City of Woodburn Local Wetlands Inventory and Riparian Assessment

Prepared for

The City of Woodburn

Prepared by

Shapiro and Associates, Inc.

January 5, 2000

City of Woodburn Local Wetlands Inventory and Riparian Assessment

Prepared for

Teresa Engeldinger
The City of Woodburn
270 Montgomery Street
Woodburn, Oregon 97071

Prepared by

Dan Cary
Colin MacLaren
John Gordon
Ed Strohmaier
Peggy O'Neill
Paul Gill
Sylvia Jung
Shapiro and Associates, Inc.
1650 N.W. Naito Parkway, Suite 302
Portland, Oregon 97209
SHAPIRO Project #2981036

January 5, 2000

TABLE OF CONTENTS

1.0 INTRODUCTION **1**

2.0 SOURCE MATERIALS AND METHODS **2**
2.1 Source Materials 2
2.2 Local Wetlands Inventory 2
2.2.1 Overview of the Local Wetlands Inventory 2
2.2.2 Overview of Local Wetlands Inventory Methods 2
2.2.3 On-site Wetland Determination 3
2.2.4 Off-site Determination 4
2.2.5 Classification of Wetlands 5
2.2.6 Data Compilation and Interpretation 5
2.2.7 Confirmation of LWI 5
2.3 Wetland Quality Assessment 6
2.3.1 Overview of the Oregon Freshwater Wetland Assessment Methodology 6
2.3.2 Application of OFWAM 6
2.3.3 Wetlands of Special Interest for Protection 6
2.3.4 Locally Significant Wetland Assessment 7
2.4 Riparian Assessment 8
2.4.1 Overview of Riparian Assessment 8
2.4.2 Methodology of the Riparian Guide 9
2.5 Cartographic Products 10

3.0 PROJECT AREA CHARACTERISTICS **10**
3.1 Background Information 10
3.2 Setting 11
3.3 Topography 11
3.4 Hydrology and Drainage Basins 12
3.5 Soils 13
3.5.1 Overview 13
3.5.2 Soil Association Descriptions 13
3.5.3 Hydric Soil Descriptions 14
3.6 Vegetation 14
3.6.1 Historical Overview 14
3.6.2 Vegetation Communities 15

4.0 WETLAND FINDINGS **16**
4.1 Wetland Classification and Location 16
4.1.1 Wetland Types and Classification 16
4.1.2 Location of the Wetlands 18
4.2 Oregon Freshwater Wetland Assessment Methodology Results 18
4.3 Locally Significant Wetlands 18

5.0 RIPARIAN FINDINGS **19**

6.0 SUMMARY **19**

7.0 REFERENCES **21**

Appendices

Appendix A Wetland and Riparian Inventory Section Map Information
Appendix B Wetland Data and Summary Sheets (organized by drainage basin and wetland code)
Appendix C Riparian Data and Summary Sheets
Appendix D DSL OFWAM Manual
Appendix E DSL Riparian Manual

List of Tables

Table 1. Soil Types within the Woodburn UGB
Table 2. USFWS Wetland Classes Mapped by the NWI
Table 3. Woodburn Wetlands, Wetland Area, and USFWS Wetland Classification
Table 4. Summary of OFWAM Results for City of Woodburn
Table 5. Significant Wetlands and Wetlands of Special Interest for Protection
Table 6. Urban Riparian Inventory and Assessment Summary

List of Figures

Figure 1. Urban Growth Boundary and Zoning of the City of Woodburn
Figure 2. Location and Generalized Topography
Figure 3. Drainage Basins
Figure 4. Soil Mapping Units
Figure 5. National Wetland Inventory Designations
Figure 6. Wetlands and Intermittent Drainages Identified by the LWI

1.0 INTRODUCTION

The City of Woodburn (City), like many other Willamette Valley communities, is being discovered as a very suitable place to live and develop businesses. As a result, the City is experiencing significant growth. Over four hundred new residential building lots have been approved in the last few years. Many large, undeveloped properties are zoned for development, both residential and commercial (Figure 1). To plan for and manage continuing growth, the City is conducting Periodic Review. Part of this review includes a buildable lands inventory. A stormwater master plan and parks/open space master plan also are being prepared. Completion of a Local Wetland Inventory (LWI) is critical to the completion of these master plans.

The City was awarded a 1997/1998 Wetlands Planning Assistance Grant by the Oregon Division of State Lands (DSL), funded by the U.S. Environmental Protection Agency (EPA) Region X. The work described in the grant includes conducting a LWI and a Riparian Assessment. An approved LWI will replace the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) maps that are currently the City's only source of information on where wetlands are located. The LWI will be incorporated into the statewide wetlands inventory.

On May 14, 1998, the City hired Shapiro and Associates, Inc. (SHAPIRO) to conduct the LWI and Riparian Assessment using SHAPIRO wetland scientists experienced in conducting LWIs: Dan Cary, Colin MacLaren, and John Gordon. Mr. Cary, project manager, is certified as a wetland delineator by the U.S. Army Corps of Engineers (COE). Ed Strohmaier and Paul Gill, trained wetland delineators, and Peggy O'Neill, a wetland technician, assisted in the inventory. Sylvia Jung, a cartographer with experience mapping LWIs, produced the digitized mapping products. Field work was performed between July 21 and September 1, 1998.

This report documents the methods and results of the LWI. In addition, the relative quality of the wetlands was assessed using the Oregon Freshwater Wetland Assessment Methodology (OFWAM, Roth, et al., revised edition, 1996). This information was used to identify significant wetlands within the City's Urban Growth Boundary (UGB) to address Goal 5 requirements for wetland protection. Riparian assessments were conducted using the Urban Riparian Inventory and Assessment Guide (Riparian Guide; Pacific Habitat Services, 1998). A brief description of the OFWAM and Riparian Guide processes are provided in Sections 2.3 and 2.4 of this document, and the summary sheets for each wetland are included in the appendices.

Methods used to conduct the study are found in section 2.0; project area characteristics are described in section 3.0; wetland findings are reported in section 4.0; and riparian findings are reported in section 5.0. Section 6.0 includes a summary of the project, and Section 7.0 lists all references used. Appendix A contains wetland inventory section maps; Appendix B contains data sheets, OFWAM assessment worksheets, and results organized by watershed and wetland code; Appendix C contains riparian assessment worksheets and results; Appendix D contains a complete OFWAM guide; and Appendix E contains the riparian guide in its entirety.

2.0 SOURCE MATERIALS AND METHODS

2.1 Source Materials

Available information and data were compiled and reviewed prior to field work. For example, soil mapping information was compiled from data available from the U.S. Department of Agriculture (USDA) Soil Conservation Service (SCS, now known as the Natural Resource Conservation Service [NRCS]) county soils survey. U.S. Geological Survey (USGS) 7.5-minute topographic quadrangles, USFWS NWI maps, flood insurance rate maps from the U.S. Department of Housing and Urban Development Federal Insurance Administration (FIRM), City zoning maps, and tax assessor maps, also were consulted.

A digitized base map of the study area was obtained that included layers for tax lot lines, street names, right-of-ways, and section boundaries. A series of recent, spring, color, aerial photographs were obtained for the study area at the scale of the base map. Other source materials included: Oregon Rivers Information System (ORIS) fish presence data base; Oregon Department of Environmental Quality (DEQ) 303(b) report (1998); Classification and Catalog of Native Wetland Plant Communities in Oregon (John Christy, 1993); and a current data search from the Oregon Natural Heritage Program (ONHP). This information was used to develop a preliminary indication of the location and possible quality of wetlands, facilitate on-site gathering of data, and complete the assessments.

The City, with assistance from SHAPIRO, identified properties likely to contain wetlands. The owners of the identified properties then were sent an access permission letter. Properties to which access was granted were located on the aerial photograph and later noted on inventory maps.

2.2 Local Wetlands Inventory

2.2.1 Overview of the Local Wetlands Inventory

The 1989 Oregon State Legislature authorized the DSL to develop a statewide wetlands inventory suitable for planning and regulatory purposes. Pursuant to ORS 196.674, in 1994 the DSL established LWI standards and guidelines, which are located in OAR 141-86-180 through 141-86-240. The purpose of an LWI is to locate, map, and classify wetlands by type (such as forested wetlands) over a relatively large geographic area. In accordance with LWI standards, the approximate boundaries of all wetlands at least 0.5 acre in size are identified in the inventory. No wetland boundaries were staked or flagged by SHAPIRO for this study. This LWI does include wetland delineations approved by the DSL and COE. These wetland delineations were confirmed within the last ten years, but no later than the end of the field collection period.

2.2.2 Overview of Local Wetlands Inventory Methods

A LWI is conducted using color or color infrared, aerial photographs taken within five years of the inventory initiation and at a minimum scale of 1" = 800' (1:9600). In general, wetlands are located using aerial photographs. Then site visits are conducted (on-site) option, as described in

the LWI standards and guidelines. In cases in which property access is denied, wetlands can be mapped off the site using other information, such as topographic maps and aerial photographs, to aid in locating wetlands. The product of an LWI is a parcel-based map showing the approximate location of wetlands at a minimum scale of 1" = 800'. The parcel-based map allows the property owner, local jurisdiction, and DSL to know which tax lots may contain wetlands.

2.2.3 On-site Wetland Determination

Where property access permission had been granted, on-site wetland determinations were made using the *Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1* (Manual; Environmental Laboratory, 1987). The COE and DSL recognize the use of the 1987 Manual for delineation of wetlands.

The Manual provides technical criteria, field indicators, and recommended procedures to be used in determining whether an area is a jurisdictional wetland, and the location of the wetland boundaries. The Manual requires that three technical criteria be met in undisturbed situations before areas can be considered wetland under federal or state jurisdiction. These criteria are the presence of hydric soils, hydrophytic vegetation, and wetland hydrology under normal circumstances. If one of these criteria cannot be determined because of disturbance caused by recent natural events or human activities, an alternative method must be used in making wetland determinations.

Observations of soils, vegetation, and hydrology were made using a modification of the Manual's "Routine Onsite" method. Data sites were selected to provide a valid representation of site conditions. Data were collected from representative sampling locations to justify the location of the wetland boundary. However, additional sample sites were investigated between these data points to verify changes in the three parameters, further characterize the wetland, and refine the wetland boundary.

Hydrologic Assessment

The Manual defines wetland hydrology as saturation within a major portion of the root zone (usually above 12 inches), typically for at least 12.5% of the growing season. The growing season for any given site or location is determined from SCS or NRCS data and information. The growing season is defined as the frost-free period recorded at the nearest recording station five years out of ten. Wetland hydrology field indicators were recorded for each excavated soil pit. Data typically recorded include depth of inundation, water table, and soil saturation. Primary indicators, such as sediment deposits, watermarks, drift lines, and drainage patterns, or secondary indicators, such as oxidized rhizospheres (root zones), also were recorded.

Soils Assessment

Hydric soils are those that have formed exclusively under wet conditions (soils that characteristically have high water tables, are ponded or frequently flooded, or are otherwise saturated for extended periods during the growing season). The possible location of hydric areas on the site was obtained from the SCS or NRCS county soil survey. Soil pits were excavated to

a depth of 18 inches or more in selected locations in relation to identified potential wetland areas. Soil profiles were examined for hydric soil indicators. Soil characteristics (matrix color, mottling, texture, and other features) were recorded.

Vegetation Assessment

Hydrophytic vegetation consists of those plant species that have adapted to growing in substrates that are periodically deficient of oxygen because of saturated soil conditions. Species lists of commonly encountered plants and their status have been prepared for all regions of the country by the USFWS (1988 with 1993 supplement). The status of a particular plant is the probability of that plant occurring in a wetland. Five basic groups of vegetation are recognized in the USFWS list based on their frequency of occurrence in wetlands (Reed, 1988, 1994). These categories, referred to as the "wetland indicator status" (from the wettest to driest habitats), are as follows: obligate wetland (OBL) plants; facultative wetland (FACW) plants; facultative (FAC) plants; facultative upland (FACU) plants; and obligate upland (UPL) plants. Refer to data sheets in Appendix B for these categories. Many plants are found in transitional areas between wetlands and uplands. These areas are usually characterized by flat to gradually sloping terrain where the species composition may not reflect true wetland boundaries. In such areas, a species with a status of FACU may extend into the wetland areas, just as FACW species may be present in upland areas.

A visual percent-cover estimate of the dominant species of the plant community was performed for key sample sites. A 30-foot-radius area was investigated for dominant tree and shrub species, and a 10-foot-radius area for dominant herbaceous species, using soil pit locations as a center of reference. Dominance of plant species was determined by estimating their percent areal cover per stratum (herbaceous, shrubs, woody vines, and trees). Species from each stratum were listed together in descending order of percent cover. A determination as to predominance of hydrophytic vegetation was made using the 50-20 technique. The most abundant plant species (when ranked in descending order of abundance and cumulatively totaled) that, when totaled, immediately exceed 50% cover, plus any species comprising more than 20% cover, represent the dominant species (Federal Interagency Committee for Wetland Delineation, 1989). If more than 50% of the dominant species included by the above criteria are FAC or wetter, the vegetation community is considered hydrophytic. FAC- species are excluded and are considered non-hydrophytic vegetation. The "-" indicates plant species that prefer slightly drier conditions on average. A "+" indicates plant species that prefer slightly wetter conditions on average.

2.2.4 Off-site Determination

No on-site sampling could be conducted where property access permission had been denied or not explicitly approved. Therefore, off-site determinations were made on the basis of aerial photograph inspection, all available mapped attributes (e.g., SCS soil surveys and NWI maps, confirmed determinations and delineations), and, where available, a reconnaissance from nearby public or approved vantage points. Observations from vantage points included documentation of dominant vegetative communities (forested, scrub/shrub, or emergent) and water regimes (such as ponded areas and obviously wet meadows). Approximate wetland boundaries were drawn on aerial photographs. Boundaries determined in this way may not be sufficiently accurate for state

and federal jurisdictional determinations because of the absence of actual on-site data. In addition, where views into properties from vantage points were not possible or otherwise restricted, and where aerial photographic and mapped information was inconclusive, some wetland areas may have been missed and were not inventoried.

2.2.5 Classification of Wetlands

The Cowardin classification system was used to classify the types of wetlands inventoried (Cowardin, et al. 1979). The Cowardin system classifies wetlands according to general systems, structure, vegetation types, water regime, and other modifiers. For example, wetlands within the Woodburn study area are of the palustrine class. Palustrine combines vegetated freshwater wetlands (traditionally called marshes, swamps, bogs, fens, and wet prairies) and small, shallow, permanent, or intermittent water bodies called ponds that are less than 2 meters (6.6 feet) deep. This classification applies to emergent, scrub/shrub, and forested wetland areas. Wetlands dominated by grasses and other herbaceous plants are classified as PEM, Palustrine Emergent. Wetlands dominated by woody species less than 30 feet high are classified as PSS, Palustrine Scrub/Shrub. A site dominated by woody species over 30 feet high is classed as PFO, Palustrine Forested. The NWI inventory maps also use the Cowardin classification system for mapped wetland habitats.

2.2.6 Data Compilation and Interpretation

Data were recorded in the field and subsequently transferred to computerized standard wetland delineation data sheets. Sampling site locations were recorded on the aerial photographs. The approximate boundaries of wetlands and location of sample sites were drafted on the aerial photograph in the field. These boundaries subsequently were digitized onto the AutoCAD maps. All wetlands received a unique code to aid in their identification. The code was based on the drainage basin the wetland was located in and the number of wetlands within each basin. In general, parts of wetlands received separate codes where major roads or distinct breaks in wetland character occurred. Some wetlands were grouped and coded as one unit where they were adjacent, hydrologically linked, or similar in character, thus functioning as a unit. Wetland delineation boundaries confirmed by the DSL were digitized from photocopies of maps in reports submitted to the DSL. In addition, mitigation areas were drawn on the maps, if their locations were known.

2.2.7 Confirmation of LWI

A draft set of maps and report is provided to the DSL for its confirmation and assessment. Once the DSL has reviewed the documents, SHAPIRO will review the comments and make modifications to the draft wetland maps and report. The products are then resubmitted for final approval. The status of this report as draft or final is indicated on the report cover and maps.

2.3 Wetland Quality Assessment

2.3.1 Overview of the Oregon Freshwater Wetland Assessment Methodology

The OFWAM was developed by an interagency committee to assess the relative quality of a wetland. The methodology is intended for use by planners, public officials, and community members for planning and educational purposes. Completion of this methodology provides basic information, which is not intended for evaluation of detailed, site-specific impacts on individual wetlands.

OFWAM is based on the idea that an understanding of the wetland system functions and conditions at local, state, and federal levels is necessary to make management decisions. Recommended uses of OFWAM include collection of basic information about wetlands in an assessment area, creation of a database of functions and conditions and other wetland data, support of decision making and planning within a jurisdiction, and education. OFWAM requires that the same functions and conditions be evaluated for each wetland within a study area. There are, in addition, other considerations noted in the following sections that determine the wetland's overall value.

2.3.2 Application of OFWAM

OFWAM assessments were partially completed during field work using data gathered in the field. Other source materials were used to complete the assessments. The methodology provides qualitative information on the relative value of wetlands based on a series of questions related to wetland functions. The following functions are assessed: wildlife habitat, fish habitat, water quality, hydrologic control, sensitivity to impact, enhancement potential, education, recreation, and aesthetic quality. Each function is assessed by criteria that give an indication of whether a wetland function is (1) intact, (2) affected or degraded, or (3) lost or not present. OFWAM is designed to be open-ended; therefore, other functions and conditions may be added later, or some may be dropped if not important to the user.

The OFWAM results and a summary of the functions and conditions for each wetland are included in Appendix B. Additional details about assessing the functions and conditions are provided in Appendix D.

2.3.3 Wetlands of Special Interest for Protection

A subset of questions within OFWAM provides a method to assess whether any wetlands within the study area should be considered Wetlands of Special Interest for Protection (WSIP). WSIP assesses whether the wetland is currently in a management plan, is protected by regulatory rules or statutes, or is uncommon in Oregon. The presence of rare, threatened, or sensitive species within an area makes the wetland a potential WSIP. An affirmative answer to any one of these questions also will place the wetland into a category for protection. This information could be used in management decisions for a site. The use of OFWAM and WSIP screening questions

will assist in an overall evaluation of the wetlands in the assessment area. Many of these WSIP questions are repeated in the locally significant criteria questionnaire (see next section), so the results were combined in one table (see Section 4.3).

2.3.4 Locally Significant Wetland Assessment

The term "significant wetlands" has meaning in the context of Statewide Planning Goal 5. Under this Goal, local governments are instructed to identify their significant resources, including wetlands, so those resources serving significant functions in the local community are given proper consideration in planning decisions. The DSL established a technical advisory committee to develop the locally significant wetlands (LSW) criteria. The DSL adopted the Administrative Rules for Identifying Significant Wetlands in January 1997 (141-86-300 through 141-86-350). The criteria rely heavily on the results of OFWAM. Only jurisdictional wetlands are assessed with the criteria.

Locally Significant Wetland Criteria:

A wetland is considered significant if it meets one or more of the following criteria:

- Wetlands that are given the highest rank for <u>any</u> of the four ecological functions addressed by OFWAM or equivalent methodology (see Appendix D for more details on the ranking):
    - wildlife habitat,
    - fish habitat,
    - water quality, or
    - hydrologic control.
- Wetlands that (1) are rated either in the highest or second highest category for water quality (in OFWAM or equivalent) <u>AND</u> that (2) border a water quality limited stream, as listed by the DEQ. Dedicated stormwater detention swales are not included.
- Wetlands that contain one or more uncommon wetland plant community, including those listed in the ONHP's *Classification and Catalog of Native Wetland Plant Communities in Oregon* as G1-G3 and S1-S3.
- Wetlands inhabited by any species listed by the federal or state government as a sensitive, threatened, or endangered in Oregon (unless consultation with an appropriate agency deems the site not important for the maintenance of the species).
- A wetland that is a dedicated or proposed Registered Natural Area or Area of Critical Environmental Concern, State Natural Heritage Conservation Area, Federal Research Natural Area, or Land Trust.
- Wetlands specifically protected as wetland resources in a recognized federal, state, or local management plan, (e.g., for park, refuge, or scenic river).

- Wetlands that rate in the highest category for fish habitat in OFWAM and are located adjacent to a stream segment that is mapped by the Oregon Department of Fish and Wildlife (ODFW) as habitat for "indigenous anadromous salmonids."

The final two criteria are at the discretion of the local government, but have direct connections to OFWAM results:

- *Optional Criterion* (at discretion of local government): The wetland represents a *locally* unique plant community. Wetland is or contains the only representative within the UGB of a particular native plant community (listed in the ONHP's *Classification and Catalog of Native Wetland Plant Communities in Oregon)*. To be identified as a LSW, such a wetland also must score the highest or second highest rank for <u>any</u> of the four ecological functions addressed by OFWAM or equivalent methodology.

- *Optional Criterion* (at discretion of local government): The wetland rates at the highest rank for education potential, and there is documented use for educational purposes by a school or organization.

The City will be required to prepare local wetland protection ordinances to apply to locally significant wetlands. Additional wetlands may be protected based on other information, such as the results of the WSIP. Any wetlands not protected by local ordinances may still be under the jurisdiction of DSL and COE.

2.4 Riparian Assessment

2.4.1 Overview of Riparian Assessment

In accordance with Goal 5, a riparian inventory and assessment was performed for limited areas within Woodburn's UGB. Goal 5 requires local governments to inventory and protect riparian corridors. Riparian areas are zones of transition between aquatic ecosystems and terrestrial ecosystems. Goal 5 includes definitions that establish a riparian area adjacent to every river, lake, or stream, including intermittent streams with a defined channel. Human-made irrigation or drainage ditches are specifically excluded. Riparian areas can enhance water quality, reduce erosion, moderate water temperatures and flood flows, and provide important fish and wildlife habitat. Riparian areas are particularly important for anadromous salmonids, which rely on cold, clean water and the habitat created by large woody debris.

Local governments have two options that can be implemented in the protection of riparian areas. One option is to inventory and assess all riparian areas as described above, establishing the width of the riparian corridor on the basis of riparian vegetation. The inventoried sites are then analyzed to determine their significance, and ordinances are implemented to provide appropriate protection.

The other option is to implement the "safe harbors" provision. Under this plan, only riparian areas adjacent to fish-bearing water resources are included for protection, and their width is based on the average stream flow of the water resource. Local governments may use either of these options, or some combination of them, to manage their riparian resources.

The riparian inventory and assessment was conducted using the methods contained in the Riparian Guide (a copy of which is found in Appendix E). The Riparian Guide is a rapid inventory and assessment method for defining the location and quality of riparian areas. It is intended as a tool to provide consistent riparian inventory results. This document provides guidance for determining the width and length of riparian areas, and for assessing their water quality, flood management, thermal regulation, and wildlife habitat functions

2.4.2 Methodology of the Riparian Guide

The Riparian Guide includes a field inventory component, during which information is gathered on the width and other physical characteristics of the riparian areas. Riparian areas are assessed as left and right reaches facing downstream. Reaches of the riparian area are split where the character of the riparian area changes. The potential height of the dominant tree in the riparian area determines the width of the riparian areas assessed. Based on these field observations, the following functions of the riparian area are assessed: (1) Water quality, (2) Flood Management, (3) Thermal Regulation, and (4) Wildlife Habitat.

In general, a riparian area receives a higher ranking when the following criteria are met:

- average slope in the riparian area is less than 10%;
- dominant vegetation cover in the riparian area is woody vegetation (trees, shrubs, vines) greater than 1 meter (3.2 feet) high;
- dominant vegetation at the top of the bank or edge of the water resource is woody vegetation greater than 1 meter (3.2 feet) high;
- extent of impervious surface is less than 10%;
- the NRCS ranks the water erosion hazard of the dominant soil unit as low, slight, or moderate;
- aspect or orientation of the riparian area allows shading of the water resource at midday during the summer;
- flood prone areas (adjacent flat areas, depressions, swales, FEMA mapped 100-year floodplain) are present beyond the top of the bank or edge of the water resource;
- woody vegetation (trees, shrubs, vines) greater than 1 meter (3.2 feet) high are dominant in the flood prone area;
- large woody debris is present within the riparian area;
- stream or water resource is not constricted by human-made features (e.g., channelization, riprap, concrete wall, etc.);
- water resource is bordered by a vegetated riparian area at least 30 feet wide;
- more than two vegetation layers are present (e.g., canopy, mid-story, groundcover)
- woody vegetation overhangs the edge of the water;
- surface water is present throughout year;

- more than one type of water resource (stream, wetland, lake/pond) is within or immediately adjacent to the riparian reach;
- degree of development or human-caused disturbance (e.g., buildings, impervious surfaces, lawns, agriculture, trash) in the riparian area is less than 25%.

Where these factors are present or developing, the riparian area provides for water quality, flood management, thermal regulation of the water resource, and wildlife habitat.

2.5 Cartographic Products

Wetland boundaries were drawn on aerial photographs. Aerial photographs can have distortion at the edges, so digitized boundaries were adjusted. The inventory was mapped at a scale larger than the scale required in the LWI rules to allow for more clarity. However, at the map scale of 1" = 200' (1:2400), the width of a wetland boundary line is approximately 4 feet. LWI cartography conventions require accuracy of ±25 feet in placement of the wetland boundary. Wetland field staff reviewed early draft maps and made corrections where necessary to increase the accuracy of the maps. Sample sites were identified within properties to which access was permitted. Ditches and other narrow linear features located on the edge of a property were occasionally drawn slightly to the side of the property line for graphic clarity. Each section map includes a small portion of the adjoining sections. The overlap allows for ease in viewing a wetland that may cross section boundaries. Using AutoCAD, a line was drawn paralleling the edge of the stream to show the width of the potential riparian area.

3.0 PROJECT AREA CHARACTERISTICS

3.1 Background Information

Available information and data were compiled and reviewed before field work was conducted. Soil mapping information was compiled from data available in the SCS Soil Survey of Marion County Area, Oregon. Preliminary wetland information was obtained from Woodburn and St. Paul, Oregon, NWI maps. Floodplain information was obtained from 100-year floodplain Woodburn and Marion County FEMA-FIRM maps (U.S. Dept. of Housing and Urban Development, 1979). Woodburn and St. Paul, Oregon USGS 7.5-minute topographic quadrangles, City zoning maps, and tax assessor maps also were consulted. Other source materials included: ORIS fish presence data base; DEQ 303(b) report (1998); *Classification and Catalog of Native Wetland Plant Communities in Oregon* (John Christy, 1993); and a current data search from the ONHP. This information was used to develop a preliminary indication of the location of wetlands, identify drainageways, highlight low-lying areas, facilitate on-site gathering of data, and complete the assessments.

The City of Woodburn provided a digitized base map of the study area. This map included layers for tax lot lines, street names, right-of-ways, and section boundaries. The project area base map was then plotted at a scale of 1" = 200' onto 24" x 36" sheets. Each sheet covers a section and small portions of surrounding sections, and includes an index map.

A series of color, aerial photographs dated June 6, 1998 were obtained from Bergman's Photographic Services for the study area at a scale of 1" = 200' to match the scale of the base map. These aerial photographs were covered with clear acetate (permanently registered) to protect them during field use and as a surface for drafting wetland boundaries and sample sites.

The City, with assistance from SHAPIRO, identified properties likely to contain wetlands. The owners of the identified properties were sent an access permission letter. Boundaries of properties to which access was granted were identified on the aerial photograph and base map.

3.2 Setting

The City of Woodburn is located in the Willamette Valley in Marion County, Oregon (Figure 2). The City was incorporated in 1889. The Oregon Blue Book (Levine, 1996) lists the City's population as 15,235. Historically, agriculture has provided the economic base for Woodburn.

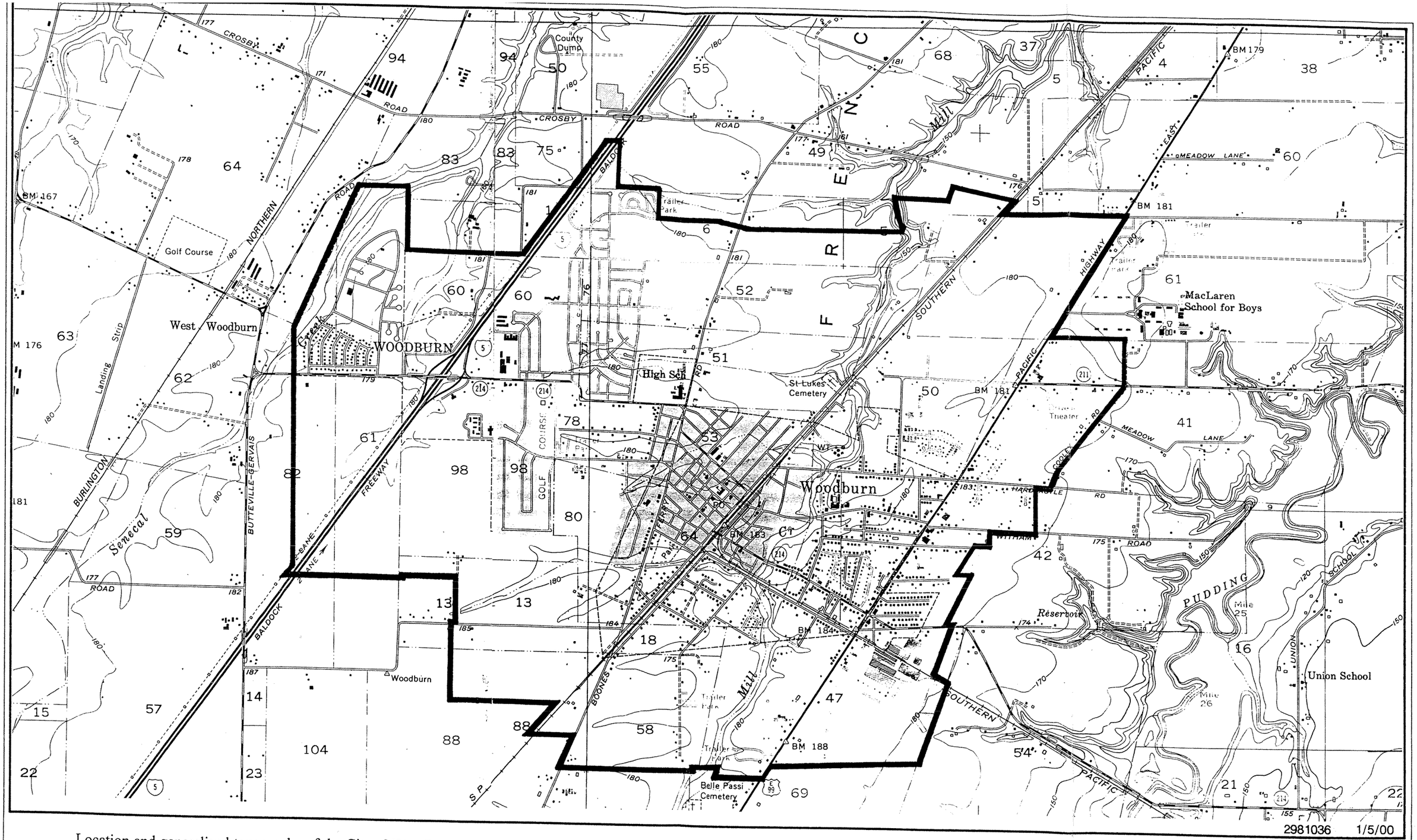
Woodburn is approximately 10 miles northeast of Salem and 20 miles south of Portland. The primary transportation corridors are Interstate 5 on the west, Highway 99 East on the east, and Highway 214 connecting them. Woodburn is roughly equidistant from the foothills of the Cascade Range on the east and the Coast Range on the west. The Willamette River is approximately 5 miles west of Woodburn.

The boundary of the wetland inventory area corresponds with the City's UGB (Figures 1 and 2). Starting in the vicinity of Interstate 5 and Newport Way, the UGB runs eastward, with irregularities, to Highway 99 E. It follows Highway 99 E southwest to a point north of Molalla Road, where it turns east again for approximately one-quarter mile. The boundary then turns southwest and roughly parallels Highway 99 E to a point approximately one-quarter mile south of Cleveland Street, where it turns westward to Front Street. It then follows Front Street northeast a short distance, turns west and north to intersect Interstate 5, then north to cross Highway 214 east of Willow Avenue. Continuing north and then turning east at the end of Ten Oaks Avenue, the boundary returns to the starting point. The inventory area totals approximately 3,000 acres.

3.3 Topography

Woodburn's LWI area is located on a broad, generally level plain between two shallow, roughly parallel drainages. Senecal Creek drainage, on the northwest side of the inventory area, and Mill Creek drainage, on the eastern side of the inventory area, are oriented along a southwest-to-northeast axis. The elevation of the flat area between the drainages is about 180 feet (National Geodetic Vertical Datum; NGVD). The bottom of the Senecal Creek drainage is approximately 20 feet below the level of the surrounding land. Mill Creek drainage also is about 20 feet deep, putting the lowest area at approximately 160 feet NGVD. Both of these drainages are relatively broad and have gently sloping sides. The drainages themselves have a low gradient.

Shallow, wide drainage swales for East Senecal Creek in the northwestern part of the inventory area and Goose Creek near the center of the area are the only other significant topographic features.



Location and generalized topography of the City of Woodburn Local Wetlands Inventory study area, Oregon (U.S.G.S. 7.5-minute quadrangles, 1:24000, Woodburn 1956 photorevised 1970, and St. Paul 1956 photorevised 1985).

FIGURE 2

SHAPIRO & ASSOCIATES, INC.

3.4 Hydrology and Drainage Basins

Woodburn is in the Molalla-Pudding sub-basin of the Willamette River drainage basin. The inventory area contains two main drainage basins further divided into several smaller drainage basins (Figure 3). The City's stormwater management plan is organized by these two main drainages, and they form the basis of organization for the inventory.

Mill Creek (MC) is the main hydrologic feature and has the largest drainage basin in Woodburn. Mill Creek flows from southwest to northeast through the inventory area near the eastern boundary, and enters the Pudding River near Molalla 10 miles northeast of the inventory area.

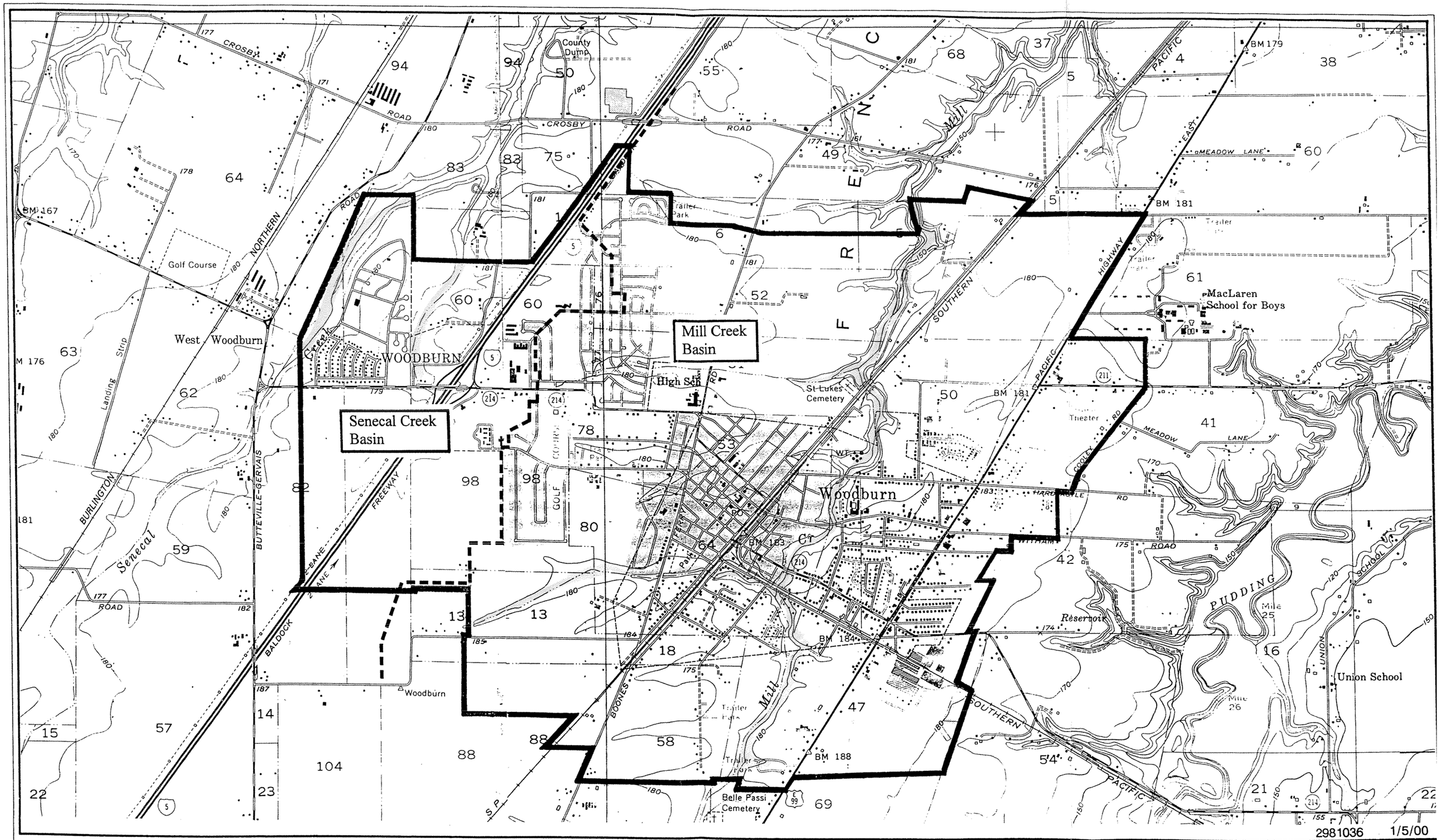
Most of the Mill Creek channel has been excavated and realigned. The excavated channel is approximately 4 to 6 feet wide, 4 feet deep, and lacks significant sinuosity. Much of the creek channel was dry at the time field work for the inventory was conducted; however, northern portions of the stream contained some standing water. Mill Creek is mapped by the USGS as a perennial stream for most of its length in the inventory area.

Near the southern edge of the inventory area adjacent to a residential development, the Mill Creek channel has been excavated to form a water feature consisting of a pond with islands. The pond contained water at the time of the study. All wetlands in the Mill Creek basin are designated as MC-x.

Goose Creek is a small, realigned tributary of Mill Creek. The headwater basin of Goose Creek is a developed, single-family residential area. A stormwater conveyance system collects runoff from the development and daylights between the western end of Mayana Drive and the northwestern corner of the adjacent public school campus to the south. The creek then flows in an excavated ditch along the southern end of the Tukwila golf course, Woodburn Junior High School, and into Mill Creek southwest of the intersection of Highway 214 and Front Street. At the time of the inventory, Goose Creek had flowing water in it. It is mapped by the USGS as an intermittent stream. Wetlands in this drainage also are designated MC-x, because it is a sub-basin of the Mill Creek system.

Senecal Creek (SC) drains the northwestern part of the inventory area. The channel lacks sinuosity within the floodplain, possibly as a result of excavation or realignment of the stream. The channel is approximately 4 to 6 feet wide and 2 feet deep. At the time of the inventory, Senecal Creek had water only in small, isolated pools in the channel. The USGS mapped the portion of Senecal Creek within the inventory area as perennial. Senecal Creek flows into Mill Creek approximately 6 miles northeast of the inventory area. All wetlands in the Senecal Creek basin are designated SC-x.

East Senecal Creek drains a small part of the Senecal Creek basin. Water from East Senecal Creek fed a large wetland (SC-2C) with substantial areas of inundation and saturation at the time of the inventory. The USGS mapped the creek as intermittent within the inventory area. Wetlands in this drainage also are designated SC-x, because it is a sub-basin of the Senecal Creek system.



Basins within the City of Woodburn Local Wetlands Inventory study area, Oregon.

FIGURE 3

SHAPIRO & ASSOCIATES, INC.

At the time of the inventory, significant commercial and industrial development was occurring in the Senecal Creek basin. Senecal Creek's position on the edge of the UGB makes it sensitive to activities both inside and outside the inventory area.

3.5 Soils

3.5.1 Overview

Most of the soils in the study area were formed in mixed or unsorted alluvium, silty alluvium, mixed mineral and organic material, and loess of mixed mineralogy. Alluvium is unconsolidated sediment deposited by streams. Loess is windblown silt deposit from glacial outwash. The term "mixed" means the soil particle sizes are generally unsorted.

Nine soil types are mapped within the Woodburn UGB. These soils are shown with their mapping codes in Table 1. In addition, hydric soils and soils with hydric inclusions are also indicated in the table. Mapping units are shown in Figure 4.

3.5.2 Soil Association Descriptions

There are two major soil associations mapped in the study area: the Woodburn-Amity-Willamette association (map unit 4) and the Concord-Dayton-Amity association (map unit 5).

The Woodburn-Amity-Willamette association consists of level to rolling, well-drained to somewhat poorly-drained silt loams over silty clay loams that formed in silty alluvium of mixed mineralogy. The soils are located above the bottomlands of the North Santiam, Santiam, and Willamette Rivers. The association is mapped generally in the western half of the study area. Woodburn soils make up about 60% of the association, Amity soils about 30%, and Willamette soils about 8%. The remaining percentage consists of small areas of Concord, Dayton, Wapato, and Bashaw soils. All of the soils, except the Willamette soils, have a perched water table in winter and early spring. Soils of the association are used for small grains, pasture, hay, orchards, grass seed, fruits, and vegetables, and game birds.

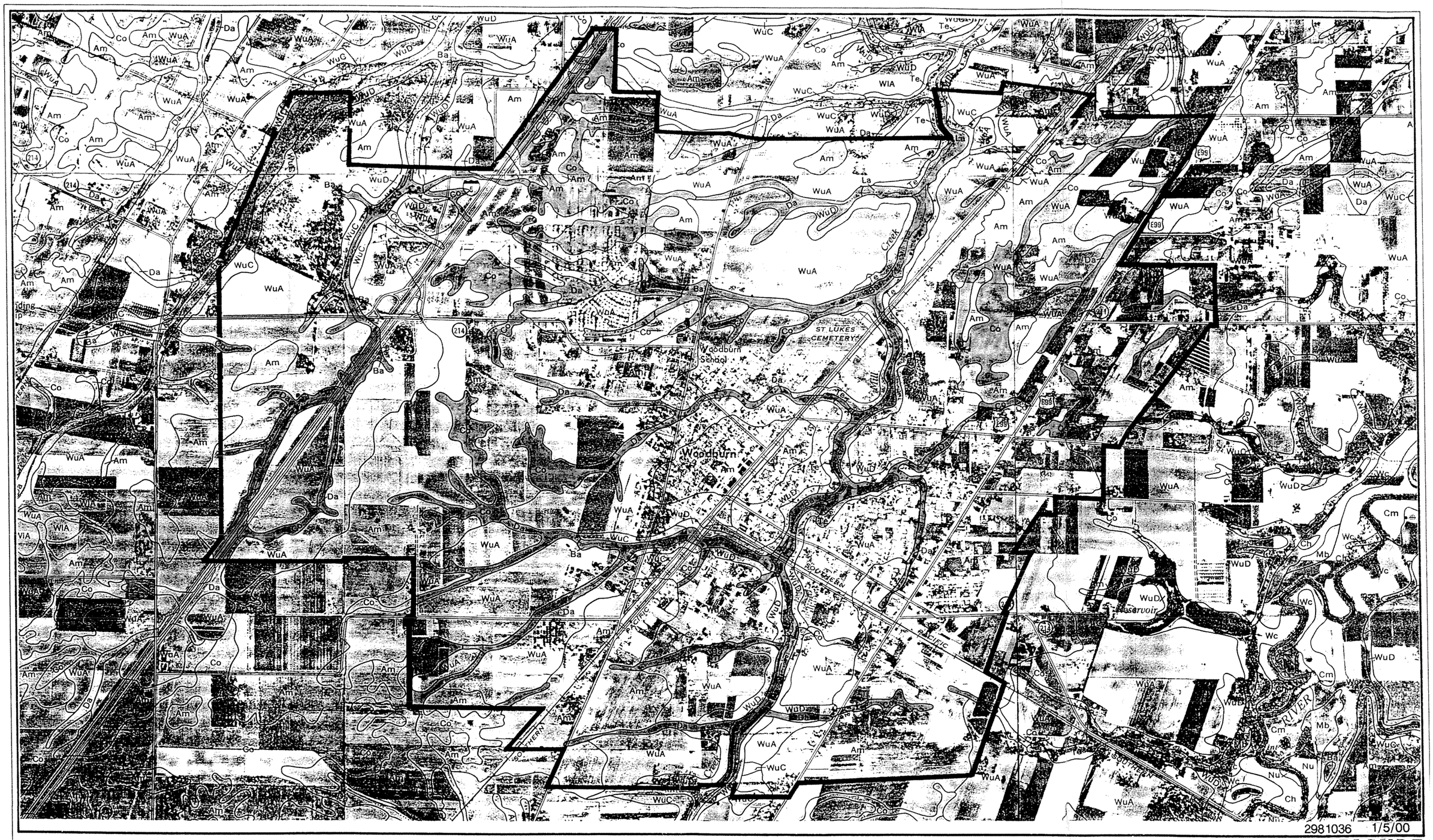
The Concord-Dayton-Amity association consists of nearly level, poorly-drained and somewhat poorly-drained silt loams over silty clay, clay, and silty clay loams. The soils have formed in silty and clayey alluvium located in shallow drainageways, depressions, and level areas. The association is mapped generally in the eastern half of the study area. Concord soils make up 40% of the association, Dayton soils about 30%, Amity soils about 20%, and Holcomb soils about 5%, in addition to other minor soils. The soils of this association have a perched water table; during wet periods in winter and spring, water ponds on these soils. Soils in this unit are used for pasture, small grains, hay, grass seed, and game birds.

Table 1. Soil Types within the Woodburn UGB

Soil Type	Map Code	Hydric*	Drainage Class	Erosion Hazard
Amity silt loam	Am	No[1]	Somewhat poorly drained	None or slight
Bashaw clay	Ba	Yes	Poorly-drained	Slight
Concord silt loam	Co	Yes	Poorly-drained	Slight
Dayton silt loam	Da	Yes	Poorly-drained	Slight
Labish silty clay loam	La	Yes	Poorly-drained	None or slight
Terrace escarpments	Te	No	Not listed	Not listed
Woodburn silt loam, 0 to 3% slopes	WuA	No[1]	Moderately well-drained	Slight to moderate
Woodburn silt loam, 3 to 12% slopes	WuC	No	Moderately well-drained	Moderate
Woodburn silt loam, 12 to 20% slopes	WuD	No	Moderately well-drained	Moderate

*Notes: [1] may have inclusions of hydric soils

Sources: USDA SCS, 1972 (Soil Survey of Marion County, Oregon)
USDA SCS, 1989 (Hydric Soils of Oregon by County)



Soil mapping units with hydric soils within the City of Woodburn Local Wetlands Inventory study area, Oregon (Soil Conservation Service, *Soil Survey of Marion County*, Oregon, 1:20000, 1972.)

FIGURE 4

SHAPIRO & ASSOCIATES, INC.

3.5.3 Hydric Soil Descriptions

Bashaw clay (Ba) consists of poorly-drained and very poorly-drained soils that have formed in alluvium. These soils are found in backwater areas of the floodplains and in drainage channels of silty alluvial terraces. In a typical profile, the surface layer is very dark gray (10YR 3/1) clay in the upper 3 inches and black (N2/0) clay to 31 inches thick. The upper part of the subsoil extends to about 48 inches deep and is very dark gray (N3/0) clay. The soil is classified as very fine, montmorillonitic, mesic Typic Pelloxererts. Permeability is very slow.

Concord silt loam (Co) consists of poorly-drained soils that have formed in alluvium of mixed mineralogy. These soils are on broad valley terraces, in slightly concave depressions, and in drainageways. The surface layer is typically very dark grayish brown (10YR 3/2) silt loam about 6 inches thick. The subsurface is dark gray silt loam and heavy silt loam (10YR 4/1) about 3 inches thick. The subsoil is dark gray (10YR 4/1) heavy silt loam, and gray (10YR 5/1) and dark gray (10YR 4/1) light silty clay about 10 inches thick. The soil is classified as fine, montmorillonitic, mesic Typic Ochraqualfs. Permeability is slow.

Dayton silt loam (Da) consists of poorly-drained soils that have formed in old, mixed alluvium, with possible influence from loess deposition. The soils are found on terraces, where they occupy areas in drainageways and depressions. In a typical profile, the surface layer is very dark grayish brown (10YR 3/2) silt loam about 7 inches thick. The subsurface layer is dark gray (10YR 4/1) silt loam about 6 inches thick. The subsoil is about 33 inches thick consisting of dark gray (10YR 4/1) and grayish brown (10YR 5/2) clay. The soil is classified as fine, montmorillonitic, mesic Typic Albaqualfs. Permeability is very slow.

Labish silty clay loam (La) is a poorly-drained soil formed in mixed mineral and organic material on the bottoms of former shallow lakes. Typically, the surface layer is black (10YR 2/1) silty clay loam about 7 inches thick. The subsurface layer is very dark brown (10YR 2/2) silty clay about 9 inches thick. The subsoil layer is very dark gray (N3/0) clay extending to 60 inches or more. The soil is classified as fine, montmorillonitic, acid, mesic Cumulic Humaquepts. Permeability is slow.

3.6 Vegetation

3.6.1 Historical Overview

Woodburn is located in the Willamette Valley unit of the Interior Valley zone of Western Oregon (Franklin and Dyrness, 1973). This zone is the warmest and driest region west of the Cascade Range because of its position in the rain shadow of the Coast Range. The Willamette Valley has been occupied by Euroamericans since the early 19th century. Since that time the natural vegetation has been subject to extensive modification. Before the early 19th century, Native Americans controlled vegetation on extensive areas of the Willamette Valley by seasonal burning (Johannessen, 1971).

According to Franklin and Dyrness, four major vegetation communities probably existed in the Woodburn area before the City was founded: oak woodland, coniferous forest, grassland, and riparian communities. Remnants of these community types still exist in the inventory area. An important subset of the riparian community type is wetland vegetation. While not addressed specifically by Franklin and Dyrness, it is included below because of its significance in the present work.

3.6.2 Vegetation Communities

Oak Woodland

Oak woodland is dominated by Oregon white oak (*Quercus garryana*). Other tree species sometimes present are Douglas-fir (*Pseudotsuga menziesii*) and bigleaf maple (*Acer macrophyllum*). A typical example of remnant oak woodland in Woodburn is on the upland riparian areas along parts of Senecal Creek.

Coniferous Forest

Douglas-fir is the dominant tree in the coniferous forest community. Grand fir (*Abies grandis*) and bigleaf maple are common minor constituents of this community. The fir grove in Senecal Creek Park is similar to this community type.

Grassland

Franklin and Dyrness published figures from Johannessen showing that grasslands were probably the main vegetation community on the broad plain between Senecal Creek and Mill Creek. However, they also note that all grasslands in the Willamette Valley most likely have been modified by human activities. Presently, the closest approximation to a grassland community in the inventory area are pasture land, mowed fields, and open areas that support predominantly herbaceous vegetation.

Riparian

Black cottonwood (*Populus balsamifera*) and Oregon ash (*Fraxinus latifolia*) dominated riparian communities. Various willow (*Salix*) species were common in this association. Riparian woodlands are still found in Woodburn. The bottomland in Senecal Creek Park supports an ash forest.

Wetland

Vegetation in Woodburn's wetlands is diverse, varying from grasses and other herbaceous plants to trees. Wetlands dominated by grasses and other herbaceous plants are classified as Palustrine Emergent (PEM). Nearly all the wetlands in Woodburn are PEM. A common grass in unmaintained sites is reed canarygrass (*Phalaris arundinacea*), which is found in and along

many of the stream channels and drainage ditches. Broadleaf cattail (*Typha latifolia*) is also found in these areas, if the duration of wet conditions is long enough. These two species are common in wetland areas of the Mill Creek basin.

Wetlands dominated by woody species less than 30 feet high are classified as Palustrine Scrub/Shrub (PSS). A site dominated by woody species over 30 feet high is classed as Palustrine Forested (PFO). In Woodburn, the scrub/shrub and forest species are often found growing intermingled. Major scrub/shrub species include clustered wild rose (*Rosa pisocarpa*), Scouler willow (*Salix scouleriana*), Sitka willow (*S. sitchensis*), Douglas' hawthorn (*Crataegus douglasii*), and red-osier dogwood (*Cornus stolonifera*). Wetland trees are limited to Oregon ash, black cottonwood, and red alder (*Alnus rubra*).

4.0 WETLAND FINDINGS

4.1 Wetland Classification and Location

4.1.1 Wetland Types and Classification

The USFWS mapped wetlands in the study area as part of the NWI program (Figure 5). The NWI maps are generated primarily on the basis of interpretation of small-scale (1" = 4,833' [1:58000]), color infrared, aerial photographs. Limited ground reconnaissance was conducted to confirm the interpretations. Cowardin classifications of wetlands identified by the NWI in Woodburn are found in Table 2. The LWI conducted by SHAPIRO identified many wetlands within the Woodburn UGB that were not mapped by the NWI.

Palustrine emergent (PEM) wetlands comprise the majority of wetlands mapped in the inventory. All the wetlands along the main stem of Mill and Goose Creeks are PEM. The northern half of wetlands in East Senecal Creek are also PEM. In addition, all the wetlands not directly associated with the main stem drainages are PEM, except the water hazards on the Tukwila golf course and four other isolated sites.

Reed canarygrass is the dominant plant in the main stem drainage PEM wetlands. It is mowed to reduce fire hazard, but is still able to compete successfully with other plant species, preventing them from forming large populations.

With the exception of the golf course water hazards and four other sites noted above, wetlands not directly associated with the main stem drainages are in agricultural fields. These wetlands vary from mostly bare soil surface to a variety of agricultural species and invasive vegetation common to disturbed sites.

Palustrine forested (PFO) wetlands were mapped on Senecal Creek and the southern half of East Senecal Creek. The dominant tree is Oregon ash, with a few specimens of black cottonwood. The understory includes clustered wild rose, red-osier dogwood, and willow species. Herbaceous vegetation under the canopy is dominated by reed canarygrass.

Table 2. U.S. Fish and Wildlife Service Wetland Classes Mapped by the National Wetlands Inventory within the Woodburn UGB

Code	Cowardin Classification of NWI Mapped Wetlands within the Woodburn UGB
PEM1Y	palustrine, emergent, persistent, saturated/semipermanent/seasonal
PEM1Yx	palustrine, emergent, persistent, saturated/semipermanent/seasonal, excavated
PFO1W	palustrine, forested, broad-leaved deciduous, intermittently/flooded/temporary
PFO1Y	palustrine, forested, broad-leaved deciduous, saturated/semipermanent
POWKZh	palustrine, open water, artificially flooded, intermittently exposed/permanent, diked/impounded
POWKZx	palustrine, open water, artificially flooded, intermittently exposed/permanent, excavated
POWZ	palustrine, open water, intermittently exposed/permanent

Some wetlands in the Mill Creek basin are also PFO. The wetland that extends west onto Tukwila golf course from Mill Creek is partly PFO, with Oregon ash, red alder, black cottonwood, and willow trees. North of the confluence of this wetland and the wetland on the main stem of Mill Creek is a stand of large, black cottonwoods. This is the largest PFO wetland remaining in the Mill Creek bottomlands.

Two isolated wetlands also were classified as PFO. One is a linear stand of black cottonwood trees on the western side of the Southern Pacific Railroad tracks, just south of the intersection of the railroad and Settlemier Street. A second cottonwood stand is located on the western side of the drive-in theatre, southeast of the intersection of Hood Avenue and Highway 99 E.

Palustrine scrub/shrub (PSS) wetlands are found in several places in the inventory area. Scattered, small pockets of PSS wetlands are found along Mill Creek and in the wetland that extends from Mill Creek onto the golf course. Two isolated wetlands also were classified as PSS. At the northern end of Progress Way, water in a drainage ditch supports a PSS wetland dominated by willow species. This wetland extends northeast to the edge of the inventory area. The second isolated PSS wetland is on the future site of Centennial Park. This wetland is in an excavated area in a large, unused field. The combination of hydric soil and excavation apparently produces saturation or possibly shallow ponding in the excavation early in the growing season. Black cottonwood saplings are the dominant wetland vegetation on the site.

Open water wetlands (POW) are uncommon in Woodburn. A water feature consisting of the excavated floodplain of Mill Creek, which ponds approximately 1 acre of water, is the main open water feature in Woodburn's wetland system. This pond is mapped as part of wetland MC-1. The pond includes two small islands. Shoreline vegetation is predominantly reed canarygrass and Himalayan blackberry (*Rubus discolor*). At the time of the inventory, the surface of the pond had been reduced by evaporation and percolation to expose the pond bottom around the edges. Turbidity was high, possibly from algal growth and suspended sediments resulting from feeding activities of resident waterfowl observed on the pond.

Tukwila golf course has seven water hazards that were mapped on the inventory. The water level in the ponds is maintained by precipitation and surface runoff during wet periods. In the summer, water is added to the ponds by pumping water into them from the course's irrigation system. These water hazards are mostly unvegetated. Three of the water hazards were excavated in non-hydric soil, and therefore probably would not be considered jurisdictional wetlands.

Three stormwater detention facilities were mapped during the inventory. These facilities ameliorate runoff from impervious surfaces and remove sediments, petroleum products, and other deleterious materials that may be found in storm runoff from developed sites. These facilities also were constructed in non-hydric soil, and therefore probably would not be considered jurisdictional wetlands.

4.1.2 Location of the Wetlands

Figure 6 shows the location of individual wetlands, wetland complexes, and water bodies mapped in the inventory. Table 3 lists each wetland, its area, and its wetland classification. The 31 water resources listed in Table 3 total 99.88 acres Seven of these wetlands totaling 72.13 acres, or 72 percent of the total, are adjacent to, or part of, wetland complexes associated with Mill Creek, Senecal Creek, or East Senecal Creek. The remaining features are isolated.

Of the total acres, 60.72 acres, or 61% are in the Mill Creek drainage basin. Wetlands directly associated with the main stem of Mill Creek were mapped in seven separate wetland complexes, some of which are composed of several smaller sub-units. Thirteen wetlands were mapped in the Mill Creek drainage that are not on the main stem of the creek. Seven ponds (water hazards) were mapped on the Tukwila golf course. One (wetland 8J) was mapped as part of wetland 8 because it was excavated in hydric soil and is hydrologically connected to wetland 8. Three stormwater detention facilities were mapped in this drainage basin.

Wetlands mapped in the Senecal Creek basin totaled 39.16acres, or 39% of the wetlands mapped in the inventory. Wetlands directly associated with the main stem of Senecal Creek were mapped as one unit, totaling 23.02 acres, or 23% of the total mapped wetlands. Wetlands directly associated with the main stem of East Senecal Creek were mapped as one complex, with three sub-units. Total acreage of this complex is 12.81 acres, or 13% of the total. One wetland was mapped in the Senecal Creek basin that was not directly associated with either of the creeks.

4.2 Oregon Freshwater Wetland Assessment Methodology Results

Results of the OFWAM are summarized in Table 4. This table is useful primarily for obtaining an overview of the current and potential functional status of each wetland. The functional level of each assessed characteristic is shown for each wetland. These functional levels are derived directly from the assessment summary forms. Detailed responses used to generate the summary results are available on the data forms for each wetland, which are provided in Appendix B. This more detailed information (individual OFWAM data sheets) should be consulted before making decisions regarding any wetland.

4.3 Locally Significant Wetlands

Ten individual wetland sites or wetland complexes were determined to be locally significant based on the OFWAM analysis of significance (Table 5). Nine of these significant wetlands are along the main stem of Mill, Senecal, East Senecal, or Goose Creeks. These wetlands include the entire length of these streams within the inventory area. The tenth wetland is a short length of a minor drainage that flows directly into Mill Creek.

All the significant wetlands were given the highest rank for hydrologic control. This indicates that they serve important hydrologic control functions because of their location in developed areas and their ability to absorb floodwaters within floodplains.

Table 3. Woodburn Wetlands, Wetland Area, and USFWS Wetland Classification*

Wetland Code	Drainage Basin	USFWS Wetland Classification				Total Acreage
		PEM	PFO	PSS	POW	
MC-1	Mill Creek	7.44	0	0	1.31	8.75
MC -2	Mill Creek	1.64	0	0	0	1.64
MC -3	Mill Creek	3.72	0	0	0	3.72
MC -4	Mill Creek	0.19	0	0	0	0.19
MC -5	Mill Creek	4.88	0	1.45	0	6.33
MC -6	Mill Creek	1.24	0	0	0	1.24
MC -7	Mill Creek	2.15	0	0	0	2.15
MC -8	Mill Creek	14.70	1.05	0.50	1.16	15.86
MC -9	Mill Creek	0	0.35	0	0	0.35
MC -10	Mill Creek	0.29	0	0	0	0.29
MC -11	Mill Creek	2.06	0	0	0	2.06
MC -12	Mill Creek	0.58	0	0.17	0	0.75
MC -13	Mill Creek	0.43	0	0	0	0.43
MC -14	Mill Creek	0.06	0	0	0	0.06
MC -15	Mill Creek	2.0	0	0	0	2.0
MC-16	Mill Creek	0.96	0	0	0	0.96
MC-17	Mill Creek	0.99	0	0	0	0.99
MC-18	Mill Creek	0.19	0	0	0	0.19
MC-19	Mill Creek	2.07	0	1.89	0	3.96
MC-20	Mill Creek	0	1.61	0	0	1.61
MC-21	Mill Creek	0	0	0	0.16	0.16
MC-22	Mill Creek	0	0	0	0.54	0.54
MC-23	Mill Creek	0	0	0	0.84	0.84
MC-24	Mill Creek	1.41	0	0	0	1.41
MC-25	Mill Creek	0	0	0	0.92	0.92
MC-26	Mill Creek	0	0	0	1.07	1.07
MC-27	Mill Creek	0	0	0	0.07	0.07
MC-28	Mill Creek	0	0	0	0.18	0.18
SC-1	Senecal Cr.	0	11.51	11.51	0	23.02
SC-2	Senecal Cr.	6.06	0	6.75	0	12.81
SC-3	Senecal Cr.	0	0	3.33	0	3.33
	TOTALS	53.06	14.52	25.6	6.70	99.88

* Wetland type according to the wetland classification system developed by Cowardin, et al. ("Classification of Wetlands and Deepwater Habitats of the United States"; 1979) and used by the USFWS – NWI. ().
PEM=Palustrine emergent, PFO=palustrine forested, PSS= palustrine shrub/scrub, POW=Palustrine open water.

Table 4. Summary of Oregon Freshwater Wetland Assessment Methodology (OFWAM) Results for City of Woodburn

Wetland Code	OFWAM Assessment Elements: Functions (F) and Conditions (C)									
	Wildlife Habitat (F)	Fish Habitat Streams (F)	Fish Habitat Lakes/Ponds (F)	Water Quality (F)	Hydrologic Control (F)	Education (F)	Recreation (F)	Enhancement Potential (C)	Aesthetic Quality (C)	Impact Sensitivity (C)
MC-01	Provides Limited	Impacted	N/A	Intact	Intact	Can Provide	Can Provide	High	Moderately Pleasing	High
MC-02	Provides Limited	Impacted	N/A	Impacted	Intact	Potential	Inappropriate	Low	Moderately Pleasing	Moderate
MC-03	Provides Limited	N/A	N/A	Impacted	Intact	Inappropriate	Inappropriate	Low	Moderately Pleasing	Moderate
MC-04	Provides Limited	Not Present	N/A	Intact	Intact	Potential	Inappropriate	Moderate	Moderately Pleasing	Moderate
MC-05	Provides Limited	Not Present	N/A	Intact	Intact	Potential	Inappropriate	Moderate	Moderately Pleasing	Moderate
MC-06	Provides Limited	N/A	N/A	Intact	Impacted	Can Provide	Potential	Moderate	Moderately Pleasing	Moderate
MC-07	Provides Limited	Impacted	Impacted	Impacted	Intact	Potential	Potential	Moderate	Moderately Pleasing	Moderate
MC-08 a-j	Provides Limited	Impacted	Impacted	Intact	Intact	Can Provide	Potential	Moderate	Moderately Pleasing	Moderate
MC-09	Provides Limited	N/A	N/A	Intact	Impacted	Potential	Inappropriate	Moderate	Moderately Pleasing	Moderate
MC-10	Provides Limited	N/A	N/A	Impacted	Impacted	Inappropriate	Inappropriate	Low	Moderately Pleasing	Moderate
MC-11	Provides Limited	N/A	N/A	Impacted	Impacted	Inappropriate	Inappropriate	Low	Moderately Pleasing	Moderate
MC-12	Provides Limited	N/A	N/A	Intact	Intact	Potential	Inappropriate	Low	Moderately Pleasing	Moderate
MC-13	Provides Limited	N/A	N/A	Impacted	Impacted	Potential	Inappropriate	Low	Moderately Pleasing	Moderate
MC-15	Provides Limited	N/A	N/A	Impacted	Impacted	Inappropriate	Inappropriate	Moderate	Moderately Pleasing	Moderate
MC-16	Provides Limited	N/A	N/A	Intact	Intact	Potential	Inappropriate	Low	Moderately Pleasing	Moderate
MC-17	Provides Limited	N/A	N/A	Impacted	Impacted	Inappropriate	Inappropriate	Low	Moderately Pleasing	Moderate
MC-18	Provides Limited	N/A	N/A	Impacted	Impacted	Inappropriate	Inappropriate	Moderate	Moderately Pleasing	Moderate
MC-19	Provides Limited	Impacted	N/A	Impacted	Impacted	Inappropriate	Inappropriate	Low	Moderately Pleasing	High
MC-20	Provides Limited	N/A	N/A	Impacted	Impacted	Inappropriate	Inappropriate	Moderate	Moderately Pleasing	Moderate
MC-24 a,b	Provides Limited	N/A	N/A	Impacted	Impacted	Potential	Inappropriate	Low	Not Pleasing	Moderate
MC21-23,25,26	Provides Limited	N/A	Impacted	Impacted	Intact	Potential	Potential	Low	Moderately Pleasing	Moderate

Note: N/A = Not applicable for this wetland

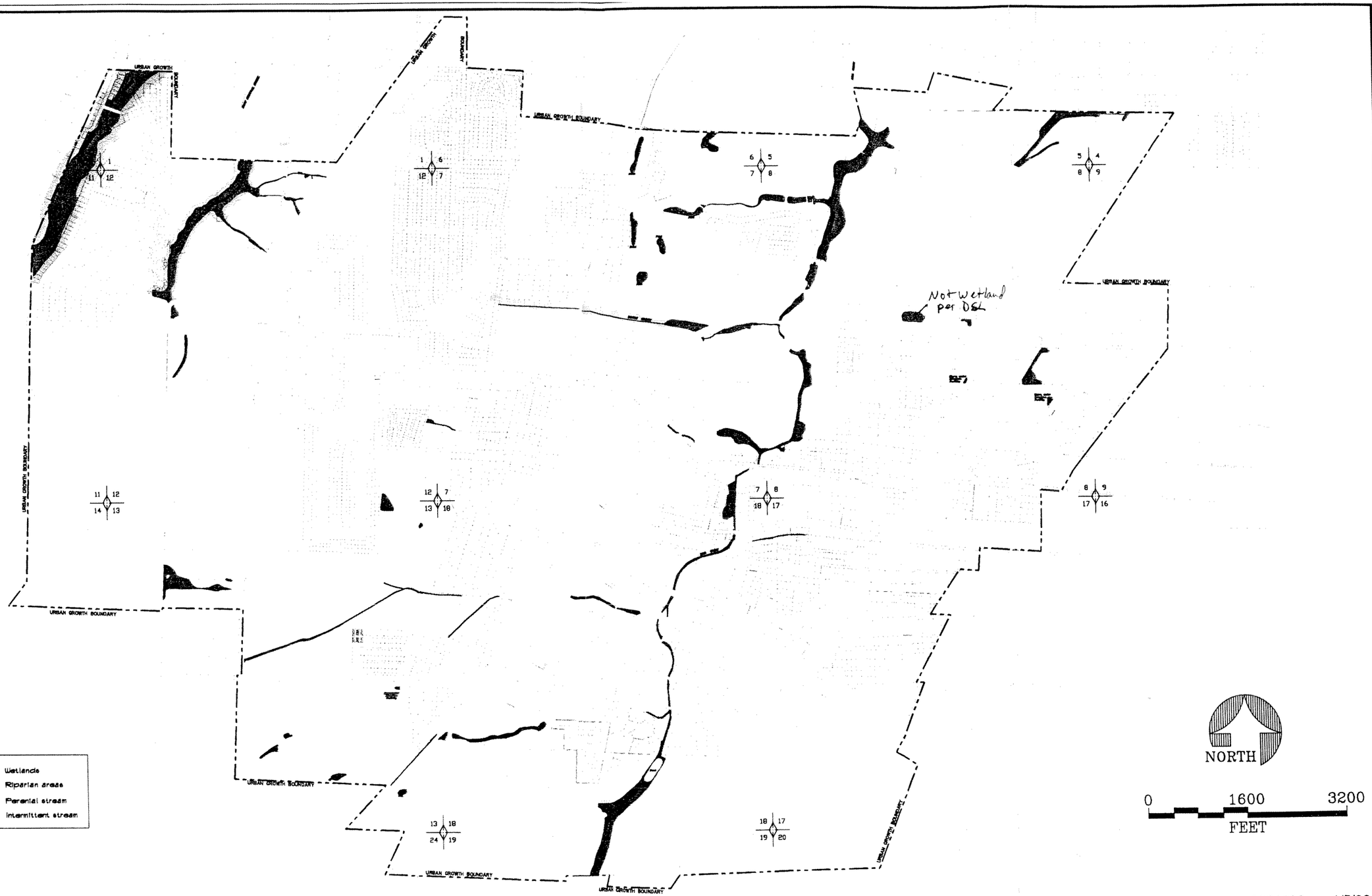
Table 4. Summary of Oregon Freshwater Wetland Assessment Methodology (OFWAM) Results for City of Woodburn

Wetland Code	OFWAM Assessment Elements: Functions (F) and Conditions (C)									
	Wildlife Habitat (F)	Fish Habitat Streams (F)	Fish Habitat Lakes/Ponds (F)	Water Quality (F)	Hydrologic Control (F)	Education (F)	Recreation (F)	Enhancement Potential (C)	Aesthetic Quality (C)	Impact Sensitivity (C)
SC-01	Provides Limited	Impacted	N/A	Intact	Intact	Can Provide	Potential	Moderate	Moderately Pleasing	Moderate
SC-02 a-d	Provides Limited	Impacted	N/A	Impacted	Intact	Potential	Potential	Moderate	Moderately Pleasing	Moderate
SC-03	Provides Limited	N/A	N/A	Impacted	Impacted	Inappropriate	Inappropriate	Moderate	Moderately Pleasing	Moderate

Note: N/A = Not applicable for this wetland

Table 5. Significant Wetlands and Wetlands of Special Interest for Protection

Wetland Code	Results of Local Wetland Significance Assessment	Results of Wetlands of Special Interest for Protection Assessment
MC-1	• Wetland scores the highest rank for hydrologic control. • Wetland is rated in either the highest or second highest category for water quality AND borders a water quality limited stream as listed by DEQ.	
	• .	
MC-2	• Wetland scores the highest rank for hydrologic control. • Wetland is rated in either the highest or second highest category for water quality AND borders a water quality limited stream as listed by DEQ.	
MC-3	• Wetland scores the highest rank for hydrologic control. • Wetland is rated in either the highest or second highest category for water quality AND borders a water quality limited stream as listed by DEQ.	
MC-5	• Wetland scores the highest rank for water quality and hydrologic control, AND borders a water quality limited stream as listed by DEQ.	
MC-6	• Wetland scores the highest rank for water quality and hydrologic control, AND borders a water quality limited stream as listed by DEQ.	
MC-7	• Wetland scores the highest rank for hydrologic control.	
MC-8	• Wetland scores the highest rank for water quality and hydrologic control, AND borders a water quality limited stream as listed by DEQ.	
MC-16	• Wetland scores the highest rank for water quality and hydrologic control.	
SC-1	• Wetland scores the highest rank for hydrologic control.	
SC-2	• Wetland scores the highest rank for hydrologic control.	Factory Outlet Store Mitigation
SC-3	• Wetland scores the highest rank for water quality.	



Base map from City of Woodburn, 1998

2981036 1/5/00

FIGURE 6

Wetlands, riparian areas, and intermittent drainages identified by the Local Wetlands Inventory of the area within the City of Woodburn's Urban Growth Boundary.

SHAPIRO & ASSOCIATES, INC.

Seven of the eight wetlands in the Mill Creek drainage were significant also because they scored in the highest or second highest category for water quality, and they are along a water quality limited stream. This finding of significance indicates that these wetlands continue to play a significant role in maintaining water quality in Mill Creek.

5.0 RIPARIAN FINDINGS

The riparian inventory and assessment was conducted on Senecal and East Senecal Creeks using the procedures in the Riparian Guide. The riparian areas on each side of the creeks were segmented into reaches based on various characteristics, such as the type of development (or lack thereof) adjacent to the stream and the type of vegetation dominating the area. Each segment or riparian reach was coded to identify the side of the stream (looking downstream: right side [R] and left side [L]) and its sequential number, with number 1 being the furthest upstream.

The riparian corridor on Senecal Creek was divided into five reaches, two on the left (western) side of the creek and three on the right (eastern) side. The length of East Senecal Creek within the inventory area was assessed with one riparian reach on each side of the stream.

The width of each riparian area was determined by the potential height of the dominant tree species growing in it. Two tree species dominated portions of the riparian areas. Douglas-fir dominated the riparian areas on Senecal Creek. Its potential tree height (PTH) is 120 feet, resulting in a riparian area width determination of 120 feet. Oregon white oak was determined to be the dominant tree species in the riparian areas bordering East Senecal Creek. The PTH of Oregon white oak is 60 feet, resulting in a riparian area width determination of 60 feet.

The actual widths of existing riparian areas, with a vegetated buffer that was not disturbed, varied from nonexistent to 120 feet. These widths are reported for informational purposes to assist in writing ordinances addressing riparian buffers. The vegetated riparian buffer is generally absent on the part of Senecal Creek north of Senecal Creek Drive and on the eastern side of East Senecal Creek. By contrast, the riparian area on the eastern side of Senecal Creek, in Senecal Creek Park, is largely intact and extends the full width of the riparian area as determined by the PTH. This broad variation in the width and quality of the riparian areas (summarized in Table 6) is not surprising because of the extensive historical alteration of the stream corridors.

Riparian areas along Mill Creek are generally vegetated by reed canarygrass. The vigorous, dense growth of this invasive species, combined with mowing, may prevent shrubs and trees from becoming established.

6.0 SUMMARY

Woodburn's Goal 5 wetland resource inventory has been completed in compliance with guidance from the DSL, which governs LWIs. The resulting maps are more complete and of greater resolution and accuracy than the NWI maps that were used previously by the City to determine

Table 6. Woodburn Urban Riparian Inventory and Assessment Summary

Reach Code	Potential Tree Height (ft)	Actual Riparian Width (ft)	Length Of Reach (ft)	Water Quality Function	Flood Management Function	Thermal Regulation Function	Wildlife Habitat Function
ECL-1	60	35	600	HIGH	HIGH	MED	HIGH
ECR-2	60	60	2600	MED	LOW	LOW	HIGH
SCL-1	120	100	2120	HIGH	LOW	LOW	MED
SCL-2	120	20	1320	MED	LOW	MED	LOW
SCR-1	120	40	2060	HIGH	MED	MED	HIGH
SCR-2	120	120	950	HIGH	MED	MED	HIGH
SCR-3	120	20	880	MED	LOW	MED	HIGH

the location of possible wetlands. The inventory is a tool that can be used by the City to make informed planning decisions.

Thirty-one individual wetlands, wetland systems, and water bodies totaling 99.88 acres, were identified by the LWI. The largest single mapped wetland complex is 23.02 acres. The most common wetland classification type in the inventory area is PEM (53.06 acres). Most of these wetlands are directlyassociated with the main drainages in Woodburn. These wetlands are vegetated by grasses and other non-woody, low-growing plants. Many of these wetlands may experience some degree of inundation during the winter and early part of the growing season.

Palustrine forested wetlands comprise the second largest category of mapped wetlands. Most of these forested wetlands are in the Senecal Creek and East Senecal Creek bottomlands. Small amounts of PFO wetland also remain in the Mill Creek drainage as isolated stands of trees.

Ten wetlands were determined to be locally significant. These significant wetlands include all of the wetlands along Mill, Senecal, East Senecal, and Goose Creeks. Each of these wetlands is significant because of its hydrologic control functions in the drainage basin. In addition to hydrologic control, nine of the significant wetlands are significant because of their water quality functions. Under Goal 5 rules, locally significant wetlands in Woodburn will need to be protected by local ordinances.

Assessment of the riparian corridor along Senecal Creek and East Senecal Creek resulted in a determination of 7 riparian reaches, the longest being approximately 2,600 feet long. The width of each reach was determined by existing vegetation, and varied from 60 to 120 feet. In some reaches, actual riparian vegetation and function were almost completely gone. In other reaches, significant vegetation, natural value, and function remain.

Most of the wetlands and riparian areas within Woodburn's UGB have been affected significantly by development, whether residential, commercial, industrial, or agricultural. Each of the wetlands and riparian areas within the study area still serves important functions associated with fish and wildlife habitat, water quality, hydrologic control, and quality of life.

7.0 REFERENCES

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. Larse. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Fish and Wildlife Service, Office of Biological Services, FWS/OBS-79/31. 103pp.

Federal Interagency Committee for Wetland Delineation. 1989. Federal Manual for Identifying and Delineating Jurisdictional Wetlands. U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, and U.S.D.A. Soil Conservation Service, Washington, D.C. Cooperative technical publication. 76 pp. plus appendices.

Franklin, Jerry F., and C. T. Dyrness. 1973. Natural Vegetation of Oregon and Washington. U.S. Forest Service General Technical Report PNW-8.

Johannessen, Carl L. 1971. The Vegetation of the Willamette Valley. Annals of the Association of American Geographers. 61 (2): 286-302.

Levine, C., ed., 1996. Oregon Blue Book. Secretary of State, Salem, Oregon.

Pacific Habitat Services, Inc. 1998. Urban Riparian Inventory and Assessment Guide. Oregon Division of State Lands, Salem, Oregon.

Reed, Porter B., Jr. 1988. National List of Plant Species That Occur in Wetlands: Northwest (Region 9). Prepared by the U.S. Fish and Wildlife Service, St. Petersburg, Florida. NERC-88/18.37.

Reed, Porter B., Jr. 1993. List of Plant Species that Occur in Wetlands (Region 9): 1993 Supplement. Washington D.C.

Roth, Emily, et al. 1996. Oregon Freshwater Wetland Assessment Methodology. Revised edition. Oregon Division of State Lands.

U.S. Army Corps of Engineers. 1987. Corps of Engineers Wetland Delineation Manual. Environmental Laboratory. Technical Report 4-87-1.

U.S. Department of Housing and Urban Development. 1979. Federal Emergency Management Agency (FEMA) National Flood Insurance Program Flood Insurance Rate Map (FIRM) City of Woodburn, Oregon, Marion County. Panel Number 410172 0001 B.

U.S. Department of Housing and Urban Development. 1979. Federal Emergency Management Agency (FEMA) National Flood Insurance Program Flood Insurance Rate Map (FIRM), Marion County, Oregon. Panel Number 410154 0075 C and 410154 0100 C.)

U.S. Fish and Wildlife Service, National Wetlands Inventory. 1981. Woodburn, Oregon and St. Paul, Oregon. CIR aerial photography, overlaid on USGS 7.5-minute quadrangle.

U.S. Geological Survey. 1956. Woodburn, Oregon, 7.5-minute quadrangle topographic map, photorevised 1970, and St. Paul, Oregon 7.5-minute quadrangle topographic map, photorevised 1985.

U.S.D.A. Soil Conservation Service. 1972. Soil Survey of Marion County Area, Oregon.

U.S.D.A. Soil Conservation Service. 1989. Oregon Hydric Soils by Counties.

Appendix A

Wetland and Riparian Inventory Section Map Information

The wetland and riparian inventory section maps are provided separately.

Appendix B

Wetland Data and Summary Sheets
(organized by drainage basin and wetland code)

CONSTITUTION AVE
TUKWILA DR
HAZELNUT DR
Pond
MC-23
Pond
Pond
MC-22
MC-21
Pond
ASTOR WAY
PATRIOT ST
CONCORD ST
JAMESTOWN ST
LEXINGTON CT
BOONE'S FERRY RD
MILLER FARM RD
COUNTRY CLUB RD
BERNARD DR
ANNA ST
ROBERT ST
JACOB ST
ST
HENRY'S BLVD
ALTHEA
MAYANNA DR
MILLER CT
MILLER FARM
GOOSE CR RD
MC-7B
2700
2300
2200
600
GOOSE CREEK
16
15
MC-7A

Oregon
John A. Kitzhaber, M.D., Governor

Division of State Lands
775 Summer Street NE
Salem, OR 97301-1279
(503) 378-3805
FAX (503) 378-4844
TTY (503) 378-4615

State Land Board
John A. Kitzhaber
Governor
Bill Bradbury
Secretary of State
Jim Hill
State Treasurer

December 22, 1999

Mr. Richard Jennings
Mayor
City of Woodburn
270 Montgomery Street
Woodburn, Oregon 97071

Re: **Approval of the City of Woodburn's Local Wetlands Inventory and Assessment**

Dear Mayor Jennings:

I am pleased to notify you that the Division of State Lands has approved your Local Wetlands Inventory (LWI) and assessment. We appreciate your planning staff working closely with our staff and the wetland consultant to ensure that the inventory meets state LWI requirements (OAR 141-86-180 to 240) and the city's needs. The final inventory requirement is for the city to notify property owners with wetlands mapped on their property within 120 days of this approval.

Approval by the Division means that the LWI becomes part of the Statewide Wetlands Inventory. The LWI must now be used by the city instead of the National Wetlands Inventory for the Wetland Land Use Notification Process (ORS 227.350). The LWI and functional assessment also form the foundation for your wetland planning under Statewide Planning Goal 5, and the LWI must be adopted by the city per the Goal 5 requirements. Please note that when significant wetlands are designated using the locally significant wetland criteria (OAR 141-86-300 through 141-86-350) the wetlands determined to be "not significant" may be coded to distinguish them from "locally significant wetlands," but must not be removed from the approved LWI maps. The "non-significant" wetlands are still subject to state and federal permit requirements.

While considerable effort has been made to accurately identify the wetlands within the study area, the Division's approval does not guarantee that all regulated wetlands have been mapped. Also, exact wetland boundaries have not been surveyed, and there are inherent limitations in mapping accuracy. The Division advises that persons proposing land alteration on parcels containing mapped wetlands first contact the Division or obtain a wetland boundary delineation by a qualified consultant and submit it to the Division for approval prior to the land alteration.

We are pleased that the City of Woodburn has conducted a thorough wetlands inventory and has made wetland planning a high priority. We look forward to working with you and your staff as you continue on the Goal 5 wetland planning effort.

Respectfully,

Paul R. Cleary
Director

cc: Steve Goeckritz, City of Woodburn
Teresa Engeldinger, City of Woodburn
Jim Hinman, DLCD
Dan Cary, Shapiro & Associates
Yvonne Vallette, EPA (enclosure forthcoming)
Brian Lightcap & Dan Gresham, Corps of Engineers (enclosure forthcoming)
John Marshall, FWS, Portland Field Office (enclosure forthcoming)
Patty Snow, ODFW (enclosure forthcoming)
Tom Melville, DEQ
Dennis Peters, FWS Regional Office
Steve Moser, DSL (enclosure forthcoming)
John Lilly, DSL

k:\wetlands\annette\lwi\woodburnlwi approval.doc

WOODBURN LOCAL WETLANDS INVENTORY

- Wetland Summary Sheet -

Date(s) of Field Verification: 08/04/98

Wetland Mapping Code: MC-07a,b

Investigator(s): JG/ES

Size (acres): 2.15

Location

Legal: T5S R1W S7

Other: N. of Hwy 214, S. of Woodburn H.S. athletic fields

Basin: Mill Creek

600, 2200, 22601, 7200, 7300, 7400, 7500, 7600, 7800, 7900, 8000, 8100, 8200, 18400, 18500, 18600, 18700, 18800

Soils

Mapped Series: Ba, Da

Hydrology

Hydrologic Source: Surface flow

Wetland Classification(s): PEM, RUB

Dominant Vegetation

Trees	Shrubs	Vines	Herbs

Comments:

Goose Cr. emerges from a culvert at the NE corner of Lincoln Elementary School property. The channelized creek enters the wetland from the west and maintains the wetland's southern boundary. The east to west trending 50' by 450' site is a mowed field, sloping upward gently to the north. Soils were low in chroma with mottles and concretions.

Wetland Classification Codes:

PFO = palustrine forested	PSS = palustrine scrub-shrub	RSB = riverine streambed (intermittent)
PEM = palustrine emergent	POW = palustrine open water	RUB = riverine unconsolidated bottom

WETLAND DETERMINATION DATA SHEET - 1987 MANUAL

Client/Applicant: City of Woodburn Site: MC-07 Plot: 15

T 5S R 1W S 7 City: Woodburn County: Marion State: OR

Plot Location; Topography: Sloping mowed field south of Woodburn High School athletic fields, north of Hwy 214.

Project #: 2981036 Determined by: JG/ES Date: 8/4/98

DETERMINATION: IS THIS PLOT IN A WETLAND?: Yes

Do Normal Circumstances exist on the site? No

Explanation: Mowed field; channelized stream.

Are Soils ☐ Vegetation ☑ Hydrology ☑ significantly disturbed? Yes

Explanation: Mowed field; and channelized stream.

VEGETATION Dominant Plant Species

Herb Stratum - % total cover:		Ind. %Cover: 100
Alopecurus pratensis	FACW	35
Holcus lanatus	FAC	35
Festuca arundinacea	FAC-	20
Plantago lanceolata	FAC	15
Rumex acetosa	NI	5
Taraxacum officinale	FACU	5

Shrub/Sapling Stratum - % total cover:	Ind. %Cover: 0

Woody Vine Stratum - % total cover:	0

Tree Stratum - % total cover:	0

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) 2 of 3 = 67 % (50/20 Rule)

Vegetation Criterion Met? Yes

SOILS Mapped Unit Name: Bashaw clay

Drainage Class: poorly drained

Taxonomy: Very fine, montmorillonitic, mesic, Typic Pelloxererts

FIELD SOIL CHARACTERISTICS:

Horizon	Depth	Matrix Color	Redox Abundance, Size, Color	Texture, Structure, Other
	0-6"	10YR3/2	mottling, faint, common	fine sandy loam
	6-18"	10YR3/1		silty loam

☐ Histosol ☐ Prob. Aquic moisture regime ☑ Redox features ☐ Organic streaking

☐ Histic epipedon ☐ Reducing conditions ☑ Concretions ☐ Organic pan

☐ Sulfidic odor ☐ Gleyed ☐ Highly organic surface layer ☑ On hydric soils list

Soil Criterion Met? Yes

HYDROLOGY

Depth of inundation: N/A Depth to water table: >18" Depth to saturation: >18"

Primary Indicators:

☐ Inundated

☐ Saturated in upper 12"

☐ Water marks

☐ Drift lines

☐ Sediment deposits

☐ Drainage patterns

Secondary Indicators (2 or more required):

☑ Oxidized rhizospheres ☑ Local soil survey data

☐ Water-stained leaves ☐ FAC-Neutral test

☐ Recorded data (aerials, groundwater data)

Explain:

☐ Other

Explain:

Hydrology Criterion Met? Yes

WETLAND DETERMINATION DATA SHEET - 1987 MANUAL

Client/Applicant: City of Woodburn Site: MC-07 Plot: 16

T 5S R 1W S 7 City: Woodburn County: Marion State: OR

Plot Location; Topography: Mid-point of slope south facing slope; S of Woodburn HS athletic field, North of Hwy 214.

Project #: 2981036 Determined by: JG/ES Date: 8/4/98

DETERMINATION: IS THIS PLOT IN A WETLAND?: No

Do Normal Circumstances exist on the site? No

Explanation: mowed field; channelized stream

Are Soils ☐ Vegetation ☑ Hydrology ☑ significantly disturbed? No

Explanation: Mowed field; and channelized stream.

VEGETATION Dominant Plant Species

Herb Stratum - % total cover:		Ind. %Cover: 100
Holcus lanatus	FAC	20
Poa pratensis	FAC	10
Leontodon leysseri	UPL	10
Rumex acetosella	FACU	5
Daucus carota	UPL	5

Shrub/Sapling Stratum - % total cover:	Ind. %Cover: 0

Woody Vine Stratum - % total cover: 0 **Tree Stratum** - % total cover: 0

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-) 2 of 5 = 40 % (50/20 Rule)

Remarks: About 50% of cover is dead; dry grass (mowed).

Vegetation Criterion Met? No

SOILS Mapped Unit Name: Bashaw clay

Drainage Class: poorly drained

Taxonomy: Very fine,montmorillonitic, mesic Typic Pelloxererts

FIELD SOIL CHARACTERISTICS:

Horizon	Depth	Matrix Color	Redox Abundance, Size, Color	Texture, Structure, Other
	0-6"	10YR4/3		Silt loam
	6-16"	10YR4/3		Silt loam

☐ Histosol ☐ Prob. Aquic moisture regime ☐ Redox features ☐ Organic streaking
☐ Histic epipedon ☐ Reducing conditions ☐ Concretions ☐ Organic pan
☐ Sulfidic odor ☐ Gleyed ☐ Highly organic surface layer ☑ On hydric soils list

Soil Criterion Met? No

HYDROLOGY

Depth of inundation: N/A Depth to water table: >16" Depth to saturation: >16"

Primary Indicators:

☐ Inundated
☐ Saturated in upper 12"
☐ Water marks
☐ Drift lines
☐ Sediment deposits
☐ Drainage patterns

Secondary Indicators (2 or more required):

☐ Oxidized rhizospheres ☐ Local soil survey data
☐ Water-stained leaves ☐ FAC-Neutral test
☐ Recorded data (aerials, groundwater data)
Explain:
☐ Other
Explain:

Hydrology Criterion Met? No

OREGON FRESHWATER WETLAND ASSESSMENT METHODOLGY

Date(s):	08/04/98	**Investigator(s):**	JG/ES
Project Name:	City of Woodburn		
WetlandCode:	MC-07	**ProjectNumber:**	2981036

Wildlife Habitat		Fish Habitat Streams		Fish Habitat Lakes/Ponds		Water Quality		Hydrologic Control		Sensitivity to Impact	
Q1:	A	Q1:	C	Q1:	C	Q1:	A	Q1:	A	Q1:	A
Q2:	C	Q2:	C	Q2:	C	Q2:	B	Q2:	B	Q2:	B
Q3:	C	Q3:	C	Q3:	C	Q3:	C	Q3:	B	Q3:	C
Q4:	A	Q4:	A	Q4:	B	Q4:	B	Q4:	A	Q4:	A
Q5:	A	Q5:	C	Q5:	C	Q5:	A	Q5:	C	Q5:	A
Q6:	A	Q6:	C	Q6:	C	Q6:	C	Q6:	A	Q6:	B
Q7:	A							Q7:	A		
Q8:	C										
Q9a:											
Q9b:	C										

Enhancement Potential		Education		Recreation		Aesthetic Quality	
Q1:	B	Q1:	B	Q1:	A	Q1:	C
Q2:	A	Q2:	A	Q2:	C	Q2:	B
Q3:	C	Q3:	B	Q3:	C	Q3:	C
Q4:	B	Q4:	C	Q4:	B	Q4:	B
Q5a:		Q5:	A	Q5:	B	Q5:	B
Q5b:	B	Q6:	B	Q6:	B	Q6:	B
Q6:	B						

Wildlife Habitat:	The wetland provides habitat for some wildlife species.
Fish Habitat - Streams:	The wetland's fish habitat function is impacted or degraded.
Fish Habitat - Lakes/Ponds:	The wetland's fish habitat function is impacted or degraded.
Water Quality:	The wetland's water quality function is impacted or degraded.
Hydrologic Control:	The wetland's hydrologic control function is intact.
Sensitivity to Impact:	The wetland is potentially sensitive to future impacts.
Enhancement Potential:	The wetland has moderate potential for enhancement.
Education:	The wetland has potential for educational use.
Recreation:	The wetland has the potential to provide recreational opportunities.
Aesthetic Quality:	The wetland is considered to be moderately pleasing.

OREGON FRESHWATER WETLAND ASSESSMENT METHODOLGY

Function and Condition Summary Sheet for the Oregon Method

WetlandCode:	MC-07	ProjectNumber:	2981036

Function	Evaluation Descriptor	Rationale
Wildlife Habitat	The wetland provides habitat for some wildlife species.	Two or more Cowardin wetland classes. Emergent veg. or wet meadow. Low degree of Cowardin class interspersion. More than 1 acre of unvegetated open water present. Wetland connected to another body of water by surface water. Wetland connected to other wetlands within a 3 mile radius. Upstream not listed as water quality limited. Residential/Industrial land use within 500 feet of wetland edge.
Fish Habitat - Streams	The wetland's fish habitat function is impacted or degraded.	Less than 50% of stream shaded by riparian vegetation. Physical character of stream channel extensively modified/piped. Stream contains less than 10% of instream structures. Upstream not listed as water quality limited. Residential/Industrial land use within 500 feet of wetland edge. No fish species present during the year.
Fish Habitat - Lakes/Ponds	The wetland's fish habitat function is impacted or degraded.	Less than 50% of stream shaded by riparian vegetation. Physical character of stream channel extensively modified/piped. Stream contains less than 10% of instream structures. One or more upstream reaches are listed moderate water quality. Residential/Industrial land use within 500 feet of wetland edge. No fish species present during the year.
Water Quality	The wetland's water quality function is impacted or degraded.	Surface flow (including streams and ditches) is wetland's primary source of water. Unable to determine evidence of flooding or ponding during the growing season (or unapplicable). Low (<60%) degree of wetland vegetation cover. Between 0.5 and 5 acres of wetland connected to other wetlands within a 3 mile radius. Residential/Industrial land use within 500 feet of wetland edge. Upstream not listed as water quality limited in watershed or adjacent to the wetland.
Hydrologic Control	The wetland's hydrologic control function is intact.	All or part of wetland located within 100-year floodplain or enclosed basin. Unable to determine evidence of flooding or ponding during the growing season (or not applicable). Area is between 0.5 and 5 acres. Waterflow out of wetland is restricted or no outlet. Emergent veg. or wet meadow is dominant cover type. Residential/Industrial land use within 500 ft of wetland on downstream or down-slope edge of wetland. Urban or Urbanizing land use in watershed upstream from area.
Sensitivity to Impact		

OREGON FRESHWATER WETLAND ASSESSMENT METHODOLGY

Function and Condition Summary Sheet for the Oregon Method

WetlandCode:	MC-07	ProjectNumber:	2981036

Function	Evaluation Descriptor	Rationale
Sensitivity to Impact	The wetland is potentially sensitive to future impacts.	Stream flow or bank has been modified by human activities within 1 mile above wetland. Water is not being taken out of streams through active diking, drainage, or irrigation districts upstream. Upstream not listed as water quality limited in watershed upstream of the or adjacent to the wetland. Residential/industrial (developed) land use within 500 feet of wetland's edge. Dominant Residential/Industrial (developed) land use within 500 feet of wetland's edge. Emergent veg. only or wet meadow is the dominant cover.
Enhancement Potential	The wetland has moderate potential for enhancement.	Wetland has lost one or more functions or one or more functions is not present in assessment results for wildlife habitat, fish habitat, water quality and hydrologic control. Wetland's primary source of water is surface flow, including streams and ditches. Water flow into wetland is restricted and cannot be restored. Wetland's area is between 0.5 and 5 acres. Between 10 and 40 % of wetland's edge is bordered by a vegetative buffer 25 or more feet wide. Wetland is potentially sensitive to future impacts.
Education	The wetland has potential for educational use.	Wetland site is open to the public for direct access or observation, but allowed only with permission. There are no visible hazards to the public at the wetland site. Provides wildlife habitat for some species, or fish habitat is impacted or degraded. There is no existing physical public access to other features, and observation of other features cannot be made. There is a maintained public access point within 250 feet of the wetland's edge. Access is not available for limited mobility.
Recreation	The wetland has the potential to provide recreational opportunities.	There is a maintained public access point within 250 feet of wetland's edge. Wetland not accessible by boat-no boat launch within 1 mile/ cannot develop. No existing trails and viewing areas to guide user or if created, would disrupt wildlife or plant habitat. Wetland provides habitat for some species. Fishing is not allowed at wetland or adjacent water body (or not applicable). Hunting is not allowed at the wetland.
Aesthetic Quality	The wetland is considered to be moderately pleasing.	One Cowardin class is visible from primary viewing area(s). Between 25 and 50% of wetland is visible from viewing area(s). General appearance of wetland has visual

OREGON FRESHWATER WETLAND ASSESSMENT METHODOLGY

Function and Condition Summary Sheet for the Oregon Method

WetlandCode:	MC-07	ProjectNumber:	2981036

Function	Evaluation Descriptor	Rationale
		detractors which cannot be removed easily. Visual character with surrounding area is landscaped or manipulated by people. At certain times, unpleasant odors are present at the primary viewing location. Continuous traffic and other intrusive noise and natural sounds are audible at primary viewing location.

Woodburn
Wetlands of Special Interest for Protection Assessment
Answer Sheet

WetlandCode: MC-07

Question 1	**B** *List:*
Question 2	**B** *List:*
Question 3	**B** *List:*
Question 4	**B** *List:*
Question 5	**B**
Question 6	**B**
Question 7	**B** *List:*
Question 8	**C**
Question 9	**B**
Question 10	**B**

Woodburn
Local Wetland Significance Assessment

WetlandCode: MC-07

A. "OUT" Test

No Wetlands artificially CREATED ENTIRELY FROM UPLAND that are:

(a) created for the purpose of controlling, storing, or maintaining stormwater;
(b) active surface mining ponds;
(c) ditches without free and open connection to waters of the state AND without fish;
(d) <1 acre and unintentionally created from irrigation leak or construction activity;
(e) of any size and created for the purpose of wastewater treatment, stock watering, settling of sediment, cooling industrial water, or as a golf course hazard.

No Documented as being contaminated by hazardous substances, materials or wastes ("Hazmat sites").

This wetland MEETS the criteria for identification as a Local Significant Wetland

B. "IN"

Yes Wetlands that score the highest rank for ANY of the four ecological functions addressed by OFWAM or equivalent methodology:

- **No** wildlife habitat,
- **No** fish habitat,
- **No** water quality,
- **Yes** hydrologic control.

No Wetlands that (1) are rated in either the highest or second highest category for water quality (in OFWAM or equivalent) AND that (2) the wetland is within one-quarter mile from a water quality-limited stream as listed by DEQ.

No Contains one or more rare wetland plant communities including those listed in the Oregon Natural Heritage Program's CLASSIFICATION AND CATALOG OF NATIVE WETLAND PLANT COMMUNITIES IN OREGON as G1-G3 and S1-S3.

No Inhabited by any species listed by the federal or state government as a sensitive, threatened or endangered species in Oregon (unless consultation with appropriate agency deems the site not important for the maintenance of the species.

No Wetland rates in either the highest or second highest category for Fish Habitat in OFWAM and is located adjacent to a stream segment that is mapped by ODFW as habitat for "Indigenous anadromous salmonids."

No OPTIONAL CRITERION (at discretion of local government): Wetland represents a LOCALLY unique plant community.

No OPTIONAL CRITERION (at discretion of local government): Wetland is publicly owned, rates highest rank for education potential, and there is documented use for educational purposes by a school or organization.