South Bandon Refinement Plan

Prepared for

City of Bandon

Prepared by

SRI/SHAPIRO/AGCO, Inc.

Foster Consultants

June 30, 1997

South Bandon Refinement Plan
Project Report and Recommendations

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June 30, 1997

ACKNOWLEDGMENTS

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Staff of the City of Bandon (City), Coos County, and DLCD served on the management team for the project. City staff also provided background information and the logistical needs of the local workshop process.

The project team included:

- SRI/SHAPIRO/AGCO, Inc. (SHAPIRO), land use planning and environmental science;
- Robert Foster Consultants, urban design; and
- The Dyer Partnership, civil engineering.

The team also has benefited from concurrent work on a Transportation System Plan for the City of Bandon by JRH Transportation Engineering, Graham Carey, P.E., Project Manager.

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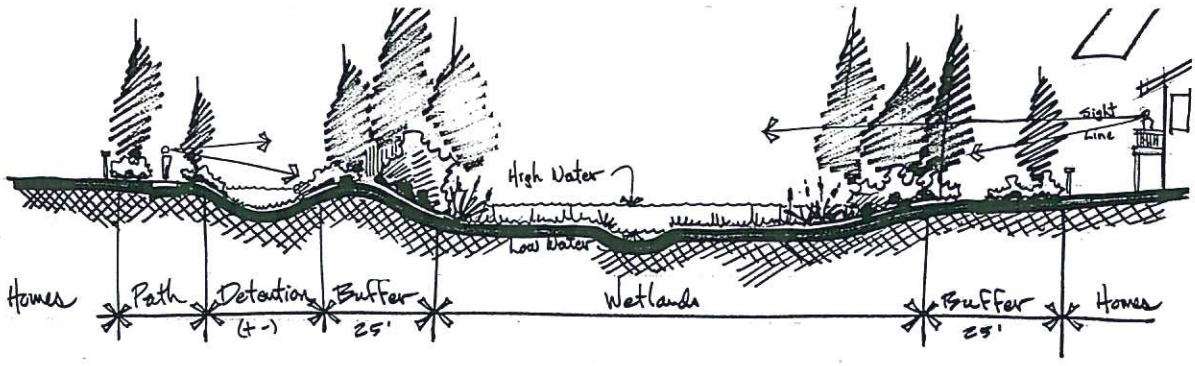
PURPOSE OF THE REFINEMENT PLAN

The study area, which is within the Bandon Urban Growth Boundary (UGB), has the potential for substantial urban development. Situated immediately south of the existing City limit line in the area between Highway 101 and the coastal bluff, it is a logical location for accommodating some of the City's residential growth needs. At present, however, most of the study area is outside the City and does not have City utility services.

There are indications that wetlands are present within the study area. Portions of the study area have been identified as potential wetlands on National Wetlands Inventory (NWI) Maps. Observations from site visits confirm that some drainageways, ponds, and depressions exhibit wetland characteristics. The specific locations of wetlands and the pattern of natural drainageways will be important factors shaping the long-term urbanization of the area.

Development under applicable Coos County standards likely would produce a large-lot pattern of homes on parcels of 1 acre or more, using on-site water and septic systems. Such a pattern would be in direct conflict with the long-term objectives of Bandon's Comprehensive Plan.

On the other hand, the City does not desire to suppress development under County standards until urban services are available and annexation occurs. The purpose of this study is to create a joint City/County strategy that will enable development to occur under County standards, but in a manner compatible with long-term future infill development.



There are four key components of the South Bandon Refinement Plan project:

1. An inventory of natural and cultural features;

2. Land use and circulation plans incorporating urban design concepts;

3. An Infrastructure Plan, addressing water, sanitary sewer, stormwater drainage, and local street system needs; and

4. A Growth Management Plan (GMP) covering:
   - Sequencing of development,
   - Strategies for implementation,
   - Suggested amendments to City and County plans and implementing ordinances, and
   - A cooperative agreement between the City and County to guide and direct implementation of the GMP.

THE REFINEMENT PLAN PROCESS

This outline describes the sequential approach used in the Refinement Plan process.

I. Background Research/Inventory

- Wetland Study
- Cultural Inventory
- Economic Scan

II. Site Visit and Community Design Workshops (April 21 through 23, 1997)

- Day 1
  - Meet with City Staff, and Engineering and Transportation Consultants
  - Meet with Key Property Owners
  - Develop Preliminary Design Concepts
  - Public Presentation and Feedback
- Day 2
  - Meet with City and County Staff
  - Develop Neighborhood Character Concepts
  - Develop Policies and Strategies
  - Public Presentation and Feedback
- Day 3
  - Summary Public Presentation and Feedback

III. Technical Analysis

- Utilities
- Storm Drainage
- Transportation

IV. Refinement of Concepts, Policies, and Strategies

V. Implementation Workshop (June 12 and 13, 1997)

- Day 1 (evening)
  - Present Preliminary Implementation Concepts to Key Property Owners and Citizens
  - Discussion and Feedback
- Day 2 (morning, early afternoon)
  - Meet with City and County Staff
  - Identify Implementation Issues
  - Develop Implementation Concepts, Policies, and Strategies
  - Public Presentation and Feedback

VI. Report and Recommendations

Figure 1 contains photographs of the Community Design Workshops held in April. Appendix A contains detailed process schedules for both of the workshops.

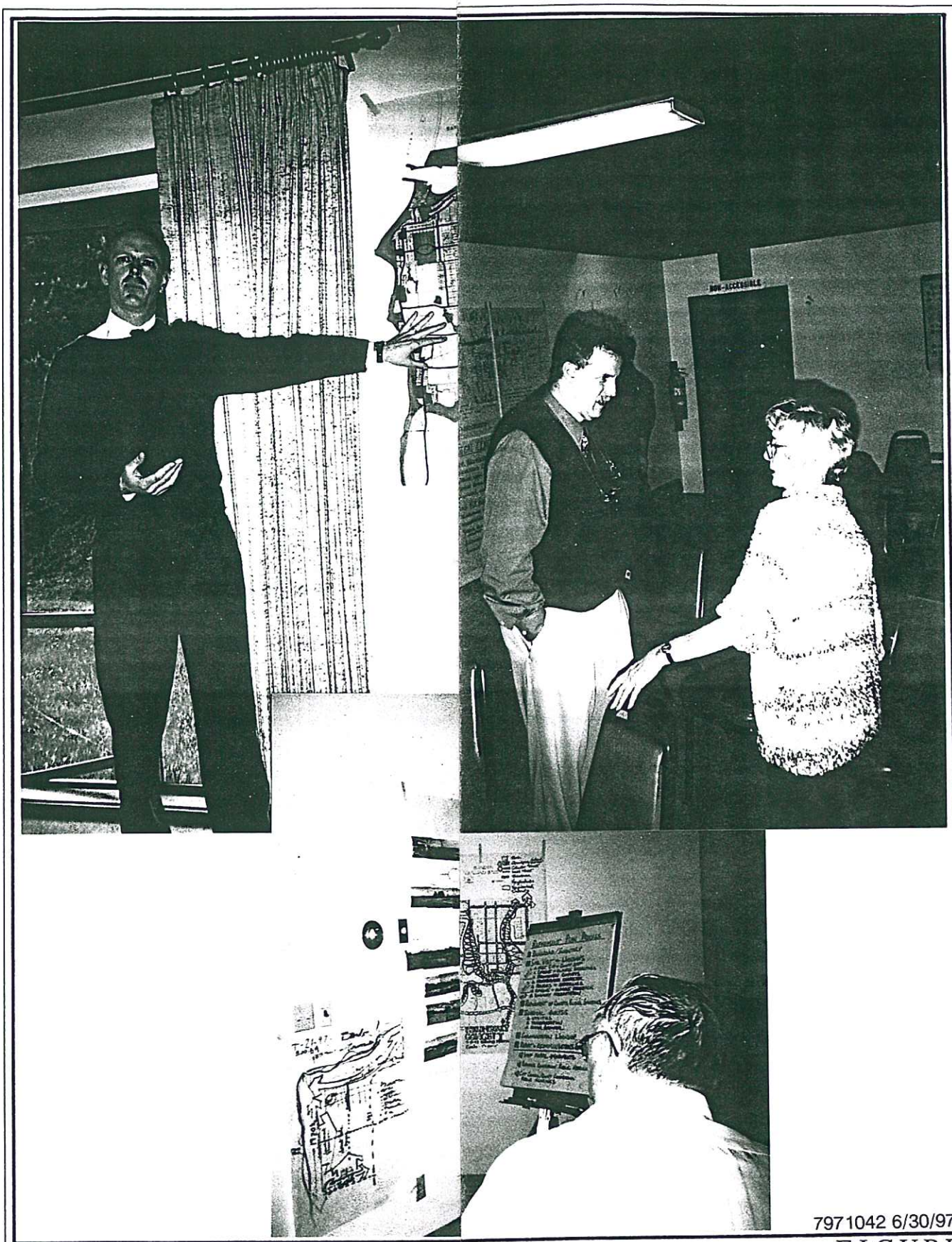


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FIGURE
1

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BACKGROUND, INVENTORY, AND TECHNICAL STUDIES

PHYSICAL INVENTORY

SHAPIRO environmental scientists performed a preliminary identification of potential wetlands and protected habitat areas within the study area. After reviewing a July 7, 1992 aerial photograph supplied by the City of Bandon, two scientists visited the site on April 1 and 2, 1997. The site investigation included an aerial fly-over survey and on-site inventory work.

The wetlands study yielded a map indicating the presence of three types of soil and topographic conditions: uplands, wetlands, and a mosaic of uplands and wetlands. Some areas were too overgrown with Irish gorse to be observed, and were identified as "inaccessible areas."

Based on the results of the wetlands study, the SHAPIRO team reviewed wetland boundary issues with the City of Bandon Planning Director. The consensus view was that the planning approach should seek to identify reasonable patterns of future development, leaving the specific determination of exact wetland boundaries to be performed in the course of the development permitting process.

SHAPIRO scientists also requested an Oregon Natural Heritage Program database search for any observations of rare, threatened, and endangered wildlife and plant species in the vicinity of the study area.

The Wetlands Study Map is shown in Figure 2. Appendix B contains project memorandums and correspondence related to wetland findings and habitat issues.

CULTURAL INVENTORY

Population Trends

According to figures maintained by the Center for Population Research and Census at Portland State University (CPRC), the City of Bandon's population was estimated at 2,610 in 1995 and 2,760 in 1996. This represents an increase of 150 persons, or 5.7%, in that year.

Between 1980 and 1990, Bandon's population declined by 3.8%. During the same period, Coos County's population declined by 5.9%, and the State of Oregon's grew by 8%. This downward trend (at City and County levels) had reversed in the early part of the 1990's: from 1990 to 1995, Bandon's population grew approximately 17.4%. A significant share of this growth is attributed to migration into the community by retirees. During the 1990 to 1995 period, Coos County's population grew 3% and Oregon's grew 10.2%.

SOUTH BANDON REFINEMENT PLAN

WETLANDS STUDY

WETLAND

WETLAND MOSAIC

INACCESSIBLE AREAS

UPLAND

STUDY BOUNDARY

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NORTH

0 600 1200

FEET

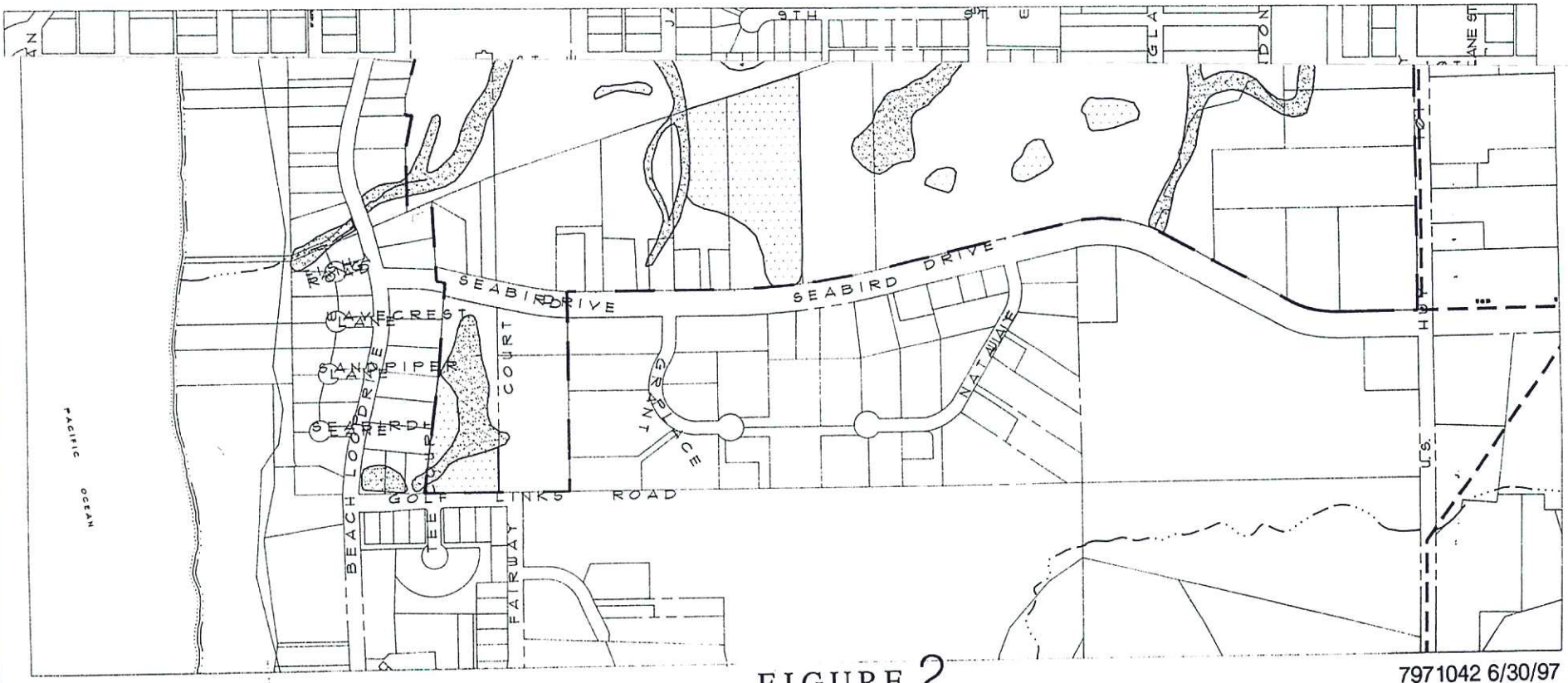

FIGURE 2

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Economy

The City of Bandon's median household income is relatively low. In 1990, Bandon's median income figure was $17,708, only 65% of the State of Oregon figure ($27, 250). Similarly, Bandon's 1990 per capita income figure is 79% of the State of Oregon amount ($10,569 versus $13,418).

According to profile information from Coos-Curry-Douglas (CCD) Business Development Corporation, Bandon's historic reliance on fishing, agriculture, and timber-related industries has, in recent years, given way to an economy increasingly shaped by tourism and related retail and commercial service businesses. Tourism and recreation opportunities are credited with fueling in-migration, especially by retirees.

Local business growth in recent years primarily has been in retail and commercial service sectors of the economy. By contrast, industrial activity and job opportunities, as well as the industrial real estate market, have been slow.

The Oregon Economic Development Department (OEDD) identifies lumber, fishing, and tourism as principal industries of the county, and lists fisheries, tourism, and forest products as "Key Targeted Industries (to diversify the economy of the region)." Strategies suggested by OEDD emphasize identifying and pursuing opportunities to perform value-added processing of local fisheries, forest, and agricultural products locally.

The study area is located near an industrially zoned area to the south, adjacent to the Bandon Airport. This industrial district is considered suitable for heavy and light industrial uses, as well as distribution and food processing. High-technology manufacturing or other uses could conceivably find such a location attractive; however, without access to a skilled labor base, it is unlikely that firms of significant size would locate in Bandon.

The industrial district near the Bandon airport is being considered for designation as an enterprise zone, which could enhance Bandon's prospects for job growth through industrial development. If such employment growth were to occur, the needs of working families would influence the local housing market, creating heightened demand for appropriate and affordable housing.

Existing Development Pattern

The City of Bandon's street layout and land use pattern have remained quite similar to the basic pattern established prior to the devastating Bandon fire of 1936. In recent decades, however, there has been increased demand for low-density homes in the area south of the City limits. As some of this development has occurred, cul-de-sac street configurations have cut off opportunities to achieve a connected network of local streets in the future.

In addition, wetland conservation regulations implemented by the U.S. Army Corps of Engineers (Corps), Oregon Division of State Lands (DSL), and Oregon Department of Environmental Quality (DEQ) will affect construction of streets, as well as private properties, to the extent fills and other modifications to jurisdictional wetlands will be necessary.

It is important that the City and County plan the network and standards for future roads within the study area, to:

- Minimize impacts on protected wetlands and riparian corridors;
- Align and space local street intersections along Highway 101 to reduce congestion and turning movement conflicts that degrade highway capacity and create safety problems;
- Achieve satisfactory road network connectivity within and through neighborhood areas; and
- Implement street design strategies that calm traffic speeds and reduce the tendency of neighborhood collector streets to function as "cut-through" routes for non-local traffic seeking to bypass congestion on major roads.

The "Donut Hole"

Piecemeal development has, over time, almost created a ring of annexed and developed properties around the large, relatively undeveloped Refinement Plan study area. Although it is within the City of Bandon UGB, most of the study area is currently in Coos County jurisdiction. As a result, it has come to be known locally as the "Donut Hole."

Prior to the 1970's, there was very little demand for residential development south of 13th Street. At that time, home building began to increase along the bluffs overlooking the beaches south of the City. On the other side of the study area, commercial development occurred along Highway 101, extending the City limits southward along the highway corridor.

In the 1980's, and particularly with construction of Seabird Drive, demand for residential development resulted in land subdivisions and construction along that road.

Continued piecemeal development of land within the "Donut Hole" under present Coos County development standards would very likely conflict with the long-term objective of efficient urbanization and provision of public utility services.

Status of Land Use and Development Policies and Regulations

Land Use and Zoning

The study area is within the City's UGB, but has not yet been annexed into the City. As a result, most of the study area is under Coos County jurisdiction and subject to County zoning codes. County zoning designations within the study area include Commercial (C-1) along Highway 101, Urban Residential-1 (UR-1) in the western portion of the study area, and Urban Residential-2 (UR-2) in the eastern portion (except along Highway 101). In general, these County residential zones require a minimum 1-acre parcel size, and allow the use of on-site drinking water wells and septic systems. Figure 3 contains a map of City and County zoning within the study area.

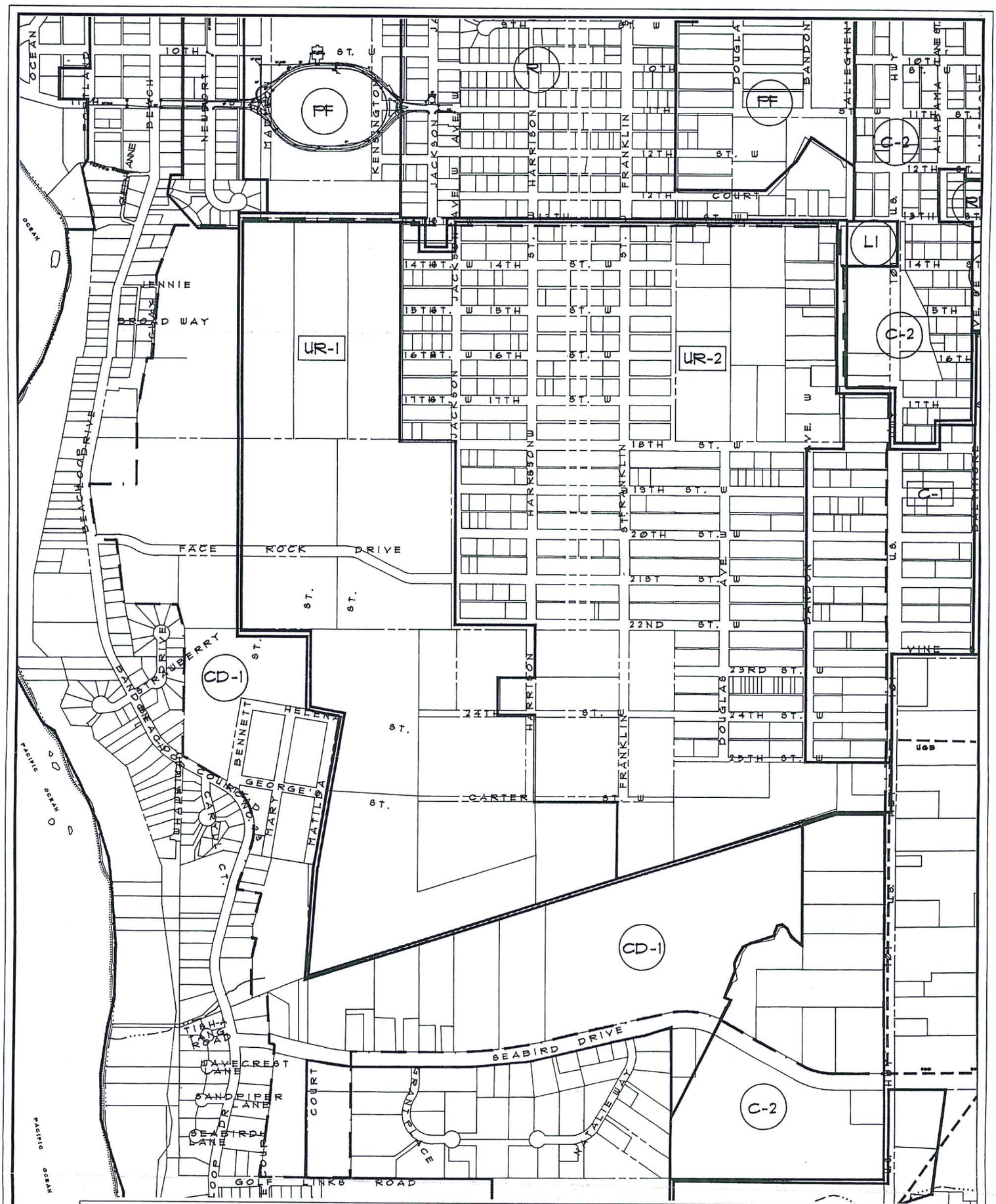
Table 1. Summary of Existing County Zoning Designations in the Study Area

County Zone	Description/Purpose	Key Characteristics
Commercial (C-1)	Provides commercial retail and service opportunities within UGBs; recognizes existing commercial uses outside UGBs.	Minimum lot size: no requirement.
Urban Residential (UR-1)	Provides for conventional detached single-family dwellings, manufactured homes, and duplexes within UGBs. Clustered detached single-family dwellings within a Planned Unit Development (PUD) are allowed.	Minimum lot size: 1 acre. Manufactured home siting standards are less restrictive than City's, require pitched roof (at least 3/12 pitch).
Urban Residential (UR-2)	Provides urban residential areas appropriate for single-family dwellings, manufactured homes, mobile homes, and duplexes within UGBs. Multifamily dwellings within a PUD are allowed.	Minimum lot size: 1 acre.

Along the western edge and in the southern part of the study area, land is in the City's Controlled Development-1 (CD-1) zone. In the southeastern corner of the study area, land is in the General Commercial (C-2) zone.

Table 2. Summary of Existing City Zoning Designations in the Study Area

City Zone	Description/Purpose	Key Characteristics
Controlled Develop-ment-1 (CD-1)	"[T]o recognize the scenic and unique qualities of Bandon's ocean front and nearby areas and to maintain these qualities as much as possible by carefully controlling the nature and scale of future development in this zone." [Zoning Ord., § 3.400] Provides for a mixture of residential, recreational, and tourism-oriented commercial uses. Single-family dwellings, manufactured homes, State Parks, residential care homes, and public utility facilities are permitted as of right. With Conditional Use Permit (CUP) approval, duplex residences, Planned Unit Developments (PUD's), governmental uses, and a variety of uses related to tourism (e.g., museums, information centers, hotels/motels, eating/drinking establishments, gift/craft stores, vacation rental dwellings, and parks and recreation facilities) are allowed.	Minimum lot size: Single-family dwelling, 5,400 square feet. Duplex, 9,000 square feet. Other uses, no requirement. Maximum structure height: West of Beach Loop Drive, 24 feet. East of Beach Loop Drive, 28 feet; up to 35 feet with CUP approval; 50 feet for government buildings and churches, subject to conditions [Zoning Ord. § 7.080(2)]. Maximum lot coverage: 50%. All homes are required to have at least eight out of the following twelve design features: garage of materials matching the residence; pitched roof (at least 3/12 pitch); gables; eaves (minimum projection 6 inches); tile or shake roof; dormers; minimum 2-inch offsets on building face or roof; cupolas; covered porch or recessed entry; recessed entry area: pillars or posts; bay windows; window shutters; horizontal lap siding.
General Commercial (C-2)	Provides for the general shopping, business, and commercial needs of the City and surrounding areas. A wide variety of commercial uses is allowed as of right. With CUP approval, single-family or multifamily residences, residential care homes and facilities, RV parks, drive-up uses, museums, information centers, food or dairy processing, governmental buildings, churches, and fuel dispensing, or storage facilities are allowed.	Minimum lot size: no requirements. Maximum structure height: 45 feet; 50 feet for government buildings and churches, subject to conditions [Zoning Ord. § 7.080(2)]. Maximum lot coverage: 75%.



City of Bandon and Coos County Current Zoning Within Study Area

City

- RI Residential 1
- C-2 General Commercial
- LI Light Industrial
- HI Heavy Industrial
- CD-1 Controlled Development, Zone 1
- PF Public Activity
- NR Natural Resources and Open Spaces

County

- UR-1 Urban Residential
- UR-2 Urban Residential
- C-1 Commercial
- Study Area Boundary

0 600 1200 FEET

NORTH

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FIGURE 3

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Design Requirements

- Single-Family Residential Uses: In the City's CD-1 zone, eight of fourteen design elements are required for "all homes" (see Table 2 above).

- Multifamily Residential: The study area is not within the City of Bandon's Architectural Review Overlay Zone. Projects are not subject to design review but must comply with building height, setback, and lot coverage requirements. Sign requirements are contained in Zoning Ord. § 3.440.

- Commercial: The study area is not within the City of Bandon's Architectural Review Overlay Zone. Projects are not subject to design review, but must comply with building height, setback, and lot coverage requirements. Sign requirements are contained in Zoning Ord. § 4.240.

TECHNICAL STUDIES

Water System

The City impounds surface water from Ferry and Geiger Creeks, and is currently working to develop a solution to a drinking water quality mandate imposed by the Oregon Health Division (OHD). The City has stopped all out-of-service area extensions until OHD's water quality mandate has been met and system capacity is increased. Recently, the City received voter approval of the bond issue necessary to proceed with water system improvements.

Sewer System

The City's current policy is not to provide sewer extensions beyond City limits. Annexation is required in order to connect to City sewer service (other than in extreme cases where public health and safety concerns require an exception).

Two key factors suggest that most of the study area cannot be served by gravity flows into the existing sanitary sewer system:

- Natural topography generally slopes to the south, and
- Existing City sewer lines to the north are not deep enough to allow gravity connections from most of the study area.

Options for providing sewer service to the study area are explored in a technical report by the Dyer Partnership. That report recommends the system include a series of pump station facilities, enabling the City's existing sewer system to accommodate development extending south of 13th Street, contiguous to the present City limits. Using this approach, the City's strategy for sewer system development can be a tool for positively influencing the location and sequence of development.

The Technical Memorandum prepared by The Dyer Partnership contains their analysis and recommendations on sanitary sewer service issues.

Storm Water Drainage

Within the project area, drainage is provided mainly by natural drainageways and man-made ditches. Many of the ditches are inadequately designed, constructed, and maintained to provide effective drainage. As a result, ponding is common.

Storm drain culverts have been installed at some locations to allow water to flow under existing roads. Most are along Beach Loop Drive. The capacity of these culverts to accommodate increased flows as a result of development is not known. West of Beach Loop Drive, erosion may become a problem in light of the steep cliffs that descend to the ocean beach.

The Technical Memorandum prepared by The Dyer Partnership contains their analysis and recommendations on stormwater drainage issues.

Transportation System

The City is currently in the process of preparing a new Transportation System Plan (TSP). The report and recommendations of the study, prepared by JRH Engineering, Inc., will be contained in a separate report.

CONSTRAINTS AND OPPORTUNITIES ANALYSIS

Constraints

- The broad, generally flat study area has natural drainageways, riparian corridors, and wetlands that divide the land into four segregated upland districts.

- Although public streets have been platted and dedicated, street construction has not occurred in most of the study area. In some locations, new roadways that do not match the platted street pattern have been graded within the past two years.

- The land ownership pattern consists of a few large, and many smaller property holdings. Development projects of significant scale are generally difficult if land in multiple ownerships must first be consolidated.

- Some holdings appear to contain little or no wetlands, but others appear to contain mostly hydric (water-bearing) soils or wetlands, imposing significant limitations on development potential.

- The area generally slopes downhill from north to south, away from the present City limits. As a result, using the City's existing sewer system to accommodate the study area's future sanitary sewerage needs will require the installation of one or more pump stations and pressure mains.

Opportunities

- Views of the ocean and beaches are not available from within the subject area, but riparian corridors and wetlands within the subject area can be used as scenic amenities for homes.

- Pedestrian trails alongside riparian and wetland corridors can provide off-street paths, for walking as a form of transportation as well as exercise.

- Natural boundary features create districts well suited to the creation of distinct neighborhood enclaves.

- Wetlands can be utilized to provide storm water detention, reducing damaging downstream impacts of development that increases stormwater runoff volumes.

Figure 4, the Preliminary Concept Map from the Community Design Charrette Workshop, illustrates how the study area's physical setting can create the framework for an interconnected network of streets and off-street paths, neighborhood districts and enclaves, and a series of "pocket park" features that distinguish each subarea.

SOUTH BANDON REFINEMENT PLAN

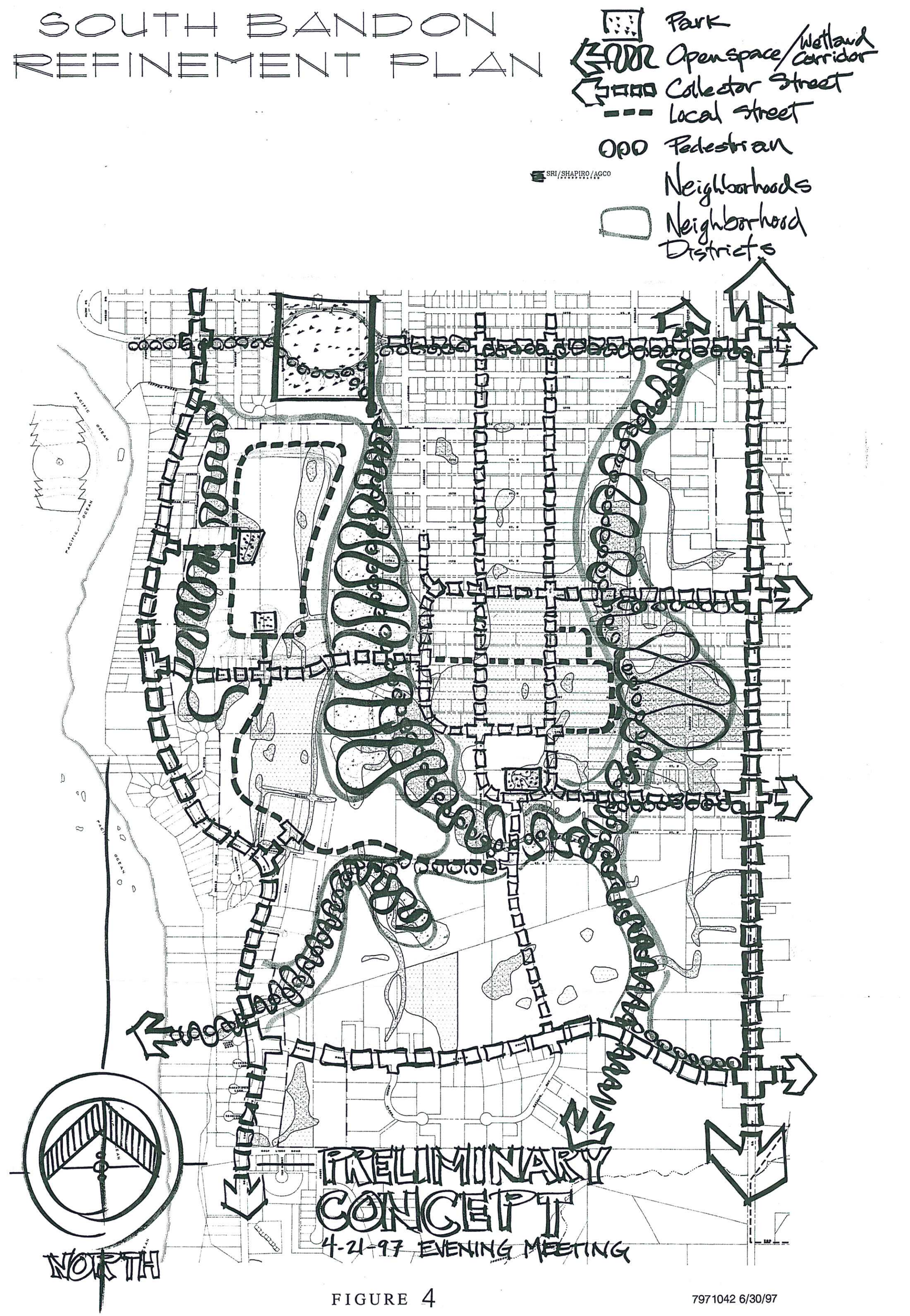

FIGURE 4

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Community Design Principles

COMMUNITY DESIGN PRINCIPLES

CREATE NEIGHBORHOODS

Neighborhood Center Focus

Ideally, a neighborhood is associated with a distinctive feature or place at or near its center. Any feature associated with the neighborhood can serve as its center: it could be a business district, a park, a plaza with a fountain or a gazebo, a church, a pond, a neighborhood store, a shopping center, a creek, or a boulevard. Primarily, it needs to be an attractive place where people like to gather or meet.

The Bandon Community Park is an excellent example of a potential neighborhood center.

Five-Minute Walk to Neighborhood Center

A five-minute walk corresponds to approximately a quarter-mile for most people. This fairly comfortable distance to walk, measured around the neighborhood center, yields the basic area people see as "belonging to" that center and forming an identifiable neighborhood. With a quarter-mile from center to edge, the "ideal" neighborhood measures approximately a half-mile square, containing about 160 acres.

Of course, neighborhoods are not in reality organized so precisely. These abstract characteristics flex and adapt in practice, as they are shaped by natural and man-made influences. To a great extent, good neighborhood design consists of using these characteristics as building blocks, and not attempting to stretch the limits too far.

The Refinement Plan study area, containing approximately 470 acres, can be expected to yield three, perhaps four distinct neighborhoods, based on its size and physical characteristics.

Defined Neighborhood Edges/Boundaries

In addition to being associated with a center, an identifiable neighborhood has well-defined edges. Natural and man-made barriers make excellent boundaries:

- Coastal cliffs, rivers, drainageways, and steep hills are examples of natural boundaries; and

- Railroad tracks, freeways, highways, and high-volume traffic streets that are difficult to cross are man-made edges.

An interesting feature of boundary elements is that they often have a complex set of roles or functions. For example, a street that forms the boundary of the neighborhood may at the same time serve its transportation and shopping needs, and provide a transition to the neighborhood on the other side of the street, acting like a seam that joins them.

Accessible, Connected Interior

A system of connected streets and paths should accommodate all forms of circulation, making it easy for residents and guests to travel anywhere in the neighborhood using local streets or walking paths. Such a system makes walking or bicycling comfortable and efficient, and reduces congestion on higher-capacity roads outside the neighborhood. For these reasons, an internal grid pattern is desirable. Access to areas where through connections will not be made, such as properties that back up to greenways, should be provided via loop streets. Cul-de-sac streets should be allowed only in isolated areas where it is not physically feasible to make a through or loop connection.

Finally, traffic calming measures should be used in the design of local and collector streets to help reduce speeds and discourage "cut-through" traffic. Continuity breaks, curb extensions at intersections, intersection dividers, center islands, street trees and landscaping, and other features can enhance the pedestrian character of the street.

BUILD KEY RELATIONSHIPS

Neighborhood in Community

Well-designed neighborhoods are more than just collections of residences. They have an important role as public places that fit into and enhance a larger community context. Creating strong linkages between new neighborhoods and old, and between neighborhoods and community resources such as neighborhood parks, yields opportunities for community-enriching relationships to occur.

Lasting neighborhoods are built on strong and vital relationships with the communities in which they are located.

Neighborhood in Environment

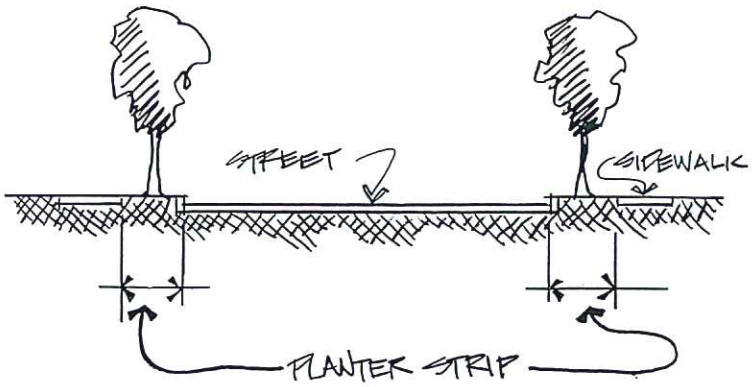
In addition to having a role in the larger community framework, a neighborhood is set in the context of a particular physical place. Sensitive, intelligent design responds to climatic elements such as wind, rainfall, and range of temperatures. For example, at the scale of a house, a covered front entry porch offers comfort and protection from weather extremes to residents and guests. At the neighborhood scale, tree-lined streets, paths, pocket parks, and public plazas offer residents safe and comfortable places to meet or relax.

Smart neighborhood design also takes advantage of unique site characteristics to integrate development and create amenity value. Bandon's character as a coastal community is one of its primary attractions for residents as well as visitors. The attraction of ocean views is obvious, documented by the many homes situated above the ocean beaches with large picture windows oriented to the west.

For the most part, ocean views will not be available to future homes within the subject property; there are too many buildings already established along Beach Loop Drive, as well as stands of mature trees that block views. On the other hand, if addressed sensitively and carefully, the wetlands and riparian corridors within the subject site can be used to create unique and desirable residential enclaves with attractive views, a sense of seclusion and privacy, and convenient access to off-street walking trails.

Streets, Alleys, and Walkways are Important Public Spaces

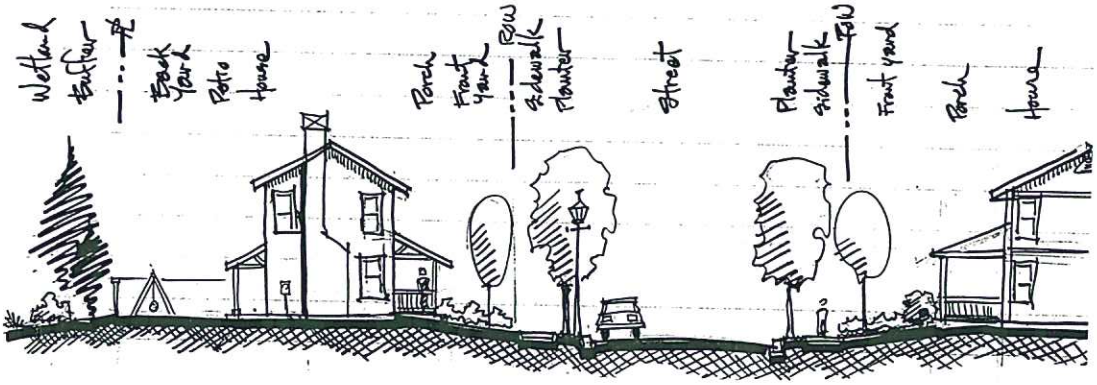
Just as a neighborhood is more than a collection of houses, public streets are more than conduits for traffic movement. They also can be comfortable places to meet neighbors, walk for exercise, or take a leisurely stroll. Attention to some basic needs and details will help encourage the creation of beautiful streets, alleys, and pedestrian paths:



- Provide a landscape strip between the sidewalk and street, wide enough to support street tree species that will produce a dense overhead canopy. Medium to large trees create a sense of shelter, moderate the severity of wind and rain, and offer summer shade.

- Provide on-street parallel parking. Parked cars provide an effective barrier protecting pedestrians from moving vehicles in travel lanes.

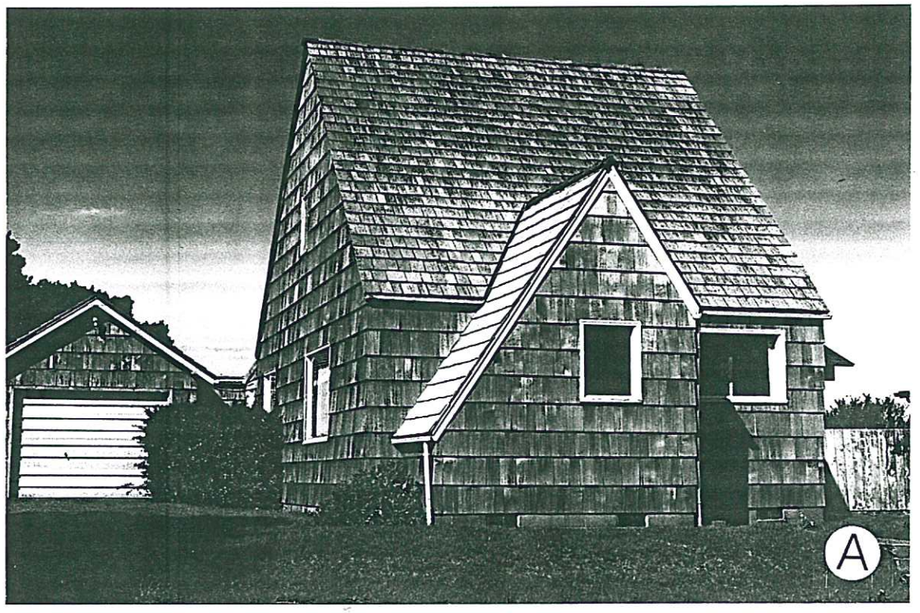
- Ensure that pedestrian areas – streets, alleys, and walkways – are visible from surrounding structures to provide surveillance and a sense of security for users.

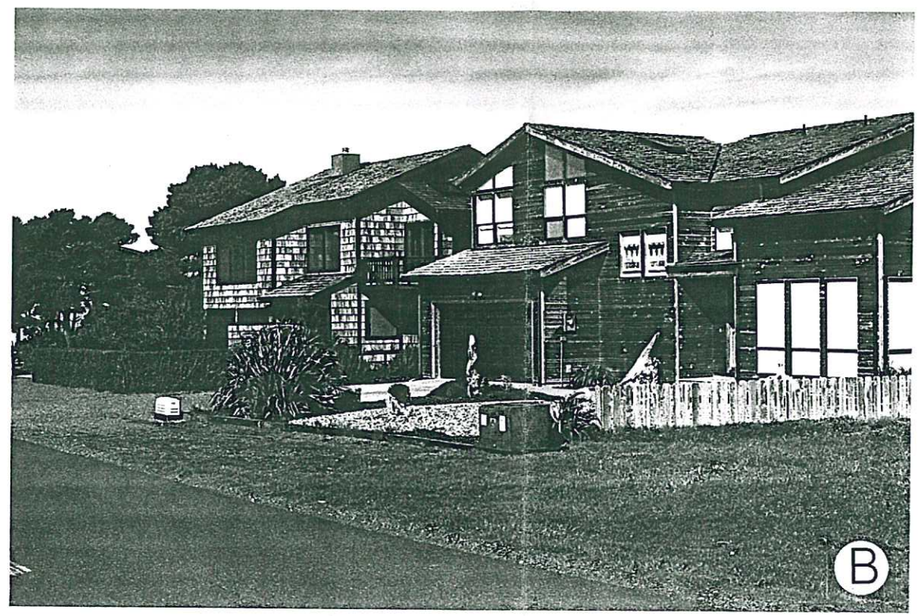


Buildings to Streets

Buildings reinforce the importance of the public street as a shared community open space by orienting front doors, entry porches, windows, and other features toward it. These visual linkages provide mutual surveillance over public areas, helping both residents and pedestrians feel safer.

Figure 5 contains photographs of some existing houses in Bandon that develop good relationships with the street using front doors, windows, formal entryways, and porches.





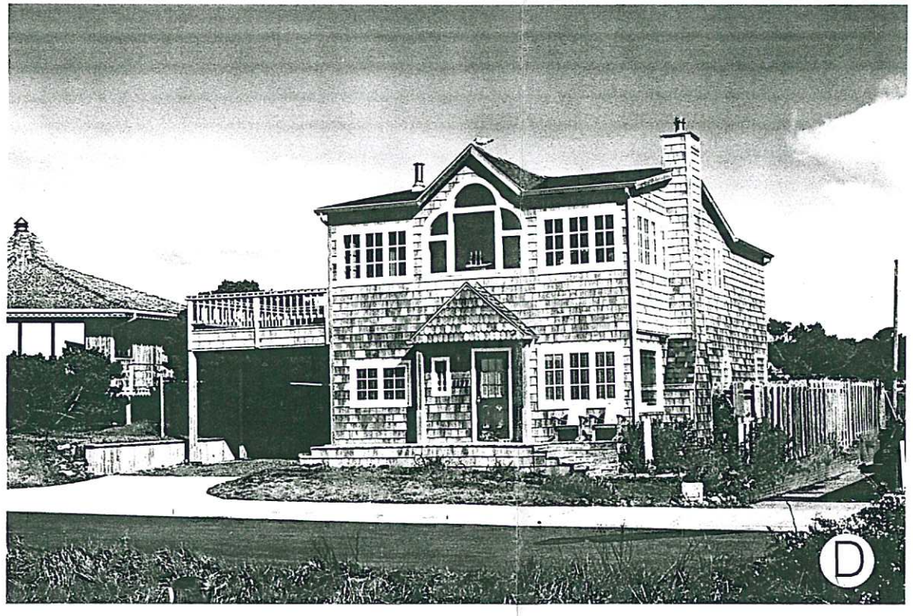


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FIGURE 5

Homes located in Bandon provide examples of community design principles. **Photograph A** shows a house which has exposure to harsh coastal weather elements. **Photographs B, C, and D** are of houses which create good relationships with the street through the orientation of front doors, porches, and windows.

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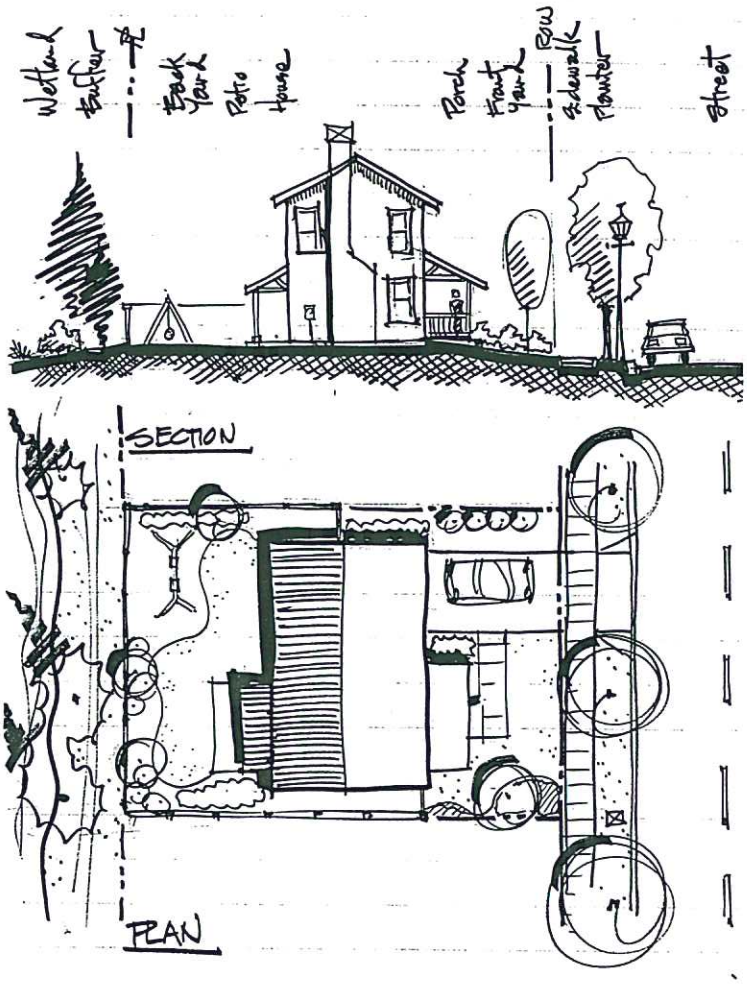
Buildings to Environment

Like neighborhoods, buildings are located within a specific climatic and spatial context. Well-sited buildings, whether residential, commercial, industrial, or mixed-use, take advantage of potential amenities (such as view opportunities, visibility of the building's formal or public side, and seclusion of its private areas) and minimize exposure to detrimental conditions (such as noise from arterial roads, or harsh weather elements).

In Figure 5, there is a photograph of a house designed to maximize protection from harsh coastal weather.



OPEN SPACE CONCEPTS

Riparian Corridors

Riparian corridors:

- Should be protected as valuable wildlife habitat;
- Offer scenic view opportunities for adjacent development; and
- Provide potential routes for off-street pedestrian trails alongside buffer zones.

Wetlands and Buffers

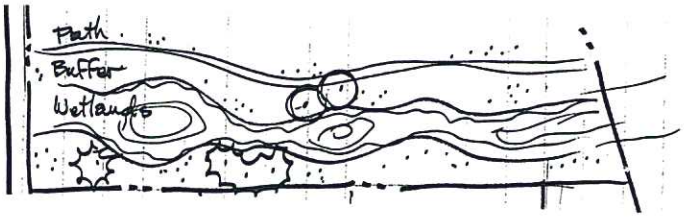
Wetlands and buffers:

- Should be protected as valuable wildlife habitat;
- Offer scenic view opportunities for adjacent development;
- Can perform a stormwater detention function; and
- Provide potential routes for off-street pedestrian trails alongside buffer zones.

Pedestrian Path System

Pedestrian paths:

- Should be located adjacent to, but outside, selected wetland and riparian corridor buffer areas;



- Provide off-street alternative pedestrian routes for travel between neighborhood areas, Community Park, and schools;
- Provide recreational walking loops of varying lengths;
- Offer potential for a fitness course with exercise routines located along a walking route; and
- Can provide interpretive displays about riparian corridors, wetlands, and other natural features.

Wind Management

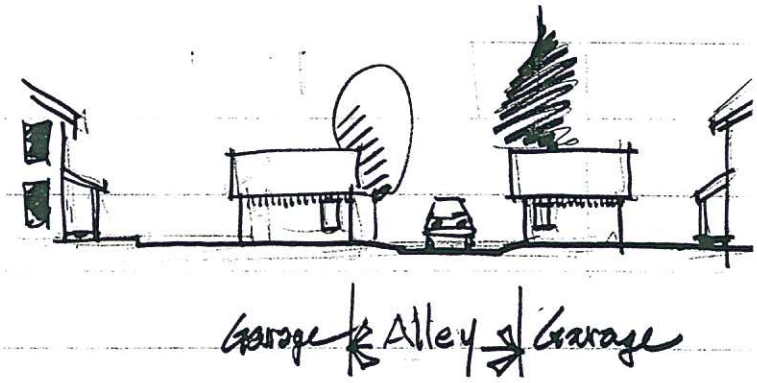
A well developed tree canopy (for example, pine, cedar, spruce, and cypress) helps to mitigate wind at ground level, improving pedestrian comfort and aiding residential energy efficiency.

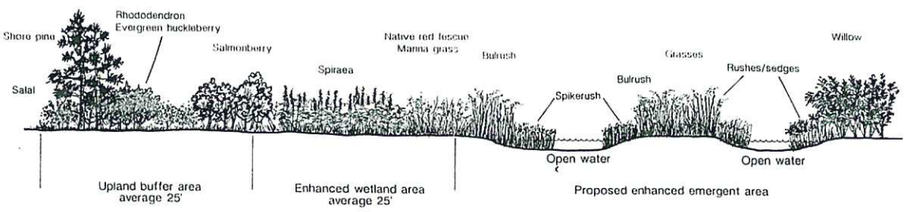
Figure 6 illustrates the effect a substantial tree canopy has on moderating wind at ground level.

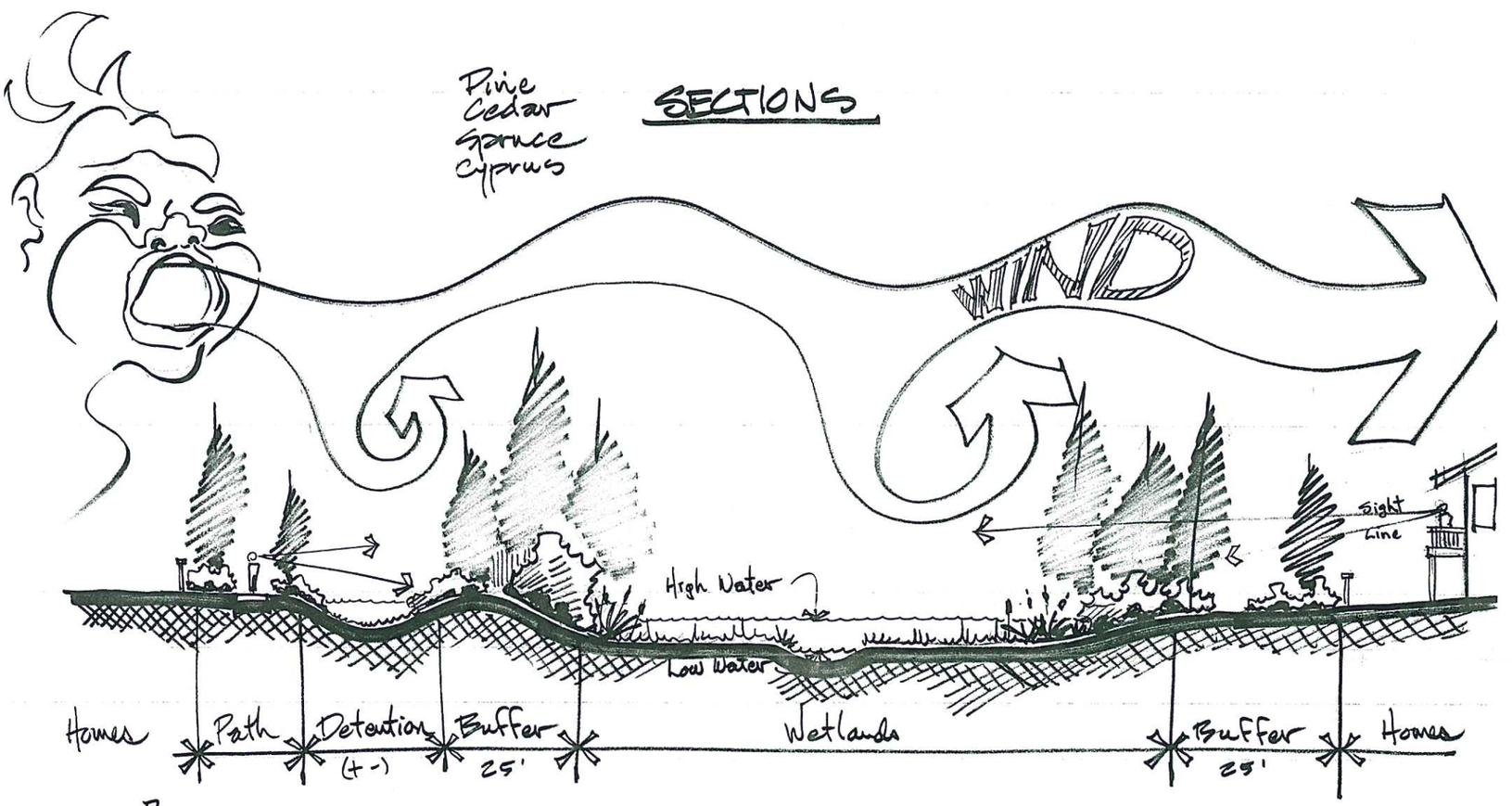
ORIENTATION CONCEPTS

Alley Access to Garages

Providing alley access to garages allows plenty of on-street parking in front of homes, creating safe sidewalks without driveway conflicts. Many of the existing platted blocks in the study area contain rectangular lots with alley access at the







- Buffers / Openspace / Storm water detension
- Wetland regime / Interpretive displays / Views
- Wind management
- Path system / Path loops / Par course stations

OPEN SPACE CONCEPT

FIGURE 6

SOUTH BANDON
REFINEMENT PLAN

rear. This is the preferred form for lots that do not back up to riparian corridors or wetlands.

Visual Orientation to the Street

Home design should be required to maintain a strong visual orientation to the street, using elements such as windows, front entryways, and porches. Visual prominence of garages should be minimized, by (for example):

- Locating them at the rear with alley access wherever possible;
- Requiring them to be set back from the main part of the residence; or
- Requiring that garage doors be recessed a minimum of two feet behind the front wall surface.

Create Greenway Views

Development adjacent to riparian corridors or wetlands should have rear yards facing the natural area, with driveway access from the street in front. Architectural elements such as windows or decks should be used to provide views into natural areas. The resulting surveillance over greenway trails contributes to the security of residents, guests, and trail users.

The orientation of rear yards, decks, and windows to provide views into natural areas is illustrated in Figure 6.

FUTURE INFILL: THE SHADOW PLAT CONCEPT

This technique requires a developer of a home on a large lot to plan how future infill development can occur. The home, garage, and any other buildings must be situated so they will be functional in the present, but will create good relationships to the street and neighboring homes when (and if) future infill development occurs.

When development of a large property is proposed, the developer must obtain approval of a "shadow plat" demonstrating how the proposed development is compatible with future infill development of the property. Key principles include:

- The shadow plat must show a proposed future lot pattern meeting the City lot size, street connectivity, and residential density requirements;

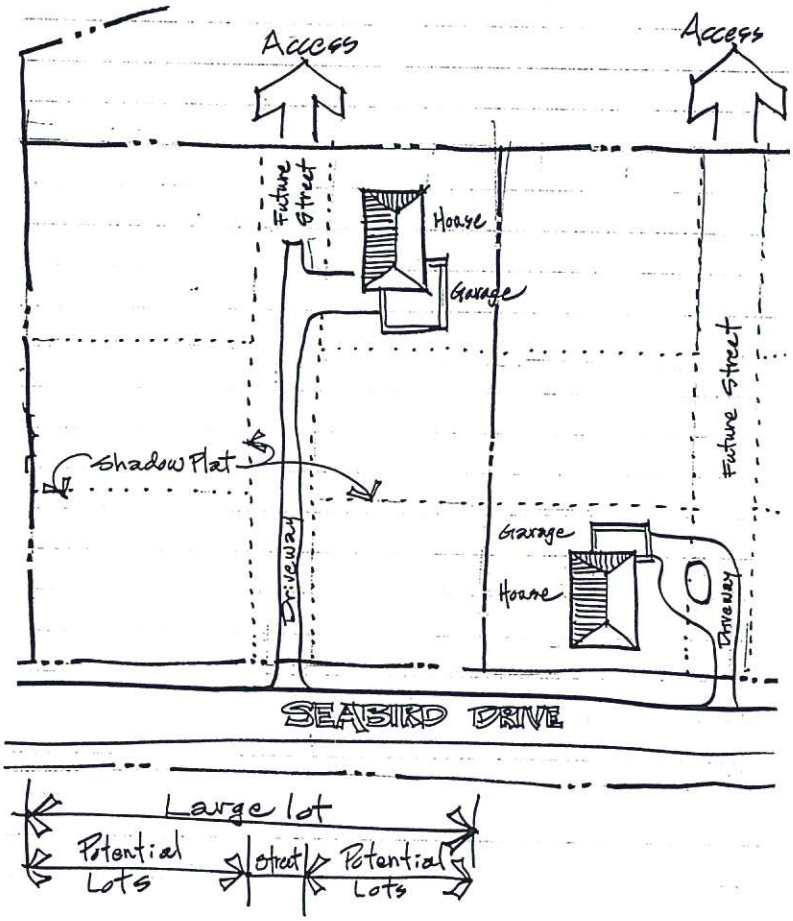
- The shadow plat indicates how public street, utility, and storm drainage requirements will be met in the future;

- Easements are placed over future street right-of-way areas to ensure that buildings will not be located in conflict with the planned street pattern;

- An agreement to install public utilities and build and connect streets in conjunction with future infill development is required as a condition of approval;

- The house should be sited so that it will have windows, front door, entry porch, and other features facing the future street; and

- Building setbacks will be measured against future right-of-way and property boundaries as indicated in the approved shadow plat to ensure that future infill will not result in nonconforming building setbacks for the initial development.



Typically, a development will locate its driveway so it can become a city street in the future. The shadow plat indicates how the driveway can be converted to a through street (or a through alley if there is a better location for the street) as a condition of infill development.

Requiring future infill development as part of the shadow plat approval process is not recommended. Whether to subdivide and develop the remainder of a given parcel should be at the option of the property owner, not mandatory, and in particular not limited to a specific time frame.

Neighborhood Character Concepts

NEIGHBORHOOD CHARACTER CONCEPTS

Application of the Community Design Concepts to the study area produces four distinct neighborhood subareas. Each has a uniquely different set of characteristics and opportunities.

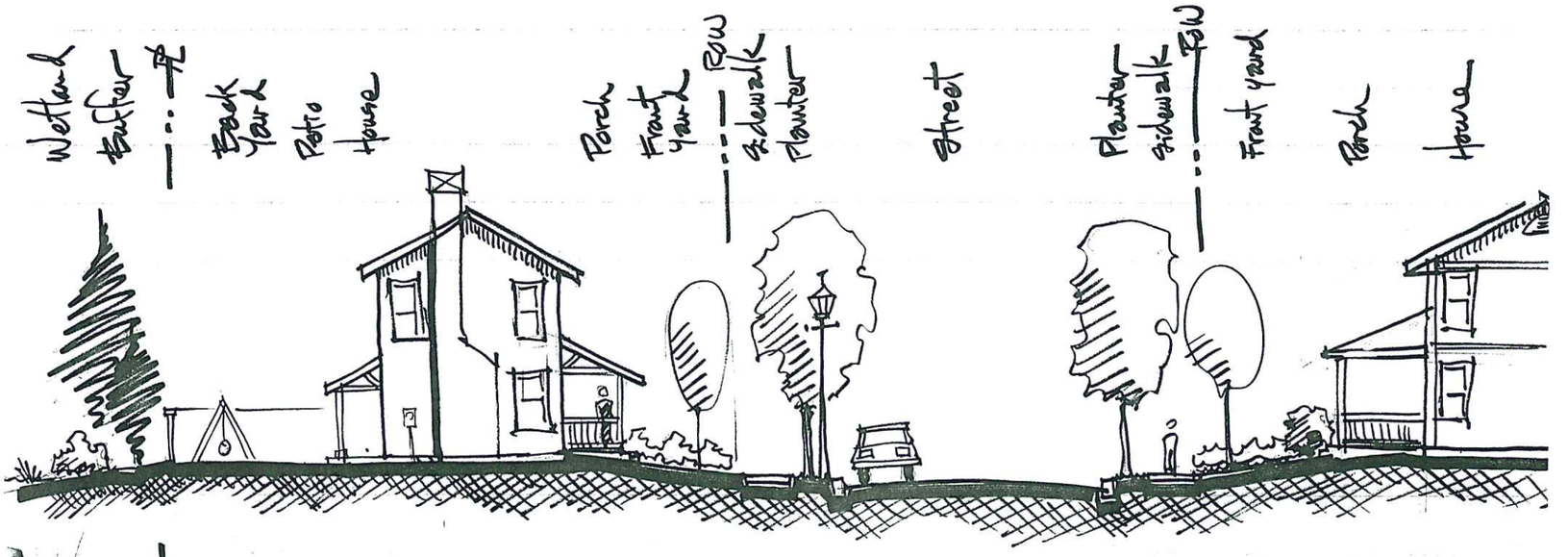
CENTRAL NEIGHBORHOOD

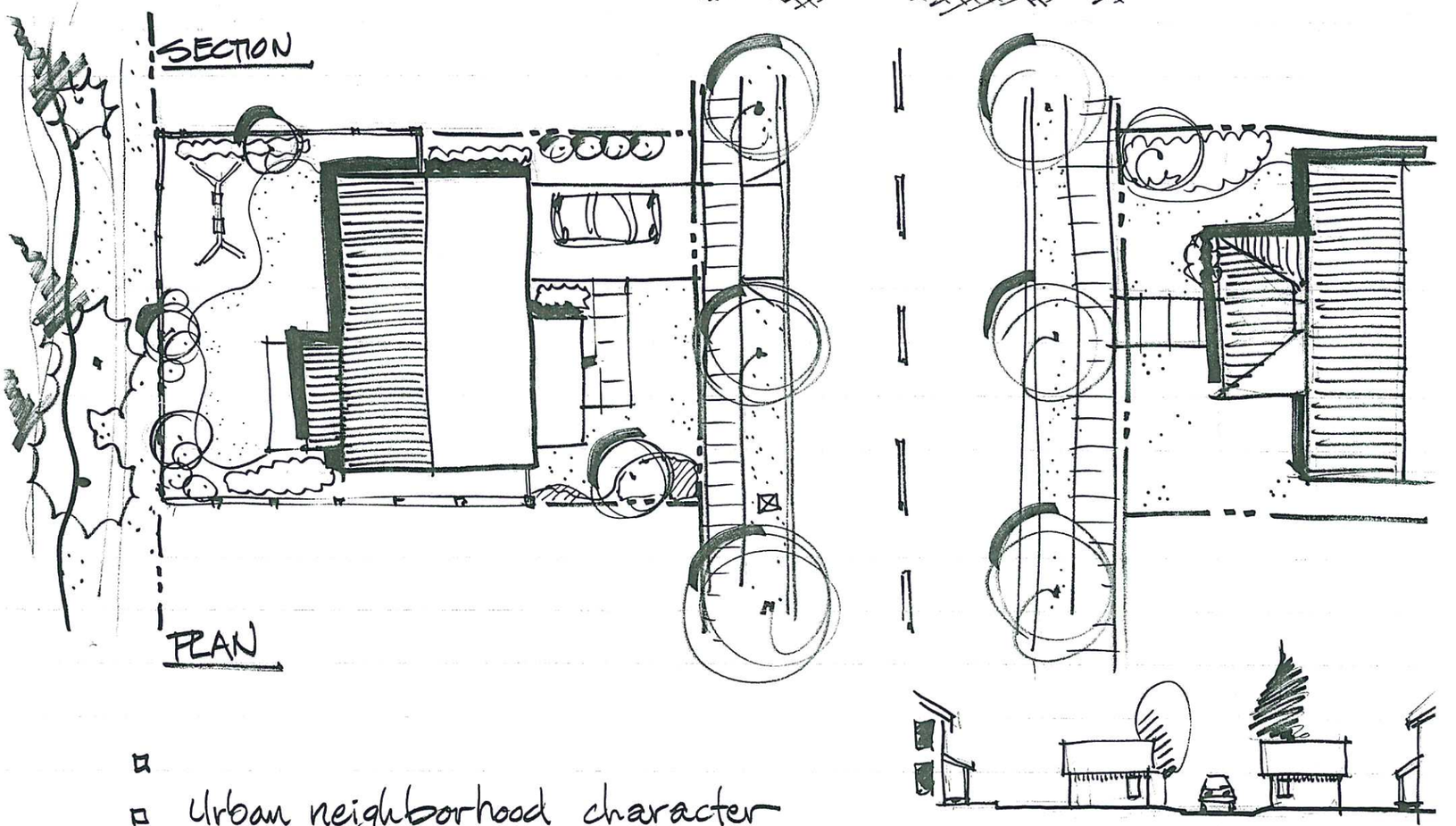
The Central neighborhood, in the northern part of the study area, has the closest relationship to the existing Community Park and school. It is basically the extension of the existing development and land platting pattern (within the City limits) south into the study area. It is very well connected with the existing streets and blocks to the north, but on its east, west, and south sides, wetlands and natural drainageways surround it. An urban neighborhood character, very similar to that of established blocks within the City limits to the north, is an appropriate pattern.

In general, development based on the existing lot pattern is likely and desirable; however, wetlands and drainageways will constrain development on some of the lots platted in the past.

The existing platted block pattern, which includes alleys for access to garages, is the preferred form for lots that do not back up to natural greenway corridors or wetlands.

Figure 7 illustrates the orientation of homes to streets, alleys, and wetlands and riparian corridors in the Central Neighborhood.





- Urban neighborhood character
- Extension of existing pattern to south
- shortest relationship to existing park & school
- Based on existing lot pattern

CENTRAL NEIGHBORHOOD

4-22-98

FIGURE 7

SOUTH BANDON
REFINEMENT PLAN

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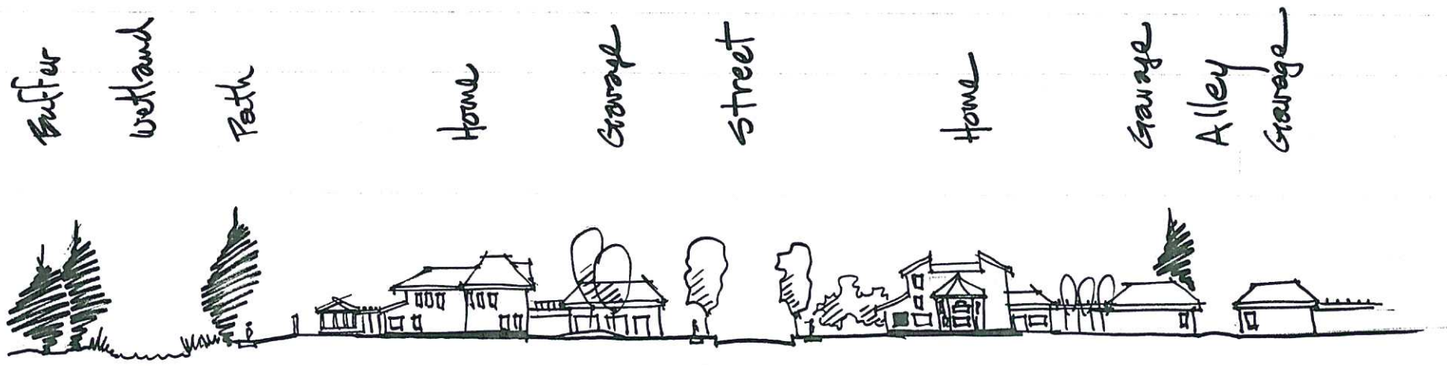
BEACH LOOP DRIVE NEIGHBORHOOD

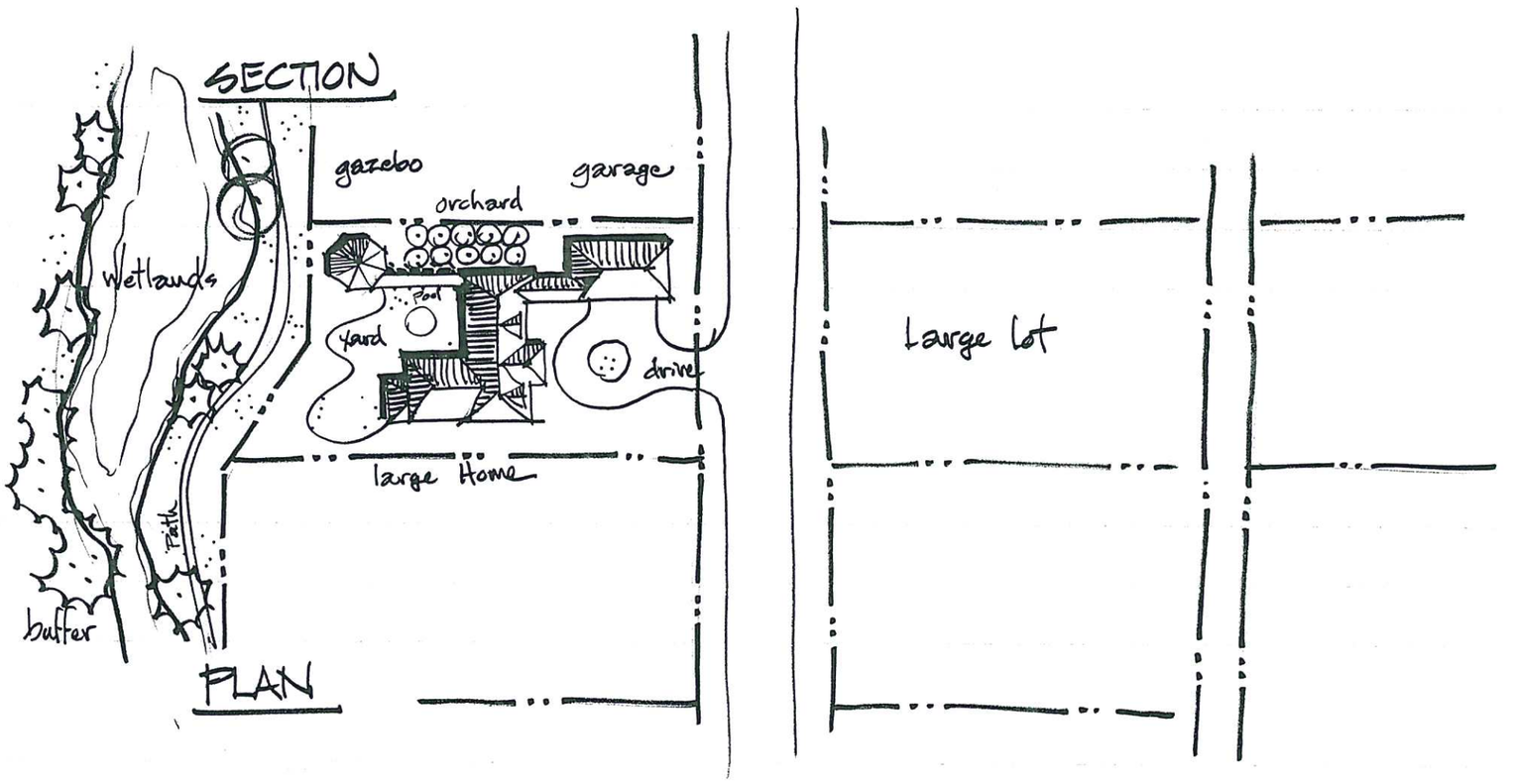
On the west side of the study area, there is a secluded district concealed from view by existing houses and a wetland/greenway corridor with very limited ingress and egress locations. This enclave provides an attractive location for large, architect-designed or "showcase" houses.

Although homes will likely be larger in size, it is important that they be consistent with an urban neighborhood character. Within the neighborhood enclave, streets should form an internal grid of streets, alleys, and loop streets on the edges. Homes should maintain a strong visual orientation to the street, using windows, front entryways, and porches.

Homes adjacent to riparian corridors or wetlands should have rear yards facing the greenway, with driveway access from the street in front. Windows or decks should provide views into natural areas.

Figure 8 illustrates the orientation of homes to streets, alleys, and wetlands and riparian corridors in the Beach Loop Drive Neighborhood.





- Lower density / larger setbacks
- Secluded / Exclusive / Architect designed houses
- 50% Surrounded by wetlands / 50% by housing
- Limited access
- Larger homes / Showcase / Large Lots / Higher income
- Internal grid streets with alleys / Loop drive

BEACH LOOP DRIVE NEIGHBORHOOD

4-22-97

FIGURE 8

SOUTH BANDON
REFINEMENT PLAN

COAST HIGHWAY NEIGHBORHOOD

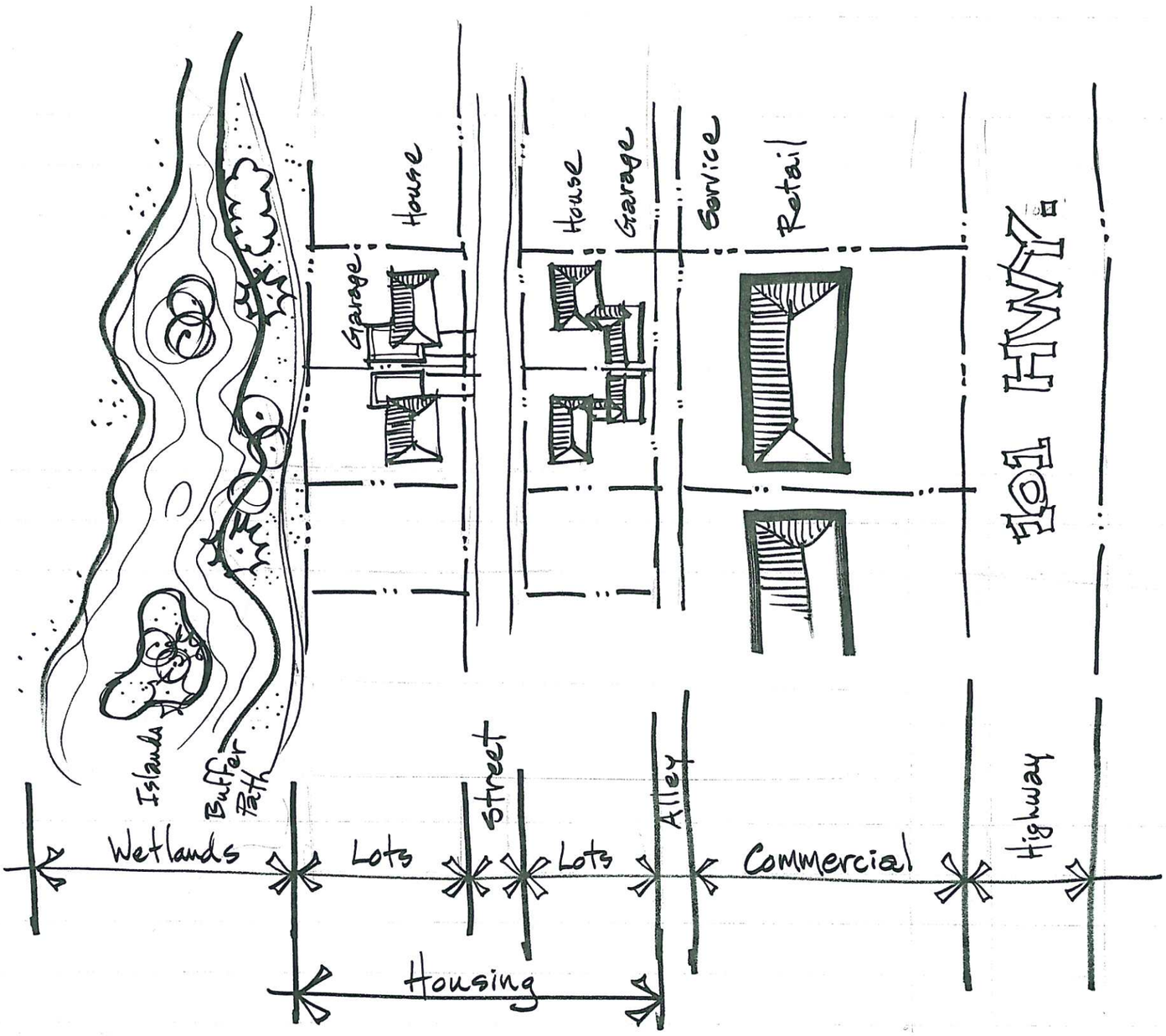
Along the eastern side of the study area, commercial uses predominate along Highway 101. They currently are allowed under the County's C-1 zoning designation, which extends one block west to Bandon Avenue. The distance between Highway 101 and the greenway corridor to the west varies, from approximately 1,000 feet in the northern and southern ends of the study area, to practically zero in the vicinity of 21st Street.

The area behind the commercial blocks along Highway 101 provides a unique opportunity for a "business incubator" neighborhood suitable for homes with sizable garages or workshops. Its neighborhood character will be urban, dominated by and primarily oriented to commercial activities along Highway 101. A transition can occur from east to west, with commercial/light industrial uses fronting on the highway, "cottage industry"/commercial workshops behind them, and residential streets in the areas close to the greenway corridor at the west.

Alleys or local north-south "backage roads" behind the commercially zoned properties along Highway 101 will allow short trips within and between blocks, relieving Highway 101 of some trips and turning movements. Just west of the commercially zoned blocks, a mixed-use residential/commercial/light industrial district can be created. Properties in this area will be allowed to have residences in front and commercial buildings at the rear, with access via alleys or backage roads.

On the residential street, backage road/rear alley access to garages allows plenty of on-street parking and creates safe sidewalks without driveway conflicts. By restricting commercial buildings, garages, and workshops to the rear portions of lots, homes can maintain a strong visual orientation to the street, with windows, front entryways, and porches. Homes adjacent to riparian corridors or wetlands will have rear yards facing the greenway, with driveway access from the street in front. Their views into riparian corridors and wetlands provide security and surveillance over greenway trails.

Figure 9 illustrates homes fronting on residential streets with garages and workshop/commercial buildings oriented to alleys or backage roads in the Coast Highway Neighborhood.



- Retail commercial Frontage / Shared alley & Service
- Cottage Industry
- Incubator uses

COAST HIGHWAY NEIGHBORHOOD

4-22-97

FIGURE 9

SOUTH BANDON
REFINEMENT PLAN

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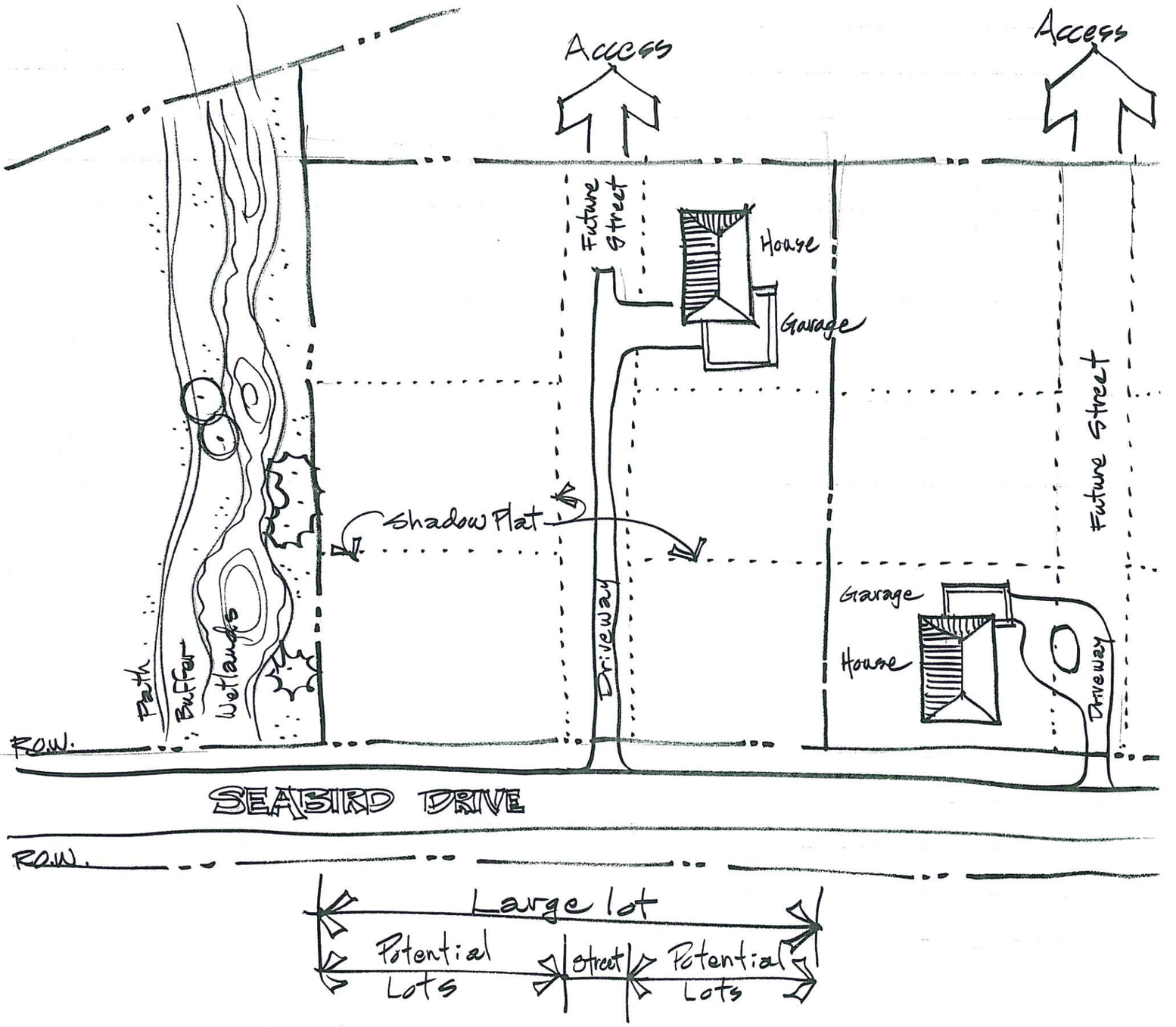

- Large lots extensive area
- Shadow plat for future access
- Elbow room
-

SEABIRD NEIGHBORHOOD

4-22-91

FIGURE 10

SOUTH BANDON REFINEMENT PLAN

SEABIRD NEIGHBORHOOD

At the Community Design Charrette Workshop meetings, property owners in the Seabird Drive area expressed their desire to maintain its rural neighborhood character, with homes on large lots and plenty of "elbow room." At the present time, this part of the study area, farthest from the City's center, is a logical place for such low-density development; however, extensive development and use does not necessarily preclude its ultimate future development similar to the Central Neighborhood described above.

With a shadow plat requirement, as discussed above, a developer must illustrate that the proposed construction is compatible with a future pattern of lots and streets meeting City development standards. Buildings (such as homes, garages, sheds, or other structures) must be located to allow future infill development to occur according to the shadow plat. If infill development does occur in the future, the existing house and other buildings will be well situated with respect to public streets and alleys.

In general this means that:

- Driveways will be aligned to allow them to become public streets or alleys in the future, creating through connections to the local street network;
- Homes will be oriented to create a good relationship to the public street when infill development occurs;
- Buildings will maintain appropriate setbacks from future lot boundaries and street rights-of-way to avoid creation of nonconforming conditions when infill development occurs; and
- Easements will be placed on proposed future road alignments to ensure that no construction occurs in conflict with future dedication of streets.

In the Seabird neighborhood area, requiring future infill development as a condition of the shadow plat approval process is not recommended. Property owners should retain the right to decide whether to subdivide and develop the remainder of their property.

As in other neighborhood subareas, lots adjacent to riparian corridors or wetlands should have rear yards facing the greenway with driveway access from the street in front.

Figure 10 illustrates the use of the shadow plat to design development on large lots so that it allows future infill to occur. Ultimately, if full build-out occurs, homes in the Seabird Neighborhood will have relationships to streets, alleys, and wetlands and riparian corridors similar to those in the northern neighborhoods. Through the shadow plat process, the unnecessary cost of removing existing homes can be largely eliminated.

POLICY THEMES AND STRATEGIES

The following key policy themes and implementation concepts arose from the Community Design Charrette Workshop process:

Annexation

Allow annexations only of land contiguous to City limits with existing or concurrent provision of adequate roads and utilities.

Infrastructure

Require new developments to include construction of necessary roads and utilities.

Flexibility

Allow homes on large lots, but require siting of buildings that enables future infill development to occur.

Circulation

Create a network of connected streets and pedestrian paths.

Scenery

Use wooded streams, marshes, ponds, and wetlands as scenic resources that add value.

Safety

Site homes with windows that keep an eye on streets and pedestrian paths.

Stormwater Management

Prepare an integrated approach to stormwater management and wetland conservation/enhancement to avoid costs of repairing downstream impacts of severe flow peaks and erosion.

Integrated Wetland Enhancement and Storm Water Management

There is an opportunity within the study area to work with the system of natural drainageways, riparian corridors, and wetlands to achieve stormwater management objectives in conjunction with conservation and enhancement of these resource areas. The Dyer Partnership report (contained in a separate Technical Memorandum) provides a technical examination of the capacities that will be necessary to accommodate stormwater flows as future development occurs.

This approach will require a number of steps to be taken and issues resolved:

- An inventory of jurisdictional wetlands should be prepared;
- A functions and values analysis should be prepared, identifying low-value areas that may be filled for development, high-value areas that should be conserved in their present condition, and mitigation opportunity areas appropriate for enhancement or wetland creation;
- Wetland mitigation design work incorporating the capacities needed for the stormwater storage function will be required;
- Requirements and standards for water quality treatment prior to the release of stormwater into natural drainageways will need to be adopted (these may consist of on-site swales, subarea treatment/detention facilities, or other methods); and
- Funding mechanisms will be needed for public costs, such as a Stormwater Management Systems Development Charge (SDC), formation of a Local Improvement District (LID), or other strategies.

Appendix D provides a framework approach for pursuing this integrated stormwater management and natural resource conservation strategy.

Recommendations

RECOMMENDATIONS

LAND USE

In general, land uses proposed by this Refinement Plan do not differ from the City's existing Comprehensive Plan. However, some adjustments are suggested based on physical inventory work and comments from residents.

- **Respond to Natural Resource Areas.** The development pattern should be re-shaped to respect identified riparian corridors, wetlands, natural drainageways, and scenic resources.

- **Create a "Business Incubator" District.** The Coast Highway neighborhood subarea provides an excellent setting for homes with accessory workshops, in which commercial or "cottage industry" businesses can be encouraged to grow.

A conceptual land use diagram illustrating land uses in relation to the conservation of riparian corridors, natural drainageways, and wetlands is shown in Figure 11. (The boundaries illustrated are symbolic only, because actual boundaries of natural areas subject to conservation requirements have yet to be precisely determined.) The natural areas are used to frame and define the four neighborhood areas identified above.

SOUTH BANDON REFINEMENT PLAN

CONCEPTUAL LAND USE PLAN

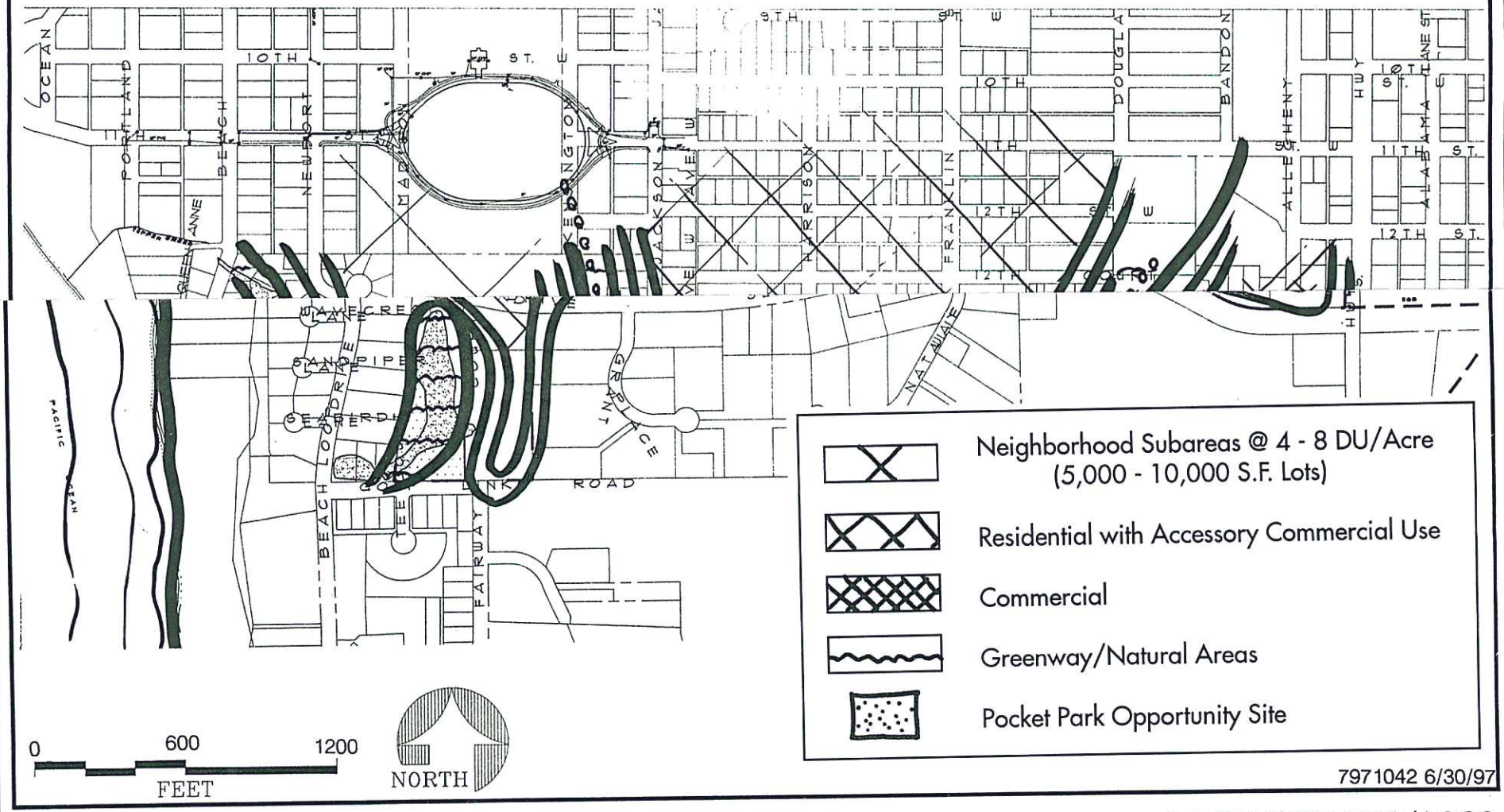

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FIGURE 11

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CIRCULATION SYSTEM

Circulation within the study area will be considered in the context of Bandon's current work on a new Transportation System Plan (TSP). The following key recommendations from this study should be incorporated into that effort:

- **Introduce Continuity Breaks.** Collector streets within the South Bandon study area should have at least one continuity break along their length, so they do not extend through the study area in a straight line. Continuity breaks include features like "T" intersections, "tuning forks," and offset intersections that require a driver to slow down or stop to negotiate a maneuver. This simple structural device is suitable for areas that do not have high trip demand, and helps to reduce speeding and avoid having the collector function as a "bypass" or "cut-through" route that diverts traffic from congested routes along the perimeter of the neighborhood.

- **Avoid or Reduce Natural Area/Wetland Impacts.** Reducing the number of streets that cross wetlands and drainageways will reduce impacts on those natural resources, and will maintain the neighborhoods' sense of enclosure. Crossings should be located at narrow points where impacts can be minimized.

- **Reduce Access Points and Turning Movements on Highway 101.** A network of local streets, "backage" roads, and alleys in the Coast Highway neighborhood can allow vehicles to circulate locally without reliance on Highway 101. Focusing on one or two minor collector intersection alignments that offer continuity westward into the Central neighborhood can reduce the number of street access points along the highway.

- **Adopt Requirements for Pedestrian Paths Adjacent to Greenway Buffers.** Off-street walking paths are a valuable part of the community's public infrastructure, functioning both as transportation and recreational facilities. To obtain right-of-way dedications or public access easements from developers, or at a minimum require minimum building setbacks that allow future land acquisitions for pedestrian paths, it is critical to adopt an ordinance identifying greenway path locations, width standards, and dedication requirements.

Figure 12 contains a circulation system diagram illustrating how these concepts may be applied within the study area.

SOUTH BANDON REFINEMENT PLAN

CONCEPTUAL CIRCULATION SYSTEM

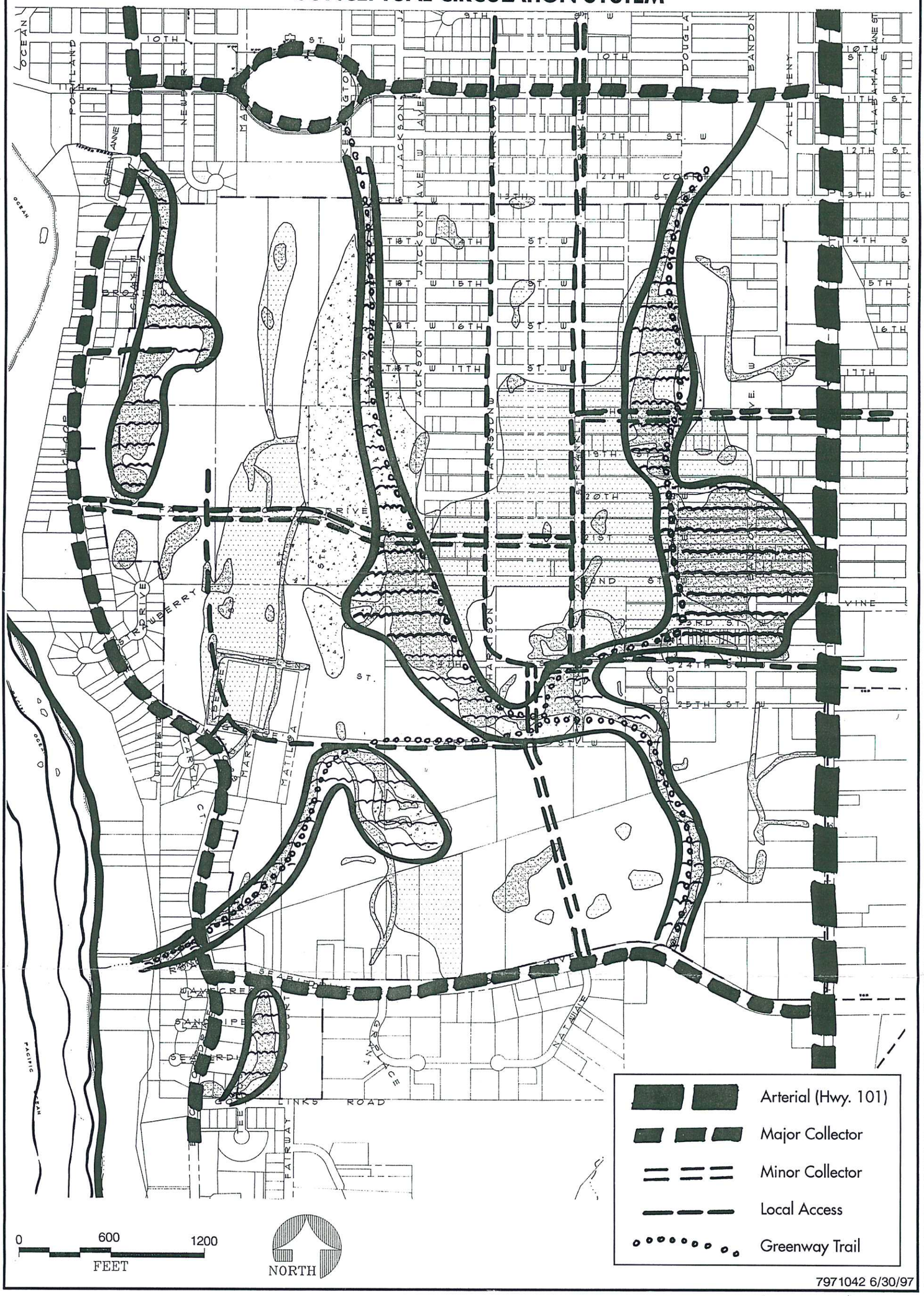

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FIGURE 12

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PLAT STUDIES

Plat studies were prepared to illustrate the application of planning and circulation concepts in selected portions of the study area. Note that the greenway boundaries shown are for illustrative purposes only; wetland and natural area determinations, mitigation plans, and permits issued by the Oregon Division of State Lands (DSL) and U.S. Army Corps of Engineers (Corps) will be needed before detailed platting of these areas can occur.

Coast Highway Neighborhood

Within the Coast Highway neighborhood, accessory commercial and "cottage industry" uses should be allowed within the residential area. Development standards in that neighborhood should allow workshops to be located only adjacent to alleys, reserving street frontages for residences. Figure 13 contains a plat study for the northern portion of the Coast Highway neighborhood, illustrating the following concepts:

- Douglas Street, extending between 13th and 20th Streets, provides access to residential lots that back onto the greenway corridor to the west.
- On the eastern side of Douglas Street, residential lots are backed by alleys, where accessory commercial and cottage industry uses can be located.
- Lots along the east-west streets offer alley access to accessory buildings, conserving the street frontages for homes.

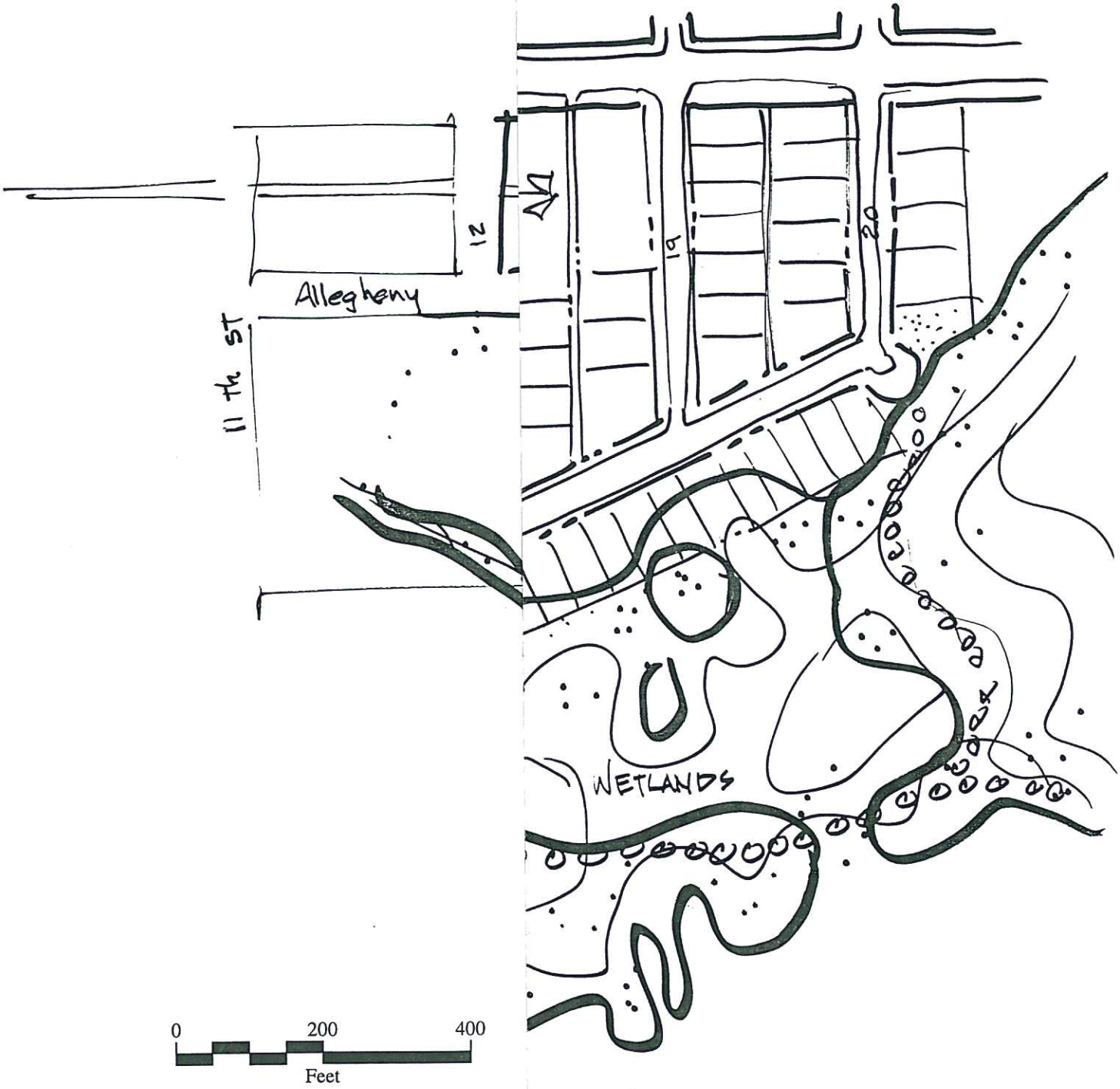

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FIGURE 13

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Central/Seabird Transition Area

Figure 14 contains a plat study for the southern portion of the Central neighborhood and the Seabird Drive area. Key concepts illustrated in the drawing are listed below.

- A continuity break in the north-south collector (Franklin Street) requires turning movements at 24th Street before continuing south to align with Natalie Way at Seabird Drive.

- Design approaches to wetland/greenway edges include street alignments parallel to greenway corridors, looping streets with curves abutting the greenway or homes along the greenway edge, street "eyebrows," cul-de-sac streets, and flag lots in isolated locations.

- Pedestrian trails (illustrated by series of small circles) are provided along greenways.

- Small parks, organized around wetland/natural area features, are located adjacent to intersections, where they signify passage from one neighborhood to another.

- Shadow platting is illustrated in the area generally south of 24th Street.

SOUTH BANDON REFINEMENT PLAN

CENTRAL/SEABIRD TRANSITION AREA PLAT STUDY

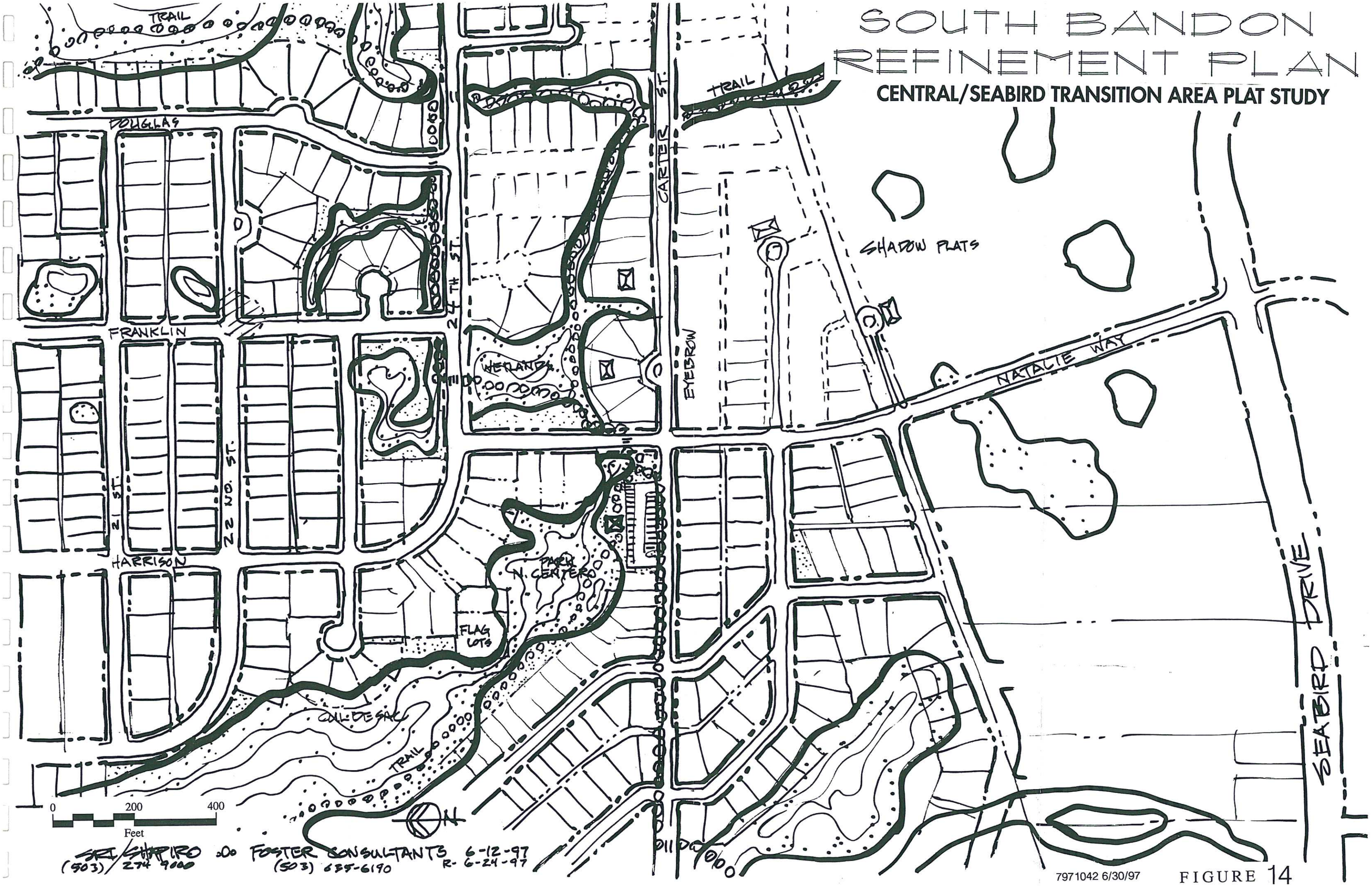

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FIGURE 14

Seabird/Beach Loop Transition Area

In Figure 15, potential platting of the southern portion of the Beach Loop Drive and Seabird Drive neighborhood areas is illustrated, implementing the following concepts.

- Streets are organized to create lots with rear yards adjacent to greenways.
- Blocks that do not back up to greenways have alley access to garages.
- Pedestrian paths (illustrated by series of small circles) use both greenway and street/sidewalk alignments.
- Entrances to neighborhood enclaves are highlighted by center medians in streets.
- Large dunes (in the northwestern corner) are included in platted areas, but large lots with property boundaries on the high points allow homes to be built beside them, offering some protection from development on top of the dunes.
- A detention pond is shown along the drainageway that flows southwest, slowing the release of water into the culvert crossing under Beach Loop Drive.
- Some areas are shown platted for development on the assumption that some wetland areas can be filled, with mitigation/creation at other locations.

SOUTH BANDON REFINEMENT PLAN

EACH LOOP DRIVE/SEABIRD TRANSITION AREA PLAT STUDY

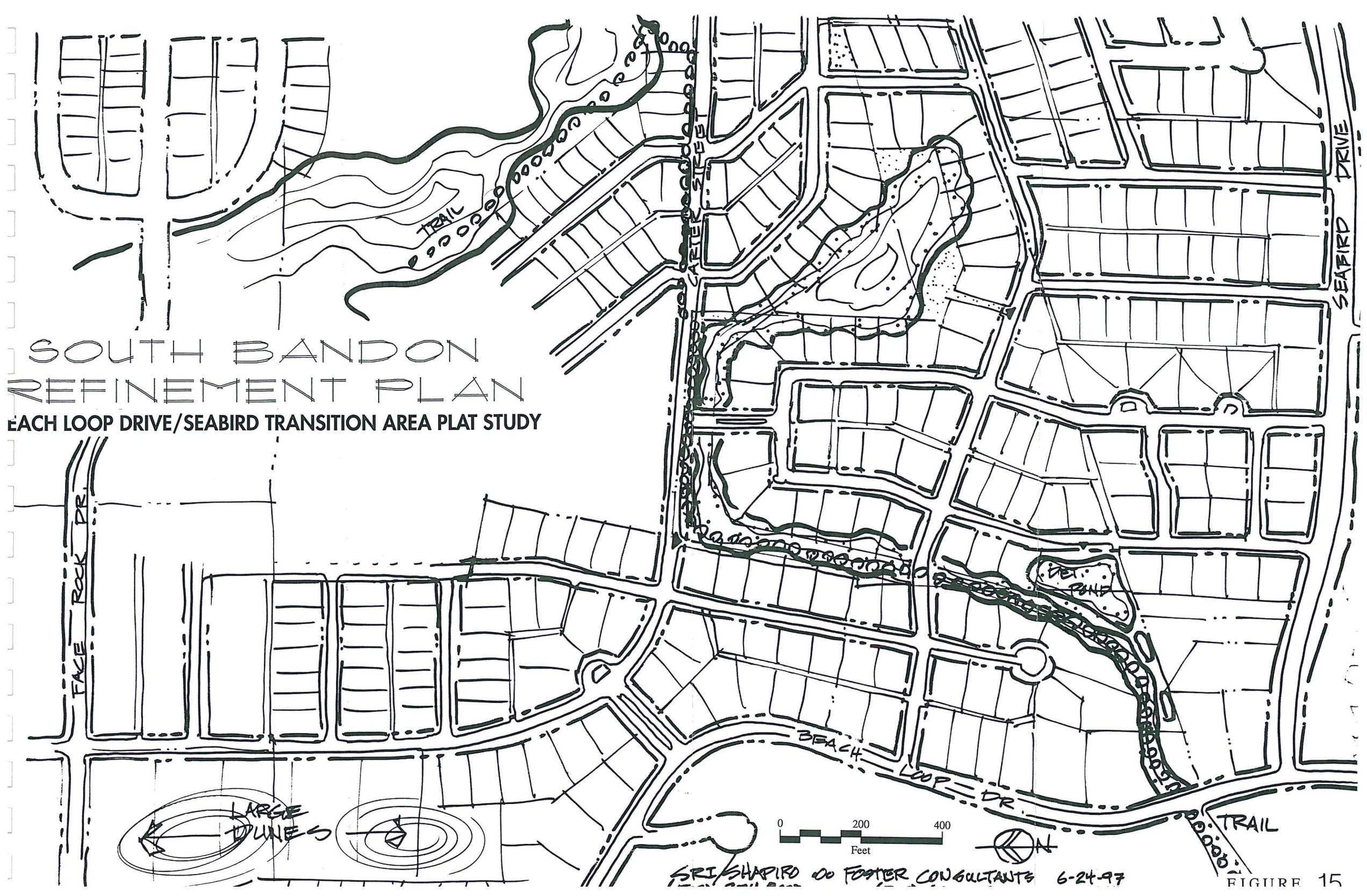

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FIGURE 15

Creating an Integrated City/County Growth Management Plan (GMP)

CREATING AN INTEGRATED CITY/COUNTY GROWTH MANAGEMENT PLAN (GMP)

GENERAL PURPOSES AND OBJECTIVES OF GMP

Define Joint Approaches to Interim Development

A unified City/County program to guide development in the study area will reduce the risk that interim development will conflict with long-term urbanization objectives, and will reduce uncertainty for property owners and developers.

Several approaches to interim development have been used in other areas:

- **Transportation and Utility Corridor Planning.** This method consists of preparing and adopting "framework" facilities plans for urban reserve areas. Framework plans should include: classification of major streets, right-of-way widths, and alignments sufficient to estimate appropriate setbacks and access points; water and sewer system capacity needs and alignments; stormwater management capacity needs and facility locations; and parks and recreation needs. Such plans provide a strong, rational basis for imposition of development requirements.

  The South Bandon Refinement Plan project addresses many of these needs. In the specific context of the study area, however, precise alignments of some streets and other facilities likely will depend on determinations of wetland boundaries, functions and values analysis, and stormwater management capacity planning.

- **Minimum New Lot Size of 5-10 Acres.** This relatively simple approach is based on the presumption that relatively large acreages allow future infill redevelopment to occur. Without some controls on the placement of structures, however, buildings often conflict with efficient street alignments when future platting is attempted.

  In the study area, current County zoning allows lots to be created at a minimum size of 1 acre. In addition, the northern part of the study area contains many platted lots with established development rights under County ordinances. As a result, this strategy has very limited applicability in the South Bandon context.

- **Redevelopment Plan Requirements.** This strategy requires a developer to submit a plan generally showing how the property could be redeveloped within the density range prescribed by City of Bandon zoning. A survey of key facility locations, such as major street centerlines, may be required for confidence that adequate setbacks are maintained.

  Redevelopment planning as a requirement for construction in the study area is recommended; however, the stronger implementation strategy offered by shadow platting (below) is preferred.

- **Shadow Plat Requirements.** Similar to a redevelopment plan, a shadow plat is implemented by recording a plat document describing future property boundaries and easements protecting future rights-of-way and other necessary public utility service corridors from development. Implementation also may be through recorded conditions, covenants, and restrictions (CC&R's), but this technique relies on civil litigation as its enforcement mechanism. Cost to the applicant is high as a result of the engineering and survey work needed to prepare a shadow plat. Some uncertainty is created because minimum lot sizes, configurations, right-of-way widths and other development parameters may be amended over time, and may make the shadow plat inconsistent with future partition or subdivision regulations.

  In the South Bandon context, shadow platting can provide a mechanism for allowing development of lots 1 acre or more in size under County standards, while demonstrating compatibility with future infill redevelopment potential and reserving portions of the property necessary to achieve it.

- **Clustering of Development.** A clustering requirement allows an owner to build the full number of dwelling units allowed under County standards, but requires them to be clustered in a portion of the property so that the developed area meets City density requirements. The remainder of the property is held in reserve for future urban development under City standards following annexation.

  For example, the owner of a 5-acre parcel would be allowed to build five houses. Instead of platting five 1-acre lots, a 1-acre portion of the property would be used for all five homes, yielding a development area density of five dwelling units per acre, and reserving the remaining four acres for future development.

  Ordinarily, this strategy is attractive, especially when combined with redevelopment plan requirements that ensure future connectivity and efficiency of street and utility system alignments. In the South Bandon study area, however, present lot and ownership patterns in the study area consist of many smaller ownerships, making this strategy a poor fit with existing circumstances.

Public Facilities Planning

Primary objectives of the GMP include providing for efficient construction, maintenance, and operation of roads and utilities, and avoiding flooding and erosion damage and their public and private repair costs. To achieve this, a common vision for public facilities systems and a consistent set of construction standards is needed.

Resource Conservation

The GMP intends to add amenity value to the South Bandon study area through wise conservation, enhancement, and orientation of uses to the area's natural resources. These include riparian corridors, wildlife habitat, wetlands, and scenic resources.

Appendix D outlines a suggested approach to integrating stormwater management needs and natural area conservation objectives in the study area.

City and County Policies and Administrative Demands

Several GMP objectives relate to the relationship between the City of Bandon and Coos County, and the relationship of each of them to their constituents. These include:

- Fairness to property owners;
- Consistency of standards and requirements;
- Efficient and reliable administration;
- Clearly defined City and County roles in the development approval process; and
- Coordinated or shared land use and development standards within the study area.

JOINT ADOPTION OF A SHARED VISION FOR THE FUTURE OF THE STUDY AREA

The GMP needs to be based on a vision for the long-term future of the South Bandon study area adopted by both the City of Bandon and Coos County. It will consist of:

- A desired land use pattern, including areas for commercial use and a variety of residential neighborhoods with distinct identities and place characteristics, as described above in the Neighborhood Character Concepts Section of this report (See Figure 11, Land Use Plan and Neighborhood Concept Diagram);
- An integrated network of parks and open spaces supporting active and passive recreational uses (See Figure 11, Land Use Plan and Neighborhood Concept Diagram);
- Transportation system elements and relationships, including a hierarchy of streets, bicycle, and pedestrian facilities, and off-street paths and trails (See Figure 12, Circulation Plan Diagram); and
- An implementation phasing plan to guide the transition from the area's present condition and land uses to its desired future condition.

DEVELOPMENT PHASING FOR IDENTIFIED AREAS AND SUBAREAS

Infrastructure Concurrency

A basic premise of planning for urban development is to ensure that development occurs when needed infrastructure elements--streets, water, sewer, and stormwater drainage--are available, or will be provided concurrently. In many communities, schools, parks, and recreation facilities are increasingly viewed as appropriate additions to the list of needed public infrastructure elements.

The infrastructure phasing analysis work performed by The Dyer Partnership as part of this refinement plan project is essential for formation of a development phasing strategy. (The Dyer Partnership report is contained in a separate Technical Memorandum.) In some parts of the study area, water and sewer systems can accommodate some line extensions to allow additional development to occur; however, it is not necessary for the community to specify the exact direction or subarea eligible for development activity.

Instead, a more flexible approach is recommended. The City and County should establish development standards and fees, as well as public works construction requirements, that offer flexibility without compromising system functions. This two-part strategy involves:

- Defining threshold requirements for utility services as a development approval criterion; and

- Putting together a package of regulatory and financing tools that enable timely construction of needed infrastructure elements.

The Technical Memorandum produced by The Dyer Partnership evaluates water and sewer system capacities and structures, and identifies areas within which services can be extended in the absence of key system elements (such as looped water lines and sewer lift stations). Appendix C of this report provides a summary of developer requirements, Recovery Agreements, SDCs, and LIDs, and how they can be used together to create a flexible package of infrastructure development tools.

Land Development Demand Characteristics

Another dimension of the infrastructure phasing problem relates to ownership patterns in portions of the study area, and the different types of demand for development permits anticipated in those subareas.

The Seabird Drive Area

The ownership pattern in the southwestern portion of the study area, which roughly corresponds to the Seabird Drive Neighborhood concept area, generally consists of large, unplatted units of land in single ownerships. Development activity in this area is expected to take the form of subdivision projects of substantial scale. Developers behind such proposals can be expected to install needed public streets and public utilities in conjunction with development, and be willing to participate in formation of LIDs that will contribute to the success of their projects.

One important issue that development in this area raises is the generation of new loads on existing City and County streets outside the immediate area of development. It is uncertain whether the City's present SDC for streets would provide adequate funding to make these improvements, or create a sufficient incentive for developers to perform off-site improvements in exchange for SDC credits.

Northern Areas

The other three neighborhood concept areas—Central, Coast Highway, and Beach Loop Drive—are characterized by small platted lots held by multiple owners. Some blocks are owned by only one or two parties, but many have lots held by separate owners ranging from approximately 2,500 to 8,000 square feet per lot. Under Coos County regulations, these lots have established (i.e., "grandfathered") development rights, and construction can be permitted despite the minimum 1-acre lot size requirement.

In this context, development activity is expected to be primarily individual owners building a residence on an existing platted lot, or in some instances combined lots. Construction by speculative developer/builders also is anticipated, but to a lesser extent.

Individual home building projects, especially those undertaken by families, rarely have sufficient resources to take on substantial public infrastructure construction requirements. such as street improvements and extension of water and sewer lines. In these subareas, however, there are pressing needs for collective action to construct sewer lift stations, streets, public drainage system improvements, and other public facilities to accommodate new construction.

The pattern of isolated lot-by-lot development proposals may make it difficult for the community to form LIDs for needed improvements, especially if surrounding property owners do not wish to participate or desire to impede infill development.

KEY TERMS FOR A JOINT CITY/COUNTY GROWTH MANAGEMENT PLAN AND INTERGOVERNMENTAL AGREEMENT

Many substantial City/County governance issues have come into focus in the course of exploring the interim and long-term future of the South Bandon study area. Some of these relate directly to policy differences between the two bodies; others involve administrative functions and operating budget limitations. In addition, a joint agreement to guide development within the study area must address delegation, authority, and jurisdictional transfer issues.

Within the time and budget limitations of the South Bandon Refinement Plan project, arrival at a City/County consensus on specific terms for such an agreement has not been within reach. This section suggests joint planning themes and possible solution strategies to be explored further by the City and County.

Growth Management Plan Implementation Issues

The influences that will shape the urbanization process in the South Bandon study area are complex:

- **Development Activity Patterns.** Different patterns of development activity are anticipated in different parts of the study area as a result of the land ownership pattern. In some areas, it is reasonable to expect construction of public infrastructure elements by developers operating a sufficient scale to take on those costs. In other portions of the study area, small ownerships indicate that most construction demand likely will be from individuals and families wishing to build a house, and unable to take on substantial system development costs.

- **Street Improvement Needs.** Streets within the study area are platted, but many do not physically exist, or are constructed of substandard quality. Achieving street connectivity for new development that is not contiguous to present City streets will be costly, and beyond the means of most individuals and families. Large subdivision projects will be required to construct all necessary internal streets, and perhaps also improvements to streets along their edges, but this will not ease the additional burden they will create on existing streets beyond the property edges.

- **Water System Capacity.** When the capacity of the City's water quality treatment facility has been expanded, some extensions of existing water lines can be made into the study area before loop connections will be required for sufficient fire flow volumes. Because there are several alternative locations where these extensions could occur, it is not necessary (and may be counterproductive) to require a single pattern or direction for water system construction. (The Technical Memorandum prepared by The Dyer Partnership contains a detailed analysis of water system needs and a recommended strategy.)

- **Sewer System Capacity.** Distinct sewer catchment areas can accommodate some new development independent of each other, while others will need to be served sequentially owing to capacity upgrades that will be required downstream. Some catchment areas will require installation of one or more pump stations in order to be served. (The Technical Memorandum prepared by The Dyer Partnership contains a detailed analysis of sewer system needs and a recommended strategy.)

- **Stormwater Management.** To avoid downstream flooding and erosion impacts, stormwater management needs to be coordinated throughout the study area and surrounding lands. There is promise in the concept of enhancing natural drainageways and wetland areas to perform a stormwater detention function, but sufficient functions and values inventory data are not yet available to begin such a design effort.

As a result of these circumstances, the recommendations in this report are more programmatic, suggesting that the City and County work to:

- Define a set of review criteria for development proposals, and

- Develop a robust but flexible set of tools for achieving construction of necessary public infrastructure in the course of private-sector development activity.

Joint Policies on Development, Annexation, and Provision of Utility Services

Key Objectives

- Create a vision for the future of the study area, held in common by City and County.

- Focus development within Urban Growth Boundaries.

- Minimize need for future expansions of urban areas (i.e., sprawl).

- Provide efficient and logical construction, use, and maintenance of public infrastructure capacity (streets, water, sewer, and stormwater management systems).

- Integrate City and County land use decision-making processes and standards within the study area.

- Promote housing affordability.

Recommendations—Development, Annexation, and Utility Services

- **Adopt a Joint Vision for the Future Development of the South Bandon Study Area.** Both City and County Comprehensive Plans should be adapted to further the creation of urban neighborhoods as conceived in this Refinement Plan. This may be

accomplished through joint adoption of a unified City-County plan and standards document to guide development in the study area. The unified plan would be incorporated by reference into existing plans and zoning ordinances through amendment actions at the County and City levels, and would function similar to an overlay that creates a special set of approval procedures and requirements within its boundaries.

- **Adopt a Common Set of Development and Public Works Construction Standards.** Joint adoption and implementation of unified development standards by both the City and County is recommended. The objective is to provide a consistent set of regulations, compatible with interim development prior to annexation, as well as urban development in accordance with the City of Bandon's Comprehensive Plan and Zoning Ordinance.

- **Recognize the City as the Provider of Urban Public Facilities.** The City of Bandon is the urban public facilities service provider (streets, water, sewer, stormwater management, parks and recreation systems) within the study area.

- **Require the Availability or Installation of Public Services for Development within the Study Area.** Under the present County standards, parcels of an acre (or less in the case of existing lots) can be developed without City water and sewer services. Allowing development at this scale could create an extensive pattern of development that effectively precludes its future urbanization, especially if substantial costs for City services (including one-time fees such as Systems Development Charges, or operating costs) would be charged when redevelopment occurs. While this approach will raise individual owners' expenses to develop under County standards, that cost must be weighed against the public cost of potential sprawl over a long-term future.

- **Create a Joint Review Process for Development Applications within UGB Areas Prior to Annexation.** The level of coordination suggested by these recommendations will demand a progressive, case-by-case problem-solving approach by staff, aimed at putting together the appropriate "package" of regulatory requirements and tools to achieve development in accordance with planning objectives. It may be advantageous to the City and County, as well as to prospective developers, to have Bandon staff serve as the point of contact for development inquiries within the study area. With that in mind, the City and County should reconsider the notification and land use decision-making process as it is currently set up in their present Urban Growth Area and Area of Mutual Interest Management Agreement. That agreement does not require early notification and participation by the City of Bandon in planning decisions by the County, instead putting the City in the position of potentially having to appeal a decision in order to raise issues of concern. Both jurisdictions need to consider political, legal, and administrative matters implicit in any delegation and

coordination process, while seeking to frame a unified process that offers predictability and consistency to property owners and developers.

- **Resolve Service District Boundary Issues.** Boundaries of special service districts (such as fire protection) and other governmental services (such as police patrols, animal control, and sanitation), and procedures for handling transfers and boundary adjustments over time, need to be examined and clarified between the two jurisdictions.

- **Research Tax Base Issues.** The City and County need to consider tax base issues as they affect annexation policies and strategies for urban service provision. The passage of Ballot Measure 47, and the more recent passage of Ballot Measure 50, will affect the way assessed values are treated when annexations occur; however, specific effects cannot be determined until pending legal and implementation issues have been resolved. At that point, the City and County should examine the fiscal and administrative consequences of alternative strategies, such as providing utility service extensions at higher utility rates outside City limits, or requiring annexation prior to development.

- **Create a Strategy for the Transfer of Jurisdiction over Streets.** The City and County need to frame a strategy for the transition of roads from County to City jurisdiction. Although street rights-of-way have been platted in most of the northern part of the study area for decades, many do not physically exist, or are not in usable condition. Some roads are considered by the County to be open to public travel and eligible for County maintenance, but most do not meet minimal County standards. Other County roads will require improvements in order to meet City public street construction standards. A strategy for making the transition should include upgrades to these roadways as part of an overall package of transportation system capital improvements. Combinations of funding mechanisms, such as formation of LIDs, imposition of SDCs, and imposition of developer exactions eligible for recovery agreements, should be explored to form a workable program. (Please see Appendix C, Table 1.)

- **Consider Specifying Reserve Areas.** The analysis of water and sewer systems indicates that some flexibility is available with respect to system extensions before key elements (such as looping of water lines or construction of sewer pump stations) must be added. On the other hand, it is apparent that some portions of the study area will not be eligible for urban services until key infrastructure elements have been installed. As part of an overall implementation plan, the City and County should consider designating these subareas to be held in reserve for future urbanization only when infrastructure systems have the necessary capacity to serve planned development densities. Typically, this approach involves severely restricting and types of development allowed, and requiring large lot sizes (e.g., minimum parcel sizes of 5 to 10 acres or more). Potential pitfalls of this approach may include

"temporary taking" claims based on the imposition of strict land use limitations in the urban reserve area. Note that a strong set of infrastructure sufficiency requirements may achieve essentially the same result as designation of reserve areas.

Joint Policies for the Preservation and Enhancement of Drainageways, Riparian Corridors, Wetlands, Wildlife Habitat, and Scenic Areas

Key Objectives

- Meet Goal 17 requirements for conservation of significant environmental resources;
- Add amenity value for neighborhoods within the South Bandon study area;
- Integrate conservation/enhancement efforts and stormwater management planning; and
- Create mechanisms that produce value for owners of property affected by wetland conservation and stormwater management planning.

Recommendations—Natural Area Preservation/Enhancement

- **Preserve the Beach/Bluff Environment, Including Public Access.** As a community resource emblematic of Bandon's status as a coastal city, the beach/bluff environment is vital to conserve for the enjoyment of local residents and visitors. Public beach access locations should be integrated into the network of pedestrian trails and local streets.

- **Create Local Scenic Resources.** Natural drainageways, riparian corridors and wetlands within the study area have the potential to serve a functional role as stormwater detention facilities. This approach, which will require the impoundment of water, produces opportunities to create scenic greenway corridors and ponds with dense plantings of shrubs and trees. These scenic resources add amenity value to adjacent properties and neighborhoods. Appendix D suggests a process for undertaking an integrated stormwater management and natural area conservation program.

- **Help Create Marketable Values for Wetlands and Natural Areas.** The City of Bandon can enable owners of property affected by wetland determinations and stormwater management needs to capture some market value for their properties. One component of a successful program will be to adopt ordinance provisions that allow the use of equity transfer tools, such as Transferable Development Rights (TDRs), mitigation banking, and density shifts with clustering of units in upland areas. In addition, infrastructure financing methods should provide funding for public land acquisitions at key locations within the structure of the drainage system. The

discussion of integrated stormwater management and natural resource conservation in Appendix D includes a description of some of the tools that can be used.

- **Adopt Requirements for Pedestrian Paths Adjacent to Greenway Buffers.** Off-street walking paths provide amenity value for residents, serving both transportation and recreational needs. Adoption of an ordinance identifying greenway path locations, width standards, and dedication requirements is necessary to enable the City to obtain right-of-way dedications or public access easements from developers, or at a minimum to require minimum building setbacks that allow future land acquisitions.

Recommended Strategy and Rationale for Water and Sewer SDC Fees

A practical reality confronts the South Bandon study area. Interim development on one-acre parcels is very unlikely to be conducive to infill redevelopment at urban densities (four to eight dwelling units per acre), particularly if the costs associated with construction and connection to urban water and sewer systems are deferred. A SDC program specifically tailored to the needs of the South Bandon area is recommended as part of an overall strategy to allow interim development without creating disincentives for future infill.

To effectively implement a SDC-based infrastructure financing strategy component, the City and County should:

1. Adopt policies requiring hookups to urban water and sewer services for all building permits issued within the study area; this implies no new wells or septic drain fields will be allowed.

2. Adopt an agreement establishing that the City is the urban service provider within the South Bandon area, and as such receives SDC fees for the construction of those services.

3. Adopt SDC ordinances in which the capital cost of public utility facilities is apportioned based on the size of the area rather than actual numbers of service connections. The fees paid by a specific property on which development is proposed will be calculated based on its size and potential number of dwelling units at the minimum urban density prescribed in the City of Bandon's Comprehensive Plan and Zoning Code (four dwelling units per acre, or approximately 10,000 square feet per lot).

The rationale behind this method is that water and sewer line extensions have relatively fixed capital costs, which are not reduced if fewer connections than their capacity are made to them. Because of the need for sufficient fire flows, looped lines, capacity to accommodate infill, and other considerations, a single house on a 1-acre piece of property (under County codes) requires essentially the same water and sewer service extensions as

the four or more homes that would be required under City codes. As a result, the SDC fees paid by that house should reflect the capital cost of constructing the service line extensions, based on the area served rather than the number of service connections established at the present time.

Under this concept, the water and sewer SDC fees for a house on a 1-acre property would be four times the fees for a house on a lot of up to 10,000 square feet. In addition to connection to water and sewer systems, the property would retain SDC credits equivalent to three dwelling unit connections that may be claimed in the course of future infill development, through subdivision or partitioning. Such a method will:

- Allow large-lot development for individuals and families who desire it;
- Collect fees better reflecting the actual capital cost of serving large-lot developments;
- Generate SDC credits that add to the value of the large properties, in the form of prepayments against the cost of obtaining utility services for additional homes in the future; and
- Produce incentives for future infill development at desired urban densities.

A benefit of the SDC strategy is its application through the building permit issuance process, so that properties on which no new development is proposed are not subject to assessment, as they would be in the case of Local Improvement District formation.

SUMMARY

The South Bandon Refinement Plan study area has the potential to accommodate attractive neighborhood-scale development in a unique environmental setting: homes will be nestled among scenic riparian corridors and ponds, but close to parks and bluffs offering dramatic coastal views. The need for a comprehensive management strategy for stormwater runoff (to avoid erosion and flood damage problems) contributes to the opportunity to create this environment.

This opportunity, however, is challenged by the risk of substantial development activity under present Coos County ordinances that would conflict directly with long-term urbanization objectives. In particular, construction of homes on large lots (1 acre or larger) will make future redevelopment at planned urban densities unlikely, unless the City of Bandon and Coos County create a joint policy framework to preserve and encourage infill opportunities.

By implementing a set of infrastructure development requirements and tools that ensure construction of sufficient public facilities in conjunction with development projects, the City and County can create a flexible permitting strategy. The recommended approach will allow market demand to determine the locations where development occurs, while ensuring that adequate public works construction takes place to serve it. Long-range planning to allow redevelopment is recommended, such as by requiring shadow platting of large parcels as a development permit requirement.

A broad set of infrastructure financing tools, including developer requirements, Recovery Agreements, SDCs, and LIDs, also is recommended. The City and County will need a "menu" of techniques that can be applied to achieve public works construction in the wide variety of circumstances found within the study area.

Appendix A

Planning Process

APPENDIX A

PLANNING PROCESS

Refinement Plan Tasks and Chronology

Consultant Contract Phase

1. Background Research (March-April, 1997)
2. Community Design Workshop (April 21-23)
3. Refinement of Design Concepts, Policies and Strategies; Technical Analysis (April-June)
4. Implementation Strategies Workshop (June 12-13)
5. Preliminary Report (June 20)
6. Final Report (June 30)

Community Follow-Through Phase

1. Staff Prepare Amendment Proposals
2. Planning Commission Public Hearing (City, County)
3. City Council/County Commission Public Hearings

Bandon Refinement Plan Project
Community Design Workshop Schedule
Bandon Community Center
April 21-23, 1997

Monday, April 21

a.m.

8:00 Staff Briefing/Work Session

10:00 Property Owners Work Session

p.m.

12:00 Working Lunch

- Debrief property owners work session
- Constraints, opportunities, and issues identification

1:00 Design Team Work Session (closed, guests by appointment)

- Refinement of issues
- Preliminary design concepts, policies, and strategies

5:30 First Day Open House (2 hours)

- Welcoming remarks by Mayor
- City Council to attend
- Introduce preliminary design concepts, policies, and strategies to public and stakeholders for discussion and feedback

Tuesday, April 22

a.m.

8:00 City & County Staff Work Session - focus on joint planning agreement issues

10:00 Design Team Work Session

- Closed work session
- Appointments with citizens, property owners, or staff to review specific issues or concerns
- Research
- Problem-solving
- Writing and drawing

p.m.

5:30 Second Day Open House (2 hours)

- Presentation of work in progress for discussion and feedback

Wednesday, April 23

a.m.

10:00 Wrap-up Presentation (2 hours)

- Preliminary Refinement Plan key elements
- Next steps
- Discussion and feedback

Comments from Citizens and Property Owners

(Question) What development is allowed under present County standards?

(Question) What are the ramifications of fast growth versus slow growth?

(Question) What standards or guidelines can be used to control growth and development?

(Comment) Road network should be established prior to development, and soon!

(Comment) A summer air photo for reference would be helpful in identifying wet and dry areas.

(Comment) Consider effects anticipated from development of Bandon Dunes Golf Course at Whiskey Ridge, north of Bandon.

Frasier: wants to know whether investing in a house within the study area makes sense at this time, or whether to sell or build elsewhere

Neeley: concerns about ability to continue operating small business, etching glass and preparing scented oils in his home.

McCurdy: drainage concerns; desire plenty of room around their home; concerned about reductions of property values.

Walker: interest in partitioning of property and residential development; parallels between land uses allowed by the City and County.

Leaf: concerned about what will happen in the area, and at what time in the future as a result of this planning effort.

Densmore: interest in expansion of motel; solutions options for drainage issues.

Peters: concern about drainage issues.

Ek: concern about provision of water and sewer utilities; interested in market value and development prospects on behalf of Swedish owner.

Stark/Johnson: concerns about allowed land uses in the area.

Hardy/McMahon: want to keep their house and property quiet; don't want City to expand; don't want or need water or sewer; want street improvements; expect their costs to increase if annexed into the City; want to maintain agricultural animals and farming uses.

South Bandon Refinement Plan Project
Agenda for Property Owners Workshop on Implementation Issues
Thursday, June 12, 1997, 7:30-9:30 p.m.
City Council Chambers

Welcome and Introductions ▪ Process Overview ▪ Purpose of this Workshop	10 minutes
Recap of Design Charrette Work	10 minutes
Presentation of Design and Development Concepts	10 minutes
Presentation of Implementation Concepts	15 minutes
Discussion of Issues and Alternative Approaches	45 minutes
Summary/Wrap-up	15 minutes
Next Steps	15 minutes

South Bandon Refinement Plan Project
Agenda for City/County Staff Workshop on Implementation Issues
Friday, June 13, 1997, 8:00 a.m.-12:00 p.m.
City Council Chambers

Welcome and Introductions ▪ Process Overview ▪ Purpose of this Workshop	5 minutes
Recap of Design Charrette Work	5 minutes
Presentation of Design and Development Concepts	5 minutes
Presentation of Preliminary Implementation Concepts, Results of Property Owners Workshop	15 minutes
Implementation Issues Identification ▪ Policy Congruence/Conflict ▪ Administrative/Procedural Demands, Costs ▪ Authority/Delegation Issues	30 minutes
Team Problem Solving, Development of Alternative Approaches List Pro's and Con's, Potential Consequences: ▪ Political/Social ▪ Economic ▪ Equity Impacts ▪ Environmental ▪ Land Use Pattern ▪ Public Infrastructure Costs and Efficiency ▪ Transportation ▪ Other	40 minutes
Break	10 minutes
Synthesis of Alternatives ▪ Identification of Key Elements ▪ Preferred Approach to Implementation/Coordination ▪ Issues/Topics for Follow-up Study and Discussion	20 minutes
Presentation Strategy	20 minutes
Presentation Preparation	90 minutes

South Bandon Refinement Plan Project
Draft Agenda for Citizens Workshop on Implementation Issues
Friday, June 13, 1997, 1:00-3:00 p.m.
City Council Chambers

Welcome and Introductions Process Overview	5 minutes
Recap of Design Charrette Work	5 minutes
Presentation: ▪ Design and Development Concepts ▪ Implementation Concepts ▪ Property Owners' Comments and Issues ▪ Staff Analysis and Alternatives Development ▪ Recommended Approach	40 minutes
Discussion of Issues and Alternative Approaches	45 minutes
Summary/Wrap-up	15 minutes
Next Steps	10 minutes

Appendix B

Natural Features Inventory

SRI/SHAPIRO/AGCO
INCORPORATED

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Portland, Oregon 97209
Phone / 503.274.9000
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Project Memorandum

Date: April 11, 1997
To: Mr. Dennis Lewis, AICP
City of Bandon
555 Highway 101
P.O. Box 67
Bandon, Oregon 97411

Phone: (541) 347-2437
Fax: (541) 347-1415

From: Lee Leighton, AICP
Project: Bandon Refinement Plan
Project #: 7971042
Subject: Interpretation of Wetlands Study Map

This memorandum provides supporting information to help you interpret and use the attached Wetlands Study Map prepared by SRI/SHAPIRO/AGCO, Inc.'s (SHAPIRO's) environmental scientists Dan Cary and Julie Fukuda, and cartographer Sylvia Jung.

Limitations of the Wetlands Study Effort

This map must be understood in the context of our budget limitations for natural inventory work as part of the Bandon Refinement Plan project. The map indicates approximate wetland boundaries as observed on a July 7, 1992 aerial photograph, and a site visit on April 1 and 2, 1997, which included an aerial fly-over survey and on-site inventory work. Because of the size of the study area and access limitations imposed by the density of shrubs in some areas, the work does not include the kind of detail or precision associated with a local wetlands inventory, wetlands identification study, or delineation. The effort also does not include qualitative assessment of wetland functions and values.

As of this date, we have not received a response to the inquiry Julie Fukuda has made to the Oregon Natural Heritage Program, requesting a database search for any observations of rare, threatened, and endangered wildlife and plant species in the vicinity of the study area. We hope to receive a response by the time of our charrette visit, April 21-23, 1997.

Opportunities and Constraints Analysis

As indicated in Task 1.4 of the Scope of Work for our project, we need you to review this wetlands study work and indicate the boundaries you wish us to establish for areas to be considered constrained by wetlands (essentially, not subject to development). We will consider the remainder eligible for development for purposes of any design studies which we will pursue in the course of our workshops.

The descriptive information below will help you to understand the shaded areas of the attached map, make some judgments about a desired approach to wetlands conservation or encroachment, and give us instructions we will use to prepare a base map for our subsequent work. SHAPIRO and Foster Consultants will rely on the resulting boundary assumptions, without attesting to their validity with respect to obtaining agency approvals for development. These may include wetland delineation approvals and permits from the U.S. Army Corps of Engineers, Oregon Division of State Lands, Oregon Department of Environmental Quality, and Oregon Department of Fish and Wildlife. In essence, given the limited precision of information available, it is up to Bandon to decide how aggressively to treat the question of encroachment into wetland areas.

Categories Used in the Wetlands Study Map

In this section, we describe the categories that apply to the boundaries and shadings on the Wetlands Study Map. We also offer suggestions for reserving buffer areas around wetlands, wetland/upland mosaic areas, and inaccessible areas. Adhering to these guidelines will provide you with the safest approach, yielding a low likelihood that our planning work will unintentionally produce conflicts with established wetlands subject to wetlands conservation regulations.

<u>Uplands</u>

These areas, which are not shaded on the map, appear to be predominantly upland areas and were verified on the ground or from an aerial reconnaissance. If wetlands occur in these areas they are minimal, small, or are in unpredictable places (e.g., man-made excavations). Development could likely happen within these areas without encountering significant environmental constraints. Map accuracy is estimated at approximately 25 feet.

<u>Wetlands</u>

These areas clearly appear to be potentially jurisdictional wetlands of varying quality. They were verified on the ground or from an aerial reconnaissance. Impacts to most

wetland areas should be minimized or avoided during development. Map accuracy is estimated at approximately 25 feet. We suggest that a buffer of at least 50 feet be protected from development.

Mosaic of uplands and wetlands

These areas contain a mixture of wetlands and uplands in such a complex arrangement it was difficult to map in the time available. These areas contain enough wetlands (at least 50%) that the whole mosaic should be treated as wetlands because the included upland portions are inferior for development. Map accuracy is estimated at approximately 25 feet. We suggest that a buffer of at least 50 feet be protected from development.

Inaccessible areas

These areas could contain wetland and upland areas, but were impossible to discern from limited ground access and aerial reconnaissance. Ground access was impossible or difficult in the time allotted. Extensive clearing of gorse shrubs will need to be done to determine the development potential of these areas. The accuracy of mapped boundaries adjacent to uplands, where perimeter edges were accessible, is estimated at approximately 50 feet. The accuracy of mapped sub-units within these areas, such as a wetland area shown surrounded by inaccessible terrain, cannot be determined. We suggest that a buffer of at least 50 feet (on the upland side) be protected from development along upland edges.

Application

In general, confidence can be highest for wetland boundaries adjacent to upland edges, where the transition area was accessible and could be closely observed, and the separation between wetland and upland environments was relatively clear. Confidence is lower for edges of "mosaic" areas, as they represent a complex pattern of intermixed wetland and upland patches. For transitions among wetlands, mosaic areas, and inaccessible areas, mapped boundaries must be considered relatively imprecise.

We have used a highlighter to overlay a reference grid on the attached Wetlands Study Map. If you have questions about particular sub-areas, we will be able to quickly identify them and discuss them by telephone as we have a similar copy in our office. Please call us at (503) 274-9000 if you have any questions or comments, or would like to review our approach.

Thank you for your prompt attention. We need your instructions as soon as possible in order to prepare and print copies of working base maps for use in our charrette workshop in Bandon, April 21-23, 1997. We are excited about our upcoming visit!

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Project Memorandum

Date: May 6, 1997

To: Lee Leighton, Project Manager

From: Dan Cary

Project: Bandon Refinement Plan

Project #: 7971042

Possible rare plant and animal elements

Fifteen records of these plant and animal species were found by The Oregon Natural Heritage Program (ONHP) within a 2-mile radius of the study area. Although some of these species were found outside of the study area boundaries, these species are not necessarily present within the study area; there is no information known to ONHP from the site. To assure that there are no rare plant and animal elements present, the site should be inventoried at the appropriate season.

Any proposed development that could result in a "take" (such as destruction of critical habitat, killing, maiming, and harassing) must comply with the Endangered Species Act, Sections 2 - 4. Species proposed to be listed or Species of Concern are not protected. It would be beneficial, however, to consider a proposed species' potential to be listed; wen a species becomes listed a development must immediately comply with the Endangered Species Act.

Aleutian Canada geese (*Branta canadensis leucopareia*)
Federal status: listed threatened
State status: listed endangered

These species have been seen on off-shore rocks and may nest or graze on pastures within the study area.

Coastal coho salmon (*Oncorhynchus kisutch*)
Federal status: proposed threatened
State status: species of concern

There are no records from the study area, but there is a potential for presence in the small streams within the study area.

White-footed vole (*Arborimus albipes*)
Federal status: species of concern
State status: sensitive-undetermined

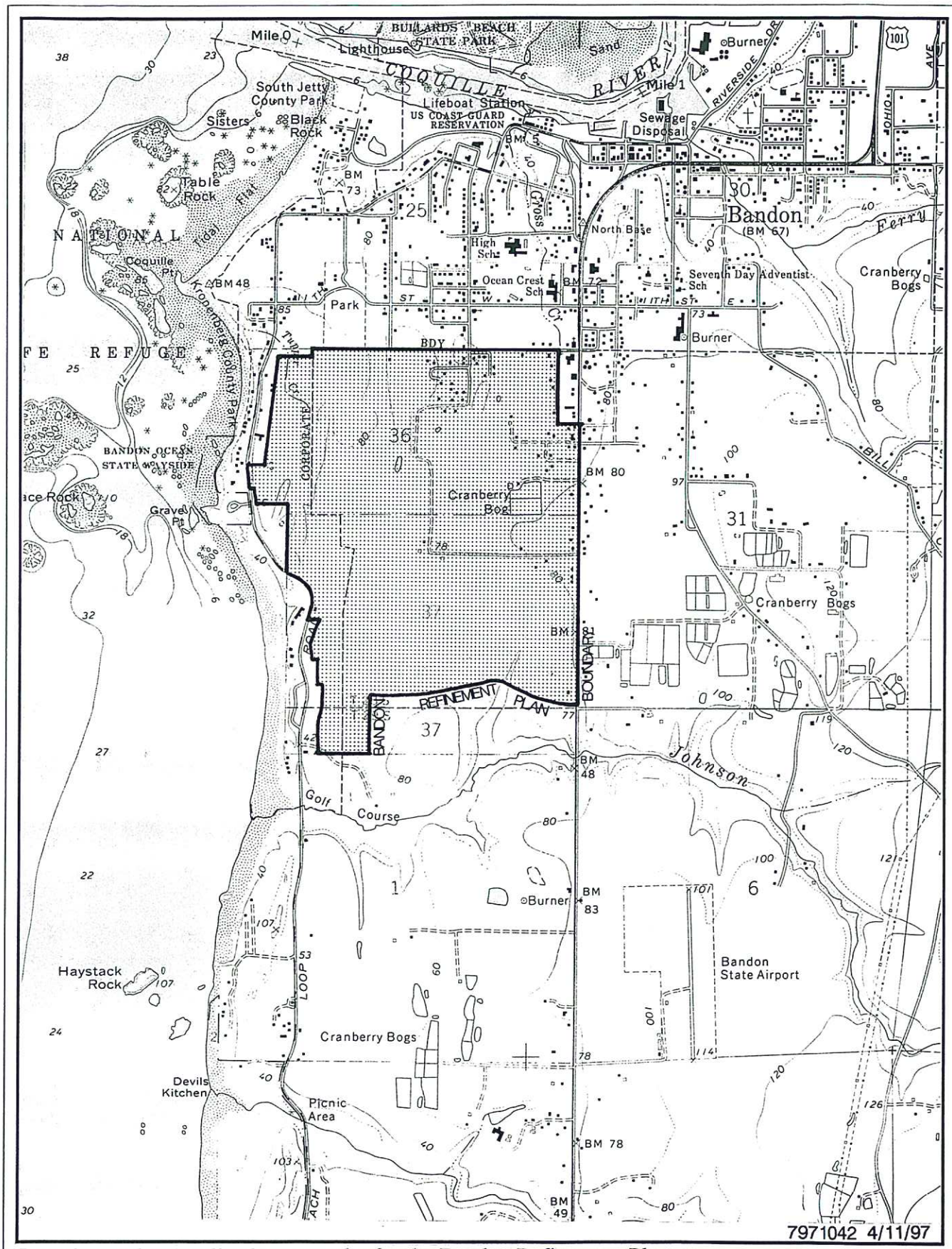
Found near the study area, and there is potential habitat along the streams within the study area.

Western lily (*Lilium occidentale*)
Federal status: listed endangered
State status: listed endangered

The exact location is not revealed, likely to occur in many areas within the study area.

Silvery phacelia (*Phacelia argentea*)
Federal status: species of concern
State status: listed threatened

Found north of the study area, but may be found in the sand dune areas in the western portion of the study area.



Location and generalized topography for the Bandon Refinement Plan study area in Coos County, Oregon (U.S.G.S. Bandon, Oregon, 7.5-minute quadrangle, 1:24000, 1970).

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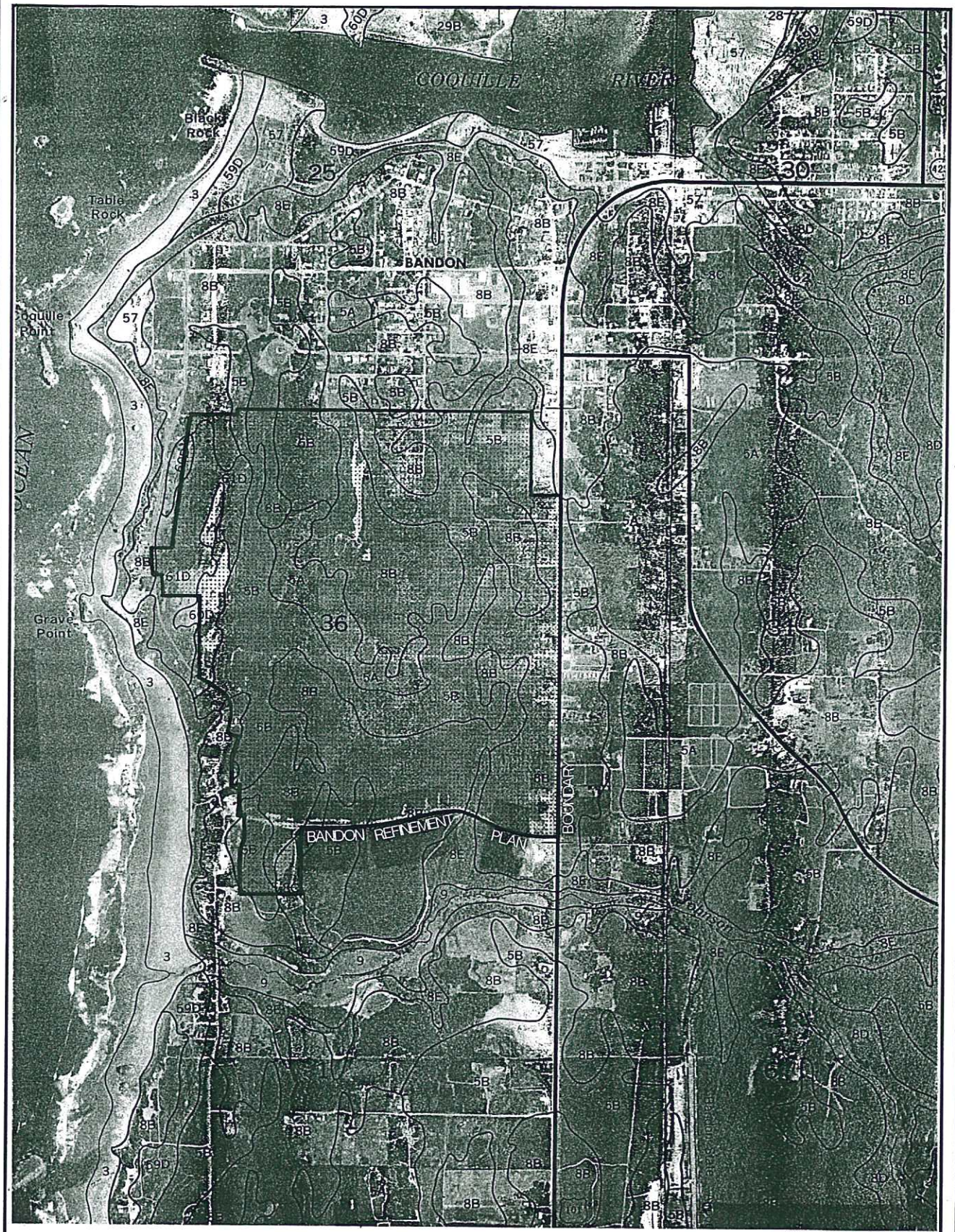

Soil mapping units for the Bandon Refinement Plan study area in Coos County, Oregon (Soil Conservation Service, *Soil Survey of Coos County, Oregon,* 1:20000, 1989).

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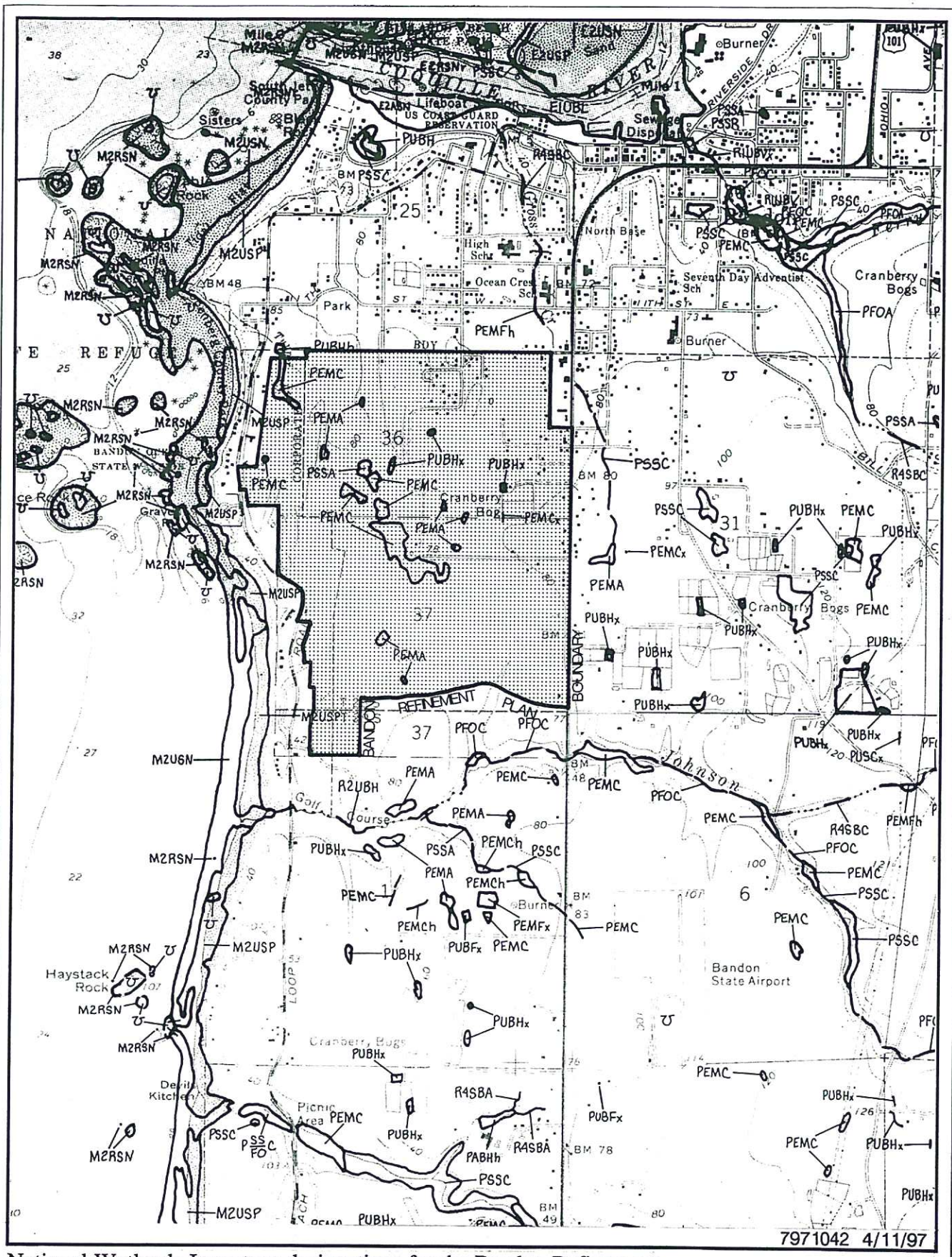

National Wetlands Inventory designations for the Bandon Refinement Plan study area in Coos County, Oregon (U.S. Fish and Wildlife Service, Bandon, Oregon, 7.5-minute quadrangle, 1:24000, based on 1982 color infrared photography).

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Appendix C

Review of Selected Infrastructure Funding Mechanisms

South Bandon Refinement Plan

Review of Selected Infrastructure Funding Mechanisms

A broad list of capital funding methods for infrastructure improvements is contained in the South Bandon Refinement Plan Technical Memorandum provided by The Dyer Partnership. This Appendix is designed to supplement that list by discussing the application of a specific package of tools to achieve infrastructure development while minimizing direct public capital funding. These tools include:

- Developer Installation of Improvements;
- The Systems Development Charge (SDC); and
- The Local Improvement District (LID).

Developer Installation of Improvements

Increasingly, city and county jurisdictions are requiring developers to install all needed public facilities to meet public standards, and dedicate them to the public following inspection and approval. This approach is appropriate for incremental improvements within and immediately adjacent to development sites, but encounters regulatory takings issues if expanded too far (specifically, the "rough proportionality" test established by the Dolan v. City of Tigard case precedent).

The local government must first adopt an ordinance establishing its authority to require developers to construct streets and public facilities in conjunction with land development. The local government also creates plans for streets, public utility systems, and stormwater management, specifying the needed capacities and dimensions to be constructed at particular locations. These standards are then used to require developers to construct facilities in accordance with plan specifications, as conditions of land use approvals or building permit issuance. Developers are required to extend streets, water and sewer lines, and storm drainage improvements to serve their development sites. In addition, they must provide for the next increment of extension to occur, typically by extending lines and streets to the edge of the developed property and providing stubs for future connections.

Where construction of such extensions may be necessary in the future, but would be more efficiently included in a larger project, tools such as Improvement Agreements, LID Non-Remonstrance Agreements, and cash deposits can provide for the developer's contribution or participation without requiring immediate construction. Bonds are sometimes used as a means of securing financial or performance commitments; however, collection in the case of default is complicated and frequently requires litigation.

Any strategy that seeks to obtain commitments for future performance or participation in cost sharing, in lieu of immediate construction, involves uncertainty about future compliance and other complications. A tool for making immediate construction more acceptable to a developer is to offer a recovery agreement for future reimbursement of

some of the costs, based on the benefits received by other properties to be served by the facilities.

The Recovery Agreement

In many cases, off-site improvements required in accordance with system plans will have the capacity to serve additional properties or subareas. Where this occurs, a recovery agreement allows the developer to obtain reimbursement from owners of benefited property in the course of future development.

This strategy requires the adoption of an ordinance allowing the local government to contract with a developer to obtain partial recovery of infrastructure costs exceeding those required to serve only the proposed development, and defining the process for creating such an agreement.

The developer submits a proposal to define the "area of benefit" for installed improvements, and the appropriate method of calculating the allocation of costs among benefited properties. The formula should seek to apportion equitably the value of the constructed improvements among properties that will in the future be served by them. The proposal is considered at an open public hearing before the political body with authority to enter into contracts (i.e., City Council or County Commission).

When approved and entered into by developer and jurisdiction, the recovery agreement defines the amount to be collected from benefited properties in conjunction with issuance of building permits, and remitted to developer (less a defined amount retained by the jurisdiction to cover administrative costs). Because building permit issuance is the point of attachment for collection of recoverable amounts, no liens or other instruments are recorded against benefited properties, and no reimbursement occurs unless and until construction occurs on a benefited property.

It is also possible for other agencies or the City itself to act as the developer, establishing a recovery agreement, installing infrastructure, and obtaining reimbursement over time as incremental development occurs.

The Systems Development Charge (SDC)

Local jurisdictions can adopt Systems Development Charge (SDC) ordinances, in which a specific list of improvements eligible for SDC-funded construction is adopted, the cost of their construction is estimated, and a formula apportioning those costs among properties in the community is defined. Fees are generally calculated based on system-wide needs rather than for distinct local subareas.

Oregon State law requires that the calculation of the SDC fee not be weighted in favor of present property owners, that is, the cost of facilities that will serve both present and future residents cannot be pushed onto new residents or developers in excess of their fair share overall. Within that context, however, the local jurisdiction has considerable latitude in determining the calculation of SDC fees. Assumptions used in framing the apportionment method must be clear and rational. It is also critical that they be consistent with regulations and anticipated development patterns in the area.

Improvements to be funded by SDC fees need not be constructed in advance. Rather, the funds are accumulated for use on construction projects whose priority and timing are decided by the local government. In some instances, a developer will desire to build at a location where public construction of needed facilities is not planned in the near term. The local government has the option of revising construction priorities to advance the schedule for the needed system improvement. If this is not desirable, the SDC ordinance should enable the developer to perform the necessary construction and receive credit for its cost, up to the full amount of the project's SDC fee liability. The SDC ordinance should make it clear that the jurisdiction has authority to define the scope of needed improvements, to ensure that properly functioning networks and system sub-units are constructed.

Collection of SDC fees occurs when building permits are issued. A major attraction of the SDC strategy is that it does not require assessment of costs to existing properties whether development is proposed or not, but rather represents new development "paying its own way" to a greater extent.

The Local Improvement District (LID)

A Local Improvement District is a geographic area in which public improvement projects are undertaken, with costs and interest payments secured by liens assessed against real property within the district. Formation of a LID requires City Council action and approval by a majority of property owners within the proposed district. District boundaries, the method of raising capital, specific improvements to be constructed, apportionment of costs among properties within the district, interest rates, repayment terms, and lien assessments all need to be clearly described.

Unlike the creation of SDC programs, LIDs are formed to benefit a defined area and finance a specific infrastructure development, whose costs are borne by property owners within the district itself. The local jurisdiction, with approval authority over whether to form a LID, has control over the projects to be undertaken and their timing.

A key benefit of LIDs is that they help direct private sector development by providing necessary infrastructure in advance of development. Secondarily, LID assessments increase the cost of holding property in an undeveloped condition by increasing carrying costs, further contributing to development activity.

Because LIDs create a liability for property owners irrespective of whether or when they intend to develop their property, owners who do not intend to develop their property in the near future often oppose their formation. In addition, high underwriting costs demand that districts be substantial in size, formed around projects of sufficient scale to absorb the additional overhead.

Tables: Comparison of Selected Funding Mechanisms

Tables 1 through 5 compare the application of the funding mechanisms discussed above to construction of streets, water, sewer, stormwater management, and parks systems.

Table 1. General Applicability of Selected Financing Tools Street Improvement Projects

Funding Mechanisms			
Developer-Installed Improvements	**Recovery Agreements**	**Systems Development Charge (SDC)**	**Local Improvement District (LID)**
Suitability: Good for large-scale development projects; poor for individual construction permit requests. **Eligible facilities**: Local neighborhood streets; for larger projects, may include adjacent collector and higher-level functioning streets unless access is restricted. **Adaptability**: "Half-street" improvements often apply to streets along the edge of a development site or property. **Application**: Construction is required as a condition of building permit issuance or building occupancy.	**Suitability**: Good for large-scale developments; poor for individual construction permit requests. **Eligible facilities**: Improvements to streets of any functional classification that will benefit properties in addition to the subject property. **Adaptability**: The reimbursement amount is determined as part of preparing a Recovery Agreement. **Application**: Street construction by the developer is required as a condition of building permit issuance or building occupancy; reimbursements are subsequently collected from developers of benefited properties as a condition of building permit issuance.	**Suitability**: Good. **Eligible facilities**: Collector and higher-level functioning streets considered to serve community (rather than local neighborhood) transportation needs. **Adaptability**: Developers receive credit against SDC charges for construction of listed streets eligible for SDC funding. **Application**: Fees, less credits for constructed improvements, are payable when building permits are issued.	**Suitability**: Fair. ▪ Largely dependent on assessed values and the resources of property owners within the proposed district. ▪ High overhead, due to bond underwriting costs, favors formation of large districts. **Eligible facilities**: Streets within a defined geographic district. **Adaptability**: The LID apportionment method may include adjustments based on factors such as property size or distance from eligible roadways. **Application**: Liens against real property.

Table 2. General Applicability of Selected Financing Tools Water System Improvement Projects

Funding Mechanisms			
Developer-Installed Improvements	**Recovery Agreements**	**Systems Development Charge (SDC)**	**Local Improvement District (LID)**
Suitability: Good for large-scale development projects; fair to poor for individual construction permit requests. Private projects, rather than City, direct the sequence and location of new water lines. **Eligible facilities**: Water line extensions to reach development sites. **Adaptability**: Where line sizes larger than needed for proposed development are required, City may offer to pay incremental cost of upsizing. **Application**: Construction is required as a condition of building permit issuance.	**Suitability**: Good for large-scale development projects; fair for individual construction permit requests. Private projects, rather than City, direct the sequence and location of new water lines. **Eligible facilities**: Water line extensions to reach development sites which must be oversized to accommodate future service areas. **Adaptability**: The amount of reimbursement available is determined as part of preparing a Recovery Agreement. **Application**: Construction is required as a condition of building permit issuance.	**Suitability**: Good for large-scale development projects; good for individual construction permit requests. **Eligible facilities**: Public water trunk lines, loop connections, and local supply lines. **Adaptability**: Developers receive credit against SDC charges for construction of water system elements that exceed the minimum necessary to serve their proposed development. **Application**: Fees, less credits for constructed improvements, are payable when building permits are issued.	**Suitability**: Good. ▪ Largely dependent on assessed values and the resources of property owners within the proposed district. ▪ High overhead, due to bond underwriting costs, favors formation of large districts. **Eligible facilities**: Water lines within a defined geographic district. **Adaptability**: The LID apportionment method may include adjustments based on distance from water trunk lines, etc. **Application**: Liens against real property.

Table 3. General Applicability of Selected Financing Tools Sewer System Improvement Projects

Funding Mechanisms			
Developer-Installed Improvements	**Recovery Agreements**	**Systems Development Charge (SDC)**	**Local Improvement District (LID)**
Suitability: Good for large-scale development projects; fair to poor for individual construction permit requests. Private projects, rather than City, direct the sequence and location of new sewer lines. In some areas, construction of lift stations is a necessary precondition. **Eligible facilities**: Sewer line extensions to reach development sites. **Adaptability**: Where line sizes larger than needed for proposed development are required, City may offer to pay incremental cost of upsizing. **Application**: Construction is required as a condition of building permit issuance.	**Suitability**: Good for large-scale development projects; fair to poor for individual construction permit requests. Private projects, rather than City, direct the sequence and location of new sewer lines. In some areas, construction of lift stations is a necessary precondition. **Eligible facilities**: Sewer line extensions to reach development sites which have capacity to accommodate future service areas. **Adaptability**: The amount of reimbursement available is determined as part of preparing a Recovery Agreement. **Application**: Construction is required as a condition of building permit issuance.	**Suitability**: Good for large-scale development projects; good for individual construction permit requests. **Eligible facilities**: Public sewer gravity lines, pressure lines, lift stations, and other facilities that serve multiple system users. **Adaptability**: Developers receive credit against SDC charges for construction of sewer system elements that exceed the minimum necessary to serve their proposed development. **Application**: Fees, less credits for constructed improvements, are payable when building permits are issued.	**Suitability**: Good. ▪ Largely dependent on assessed values and the resources of property owners within the proposed district. ▪ High overhead, due to bond underwriting costs, favors formation of large districts. **Eligible facilities**: Sewer lines within a defined geographic district. **Adaptability**: The LID apportionment method may include adjustments based on distance from sewer trunk lines, etc. **Application**: Liens against real property.

Table 4. General Applicability of Selected Financing Tools Stormwater Management System Improvement Projects

Funding Mechanisms			
Developer-Installed Improvements	**Recovery Agreements**	**Systems Development Charge (SDC)**	**Local Improvement District (LID)**
Suitability: Good for large-scale development projects; poor for individual construction permits. **Eligible facilities**: On-site conveyance, pre-treatment, and detention facilities. Impact analysis, and construction of off-site improvements indicated by analysis results, may also be required. **Adaptability**: Where facilities larger than needed for proposed development are required, such as to accommodate predicted flows throughout the drainage basin, the City may offer to pay the incremental costs of construction to meet long-term flow expectations. **Application**: Construction is required as a condition of building permit issuance.	**Suitability**: Good for large-scale development projects; poor for individual construction permits. **Eligible facilities**: On-site and off-site conveyance, treatment, and detention facilities, to the extent these are constructed with excess capacity to accommodate future development. **Adaptability**: Where facilities larger than needed for proposed development are required, such as to accommodate predicted flows throughout the drainage basin, the Recovery Agreement identifies benefited properties and appropriate reimbursement values. **Application**: Construction is required as a condition of building permit issuance.	**Suitability**: Good for large-scale development projects; fair for individual construction permit requests. **Eligible facilities**: Listed, eligible on-site and off-site conveyance, treatment, and detention facilities, to the extent these are constructed with excess capacity to accommodate future development. **Adaptability**: Developers receive credit against SDC charges for construction of facilities that exceed the minimum necessary to serve their proposed development. **Application**: Fees, less credits for constructed improvements, are payable when building permits are issued.	**Suitability**: Good. ▪ Largely dependent on assessed values and the resources of property owners within the proposed district. ▪ High overhead, due to bond underwriting costs, favors formation of large districts. **Eligible facilities**: Storm drainage facilities within a defined geographic district. **Adaptability**: The LID apportionment method may include adjustments based on the effects stormwater management planning may have on particular properties. **Application**: Liens against real property.

Table 5. General Applicability of Selected Financing Tools Parks System Improvement Projects

Funding Mechanisms			
Developer-Installed Improvements	**Recovery Agreements**	**Systems Development Charge (SDC)**	**Local Improvement District (LID)**
Suitability: Fair for large-scale development projects; poor for individual construction permits. **Eligible facilities**: Community and neighborhood parks and open space improvements and dedications, including "pocket parks," greenway corridor segments, and trails. **Adaptability**: The ability to exact dedications for parks, trails, and open space is limited by the "rough proportionality" rule established in the "Dolan" case. Obtaining exactions from small units of development may not be feasible. **Application**: Dedication and, if applicable, construction is required as a condition of building permit issuance.	**Suitability**: Fair for large-scale development projects; poor for individual construction permits. **Eligible facilities**: Community and neighborhood parks and open space improvements and dedications, including "pocket parks," greenway corridor segments, and trails. Note that benefited property boundaries are far less clear than for utility line installations, complicating the process of adopting a satisfactory agreement. **Adaptability**: The ability to exact dedications for parks, trails, and open space is limited by the Dolan "rough proportionality" rule. Obtaining exactions from small units of development may not be feasible. The amount of reimbursement available is determined as part of preparing a Recovery Agreement. **Application**: Dedication and, if applicable, construction is required as a condition of building permit issuance.	**Suitability**: Good. **Eligible facilities**: Listed, eligible park sites, greenway corridors, and trail facilities. **Adaptability**: Developers receive credit against SDC charges for construction of listed facilities. **Application**: Fees, less credits for constructed improvements, are payable when building permits are issued.	**Suitability**: Good. ▪ Largely dependent on assessed values and the resources of property owners within the proposed district. ▪ High overhead, due to bond underwriting costs, favors formation of large districts. **Eligible facilities**: Park sites, greenways, and trail facilities within a defined geographic district. **Adaptability**: The LID apportionment method may include adjustments based on factors such as a property's distance from proposed parks and trails. **Application**: Liens against real property.

Appendix D

Integrated Stormwater Management and Wetlands Conservation Approach

South Bandon Refinement Plan

Integrated Stormwater Management and Wetlands Conservation Approach

A unique opportunity exists in the South Bandon study area to create a program integrating stormwater management and the enhancement of riparian corridors, drainageways, and wetlands. These physical features can serve as the framework that creates distinct neighborhood enclaves surrounded by scenic corridors, but very well connected to the "fabric" of Bandon's existing neighborhoods.

The following outline suggests a method of identifying and taking advantage of these opportunities.

I. DEFINE THE PUBLIC INVOLVEMENT PROCESS

The proposed integrated stormwater management/natural features enhancement program not only requires work by environmental and civil engineering specialists, but also substantial involvement of affected property owners and interested citizens. Ultimately, a constituency of supporters will be essential to adoption of a proposed plan.

To commence the project, begin with these important steps:

1. Notify the public and property owners of the process;
2. Provide a process overview;
3. Educate the public and property owners about the importance of riparian corridors, natural drainageways, and wetlands;
4. Explain the opportunities to participate in the design process;
5. Ask citizens for assistance to identify resources and sites of importance; and
6. Obtain owners' permission to enter properties to conduct inventory work.

II. WETLANDS AND HABITAT ANALYSIS

In this phase, technical work is undertaken to characterize the present condition of riparian corridors, drainageways, wetlands, and cultural resources within the study area.

1. **Local Wetland Inventory.** Perform a determination of wetland boundaries and prepare a wetland inventory map.
2. **Wetland Functions and Values Analysis.** Characterize wetland hydrology, applying the Oregon Freshwater Wetland Assessment Methodology (OFWAM). It is important to include Oregon Department of Fish and Wildlife (ODFW) staff in this effort.

3. **Habitat and Natural Resource Values Inventory and Analysis.** Characterize fish and wildlife habitat. As in the analysis of wetland functions and values, it is important to include ODFW staff in this task.

4. **Cultural Resources Inventory.** This task includes preparation of archaeological and historical inventories.

5. **Characterize Receiving Drainageways.** This task involves evaluation of erosion potential and conveyance capacity, delineation of floodplains, and determination of water quality requirements. In particular, it is important to determine whether each drainageway is subject to Total Maximum Daily Load (TMDL) requirements established by the Department of Environmental Quality (DEQ). If so, special pre-treatment standards apply.

6. **Draft Analysis Document.** Analysis results are released for review before being finalized.

7. **Public Review Opportunity.** Obtain public comments on the draft document and refine it before release in final form.

8. **Final Analysis Document.** Analysis results are published.

III. MITIGATING AND PERMITTING WETLAND FILLS

In this phase, a desirable program to guide land development, stormwater management, and natural area conservation/enhancement is developed.

1. **Define the Public Involvement Program.** As for prior phases, public involvement is an important component of a successful project. Key process points and opportunities for citizen review and input should be identified and communicated to the public early in the process.

2. **Design Principles.** The following guidelines should be used in preparing wetland filling and mitigation proposals:

   - Avoid altering or affecting high-quality wetlands;
   - Target low-quality wetlands that could be improved using treated stormwater; and
   - Buffer resources and wetlands from development.

3. **Identify Wetlands to be Left Unaltered.** The existing characteristics of high-quality wetlands should be retained as much as possible.

4. **Identify Wetlands to be Filled.** Low-quality wetlands provide the most logical locations to consider filling to allow development, in conjunction with mitigation efforts in other areas.

5. **Identify Wetlands to be Enhanced.** Wetland areas of marginal quality are good locations to consider enhancement efforts, such as removal of invasive, non-native plants and replanting of native species.

6. **Identify Wetlands to be Enlarged or Created.** In some locations, enlargement of wetland areas may be required, especially where stormwater detention is needed. At this phase, a preliminary identification of potential enlargement/creation sites can be made, with sizing and capacity details determined in conjunction with the stormwater management planning phase.

IV. STORMWATER MANAGEMENT

In this phase of the project, the stormwater management needs of the study area are considered in light of the proposed network of wetlands and drainageways.

1. **Define the Public Involvement Process.** Stormwater management system design will affect property owners' responsibilities in the course of development. An involvement program will enable the design process to respond creatively and productively to citizens' and owners' concerns.

2. **Define Drainage Basins.** Because the existing topography of the study area is generally broad and flat, there are some opportunities to reshape drainage area boundaries to adjust stormwater flows among the drainageways within the study area. Such adjustments should be considered in light of the water balances needed to preserve, enhance, or create wetlands according to work in the previous phase.

3. **Develop Stormwater Drainage and Water Quality Treatment Plans.** For each drainage basin, design the basic structure of pre-treatment facilities, which prepare stormwater runoff prior to its release into public stormwater drainage facilities, public drainageways, and detention facilities. The following guidelines should be followed:

   A. **Involve DEQ Staff.** A 401 Permit Process Specialist will be needed to help determine basin-wide detention and water quality objectives.

   B. **Amend Building Requirements to Reduce Impervious Area.** Impervious surfaces reduce infiltration and increase stormwater runoff. Impervious surface cover within a watershed can cause adverse effects on streams (Schueler, 1994). Recognizing the adverse effects of impervious surface, a recent publication from the Center for Watershed Protection (Schueler, 1995) proposes that managing and reducing the amount of impervious surface be used as a primary planning tool to protect urban streams. Various methods that could be incorporated into building requirements are shown below.

Strategies to Efficiently Use Impervious Surfaces

- Narrower residential road widths
- Reduced road lengths
- Hourglass streets
- Cluster development
- Shared driveways
- Angled parking with one-way traffic flow
- Smaller parking stalls
- Reduced parking space ratios for some uses
- Shared parking facilities in commercial areas
- Shorter residential driveways
- Reduced cul-de-sac radii
- Cul-de-sac donuts
- Vertical parking structures
- Two-story buildings vs. one-story
- Stream buffers
- Grass swales vs. curb and gutter
- Open space landscaping requirements
- Sidewalks only on one side of street
- Reduced side and rear yard setbacks
- Decreased distance between lots
- Hammerhead-shaped turnarounds
- Permeable spillover parking areas

Source: Schueler, 1994.

C. **Apply Regional and Dispersed Management Techniques.** To meet detention and water quality objectives identified in the previous steps, regional and dispersed techniques can be used to create an effective overall program. Table 1 contains a summary of stormwater management techniques, some of which are discussed in detail below.

Regional Management Techniques

Infiltration Basins. Infiltration is used when soils and groundwater conditions allow stormwater to soak into the ground without harming groundwater quality. Specific requirements pertaining to infiltration rates of soils and distance to underlying groundwater must be met to ensure that an infiltration facility will perform properly. Infiltration facilities including ponds, tanks, and trenches, have detention volume to temporarily store runoff while it is being infiltrated. Often these facilities are designed with a pre-settling basin to reduce the amount of sediments entering, or they are lined with a filter media that can be replaced or cleaned to prevent clogging.

Infiltration within Conveyance System (Open Ditches). Existing roadside ditches in suitable soils can often be used to infiltrate water as it is conveyed.

Enhance Wetlands for Detention. Wetlands can often be enhanced to provide stormwater detention. Generally, pretreatment of stormwater is required prior to discharging to a natural wetland.

Constructed Regional Detention. Stormwater can be managed in large constructed detention ponds, provided adequate land is available in the appropriate area. Having regional detention ponds reduces construction cost and simplifies operation and maintenance.

Table 1. Summary of Stormwater Management Techniques

Technique	Pretreatment	Application	Limitations
Infiltration Ponds	Pretreatment capacity should handle a 6-month, 24-hour storm	• stormwater collected from large developed areas • can be combined with recreation and open space areas	• regular maintenance and removal of sediments is required
Conveyance Ditches and Swales	Filter media can be built into bottom of ditch or swale to provide pretreatment	• roof drainage • roadside ditches • stormwater collected from large developed areas	• regular maintenance and removal of sediments is required
Infiltration Trenches and Dry Wells	Pretreatment recommended to reduce sediments of inflow	• roof drainage • road/parking lot drainage	• pretreatment is especially important to protect filter media from clogging • clogged systems generally need to be replaced • reserve infiltration area required • emergency overflow path required
Enhanced Wetland Detention	Filter strips can efficiently pre-treat stormwater	• stormwater collected from large developed areas • can be combined with recreation and open space areas	• detention design must consider hydroperiod of wetland
Constructed Regional Detention	Pretreatment not required	• stormwater collected from large developed areas	• requires relatively large tract of land • requires planning on a watershed scale
Roof Downspout Systems	Pretreatment not required for runoff from clean surfaces	• roof drainage	• individual downspout system is limited to 5,000 square feet of roof area
Runoff Dispersion	Pretreatment not required for runoff from clean surfaces	• roof drainage • roofs adjacent to lawn or open space • outfalls of low flows to natural buffer areas	• amount of infiltration is dependent upon dispersion area available
Porous Pavement	Pretreatment recommended for vehicle surfaces	• sidewalks • spill-over parking • emergency access roads • recreational trails	• generally not suitable for heavy vehicle traffic • surfaces can be difficult for elderly • infiltration rates are limited
Onsite Detention	Pretreatment not required	• stormwater collected from small developed areas; two lots or more	• sometimes difficult to fit into site land area or topographic constraints • relatively expensive

Dispersed Management Techniques

Roof Infiltration. Roof infiltration can be used to manage stormwater from roofs and patios of individual lots. Soils on the site must have adequate infiltration capacity.

Splash Blocks. Runoff from small areas of impervious surface not containing significant amounts of pollutants may be dispersed and infiltrated in certain areas. This strategy often is used for runoff from roofs and other clean surfaces, such as sidewalks. Roof drains typically convey flow onto splash blocks and then to a lawn or other vegetated area, at which point it disperses and infiltrates. This method of infiltration is appropriate in landscapes consisting of impervious areas surrounded by a mosaic of permeable areas, including lawn or open space.

Porous pavement. Roadways and parking areas generally are paved with concrete or asphalt, which does not allow infiltration. By using porous or pervious paving materials which, while not completely pervious, are substantially more pervious than asphalt or concrete, runoff can be reduced and infiltration increased. A number of different types of porous paving materials are commercially available. Whereas most uses are for overflow parking areas and sidewalks, some materials are strong enough for vehicle surfaces, such as emergency roads, not receiving heavy traffic use. Pretreatment of stormwater is recommended if the surface is exposed to vehicle traffic. A major limitation in using porous materials is that the infiltration rates of the materials are limited.

On-site Detention. Runoff from small areas of impervious surface not containing significant amounts of pollutants may be dispersed and infiltrated in certain areas. This strategy often is used for runoff from roofs and other clean surfaces, such as sidewalks.

4. **Develop Strategies for Conveyance.** A variety of methods can be used to convey stormwater runoff within each drainage basin. Examples include:

- Roadside drainage improvements;
- Direct discharge to ocean;
- Discharge to ocean with erosion protection standards for steep slopes and bluff; and
- Discharge into wetlands and natural drainageways.

For discharge into wetlands and natural drainageways, pre-treatment facilities that provide filtration of runoff should be located outside required buffer widths.

Wetland and stream buffers planted with native vegetation offer the following additional benefits:

- Reduction of watershed imperviousness;
- Filtering of pollutants from stormwater;
- Additional flood storage capacity;
- Stream bank erosion protection; and
- Provision of food and habitat for wildlife.

5. **Develop a Maintenance Program for the Stormwater System.** As development in the watershed expands, more areas will rely on constructed systems to manage stormwater. Stormwater system maintenance activities in the watershed should focus on maintaining the function of all constructed systems. Maintenance activities will be especially important for infiltration systems, and should include efforts to enhance stormwater infiltration in conveyance systems, including roadside ditches where the underlying soils are suitable.

6. **Develop Erosion and Sedimentation Control Standards for Construction Activity.** Maintaining the permeabilities of the pervious areas within new construction will be important for both short- and long-term management of surface water runoff. Best management practices (BMPs) to control erosion and soil compaction during clearing and grading operations should be adopted. It will be particularly important to implement these BMPs in areas where infiltration structures eventually will be installed.

7. **Identify Resource Enhancement and Water Quality Improvement Projects.** The full set of proposed natural area improvement projects is compiled.

8. **Prepare a Summary of Proposed Stormwater Management Improvements.** The list of proposed stormwater management projects is created.

9. **Develop a Phasing Plan for Proposed Development and Construction of Stormwater Management System Components.** A structured approach to construction, over time, of the integrated resource conservation/enhancement and stormwater management system is framed.

10. **Define Public and Private Roles and Responsibilities.** The program will include a combination of public improvements and private components to be constructed in conjunction with development projects.

    A. **Public Land Acquisitions for Implementation of Stormwater Management Plan.** At some locations, particularly in logical places for regional detention ponds, land purchases may be necessary. Eminent domain powers should be used only where acquisition through purchase or transfer cannot be negotiated.

    B. **Mitigation Banking Concept.** Because of the ownership pattern in much of the study area, many property owners that desire to fill wetlands for

development will be unable to perform mitigation work within their own properties. Others whose land may contain substantial jurisdictional wetlands or candidate areas for wetland enhancement, enlargement, or creation, as identified in previous steps, can receive some economic benefit by creating "mitigation banks" where developers can purchase rights to perform off-site mitigation in order to maximize their property's development potential. In this way, mitigation efforts can be steered where it will be most beneficial to the environment while creating some economic benefit for affected property owners.

C. **Transfers of Development Rights (TDRs).** Another mechanism for creating equity for properties affected by wetland delineations and stormwater management acquisitions is to allow development rights to be sold to other property owners. These rights can be in the form of a specific number of dwelling units, square footage of floor area, or other bonuses based on the affected property's hypothetical development potential if it were not constrained. The developer who buys TDRs obtain rights to build in excess of the limitations otherwise imposed at a particular development site. Implementation requires the City to identify the types of rights eligible for transfer, the target areas within which TDRs can be applied as a bonus for development, and standards establishing the maximum densities, building sizes and heights, and other parameters that will be allowed through application of TDRs.

D. **City/County Role in Oregon Division of State Lands (DSL)/U.S. Army Corps of Engineers (Corps) Permit Process.** The local jurisdictions' role in working with DSL and Corps can be adjusted to meet the needs of the project, or project subareas. In some portions of the study area, particularly where large units of land suggest that development will consist of sizable subdivision proposals, it may be best to create a stormwater management/natural area conservation framework and require the specific details of implementation and permitting to be proposed by the developer and implemented through subdivision approval conditions. In other subareas, where it would be inappropriate to require the owner of an existing small lot to resolve system-level drainage issues, a more detailed, active approach may be appropriate. A well-defined plan for these subareas would offer owners of existing lots clear information about their development rights and options.

E. **Property Owner/Developer Role.** This issue is related to the City/County involvement question. In general, large-scale developers may derive some benefits from performing their own delineations, stormwater management plans, removal/fill applications, and mitigation plans, because of the opportunity to respond to site needs creatively in the design process. By contrast, individual owners of existing small platted parcels have few or no options to re-shape system needs affecting their properties.

V. IMPLEMENTATION

A combination of strategies will be needed to put the integrated stormwater management/natural area conservation plan to work.

1. **Adopt Policy, Plan, and Development Requirements.** Typical implementation tools include:

   - Adoption of a Protective Overlay Zone and standards;
   - Identification of corridors and wetland areas subject to overlay zone provisions;
   - Wetland and natural area buffer width, planting, and setback requirements; and
   - An approval process that allows conditions to be imposed on proposed development.

2. **Identify Funding and Construction Mechanism(s).** Facilities can be built in a variety of ways, including public, private, and joint construction efforts. Strategies include:

   - Development requirements and exactions imposed on private developers through the land use review process;
   - Local Improvement District (LID) Formation;
   - Imposition of a Systems Development Charge (SDC);
   - Private construction eligible for recovery charge reimbursement from benefited properties over time;
   - Allocation of capital funds for stormwater management system acquisitions and construction; and
   - Grant funding, such as through the Community Development Block Grant (CDBG) program.

3. **Obtain DSL/Corps Permits as Needed.** Depending on the specific approach being taken in a given watershed area or study subarea, two key schemes are suggested:

   - The City submits permit applications to the DSL and Corps for the proposed removal/fill and mitigation program; or
   - The City adopts regulations, and individual permits are obtained by developers in conjunction with development proposals.

   The anticipated timing of development also is an important consideration, as permits routinely expire and need to be renewed every three years if construction has not occurred.

4. **Monitoring Requirement.** As a permit condition, the DSL and Corps may require monitoring of wetland mitigation and enhancement projects for a period of three to five years, or longer. During the monitoring period, irrigation, replanting, and other actions may be required to assure a satisfactory plant survival rate. These obligations, which must be borne by the permit applicant, need to be considered carefully in any decision to take responsibility for obtaining DSL/Corps permits.

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