 square feet.

Table 2: Allowable Floor Area
2002 Recommended Development Standards and Transportation Concept

Estimated net developable area	**Base FAR** (4:1, 6:1)	**Transferred FAR from proposed parks and greenway**	**Bonus FAR** (limit 2:1)	**Maximum allowable FAR**
3,375,000	**19,191,000**	7,775,000	6,751,000	**33,717,000**

Notes:
All numbers in square feet
Estimated net developable area = all lands (surface area) less ROW, open space and the greenway
Transferred FAR from proposed parks and greenway = transferable square footage from proposed parks and the greenway (at the base FAR)
Calculations are rounded to the nearest 1,000.

Floor Area Needed to Accommodate Proposed Goals for Jobs and Housing Units

The *Recommended North Macadam Plan* sets goals of providing 10,000 jobs and at least 3,000 housing units within North Macadam by the year 2019. The following analysis shows that an estimated 11.85 – 17.85 million square feet of floor area will be needed to accommodate these goals.

- Housing Units: 4.5 million square feet (assuming an average of 1,500 gross square feet per residential unit for 3,000 units).

- Office Space: 3.5 – 9.5 million square feet (assuming an average of 350 – 950 gross square feet per employee for 10,000 employees). Traditional office development averages about 350 square feet per employee, however, the science and technology industry typically provides up to 950 square feet per employee. These uses may account for a large percentage of the jobs in North Macadam in the early years of development.

- Retail: Approximately 250,000 square feet.

- Parking Spaces: 3.6 million square feet (Assuming an average of 300 gross square feet per vehicle, for 12,000 off-street parking spaces called for in the recommended plan).

Under-build

While individual projects may develop to the maximum allowed floor area for a site, the sum of development within a district rarely meets the maximum allowable floor area capacity for that broader area. For that reason, it can be useful to estimate likely build-out by factoring in an estimate of anticipated "under-build." Under-build is a comparison between the amount of development that it is possible to build and the amount that is actually built. The "under-build factor" is the percentage difference between the amount of development that is possible to build and the amount that is actually built. For example, if it is possible to build up to 100,000 square feet, but only 60,000 square feet is developed, the under-build factor is 40 percent.

To examine the likely capacity of the *Recommended Zoning Code*, this analysis assumes that 80 percent of the potential developable parcels in North Macadam will redevelop. For that 80 percent, it is further assumed that, on average, developments will develop up to 80 percent of the maximum build-out, making use of available bonuses. This means that the area is assumed to reach 64 percent of its maximum development potential (equivalent to an under-build factor of 36 percent). Many factors will affect build-out of the plan area and the actual build-out may vary considerably from this assumption.

Conclusions

- The *Recommended Zoning Code for North Macadam* provides an estimated additional 2,761,000 square feet of base developable floor area, compared with the base floor area allowed under existing Zoning Code standards (i.e. allowed development without the use of floor area bonuses).

- When total allowable bonuses are included, the recommendation provides for an estimated 2,912,000 square feet more floor area than the existing development standards.

- An estimated 11.85 – 17.85 million square feet of floor area is needed to accommodate the proposed goals of providing 10,000 jobs and 3,000 housing units within North Macadam by the year 2019.

- Assuming an under-build factor of 36 percent, the *Recommended Zoning Code for North Macadam* would provide over 12 million square feet of developable area available without bonuses (64% of 19,191,000 = 12,282,240).

- Assuming an under-build factor of 36 percent, the *Recommended Zoning Code for North Macadam* would provide over 21 million square feet of developable area available with bonuses (64% of 33,717,000 = 21,578,880).

- There is sufficient developable area available under the recommended plan to accommodate the goals of 10,000 jobs, 3,000 housing units, accompanying retail uses and parking by the year 2019.

- Many factors, such as site conditions and economic factors, will affect build-out of North Macadam; the actual build-out may vary considerably from the assumptions of this analysis.

Design Advisory for North Macadam

Introduction

In spring 2001, the Portland Design Commission had three workshops to explore design principles for North Macadam. The Design Advisory document reproduced on the following pages describes and illustrates the ideas considered during those sessions. This document includes the principles that formed the basis for many of the provisions included in the *Recommended North Macadam Plan*, the *Recommended Zoning Code for North Macadam*, and the *Recommended North Macadam Design Guidelines* and *Greenway Design Guidelines for North Macadam*.

PORTLAND DESIGN COMMISSION

DESIGN ADVISORY

FOR THE

NORTH MACADAM DISTRICT

Portland Design Commission

Christopher Kopca, Chair
Michael McCulloch, Vice-Chair
Brigid Flanigan
Lloyd Lindley
Nancy Merryman
Loren Waxman
Linda Wisner

November 2001
City of Portland
Bureau of Planning

In Spring 2001, the Portland Design Commission had three workshops to explore design principles for North Macadam. This document describes and illustrates the ideas considered during those sessions. The first workshop took place on April 27, 2001 at OMSI, in the Parker Room. The second and third workshops took place on May 18, and May 25, 2001, at 1900 SW 4th Avenue in Portland, Oregon.

The primary participants were the Design Commissioners:

Christopher Kopca (Chair)
Michael McCulloch (Vice Chair)
Brigid Flanigan
Lloyd Lindley
Nancy Merryman
Loren Waxman
Linda Wisner

Also present and participating in the North Macadam District Design Commission workshops were:

Rick Michaelson, Portland Planning Commission, Chair,
and North Macadam Steering Committee Chair
Gil Kelley, Bureau Director for the Bureau of Planning
Jeff Joslin, Design Team Leader, Office of Planning and Development Review

In addition, the following consultants and city staff provided technical support:

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Yvonne Poelwijk, Design Commission Hearings Clerk

Most of the drawings in this document were produced during the three Design Commission worksessions. Additional drawings were provided by Lloyd Lindley, ASLA.

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PORTLAND DESIGN COMMISSION DESIGN ADVISORY FOR NORTH MACADAM

SUMMARY

In November 2000, the Portland Design Commission participated in joint hearings with the Portland Planning Commission regarding proposed revisions to city policies, action charts, zoning code, the *Willamette River Greenway Plan,* and design guidelines for the North Macadam District. Following the hearings, the Planning Commission directed the Bureau of Planning to answer a set of policy questions to guide the next phase of the revision process. The Planning Commission later requested that the Bureau of Planning seek the Design Commission's input to help resolve the design related policy questions for the North Macadam District. (A copy of the memo from the Planning Commission outlining their request is included in the appendix of this document.)

The Portland Design Commission and city staff had three worksessions in the Spring of 2001 to explore potential design considerations for the North Macadam District. The worksessions involved broad ranging conversations about the future of development in North Macadam. The commissioner's ideas were augmented with visual illustrations.

The commissioners made many individual comments and then as a body discussed the merits of various ideas. Those comments and illustrations that received broad support were identified as potential design principles for North Macadam and are included in this document.

The Design Commission is very supportive of this particular design advisory process because it allows the commissions to be proactive and suggest urban form for this nascent district. The Design Commission suggests that this advice be considered as one piece in the evolution of the discussion regarding design principles in North Macadam. This advice was informed by a number of previous products including the body of work coordinated by the North Macadam District Steering Committee. It is also informed by significant public testimony, the Commission's understanding of the issues that any development in North Macadam must address, and the Commission's perspective about the city and the city's design guidelines.

KEY DESIGN PRINCIPLES

The following are the key design principles for the North Macadam District that enjoyed the full support of all the Design Commissioners:

- The Willamette River Greenway in North Macadam should be master planned. It will serve as a local and regional resource and should be designed, managed, and financed accordingly.

- The master plan design of the greenway in North Macadam needs to include Ross Island.

- The greenway should be connected to the built environment of the district using "green fingers" or "green streets". This concept is discussed on page 11.

- Point towers should be encouraged in North Macadam. The discussion focusing on point towers begins on page 16.

- River Parkway should be realigned to respond to the undulations of the river.

- Surface parking lots and structured parking should be prohibited from abutting the greenway. Other than on-street parking, parking should be screened by active uses or other methods designed to hide the parking functions.

- On-street parking should be provided wherever possible.

- There should be some consideration of small, discontinuous, European-style streets between the greenway and development.

- This district should not mimic downtown. This area provides distinct parcels sizes and shapes affording an opportunity to create a unique district within the city. Development in North Macadam should transcend the principles of downtown by creating a unique identity. It needs a unique set of regulations to support this unique identity.

- The upper reaches of the West Hills should continue to be visible from the inner east side of Portland, particularly the Eastbank Esplanade. This district should also offer a different skyline vista than is currently visible in the central business district.

DESIGN ADVISORY FOR NORTH MACADAM

I. Greenway

A. General Greenway Considerations

1. The enlarged greenway in North Macadam should be a local and regional resource and needs to be master planned. Although it should be designed as a continuous stretch along the river, it is acknowledged that it may be built in phases.

2. The greenway should connect to the built environment of the district using "green fingers" or "green streets".

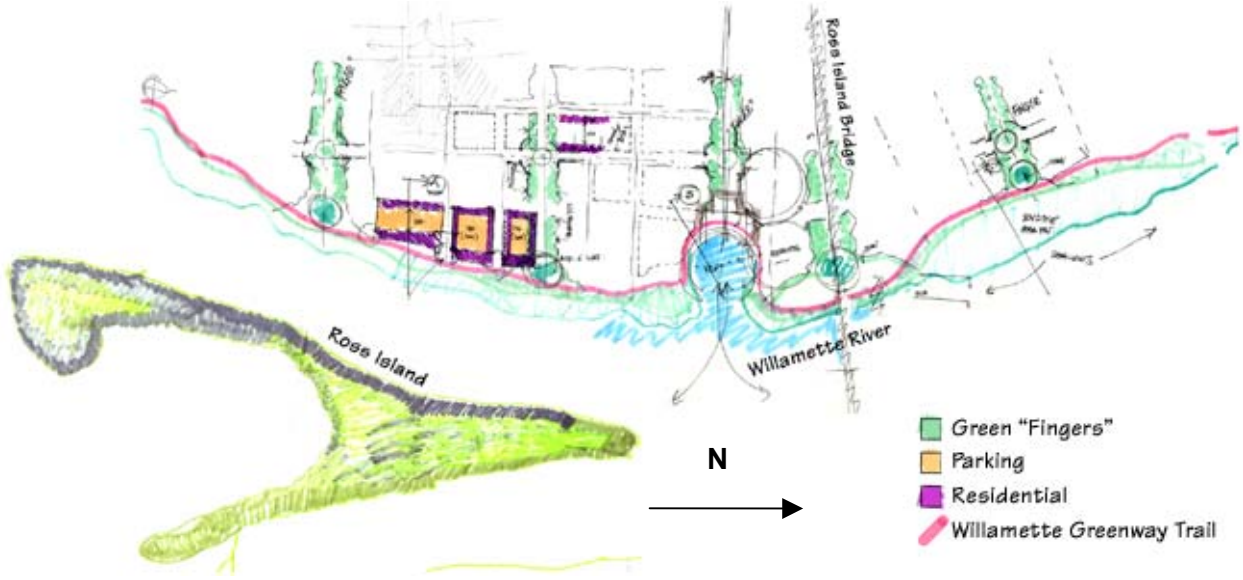

Figure 1: This diagram illustrates a continuous greenway with a diversity of experiences. The meandering red line through the greenway is the greenway trail. The greenway trail and other components of the greenway need to respond to changing river depths. In particular, the shallow water areas along the greenway offer the best riparian habitat and may need to provide safe places for fish that do not allow human intrusion.

3. The design of the greenway should include Ross Island. Think of this as a two-side stretch of river providing for both fish and people, connecting both east and west riverbanks.

4. The following components should be part of the North Macadam District greenway master plan: urban areas, riparian areas, and varying width. Variation would be based on river flow patterns and other factors determining the best location for any particular element.

5. The design of the greenway in North Macadam should respond appropriately to the many and sometimes conflicting objectives that are hoped to be achieved within the district.

6. Link the character and form of buildings along the greenway with and to the greenway immediately adjacent to it. The following variables should be addressed in any potential master plan for buildings along the greenway: depth, width, height, and orientation.

7. Access to the greenway needs to invite the public.

8. Emphasize the close connection between the urban and natural areas to create something exceptional for the public. There should be urban and riparian environments along the length of the greenway with a series of diverse "wows" or exceptional experiences. Each of these different zones should have a different character.

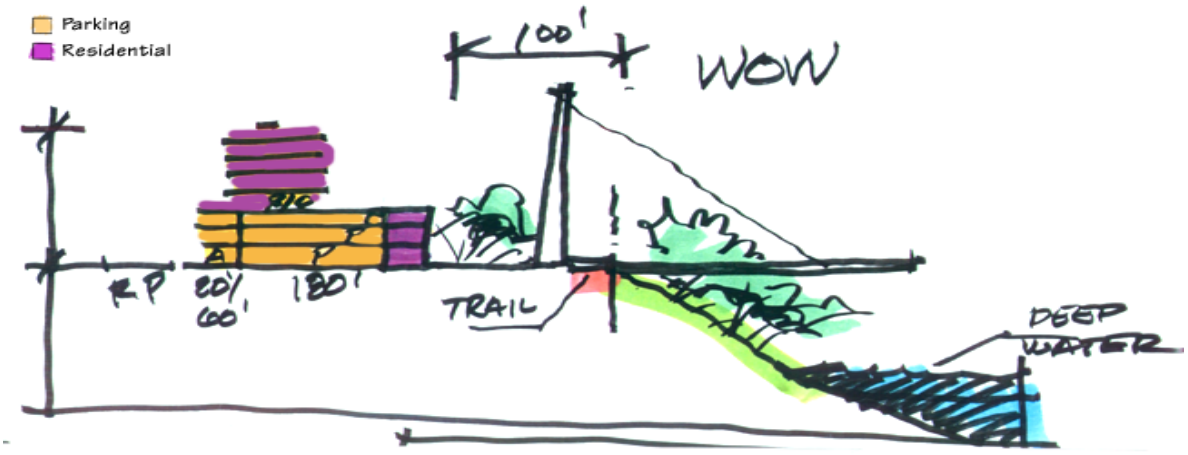

Figure 2: This diagram illustrates a potential "wow" along Greenway in the form of a cantilevered view-platform out over the riverbank.

9. Locate frequent entrances and other connections to the greenway from any and all buildings along the greenway. There should not be a continuous building wall along the greenway. No building should run more than 250 or 300 feet without a physical break. Buildings along the greenway need to respond to the pedestrian scale. Assuming a standard block of approximately 250 feet long, building facades should not comprise more than 65 to 80 percent of their frontage, above a several story podium. This percentage may vary for larger blocks.

10. The greenway should be developed in partnership with the private property owners, the public, and possibly a non-profit organization.

11. Private property owners should not be required to carry the entire financial burden for the greenway.

B. Greenway Path Considerations

1. There should be multiple paths throughout or at least in some portions of the greenway. There should be some paths over the water. The path over the water could be a "floating bog path" that meanders over the greenway and the river, only lightly touching sensitive areas.

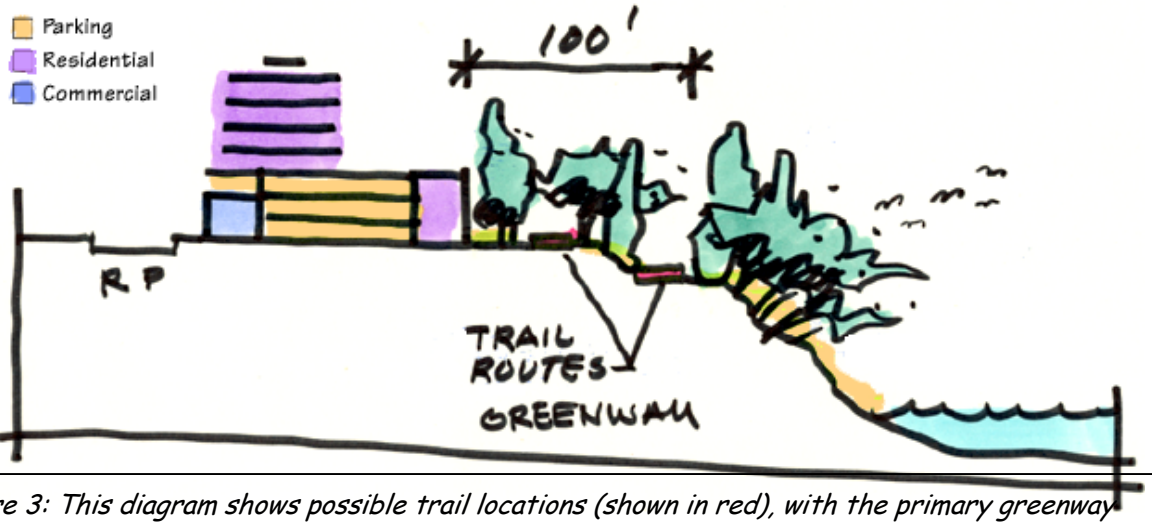

Figure 3: This diagram shows possible trail locations (shown in red), with the primary greenway trail located above the top of bank and a secondary trail slightly lower on the riverbank.

C. Parking and the Greenway Considerations

1. Screen all parking from the greenway with active uses (office, retail, residential) along the edge.

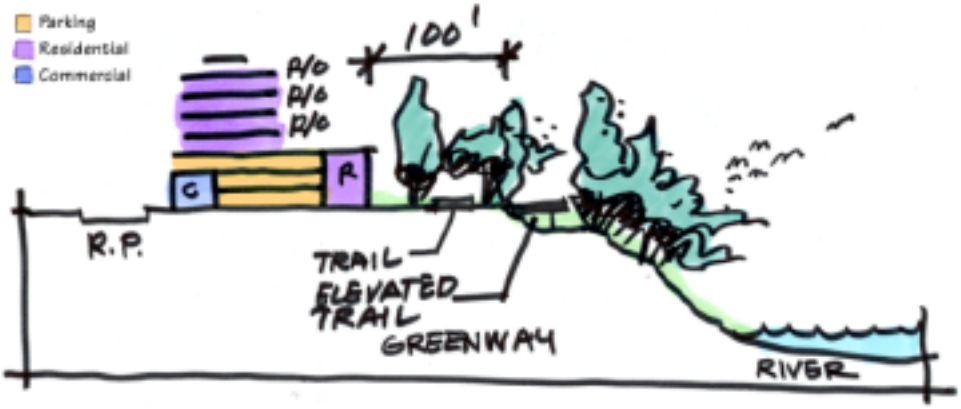

Figure 4: In this illustration, the parking is internally located behind retail and residential uses

2. Prohibit parking, surface or in structures, immediately adjacent to the greenway. The only exception is on-street parking along a quiet European type street, or along River Parkway. When structured parking is included within a project along the greenway, it must be internally located within the building. In addition, there must be active uses located in the building frontage along the greenway.

Figure 5: The only parking that should be visible from the greenway should be on-street parking.

3. In those instances where townhouses will be phased in later, landscaping or other types of screening should be required. Parking must not be visible from the greenway and cannot be included within the first 75 feet of building frontage as measured from the western edge of the greenway setback.

II. Streets

A. General Street Considerations

1. Define active use in this district to mean something other than parking or storage. Almost anything else should be allowed. If parking is included in a project that calls for active use, the parking must be screened by an active use such as retail or residential.

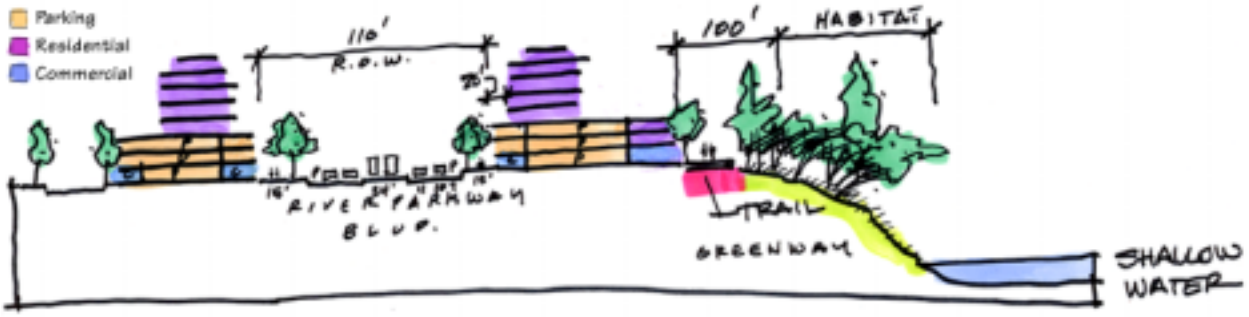

Figure 6: Parking adjacent to the greenway should be prohibited.

2. Encourage the development of a small "European" street near the greenway. If these types of streets, or accessways, exist along the greenway, they should be local, discontinuous and pedestrian scaled. Limit the scale of development fronting the small street to potentially include a 50 foot height limit, 50 feet back from the property line, to encourage intimate, likely residential, uses.

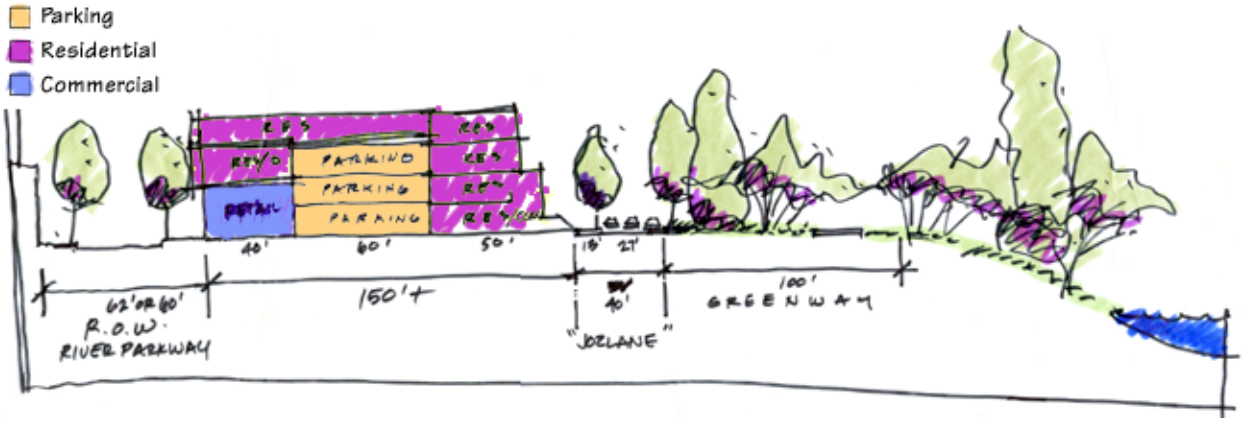

Figure 7: The incorporation of small, European-style streets along some parts of Greenway should be considered in some places to enhance adjacent functions.

3. Develop streets to support a neighborhood character through the use of mews or other small streets (not alleys) within blocks to break down the scale inherent in large blocks. This approach would provide for 2 sided activity and internal access to the block.

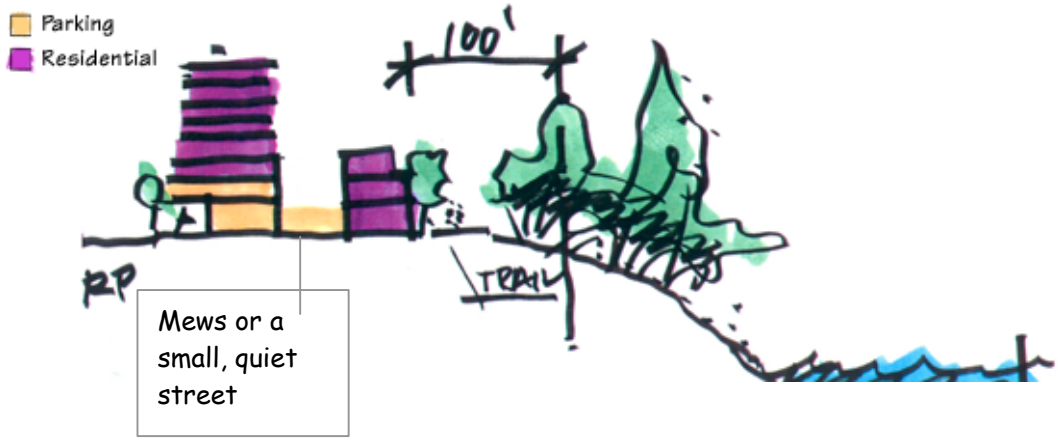

Figure 8: Mews and other types of small streets could provide North Macadam with a unique identity.

4. Encourage on-street parking on as many streets as possible to encourage street level uses and activity. On-street parking promotes a sense of neighborhood, convenience, and vitality.

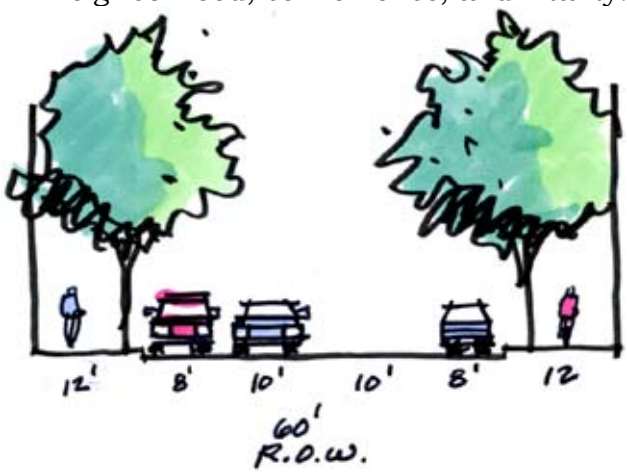

Figure 9: On-street parking contributes to street level activity along the greenway and in the neighborhood.

5. Some streets could be like "green fingers" flowing into the district from the greenway. These "green fingers" can break up the hard, paved grid, giving an intermediate scale within the district. The "green fingers", which will sometimes be streets, in other places pedestrian accessways, should be placed at regular intervals, perhaps every four to six blocks. These smaller- scaled green fingers will introduce people gently into the greenway. This can be done through the use of identical and/or similar landscaping as found in the greenway. An additional benefit will be the visual enhancement of the greenway entrances.

Figure 10: "Green fingers" flowing into the district help connect the urban character of the built environment with the riparian character along the river. The red line represents the Willamette Greenway Trail. The green shapes along some east-west streets indicate Green streets and/or "green fingers".

6. Do not encourage Barcelona street corners. (This refers to a currently proposed street standard to set back the corners of buildings at a number of district intersections.

7. Provide for adequate sidewalks throughout the district. Sidewalks and other pedestrianways should be a minimum of 12 to 15 feet wide.

B. River Parkway Considerations

1. Revisit and consider relocating the River Parkway alignment as approved in the *1996 North Macadam District Street Plan*. A realigned River Parkway may incorporate several distinct characteristics as it moves through the District. This street should be primarily located alongside the greenway to give greater public access and recognition of the regional amenities the greenway will provide. An additional benefit may be to help define greenway design, costs, management, and operational responsibilities. River Parkway should undulate throughout the district in order to reflect its "parkway" label, the anticipated wider greenway setback, and appropriately sized development parcels. Included below are several components that could be incorporated into a realigned River Parkway as it undulates through the North Macadam District.

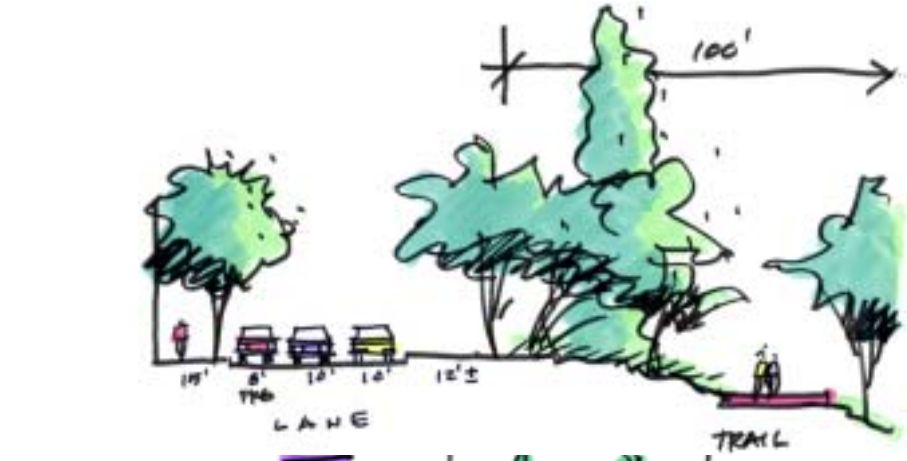

Figure 11: River Parkway along the greenway, possibly in the northern part of the district.

Figure 12:. River Parkway as a boulevard with a landscaped median, offering an exclusive right-of way for the streetcar.

Figure 13: River Parkway is internal in this section, with a quiet lane or street along a few blocks of the greenway, possibly around Gaines Street.

C. East – West Street Considerations

1. East-west streets designated as “green streets” or “green fingers” should have landscaping in the building setbacks.

2. Add green spaces along streets, particularly through the use of landscaping, throughout the District.

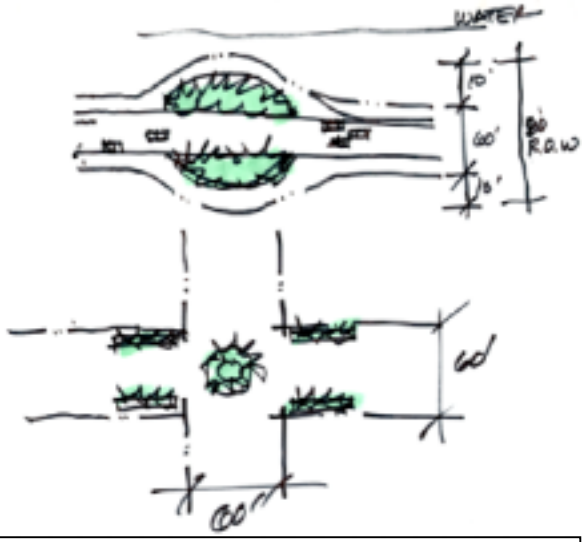

Figure 14: Green streets and setbacks can take a variety of forms.

3. Establish new and protect all view corridors.

4. Protect view opportunities throughout the district.

Figure 15: This plan diagram illustrates a potential layout of several point-tower buildings. The purple-hatched objects represent point towers placed to maximize views for each building.

D. Enlarged Blocks

1. Establish design principles for large streets to accommodate larger block faces. These larger blocks, perhaps even superblocks, may foster the unique urban character that is called for in this district.

   These larger blocks, 250 feet or larger in any direction, have the potential to negate the desired urban character of this district if not handled appropriately. To help assure that these larger blocks will be compatible with the intended urban character of the district, special attention will be required to building scale, massing and articulation. To this end, developments on these blocks should follow one or two approaches:

   a. If there are two or more separate buildings on an enlarged block, (including separate podiums in the case of point towers) these buildings should contain variations in massing, height and orientation.

   b. If a single building is built on an enlarged block, that building should be highly sculpted and/or articulated with varied massing and scale. The building sculpture should conform to the street pattern, greenway design orientation (if adjoining), view corridors, and other view opportunities.

The current definition of a superblock (*Portland Zoning Code*: Title 33.910) is "a continuous area, either in single or multiple ownerships, which includes a vacated street and which has a total gross area in private property of at least 75,000 square feet." In North Macadam there are a number of blocks that are larger than the typical 200 foot block faces that make up the downtown portion of the central city. These enlarged blocks in North Macadam do not technically qualify as superblocks. However, the Design Commission recommends that most regulations associated with "superblocks" in the central city, such as cross block pedestrian access, should also apply to these enlarged blocks in North Macadam.

III. Height and Bulk

A. General building considerations

1. Typical building heights will have a maximum height of 150 feet for standard buildings and 225 feet for point towers. (See page 1 for a discussion of other point tower considerations.)

2. The top of the West Hills ridgeline should be visible from the East Bank Esplanade. Building heights in the district should respond to the west hills.

150'+/-

Figure 16: This photo, taken from the East Bank Esplanade, shows the West Hills in the background. The dotted white line across the horizon indicates approximately 150 feet above the top of bank. It will be important to sculpt this new skyline so that the West Hills are not obliterated from view.

3. Buildings should not run more than 250 or 300 feet (depending on the size of the block) along the ground level without a physical break so as to respond to the pedestrian scale. Buildings should be encouraged to incorporate a certain amount of modulation in their façade.

4. Set a maximum building width on a north-south axis at 65 to 80 percent of the block length. The principle is to limit extra wide buildings from dominating this new section of the skyline.

5. Allocations of floor area ratio should be carefully evaluated in regards to the proportion of the buildings. It is desirable that parking count

towards the total maximum floor area for any project. There should be some allowances for building mass to accommodate the above ground parking in this district. However, this must be carefully balanced so that buildings do not become overly massive and bulky.

B. Point tower Considerations

Definition of a point tower: A residential building with a tall thin tower. This tower may be placed on an enlarged podium, containing parking and some combination of retail, office, and/or housing. In other circumstances there is no enlarged podium because the parking is underground or off-site. The tower component would have a decidedly smaller footprint than the podium. The tower portion of the building needs to be at least four times as tall as it is wide. In those instances where there is an enlarged podium, residential units are to front on all primary building elevations.

1. Point towers should be encouraged in the North Macadam District.

2. Develop design standards for the placement of point towers throughout the district. These standards should apply to all point towers, including those along the greenway. The design standards should address air, light, and breathing room for both people and buildings.

3. When a point tower is sitting on a building base that is wider than the tower part of the building, the base should not exceed 50 feet in height.

Figure 17: Purple hatched objects indicate point tower footprint sitting on top of a building base that is not more than 50 feet tall.

4. The shaft of a point tower can be as tall as 225 feet tall.

5. Control point tower locations through a formula accounting for height greater than "x".

6. Encourage point towers fronting along east-west streets that would help define view corridors from designated viewpoints on Terwilliger Boulevard down to the river. Require landscaped setbacks along these streets.

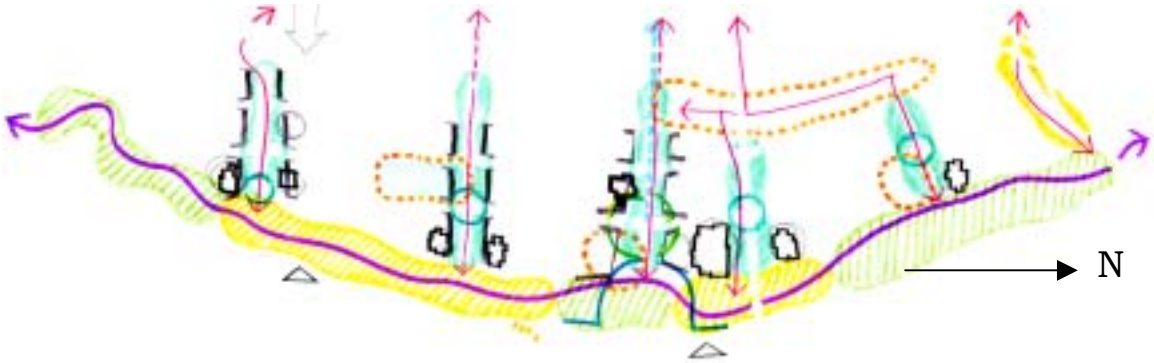

Figure 18: Potential sites for point towers (outlined in black) would be set back from the adjacent street. The turquoise east-west streets are "green streets" or "green fingers" with ample landscaping accommodating views from Terwilliger Boulevard. The purple line refers to the primary greenway trail.

7. The building profile to greenway should be slender. The shaft of the tower should have a floorplate of no more than, approximately, 75 feet by 90 feet. Residential units should face out in all four directions.

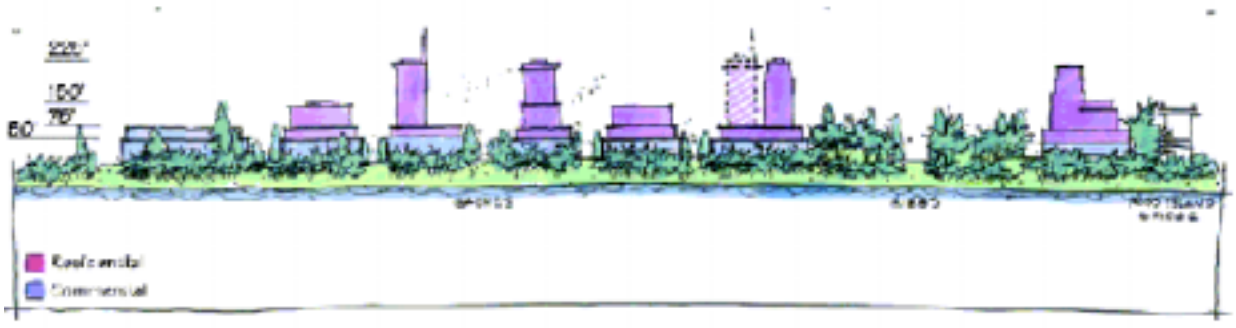

Figure 19: This diagram illustrates the difference in building profile for point towers as opposed to other buildings as seen from the greenway. The scale at the left identifies building heights at 50 feet, 75 feet, 150 feet and 225 feet. Buildings above 150 feet tall are point towers.

8. Consider limiting point towers to blocks of a certain minimum size in order to accommodate the height of the building without overpowering the pedestrian experience.

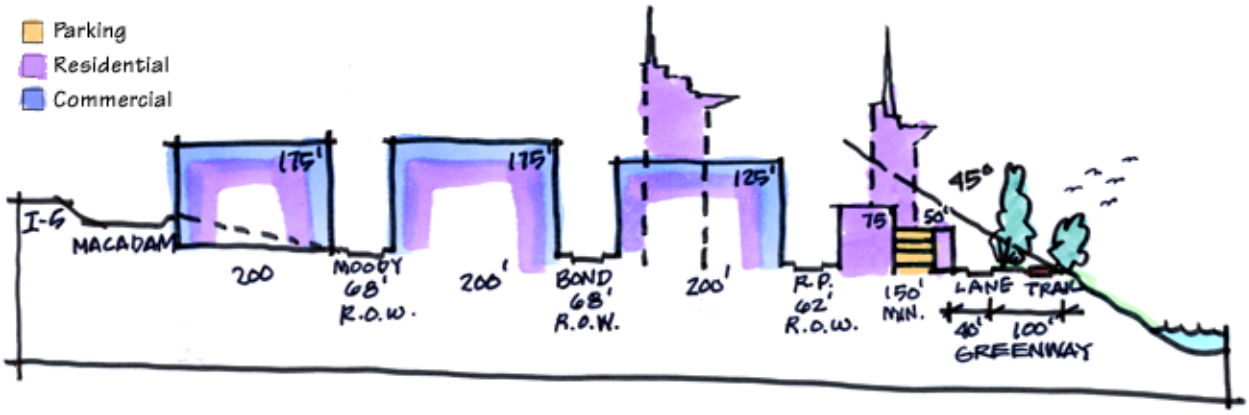

Diagram 20: This cross-section illustrates potential building heights for commercial buildings and for residential point towers.

9. Buildings should not be taller than 150 feet unless the building is a residential point tower.

10. Develop a skyline that is not dominated by single buildings on wide blocks, but rather multiple buildings at varying setbacks from the greenway to allow a diverse skyline.

11. Protect air, light, and access to the greenway.

IV. Parking

A. General Parking Considerations

1. Above-grade parking should count toward allowable floor area ratio. Floor area ratios should be calculated recognizing the parking impacts.

2. There should be some on-street parking on all streets, including River Parkway. On-street parking promotes a neighborhood feel.

3. Hide the visual impact of parking trays on the street front with other uses. Divide larger blocks to avoid large parking trays, picking the side that is most critical to mask.

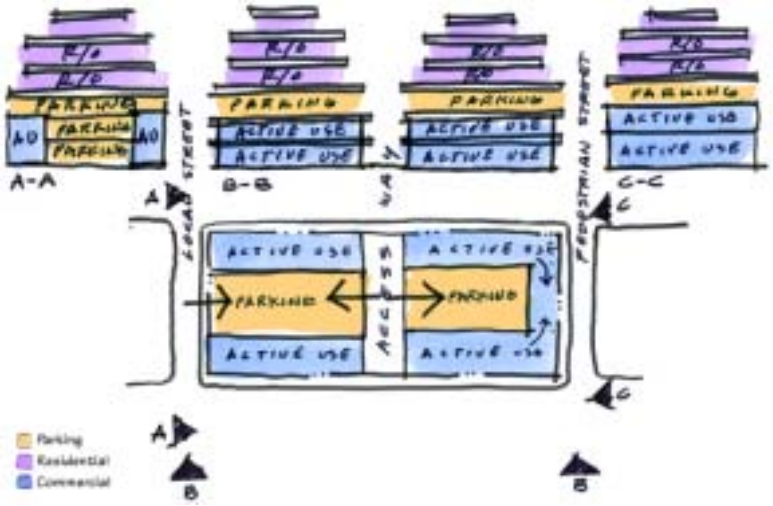

Figure 21: This drawing illustrates, in both plan view and in section, active uses masking the internally located parking. The larger block sizes in North Macadam make it possible to accommodate both parking and the pedestrian experience.

4. Where there is structured parking along streets with the active use designation, have the active use requirements extend up to the second or third floor. There needs to be an acknowledgement that the pedestrian experience extends beyond the ground level.

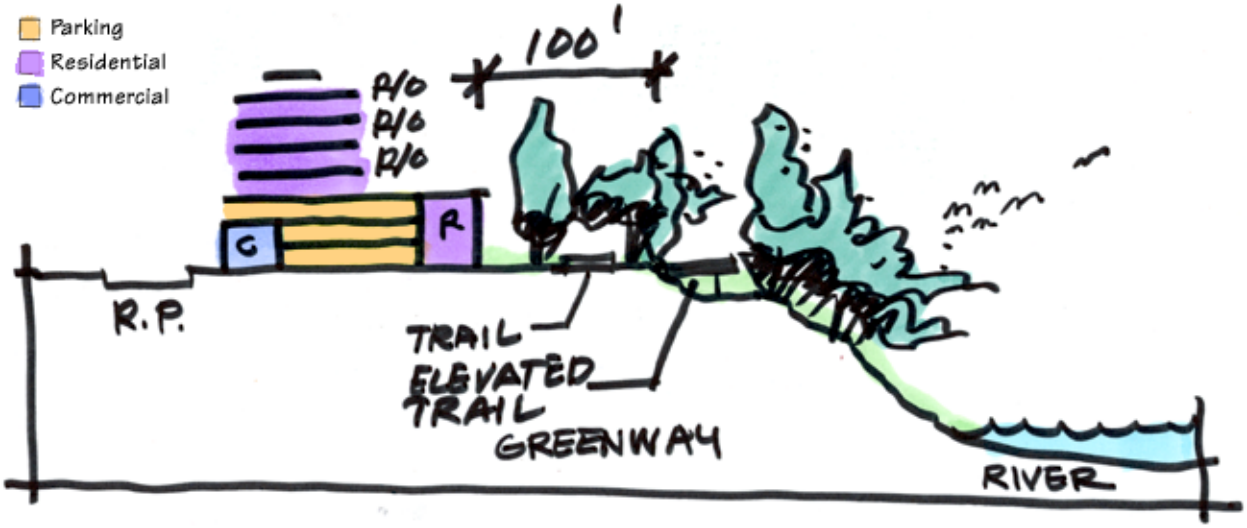

Figure 22: Active use requirements, shown in purple, extend two vertical stories adjacent to River Parkway. This diagram illustrates three decks of parking, (shown in yellow in the center of the building diagram) masked by active uses on River Parkway, and by residential uses along the greenway frontage.

5. Greenway parking considerations are addressed in the parking section, on page 8.

Appendix

Date: **February 27, 2001**

To: **Design Commission**

From: **Planning Commission**

Re: **North Macadam Process**

The Planning Commission discussed, at its February 27 meeting, the revised process for North Macadam. The Planning Commission supports this proposed process and also hopes for the Design Commission endorsement. A copy of the revised process is attached to this memo.

Last November, the Planning and Design Commissions held joint hearings on tentative proposals for revising policy, zoning code, and design guidelines for the North Macadam District. At the November hearings, it was apparent that there exists a range of opinions on the code and design guidelines. It is also clear that the range of opinions stem from a need to resolve some basic policy questions.

At the January 23 Planning Commission meeting, Planning staff identified some key questions needing answers in order to resolve the policy concerns. The Planning Commission concurred, with the addition of a few questions. The list of design related policy questions are attached. The Planning Director has asked the Design Commission to participate in giving informal input to Planning Bureau staff. He has suggested, and we concur, that you schedule a worksession in April with Planning Bureau staff, to talk about suggested design principles. Planning Bureau staff will use your input in the resolution of these questions.

We encourage the members of the Design Commission to share their thoughts on the list of questions with staff at their March 15 meeting. The two Commission chairs and the Planning Director will continue to consult and coordinate over the next several months. Please feel free to call Deborah Howes, Project Leader for the North Macadam project at the Bureau of Planning, if you have any questions about the North Macadam project. Her telephone number is 503-823-6107.

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North Macadam Policy Questions for Design Commission's Consideration

The following are the questions Planning Bureau staff presented to the Design Commission at their April 2001 worksession:

- What should be the character of the greenway, including the landscaped treatments, the trail, and the types of activities occurring within the greenway?
- What should be the character of development adjacent to the greenway?
- What considerations should there be around building mass?
- What form should the skyline take in North Macadam?
- What should be the character of development at the street level, particularly at key intersections and activity centers?
- What types of parking configurations should be allowed, encouraged, or discouraged?

GREENWAY AND PARKS

GREENWAY AND PARKS

Introduction

This section provides the following information that supports Section D (Greenway and Parks) of the *Recommended North Macadam Plan*. This section also supports the *Recommended Zoning Code for North Macadam* and the *Recommended North Macadam Design Guidelines*.

- The **North Macadam Environmental Considerations** section reviews the various environmental considerations in the plan area and demonstrates consistency with city and state aspirations to improve watershed health.
- The **Greenway Trail** section introduces the proposed trail, which could form a key link in the city's existing trail system. Key attributes and the potential for trail use as an alternative mode of transportation (e.g., commuting) are also discussed.
- The **Greenway Vision and Design Coordination Plan** describes the desired elements of the planning process for the North Macadam Greenway.
- The **Economic Benefits of Greenways** section explores the role of greenways in enhanced livability and quality of life and the economic benefits that ensue. The economic effects of greenways in urban development and revitalization projects are also explored.
- The **Greenway Case Studies** section gives examples and brief descriptions of other urban greenway projects around the nation and their economic impact. These are given to provide further information regarding other cities' greenway development strategies, methods, and goals.

North Macadam Environmental Considerations

> *"The North Macadam District provides a unique opportunity to showcase an environmentally sound urban development…To live up to this unique opportunity, proposed development should provide a functional riparian system, which would contribute to improvements in fish and wildlife habitat, and water quality in the lower Willamette River."*
>
> (USFWS correspondence dated November 29, 2000).

The Willamette River basin is home to over 2.3 million people, approximately 70 percent of Oregon's total population. The activities that support that population also impact the area's natural resources. As a result, the Willamette basin faces several challenges:

- the decline of salmon and steelhead populations (and other animal and plant species);
- widespread loss of fish and wildlife habitat; and
- violation of state water quality standards.

North Macadam is only about 140 acres; however, its location in the Willamette River watershed adjacent to the river makes it integral in addressing those challenges. Because of this, North Macadam presents a unique opportunity to provide ecosystem functions in a section of the Willamette River that has few riparian, floodplain or near shore conditions that support watershed health.

By incorporating environmental consideration into the *Recommended North Macadam Plan*, the vision for North Macadam demonstrates consistency with city and state aspirations to improve watershed health. The plan supports the River Renaissance Vision and City Council's resolution to assist in the recovery of salmon and steelhead, stating that new development in North Macadam should ensure "a 'no take' of endangered species while also improving existing Willamette riverbank habitat conditions." Brownfield cleanup and stormwater management goals described in the plan also support City goals. In addition, the plan supports state goals articulated in the *Willamette Restoration Strategy* and the *Oregon Plan,* and federal goals included under the *Endangered Species and Clean Water Acts*. North Macadam can further contribute to the City's efforts to meet these goals by establishing a greenway setback that protects and enhances riverine and riparian resources.

Much of the district is located on fill above the 100-year floodplain and is not considered riparian by some definitions. At the same time, some existing resource values are still high. Portions of the district were inundated by the 1996 flood, and the river channel and the riverbank are riparian resources (Fishman Environmental Services comments, date 11/28/2000, p.3). Intact riparian areas provide numerous ecological benefits, including maintenance of water quality, flow, channel dynamics, microclimate, food web connections, and fish and wildlife habitat.

A restored riverbank and setback area can contribute to riparian and ecosystem health by providing:

- leaves, bark, branches, and other organic materials that provide food to aquatic and terrestrial fish and wildlife;
- a diverse array of roosting, hiding, nesting, and foraging habitat for a variety of species;

- a place for plants and soils (and where necessary, engineered systems) that improve water quality by filtering contaminants and sediment from runoff;
- areas for flood storage; and
- bank and river conditions that are fish friendly.

The urban environment can also benefit from protecting and enhancing riparian resources by providing recreational and aesthetic value, and insulating development from the impacts of flooding and erosion.

Currently, only some of those functions occur at the site. However, considering restoration potential is important for protecting riparian resources:

> *"While riparian resources currently exhibiting the qualities necessary to support functional values are critical, it is also important to identify other riparian resources that may achieve these qualities once restoration actions are taken."*
> (Correspondence from DEQ dated February 25, 2002).

The City of Portland's approach to the preservation of riparian resources in North Macadam includes protection of riparian areas (the riverbank and river channel) and riparian functions. Riparian functions can occur outside of a strictly defined riparian area, therefore the protected area needs to extend beyond the riverbank.

Providing a setback to protect the floodplain and riparian resources and provide for restoration opportunities will be one important function of the greenway. The setback area would provide a "buffer" (an area adjacent to a resource that preserves and protects the resource and its environmental functions) to the intense land uses recommended for the area. Only those activities that can be performed without harming the resource should be allowed in the buffer area.

Agreement on the ideal buffer size has not been reached in the literature or specific to the site. Our preliminary review of the scientific literature found recommendations for buffer widths ranging from 10 feet to 984 feet, depending on the desired ecological functions. The literature suggests that many of the desired functions can be retained or restored by allocating a 50-300 foot setback. The scientific literature also generally agrees that the intensity of adjacent land use needs to be considered in making buffer width determinations.

Where land uses are especially intense, buffer areas need to be larger, especially in areas where maintaining water quality is a goal (Spence et al. 1996,220-1). This indicates that the minimum setback for the area needs to be larger than 50 feet. The goal should be to provide an area that includes natural and engineered features to restore the desired ecological functions, and protect those functions from the impacts of development. Placing protection and restoration of ecological functions as a priority will allow North Macadam to develop in a manner consistent with the watershed restoration goals of the city and state.

Draft Matrix of Riverine and Floodplain Functions for the Willamette River **6/18/02**

The information in this table was developed for the purpose of identifying significant resources along the Willamette River.

This document is currently in **DRAFT** form and will be updated as part of other environmental planning efforts by the Bureau of Planning. It is provided for reference purposes only. Not all of these functions are present or desirable in North Macadam.

Functions	Associated feature and Explanation of function/benefits
Channel dynamics	
Large wood 	• *Feature*: Large Wood in and near the channel. *Explanation*: Large wood plays a role in shaping the river channel by creating complex channel habitat features • *Feature*: recruitment areas *Explanation*: Recruitment areas and features that facilitate the accumulation of wood include shallow water areas, islands and sand bars, rock outcrops, and man-made features such as docks and pilings[1]. • *Feature*: large wood sources *Explanation*: Large wood sources include trees adjacent to the river and upstream
Channel forming processes	Undeveloped areas that allow for natural river channel processes to function. Development of in-channel habitat features, migration of channel location, formation of backwater areas, and channel complexity occur or can occur in the area. • *Feature*: vegetation *Explanation*: Trees, shrubs, and herbaceous plants stabilize the riverbank. Roots hold soils in place and the plants reduce flow velocities. • *Feature*: Large wood *Explanation*: Large wood plays a role in shaping the river channel by creating complex channel habitat features • *Feature*: floodplains and areas that allows for inundation and channel migration *Explanation*: Low gradient streams tend "snake" across their floodplain in a series of "S"-curves. Floodplains allow room for the channel to meander and create complex habitat features. • *Feature*: minimal or no channelization or revetments *Explanation*: Human structures built in the meander zone can interfere with natural stream hydrology, and lead to decreased in-stream habitat complexity

[1] The accumulation of large wood near docks and pilings creates management problems and does not necessarily provide ecological benefit. However, the wood that accumulates in these areas can be stock-piled for use in restoration projects in areas where large wood accumulation is not in conflict with other uses.

Draft Matrix of Riverine and Floodplain Functions for the Willamette River **6/18/02**
The information in this table was developed for the purpose of identifying significant resources along the Willamette River.

Functions	Associated feature and Explanation of function/benefits
Food web	
Solar inputs	• *Feature*: Open river channel (not spanned by vegetation) *Explanation*: Where river channels are not completely enclosed by vegetation more sunlight accesses the river's surface supporting production of phytoplankton, periphyton, and vascular plants that form the foundation of large river food webs.
Organic Inputs	• *Feature*: diverse vegetation *Explanation*: Trees and overhanging vegetation are a source of leaf-litter, fallen branches, logs, and other organic matter. This material is an important food source for the organisms that fish eat (aquatic and terrestrial invertebrates). • *Feature*: variety of structural components-aquatic, riparian, terrestrial *Explanation*: Large trees, downed wood, rocks, or other elements are structural components that serve as a substrate or as a food source for a variety of organisms. • *Feature*: floodplains *Explanation*: Organic material can enter the aquatic environment by falling into the river, or when the river floods. Vegetation that overhangs the riverbank or is subject to frequent flooding carries organic material to the river.
Water Quantity : Sources and storage	
Inflow	• *Feature*: tributary streams, springs, seeps or other water feature *Explanation*: These land features supply water to rivers (cold water sources are particularly important in an urban area. • *Feature*: Vegetation *Explanation*: leaves and needles can capture moisture from the atmosphere. Conifers are more effective at capturing this moisture than deciduous trees.

Draft Matrix of Riverine and Floodplain Functions for the Willamette River **6/18/02**

The information in this table was developed for the purpose of identifying significant resources along the Willamette River.

Functions	Associated feature and Explanation of function/benefits
Groundwater recharge/Infiltration	• *Feature*: Pervious surfaces-organic-rich soil and other soil types, vegetated sites *Explanation*: Uncompacted topsoil rich in organic materials can hold water and slow stormwater runoff • *Feature*: Wetlands *Explanation*: These areas recharge groundwater aquifers, and store floodwaters and reduce "flashy" river hydrology. • *Feature*: floodplains *Explanation*: These areas recharge groundwater aquifers, and store floodwaters and reduce "flashy" river hydrology.
Storage 	• *Feature*: Off-channel lakes and wetlands *Explanation*: These areas recharge groundwater aquifers, and store rainwater and floodwaters and reduce "flashy" river hydrology. • *Feature*: River channel *Explanation*: the river channel serves as a water conveyance and storage device • *Feature*: Floodplain *Explanation*: These areas recharge groundwater aquifers, and store floodwaters and reduce "flashy" river hydrology. • *Feature*: vegetation *Explanation*: Riparian vegetation acts as a sponge to hold water, slow stormwater runoff, and maintain stable flow in rivers (baseflow).
Water Quality	
Hyporheic exchange	Hyporheic zones provide water quality functions, cooling and filtering water as it passes through the gravel in and adjacent to the river. • *Feature*: Instream features such as gravel bars and gravel beds adjacent *Explanation*: This zone of converging surface and groundwater can provide water quality functions where permeable substrate, such as gravels, allow the interchange of groundwater and river water. • • *Feature*: Pervious riverbank *Explanation*: This zone can provide water quality functions where permeable substrate allows the interchange of groundwater and river water.

Draft Matrix of Riverine and Floodplain Functions for the Willamette River 6/18/02
The information in this table was developed for the purpose of identifying significant resources along the Willamette River.

Functions	Associated feature and Explanation of function/benefits
Filtration (excess nutrients and contaminants)	• *Feature*: Non-compacted, organic rich soils *Explanation*: Maintaining uncompacted topsoil that is rich in organic materials allows stormwater to infiltrate into the ground rather than flow over the surface (reduced surface erosion). • *Feature*: Riparian/wetland vegetation and overland flow (run-off not piped *Explanation*: Vegetation growing in the riparian area filters sediment, excess nutrients, and chemical pollutants from stormwater runoff. This functional value occurs where stormwater is allowed to flow through riparian vegetation before entering the river channel. *Feature:* Wetlands and floodplains *Explanation:* Passing water through a wetland or vegetated floodplain also helps remove sediment, excess nutrients, and chemical pollutants
Water temperature	• *Feature*: :Cool water source-spring, seep, cooler tributary stream *Explanation* Tributary streams, seeps, springs, and deep pools provide sources of cooler water that provides a refuge for thermally sensitive species. • *Feature*: Deep pools *Explanation*: deep water areas can have lower water temperatures that provide thermal refuge.
Erosion control	• *Feature*: Riparian vegetation-roots hold soil, plants slow run-off reducing erosive forces *Explanation*: Vegetation growing from the streambank can help prevent erosion. Roots and fallen tree trunks may also stabilize river channel banks. • *Feature*: Large wood *Explanation*: Wood along the bank can stabilize the river bank, reduce erosive forces, and redirect flow • *Feature:* natural riverbanks *Explanation*: Artificial channelization of river reaches can lead to additional erosion in other downstream reaches.

Draft Matrix of Riverine and Floodplain Functions for the Willamette River **6/18/02**

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Functions	Associated feature and Explanation of function/benefits
Microclimate	
Shade	• *Feature*: Trees or other vegetation *Explanation*: Groups of trees or shrubs sufficient in size to influence localized climate conditions such as air temperature, humidity, wind speed, and water temperature. Stands of trees can impact air temperature, reduce humidity, lower transpiration rates, and help maintain soil moisture. • *Feature*: Topographic features creates shade-such as steep canyons or aspect *Explanation*: Localized topography can also impact air temperature and humidity (for example a deep gorge may be cooler due to shading).
Water temperature	• *Feature*: Cool water source-spring, seep, cooler tributary streams *Explanation*: Inflows of cool water can create microclimate conditions in the stream channel providing refugia in streams where temperatures exceed the comfort range of biota • *Feature*: Deep pools • *Explanation*: deep water areas within the river channel can create temperature gradients
Air temperature Relative humidity	• *Feature*: Patches of vegetation in proximity to water *Explanation*: trees can lower the air temperature and raise relative humidity providing cool, moist areas that serve as habitat and refugia.
Wind velocities	• *Feature*: Patches of vegetation *Explanation*: trees block the wind reducing wind velocities • *Feature*: Geologic features *Explanation*: rock outcrops can block wind creating sheltered areas. Slopes and valleys can create katabatic (air cooled at higher elevation flows downhill) and anabatic (heated air moving upslope) wind
Soil moisture	• *Feature*: Patches of vegetation *Explanation*: vegetation reduces air temperatures and wind velocities, increases relative humidity, in turn these conditions reduce the amount of moisture taken from the soil and transpired by the plants, thus maintaining soil moisture. • *Feature*: Proximity to water/water table *Explanation*: water can contribute to relative humidity that helps maintain soil moisture. High water tables can also maintain soil moisture.

Draft Matrix of Riverine and Floodplain Functions for the Willamette River **6/18/02**

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Functions	Associated feature and Explanation of function/benefits
Fish/ Aquatic Habitat	
Cover	• *Feature*: Rocks and rock outcrops *Explanation*: rocks and rock outcrops provide places for fish and other aquatic species to hide from predators. • *Feature*: large wood *Explanation*: large wood can provide places for fish and other aquatic species to hide from predators. • *Feature*: Overhanging vegetation *Explanation*: vegetation that hangs over the river provides places for fish and other aquatic species to hide from predators. • *Feature*: Emergent vegetation *Explanation*: provide places for fish and other aquatic species to hide from predators.
Spawning areas[2]	• *Feature*: Gravel *Explanation*: use gravel beds as spawning areas • *Feature*: Current *Explanation*: anadromous salmonids spawning areas must also have appropriate velocity and oxygenation
Resting and feeding areas	• *Feature*: Shallow water areas and areas of slow velocity *Explanation*: shallow water areas often have slower velocities that allow fish and other aquatic species to rest and feed efficiently • *Feature*: Overhanging vegetation and emergent vegetation *Explanation*: vegetation in and over the river can provide a source of food and create sheltered areas for resting and feeding. • *Feature*: Large wood in the water *Explanation*: large wood can slow velocities and create backwater and off-channel areas that are used for resting and feeding.
Food sources	• *Feature*: Floodplain connectivity *Explanation*: large areas of connected habitat; connections to the floodplain, and connectivity to upstream and downstream reaches

[2] should this be included in the large river context?

Draft Matrix of Riverine and Floodplain Functions for the Willamette River **6/18/02**

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Functions	Associated feature and Explanation of function/benefits
Accessibility	• *Feature*: Minimal barriers *Explanation*: a variety of physical, chemical, or biological barriers can eliminate or reduce access to important habitat
connectivity	• *Feature*: Large areas of connected habitat *Explanation*: • *Feature*: Floodplain connectivity *Explanation*: flooded areas can provide refuge from the river channel during flood events. Floods facilitate the exchange of nutrients between aquatic and terrestrial environments.
diversity	• *Feature*: Channel complexity and off channel habitat *Explanation*: channels with various depth and shoreline characteristics will support a wider variety of wildlife species
Riparian and Upland Wildlife Habitat	
Food sources	Habitat with food, cover, resting, roosting, and nesting options for a diverse assemblage of biota in proximity to water • *Feature*: Diverse habitat types and vegetation communities *Explanation*: A variety of habitat types, including vegetation communities, are needed to support the diverse wildlife population that use of rely on for all or some of their life history needs.
Cover	• *Feature*: Stands of trees with multiple-layered canopies, *Explanation*: Stands of trees with a range of species and maturity will provide more habitat opportunities to a broader range of wildlife.
Nesting areas	• *Feature*: snags and downed trees *Explanation*: struture such as large wood, snags, downed wood, rock outcrops provide cover, nesting and roosting places for a variety of wildlife. • *Feature*: intact native riparian vegetation *Explanation*: Native species are preferred over cultivated or invasive species for providing habitat functions
Roosting/resting	• *Feature*: rare plants or habitat types *Explanation*: Rare plants and habitat can provide refugia for sensitive wildlife species

Draft Matrix of Riverine and Floodplain Functions for the Willamette River 6/18/02
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Functions	Associated feature and Explanation of function/benefits
Water	• *Feature*: accessible *Explanation*: wildlife species require access to water sources • *Feature*: nearby cover *Explanation*: water features with nearby cover provide attractive water sources to wildlife
Connectivity	• *Feature*: minimal fragmentation or disturbance *Explanation*: Corridors of native vegetation. Wildlife species require access to water, food, and cover/shelter. Wildlife cannot survive in isolated patches of habitat if water, food, or cover is absent. Some wildlife species also require an area of suitable habitat of a certain minimum size. Corridors of natural vegetation along streams provide pathways for wildlife movement between larger natural areas. Maintaining such pathways helps to reduce the impact of habitat fragmentation.

Greenway Trail

Introduction

The proposed greenway trail in North Macadam will form a key link in the existing trail system. It will provide access to the river and a recreation resource. With a goal of 10,000 new jobs and 3,000 new housing units in North Macadam by the year 2019, it is reasonable to expect that this section of the greenway trail will also be used for transportation to and from the downtown area.

Recreational Trail Use

The greenway trail in North Macadam will allow residents, employees, and visitors of the district access to the river and to a regional recreational trail system. The North Macadam segment of the greenway trail will be approximately 1.25 miles in length and will fill a significant gap within the existing regional system.

The North Macadam trail will connect the southern trail at River Forum, Johns Landing and Willamette Park with the existing downtown trail at South Waterfront Park. The increased continuity can be expected to draw additional recreational users from within the district and from downtown. Total recreational use numbers for the North Macadam trail can be expected to be similar or slightly higher (due to overall increased use related to increased trail connections and distance) than the RiverPlace numbers.

Table 4: Trail Use Along Existing Segments of the Greenway Trail

Area	Morning	Noon Hour	Afternoon/Evening
Waterfront Park	162	804	296
RiverPlace	96	538	287
Johns Landing	62 (weekend 126)	124 (weekend 308)	108 (weekend 160)

Willamette Greenway User Survey, October 1998, Portland Parks & Recreation

Trail Use as an Alternative Transportation Mode

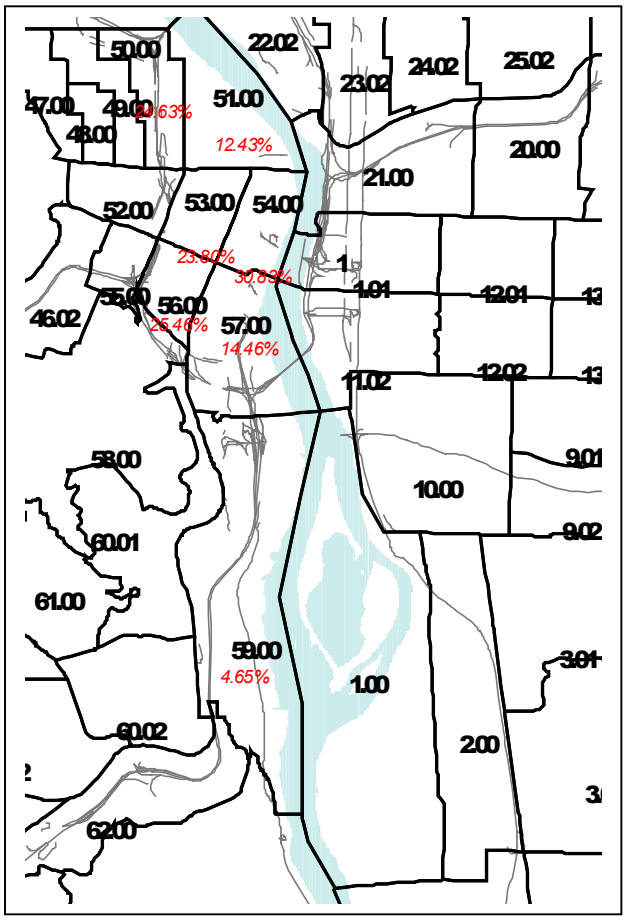
Several sources of information support the assumption that the proposed North Macadam trail will also serve as a transportation link for pedestrians and bikers in the district.

Expected Pedestrian and Bicycle use in North Macadam

Transportation analyses for the district have anticipated that at least 10 percent of the trips to and from the district will be pedestrian and bicycle.[1] The transportation analysis is further supported by statistics on walking and biking from the American Community Survey.

Percentage of Central City Dwellers Who Bike/Walk to Work in Portland

Statistics from the 1996 American Community Survey reveal that a much greater percentage of people living in or close to downtown walk or bike to work than other city residents. The figure to the right shows 1996 percentages of bicycle and pedestrian commuters in the Portland downtown area, as follows:



Bold numbers are census tracts (see chart below)

Census Tract and Approximate Neighborhood	Bikers and Walkers as Percentage of Census Tract Population
Tract 51 (Pearl District)	12.43%
Tract 53 (Downtown)	23.80%
Tract 54 (Downtown)	30.83%
Tract 56 (Downtown)	25.46%
Tract 57 (Downtown)	14.46%
Tract 59 (North Macadam)	4.65%

In comparison, the citywide average of bicycle and pedestrian commuters is approximately 4.3 percent, with declining percentages towards the city boundary. These statistics are likely due to the concentration of employers within the downtown area (i.e., jobs that are within walking distance) and the availability of an accessible transportation network (i.e., sidewalks and slower moving traffic). Census tract 59 includes the North Macadam area, where the goal is to provide 10,000 jobs and 3,000 housing units by 2019. As North Macadam develops and its residential population grows toward these goals, it is likely that census tract 59 will also show above-

[1] *North Macadam Parking and Transit Strategy*, 2000, Portland Office of Transportation*; North Macadam District Transportation Analysis*, 1999, David Evans and Associates

average percentages of people who bike and walk to work because of its proximity to employment concentrations and the development of an accessible transportation network.

Use of the Greenway Trail for Commuting

It is not known how many people currently use the greenway trail to commute to work; however, it is reasonable to suggest that commuters will use the trail. The greenway trail will provide a straight line to downtown and will be separated from automobile traffic. Several national studies have shown that more commuters would bike to work if it were not for fear of driver behavior.

New York City Bicycle Survey Report (1999)

The New York Department of City Planning distributed 8,000 surveys to known New York City area cyclists. There was a 17.5% response rate.

- 60.4% cycle to work at least once a week.
- 40.8% said they do not cycle to work because of fear of motorists.

Vancouver British Columbia Cycling Survey (1998)

Surveys were widely distributed through list-serves, newspapers, bicycling newsgroups, and handed out on bicycle routes. A total of 1,784 people responded.

- 45% use their bicycle daily for commuting to work.
- 19% use their bicycle weekly for commuting to work.
- 23% would cycle more often if it weren't for traffic/driver behavior.

Attitude Study for the Portland Metropolitan Bicycling Encouragement Program (1982)

The 601 respondents in the survey were selected from the Portland metropolitan area by a random sampling technique.

- 5.2% had commuted to work by bicycle at some point during that year.
- 15% thought that riding a bicycle to work is a possibility for them.
- 55% said that traffic made it too dangerous to ride a bicycle more often.

Impact of Anticipated Development on Trail Use

As described above, the proposed greenway trail will likely be used for recreation by residents, employees, and visitors of the district, and is likely to serve as a route for at least a portion of the trips expected to and from the new development in the district. Transportation analysis for North Macadam has estimated the number of trips likely to be generated by various development types. The general assumptions for the area are shown in Table 5, below.

Table 5: Estimated Daily Trips in North Macadam by Development Type

Development type	Estimated daily trips (all modes)	Estimated daily trips (pedestrians/bicycles)
Residential	11 per dwelling unit	1.1 per dwelling unit
Office	41 per 1000 square feet	4.1 per 1000 square feet
Retail	78 per 1000 square feet	7.8 per 1000 square feet

Based on the assumptions and analysis outlined above, a direct link can be made between the development anticipated in the North Macadam subdistrict, and the need for a trail facility. The *Recommended North Macadam Plan* allocates the costs and responsibilities of providing and

improving the trail based on the square footage and type of development being proposed within the district.

Conclusions

Based on these findings:

- The greenway trail is likely to serve a critical recreation function in North Macadam;
- As North Macadam develops, it is likely to shift towards a higher percentage of pedestrian and bicycle trips; and
- It is reasonable to assume the greenway trail will be used considerably by commuters to and from North Macadam as the district grows.

Greenway Vision and the Design Coordination Plan

The North Macadam greenway is one of the most exciting design opportunities in Portland today. The greenway has the potential to reflect our commitment to both high-density urban community and exemplary treatment of our natural resources. Bringing these two elements together is a stimulating design challenge that has very little precedent. Searching for examples of rivers that retain their natural edge environment and fit into the urban fabric as they flow through a city yields surprisingly little. To date, cities have built seawalls and riprap edges to protect against rivers and take advantage of rivers' visual qualities without consideration of their functions. This lack of precedent of balance between the natural resource's value and people's interaction with rivers increases the sense of creating something new. In Portland, we are up to the challenge. The City joins the community and private property owners in a strong commitment to enhance the livability of North Macadam through an exemplary greenway design and by providing a harmonious relationship between people and the natural functions of the river.

Greenway Project Excellence
The following concepts are considered key to the greenway vision for the design coordination plan.

The River, the Greenway Trail and Urban Community
When thinking about the greenway, we start at the river and continue to the bank, greenway trail and then to the adjacent development. Rather than thinking of these as distinct areas, they are a continuum. The greenway will be an integral riparian environment that respects and reflects the river, with rooms that are carved for views and use by people enjoying the river. The greenway will also include places where the river environment moves across the trail and into the development. Trees and riparian vegetation can be selected to mimic a natural river environment and as a design element to showcase the plants themselves. The feeling and sense of the river is therefore drawn into the urban environment. A key element of greenway design will be the influence of the river environment on the urban community edge.

The Urban Community, the Greenway and the River
Similarly, urban elements will be incorporated into the greenway trail and contrasted with riparian vegetation. Design features that provide for people's movement through the greenway and toward the water's edge will include contemporary elements, in keeping with the architecture of the adjacent development and North Macadam District. The project's success will be based on a compelling juxtaposition of the contemporary architecture and a riparian environment.

The Linear Experience of the Greenway: Unity and Diversity

The sequential experience of people moving north/south on the trail is important. This segment of the trail system is over a mile in length and presents an opportunity for both unity and diversity of experiences. Unity may be expressed in planting design, such as a linear planting of trees like those found along the Dutch canals, or the rhythm of the plant palette, closing and opening to reveal the river. Grading design can achieve a flow of the ground plan. Site furnishings can achieve a sense of place through the design of lighting, benches and signage.

The diversity of experience is also important to trail users, such as the experience of being in the middle of riparian woods then opening out into a meadow environment with sweeping views of the river. People on wheels will be moving quickly through the greenway, so diversity can be accomplished by working with grading so that there is a rise and fall of the trail. Pedestrians will move more slowly and observe a higher level of detail and design complexity, including interesting plants, overlooks with views to the river and paths directly to the water's edge. Careful treatment of the linear design, including both unifying elements and a diversity of experiences, will support a cohesive and interesting environment for trail uses.

Importance of Stormwater Treatment

The greenway can also be considered as a buffer between high-density development and the Willamette River. Creative treatment of stormwater with swales and vegetated filters will improve water quality before it enters the river. Water quality features can be designed to both blend in with the greenway landscape, as well as showcase wetland plants in this important function. Water quality elements can be located anywhere within the greenway and can include, for example, seasonal fountains with hardscape and art, or wetland plantings with boardwalks over them. Innovative design of water quality features that are effective and complement the overall greenway will be a fundamental component of the greenway design.

Response to Opportunities

The existing condition of the riverbank throughout North Macadam is far from a blank slate. There are numerous remnants of previous industrial and shipbuilding activities. There may be opportunities to reinterpret and reuse these remnants in creative ways. For example, the pilings in the river may be reused for

platforms that get people out over the river, while not disturbing the river bottom with new construction. Similarly, there may be areas where the bank can gently slope to provide visual or physical access to the water. The *design coordination plan* will provide creative responses to these opportunities.

Importance of Art

The greenway is an opportunity to incorporate art in special places or in a sequential manner that unifies the trail experience. Or, the project itself could be conceived as an art project. Art may provide a link between our current culture and the history of the site. It is anticipated that public funds used to construct the greenway will contribute to the Art in Public Places program. The greenway design team will include art and artists to contribute to project excellence.

Security and Maintenance

The greenway can be an asset or a liability. If the greenway is easy to secure and maintain, it will be an asset to the North Macadam District. If design components are ill conceived, the greenway could provide to be a liability and a deterrent to the early success of creating this district. Careful consideration of this aspect of design is essential to project success.

Design Excellence

Portland has many distinguished parks and a growing network of urban trails. The design coordination plan will draw upon design expertise available locally and nationally, and will make a unique contribution to the system of urban river trails. The greenway design must show careful consideration of the quality of materials, strong contextual design, as well as site-specific design.

Components of the Greenway

Riverbank

The riverbank is currently an edge condition that has been functional for industry, especially shipbuilding, for decades. Almost void of vegetation, there are many remnants of industry, such as concrete foundations, piles of asphalt and below ground contamination. A recent geo-technical investigation found an entire truck beneath the surface. The design coordination plan provides an opportunity to create a vegetated edge that will remember the river's natural resource value, not nostalgically but functionally and beautifully. The riverbank will be planted with native plants, either in natural plant communities or in a more contemporary design. Where appropriate, bank grading will provide a gentle slope to allow easy

views to the water's edge. Where there are opportunities, in-water work to improve fish habitat will be created and integrated into the overall design of the greenway.

Trail

The trail is an important element for the district's employees and residents, and serves as a link for the City's overall system of trails. The split trail, separating wheels and pedestrians, increases safety and also enhances the respective experiences of trail users. The success of the split trail resides in the effective divider, which becomes a design element. It may be short, with a formal edge or planters, or it could be broad, with trees, shrubs and groundcovers, and it could be a water quality facility. The trail width and materials will remain consistent, while the divider area may change over the length of the trail. The wheels trail will be asphalt, to facilitate movement. The pedestrian trail may consist of unit pavers, for permeability and to distinguish it from the wheel trail. Where pedestrians cross the wheels trail, the type of pedestrian pavement will alert trail users of a crossing.

River Access and Water Taxis

Access to the water's edge is important for people. The design coordination plan is a method whereby access points can be coordinated in a logical rhythm and spacing. Two access points may fall on one property and none on another, as the logic that develops will be based on river and bank conditions and people's movements, rather than property ownership. It is anticipated that there will be three to five water access points along the North Macadam greenway. District boosters and transportation advocates continue to promote the idea of have water taxi service to North Macadam. Water taxi stops could be located under bridges for legibility, with a long-considered site being under or near the Ross Island Bridge. This is central to the district and close to Gibbs Street and the transportation hub of the district. The water taxi stop may be designed in conjunction with a public viewpoint, as this location has wonderful views of both Ross Island and Portland's skyline.

Financial Partnership for Planning and Implementation

Private Property Owners Contribution

The *Zoning Code* defines a private property owner obligation to be basic improvements to the riverbank, including planting and a proportion of the trail construction, based on the percentage of potential trail users in the new development. Where development occurs next to the greenway, property owners will be required to provide a public easement for the greenway trail.

The *North Macadam Plan* is recommended to change the allowable development potential (measured as Floor Area Ratios or FAR) and building heights along the eastern side of the district as a way of offsetting site development costs related to the proposed new greenway regulations. In addition, the *Zoning Code* allows the development potential of the setback area to be transferred to other portions of a development site (or to other parts of the district). This allows developers to realize the maximum development potential of their property.

Public Commitment

The City is responsible for greenway improvements above the base improvements required in the *Zoning Code*. This includes funds for the design coordination plan, trail improvements above those provided by the property owners, trail furnishings, and access to the water, overlooks, etc., as established by the design coordination plan. The City may also handle City and federal permitting for greenway development consistent with the design coordination plan.

Conclusion

The design of the greenway at this time has the potential to draw stakeholders together and create a design that works at the large, community-scale and also at the more detailed property scale. To do this, the design must reflect the importance of the health of the river as well as human enjoyment of the river. There are seldom opportunities to advocate for a fresh look at the fundamental balance of people with nature – this is one of them.

Economic Benefits of Greenways

Introduction

Greenways are more than corridors of protected open space managed for conservation and recreational purposes: they can also stimulate the economy. Enhancing a community's quality of life, greenways aid in attracting, retaining and revitalizing business. Greenway trails and open spaces also can have a positive effect on the value and salability of nearby properties, attract tourists and can save public infrastructure costs.

The connection between investment in open space and greenways and economic viability can be difficult to describe and document. However, projects around the country given reasonable evidence of the connection between creating a more livable and beautiful urban environment and resulting economic gains.

Attracting and Retaining Business, Employees, and Residents

Nationwide, access to open space and parks has become a new measure of community wealth – an important way to attract and retain businesses and residents by guaranteeing both quality of life and economic health. Quality of life and economic vitality are inextricably linked. A city with a reputation for a high quality of life generally attracts new businesses and expands existing business.

Money Magazine measures a city's quality of live based on numerous interdependent psychological and physical variables such as education, parks and recreation, cost of living/housing, crime rate, cultural opportunities, and health services. Convenient access to natural settings, recreational and cultural opportunities, and open space attracts young professionals and families, especially. Conversely, if the community ceases to provide the amenities associated with quality of life, companies and residents are likely to look for the next location.

A survey done by the National Bicycle and Pedestrian Clearinghouse in 1995 of corporate real estate executives indicates that choosing a location that will help attract and retain key personnel is the most important factor for selecting a business location. They add that for most businesses, employee quality of life is equally as important as business costs when selecting a location for an office or factory. As fewer companies are tied to raw materials, natural resources, or energy supplies, they look to vibrant cities with access to markets and a skilled workforce.

A company that retains personnel is a company that is likely to stay in an area. An area with a high quality of life is likely to attract quality employees as long as livability is maintained. It is in a city's best interest to enhance and maintain its quality of life in order to attract, but also retain, its residents.

Ross DeVol, from the Milken Institute Review said, "more and more companies and skilled labor locate where they want – not where they must." An important issue then, is not only to attract these companies and skilled labor, but also to maintain their presence by continually devoting energy to improve livability and quality of life.

Locally, Portland is consistently noted for its high quality of life. *Money Magazine* listed Portland as both the "Best Place to Live" in 2000 and the "Best Place to Vacation" in 2002.

Revitalization
Many communities have initiated greenway development projects to spark waterfront developments, the rebirth of downtown business areas, and revitalization of neighborhoods. When a greenway is built, the increase in activity has shown to correspond with economic investment in the area.

- In Chattanooga, after a deep recession in the 1980s, a $356 million public/private investment in Chattanooga's downtown riverfront doubled the number of businesses and full time jobs in the district while assessed property values increased 127.5 percent, eight years later, according to the Trust for Public Land's report on *The Economic Benefits of Parks and Open Space*.

- The South Platte River Greenway in Denver, Colorado transformed what used to be a dumping ground for garbage, industrial waste and sewage into an area supporting industrial use, mixed-use residential development, public attractions, offices, condominiums, parks, commercial uses, with more on the way. Residents and tourists now congregate to watch boaters and kayaks on the river.

- In Dunedin, Florida the downtown area was suffering a 35 percent storefront vacancy rate in the early 1990s until the Pinellas Trail came into town. Now storefront occupancy is 100 percent and business is booming, according to a 1995 National Bicycle and Pedestrian Clearinghouse survey.

Studies done in Baltimore, San Francisco, San Antonio, Seattle, and New Orleans also indicate that economic development follows the creation of well-designed and properly maintained parks, greenways and open space.

Salability & Property Values
Greenway corridors provide a variety of amenities, such as attractive views, open space conservation and easily accessible recreation opportunities. People value these amenities. This value can be reflected in real property values and increased marketability for properties near open space. Along with increased property values come corresponding increases in property tax revenues.

Many studies have assessed the relationship between the proximity to open space (parks, greenbelts, greenways, etc.) and property values. Results of several studies show that properties along or near open space tend to have higher property values and are easier to sell. This depends partly on the nature of the open space. The National Parks Service study on *The Economic Impacts of Protecting Rivers, Trails, and Greenway Corridors* found that property value increases tend to be highest near greenways that:

- Highlight open space rather than highly developed facilities;

- Have limited vehicular access, but some recreational access; and
- Have effective maintenance and security.

The National Parks Study also found that proximity to greenways, rivers and trails can increase the sale price, increase the marketability of adjacent properties, and promote faster growth. Clustering the development to allow for the greenway might also decrease overall development costs and result in greater profits for the developer.

Urban greenways that are well-maintained can increase the desirability of a neighborhood.

- In a 1991 survey completed in Denver, Colorado by the Trust for Public Land revealed that the percentage of residents who would pay more to live in a neighborhood near a park or greenway increased from 16 to 48 percent from 1980 to 1990.

- In Seattle, the 12-mile Burke-Gilman trail has not only been a selling point for nearby properties, it has also been proven to increase the value of those properties. According to a study conducted by the Seattle Engineering Department (1987), "property near but not immediately adjacent to the trail is significantly easier to sell and, according to real estate agents, sells for an average of 6 percent more as a result of its proximity to the trail."

- A study done by the National Association of HomeBuilders in 1995 reported the value of residential property is 10 to 20 percent higher in the vicinity of park facilities.

- The Center for Urban Studies at the University of Akron reported in 1994 that park property, particularly open areas, appears to increase the value on property from 5 to 20 percent within 500 feet of a park.

Tourism

Given present rates of growth, the tourism/leisure industry is anticipated to become the leading U.S. industry. According to the Trust for Public Land, tourism is currently one of the nation's largest employers, supporting seven million jobs. Across the nation, parks, rivers, scenic lands and wildlife habitat help support the growing tourism industry. Increased tourism and the resulting business growth adds to the tax base and creates jobs for area residents.

Tourist attractions generate publicity. For example, in Portland, Oregon, August 2002 issues of *Sunset Magazine* and *Condé Nast* both feature the Eastbank Esplanade, part of the Willamette River Greenway. The goal of this kind of publicity is to induce visitors traveling to Portland to extend their stay to visit this attraction.

Reduction in Long-Term Infrastructure Costs

Urban greenways can supplement a city's transportation network and play a role in alleviating traffic congestion by increasing the amount of pedestrian, bicycle, and skate commuters. Fewer cars on the road amounts to less pollution and less traffic congestion. Greenways provide a safe and pleasurable opportunity for cities to achieve their mode-split goals by providing accessways to key centers of employment and recreation. According to a 1992 Louis Harris Poll, fifty-three percent of Americans would bicycle to work, at least occasionally, if there were more safe,

separate, designated bike paths in their communities. Paved greenway trails currently serve as alternate transportation routes for commuters, students and tourists.

Greenways along rivers can also help reduce the cost of repairing flood damage and improve water quality. Cities such as Tucson, Arizona and Denver, Colorado have established greenways or trail systems along their urban waterfronts and now incur far less in property damage from flooding. Areas once ravaged by devastating flooding are now extremely popular greenways. Many cities have adopted this philosophy throughout the nation and now have successful greenway trail systems that protect flood-prone land from development.

Greenways can also lower infrastructure costs by creating an opportunity to manage surface stormwater. Space for onsite retention of stormwater run-off and management can greatly reduce the impact of development on nearby rivers and stormwater treatment facilities. Water features that function as stormwater treatment and filtration can dually function as a public centerpiece.

Conclusion

Aside from the intrinsic environmental and recreational benefits of greenways and other forms of preserved open space, the economic benefits are important to justify. Serving as a tool for urban revitalization or increasing a city's livability, preserving open space is a valuable way to improve a city's overall quality of life. A city with a reputation for livability attracts new business and stimulates growth for existing businesses.

Often, along greenways, increased tax revenues from adjacent properties can justify setting the land aside. Designing development to protect and conserve open space can contribute positively to the quality and the lifestyle of a community.

- Greenway trails stimulate the local and regional economy by attracting businesses, residents and tourists;
- Greenways can spark revitalization and beautification in a city;
- Increased property values often occur near or adjacent to the greenway;
- Greenways can increase tax revenues for a city;
- Greenways serve important transportation functions; and
- Greenways contribute to a city’s overall quality of life.

Greenway Case Studies/Examples

Included are case studies of greenway projects from around the country of varying scope and type. Some projects were part of a greater downtown revitalization plan and some were smaller, conservation efforts. The commonality of these projects is their urban nature. These are given to provide details of planning methods and strategies, funding and economic impacts of other greenway projects across the nation.

Chattanooga, Tennessee

Project: Tennessee Riverpark

Goal: Encourage revitalization of Chattanooga

Context: Urban revitalization efforts began in the early 1980s in response to environmental problems and economic decline. Revitalization strategies emphasize principles of sustainability in order to improve the City's environment health and to attract businesses motivated by "quality of life." The focal point of these efforts is the Riverpark, which is intended to be "the spine that supports everything Chattanooga wants for itself."

Nearly 10 million people live within 100 miles of Chattanooga. Atlanta, Knoxville, Nashville and Huntsville are all less than a one and one-half hour drive from the city.

Scope: The Tennessee Riverpark is a network of riverfront trails and parks that extend from the Chichamauga Dam (within the city limits) to downtown Chattanooga. When complete, the riverwalk will extend approximately 16 miles – ten miles on the south shore and six miles on the north.

Planning: In 1985 a master plan was developed for the Riverpark, which spurred the formation of a private nonprofit organization to implement the plan. A design overlay is applied to the surrounding area and all proposed development is reviewed by a nonprofit design center.

Implementers: RiverValley Partners began in 1986 with funding from local foundations, financial institutions and grants. Initially the organization consolidated property ownership. Currently it is responsible for the coordination and development of several revitalization projects within the city, some located along the river, including a business district plan, an eco-industrial park initiative, residential development, a theater renovation, and several public attractions.

Funding: $33 million total investment, 1987 to 1996
80% private funding

20% public funding

Sources include:

City
County
Federal, including ISTEA
Foundations
State grants
Private funds

Annual costs:

$2 million a year for maintenance and security is paid equally by the City of Chattanooga and Hamilton County.

Land Acquisition: Land for the Riverpark system is acquired primarily through donations of conservation easements, though in a few instances land is purchased.

Economic Impact: Various businesses and organizations have made an estimated $300 million worth of improvements in their properties along the Riverpark. Adjacent businesses view the trail system as an asset, as a place where their employees can take relax by taking walks or have lunch along the route. Support among industrial property owners located next to the trail is so strong that they advocate for the Riverpark to industrial property owners where it is planned to expand.

Figures are not available on impacts of the riverwalk on property values, but residences located near it advertise their proximity to the trail when selling their properties. The Riverpark has also been a source of community pride.

Land Uses: The Riverpark travels through an upper-income residential neighborhood, by the University of Tennessee at Chattanooga and past industrial areas. The Rriverpark also provides links to parks and open space, entertainment facilities and the downtown commercial area.

Features: Riverpark is 30 feet wide at its narrowest, with a minimum paved width of 10 feet constructed primarily of concrete; there is decking over a wetland. Landscaping in many areas incorporates natural elements and in some places habitat enhancement has been done. Plans are underway to create a total of 50 miles of greenways that will go along side tributaries of the river.

Riverpark includes components that reflect the history, geography and economy of the area. Every Riverpark segment is considered part of a greater "learning walk" with various exhibits, historic photos and other features that tell of the area's attributes including its history, nearby industries or the wildlife and ecology.

The Riverpark links parks and public destinations including a fresh water aquarium (the world's largest and the only one in the nation), an IMAX theatre, a visitor's center and public boat launches. At one end of the Riverpark is a 55-acre park with five fishing piers, picnic facilities, a lodge and a snack bar. The Riverpark also includes the longest pedestrian bridge in the world (.5 mile) on a restored 110-year-old bridge. Below the bridge is an amphitheater. Another section connects to a private rowing center.

About 1 million people visited the Riverpark area in 1992. Currently, about 90 percent are recreational users, but an increase in bicycle commuters is expected as missing links in the Riverpark are filled in.

Denver, Colorado

Project: South Platte River Greenway

Goal: Improve the health of the South Platte River and make it accessible for recreational use.

Context: In 1965 the river was described as "too thick to drink, too thin to plow." The river had become an illegal dump and a drainage-way for sewers. Some people thought it was a joke to even call the South Platte a river. Planning for the greenway was prompted by extensive flooding in 1965, but efforts began in earnest in 1974 when the mayor asked an influential state senator to form a task force dedicated to making river improvements.

Scope: The greenway began with two parks and a portion of a trail. Currently there are 150 miles of trails, boat launches, chutes and parks in four counties and nine municipalities in the greater Denver area.

Planning: A plan drafted in 1965, after major flooding on the Platte, was considered too grandiose to implement. In 1974, a task force was formed, headed by Joe Shoemaker, and made up of a diverse group of citizens and business people. Shoemaker forbid the development of formal plans, saying they would drain the group of its creative energy. He also refused to have any contract or authority from the city, reasoning that without official powers, the committee had no limitations on what they could do. Instead of developing plans, the group focused on developing projects at strategic points along the river that would help gain public support for completing the trail. In fact, their first project was complete a little more than a year after the group was founded. In 1977, the South Platte River Greenway Foundation was became a nonprofit organization.

Implementers: South Platte River Greenway Foundation, a nonprofit agency formed at the request of the Denver mayor, had a diverse coalition of Denver civic

leaders to oversee the project, a former politician for leadership and two city planners as staff.

Funding: $1.9 million initial budget
$14 million, as of the late 1980s, came from private sources, including significant private donations
Currently the mayor of Denver is proposing a $35 million dollar investment in six separate river park projects

Economic Impact: Denver's Downtown Partnership, the city's largest business organization, is currently assisting the city with a project to redevelop 60 acres of formerly industrial land and 1.5 miles of riverfront. The Partnership has helped acquire land for this segment and has been involved in planning the project, which will include mixed uses, residences, and parks.

Land Uses: The first park developed as part of the greenway was located within a short walk from the downtown business district.
Adjacent land uses include:

- Industrial uses, like Allied Chemical and Telecom
- Mixed-use residential
- Public attractions - children's museum, aquarium
- Offices
- Condominiums
- Commercial – REI

A redevelopment project currently underway will include parks and 6 million sq. ft. of mixed-use development, with 3000 housing units.

Features: The greenway trail has a 12 width in multi-use areas with bays for walkers to retreat from bikes. The first park developed as part of the greenway, Confluence Park, included an amphitheater, a boat chute and a riverside trail near downtown Denver. The greenway provides links to 17 pocket parks, four boat chutes for kayakers, new footbridges and nature centers

As of 1990, the greenway served 150,000 people a year. The project has expanded to include areas along tributaries of the Platte River. The Greenway Foundation has initiated a boating enterprise on the Cherry Creek that they intend to sell to a private organization, once it has become profitable. Since the greenway project was initiated adjacent counties have begun to develop their own projects.

Seattle, Washington

Project: Burke-Gilman Trail

Goal: Utilize an abandoned rail right-of-way for recreational use.

Context: This was the first of several trail projects undertaken by the city. Because later projects ran into opposition from local residents, the Office of Planning conducted a study in 1987 to determine the impact of the trail on property values and any crime and safety impacts. What resulted is an often cited piece based on surveys of police officers, 350 residents and 75 real estate agents. The study indicated that the trail had a positive or neutral effect on property values and did not increase crime. Even citizens that initially objected to the project stated that the trail had a positive or neutral effect on their quality of life.

Scope: The multi-purpose trail is 14.1 miles and follows an abandoned railroad right-of-way through residential neighborhoods in northeast Seattle.

Planning: A 1972 *Comprehensive Bikeway Plan* designated the right-of-way as a priority corridor for a multi-use trail.

Implementers: Seattle Engineering Department, Office of Planning

Funding: City of Seattle purchased right-of-way
University of Washington and King County purchase other sections
City bond funding
Community Development Block Grants
Federal gas tax funds
Other federal funds

Economic Impact: Real estate agents surveyed said that being within two blocks of the trail made a home easier to sell.
Agents estimated that homes within two blocks of the trail sold for an average of 6.2 percent more.
About 93% of agents used the trail as a selling point.

Land Uses: Adjacent land uses
- Single family
- Condominiums
- Industrial
- Neighborhood commercial
- University/institutional
- Open space

Features: The trail is 8 to 10 feet wide surface with 20 foot buffer of shrubs and trees. The trail provides connections to commercial districts, University of Washington and open space, including a park at the north end of Lake Union. The trail also connects with the 13-mile Sammamish River Trail. In most areas, the trail passes within one-quarter of a mile of the shoreline of Lake Washington.

Characteristics of Trail Users:

Characteristics of trail users	
Age	35 years old
Average annual income	$35,000 (1987 dollars)
Men	58%
Women	42%

Seattle Engineering Department, 1987. Evaluation of the Burke-Gilman Trail's Effect on Property Values and Crime

Type of uses	Approx. yearly users	Approx. daily users	Percentage
All	750,000	4,500	100%
Cyclists, recreational	480,000	2,880	64%
Cyclists, commuters	120,000	720	16%
Walkers	67,500	405	9%
Joggers	67,500	405	9%
Roller skaters, wheelchair users	15,000	90	2%

Seattle Engineering Department, 1987. Evaluation of the Burke-Gilman Trail's Effect on Property Values and Crime

Vancouver, British Columbia

Project: Southeast False Creek Sustainable Neighborhood, Creekside Landing

Goal: Redevelop industrial land on the False Creek waterfront downtown in the City of Vancouver based on sustainability principles.

Context: This is a brownfield site located within the downtown area of the city. The project was initiated by city council who directed staff to incorporate elements that would reduce environmental impacts on the site. They encouraged staff to look for new solutions to environmental impacts, including those not currently allowed under the city code.

Scope: The 80-acre site is proposed for a residential neighborhood of 4,000 – 6,000 people. The exact dimensions of the greenway have yet to be determined, but they will link to the city's existing greenway system and

will provide connections to the downtown area. The project has a number of internal pedestrian paths to allow people to easily get around on foot.

Planning: This was a project to develop a zoning and redevelopment plan for the site. The effort began in 1997 and a policy statement with guidance on land use, open space, transportation and environment was completed in 1999. The process includes several studies including economic feasibility and soil contamination.

Implementers: City of Vancouver

Funding: The city land had a net market value (value minus costs of environmental remediation) of about $36 million (Canadian in 1998).

Land Acquisition: Most of the site is currently owned by the city.

Economic Impact: The project will bring a vacant piece of land back to use so that it contributes to the economic vitality and tax base of the city. The anticipated cash flow of the project is $12 million upon completion, a 4.5 percent rate of return, or a loss of $6.5 million, compared to a similar investment made with a 7 percent return. This compares with a loss of $18 million if no development were to occur.

Using principles of sustainability, the value of a greenway is expanded to include not only its recreational functions, but also its environmental functions. Sustainability also emphasizes the efficient use of resources. In the planning stages of this project, greenways and open space are seen as multi-purpose areas that can be used for recreation, stormwater management, transportation, community gardens and wildlife habitat. Landscaping will be done without chemicals and potable water will only be used on vegetable and flower gardens that are closely tended by neighborhood residents. All vegetative waste and stormwater will be handled on site.

Land Uses: Currently 43 acres are industrial lands.

Proposed land uses:

- Residential (2 story to high-rise condominiums), about 4,000 units
  - 80% market rate
  - 20% social housing
- Open space, about 22 acres
  - Village square
  - Continuous public waterfront, with a 35’ walkway-bikeway and an additional 25’ setback from the buildings
  - Habitat areas
  - Community Center

Community Gardens	
Stormwater Management , including a creek-like water system	
Commercial uses, along the square	100,000 sq. ft.
Daycare, school, library	
Total floor area:	3.2 million sq. ft.

The transportation system will emphasize pedestrian ways and a trolley line linked to downtown. Vehicle access will be provided primarily for service circulation.

Features: Sustainability, as the term is used by Vancouver planners is "Development which meets the needs of the present without compromising the ability of future generations to meet their needs." As a sustainable urban community, False Creek will emphasize increased recycling and efficient use of energy and resources, as well as reduction of waste, pollution, and environmental impacts. In addition, the development patterns of the neighborhood should also provide a structure of a strong and resilient social community and prosperous economy.

Greenways and open spaces are also seen as important on this site for their ability to provide a needed respite for urban dwellers. Community gardens are seen as a critical amenity because the area will develop as high-density housing. In this project, habitat will have value for wildlife and for resident and visiting nature lovers. Habitat will be integrated into the site through landscaping and bank improvements. Plants that provide food and cover for birds will be emphasized.

Pinellas County, Florida

Project: Pinellas Trail

Goal: Provide a safe alternative to cycling on roads, and provide a safe and pleasant pedestrian experience away from traffic.

Context: The right-of-way for this rail-to-trail project was initially purchased by the Florida Department of Transportation for mass transit. A coalition of bicycling and safety advocates convinced the county that a trail was needed instead. At that time the county had the highest number of bicycle injuries in the country and pedestrian accidents were also very high. The project was first proposed in 1984. By 1990, the first six-mile section was opened. Since then 35 miles have been completed.

Pinellas County is the most densely populated county in the state of Florida.

Scope: The trail, currently 35 miles long, will be 47 miles long when completed. More than 1 million people use the trail per year. It runs through 24 political jurisdictions and seven municipalities, including St. Petersburg, Clearwater and several smaller towns.

Planning: A coalition of pedestrians and bicyclists formed a nonprofit organization, Pinellas Trails, Inc. They focused their initial efforts on lobbying local government to support the trail project. In addition, the group sponsored trail events and developed a membership base from business owners and members of environmental and recreation groups. Pinellas County has developed the trail.

Implementers: Pinellas County

Funding: $5 million, local sales tax revenue
$10,000 for landscaping improvements – fundraising by the Pinellas Trails Inc.
In-kind donations of water fountains, landscaping, benches and other amenities from businesses and citizens
The county pays maintenance and security costs

Economic Impact: The project has had a significant economic impact, contributing to the revitalization of commercial areas, increases in property values and a rise in local tourism.

The town of Dunedin (population 37,000) was suffering a 35 percent storefront vacancy rate in the early 1990s. The town, which is less than an hour's drive from Tampa, St. Petersburg and Clearwater, now has a storefront occupancy of 100 percent. The Chamber of Commerce considers the trail to be a key factor in the commercial area's revitalization (along with beautification projects and increased parking). According to the Chamber, many trail users stop at local shops and restaurants after using the trail, which helps create a diverse mix of people shopping in the area. The Chamber sees the trail restroom facility as an important feature that encourages people to stop in the commercial district.

The trail is also a selling point for residential properties. In fact, a local real estate agency has a web site that features a map of the trail and highlights nearby properties. According to county officials, property owners that initially built fences along the trail have now added gates.

The trail has been well accepted by a variety of nonresidential users. The benefits of the trail are more obvious for commercial uses, which see the trail as a primary business attractor, but industrial uses have also supported the trail. For instance, trail construction near a Minute Maid factory in

Dunedin prompted the company to landscape its adjacent property that had previously been neglected and unsightly.

Land Uses: Adjacent land uses include commercial, industrial, residential and open space at urban and rural densities.

Features: The trail is a 15 feet wide asphalt paved path. In some areas it is as close as 300 yards from the waterfront. Lanes for pedestrian and bike use are marked. It has spurs that connect to state parks along the beach. The trail is open during the day only. About two-thirds of trips are for recreation and one-third are from commuting. Paid and volunteer rangers patrol the trail.

The Dunedin section includes shaded pavilion and a restroom that is maintained through a City agreement with a bicycle rental concessionaire. In this section the trail is landscaping to allow maximum visibility, with grass, with some shrubs.

Enthusiasm for the trail has spurred other trail efforts at the county, regional and state levels. The county is currently working with Florida Power to develop an agreement to use utility easements, which run through a more populated part of Pinellas County, as an eastern leg of the trail. There is interest in Polk and Hillsborough Counties to develop their own trails and connect into an integrated regional trail system. The expanded three-county trail system would link major metropolitan areas St. Petersburg, Clearwater and Tampa with smaller towns and recreation areas.

Pittsburgh, Pennsylvania

Project: *LTV Steel South Sides Works Master Plan*

Goal: Redevelop brownfield site for mixed uses, including open space and pedestrian paths along riverfront access. The project will include a cluster of medical and research facilities.

Context: This is one of several riverfront brownfield redevelopment projects within Pittsburgh documented through research by Carnegie Mellon University. These projects are part of an extensive economic development strategy initiated in response to of the decline of the steel industry, once the City's primary industry.

Redevelopment of the site will need to be compatible with an adjacent residential and commercial neighborhood. Another critical issue is citizen involvement and support for the project. The greenway component of the

plan addresses one of the primary concerns of neighborhood groups - ensuring access to the river. Eventually, the greenway may provide connections to the city's Riverfront Park.

Scope: The site is 130 acres, with one mile of river frontage along the Monongahela River. It is planned for approximately 26 acres of open space. The site includes a railroad that intersects a portion of the site.

The plan calls for the site to be developed as two distinct but related sections, one with a more industrial component. Currently, infrastructure improvements being made and construction of a medical distribution center is underway.

Planning: The master plan will guide the phased development of the site.

Implementers: Urban Redevelopment Authority
Pittsburgh-RISES

Funding: The projected is funded through a combination of state and city funds, as well as Tax Increment Financing. In addition, the Urban Redevelopment Authority has an income stream generated by property sales and leasing, which allows it to do some of its own financing.

Land Acquisition: All land is under the control of the Urban Redevelopment Authority. The agency has developed a land use plan and will do site improvements, create development parcels and reserve open space land along the river for greenways.

Economic Impact: This site is vacant. The Urban Redevelopment Authority views river access as a critical part of redevelopment of the site, and all other waterfront sites in the city.

Land Uses:

Research and Development	1 – 1.5 million sq. ft.
Light Industrial/Flex	400,000-500,000 sq. ft.
Retail/neighborhood commercial	100,000-200,000 sq. ft.
Retail/regional commercial	150,000-250,000 sq. ft.
Office	75,000-100-000 sq. ft.
Residential	200-300 units
Open space	26 acres

Features: The greenway is expected to accommodate recreational and commuter users. It will have a split trail, with a hard surface for cyclists, inline skaters, wheelchair users and joggers and a soft surface for recreational pedestrian use. Trail sections will be 4 to 6 feet wide. The greenway will include an amphitheater. Landscaping will have high tech and natural elements, with signage made of materials associated with steel industry.

Pittsburgh, Pennsylvania

Project: Washington's Landing Redevelopment Project

Goal: Redevelop brownfield site for mixed uses, including open space and pedestrian paths along riverfront access.

Context: This is one of several riverfront brownfield redevelopment projects within Pittsburgh documented through research by Carnegie Mellon University. These projects are part of an extensive economic development strategy initiated in response to of the decline of the steel industry, once the City's primary industry.

The site has historic significance and is located on Herr's Island in the Allegany River, about four miles from downtown Pittsburgh.

Scope: The site is 42 acres, .75 mile long by 600 feet wide.
Site problems included PCB and other environmental contamination and limited access. Development began in 1992. The trail circles the island along the riverfront.

Planning: Planning for the site took about 10 years.

Greenway development in Pittsburgh is guided by plans for the Three Rivers Heritage Trail System. The system, when complete, will include 50 to 60 miles of trails along all rivers in the metropolitan region with connections to trails along the C & O Canal and the Potomac River. Ultimately, trails will link Pittsburgh to Washington D.C.

Implementers: Urban Redevelopment Authority of Pittsburgh

Funding: Total investment of $43.8 million
Sources included:

- U.S. Economic Development Administration
- PA Department of Community Affairs
- PA Department of Commerce
- PA Department of Environmental Resources
- Appalachian Regional Commission
- City of Pittsburgh CDBG Funds
- Urban Redevelopment Authority
- City bond funds
- Port Authority Transit
- Urban Redevelopment Authority Program Income
- Pittsburgh Water and Sewer Authority
- PA Strategy 21 Funding (parks and open spaces)

An association of property owners pays trail maintenance costs.

Land Acquisition: All land was planned for while under the control of the Urban Redevelopment Authority. The agency developed a land use plan, did site improvements, created development parcels and reserving open space land along the river for greenways.

Economic Impact: This site was vacant before redevelopment. Waterfront and open spaces are an integral part of several uses including a marina, rowing association and a tennis goods manufacturing company, which uses adjacent tennis courts under an agreement with the city. Access to the waterfront is also an amenity for other uses including businesses, industry, residences and the City's Department of Environmental Protection. The trail and waterfront access has been a major selling point for the residential component of the redevelopment project. Urban Redevelopment Authority staff believe the greenway was the primary reason that residences at Washington's Landing sold faster and for higher prices than projected.

Land Uses: Open space, recreation, industrial, office, restaurant and residential.

Office space	134,000 sq. ft.
Manufacturing/office space combined	37,000 sq. ft.
Automated healthcare company	45,000 sq. ft.

Features: A new bridge was constructed to improve access to the site. The site was denuded prior to development. The trail and riverfront have been landscaped to incorporate native vegetation, boulders and other naturalistic elements. Scenic overlooks along the trail offer views of the downtown. The trail is 4 to 6 feet wide and is currently used primarily for recreation. A bridge connection is being constructed which is expected to increase the trail's use as a commuting route.

Lowell, Massachusetts

Project: Lowell Riverwalk

Goal: Spur economic development through the clean up and redevelopment of downtown riverfront property and provide a link to the Lowell National Historical Park and the Lowell campus of the University of Massachusetts.

Context: Lowell is located 25 miles from Boston. Over the last 10 years the city has experienced a 58% decline in manufacturing jobs. Since, there is no virgin land within the city for development, abandoned industrial sites are being targeted for redevelopment. The Lowell Riverwalk was the first of several projects to revitalize industrial sites in the city.

Scope: The project included joint development of a sports arena with the University of Massachusetts and a minor league baseball field connected by a riverwalk to an office complex

Planning: The Lowell Plan is a group of civic leaders, government officials and business people that meets monthly and initiates projects of this type.

Implementers: The city does not have a redevelopment authority. This project was developed under the guidance of a special project commission.

Funding: The project utilized a combination of city, state and federal funds. The city received $200,000 from the EPA Brownfield Assessment Demonstration Pilot, which paid for site assessment. The University of Massachusetts contributed funding for an arena.

Economic Impact: The project has brought has brought previously vacant land into active use.

Land Uses: Office
Public facilities, including two sports arenas
Open space

Features: The Riverwalk links two new sports facilities to the Lowell National Historical Park, the Lowell campus of the University of Massachusetts and a post office.

TRANSPORTATION

TRANSPORTATION

Introduction

Over the last six years, Portland Office of Transportation (PDOT) staff, working with Metro, Tri-Met, the Portland Development Commission (PDC), the Bureau of Planning (BOP) and the public, has compiled a number of documents that help guide transportation policy and decisions in North Macadam.

Five documents, listed below, form the basis for the ongoing transportation planning and implementation work in North Macadam. The first three of the listed reports are not included in the Supporting Information because of their length.

- The *North Macadam District Street Plan* (December 1996) Formed the basis for establishing an internal street network for North Macadam, with an emphasis on encouraging multi-modal transportation, access to the greenway, and supporting existing and future development patterns. In addition, the street plan outlines 10 principles to serve as the foundation upon which street plan modifications would be made.

- The *North Macadam District Street Design Standards and Criteria Plan Transportation Report* (November 1998) prepared by David Evans and Associates, was produced in order to analyze the development goals (10,000 jobs and 1,500-3,000 housing units) for North Macadam. The report provides a summary of the modeling results for the plan area based on these development goals, and suggests ways to improve the portals leading in and out of North Macadam to ensure that the development goals could be accommodated.

- The *North Macadam Transit and Parking Strategies Technical Report* (June 2000) built off of previous work and began to explore ways to ensure the future transportation success of North Macadam through a number of strategic suggestions. This report contains additional analysis suggesting that increasing the residential goals (up to around 5,000 dwelling units) and ratcheting down parking ratios over time as transit service becomes available can be a part of an effective palette for managing transportation needs over time in North Macadam.

The following two reports are provided this document as an overview of some of the transportation issues facing the North Macadam district.

- The **North Macadam District Transportation Analysis, Executive Summary***(*February 1999) provides an overview of some of the technical issues explored in other reports, including some of the key assumptions that continue to drive today's planning and implementation activities. For this reason, it is included as supporting documentation for the *Recommended North Macadam Plan*.

- The **Draft Transit, Transportation Demand Management and Parking Strategies** (September 2000) contains the broad ideas and concepts for a comprehensive transit and parking program for North Macadam.

North Macadam District Transportation Analysis

Executive Summary

Portland Office of Transportation

February 12, 1999

Prepared by:
Lloyd D. Lindley, ASLA
David Evans & Associates

Executive Summary

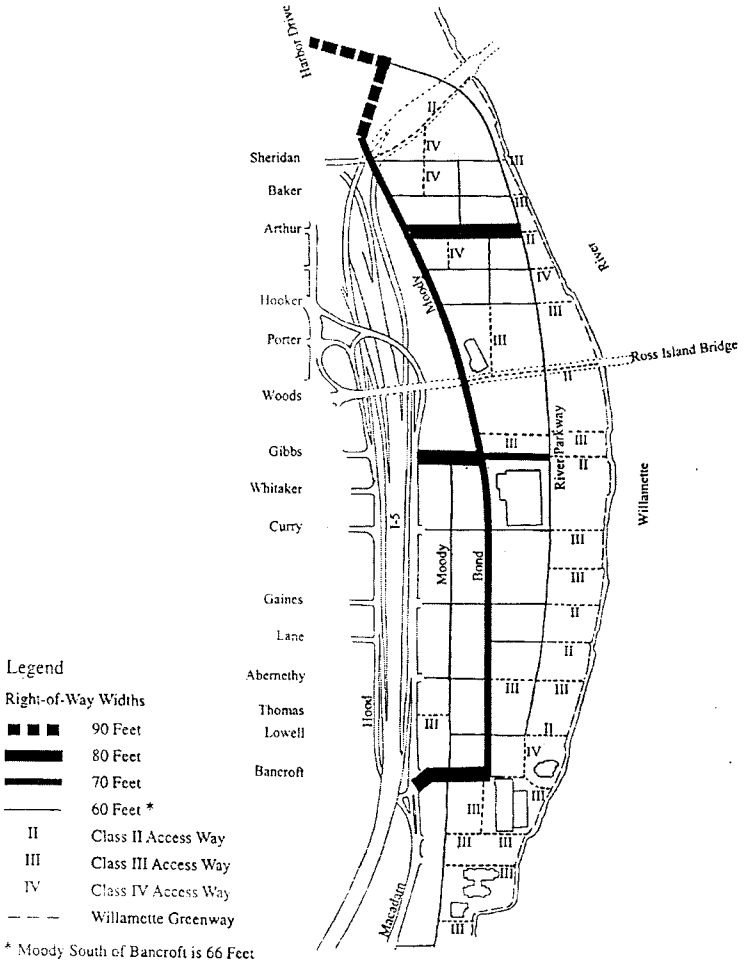
In November, 1998 a transportation analysis identified that to reach the development expectations of 1,500 households and 10,000 jobs in the North Macadam District, street and intersection improvements would be necessary at Bancroft and Curry on Macadam Avenue in conjunction with some version of the planned Harrison Connector. A subsequent analysis of potential development capacity supported this conclusion and confirmed that the projected growth could be accommodated by an improved street system, but that the district transportation portals would operate nearly at capacity. The analysis further identified that some data variability exists in the quantities of households, and retail and non-retail employment and could be adjusted to potentially reduce transportation demand.

Context

The North Macadam District is one of Portland's eight Central City districts and is adjacent to the southeastern edge of downtown. A portion of the city street grid parallels the west edge of the district while the balance of the approximately 128 acres reflects the remains of a historic working riverfront. Interstate 5 borders the west and north edges and the Willamette River shoreline runs the length of the eastern boundary. To the south is a narrow strip of the district that is adjacent to the John's Landing area. Today, much of the land is vacant with few streets and minimal infrastructure to serve the district's development vision.

Because of the freeway and river, the district is relatively isolated with only three major transportation access points. Bancroft Street at Macadam provides access in the south and Moody at Harbor Drive in the north are the two primary portals. Curry at Macadam near the center of the district provides access to and from Interstate 5, the Ross Island Bridge and Downtown. The North Macadam District is envisioned to absorb development including 1,500-3,100 households and 10,000 employees. The primary question is: Can the district accommodate the prescribed growth while creating a desirable neighborhood given limited access? The North Macadam District Transportation Analysis provides an answer.

Street Plan: Right-of-Way Widths



Purpose

City Council accepted the 1996 City Engineer's Report that identified the location, dimensions and right-of-way requirements of future streets and accessways to support urban development in the North Macadam District. Subsequently the City Council directed the Bureau of Planning, Portland Development Commission and the Office of Transportation to proceed with the Report's Next Steps. The Bureau of Planning completed the North Macadam District Street Plan Implementation Amendments, which included the adoption of code amendments. City Council directed the Office of Transportation to coordinate with the Oregon Department of Transportation to develop recommendations for both near-term and long-term improvements to address traffic access and safety issues along Macadam and Hood Avenues adjacent to the North Macadam area, and where Macadam intersects with district streets in particular at SW Bancroft and SW Gibbs Streets. Ultimately, the transportation analysis establishes a benchmark where development demand balances with transportation capacity.

The Transportation Analysis

The North Macadam District Transportation Report, completed in November of 1998, analyzed the three district portals at Bancroft, Gibbs/Curry, and Moody at Harbor Way. The report also analyzed operation of Macadam Avenue from Bancroft to the Ross Island Bridge. The study examined current travel conditions based on traffic data collected in April, 1998. Three methods were used to analyze automobile access at each portal, a 2003 - 5 year horizon, Metro 2015 transportation model, and a development and transportation capacity study. Each method considered potential development growth and transportation demands in progressively increasing detail.

2003

A 5-year desired residential and commercial development horizon for the year 2003 was established through one-on-one interviews with property owners in the district. Projected traffic volumes were analyzed at each portal to understand the potential effect of increased district traffic on the three intersections and Macadam and Hood Streets. This simplified analysis helped to quickly identify prominent transportation issues and conflicts. It excluded local and regional background traffic growth, modes of travel other than automobiles, and any Transportation Demand Management programs such as parking strategies and increased use of other transit and transportation options. This analysis showed potential increased district travel patterns at the portals and the magnitude of near-term transportation system improvements that would likely be necessary to accommodate desired new developments within the district. Three principal near-term needs were identified and include:

- Improvements to the Bancroft, Macadam and Hood intersection.
- Improvements to manage increased I-5 off-ramp and northbound Macadam Avenue weave conflicts.
- Moving the Gibbs portal to Curry and signalizing the intersection.

2015

The Metro 2015 transportation model provides a more regional and comprehensive look at the general travel conditions at the portals assuming that new developments would total 1,700 households, 2,500 retail employees and 10,200 non-retail employees. The model also assigns region-wide background traffic growth, transit service, some parking restrictions and certain anticipated regional transportation system improvements (such as the Harrison Connector).

The effect on the District portals is predicted by modeling future growth of households and employment in the North Macadam District and expected regional travel origins and destinations. Depending upon the actual development market and transportation demands the modeled projections could occur sooner or later than 2015 and in various combinations.

This model helped identify and confirm earlier findings of the 2003 analysis. The findings show that:

- Most of the automobile trips to and from the district will use Macadam and the Ross Island Bridge and that over half of the trips will come from within the City of Portland.
- The Bancroft, Macadam and Hood intersection will be significantly congested during the AM and PM peak travel hours.
- Conflicts will increase from increased traffic weaving on Macadam as a result of additional right turns into the district.
- North Macadam District traffic would not significantly effect the intersection of Naito Parkway and Harbor Drive.

Numerous transportation improvements were diagrammed and analyzed to address the Bancroft, Macadam and Hood congestion and the Macadam weave conflicts. Scenarios considered identified improvements in other efforts such as the South Portland Circulation Study and the I-405 Reconnaissance and ranged from providing two-way traffic on Macadam, to a new portal and access to south Downtown. It was determined that certain travel lane and traffic signal improvements to the Bancroft intersection and Macadam Avenue would provide capacity to serve development projections for approximately $1 million. Cost for the next level of improvements jumped to $30 million and above. Most of the higher cost scenarios involved improvements to the regional system outside of North Macadam.

Two improvement projects were identified as follows:

1. Reconfigure the Bancroft, Hood and Macadam intersection to include a 200-foot long southbound merge lane on Macadam and a 1,200-foot long divided roadway on Hood to separate southbound and northbound Macadam Avenue traffic. Traffic signal and signage improvements would be included in the project.
2. Install a new traffic signal at Curry and add a new divided lane to Macadam Avenue from the I-5 off-ramp landing to the Curry Street intersection.

While congestion will occur as the district begins to reach the projected development levels, these projects would ensure adequate and safe operations.

Transportation and Development Capacity

A more detailed transportation analysis investigated portal capacity compared to the market expectations outlined in the North Macadam District Market Analysis prepared by E.D. Hovee & Company. This analysis subtracted RiverPlace development projections which were included in the Metro 2015 model to arrive at 1,200 households, 1,400 retail employees and 7,600 non-retail employees totaling 9,000 jobs. The analysis considered two hours of peak congestion and added traffic to the Bancroft and Macadam intersection until it approached regulatory capacity. The development ratio of households and employment were consistent with the previous 2015 modeling. The results are shown in the following table.

Transportation and Development Capacity (TDC) Study

	TDC Study				Comparisons	
Uses	**2015 Model Assumptions**	**2-Hour Peak Additional Increment***	**TDC Study Totals**		**2020 Hovee Projections**	**CCTMP Goals**
• Total Households	1,200	300	**1,500**		**1,500 - 3,100**	**1,420**
• Retail Employees	1,400	500	**1,900**			
• Non-Retail Employees	7,600	1,300	**8,900**			
• Total Employment	9,000	1,800	**10,800**		**10,000**	**10,000**

*2-hour peak increment is based on acceptable regulatory transportation capacity.

Conclusions

In November, 1998 it was identified that to reach the development expectations of 1,500 households and 10,000 jobs in the North Macadam District, street and intersection improvements would be necessary at Bancroft and Curry on Macadam Avenue in conjunction with some version of the planned Harrison Connector. A subsequent analysis of potential development capacity supported the transportation analysis and confirmed that the projected growth could be accommodated by an improved street system but that the district transportation portals would operate nearly at capacity. The analysis further identified that some data variability exists in the quantities of households, and retail and non-retail employment and could be adjusted to potentially reduce transportation demand. The following are specific conclusions:

- With the identified transportation mitigation improvements, the target densities of households and employment can be achieved.

- A relatively inexpensive package of improvements was found that would meet the district's transportation demands. Two mitigation projects were specifically identified 1) Bancroft, Hood and Macadam intersection improvements 2) Macadam weave mitigation project. The Macadam weave mitigation project moves the central portal from Gibbs to Curry. These improvements are at an estimated cost of approximately $1 million.

- The transportation analysis determined that signals are warranted at the intersections of Bancroft, Hood and Macadam and at Curry and Macadam.

- The transportation mitigation improvements should be near-term in that the portals are expected to operate at or above capacity under the 2003 desired development scenario.

- The transportation analysis for 2015 included minimal Transportation Demand Management (TDM) assumptions; some transit service as well as parking restrictions in the district. This resulted in a model output of a 15% mode split. The CCTMP goal for this district is a 30% mode split; 20% on transit and 10% using other modes.

- The transportation system, with the proposed improvements, will meet regional standards for target growth. This means, however, a two-hour PM peak with severe congestion. Further TDM measures will be required to meet the expected growth in the district. Additional TDM measures would assist with achieving an acceptable balance between development density and district livability. These measures would include:

    1. Promote alternate modes – transit, carpool, vanpool, biking, walking.

    2. Manage parking – ratios for off-street and controlling on-street through timing and/or metering

    3. Reduce trips – live work in the same district, telecommute, compress work week, work alternate hours.

N. Macadam Framework Plan

September 15, 2000

DRAFT TRANSIT, TRANSPORTATION DEMAND MANAGEMENT AND PARKING STRATEGIES

INTRODUCTION

This draft strategy contains the broad ideas and concepts for a comprehensive transit and parking program for the North Macadam District (NMD). The strategy is needed to attain the goals described below, and to recognize the unique challenges facing the development of this relatively isolated, undeveloped brownfield district within the Central City.

This draft strategy has been developed in cooperation with Tri-Met and with the assistance of a variety of city bureaus, property owners and neighborhood residents, and interested citizens. While Tri-Met is recognized as the primary transit provider, a number of options are available to provide alternatives to the single occupancy auto. In addition, a variety of transit providers should be encouraged to augment basic transit services, and provide for the special needs of the district. A partnership is needed, including the city, Tri-Met, property owners and existing and future businesses to manage the implementation of the strategy, and to pursue creative approaches to non-traditional transportation services.

A Transportation Demand Management (TDM) program is needed, and an outline work program is included as a next step activity. An element of that work plan is to negotiate partnership agreements with key stakeholders, including the city, Tri-Met and property owners, and form a Transportation Management Association (TMA) assuring the on-going implementation of parking and TDM programs as the district develops.

The strategy identifies technical concepts for a rational decrease in relative parking supply as transit service and other alternative mode choices increase as the district matures. This approach recognizes the linkage between parking and transit, and the necessity to be responsive to market forces. The strategy also identifies roles and responsibilities for defining, managing and enforcing parking strategies.

Attached to this strategy is a *Draft Technical Memorandum, North Macadam Transit and Parking Strategies*, City of Portland Office of Transportation, June, 2000. This technical memo summarizes current policy and regional modeling assumptions, transit travel demand analysis,

parking demand analysis, strategies and recommendations. Also attached is a letter dated June 13, 2000 summarizing Tri-Met's recommendations.

GOALS

In August, 1999 the Portland City Council accepted the *North Macadam District Framework Plan*, and directed the preparation of a variety of implementation actions necessary to fulfill the Framework Plan's vision. This Transit, TDM and Parking Strategy addresses two action items:

> *Prepare a transit service strategy to be phased in over 10 years that integrates with the parking strategy and other transportation demand management (TDM) measures for the District.*
>
> *Prepare a district parking strategy to create parking ratios that balance the need to attract housing and business, particularly in the early years before transit is provided, with attaining mode split goals consistent with the Central City Transportation Management Plan (CCTMP):*
>
> - *A District phasing strategy where parking ratios are proportionate to the level of transit provided;*
> - *Policies on interim parking duration and use and mixed-use parking strategies;*
> - *Coordination with public and shared parking opportunities;*
> - *Proposed amendments to the Portland Zoning Code to implement the parking strategy.*

The overall goals of this Transit, TDM and Parking Strategy are:

1. Provide transit services along with a variety of TDM programs to meet and exceed the CCTMP mode split goals for North Macadam work trips: 20% transit and 10% walk/bike.
2. Provide transit services to the district as soon as the street network allows.
3. Assure transit options are provided to adequately serve travel markets.
4. Provide for parking adequate to support a full range of development needs during the evolution of the NMD.
5. Coordinate with and support transit use and service within the NMD.
6. Identify regulatory implementation that is generally consistent with other districts within the Central City.
7. Identify other forms of implementation and assign responsibilities that create certainty and assure performance.

OBJECTIVES

Objectives of the Transit/TDM Service Strategy are:

1. Employ a variety of transportation services to meet the CCTMP mode split goals.
2. Implement transit service to North Macadam as soon as the new road network allows.
3. Decrease the need to construct parking as transit services increase.
4. Develop long-range financing strategy to ensure adequate transportation services.

5. Maximize opportunities in this urban, mixed-use neighborhood to move about without having to use a car.

Objectives of the Parking Strategy are:

1. Identify parking ratios that balance short-term needs with attaining mode split goals consistent with the CCTMP.
2. Define a phasing strategy where parking ratios are proportionate to the level of transit provided.
3. Identify interim parking duration and use and mixed-use parking strategies.
4. Coordination with public and shared parking opportunities.
5. Identify appropriate amendments to the Portland Zoning Code.
6. Identify appropriate elements to be included in Development Agreements.
7. Identify roles for a Transportation Management Association.

ROLES

The roles of the private sector and public partners are outlined below:

1. Private sector role:
   - Provide for the long-term parking needs of residents and workers,
   - Support transit and transportation improvement initiatives,
   - Support TMA and TDM programs.

2. City/PDC role:
   - Facilitate the interrelationship with transit service such as street and infrastructure development,
   - Assist developments as needed to make projects feasible and to support structured parking.
   - Provide for short-term parking needs,
   - Negotiate and administer develop agreements with private property owners in order to implement transit, TMA and parking strategies.

3. Tri Met Role:
   - Provide basic transit service,
   - Provide support to City and TMA to coordinate TDM strategies,
   - Coordinate overall transit service including increasing transit service.

4. TMA role:

   The TMA will be formed as the Public/Private authority to take on decision-making and management responsibilities for all aspects of transit, TDM and parking programs.
   a. TMA to include, property/building owners, major tenants City, Tri Met.
   b. TMA may also be authorized to own/operate public parking facilities
   c. TMA management activities:
      - Support and help coordinate transit services strategies.
      - Coordinate the assessment of parking needs over time,

- Contribute to short-term parking supply
- Acquire short-term in private structures
- Manage on-street and surface lot parking programs,
- Coordinate and implement TDM programs described below,
- Manage any surface parking lot levys utilized for TDM activities.

TRANSIT AND TDM STRATEGIES

The primary elements of the Transit and TDM Strategies include specific transportation and transit service improvements, phasing system improvements as development within the district occurs, and actions to reduce the use of single occupancy autos. The near-term emphasis will be to construct the major streets and portal improvements serving the district, and to re-route existing bus lines through North Macadam. As demand and resources warrant, expansion of bus, streetcar, tram and other modes are planned. The elements of the strategy are:

1. Provide a transit service plan that implements Metro's Regional Transportation Plan. The elements of the transit service plan include:

    - Support the completion of a primary roadway system within the District;
    - Implement transit hub improvements/operations in the vicinity of Moody and Gibbs including pedestrian connections to the west, and transit preferential improvements at key intersections within the NMD consistent with the Street Plan and Street Standards;
    - Implement Macadam Avenue Regional Rapid Bus service (currently the #35 bus route), linking North Macadam with Lake Oswego and West Linn and the 5th and 6th Avenues Transit Mall in downtown Portland;
    - Re-route the #40-Tacoma to link North Macadam with Milwaukie and Clackamas County. Assure that areas now being served by this route will continue to have transit needs meet;
    - Consider re-routing other Southwest bus connections to the NMD as travel demand increases;
    - Add a future bus connection between Southeast Portland-NMD-Lloyd District to provide for direct connections between the SE Portland area and to the Lloyd District and Central Eastside;
    - Add a future bus connection from Downtown to the NMD to provide a connection from the eastern edge of downtown Portland and River District area;
    - Implement the Central City Streetcar to link the NMD with Portland State University, the West End, River District and Northwest Portland to the north, and the John's Landing area to the south;
    - Pursue the feasibility of an aerial tram linking the NMD to OHSU, and explore the feasibility of a transfer connection to buses on Barbur Boulevard and the CTLH neighborhood;
    - Pursue South/North Light Rail to Clackamas County as part of a 20-year strategy;
    - Preserve future high capacity rail options for the Jefferson Street Line.

2. Phase transit service expansion and improvements to serve NMD travel demand as employment and residential growth in the district increases. Tri-Met and PDOT have developed a potential phased approach to transit service, which is summarized in the following table and described more fully in the attachments. Note that resources have not yet been identified for service expansion beyond 2005. Transit service could be introduced by Tri-Met or another provider, including SMART, C-Tran, Central City Streetcar or a TMA.

Table 1
Peak Hour Transit Service Capacity

Year	Total Transit Vehicles/Peak Hour	Total Buses/Peak Hour	Total Peak Hour Capacity
2000-2005	9	9	576
2006-2010	36	24	3,324
2011-2015	61	49	4,924
2016-2020	84	72	6,393
2021-2025*	88	76	6,652

Based on Metro's Regional Transportation Plan 2020 Strategic Network.

3. Incorporate the following elements in a TDM plan for the NMD:
    - Transit Pass Distribution-Property manager and/or landowner participation in transit pass distribution/sales to employees and residents;
    - Carsharing- Property manager and/or landowner participation in promoting/providing carsharing to employees and residents;
    - Reserve new parking spaces for carpool/vanpool;
    - Provide bike parking at all new employment and residential sites;
    - Support levels of housing growth that meet and exceed existing targets.

PARKING STRATEGIES

The parking strategy allows basic entitled parking for all uses including visitors, and a gradual decrease in parking for office uses when specific peak hour transit capacity is reached. Additional spaces for non-office uses and visitors are subject to Central City Parking Review (CCPR). The strategy includes a process and criteria to evaluate and adjust office parking ratios after higher levels of transit service are available. The strategy also establishes a program to levy charges on surface parking remaining after higher levels of transit service are available, and the principles for public parking investments.

The reduction of office parking ratios over time is based on the goal of increasing non-auto mode split over time. Vehicle Parking Demand and Parking Ratios analysis, contained in the Technical Report and modified to reflect relatively high employment densities (200-225 sq. ft./employee) and relatively low office turn-over rates (1.15-1.2/day) conclude that a non-auto mode split of approximately 20% supports an office parking ratio of approximately 3.4 spaces/1000 square feet. A mode split of approximately 40% supports a ratio of approximately

* Rapid Bus improvements would include an added 40 buses/hour and an additional transit capacity of 2,560/peak hour. LRT would add an additional 24 trains/hour and an additional transit capacity of 7,968/peak hour.

2.5 spaces/1000 square feet. By increasing transit service and reducing minimum office parking ratios over time, the CCTMP mode split goal of 30% for North Macadam can be achieved and even exceeded.

1. Establish baseline Entitled Parking available for all office, residential and commercial developments within NMD. Baseline entitled parking reflects the 2020 goals for transit service, and will be considered "by right" parking. It is strongly encouraged that entitled parking be provided in structures, but surface parking is allowed with limitations. Structured parking is exempt from maximum FAR calculations, and additional locational and design standards and/or guidelines may apply. See Table 2.

2. Establish additional Transitional Parking for office uses that will decrease as transit capacity in the District increases to specifically defined levels. The addition of transitional parking with entitled parking is based on achieving, at a minimum, Metro Title 2 maximum parking ratios for Zone A locations when basic transit service is available. Transitional parking is subject to entering into a development agreement with PDC. It is anticipated that transitional parking will likely be provided on surface lots that will later be redeveloped for office, housing or mixed-use proposes. If Transitional Parking is provided on surface lots after the assessments described in element 4 below are completed, and parking ratios for office uses are reduced, a levy may be imposed on the surface lot spaces.

3. Utilize the Central City Parking Review (CCPR) process for non-office developments to exceed baseline entitled parking. Up to 60 parking spaces is allowed where the total number of parking spaces on a site is less than 61. More than 60 spaces are subject to CCPR. See Table 2.

Table 2
Parking Ratios and Requirements

Use	Baseline Entitled Parking	Maximum with Transitional Parking to 2002[1]	Maximum with Transitional Parking to 2007	Maximum with Transitional Parking to 2014	Maximum with Transitional Parking after 2014
Residential	1.75 spaces/ unit	1.75 spaces/ unit	1.75 spaces/ unit	1.75 spaces/ unit	1.75 spaces/ unit
Office Employees	2.5 spaces/ 1000 sq.ft.	4.1 spaces/ 1000 sq.ft.	3.4 spaces/ 1000 sq.ft.	3.0 spaces/ 1000 sq.ft.	2.5 spaces/ 1000 sq.ft.
Other Uses and Visitors	60 spaces total	Additional spaces subject to CCPR	Additional spaces subject to CCPR	Additional spaces subject to CCPR	Additional spaces subject to CCPR

[1] Basic Transit Service is achieved when the criteria for designation of Zone A is achieved, per Metro Title 2 requirements. Criteria is when 20-minute peak hour transit service is available to an area within one-quarter mile walking distance for bus transit. That criteria will be met when bus service is extended into the district concurrent with improvements to Bond Street, planned for 2002.

4. The TMA in cooperation with the City and Tri-Met, will conduct a comprehensive assessment of the transitional parking strategy by July 1, 2007 and again by July 1, 2014. The purpose of the assessments is to re-evaluate transitional parking ratios based on transit service existing and planned, and to recommend appropriate amendments to the Portland Zoning Code. Require that the City Council approve any changes to the parking ratios. As a result of the re-evaluation, transitional parking may remain, be reduced or be eliminated. As a part of the assessments, the TMA will consider and recommend a levy program on surface parking spaces utilized for Transitional Parking.

   General criteria for modifying office parking ratios are summarized below. Table 3 establishes standards for transitional parking compared to the peak hour transit service capacity extrapolated from Table 1.

   - The maximum office parking ratio is 4.1 spaces/1000 square feet until transit service which meets the criteria for Metro Title 2 Zone A is met. Once the criteria is met, the maximum office parking ratio is 3.4 spaces/1000 square feet.

   - When transit service within NMD exceeds 1500 peak hour transit capacity up to 4000 peak hour capacity office parking ratios will be reduced to 3.0 spaces/1000 square feet. There will be no reductions to office parking ratio of 3.4 before July 1, 2007.

   - When transit service within NMD exceeds 4001 peak hour transit capacity, or the streetcar is extended to the southern end of the NMD and is operational, whichever occurs first, office parking ratios will be reduced to 2.5 spaces/1000 square feet.

Table 3
Maximum Office Parking Ratios and Peak Hour Transit Service

Approximate Year, Subject to Assessment	Total Peak Hour Transit Capacity	Maximum Office Parking Ration (Spaces/1000 sqft.)
Prior to 2002	**NA**	**4.1**
2002-2007	**576-1500**	**3.4**
2007-2014	**1501-4000**	**3.0**
2014+	**4001+[2]**	**2.5**

   - Transit capacity is available and convenient to NMD riders, that is, seats/spaces are generally available during peak hours.
   - Transit markets (destinations where high levels of work based trips desire NMD) are served by transit service.

[2] 4001 peak hour transit capacity, or the streetcar is extended to the southern end of the NMD and is operational, whichever occurs first.

- A service plan is in place for a minimum of 3 years to maintain the transit capacity established at the time of the assessment. If a plan does not exist, then no changes will be made to the parking ratios.
- A service plan is approved for a minimum of 3 years to start and maintain any increase in transit capacity assumed in determining any modification to the parking ratios.

5. The TMA in cooperation with the City and Tri-Met will evaluate actual transit capacity and available service within the District at least every three years. If after 2007 an interim evaluation concludes that transit capacity has decreased more than 25% from the 2007 levels, parking ratios will be adjusted in proportion to the peak hour transit capacity shown in Table 3.

6. Shared use of residential and non-residential parking spaces will be permitted.

7. Principles for Development Agreements

   Development Agreements to contain parking management provisions:
   - Requires property/building owners to support transit and transportation initiatives;
   - Requires property/building owners to participate in TMA;
   - Requires property/building owners to agree to provisions of the Transit, TMA and Parking Strategy;
   - Establishes the authority to implement transit service/parking ratio decisions
   - Establishes authority to levy charges on surface parking lot spaces.

8. Public Parking Strategies

   The necessity for an aggressive public parking strategy is warranted by recent financial analysis[3] which concludes that most development products are not financially feasible at this time, and that a significant development cost is associated with parking, especially structured parking. Resources available for public parking, particularly from tax increment, are limited, particularly during the early years of the urban renewal program. Therefore, the public role related to parking needs to be strategic and opportunistic, and will change over time.

   a. A specific public parking strategy will be prepared by PDC, in cooperation with the TMA. The strategy will be revised in coordination with the parking assessments described in item 4.

   b. The principle objective of the short-term strategy (until 2007) is to support and enhance private development opportunities. Specific programs will be designed as part of development agreements with property owners. Elements of the strategies may include:

[3] North Macadam Residential & Office Financial Pro Formas, E.D. Hovee & Company, August, 2000.

- All on-street parking to be metered. Metering for visitors and long-term use should be considered,
- Loans made which are designed to reduce parking development costs,
- Financial participation in constructing portions of private parking structures, with authority to manage public spaces as needs within the district change,
- Acquisition and improvement of public parking facilities, both short-term surface lots and longer-term parking structures,
- Authority to acquire privately developed surface parking lots,
- Other as identified in development agreements.

c. The principle objectives of the mid and long-term strategies are to support short-term and visitor parking needs, to support the construction of private parking structures, and to facilitate the transition of surface parking lots to more appropriate uses.

DRAFT WORK PROGRAM

Phase 2-Transportation Demand Management (TDM) and Partnership Plan

1. Identify stakeholders and organize advisory groups
   a. Form stakeholder and advisory groups including:
      - City (PDC, BOP, PDOT, etc)
      - Tri Met
      - Metro
      - Businesses (NMDC)
      - Property Owners (ETAL)
   b. Develop work plan for forming a transportation management association (TMA)

2. Review and confirm primary recommendations from:
   a. Transit Service Plan
   b. Parking Strategy

3. Review transportation demand management (TDM) options
   a. Private sector strategies
   b. Public capital strategies
   c. Public service strategies

4. Assess TDM options for impact/effectiveness on alternative transportation use

5. Develop draft TDM plan
   a. Employer incentives
   b. Marketing programs
   c. New transit service plans
   d. Capital investments
   e. Operations plan
   f. Other

6. Review and evaluate draft TDM plan

7. Prepare recommended TDM plan
   a. Plan elements
   b. Standards
   c. Evaluation measures
   d. Plan assessment and refinement method(s)

DISTRICT-WIDE ENVIRONMENTAL DESIGN

DISTRICT-WIDE ENVIRONMENTAL DESIGN

Introduction

This section provides supporting information for Section F of the *Recommended North Macadam Plan*. It addresses the following subjects related to multi-objective stormwater management and "green" building techniques.

- The **Ecoroofs** section discusses the components, benefits, costs and maintenance associated with the use of ecoroofs.

- The **Landscape Systems** section reviews the use, types and design of landscape systems. In addition, descriptions of the various types of landscape systems are provided.

- The **Green Building Policy** section describes the Portland Development Commission's (PDC) requirements and standards for earth-friendly designs and materials in new development.

Ecoroofs

An ecoroof is a lightweight, low-maintenance vegetated roof system used in place of a conventional roof. The City of Portland is encouraging the use of ecoroofs as part of its efforts to promote sustainable development. This means using practices that respect natural systems and limit impacts on the environment. Sustainable development practices promote environmental, economic, and social health today, while also protecting and sustaining the well being of future generations.

The *Recommended Zoning Code for North Macadam* provides a floor area bonus for development of an ecoroof.

Benefits of an Ecoroof

Based on documented experience and studies, an ecoroof offers several important benefits not found in conventional roofing.

- Captures and evaporates from 10 to 100 percent of the precipitation that falls on it. This reduces the volume and speed of stormwater runoff leaving the site, helping prevent sewer overflows and protect receiving rivers and streams.
- Lowers the temperature of stormwater runoff, which helps maintain the cool stream temperatures needed by fish.
- Cools down roofs and reduces the "heat island" effect, which is heat radiating from roofs, roads and other surfaces.
- Improves outdoor air quality by decreasing air temperatures and reducing smog. Each square yard of an ecoroof removes nearly half a pound of airborne particles a year. On average, 16 square feet of uncut grass produces enough oxygen to supply one human.
- Increases vegetation and wildlife habitat on urban sites that typically have neither.
- Provides insulation and lowers cooling costs for the building.
- Provides an attractive alternative to a conventional roof.
- Lasts twice as long as a conventional roof, saving replacement costs and materials.
- Creates a market for recycled materials.
- Creates jobs in multiple industries.
- Is an approved stormwater management technique under Portland's *Stormwater Management Manual* requirements for new development and redevelopment.
- Can earn floor area bonuses in Portland's Central City Plan District, increasing the building space that would otherwise be allowed.

Where Ecoroofs Can Be Used

- Ecoroofs can be located on flat or pitched roof structures up to a slope of about 40 percent (or 5 in 12 pitch). They can be used on most types of commercial, multifamily, and industrial structures, as well as single-family homes and garages.
- Ecoroofs can be used for new construction or to re-roof an existing building.

Costs

It is important to note that there is a wide range of costs, depending on many factors. Installation of an ecoroof costs from $10 to $25 per square foot (sf). This includes

materials, labor, and structural upgrades. A conventional roof installation ranges from $3 to $20 per square foot. As the ecoroof market develops, costs may decrease.

Although ecoroofs initially cost more than conventional roofs, they are competitive on a life-cycle basis because of reduced maintenance and replacement costs.

Components of an Ecoroof

Ecoroof configurations vary, but typically include the following elements:

- Structural roof support sufficient to hold the weight of the ecoroof
- Waterproof membrane (impermeable liner)
- Root barrier (if needed)
- Drainage layer (if needed)
- Growth medium (soil)
- Vegetation with the following attributes:
  - Drought-tolerant, requiring little or no irrigation after establishment
  - A growth pattern that allows the plant to thoroughly cover the soil
  - Self-sustaining, without the need for fertilizers, pesticides, or herbicides
  - Able to withstand heat, cold, and high winds
  - Very low-maintenance, needing little or no mowing or trimming
  - Perennial or self-sowing
  - Fire resistant

  A mix of sedum/succulent plant communities is recommended because they have these attributes. Herbs, forbs, grasses, and other low groundcovers can also be used to provide additional diversity and aesthetics; however, these plants may need more watering and maintenance to survive and keep their appearance.
- Gravel ballast (if needed)
- Drain. As with a conventional roof, an ecoroof must safely drain runoff from the roof. It may be possible to drain the runoff to a rainwater harvesting system (such as rain barrels or cisterns).
- Irrigation (likely to be needed during the establishment period and possibly during drought conditions). The goal is to minimize the need for irrigation by paying close attention to plant selection, soil, and various roof characteristics.

Operations, Maintenance and Replacement Needs

Similar to conventional roofs, ecoroofs require some degree of care to maintain optimum function.

- **Vegetation.** Periodic inspection (at least twice a year) is needed for any type of ecoroof to ensure drain inlets are not blocked. It is also important to check the health and coverage of the vegetation; some replacement or filling may periodically be needed. Depending on the design, some plants may "brown out" or almost disappear from sight; however, they are still viable and will revive once the rainy season begins. It is advisable to check the ecoroof at least once a year during a rainstorm to ensure there is no significant water ponding.

Depending on the planting method, weeding and mulching may be needed during the establishment period. Depending on the desired aesthetics, some weeding and mulching may also be needed beyond the establishment period.

- **Fire Safety.** Sedum and other succulents are naturally fire resistant, almost eliminating fire concerns. Other types of vegetation could be of concern and need to be watered, mowed, and/or maintained to prevent fire. Depending on the seasonal rains in Portland, it is generally best to mow a non-irrigated grass roof before July.

- **Access.** Most buildings have mechanical units on the roof, which require access for operations and maintenance. These should be identified during the design phase, and access paths of gravel or other inert materials provided. In cases where access is needed only once a year, no path is required because the vegetation can tolerate some foot traffic.

- **Leakage.** An ecoroof is no more likely to leak than a conventional roof. If a leak does occur, it is not necessary to dig up large areas to reach it. Because ecoroofs are thin, they can easily be removed and replaced in mats or sections.

- **Replacement**. According to various sources, the typical lifespan for an ecoroof is about 40 years, significantly longer than a conventional roof. This is because the membranes are of good quality and the plants and growth medium protect the membrane from weathering.

Typical roofs can be as much as 50 degrees warmer than summer ambient temperatures. Covered with soil and plants, roofs would not get nearly that hot. At the same time, the greenery protects the roof below from sunlight and temperature extremes, the two forces that cause roofs to breakdown and require repairs.

Permits Needed

<u>For Re-roofing</u>

- A building may need upgraded structural support for an ecoroof, although many existing buildings are structurally sound enough. In either case, a signed document from a structural engineer is required in order to receive a building permit from Portland's Office of Planning and Development Review (OPDR).

- An ecoroof may require alteration of downspouts or other piping, requiring a plumbing permit from OPDR.

<u>For New Construction</u>

- For new development and redevelopment projects, an ecoroof permit is obtained through the standard application process.

- The ecoroof and other stormwater management elements must be reviewed by the Bureau of Environmental Services to verify that the ecoroof's construction meets the City's *Stormwater Management Manual* requirements or for floor area bonus approval.

Examples of Ecoroofs

The City of Portland has helped install ecoroofs as demonstration projects at the following locations:

- Hamilton West Apartments Building (SW 12th and Clay)
- Buckman Terrace Apartments (NE 16th and Sandy)
- Jean Vollum Natural Capital Center (NW 10th and Flanders)
- Whitaker Pond Shelter (NE 47th and Columbia Slough)
- Columbia Boulevard Treatment Plant

Landscape Systems

Landscape systems are low-lying vegetated areas that filter, detain, and/or infiltrate stormwater.

- They improve water quality by filtering out or breaking down ("treating") stormwater pollutants.

- They slow down the rate of stormwater flow.

- They allow stormwater to infiltrate (soak) into the ground, reducing the volume that leaves the site.

Landscape systems can use a variety of vegetation, including trees, shrubs, grasses, and ground covers. They are simple, technically sound strategies. They have modest maintenance requirements and are often less expensive than conventional stormwater management approaches. Landscape systems can be very pleasing to the eye, and can be integrated into the overall site landscape design.

Use of Landscape Systems

Landscape systems can be applied to a wide range of situations. They adapt easily to specific site conditions, from low-density development such as single-dwelling residential to moderate densities such as office parks, schools, and churches. They can also be integrated into higher-density urban development that has little landscaping area, but needs to be designed and constructed to ensure plant survival.

The *Recommended Zoning Code for North Macadam* allows landscaping between buildings and rights of way in order to allow landscaped storm water management systems. In addition, the transportation concept calls for landscaping within specific accessways and the greenway design may include landscape systems. In addition, landscape systems can be incorporated into existing building sites or parking lots, as well as included in new development, if adequate land or space is available.

Types of Landscape Systems

- **Vegetated swales** are long, narrow, shallow landscape depressions that treat stormwater as it flows from one end to the other. They are easily integrated into residential or nonresidential sites that include landscaping areas. They are an attractive, inexpensive technology commonly used to handle runoff from rooftops and parking lots.

- **Vegetated filters** are densely vegetated landscape areas that treat sheet flow (as opposed to channeled flow) from adjacent impervious areas. They are commonly used to handle roof runoff from residential and small commercial buildings, as well as from walkways, trails, small roads, and parking areas. They are very simple and can be incorporated into existing landscaped areas.

- **Flow-through planters** are vegetated structures that can be constructed in a variety of sizes, shapes, and materials. They have an impervious (waterproof) bottom or are placed on an impervious (hard) surface so stormwater does not infiltrate into the ground beneath them. After the stormwater flows through, it is collected in a perforated pipe at the bottom of the planter and routed to an acceptable disposal or conveyance system. Flow-through planters are a good option for treating roof runoff and providing an attractive planting area at sites with space constraints. They can be located next to building foundations or in other situations where infiltration is a concern.

- **Infiltration planters** are vegetated structures that can be constructed in a variety of sizes, shapes, and materials. They are similar to flow-through planters, except that they allow stormwater infiltration into surrounding subsurface soils. They are suited to well-draining soil types.

- **Vegetated infiltration areas or basins** are shallow landscaped depressions that collect, filter, and infiltrate stormwater runoff. They can be as simple as a yard or vegetated area receiving runoff from a downspout disconnection or paved area. They are most often applied to parking lots or residential landscaped areas with relatively shallow slopes. With well-draining soils, vegetated infiltration areas/basins can provide complete onsite stormwater disposal.

- **Trees** capture and hold rainfall in leaves and branches, allowing for high levels of evaporation. They reduce stormwater flow volumes by 35 percent or more for small storms. Trees also benefit water quality by filtering rainwater and holding soils in place, which is especially important along stream banks. They provide shade that lowers air and runoff temperatures and reduces energy needs for cooling buildings. Trees are suitable for all soil types and in almost any location, and are highly recommended as a stormwater management technique.

Design of Landscape Systems

When deciding which system or combination of systems to use, the designer must consider the drainage area the system will treat, the slope of the system and the site that drains to it, soil and subsurface soil conditions, and the seasonal depths of the ground water table. Design configurations vary widely.

Green Building Policy

In January 2002, the Portland Development Commission (PDC) adopted a *Green Building Policy* for publicly funded, private-sector development in the city. New development receiving financial assistance through PDC is now required to feature "earth-friendly" designs and materials. Containing rigorous high-performance building standards, the new policy further implements the *Green Building Policy* adopted by Portland City Council in January 2001. The city policy requires all city-funded (capital improvement) and city-financed projects to adhere to certification standards set out in the U.S. Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED) standards.

The Portland Development Commission, as one of the main agencies associated with city-funded or financed project development, is integrally involved with the application of this policy. The Portland *Green Building Policy* states that the Portland Development Commission will "adopt green building policy goals and incorporate green building practices into each of its ongoing and future program areas." Program areas include all active urban renewal areas and any future urban renewal areas (including North Macadam), development loan programs and grant fund programs. All program areas shall adhere to these standards unless explicitly identified as exceptions by the commission.

Commission staff discussed the policy with stakeholder groups and individuals, including the Association for Portland Progress (APP), Building Owners and Managers Association (BOMA), Associated General Contractors (AGC), the Home Builders Association, the American Institute of Architects (AIA) and others, all of which have provided either support for the policy or constructive comments regarding its implementation.

The Commission's goal is to become the leading redevelopment agency in the country on issues related to "green" or high-performance building development. The PDC *Green Building Policy* discusses the rationale for Commission action in this arena, sets standards, and lists initial and future steps the Commission will take to facilitate the development of high-performance buildings and sites. Many Commission projects are already incorporating green development techniques, including LEED certification, in their design and project scopes.

The PDC *Green Building Policy* reviews the range of project types the Commission develops and finances, and sets tiered standards for incorporation of high-performance building techniques, according to development type. The policy includes the following core elements, to be implemented immediately.

- *Primary Standard*. Unless specifically mentioned elsewhere, all development projects (including commercial, institutional, mixed-use, and high-rise residential project types), where PDC project financing is at least $200,000 and where the total project is 10,000 square feet or more, will be required to meet the LEED certified standard. Projects will be encouraged to meet the requirements for the more stringent

"Silver" standard or higher, as appropriate. This requirement applies to new construction and major retrofits.

- All industrial and low-density housing development will be encouraged (but not required) to meet the certified standard.
- Tenant improvements (TI) do not trigger a requirement to meet the LEED certified standard. PDC will review and incorporate the TI Green Building Guidelines currently under development by the City's Bureau of General Services and Office of Sustainable Development (OSD).
- Public infrastructure, including rights-of-way and utilities, are not required to be built to the LEED certified standard. PDC will participate in the City's current process to identify and implement green infrastructure technologies and construction practices.
- All affordable housing proposals will be required to meet the threshold criteria in *Greening Portland's Affordable Housing* and encouraged to meet as many of the preferential criteria as possible. These proposals will not be required to meet the LEED certified standard. These criteria will be reviewed annually.
- *Exception Process*. The commission may grant full or partial exceptions as necessary, including for issues related to the following: historic preservation or extraordinary costs associated with development. Since a project can often be certified via the LEED program without additional cost, projects seeking an exception will need to show how meeting LEED requirements will significantly impact the project. In addition, OSD staff will review all projects seeking an exception. OSD staff will provide recommendations to the commission.

Automatic exceptions apply to the storefront program, projects funded by the Seismic Loan Program for code-required structural upgrades, and all buildings under 10,000 square feet. *In all cases, projects will still be directed to incorporate green building techniques in all aspects of design and construction wherever possible.*

In order to implement these standards, the PDC *Green Building Policy* also includes other recommended actions that may be implemented by the executive director and the commission staff as necessary, including the following:

- Modification of the Commission's mission statement to include the goal of community sustainability.
- Dedication of appropriate resources for ongoing green building coordination.
- Creation of a Design Assistance Fund to ensure smaller development firms can incorporate high-performance techniques in the project design phase.
- Collaboration with the Office of Sustainable Development to construct an online referral Web site, where developers and others are directed to information related to materials, design strategies, etc.
- Continuation of efforts to pursue sustainable industries and assist local firms to increase resource efficiency in their operations and practices.

- Partnership with the Office of Sustainable Development to recognize local developments that further the commission's sustainable development goals, including high-performance buildings.
- Becoming a founding member of the Natural Step organization and joining the United States Green Building Council.
- Working with Portland State University to develop sustainable development curricula, with a focus on improving international dialogue.
- Continuing to work with the Office of Sustainable Development and the Office of Commissioner Dan Saltzman to promote high-performance buildings and sustainable site development throughout Portland.

DISTRICT DEVELOPMENT

DISTRICT DEVELOPMENT

Introduction

This report provides the following information that supports Section G (District Development) of the *Recommended North Macadam Plan*. The **Executive Summary, Financial Issues Impacting the North Macadam District** summarizes an analysis of the impacts on the near-term public investment strategy citing the imbalance between private investment needs and the availability of public funds on a cash flow basis. It also analyzes the impacts of changed conditions and proposals on the long-term tax increment capacity of the District.

Executive Summary, Financial Issues Impacting the North Macadam District

1. During the next 10 years, the potential tax increment financing (TIF) capacity in the district may be up to $50 million (in constant 2001 dollars). To achieve this level of TIF capacity, the near-term development proposed by Oregon Health & Sciences (OHSU) and North Macadam Investors, Inc. (NMI) and currently identified RiverPlace development projects must be completed pursuant to their schedules.

2. The projected 10-year TIF capacity is about one-half of that desired to achieve a balanced set of public goals, including infrastructure development, transportation facilities, affordable and mixed-income housing, greenway and riverbank improvements, open space amenities, business recruitment, facilities to attract the bio-science industry, etc.

3. While the report does not recommend a 10-year funding plan, it found that there could be sufficient TIF capacity to implement the basic infrastructure required for development, including the major road and utility improvements, and streetcar to RiverPlace. Some funding for extending the streetcar to the central sub-district and participating in the aerial guideway, if approved by Council, could potentially be available, but would need to be augmented with additional sources. However, the timing of many improvements may not follow an ideal schedule that meets all of the proposed development objectives.

4. While there may be sufficient TIF to implement a basic infrastructure plan, the timing of public amenities, such as the greenway, full funding for affordable housing, parks development, etc, would have to be deferred unless non-TIF sources are identified.

5. In addition, there are severe cash flow difficulties to manage over the next 10 years. A significant chicken-and-egg problem exists wherein TIF is needed for infrastructure projects that may be a pre-requisite for early NMI/OHSU development, while the NMI/OHSU development is needed to create the tax increment to pay for these improvements. Given the City's current financial condition and the hesitation of the Office of Management and Finance (OMF) to borrow against anticipated tax increment, some of the transportation improvements that are desired to coincide with the opening of the initial development projects may have to completed later, unless alternative funding sources are secured.

6. To address these cash flow challenges, PDC, in cooperation with other City Bureaus, NMI, OHSU and other North Macadam property owners, must develop a revised funding strategy for the district and consider the following:

    - Identify public improvements and amenities that are good prospects for federal funding and take steps to make these projects eligible for federal funds, including preparation of environmental impact statements.

- Identify innovative methods to advance the availability of anticipated TIF revenues, such as employing state programs as credit enhancements or borrowing mechanisms.

- Consider broader use of Local Improvement Districts (LID) and non-TIF funding sources and re-arrangement of public-private funding responsibilities.

- Identify opportunities and methods for deferring public improvements without hindering near-term development potential for NMI/OHSU.

7. Viewed on a long-term basis, a combination of factors are creating an imbalance between the tax increment generating potential of the North Macadam District and the demand for TIF-funded improvements and amenities. This issue is heightened by changes in conditions and expectations since the Framework Plan first accepted in 1999 and the companion urban renewal plan was adopted.

    - Of the 142 acres comprising the North Macadam District, the 1999 Framework Plan left about 84 developable acres after accounting for land used for roads, parks and greenway improvements.

    - Given the wider greenway widths being proposed, the greater non-property tax paying institutional presence in the district (assuming no "in lieu of" payments) and the amount of non-property tax paying or tax-abated affordable housing, the amount of property tax generating land in the district is in the 50-60 acre range.

8. These non-tax increment-generating activities fulfill a broad range of public goals. The identification of their impacts on tax increment generating capacity is not intended to recommend they not be done, but to clarify that the funding plan for North Macadam must be significantly modified.

9. Successful completion of the proposed North Macadam vision will require substantial additional resources, including City, state, federal and private funds. The original 1999 public funding plan, which was 90 percent dependent on TIF, cannot accommodate the changed development vision currently being proposed for the District.

10. The greater development densities and heights now being proposed for the District may replace some of the tax increment generating capacity used by non-property tax paying activities. The high-density condominiums proposed by NMI may demonstrate the market feasibility of higher density ownership housing, but there may be challenges in accomplishing higher density apartments and office development that is not related to institutional uses. PDC will need to continue to work with the private development community to gauge the likelihood of these proposed densities and their impact on TIF generating capacity.

Appendix

North Macadam Plan Compiled Responses (From the February 2002 Open Houses)

Introduction

On February 5 and February 9, 2002, the North Macadam Core Group hosted open houses on the proposed concepts for the North Macadam Plan. The open houses featured a series of graphic displays on the proposed plan concepts and the proposed revisions, including the following topics:

- Project context and vision
- Historical land uses
- Land use concepts
- Transportation concepts
- Greenway and parks concepts
- Development standards
- Building types
- Bonus incentives
- Stormwater treatments
- Timeline and process
- Potential names for the plan area

Open house attendees were given handouts detailing many of the elements of the proposed revisions. Comment sheets were provided for responses to the proposals and concepts. Approximately sixty people attended the two open houses. Fourteen completed comment sheets were returned. This report represents the compiled responses returned to the Bureau of Planning by February 28, 2002.

How this section is organized

This section is organized using the same order as found on the comment sheets given to open house participants. There are four general topics each followed by one or more subtopics. The general topics and subtopics are:

I. Transportation:
- **Street Plan**

II. Parks, Greenway and Open Space:
- **Greenway**
- **Parks**

III. Land Use and Code:
- **Concept Vision**
- **Development Standards**
- **Parking**
- **Bonus Options**

IV. Naming the Plan Area

The question or concept asked on the comment sheet is highlighted in bold typeface. It is followed by the respondents comments, grouped so that similar responses are together. The number of similar answers is evaluated and appears to the right of the heading for a group of similar comments. This summary heading is followed by the specific comments. The specific comments are bulleted and are the direct quotes from respondents. In some cases, individuals also provided general comments regarding a specific topic. These remarks are at the end of each topic.

I. Transportation Concepts

Street Plan

1. In the north of North Macadam, the proposal shows River Parkway located between the Greenway and private development. The alternative River Parkway alignment locates the street one block west of the Greenway.

Prefers proposed alignment -2

- Proposal makes pedestrian walk on river more secure. Gives more open space around it.
- Placing River Parkway between the Greenway and private development helps to define public and private space and allows the public close vehicular proximity to river/river views. This would be preferable.

Prefers alternative alignment - 8

- I prefer the alternative alignment.
- One block west of the Greenway is best.
- Variety is a good thing.
- Prefer River Parkway, away from the Greenway, one block west.
- The alternative is much better.
- Prefer the alignment a block west of the Greenway. Makes it less of a barrier; makes the Greenway and development more continuous.
- Alternative is okay.
- I prefer the alignment that has River Parkway double-loaded.

Other comments - 2

- I think linking the development directly, as proposed in the south area, would be more successful. Locating this street directly adjacent to the Greenway might limit access. Would one block west alignment provide a better pedestrian linkage to the Greenway and avoid current problem at Naito Parkway?
- I think the regional connections used in the South Portland Transportation Study should be examined and put on this plan.

2. There are two possible locations for the Streetcar as outlined on the maps. Do you have a preference and, if so, why?

No Preference - 3

- No preference.
- No preference. Either way the walking distance seems reasonable and logical.
- No preference.

Prefers the Moody/Bond alignment - 5

- Prefer the alignment further from the river. Preserve the river area's continuity. People will walk 2 – 3 blocks if the streets are well designed.
- Not on riverfront.
- I tend to like the two-block separation. Would potentially offer a higher level of service.
- Put the streetcar on the Moody/Bond couplet. Interior of district desperately needs some amenities and/or attractions.
- The closer to a central spine, the better.

Prefers the River Parkway alignment -1

- Prefer River Parkway route, as it would provide a more enjoyable view while riding on the streetcar.

Other comments - 4

- Prefer northbound on River Parkway
- Streetcar on Moody and River Parkway is best. Bond is bad.
- The thinking seems to be that the Portland Streetcar will in time be extended to Lake Oswego. I disagree. By its nature, the Portland Streetcar can not supplement future congestion of Highway 43. A reasonable southern limit for the line should be Boundary Street or the north end of Willamette Park. South of this point, something like the MAX cars but diesel powered needs to be used. The weak point of MAX is in downtown Portland where the running is slowed by too many stops and the length of the trains is restricted to two cars. Moody, south of Gibbs, needs to be planned to accommodate light rail operation. If streetcars can reasonably share the alignment with it then fine, but I suspect it would be better to keep them separated. The interests of North Macadam are important, but they need to be balanced with the need of the area south of it.

  Ideas have recently surfaced about putting I-5 under the Willamette River. This would be good for the Central Eastside, and it would also be good for the North Macadam District. I-5 is a kind of Chinese wall. I-5 re-graded to tunnel under the Willamette River would allow better connections to the city west of the Interstate Freeway and would therefore be a good thing.
- Prefer the third option, southbound streetcar route along eastern edge of plan area; potential for green street.

3. The proposed zoning code would ratchet down allowed office parking as the plan area develops and transit service increases over a 20-year period.

Positive response - 8

- Good.
- Great idea.
- Excellent.
- Okay.
- This is good for supporting the 30 percent mode split.
- Excellent. The Macadam area should enter the 21st century.
- Yes, yes, yes. This area is perfectly suited to bicycle and alternative transportation modes.
- Sounds good.

Other comments - 2

- A good idea only if there is adequate parking accessible to public transportation. As currently designed, there is not dedicated parking to access streetcar line.
- This is a good idea, but what about MAX being a bigger player?

4. The vision for North Macadam incorporates a concept known as "green streets" or "enhanced pedestrian streets." These types of streets can be used to manage stormwater, provide additional on-street landscaping, and/or offer visual connections to the Greenway.

Likes the idea - 12

- Good.
- A good concept. Make sure the streets are accessible to bikes and that speeds are low.
- More right-of-way views to river.
- Strongly agree with this concept.
- Excellent concept. But I hope not an overall policy. Streets need to be "urban" as well. Some need to be hardscaped and places for performance, art, and experimental design opportunities.
- Sounds very good.
- Important, yes.
- Great idea.
- Very good, natural way to control stormwater. Keep future costs down.
- Just have architects design these solutions, not engineers.
- Excellent concept for driving a strong concept into a functional beautiful thing. The environmental design concepts will further enhance the idea of being compatible with the rest of the river edge.
- This street typology is excellent. The District is the perfect setting for these types of street (due to its proximity to Waterfront Park and the Greenway, streetcar service, long and linear north/south layout.)

5. Additional comments about Transportation Concepts- 2

- The impacts of additional vehicles on Macadam Avenue remain unmitigated.
- The east-west pedestrian connection should link to the *SW Urban Trails Plan's* crossing at Barbur at Whitaker.

II. Parks, Greenway and Open Space Concepts

GREENWAY

6. The proposed concept requires a 100-foot setback from the top of the bank provided through zoning regulations. This provision allows for some variations within the area between 80' and 100' from the top of the riverbank.

Agrees with 100 foot minimum setback - 7

- Okay – this should be the minimum.
- 100 feet should be the minimum setback.
- Good idea.
- Okay.
- This is a great improvement over current code.
- Okay.
- Excellent. The planning team has demonstrated that these dimensions will accommodate a variety of conditions.

Thinks that 100 foot minimum setback is too much - 1

- 50 to 75 feet from top of bank.

Thinks that 100 foot minimum setback is not enough - 1

- Personally, I believe the Greenway should be 150 feet to successfully accommodate its intended uses (recreation, transportation and habitat). It certainly shouldn't be less than 100 feet anywhere.

Thinks that there needs to be greater flexibility - 3

- I think this would be acceptable provided there is an aggressive program of stormwater management. Strict setback only limits design potential, and should be relieved when project dictates.
- 100 feet is not enough for a public park, yet probably compromises land owners development goals. I'd prefer a variable setback that allows for a more diverse edge condition and tension between buildings and the river.
- Some possible exceptions should include the ability to site some restaurants near the river's edge. The hierarchy of greenspace makes good design sense. The idea of an undulating built edge brings identity of a dense planning concept.

7. The proposed Greenway concept includes a trail with separate areas for bicycles and pedestrians.

Likes the concept - 10

- Good. The pedestrian path should be close to the top of riverbank in places.
- Design this to minimize bike/pedestrian conflicts. The trail is a key piece, and will become more important over time as the OMSI-Springwater trail is developed.
- Excellent idea.
- Great idea.
- This is an idea whose time has come. As more people use the Greenway, the more we need this separation.
- Good idea. There are many complaints heard about conflicts between older pedestrians and bikes.
- Good idea, one path will have accidents.
- Bikes, rollerblades, and skateboards need enough room away from pedestrians.
- Excellent. Walking/running/strolling with carriages conflicts with bicycles, rollerblades, skateboards, speeds, though all are considered "pedestrian" activities.
- I like splitting the bike/pedestrian modes.

Has concerns about the concept - 4

- Maybe some places, not the two continuous trails everywhere.
- I'd like to see an alternative study. A dynamic, single changeable, sculptured form. A flowing sculptured form with eddies and architectural edges, 18 feet to 40 feet wide.
- Good idea but in some cases it may not be needed.
- Should not be visual separation, don't make "tunnels" for pedestrians, not safe.

8. The proposed Greenway concept includes three functional bands running parallel to the river. The three bands are:

- **Area closest to bank is primarily habitat.**
- **Middle area allows for pedestrian and bicycle trails and some passive recreation.**
- **Area closest to development is a transition area and may provide recreation, cafes, outdoor displays, visual amenities, and other activities.**

Likes the idea - 8

- Okay, but see above. (100 foot minimum setback, and a pedestrian path close to the top of bank in some places.)
- Okay.
- Good separation of functions. Make sure habitat plantings don't "cut off" the visual connection to the river.
- As long as there are two or three points where people can directly access the water, this is a good idea.
- Good idea.
- Fine.
- Get a great designer to design park and don't tie their hands with too many restrictions.
- Excellent. A clear and simple strategy to organize Greenway, yet allow flexibility for a wide range of uses.

Has concerns about the idea - 5

- This zoning troubles me. It is too static. Why can't a pedestrian or bicyclist engage the river with a cantilevered bridge and overlooks? I'm not convinced this is "prime habitat" and even if it was, I'm not convinced human interaction is detrimental. If we want habitat we should work on water quality in the whole system and not be deterred by 1000 feet of a 200-mile system.
- Yes, but it would be nice to have a "landing" for non-motorized water craft, canoes, rowing, etc, or a water taxi to OMSI, etc.
- The first two bands are vital for providing habitat, some recreation and transportation. However the third band should not be a commercialized zone. After all, the proposed amount of parkland has been reduced because of the enlarged Greenway, but if this increase is compromised by commercial uses, there is a net decrease in public/recreational land.
- There should be an occasional place that humans can get to the river's edge, while still protecting fish.
- How about 2 or 3 areas that "small" buildings such as restaurants could infringe upon. "Being on" the water makes a great destination. (Example- Coal Harbor, Vancouver, BC, Canaros Restaurant), otherwise great.

PARKS

9. The proposed concept, as shown on the maps, includes a variety of park types distributed through the plan area. Does this particular distribution work for you? What would you change to make it work better?

Likes the proposed parks concept - 6

- Okay.
- I like the idea of the river edge as the primary "park" with green streets connecting back to the varying sized neighborhood parks. The idea of "park" needs study. Public urban spaces need to embrace a contemporary expression and language.
- Yes.
- I like the concept of smaller parks throughout the district.
- A variety of smaller pocket parks are great. It is a fine balance between buildings and urban parks.
- Yes, given that the Greenway is a linear park.

Has concerns about the parks concept - 6

- You don't need park types with all that Greenway. Okay with the Ross Island Bridge Park changes.
- I think there needs to be definite ideas about the character of each "room" of the (Greenway) park. Otherwise it becomes an extension of Waterfront Park, which suffers from a lack of definition.
- The proposed parks distribution works partially. I have a concern about the recreational area being of sufficient size to accommodate sports, such as baseball or soccer.
- The parks need to be natural. There needs to be something more in the north.
- Okay or less inboard parks.
- Parks need to be placed to support the activities around it, not just arbitrarily placed with certain acreage.

10. The urban plaza is proposed to be in the north of the plan area and serve the needs of both residents and employees. The size is one-half acre, adjacent to private development, possibly at a node near Arthur Street.

Likes the proposed urban plaza - 4
- Okay.
- A good location if pedestrian access to downtown and Corbett/Terwilliger neighborhoods is provided. Need to consider noise abatement from adjacent freeways.
- Good.
- Good location for a public, open space element.

Does not like the proposed urban plaza - 4
- No.
- Prefer an urban plaza north of Gibbs at Tram landing.
- Keep the area more natural and less urban.
- I like this park next to the bridge but could this be the area that engages the river?

Has concerns about the proposed urban plaza - 3
- Even if privately developed, these spaces must be available to the public 24 hours a day and welcoming to all. Even private development has public responsibility.
- This plaza should not intrude into the Greenway setback. It should have some amenities such as fountains and art to be attractive to all.
- Urban plazas are of dubious values in the north. They must be very well designed, which I haven't seen in Portland yet.

11. Ross Island Bridge Park is proposed as a continuous, east-west pedestrian connection with the potential for daylighting stormwater channels. This park could include active recreation, natural, and urban characteristics.

Likes the proposed Ross Island Bridge Park concept - 8
- Okay.
- Okay.
- Consider continuing this park across Macadam, I-5, and up to Marquam Hill.
- One of the best ideas related to this project.
- Good, should definitely have skate park here, to give kids a place plus help divert skaters from where you don't want skating.
- This park makes a lot more sense at this increased size. The daylighting concept is inspired and would truly link the uplands to the river.
- Good!
- The size and location and orientation of this public park (including use of Ross Island Bridge as a prominent "marker") are excellent.

Has concerns about the proposed Ross Island Bridge Park concept - 3
- A park under a bridge? Needs to be a great design without being clammy.
- If the smaller internal parks were more urban in character this would be a good place for active recreation fields. Defer 'man-made streams' to the presence of the river itself.
- Potential for active recreation is good but please limit or eliminate urban characteristics.

12. The neighborhood park space is proposed to be accommodated in three smaller park spaces, primarily surrounded by residential land use. Instead of one park, the proposal is to create a one-acre park and two half-acre parks. These parks will provide a number of program opportunities and meeting places for residents. Design features include open lawns, ornamental planting, art, water features, spray pools, benches and tables, stormwater treatment, native plantings, and a children's playground.

Likes the proposed neighborhood park concept - 6

- Given planned density, this makes sense.
- Good, good, good.
- Surprise pocket parks are an okay idea, but park on river should be main focus.
- Good.
- Parks should support the activities of the master plan and not be mandated in terms of acres. Sometimes smaller parks are better.
- Smaller parks with residential amenities sound great, assuming residential point towers do not conflict with solar access.

Has concerns about the proposed neighborhood park concept - 4

- All good ideas, but frankly I don't foresee this being a family residential zone. More attractive to young professionals, singles, and senior business executives.
- Sounds good, but you must be careful about these spaces trying to accommodate everything. Too much "program" equals visual clutter and confusion and not enough free flowing experience. Not sure "stormwater management" can/should be accommodated in small urban spaces and if they are they should be handled more as sculpture and less as a naturalistic process.
- Perhaps two somewhat larger parks would be better.
- I am very concerned about the ever-decreasing park area. If we get 100 – 150 feet of Greenway, which would shoulder most of the open space, it would be okay. My experience with pocket parks is that the public uses them very little.

13. Additional comments about Parks, Greenway and Open Space Concepts - 2

- Interior of district needs some public amenities and/or attractions. Please bring back "Barcelona Plazas" or some other urban open space concept.
- It is essential to establish the "top of bank" as the point from which we measure the Greenway.

III. Land Use and Code Concepts

THE CONCEPT VISION

14. The vision for North Macadam is of a mixed-use urban neighborhood that recognizes and celebrates this area's unique relationship to the river.

Likes the proposed vision - 6
- Okay.
- Good.
- Good.
- Good idea.
- Yes.
- Excellent, given the district will be supported by streetcar service.

Has concerns about the proposed vision - 7
- 50 foot (Greenway) is plenty.
- Yes, but just what is this relationship about? Preservation? Rehabilitation? Recreation? Creative expression? Can we both live and learn from our relationship to the river?
- The concept of the district's unique relationship to the river should not be interpreted as a commercialization of the river.
- It is time to emphasize architectural design excellence to define project.
- Mixed development is good, but let the buildings soar, not a grid of heavy boxes like the Pearl District.
- Include light rail and streetcar in the vision statement, otherwise it is an excellent vision.
- No one seems concerned with the long-term economic efficiency of this project. Just as businesses must increasingly become efficient to survive so must governments. With all these fine ideas (and there are many) with this project there seems to be little concern with the long term cost to the city of Portland to operate and maintain it. It would seem like many of the ideas submitted would support efficient city operation but does anyone really know?

15. The vision for North Macadam includes a multi-functional Greenway and internal parks integrated with residential buildings and commercial office space.

Supports this vision statement - 7
- Good.
- Excellent.
- Good.
- Very good idea.
- Yes.
- Good.
- Excellent, given the district will be supported by streetcar service.

Has concerns about this vision statement - 3
- Need tighter development to be viable neighborhood.
- Yes, but can the industrial history have a voice too? How to incorporate affordable housing?
- Greenway and parks should be the focus.

16. The vision emphasizes employment (approximately 10,000 jobs) through office, institutional and research uses, with a strong residential focus (approximately 3,000 units).

Supports this jobs/housing vision - 6

- Okay.
- Yes.
- Good.
- Good.
- Good.
- Excellent, given the district will be supported by streetcar service.

Has concerns about this jobs/housing vision - 5

- The 10,000 jobs pose scary implications for traffic on Macadam.
- What about retail? These people will be sort of landlocked and will want shopping, restaurants, corner grocery within walking distance.
- What about affordable housing?
- I would like to see more emphasis on housing.
- High density with active uses at street level. Face the garages with town houses like they do in Vancouver, BC.

17. The vision for North Macadam integrates the natural qualities of the restored riverfront areas with new urban development.

Likes this vision - 8

- Good.
- Stronger urban development, not a garden or a park.
- Excellent.
- Good.
- Idealistic, but give it a try.
- Yes.
- Fine.
- Excellent, as long as the district will be supported by streetcar service.

Has concerns about this vision - 4

- I'm troubled by a restored riverfront if it prohibits use and access and experience. I have confidence in the adaptability of nature especially in urban environments. Habitat to meet human/cultural needs and not for its own sake in urban areas.
- Commercial activity should not intrude into the Greenway setback. Where private activities (like restaurants) are adjacent to the Greenway, there should be bollards to delineate the private and public spaces.
- Fish habitat should not dominate Greenway design.
- Some places along the river need to be accessible for people and viewing spots.

DEVELOPMENT STANDARDS

18. What are the most important urban design issues that should be considered in any revisions to the building height and allowable mass in North Macadam?

- 1. Greater height at edge of Greenway equals wider Greenway.
  2. Limit mass of tall buildings near Greenway, i.e. through use of towers.
- Tall, thin buildings to keep view of river, etc.
- I think this plan sends a pretty clear message to single family residences in the Corbett Lair Hill neighborhoods that their days are numbered. Not being a resident, I feel this may be appropriate as an evolving land-use district. I am sure they will oppose these plans vehemently, however.
- Hiding I-5 and keeping tall buildings away from the river.
- Height for green space/public space. Tall/slender versus big and bulky. Roof decks and hanging gardens.
- Traffic (auto) congestion. Lack of light from sky because too many buildings, lack of views.
- That building heights will not overwhelm pedestrians, especially along the Greenway. Views from surrounding neighborhoods need to be protected. Building mass is another concern, need step-backs that are significant.
- Stay back from the riverbank. Keep view corridors. Be aware of shadows cast on Greenway.
- Go high, create excellence in design
- If Portland really wants to respect the urban growth boundary, it needs to embrace taller buildings with more density. Cities are wonderful, take the handcuffs off Portland building heights.
- Higher floor area ratio and selected higher building heights make a hierarchy at key points in the plan.
- Given "green" street typology in right-of-way and streetcar service, 100% building coverage, higher FAR's greater height limits. FAR's should be at least 12:1 to accommodate the 250 foot height limits.
- There should be a provision in the zoning code to accommodate active uses and to provide scale through building heights, setbacks and front doors, street level town houses, etc.

19. The proposed zoning code would include some changes to the current allowable floor area ratios and building heights.

Supports this change - 5

- Okay.
- Good.
- Higher floor area ratio and selected higher building heights make a hierarchy at key points in the plan.
- Go high with excellent design.
- Yes, the Macadam Area should enter the 21st century and stop being a 1970's style suburban office park or equally dated 1970's pseudo-waterfront-resort condo.

Has concerns about this change - 2

- Okay, but how high is too high? Are we talking 40 stories?
- Building heights should not overwhelm pedestrians, especially along the Greenway. Views from surrounding neighborhoods need to be protected. Building mass is a concern. Buildings should incorporate significant step backs.

20. The proposed zoning code would require development to step back from Greenway:

- **within 100 feet of the top of bank, building height could be no more than 2:1 FAR and 75 feet, (in cases where building encroachment is allowed in Greenway setback);**
- **between 100 and 150 feet from top of bank, building height could be no more than 4:1 FAR and 125 feet;**
- **beyond 150 feet from top of bank, building height could go up to allowed maximum of 250', with applicable height and FAR bonuses.**

Supports this concept - 4

- Good idea.
- Okay.
- Good idea.
- Go high.

Has concerns about this concept - 5

- Extremely dense. I question whether developers will want to take that big of a risk, but it doesn't hurt to try. Will there be a minimum density requirement?
- Isn't the top of bank a somewhat arbitrary man-made condition? If an improvement can be demonstrated, can't its location be altered as well? Isn't it time to rethink the industrial look, feel and location of the top of bank and thereby building locations and heights? (Dreaming a bit, I realize).
- Concern about encroachment. 75 feet is too close. Also concerned about how increases to FAR close to the Greenway.
- The proposed FARs are too small. They should be at least 6:1 minimum to give flexibility to construction types. Low FAR equals wood frame sub-human construction. Need to promote concrete slabs and frame construction. Also where building commercial developments, FAR should go to 12:1 in the area of the 250-foot height limit, with 10,000 square feet of floor. 6:1 is suburban, we cannot park underground and parking garages would take up 4:1 FAR. The height and FAR need to match and 250 feet of height will need a 12:1 FAR minimum. Floor plates need to be at least 10,000 square feet and 85 percent to 88 percent efficient to work.
- Yes, but FARs are on the small side.

21. The proposed zoning code would limit floor area in relation to building heights to promote narrower buildings.

Supports the concept - 7

- Yes.
- Excellent.
- Yes.
- Yes, this would provide light, air and views to SW Hills. Sounds nice and humanizing.
- Yes.
- Good.
- Good.

Has concerns about the concept - 5

- FAR should go to 12:1 250-foot height limit, with 10,000 square feet per floor. 6:1 is suburban.
- Go high. Allow architects enough leeway to design great buildings.
- Okay as long as this results in good building design, if not then this is pointless.
- How are elevations of parking podiums addressed?
- Viability of "point" towers should be demonstrated. I prefer higher FARs given that structured parking must be built above ground; the FARs should be at least 12:1 to allow enough floor area for a point tower on top of a parking podium.

22. The proposed zoning code would require windows above the ground floor to cover at least 15 percent of the area of street-facing facades within 200 feet of the streetcar alignment.

Supports this proposal - 5

- Okay.
- Yes.
- This should be a requirement everywhere in the district.
- Yes.
- Fine.

Has concerns about this proposal - 5

- More than 15 percent would be better.
- Just what does this mean? Show me delineations and diagrams.
- This is not enough. The requirement should be more than 15 percent.
- No "prescriptive" codes in this district. Let's do "subjective".
- Percent glazing requirements are meaningless. More important is a balance of human activity with a beautiful built environment.

23. The proposed zoning code identifies a specific required residential area. Projects would be required to include one dwelling unit for every 500 square feet of net site area.

Supports this proposal - 6

- Okay.
- Okay.
- Okay.
- Good.
- Good.
- Yes.

Have some concerns about this proposal - 4

- Interesting idea. May limit development potential. Might encourage development partnerships on adjacent parcels if that is allowed.
- How many new residential units? 3000 sounds good.
- Can you force a developer into doing housing in a commercial area? Yes!! But this will limit the diversity of developers that are strictly commercial.
- How would this actually work in the area where there is office and research emphasis?

24. The proposed zoning code would allow stormwater management features within building setbacks when buildings are required to be within 12 feet of the lot line.

Supports this proposal - 5

- Okay.
- Good.
- Yes.
- Yes.
- Okay.

Does not support this proposal - 6

- No.
- Interesting idea. May limit development potential. Might encourage development partnerships on adjacent parcels if that is allowed.
- What are the implications for the public spaces? What does this do to usable street space?
- I would like to see a much greater allowable building setback (like in Vancouver BC's West End). I like the allowance for water features.
- As long as they are designed well.
- Inflexible outcomes.

25. The proposed code would require locker rooms in any building over 100,000 square feet.

Supports this proposal - 5

- Okay.
- Sure helps bike commuters, no?
- Good, this should not be a bonus.
- Okay.
- Good if no FAR bonuses are involved.

Has some concerns about this proposal - 3

- Let's do a community health club.
- What does this mean, does the code require work-out areas?
- Is this bicycle storage or showers for people? We need both.

PARKING

26. The proposed zoning code would prohibit surface parking within 200 feet of the streetcar.

Supports this proposal - 9

- Excellent. Don't turn streetcar into downtown parking shuttle.
- Good.
- Good.
- Yes!
- Yes.
- Very good.
- Good.
- Yes, prohibit parking near the streetcar.
- Should prohibit parking especially parking lots adjacent to the Greenway.

Does not support this proposal - 1

- No.

27. The proposed zoning code would prohibit surface lots larger than 40,000 square feet.

Supports this proposal - 6

- Yes.
- Good.
- Good.
- Prohibit surface parking lots altogether.
- Surface lots should not be allowed, they should be prohibited.
- Surface lots should be prohibited altogether. Allow only loading/ADA parking on surface, structure all other.

Has concerns about this proposal - 2

- Larger lots should be allowed.
- Double yes! But parking lots designed as plazas might not be so bad.

28. The proposed zoning code would cap the total amount of allowed surface parking in the plan area to 200,000 square feet.

Supports this proposal - 3

- Good.
- Very good.
- Good.

Does not support this proposal - 7

- No.
- Surface lots should be prohibited altogether. Allow only loading/ADA parking on surface, structure all other.
- Although I realize that the property owning stakeholders need some surface parking, I think it should be prohibited.
- It's hard to grasp this. It is nearly 5 acres. Again, new design standards need to be investigated.
- Temporary surface parking will evaporate.
- Is there an overall strategy for parking solutions?
- There should be a zero tolerance policy, there should be no surface parking allowed except highly regulated temporary parking as part of a planned development project that clearly included structured parking in the foreseeable future.

29. The proposed zoning code would allow for temporary surface lots that will be redeveloped over time.

Supports this proposal - 4

- Good.
- Okay, but they too must be designed elements.
- Yes, temporary surface parking will evaporate.
- Temporary surface parking lots will evaporate.

Has concerns about this proposal - 8

- Limit these. They will take on a life and a constituency of their own.
- No.
- Sure, but how would you actually make sure that these lots are only temporary?
- Surface lots should be prohibited altogether. Allow only loading/ADA parking on surface, structure all other.
- Yes, but be careful that they are actually redeveloped.
- "Temporary" needs to be defined and put into law. People will try to bypass this provision in time.
- These should have to be landscaped.
- Good, as long as properly landscaped.

30. The proposed zoning code would ratchet down allowed office parking as the plan area develops and transit service increases over a 20-year period.

Supports this proposal - 9

- Good.
- Yes.
- Okay.
- I agree.
- Yes, yes, yes!
- Good, this supports a good mode split.
- Good, a lot of people won't need cars.
- Yes, but make sure that light rail goes through here.
- This good idea needs to be well written, as people will try to bypass this in time.

Has concerns about this proposal - 1

- A good idea only if there is adequate parking accessible to public transportation. As currently designed, there is no dedicated parking to access streetcar line.

BONUS OPTIONS

31. Bonus floor area and height are given in exchange for certain amenities. The proposed zoning code would limit the number of allowable bonuses. Which of the following amenities should be encouraged through the Zoning Code:

- ❑ **Eco-roofs**
- ❑ **Affordable housing**
- ❑ **Provision of additional Greenway**
- ❑ **Payment into a Greenway/open space fund**

Supports the suggested bonus options - 3

- Supports the ones mentioned.
- Supports all the bonuses offered here.
- The options provided are good in theory.

Prefers to limit the bonus options - 4

Greenway only

- Provision of additional Greenway should be earning the most bonus. Also allow bonuses for affordable housing, and payment into a Greenway/open space fund.

Greenway and housing only

- I like a limited number of ways to get bonuses so as to put more emphasis on getting what the public wants like Greenway and housing.

Eco-roofs and affordable housing only

- Eco-roofs and affordable housing should get bonuses. There is a delicate balance of how many parks an area will support. The last thing you would want is two or three high rises dominated by greenspace. Consider energy-efficiency design, use of recycled building materials, water reclamation as amenities.
- Require eco-roofs, some affordable housing. Shouldn't have to make deals for developing this area. This is prime property on the river.

Concerns about eco-roofs - 1

- I have a concern about eco-roofs. Can these really provide a benefit? Can you be sure that they will be maintained?

In addition to the bonus options suggested, there should also be additional bonuses - 4

- Is there something to encourage all built projects will be well designed?
- There should be a bonus provision to encourage active use wrapping garage podiums (Vancouver townhouse model). Height is not the issue, proposed floor area ratios do not reflect enough square feet to height ratio, same problem we have in the West End.
- Eco-roofs, affordable housing, additional Greenway, and payment into a park fund are all excellent amenities to encourage. Also consider wrapped parking podiums.
- The proposed heights are fine and adequate, but really this area needs bonus floor area.

Does not support the suggested bonus options - 2

- No bonuses.
- Let's go with an 8:1 FAR without bonuses.

32. Are there other public amenities that should be promoted through bonus height and floor area?

Does not support the inclusion of any other bonuses - 5

- No.
- No.
- Bonuses have been misused and abuse the intent of open spaces and the Greenway.
- No.
- Not using Dryvit or Hardy board at exterior elevations.

Supports the inclusion of additional bonuses - 4

- Daycare centers, bike lockers, mixed-use buildings.
- Allowing access to all, 24 hours a day, public means everybody, not just office workers, shoppers and consumers.
- Dryvit or Hardyboard at exterior elevations!
- Wrapping active uses around a parking structure: for every square feet of active use space provided at exterior street-facing elevations of parking structure, an additional square foot of floor area is earned.

IV. Naming the Plan Area

33. Do you think that North Macadam is the right name for this plan area? Of the names offered, which are your favorites in order of preference? Are there other names that should be considered if the plan area is to be renamed?

Likes the name North Macadam - 4

- Yes, the name is okay.
- It's okay, people are used to it.
- North Macadam is the best name for the district because that is what it is.
- North Macadam is fine, but go ahead and consider other names.

Does not like the name North Macadam and prefers another name. - 7

- Possibly South Waterfront. Other names on the list are forced and pretentious.
- Of the names offered, South Waterfront is the best.
- Names starting with Corbett and Terwilliger misrepresent the history of the CTLH neighborhood. The portion of CTLH mostly west of the plan areas is Lair Hill. So maybe call it Lair Hill Landing.
- Transportation Nightmares.
- I don't really like North Macadam. I like "Marquam Flats" as it emphasizes this district's crucial link to Marquam Hill. As an option, you might consider its traditional name, "South Portland."
- It's not a bad name. I like something with Landing in it like Macadam Landing. It suggests access, but please, let's make sure access to the river, the actual river is provided.
- The "Left Bank" is a good name.

Does not like the name but does not have another name to suggest - 4

- A new name would be good to indicate a new, more urban identity for the area.
- No, it is the wrong name. I thing that this district should be broken down into 3 smaller districts.
- Nothing with "Flats" in it. Something positive about the location that relates to the river.
- North Macadam is a bad name, but none of the offered names are any good either. Go back to the drawing board. You haven't thought of a good one yet.