

Willamette Headwaters Region Wetlands and Riparian Area Inventory, Assessment, and Protection Project

Quality Assurance Project Plan (QAPP)

Lane Council of Governments
City of Adair Village
City of Brownsville
City of Cottage Grove
City of Creswell
City of Harrisburg
City of Lowell
City of Mill City
City of Monroe
City of Scio
Benton, Lane and Linn Counties
U.S. Environmental Protection Agency
Oregon Department of Land Conservation and Development
Oregon Department of State Lands
Oregon Department of Environmental Quality

January 27, 2010

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Policy Implementation Review Team:

- Nine project cities and three counties
- Department of Environmental Quality
- Department of Land Conservation and Development

1.2 Project Overview

The southern Willamette River Valley is characterized by rich and diverse water resources and a swelling population. As the population increases, putting significant pressure on development practices, these water resources are threatened. Nine rural cities in three counties will address the impacts of future development on natural resources by guiding growth. These communities are linked environmentally, and have in common a lack of local knowledge and staff to formulate effective regulatory and incentive-based strategies to protect these resources. Working within the state's Land Use Goal framework of compact growth, this project inventories and prioritizes natural resources at a detailed, local level while maintaining the benefits of broader collaboration. To improve water quality, promote a green human environment, and mitigate climate change, we will provide a mix of regulations and/or incentives and significant outreach to protect these resources through the development of a Water Resource Land Use Action Kit. The Action Kit will be a combination of visualization tools and protection alternatives.

1.3 Project Organization

This section identifies the individuals and organizations participating in the project and discusses their specific roles and responsibilities in fulfilling project goals.

The project manager for this project is Denise Kalakay, Senior Water Resources Planner at Lane Council of Governments (LCOG). Denise is responsible for project coordination, management, task development and delegation, and budgetary oversight. Denise reports on project progress to Nancy Brown, EPA Project Officer as well as representatives from the 12 participating jurisdictions, and other organizational partners. Denise Kalakay is responsible for review of project progress and deliverables and to assess success in meeting project goals and the jurisdiction's needs.

Wetland contractors(s) will be used to complete the wetland inventories through both field work and off-site identification methods such as aerial photography interpretation. The wetland contractors(s) will report directly to **Denise Kalakay** but also have oversight, through Denise, from Department of State Lands (DSL) staff.

Janet Morlan, (DSL Wetlands Program Manager) and Project Quality Assurance manager, is responsible for reviewing updates to the Quality Assurance Plan (this document) provided by LCOG. Janet will also review data generated by the wetlands contractor(s) to ensure its appropriate use and interpretation. **Peter Ryan**, DSL Wetland Specialist and project Technical Expert Reviewer, will be responsible for ensuring that the data gathered and methodology applied in the inventorying and assessment process meets the quality assurance standards outlined in this plan. **Bill Clingman**, LCOG GIS Analyst and project Technical Resource, is responsible for collection, integration and presentation of initial project data. This includes the development of base maps, and notification mailing lists for each jurisdiction. Base maps will be utilized in the initial steps of high level potential resource site identification and land owner notification. The team members listed above will work with **Denise Kalakay** (Project Manager) to review inventory results and assess policy and implementation implications of the results.

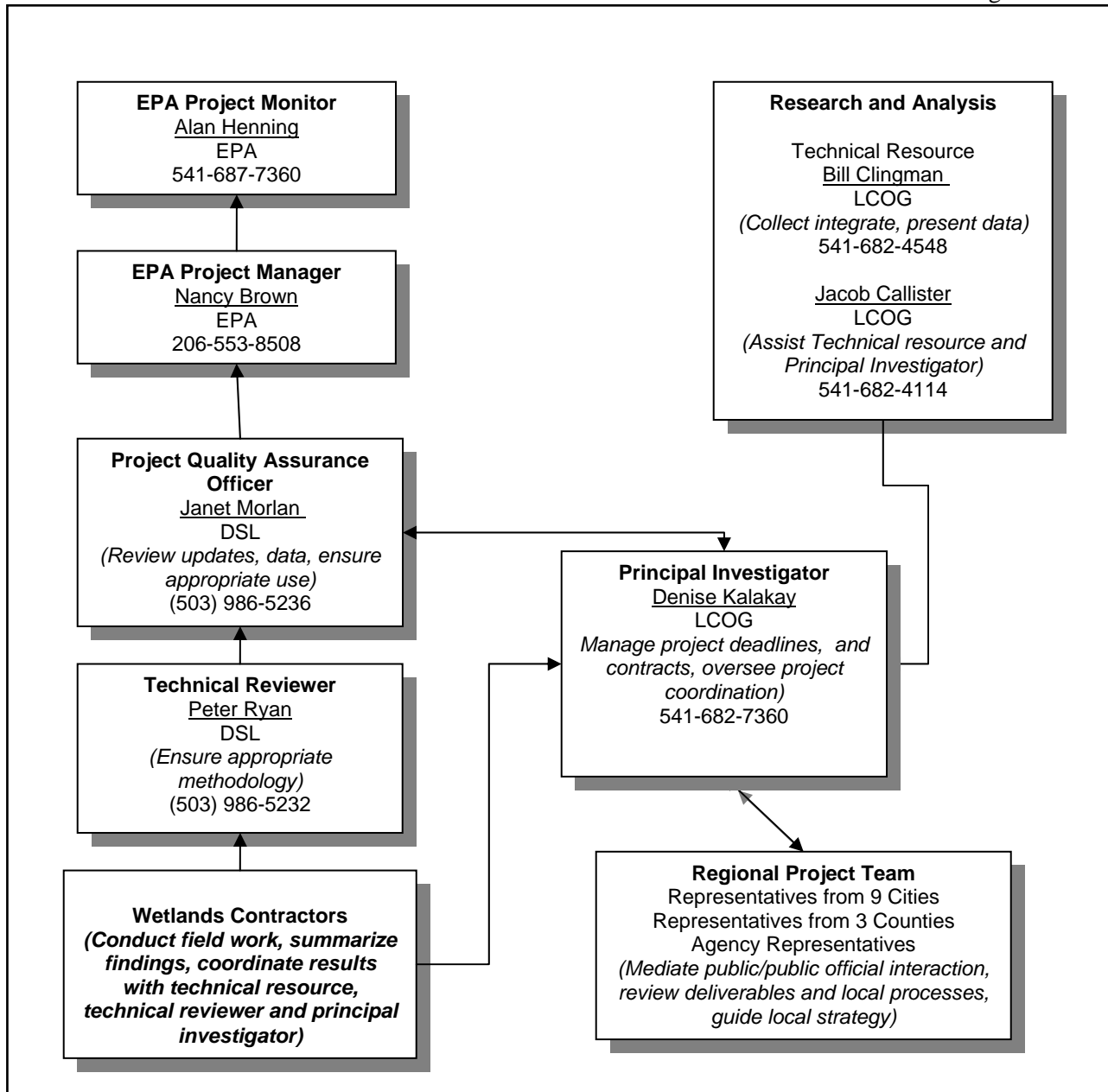


Figure 1. Project personnel organizational chart

1.4 Project Background and Objectives

The Willamette Valley once contained an immense pattern of wetlands linked to the Willamette River. The Kalapuya Indians systematically set fires to much of the valley to keep the prairie open. Settlers reshaped the river and the wetlands. Wetlands were drained and filled for agricultural land and urban development resulting in continuous habitats and vegetation patterns being fragmented and floodwater storage lost. *The vast majority of these wetlands have been converted for agriculture, urban, suburban, and industrial purposes, with less than one-half of one percent of the native Willamette Valley wet prairie remaining today.*

LCOG will coordinate work in nine Oregon cities within three counties, including Creswell, Cottage Grove, Lowell, Harrisburg, Adair Village, Monroe, Scio, Mill City, and Brownsville and Lane, Linn, and Benton Counties. These local jurisdictions lie within the Coast Fork, Middle Fork, Upper Willamette and the Santiam sub-basins comprising the upper half of the Willamette River Basin. In 2000, about 70% of Oregon's population lived in the Willamette Valley, with an expected doubling of the population by 2050. In the small cities joining in this proposal, growth is well above the state's average. Seven cities exceed a 10% population increase, with four of those cities exceeding a 20% increase since 2000. This expansion is seen as critical to the economic vitality of the region.

The regional impact of smaller cities without wetland inventories is significant, given the cumulative impact of non-point source water pollution originating from them. They lack the tools to effectively identify and protect water resources and, therefore developers lack information on how and where to minimize impacts. As development occurs without these tools in place, wetlands and riparian area functions are lost (stormwater retention, shading, pollutant removal, global warming attenuation, habitat, etc.) This loss has impacts downstream all the way to the Lower Columbia Basin, and its estuaries. Many times mitigation cannot replace the critical ecosystem functions of these high value resources. Development may be occurring in areas that are more appropriate and suited for conservation. To see on-the-ground results from intensive inventory, assessment, and planning efforts, we will work with local governments so that they accurately understand the location and value of their water resources and how to comply with mandates and apply voluntarily measures.

Objectives of this project are:

- To conserve wetland and riparian systems from loss or degradation from urban development by conducting wetland and riparian inventories for nine small cities located within three counties and five sub-basins;
- To identify areas suitable for preservation, protection, restoration, and development by conducting an assessment of significance as defined in Oregon Administrative Rules for wetland and riparian systems;
- To provide water resource technical assistance, regulatory and non-regulatory programs, and incentive-based strategies to local governments;
- To create build-out scenarios for the general public, public officials, and staff that model the impact of different land use and water resource strategies.

The project will be conducted over two years with six work tasks. Tasks 1-4 focus on accurately locating and evaluating the water resources by conducting inventories of wetland and riparian areas and classifying them by type, values, and functions. These tasks will be heavily guided by this Quality Assurance Plan. The final project objective will build on the results of Tasks 1-4, moving the inventory and assessment data into protective actions. The final tasks move the inventory and assessment data into more protective actions based on the data produced and evaluated in Tasks 1-4.

Specific activities of the project that will be addressed in this QAPP include the following:

1. Prepare reference data materials, base maps and conduct inventory mapping - wetlands.
2. Conduct assessment of wetlands - OR Freshwater Wetland Assessment Methodology (OFWAM)
3. Conduct inventory mapping and assessment of riparian areas determine significance of resources.
4. Produce wetland inventory reports, maps

1.5 Preliminary Data and Local Wetland Inventory and Assessment Methodology:

The standards and guidelines for Local Wetland Inventories (LWIs) in Oregon and as used in this project, are determined in the Oregon Administrative Rules (OAR) 141-086-0180 through 141-086-0240 (Attachment 1). Section 141-086-180 presents the “**purpose**” of LWIs.

“Pursuant to ORS 196.674 pertaining to the Statewide Wetlands Inventory (SWI), these rules establish a system for uniform wetland identification and comprehensive mapping. These rules also establish wetlands inventory standards for cities or counties developing a wetland conservation plan (WCP) pursuant to ORS 196.678. A Local Wetlands Inventory (LWI) is developed for all or a portion of a city or county according to the standards and guidelines contained in these rules (OAR 141-086-0180 through 141-086-0240).”

1.5.1 Initial data and data standards

LCOG will begin data collection and base map generations before the wetland contractor(s) begin field work. Data gathered will include all required sources of information per OAR 141-086-210(2) and several additional recommended but not required sources in 141-086-210(3), including LiDAR, and DSL permit files. Before beginning field work, base maps will be developed and held to the standard in OAR 141-086-210(4). A sample base map can be found on the project website at <http://www.lcog.org/southwillamettelwi/default.cfm>. Key data along with some critical characteristics of the data used in the project are shown in the following table:

Data Set	Source	Date	Application (use)	Acceptance Criteria
Tax Lots and Property Owner Information	Benton County, Lane County, Linn County	Oct-Nov 2009	Identification of the co-occurrence of Tax lots and Hydric Soils or Wetlands, property-owner notifications, general positional reference (base) layer.	Meets ORMAP Taxlot Standards for Urban Areas (except Monroe)
Flood Hazard Areas	FEMA (DFIRM)	Benton: 2008 Lane: 2002 Linn: 2000	Supplemental information to aid in identifying potential wetlands areas	Best available data from official source
Urban Growth Boundaries	Benton County, Linn County, LCOG	Oct-Nov 2009	Establishment of primary study areas, supplemented in some cases by adjacent areas of potential future growth as identified through local processes.	Best available data from local sources
City Limits	Benton County, Linn County, LCOG	Oct-Nov 2009	Determination of land use and zoning jurisdiction, critical for implementation of administrative protections.	Best available data from local sources
National Wetlands Inventory	US Fish & Wildlife Service	Varies, but mostly from 1982	Supplemental information to aid in identifying potential wetlands areas	Best available data from official source
Soil Survey Geographic (SSURGO) Database	Natural Resource Conservation Service	Benton: 8/2009 Lane: 7/2007 Linn: 8/2009	Accurate identification of Hydric Soils and Soils with Hydric Minor Components (Inclusions)	Best available data from official source
Roads, water features	Benton County, Linn County, LCOG	varies	General locational reference	Best available data from local sources
Aerial Photography	See below	See below	High resolution aerial orthoimagery is critical for accurate delineation of wetlands and riparian areas, especially in areas to which on-site access has not been granted.	Less than five years old, 1 meter resolution or finer, multi-spectral color, orthorectified.
Lane County cities	LCOG	3/22/2008		Resolution 0.5 feet per pixel, Photo scale 1"= 840', Map scale 1" = 100'
Benton County cities	Benton County	7/02/2005		Resolution 1 foot per pixel, Photo scale 1"= 1650', Map scale 1" =200'
Linn County (Harrisburg)	Linn County	8/14/2008		Resolution 1 foot per pixel, Photo scale 1"= 1700', Map scale 1" =200'
Linn County (all others)	Linn County	8/15/2008		Resolution 0.5 feet per pixel, Photo scale 1"= 850', Map scale 1" = 100'
Zoning, Comp Plan	Benton County, Linn County, LCOG	varies	Will become useful in later Tasks of the project, to evaluate impacts of proposed protection measures	Best available data from local sources
LiDAR	Oregon LiDAR Consortium	2009	Investigational use in some study areas. High-resolution ground elevation, vegetation height	

1.5.2 Wetland Inventory Methodology

The methodology used by the wetland inventory professionals contracted for this project will be tied to OAR 141-086, and specifically to the section 141-086-210 (5) through 141-086-210 (20), *Inventory Development Process and Standards*.

Special training and certification for wetland scientists performing wetlands inventories is not dictated in Oregon Law. For the purposes of this project, the wetland contractors will be held to the following standard: At least one person with primary responsibility for performing or overseeing the work on the project must be a certified Professional Wetland Scientist through the Society of Wetland Scientists' Certification Program or satisfactory equivalent (as determined by Oregon DSL). Selection criteria for the wetland contractor/s include qualifications and relevant experience of key project personnel, successful wetland delineations and local wetland and riparian inventories completed. They must also demonstrate experience in delineating large scale sites.

In addition, the wetland contractor(s) must provide a list of at least three references for whom work of comparable type and scope has been completed in the last three years. Reference information must include other wetland and riparian area inventories relevant to the proposed project.

The primary source documents for wetland delineations within Oregon is the *Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1* (Environmental Laboratory 1987) and the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region*, which are recognized by both DSL and COE (Regional Supplement; U.S Army Corps, 2008).

These manuals are used by the Army Corps of Engineers (“Corps”) and the Oregon Department of State Lands (“DSL”) to document the location of wetlands within the State of Oregon. The 1987 manual, along with regional supplement, provide technical criteria, field indicators, and recommended procedures to be used in determining whether an area is a jurisdictional wetland. Undisturbed areas require three criteria for them to be classified as wetland. These criteria are hydric soils, a dominance of hydrophytic vegetation, and wetland hydrology. These procedures will be included as Attachment 3 (*when provided*).

Submittal of the LWI reports for each jurisdiction will meet the requirements set in OAR 141-086-220, including documentation of the inventory and mapping processes and results as well as appendices per OAR subsections 141-086-220 (2-3). Upon LWI completion, procedures for land owner notification will also be followed per OAR 141-086-240.

1.5.3 Wetlands Assessment: Oregon Freshwater Wetland Assessment Methodology (OFWAM)

The method for assessing wetlands in this project is also contained in Oregon Rules. OAR 141-086-185(4) States the following:

(4) A wetland function and condition assessment of mapped wetlands must be conducted as part of the LWI using the Oregon Freshwater Wetland Assessment Methodology (OFWAM)

published by the Department in 1996. An equivalent functional assessment methodology may be used or adjustments may be made to OFWAM upon written approval by the Director. The assessment results are used to determine the relative quality (functions, values, and condition) of the mapped wetlands and to designate significant wetlands (OAR 141-086-0300 through 141-086-0350) as required for Goal 5, or to assess wetland functions and values for a Wetland Conservation Plan.

OFWAM is a standardized protocol for rapidly assessing the functions and conditions of wetlands. It was developed to assess the relative qualities of wetlands in a community-planning context, and is suitable for a citizen audience. The method provides a repeatable, qualitative basis for determining which wetlands exhibit high, medium, or low ratings in the following nine functions and conditions:

1. Wildlife Habitat
2. Fish Habitat
3. Water Quality
4. Hydrologic control
5. Sensitivity to impact
6. Enhancement potential
7. Educational potential
8. Recreational potential
9. Aesthetic quality

Each of these wetland characteristics is assessed by answering a series of questions. Responses are tallied to determine whether each assessed wetland characteristic is (1) intact, (2) impacted or degraded, or (3) lost or absent. The method does not average the nine functional scores, as that would be inappropriate. It also does not speculate as to future functions or conditions. The contractor(s) will be applying the OFWAM methodology (Attachment 4).

1.5.4 Wetland Significance determination:

The 1995 legislature directed OR DSL to develop criteria for determining which wetlands in a local Wetland Inventory should be considered “significant”. The Land Board adopted the resulting rules (OAR 141-86-300 through 141-86-350) in January 1997. The criteria rely heavily on the results of OFWAM.

A wetland must be considered significant if it meets one or more of the following:

- It has the highest OFWAM rank for any of the four ecological functions (first four).
- It is (1) rated in the highest OFWAM category for water quality, or (2) rated in the second highest rank category for water quality AND is within .25 mile of a water-quality limited stream, as listed by DEQ.
- It contains one or more rare wetland plant communities, as defined in the rule.
- It is inhabited by any species listed by the federal or state government as threatened or endangered in Oregon (unless consultation with an appropriate agency deems the site not important for the maintenance of the species.)
- It has a direct surface-water connection to a stream segment mapped by the ODFW as habitat for indigenous anadromous salmonids, and “intact” or “impacted or degraded” fish habitat function using OFWAM.

Two additional criteria are optional, at the discretion of the local government:

- The wetland is or contains the only representative within the urban growth boundary of a particular recognized native plant community and meets other qualifications detailed in the rule.
- The wetland is publicly owned, scores the highest rank for educational potential, and a school or organization has a documented educational use for the wetland.

1.6 Riparian Inventory and Assessment:

Riparian inventories will be conducted utilizing either the “standard” or “safe harbor” methodology described in compliance with Statewide Planning Goal 5 Administrative Rules as per OAR 660-023-030 *Inventory Process* and 660-023-090 *Riparian Corridor* (Attachment 2). For those cities selecting a standard inventory approach, the *Urban Riparian Inventory and Assessment Guide* (Riparian Guide) will be used to identify and evaluate riparian area features.

The Riparian Guide is a rapid inventory and assessment method for defining the location and the quality of riparian areas. Developed by Pacific Habitat Services for the OR DSL in 1998, it is a tool to provide consistent riparian inventory results. The Guide includes a field inventory component (based on riparian area width and physical characteristics), as well as an assessment component (based on four riparian functions: water quality, flood management, thermal regulation, and wildlife habitat). Riparian inventory and assessment work will be conducted by LCOG and Department of Environmental Quality staff following this methodology. A copy of the Riparian Guide methodology can be found on the LCOG Website at <http://www.lcog.org/southwillamettelwi/default.cfm>, and is also attached as Attachment 5.

2.1 Quality Assurance Objectives

2.1.1 Accuracy

The project will consist of two major elements: Inventory and Assessment. These directly relate to the two main components of project accuracy; positional accuracy (delineation) and classification accuracy.

2.1.2 Positional Accuracy

Positional accuracy is a measure of how well the mapped position of a feature represents its real world position.

OAR 141-086-210(12) identifies that the aim of the LWI is to map the location of wetlands at an accuracy of approximately 5 meters (16.4 feet). However, the actual accuracy may occasionally be less for some wetlands such as seasonal or forested wetlands that could not be visually confirmed.

The project will also adhere to mapping standards outlined by the Oregon Wetland Mapping Standard (OWMS). One intention of the OWMS is to support varying levels of positional and attribute accuracy. It is essential to the success of the data standard that all aspects of wetland

data be completely documented in the associated metadata (either at the feature or data set level). Although the target positional accuracy for (OWMS) is 40 feet or less, OARs guiding LWI's hold the standard at 16.4 feet (5 meters). Per the Federal Geographic Data Committee's Wetland Mapping Standard (FGDCWMS), required minimum horizontal accuracy for the OWMS is 5 meters (16 feet) or less, reported by the method set forth in *Part 3: National Standard for Spatial Data Accuracy*. Each wetland dataset should employ a single linear measurement unit such as feet or meters, but not both. Per the FGDCWMS, vertical accuracy is not specified in the OWMS. Per the FGDCWMS, the required minimum target mapping unit for the OWMS is 0.5 acres, per Oregon Administrative Rules (OAR) 141-086-0180 through 141-086-0 that apply to local governments for LWIs and wetland conservation Plans. For polygons not included in wetland conservation plans, use of a target mapping unit finer than 0.2 ha (0.5 acres) is acceptable and will enhance positional accuracy of the data.

Although Oregon rules require that all wetlands greater than one-half acre in size be inventoried, the inventories in this project raise that standard, with an aim to inventory 75% of all wetlands over one-tenth of an acre in size on lands where on-site access is not granted, and 100% of all wetlands over one-tenth of an acre on sites where on-site access is granted.

Three coordinate reference systems are typically used within Oregon: the Oregon State Plane system (divided into State Plane North and State Plane South along the county boundaries near 44 degrees north latitude), Universal Transverse Mercator (divided into UTM zones 10 and 11 along the meridian at 120 degrees west longitude), and the custom Oregon Lambert projection. The OWMS identifies that wetlands data can be provided in native coordinate reference systems. Oregon Lambert is preferred. The spatial reference information and datum **must** be clearly documented in the metadata accompanying the dataset and a projection defined in the shapefile. For this project, base maps will be prepared using the Oregon State Plane Coordinate System. Linn and Benton Counties are in the north zone, and Lane County is in the south zone.

2.1.3 Classification Accuracy

Inventory classification accuracy is a measure of whether the objects or features of a map have been correctly identified. The OFWAM methodology addresses the classification accuracy element for wetlands within the project, and the Riparian Guide methodology addresses classification accuracy for the riparian resources of the project. Classification accuracy will be held to the standards and guidelines of the OWMS as well as those outlined in OAR 141-086 and 660-023.

2.1.4 Completeness

The completeness goal is to have 100% coverage of the land within the urban growth boundaries of each of the nine participating cities. In many instances coverage will include areas of potential future growth adjacent to UGBs identified by the city staff. These areas will all have updated LWI and riparian data, meeting the quality assurance goals described in this document. A few small areas within the project cities have locally produced wetland maps that are more recent than the original National Wetland Inventory. These maps will be incorporated into this process

as ancillary data, but may require additional effort to ensure that these locally produced maps meet the quality assurance objectives for the project.

2.1.5 Comparability

Data comparability is the degree to which one data set can be compared to another. The updated LWI data shall be internally comparable across Oregon. OR DSL strives for internally comparable data by using consistent methods for all regions throughout the State, and by maintaining consistent methods over the life time of this project, except where improvements are required for data quality. When method changes are proposed, these changes will be evaluated and documented before being implemented, thereby allowing adequate study to ensure data comparability. As noted earlier, methods employed for the LWI update will adhere to the wetland mapping standards.

2.1.6 Reproducibility

A reproducible process is one that produces the same output given the same inputs and conditions. Reproducibility is important to ensuring that the data are comparable, but may, in some situations, have negative impact on accuracy. For example, a fully-automated process tends to be highly reproducible, but it may not fully capture the nuances in the source data that a well-trained photo-interpreter might catch. However, the use of human photo-interpreters introduces a degree of subjective judgment that may not be entirely consistent across all photo-interpreters. As stated on Page 9, the consultant staff with primary responsibility for performing or overseeing the work on the project must be a certified Professional Wetland Scientist through the Society of Wetland Scientists' Certification Program or satisfactory equivalent (as determined by Oregon DSL). Selection criteria for the wetland contractor/s include qualifications and relevant experience of key project personnel, successful wetland delineations and local wetland and riparian inventories completed. They must also demonstrate experience in delineating large scale sites. Selection of consultants who can provide this expertise will ensure greater reproducibility in the data.

Additionally, the methodologies proposed for the wetland and riparian inventories and assessments (OFWAM and the Riparian Guide) are designed to provide an acceptable level of consistency and reproducibility in their outcomes. For the elements of the procedure that rely heavily on human interpreters (on-site or photo), reproducibility will be maintained by using well-documented standard operating procedures and trained technicians. In addition, all wetland and riparian maps will undergo an internal review for consistency by the Technical Reviewer.

3.1 Data

3.1.1 Data Products

As per OAR 141-086-0225 *Digital Data Standards*, a minimum of two sets of DSL-approved geospatial datasets will be prepared including the following geo-referenced and ArcGIS compatible LWI features:

- Wetland polygons with a unique wetland identification label, Cowardin classification code(s) and modifiers, HGM classification, approximate wetland size, Locally Significant

Wetland significance determination (if made), whether it was visually confirmed, and the Department's wetland delineation report file number, if any.

- Probable wetland points with PW label;
- Streams with unique identification labels and, where available, names;
- Other natural bodies of water with names;
- Artificially created wetlands and water features (such as irrigation canals and ditches, industrial ponds, log ponds, golf course features, and storm water detention ponds) uniquely identified and purpose of artificially-created feature, if known;
- Watershed boundaries (6th order Hydrologic Unit Code scale or finer);
- Study area boundary;
- Tax lot lines and numbers;
- Sample plot dataset with unique identification labels that correspond to the field data form; and
- Major streets with name labels.
- Riparian Assessment Data and Forms (URIAG, other)
- Wetland Assessment Forms (OFWAM, ORWAP where used)
- Assessment data summary forms for both Wetlands and Riparian Areas
- Site/Resource Photos (where taken): Identified and included with assessment forms where applicable

3.1.2 Aerial Photography

Although extensive field work will be completed by a wetland contractor(s), a significant source of data used for the wetland and riparian area inventories and assessments will be digital aerial imagery. The minimum specifications for this imagery are as follows:

- Multi-spectral (red, green, blue)
- Georeferenced and ortho-rectified to remove terrain displacement
- Spatial resolution of 1-meter or finer and a map scale of 1 inch = 200 feet or less)
- No more than 5-years old at the time of the wetlands interpretation
- Horizontal accuracy with a root mean square error of 10 feet or less for x and y directions
- Wherever possible imagery will be acquired with the following additional specifications:
 - Spring, leaf-off conditions
 - 0.5-meter resolution

- Near-infrared 4th band

3.1.3 Ancillary Data

A variety of ancillary data may be used to compliment the primary data. Commonly used ancillary data for wetland mapping includes additional imagery from other seasons and years, elevation data, soils maps, hydrography, flood hazard, radar data, and other wetland maps (historic or local). The quality assurance standard for ancillary data is to use the best available data.

3.1.4 Mapping Methods and Standards

The mapping methods used for this project will adhere to the standards outlined in OAR 141-086-222 (2) through (5). This standard will apply to the wetlands contractor in consultation with the LCOG project manager and the designated Quality Assurance Officer for the project. Method development will follow the guidelines outlined in OAR 141-086 and 660-023. Mapping methods will be incorporated into this plan by reference when available.

3.1.5 Data Management

Much of the data to be utilized in this project has already been collected on LCOG servers, and has been placed in the two coordinate spaces (Oregon State Plane South (Lane County data) & Oregon State Plane North projections (Linn and Benton County data)). As inventory and assessment data (and all other data) become available from the wetland contractors, they will be stored on servers maintained by LCOG and RIS (Regional Information System) personnel. Data on these servers is backed up incrementally on a daily basis, with full backups being made on a weekly basis. Data analysis and manipulation occurs on distributed personal/desktop microcomputers which write output to the agency server. Internet and other security considerations are also maintained by these LCOG and RIS staff. Data processing is accomplished in a variety of commercially available software programs. Geospatial manipulation and analysis is done using Environmental Systems Research Institute's Arc GIS-ArcInfo (9.3.1) Desktop software.

Field Data Management will be another unique and critical data management component. The consultant(s) will utilize GPS for digitizing information in the field, and GPS to navigate throughout the cities. This allows for higher accuracy in mapping and greater convenience in processing field data by entering directly to digital maps, rather than hard copies. Each day consultants will review data to make sure it looks right. Ground truths of initial photo interpretations will be conducted. This increased data organization will also be helpful because resource mapping and assessment may be conducted at different times.

Where LCOG or state personnel perform Riparian Assessments hard copy field sheets will be utilized (not digital). Care will be taken to ensure proper processing and storage of completed forms. Data will be entered and managed by LCOG staff under the direction of the Technical Resource.

3.1.6 Data Attribute Accuracy

Like many spatial themes the wetland layer has relationships with other layers, and for the wetland layer this is especially true. Wetland data produced in the project will include the following minimum attribute elements:

- **SITENAME:** Name of closest mapped locality (e.g., GNIS name)
- **DATA_S_YR:** Source and year of original data (e.g., name of consultant, author of field notes).
- **CREAT_YR:** Creator and year of polygon if different than DATA_S_YR.
- **DATA_METH:** Method of data creation.
- **DATA_ACCU:** Accuracy of data, indicating the level of precision of a mapped feature.
- **COWARDIN:** System, subsystem, class, subclass, water regime, and special modifiers where applicable, per FGDCWMS.
- **COWAR_S_YR:** Source and year of Cowardin data if different than DATA_S_YR
- **HGM:** Hydrogeomorphic (HGM) class and subclass code.
- **HGM_S_YR:** Source and year of HGM if different than DATA_S_YR.
- **POLY_S_ID:** Wetland polygon ID in original data.
- **FIELD_OBS:** Field verified, onsite or offsite.
- **DATA_S_TYP:** Data source type.

4.1 Quality Assurance Procedures

4.1.1 Review and Approval Process

As per OAR 141-086-228, The LWIs will adhere to the following review and approval minimum standards:

- (1) A draft of all the LWI products required in OAR 141-086-0210 through 0225 must be provided to the DSL (if the inventory was not developed by the Department) and the local government(s) for review.
 - (2) The local government must provide opportunity for public review of and comment on the draft LWI products.
 - (3) Public and local government comments on draft LWI products must be provided to the DSL. The Department will request in writing from the party responsible for preparing the LWI any revisions or additions required in order for the LWI to be approved.
 - (4) The Department will review final products to ensure that all changes requested by the Department have been adequately addressed.
- (5) If the final LWI products meet the requirements in these rules, the Department will send a letter of approval to the local government.

4.1.2 Stakeholder Review

Draft maps will be made available to all project stakeholders for review to help identify any inaccuracies. Stakeholder review will be coordinated by Denise Kalakay (LCOG project manager). Draft data will be posted to the Project website.

A number of public meetings will also be held to present inventory results to property owners with wetland and/or riparian areas on their property, local citizens, and other stakeholders. A mark-up file will be created to indicate potential additions, deletions, and modifications to wetland boundaries as well as potential classification changes. These mark-up files will be reviewed by the LCOG Project Manager, DSL Technical Resource, and the wetland contractor for potential modifications to the wetland inventory maps.

4.1.3 Field Validation

The OR DSL incorporates field validation into all LWI projects. This process will be coordinated with the DSL, LCOG, and each of the individual jurisdictions.

4.1.4 Audits and Reporting

The LCOG Project Manager, DSL Quality Assurance Officer or designee shall periodically review the procedures used by the contractor/s. This shall include a review to ensure that written procedures remain consistent, clear, and current. Quality assurance audits shall also include on-site assessments to ensure that personnel are following procedures and that deviations from procedures are documented.

5.1 Instruments, Equipment Quality

The consultants will collect data using hand-held digital instruments. These instruments will be Trimble Yuma GPS ruggedized tablets functioning with ArcPad GIS. The tablets are an industry standard and calibration will not be required. All other data will be entered and analyzed using up-to-date and applicable hardware and software.

6.1 Documents, Records and Oversight

6.1.1 Documents and Records

All project data sets, documentation, software applications and computer code will be kept on servers maintained and backed-up by Lane County's Regional Information System (RIS) personnel. Data is in the form of text documents, tabular (i.e. spreadsheet) information, relational database, and geospatial (as ESRI file formats) data.

6.1.2 Reports to Management

Project progress reports will be produced by Denise Kalakay and LCOG staff on a quarterly basis synchronized with updates to this Quality Assurance Plan, and will be distributed to Nancy Brown and project participants. Comments will be solicited in regard to project progress and content.

Attachment 1: Oregon Administrative Rules: LWI Standards and Guidelines

Local Wetlands Inventory (LWI) Standards and Guidelines

141-086-0180

Purpose

Pursuant to ORS 196.674 pertaining to the Statewide Wetlands Inventory (SWI), these rules establish a system for uniform wetland identification and comprehensive mapping. These rules also establish wetlands inventory standards for cities or counties developing a wetland conservation plan (WCP) pursuant to ORS 196.678. A Local Wetlands Inventory (LWI) is developed for all or a portion of a city or county according to the standards and guidelines contained in these rules (OAR 141-086-0180 through 141-086-0240).

Stat. Auth.: ORS 196.674 – 196.681 & 196.692

Stats. Implemented: ORS 196.668 – 196.692

Hist.: LB 11-1991, f. & cert. ef. 11-15-91; LB 9-1994, f. & cert. ef. 12-15-94; DSL 2-2001, f. & cert. ef. 2-26-01

141-086-0185

Applicability

- (1) Once approved by the Department of State Lands (Department), the LWI must be used in place of the National Wetlands Inventory (NWI) and is incorporated into the SWI.
- (2) The approved LWI must be used by cities and counties in lieu of the NWI for notifying the Department of land use applications affecting mapped wetlands and other waters (ORS 215.418 and ORS 227.350).
- (3) An LWI fulfills the wetlands inventory requirements for Goal 5 and Goal 17 (OAR 660-015 and 660-023). An LWI that meets the additional WCP requirements specified in these rules must be used as the wetlands inventory basis for a WCP.
- (4) A wetland function and condition assessment of mapped wetlands must be conducted as part of the LWI using the *Oregon Freshwater Wetland Assessment Methodology (OFWAM)* published by the Department in 1996. An equivalent functional assessment methodology may be used or adjustments may be made to OFWAM upon written approval by the Director. The assessment results are used to determine the relative quality (functions, values, and condition) of the mapped wetlands and to designate significant wetlands (OAR 141-086-0300 through 141-086-0350) as required for Goal 5, or to assess wetland functions and values for a WCP.
- (5) An LWI is used by the Department, other agencies and the public to help determine if wetlands or other waters are present on particular land parcels.
- (6) An LWI provides information for planning purposes on the location of potentially regulated wetlands and other waters such as lakes and streams, but is not of sufficient detail for permitting

purposes under the state Removal-Fill Law (ORS 196.800 through 196.990). Smaller wetlands may not be mapped, and wetlands may be missed due to lack of onsite access, tree canopy cover and other constraints. A wetland delineation or determination report may be needed for parcels without LWI-mapped wetlands. A Department-approved wetland delineation report for wetlands identified in an LWI is usually needed prior to site development.

(7) All wetlands inventory procedures and products are subject to review and approval by the Department before the products:

- (a) Are incorporated into the SWI;
- (b) Can be used in lieu of the NWI for Wetland Land Use Notification purposes; or
- (c) Can be used by a city or county for Goal 5, Goal 17 or WCP purposes.

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 196.674 - 196.681 & 196.692

Stats. Implemented: ORS 196.668 - 196.692

Hist.: LB 11-1991, f. & cert. ef. 11-15-91; LB 9-1994, f. & cert. ef. 12-15-94, Renumbered from 141-086-0190(1) & (4); DSL 2-2001, f. & cert. ef. 2-26-01; DSL 11-2008, f. 12-12-08, cert. ef. 1-1-09

141-086-0200

Definitions

- (1) "Cowardin class or subclass" means the wetland classification according to the U.S. Fish and Wildlife Service's *Classification of Wetlands and Deepwater Habitats of the United States*, Cowardin et al., 1979.
- (2) "Director" means the Director of the Oregon Department of State Lands or designee.
- (3) "Department" means the Oregon Department of State Lands.
- (4) "Georeferenced" means linking geographic data to known coordinates on the surface of the earth.
- (5) "GIS" or "Geographic Information System" means a system of hardware, software and data storage that allows for the analysis and display of information that has been geographically referenced.
- (6) "HGM class and subclass" means the hydrogeomorphic classification of the wetland based upon its landscape position and hydrology characteristics, according to the HGM classification developed by the Department.
- (7) "Indicator" means the soil, vegetation, and hydrology characteristics or other field evidence that indicate that wetlands are present.

- (8) "Inventory" means a systematic survey of an area to identify, classify and map the approximate boundaries of wetlands, and includes the supporting documentation required by these rules.
- (9) "Mapping" means representing the identified wetlands and their approximate boundaries on a map.
- (10) "Offsite Determination" means a wetland determination conducted without field verification using NWI maps, soils maps, and aerial photographs.
- (11) "Other Waters" means waters of the state other than wetlands, such as streams and non-vegetated ponds.
- (12) "Probable Wetland" or "PW" means an area noted during the course of LWI development that appears to meet wetland criteria but is less than one half of an acre in size or is small and of undetermined size, and is mapped as a point rather than a polygon on the LWI maps.
- (13) "Sample Plot" means a specific area on the ground where soils, vegetation and hydrology data are recorded on a field data form per OAR 141-90-0035(14) in order to make a wetland determination.
- (14) "Statewide Wetlands Inventory" or "SWI" means an inventory that contains at minimum the location, type (e.g. classification) and approximate extent of wetlands in the State of Oregon. This inventory is continually revised as additional information is received or obtained by the Department.
- (15) "Stream" means a watercourse created by natural processes, or one that would be in a natural state if it were not for human-caused alterations. Stream includes a channelized or relocated stream.
- (16) "Visually confirm" or "visual confirmation" means to walk over and/or visually check an area to make a wetland determination and map wetlands and other waters.
- (17) "Wetlands" means those areas that are inundated or saturated by surface or ground water at a frequency or duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (ORS 196.800(16)).
- (18) "Wetland Delineation Report" means a written document that contains the methods, data, conclusions and maps used to determine if wetlands and/or other waters of the state are present on a land parcel and, if so, describes and maps their location and geographic extent. A wetland determination report documenting wetland presence or absence is included within this definition (OAR 141-090 et seq.).
- (19) "Wetland Determination" means a decision that a site may, does, is unlikely to, or does not contain wetlands. A determination does not include the precise location or boundaries of any wetlands determined to be present (OAR 141-090 et seq.).

(20) "Wetland Mosaic" means a complex of several wetlands that are interspersed between areas of non-wetland each less than one half of an acre in size, or less than one tenth of an acre in size for a WCP, making them difficult to map.

Stat. Auth.: ORS 196.674 - 196.681 & 196.692

Stats. Implemented: ORS 196.668 - 196.692

Hist.: LB 11-1991, f. & cert. ef. 11-15-91; LB 9-1994, f. & cert. ef. 12-15-94; DSL 2-2001, f. & cert. ef. 2-26-01; DSL 11-2008, f. 12-12-08, cert. ef. 1-1-09

141-086-0210

Inventory Development Process and Standards

(1) Wetland determinations conducted for the purpose of developing the LWI must be conducted according to the criteria, methodologies and guidance currently accepted by the Department (OAR 141-090 et seq.).

(2) Sources of inventory information must include:

(a) U.S.D.A. Natural Resources Conservation Service county soil survey and county list of hydric soils and soils with hydric inclusions, or other available soil surveys;

(b) NWI maps;

(c) USGS topographic maps;

(d) Federal Emergency Management Act floodplain maps, where available;

(e) Other available local wetlands inventories or wildlife habitat inventories that include wetlands;

(f) Department wetland determination/delineation files; and

(g) High resolution (1 meter or finer) color and color infrared (where available) aerial photos taken within five years of inventory initiation. The minimum photo scale must be 1 inch = 200 feet unless another scale is approved by the Department.

(3) Sources of inventory information may include but are not limited to:

(a) LIDAR (Light Detection and Ranging) topographic data;

(b) Irrigation drainage district maps;

(c) Local knowledge of area (e.g., residents);

(d) Oregon State University Institute for Natural Resources Oregon Explorer data;

(e) Department permit files; and

(f) Resource agencies, including the Oregon Department of Fish and Wildlife and U.S. Fish and Wildlife Service.

(4) Before beginning fieldwork, prepare a field map using an aerial photograph and include the approximate location of:

- (a) Any wetlands, deepwater habitats, and streams from the NWI;
- (b) Any wetlands from the Department's wetland determination/delineation files or from other inventories;
- (c) Hydric soils and soils with hydric inclusions (each coded separately);
- (d) Wetlands or potential wetlands identified on aerial photos;
- (e) Sites to visually confirm based on other leads; and
- (f) Properties where access was granted.

(5) Aerial photo interpretation must be tested early in the inventory process by interpreting several wetland types, ground truthing the interpretations, and then completing the aerial photo interpretations.

(6) The local government must be responsible for requesting property access permission from landowners in the study area for parcels identified by inventory staff and/or the Department as possibly containing wetlands.

(7) All potential wetlands that are not assessed with a sample plot and other waters identified through the process described in OAR 141-086-0210(1) through (4) must be visually confirmed to the extent practicable.

(8) Where property access is granted, sample plot data must be provided according to the following minimum standards:

- (a) Verify each wetland with at least one sample plot that best characterizes the wetland;
- (b) Verify with at least one sample plot each potential wetland where land use activities such as ditching, water diversion, or agricultural practices are likely to have significantly altered site conditions, making observations from a distance or a site walk-over unreliable; and
- (c) Verify with at least one-sample plot potential wetlands with unreliable indicators (e.g., one dominant plant that grows in both wetlands and non-wetlands, such as *Phalaris arundinacea*).

(9) If the LWI will be used for a WCP, in addition to the requirements in OAR 141-086-0210(7) and (8), a minimum of one sample plot must be provided that best characterizes each dominant wetland plant community.

(10) If the landowner denies access permission and if visual confirmation from an adjacent property or road is not possible, employ off-site wetland determination methods.

(11) All wetlands greater than or equal to one half of an acre and all wetlands identified in a Department-approved wetland delineation report must be identified and mapped as polygons. Wetlands that are less than one half of an acre may be mapped as polygons or as probable wetlands. Probable wetlands must be represented as points on the appropriate parcel(s) and

should be labeled as "PW" on the maps. No further characterization or assessment is required for probable wetlands in the LWI. Probable wetlands will trigger cities and counties to notify the Department of proposed land use activities affecting mapped wetlands and other waters (ORS 215.418 and 227.350). For a WCP, all wetlands one-tenth acre and larger shall be identified and mapped as polygons.

(12) The aim of the LWI is to map the location of wetlands at an accuracy of approximately 5 meters (16.4 feet). However, the actual accuracy may be less for some wetlands such as seasonal or forested wetlands that could not be visually confirmed.

(13) Each wetland must be assigned a unique identification code.

(14) All previously delineated wetlands from the Department's files must be field-verified, if possible, to determine if wetlands are still present and are approximately the same size and configuration as when delineated.

(15) All identified wetlands must be classified:

(a) To the class level of Cowardin (and to subclass for scrub-shrub and forested classes) and must include water regime and special modifiers (e.g., "farmed" or "diked/impounded"); and

(b) By dominant HGM class and subclass.

(16) When a wetland contains more than one adjoining Cowardin classification, different classes or subclasses greater than 0.25 acres in size must be mapped and labeled as separate polygons.

(17) Artificially created wetlands or other waters (such as irrigation canals and drains, industrial ponds, log ponds, golf course features, and storm water detention ponds that are greater than one half of an acre in size) must be included in the inventory regardless of their jurisdictional status, and their original purpose must be labeled on the inventory maps.

(18) Where a wetland mosaic occurs, the site must be labeled as a wetland/upland mosaic on all inventory maps and so described on the wetland summary sheet.

(19) Streams and other waters must be mapped, but no further documentation such as wetland summary sheets or OFWAM assessment is required. If an existing stream geospatial dataset is used, it may be necessary to adjust the layer to align with riparian or other linear wetlands.

(20) Using OFWAM, each wetland in its entirety must be assessed for all four ecological functions: water quality, hydrologic control, wildlife habitat and fish habitat. Any wetlands that may qualify as a Locally Significant Wetland due to education or recreation use must also be evaluated for those social functions (values) in OFWAM. The remaining functions and conditions in OFWAM do not need to be applied to any of the wetland assessment units. Contiguous wetlands or those in close proximity and assigned different codes may be grouped into a single OFWAM assessment unit based upon the guidance in OFWAM and/or in consultation with the Department.

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 196.674 - 196.681 & 196.692

Stats. Implemented: ORS 196.668 - 196.692

Hist.: LB 11-1991, f. & cert. ef. 11-15-91; LB 9-1994, f. & cert. ef. 12-15-94; DSL 2-2001, f. & cert. ef. 2-26-01; DSL 11-2008, f. 12-12-08, cert. ef. 1-1-09

141-086-0220

LWI Reports

(1) A report that meets the requirements in OAR 141-086-0220 (2) and (3) must be developed and submitted to the Department for approval. A minimum of two sets of the final Department-approved LWI report in both paper and electronic format (.pdf file format) must be prepared; one set must be provided to the Department for inclusion in the SWI and the other must be provided to the local government.

(2) The report must document the inventory and mapping processes and results, and include the following information:

(a) A general description of the study area including a description of the landscape setting;

(b) A description of the wetland inventory process including the public involvement process; the inventory methods including the date(s) and scale(s) of source maps and aerial photos used; the offsite and onsite wetland determination procedures including procedures used for visual confirmation and probable wetland identification; and all mapping and map transfer procedures used;

(c) A summary of the inventory results including the total acreage of the study area and the total number and acreage of wetlands identified within the study area, excluding the acreage of deepwater habitat and artificially created wetlands such as detention ponds or aggregate extraction ponds;

(d) A discussion of the OFWAM assessment process (e.g. how assessment units were defined) and the results;

(e) A summary of Locally Significant Wetlands, if identified (may be in table format); and

(f) All figures, with the study area clearly outlined.

(3) Appendices must include:

(a) Sample plot data on standard field data forms per OAR 141-090 et seq.

(b) A summary sheet for each wetland that must at a minimum include:

(A) The unique wetland code;

(B) Street address or equivalent location description;

(C) Township, Range, Section, Quarter Quarter Section and tax lot(s) that contain the mapped wetland;

- (D) Approximate wetland size (in acres);
 - (E) Cowardin classification(s);
 - (F) HGM classification(s);
 - (G) Mapped soil unit(s);
 - (H) Watershed boundaries at the 6th field Hydrologic Unit Code scale as defined by the US Geological Survey or finer;
 - (I) Sample plot numbers, if any;
 - (J) Department wetland determination or delineation file numbers, where applicable;
 - (K) Scientific and common names of dominant plant species;
 - (L) Primary hydrology sources;
 - (M) Sampling or visual confirmation date(s) and method;
 - (N) Locally Significant Wetland determination, if made; and
 - (O) Comments that describe the wetland, including topographic position, land uses and significant alterations (including agricultural).
- (c) OFWAM assessment results for each wetland assessment unit that must include:
- (A) Wetlands of Special Interest for Protection (OFWAM, Chapter Five);
 - (B) Wetland Characterization results (OFWAM, Appendix B);
 - (C) Assessment results represented in table format;
 - (D) Answer sheets for all wetland assessment questions (OFWAM, Appendix C);
 - (E) Function and condition summary sheets for fish habitat, wildlife habitat, water quality, hydrologic control and, if applicable, education and recreation (OFWAM, Appendix C); and
 - (F) Watershed summary sheet (OFWAM, Appendix C).
- (d) Technical staff members and qualifications.

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 196.674 - 196.681 & 196.692

Stats. Implemented: ORS 196.668 - 196.692

Hist.: LB 11-1991, f. & cert. ef. 11-15-91; LB 9-1994, f. & cert. ef. 12-15-94; DSL 2-2001, f. & cert. ef. 2-26-01; DSL 11-2008, f. 12-12-08, cert. ef. 1-1-09

141-086-0222

Paper Map Standards

(1) Maps that meet the requirements in OAR 141-086-0222 (2) through (5) must be developed and submitted to the Department for approval. A minimum of two sets of the final Department-approved LWI maps in both paper and electronic format (.pdf file) must be prepared; one set must be provided to the Department for inclusion in the SWI and the other must be provided to the local government.

(2) If the study area is covered by more than one wetland map, a single, smaller scale reference map of the complete study area is required. The reference map shall be indexed to the individual, large-scale maps and show, at a minimum, the Public Land Survey System grid, the location and code of all identified wetlands, streams, the study area boundary, and major, named streets.

(3) Wetland maps must include:

(a) Map name;

(b) Scale bar;

(c) Geographic reference to the Public Land Survey System;

(d) Roads, with major roads named, and railroads;

(e) Streams and stream names;

(f) Artificially created wetlands and other waters labeled with their purpose (e.g. storm water pond);

(g) Tax lot lines;

(h) Watershed boundaries at the 6th field Hydrologic Unit Code scale as defined by the US Geological Survey or finer;

(i) Legend that explains all map symbols, line work, and patterns;

(j) Map date (month and year final map prepared);

(k) All wetlands, clearly and accurately drawn and clearly identified by a unique wetland code that relates each wetland to field data forms, tables, databases, wetland summary sheets, and OFWAM summary forms;

(l) Cowardin classification(s) of each wetland per 141-086-0210(15a & 16);

(m) Disclaimer that reads: "Information shown on this map is for planning purposes, represents the conditions that exist at the map date, and is subject to change. The location and extent of wetlands and other waters is approximate. There may be unmapped wetlands and other waters present that are subject to regulation. A current Oregon Department of State Lands-approved wetland delineation is required for state removal-fill permits. You are advised to contact the Department of State Lands and the U.S. Army Corps of Engineers with any regulatory questions."

(n) Numbered sample plots; and

- (o) Study area boundary as defined by the local government.
- (4) Minimum map scale must be 1 inch = 200 feet (1:2,400).

Stat. Auth.: ORS 196.674 - 196.681 & 196.692

Stats. Implemented: ORS 196.668 - 196.692

Hist.: DSL 11-2008, f. 12-12-08, cert. ef. 1-1-09

141-086-0225

Digital Data Standards

- (1) A minimum of two sets of the final Department-approved LWI geospatial datasets must be prepared; one set must be provided to the Department for inclusion in the SWI and the other must be provided to the local government.
- (2) A georeferenced ArcGIS compatible dataset with attribute tables and metadata must be developed for each of the following:
 - (a) Wetland polygons with a unique wetland identification label, Cowardin classification code(s) and modifiers, HGM classification, approximate wetland size, Locally Significant Wetland significance determination (if made), whether it was visually confirmed, and the Department's wetland delineation report file number, if any.
 - (b) Probable wetland points with PW label;
 - (c) Streams with unique identification labels and, where available, names;
 - (d) Other natural bodies of water with names;
 - (e) Artificially created wetlands and water features (such as irrigation canals and ditches, industrial ponds, log ponds, golf course features, and storm water detention ponds) uniquely identified and purpose of artificially-created feature, if known;
 - (f) Watershed boundaries (6th order Hydrologic Unit Code scale or finer);
 - (g) Study area boundary;
 - (h) Tax lot lines and numbers;
 - (i) Sample plot dataset with unique identification labels that correspond to the field data form; and
 - (j) Major streets with name labels.
- (3) All georeferenced data sets must be projected using the Oregon Geographic Information Council-endorsed state standard: Oregon Lambert conformal conic (Datum: NAD 83; Units: International feet: 3.28084; Spheroid: GRS1980).

(4) Metadata must be completed for each layer, conform to the current Oregon Geographic Information Council Metadata Standard, and must include a disclaimer as described in OAR 141-086-0222(3m).

Stat. Auth.: ORS 273.045

Stats. Implemented: ORS 196.668 - 196.686 & 196.692

Hist.: DSL 2-2001, f. & cert. ef. 2-26-01; DSL 11-2008, f. 12-12-08, cert. ef. 1-1-09

141-086-0228

Review and Approval Process

(1) A draft of all the LWI products required in OAR 141-086-0210 through – 0225 of these rules must be provided to the Department (if the inventory was not developed by the Department) and the local government(s) for review.

(2) The local government must provide opportunity for public review of and comment on the draft LWI products.

(3) Public and local government comments on draft LWI products must be provided to the Department. The Department will request in writing from the party responsible for preparing the LWI any revisions or additions required in order for the LWI to be approved.

(4) The Department will review final products to ensure that all changes requested by the Department have been adequately addressed.

(5) If the final LWI products meet the requirements in these rules, the Department will send a letter of approval to the local government.

Stat. Auth.: ORS 273.045

Stats. Implemented: ORS 196.668 - 196.686 & 196.692

Hist.: DSL 2-2001, f. & cert. ef. 2-26-01; DSL 11-2008, f. 12-12-08, cert. ef. 1-1-09

141-086-0230

Revisions

(1) A city or county may elect to or may be required by the Department of Land Conservation and Development (DLCDD) to revise their LWI. An LWI revision consists of either expanding the study area of an existing LWI or incorporating new wetland location and information into an existing LWI study area. The provisions in subsections (a) through (d) must be followed when an LWI is being revised.

(a) All Urban Growth Boundary expansion areas or other areas not included in the original LWI study area must be inventoried according to the requirements in these rules. If the original LWI area is not updated at the same time, it may still be necessary to update the LWI area adjacent to the new LWI area in order to align wetlands that are continuous between the two areas.

(b) When an LWI is being updated, newly identified wetlands or wetland boundary changes equal to or greater than one half of an acre must be identified, mapped and assessed using OFWAM.

(c) Sources of information for review of the previous study area to update the LWI must at a minimum include:

(A) Wetland delineation reports approved by the Department or map errors verified by the Department after the date of the approved LWI;

(B) Aerial photos approved by the Department, taken within five years of inventory revision initiation; and

(C) A field reconnaissance of the study area.

(d) Wetlands not previously mapped on the LWI must be verified by establishing a sample plot or by visual confirmation as required in OAR 141-086-0210(7) and (8) of this rule; previously mapped wetlands no longer apparent on aerial photos must also be verified with a sample plot or visually confirmed as necessary to confirm their absence.

(2) A draft of the revised LWI products as required in OAR 141-086-0228 (1) through (5) must be provided to the Department and is subject to Department review and approval.

(3) If the LWI was used as the basis for an approved WCP, the local jurisdiction must instead:

(a) Provide to the Department, as part of the annual report (OAR 141-086-0035), a revised map and report indicating wetlands filled and wetlands restored, enhanced or created for mitigation; and

(b) Every five years, in conjunction with the Department's five year WCP review (ORS 196.684(6)), conduct an LWI review and incorporate new information, as required in OAR 141-086-0230(1)(b) through (1)(d).

(4) Newly-identified wetlands as identified by a Department-approved wetland delineation report or a removal-fill permit must not be added to the Department-approved Local Wetlands Inventory map without following the procedures outlined by OAR 141-086-0230(1)(a) through (d).

(5) Refinements to the location, extent, and/or absence of wetlands mapped on the LWI, as identified by a Department-approved wetland delineation or a Department wetland determination report, may be made at any time through an administrative process, by annotating the approved LWI or by creating a separate geospatial dataset containing the boundary adjustments, preserving the approved LWI mapping.

Stat. Auth.: ORS 196.674 - 196.681 & 196.692

Stats. Implemented: ORS 196.668 - 196.692

Hist.: LB 11-1991, f. & cert. ef. 11-15-91; LB 9-1994, f. & cert. ef. 12-15-94; DSL 2-2001, f. & cert. ef. 2-26-01; DSL 11-2008, f. 12-12-08, cert. ef. 1-1-09

141-086-0240

Landowner Notification

(1) When the LWI is approved by the Department, the local jurisdiction must notify by mail within one hundred twenty (120) calendar days all landowners of record whose parcel contains or abuts a mapped wetland or probable wetland.

(2) The local jurisdiction must provide one copy of the landowner notification letter to the Department.

Stat. Auth.: ORS 196.674 - 196.681 & 196.692

Stats. Implemented: ORS 196.668 - 196.692

Hist.: LB 11-1991, f. & cert. ef. 11-15-91; LB 9-1994, f. & cert. ef. 12-15-94; DSL 2-2001, f. & cert. ef. 2-26-01; DSL 11-2008, f. 12-12-08, cert. ef. 1-1-09

Identifying Significant Wetlands

141-086-0300

Purpose

[ORS 197.279](#) (3) directs the Division of State Lands to establish these criteria and procedures for the identification of significant wetlands under Statewide Planning Goal 5. Local governments will use these technical standards to complete their planning responsibilities for wetlands, which are established by the Land Conservation and Development Commission (OAR 660-023-0100).

Stat. Auth.: [ORS 273](#) .360

Stats. Implemented: [ORS 197](#).299

Hist.: LB 7-1996, f. 12-13-96, cert. ef. 1-1-97

141-086-0310

Policy

To protect the state's wetland resources, the functions and services they provide, and all interests, it is important that clear and consistent criteria be used to identify significant wetlands for planning purposes.

Stat. Auth.: : [ORS 273](#) .360

Stats. Implemented: [ORS 197](#).299

Hist.: LB 7-1996, f. 12-13-96, cert. ef. 1-1-97

141-086-0320

Uses and Applicability

(1) These rules provide standard criteria for local governments to use to meet their obligations for freshwater wetland planning as set forth by the Land Conservation and Development Commission (LCDC) in Goal 5. These rules do not address planning requirements for estuarine wetlands, which are covered under Statewide Planning Goal 16.

(2) Local governments shall apply the criteria for identifying locally significant wetlands (LSW). As specified in LCDC's Goal 5 rules (OAR 660-023-0100), the use of these criteria is required within urban growth boundaries (UGBs) and urban unincorporated communities (UUCs). The Goal 5 rules also authorize an option for counties to conduct detailed wetland planning in areas outside of UGBs and UUCs. Should a county choose to do so, the same rules and procedures as for UGBs and UUCs shall apply, including these criteria for significant wetlands.

(3) As provided by LCDC's Goal 5 rules (OAR Chapter 660, Division 23), local government planning and zoning responsibilities include the determination, designation, and protection of significant wetlands. A community that has identified significant wetlands prior to this rule should proceed under the provisions of OAR 660-023-0250.

Stat. Auth.: [ORS 273](#) .360

Stats. Implemented: [ORS 197](#).299

Hist.: LB 7-1996, f. 12-13-96, cert. ef. 1-1-97

141-086-0330

Definitions

(1) "Director" means the Director of the Division of State Lands or the Director's designee.

(2) "Division" means the Division of State Lands.

(3) "Indigenous Anadromous Salmonids" are chum, sockeye, Chinook and Coho salmon, and steelhead and cutthroat trout, that are members of the family Salmonidae and are listed as sensitive, threatened or endangered by a state or federal authority.

(4) "Inhabited by" means that a plant or animal species uses the site for rearing, feeding, or breeding or as a migration or dispersal corridor. This does not include incidental use of the site by an animal species.

(5) "Locally Significant Wetlands" or "LSW" are those wetland sites that provide functions or exhibit characteristics that are pertinent to community planning decisions made at a local scale, for example within a UGB. These wetland sites shall be identified by local governments according to the criteria and procedures in sections 141-086-0340 and 141-086-0350.

(6) "Native Plant Community" is used here to indicate a recognized assemblage of plant species indigenous to Oregon. All such wetland plant communities are listed in the most recent version of Classification and Catalog of Native Wetland Plant Communities in Oregon (Oregon Natural Heritage Program).

(7) "Rare Plant Community" is defined as relictual, uncommon or unique in Oregon, determined by number of occurrences and threats following national heritage program criteria (i.e., rarity ranking of G1-G3 or S1-S3). The most concise listing of wetland plant communities in Oregon that meet this standard for rarity is found in Appendix G of the Oregon Freshwater Wetland Assessment Methodology (Oregon Division of State Lands, 1996). The rarity rank of all wetland plant communities is also listed in the most recent version of Classification and Catalog of Native Wetland Plant Communities in Oregon (Oregon Natural Heritage Program).

(8) "Wetlands" means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

Stat. Auth.: [ORS 273](#) .360

Stats. Implemented: [ORS 197](#).299

Hist.: LB 7-1996, f. 12-13-96, cert. ef. 1-1-97

141-086-0340

Procedures for Identifying Locally Significant Wetlands

(1) LSW criteria are applied by the local government.

(2) The following base information is required prior to applying the LSW criteria:

(a) An approved Local Wetlands Inventory (OAR 141-086-0110 through 141-086-0240) covering the plan area; and

(b) A function and quality assessment of all inventoried wetlands using the Oregon Freshwater Wetland Assessment Methodology (OFWAM; Oregon Division of State Lands, 1996). Functional assessment descriptors from OFWAM appear in quotation marks in section 146-086-0350 of these rules. An equivalent functional assessment methodology may be used, or adjustments may be made, upon written approval by the Director. If a different assessment methodology is approved, then equivalent terminology will be set out in the Division's letter of approval.

Stat. Auth.: [ORS 273](#) .360

Stats. Implemented: [ORS 197](#).299

Hist.: LB 7-1996, f. 12-13-96, cert. ef. 1-1-97

141-086-0350

Locally Significant Wetland Criteria

(1) Exclusions. Regardless of their standing in relation to the criteria in OAR 141-086-0350(2) or (3) of these rules, wetlands shall not be designated as locally significant if they fall within any one of the following categories:

(a) Wetlands artificially created entirely from upland that are:

(A) Created for the purpose of controlling, storing, or maintaining stormwater; or

(B) Active surface mining or active log ponds; or

(C) Ditches without a free and open connection to natural waters of the state (as defined in OAR 141-085-0010(9)) and which do not contain food or game fish (as defined in [ORS 496](#).009); or:

(D) Less than one acre in size and created unintentionally as the result of:

(i) Irrigation water overflow or leakage; or

(ii) Construction activity not related to compensatory mitigation for permitted wetland impacts;
or

(E) Of any size and created for the purpose of wastewater treatment, cranberry production, farm or stock watering, settling of sediment, cooling industrial water, or as a golf course hazard.

(b) Wetlands or portions of wetlands that are contaminated by hazardous substances, materials or wastes as per the following conditions:

(A) The wetland is documented as contaminated on either the U.S. Environmental Protection Agency's (EPA) National Priority List (NPL, also known as the "superfund list"), or the Department of Environmental Quality's (DEQ) Inventory of Hazardous Substance Sites ([ORS 465.225](#)).

(B) Only the portion of the wetland affected by such hazardous substances or wastes shall be excluded from the LSW analysis. Affected portions shall be delineated in consultation with EPA and DEQ, and shall include areas potentially disturbed by clean-up activities.

(C) Contaminated wetlands that have subsequently been removed from the NPL or DEQ Inventory following clean-up shall be re-evaluated under the LSW criteria at the next periodic review.

(2) Mandatory LSW Criteria. A local government shall identify a wetland as locally significant if it meets one or more of the following criteria:

(a) The wetland performs any of the following functions at the levels indicated below using the Oregon Freshwater Wetland Assessment Methodology:

(A) "Diverse" wildlife habitat; or

(B) "Intact" fish habitat; or

(C) "Intact" water quality function; or

(D) "Intact" hydrologic control function.

(b) The wetland or a portion of the wetland occurs within a horizontal distance less than one-fourth mile from a water body listed by the Department of Environmental Quality as a water quality limited water body (303 (d) list), and the wetland's water quality function is described as "intact" or "impacted or degraded" using OFWAM. The 303(d) list specifies which parameters (e.g., temperature, pH) do not meet state water quality standards for each water body. A local government may determine that a wetland is not significant under this subsection upon documentation that the wetland does not provide water quality improvements for the specified parameter(s).

(c) The wetland contains one or more rare plant communities, as defined in this rule.

(d) The wetland is inhabited by any species listed by the federal government as threatened or endangered, or listed by the state as sensitive, threatened or endangered, unless the appropriate

state or federal agency indicates that the wetland is not important for the maintenance of the species.

(A) The use of the site by listed species must be documented, not anecdotal. Acceptable sources of documentation may include but are not limited to: field observations at the wetland sites during the local wetlands inventory and functional assessments, and existing information on rare species occurrences at agencies such as the Oregon Natural Heritage Program, Oregon Department of Fish and Wildlife, Oregon Department of Agriculture and the U.S. Fish and Wildlife Service.

(B) Input originating from other locally knowledgeable sources constitutes "documentation" if verified by one of the above agencies or a university or college reference collection.

(e) The wetland has a direct surface water connection to a stream segment mapped by the Oregon Department of Fish and Wildlife as habitat for indigenous anadromous salmonids, and the wetland is determined to have "intact" or "impacted or degraded" fish habitat function using OFWAM.

(3) Optional LSW Criteria. At the discretion of the local government, wetlands that meet one or more of the following criteria may be identified as locally significant wetlands:

(a) The wetland represents a locally unique native plant community: wetland is or contains the only representative of a particular native wetland plant community in the UGB/UUC, which is only applicable if the entire UGB/UUC is inventoried. To be identified as a LSW, such a wetland must also have been assessed to perform at least one of the following functions at the levels indicated below using OFWAM:

(A) Its wildlife habitat descriptor is either "provides diverse habitat", or "provides habitat for some wildlife species"; or

(B) Its fish habitat descriptor is either "intact", or "impacted or degraded"; or

(C) Its water quality function descriptor is either "intact", or "impacted or degraded"; or

(D) Its hydrologic control function descriptor is either "intact", or "impacted or degraded".

(b) The wetland is publicly owned and determined to "have educational uses" using OFWAM, and such use by a school or organization is documented for that site.

Stat. Auth.: [ORS 273](#) .360

Stats. Implemented: [ORS 197](#).299

Hist.: LB 7-1996, f. 12-13-96, cert. ef. 1-1-97

Attachment 2: Oregon Administrative Rules : Complying with Goal 5

Procedures and Requirements for Complying with Statewide Planning Goal 5

660-023-0000

Purpose and Intent

This division establishes procedures and criteria for inventorying and evaluating Goal 5 resources and for developing land use programs to conserve and protect significant Goal 5 resources. This division explains how local governments apply Goal 5 when conducting periodic review and when amending acknowledged comprehensive plans and land use regulations.

Stat. Auth.: ORS 183 & [ORS 197](#)

Stats. Implemented: [ORS 197.040](#) & [ORS 197.225](#) - [ORS 197.245](#)

Hist.: LCDC 2-1996, f. 8-30-96, cert. ef. 9-1-96

660-023-0010

Definitions

As used in this division, unless the context requires otherwise:

- (1) "Conflicting use" is a land use, or other activity reasonably and customarily subject to land use regulations, that could adversely affect a significant Goal 5 resource (except as provided in OAR 660-023-0180(1)(b)). Local governments are not required to regard agricultural practices as conflicting uses.
- (2) "ESEE consequences" are the positive and negative economic, social, environmental, and energy (ESEE) consequences that could result from a decision to allow, limit, or prohibit a conflicting use.
- (3) "Impact area" is a geographic area within which conflicting uses could adversely affect a significant Goal 5 resource.
- (4) "Inventory" is a survey, map, or description of one or more resource sites that is prepared by a local government, state or federal agency, private citizen, or other organization and that includes information about the resource values and features associated with such sites. As a verb, "inventory" means to collect, prepare, compile, or refine information about one or more resource sites. (See resource list.)
- (5) "PAPA" is a "post-acknowledgment plan amendment." The term encompasses actions taken in accordance with [ORS 197.610](#) through 197.625, including amendments to an acknowledged comprehensive plan or land use regulation and the adoption of any new plan or land use

regulation. The term does not include periodic review actions taken in accordance with [ORS 197.628](#) through 197.650.

(6) "Program" or "program to achieve the goal" is a plan or course of proceedings and action either to prohibit, limit, or allow uses that conflict with significant Goal 5 resources, adopted as part of the comprehensive plan and land use regulations (e.g., zoning standards, easements, cluster developments, preferential assessments, or acquisition of land or development rights).

(7) "Protect," when applied to an individual resource site, means to limit or prohibit uses that conflict with a significant resource site (except as provided in OAR 660-023-0140, 660-023-0180, and 660-023-0190). When applied to a resource category, "protect" means to develop a program consistent with this division.

(8) "Resource category" is any one of the cultural or natural resource groups listed in Goal 5.

(9) "Resource list" includes the description, maps, and other information about significant Goal 5 resource sites within a jurisdiction, adopted by a local government as a part of the comprehensive plan or as a land use regulation. A "plan inventory" adopted under OAR 660-016-0000(5)(c) shall be considered to be a resource list.

(10) "Resource site" or "site" is a particular area where resources are located. A site may consist of a parcel or lot or portion thereof or may include an area consisting of two or more contiguous lots or parcels.

(11) "Safe harbor" has the meaning given to it in OAR 660-023-0020(2).

Stat. Auth.: ORS 183 & [ORS 197](#)

Stats. Implemented: [ORS 197.040](#) & 197.225 - 197.245

Hist.: LCDC 2-1996, f. 8-30-96, cert. ef. 9-1-96

660-023-0020

Standard and Specific Rules and Safe Harbors

(1) The standard Goal 5 process, OAR 660-023-0030 through 660-023-0050, consists of procedures and requirements to guide local planning for all Goal 5 resource categories. This division also provides specific rules for each of the fifteen Goal 5 resource categories (see OAR 660-023-0090 through 660-023-0230). In some cases this division indicates that both the standard and the specific rules apply to Goal 5 decisions. In other cases, this division indicates that the specific rules supersede parts or all of the standard process rules (i.e., local governments must follow the specific rules rather than the standard Goal 5 process). In case of conflict, the resource-specific rules set forth in OAR 660-023-0090 through 660-023-0230 shall supersede the standard provisions in OAR 660-023-0030 through 660-023-0050.

(2) A "safe harbor" consists of an optional course of action that satisfies certain requirements under the standard process. Local governments may follow safe harbor requirements rather than addressing certain requirements in the standard Goal 5 process. For example, a jurisdiction may choose to identify "significant" riparian corridors using the safe harbor criteria under OAR 660-023-0090(5) rather than follow the general requirements for determining "significance" in the

standard Goal 5 process under OAR 660-023-0030(4). Similarly, a jurisdiction may adopt a wetlands ordinance that meets the requirements of OAR 660-023-0100(4)(b) in lieu of following the ESEE decision process in OAR 660-023-0040.

Stat. Auth.: ORS 183 & [ORS 197](#)

Stats. Implemented: [ORS 197.040](#) & [ORS 197.225](#) - [ORS 197.245](#)

Hist.: LCDC 2-1996, f. 8-30-96, cert. ef. 9-1-96

660-023-0030

Inventory Process

(1) Inventories provide the information necessary to locate and evaluate resources and develop programs to protect such resources. The purpose of the inventory process is to compile or update a list of significant Goal 5 resources in a jurisdiction. This rule divides the inventory process into four steps. However, all four steps are not necessarily applicable, depending on the type of Goal 5 resource and the scope of a particular PAPA or periodic review work task. For example, when proceeding under a quasi-judicial PAPA for a particular site, the initial inventory step in section (2) of this rule is not applicable in that a local government may rely on information submitted by applicants and other participants in the local process. The inventory process may be followed for a single site, for sites in a particular geographical area, or for the entire jurisdiction or urban growth boundary (UGB), and a single inventory process may be followed for multiple resource categories that are being considered simultaneously. The standard Goal 5 inventory process consists of the following steps, which are set out in detail in sections (2) through (5) of this rule and further explained in sections (6) and (7) of this rule:

- (a) Collect information about Goal 5 resource sites;
- (b) Determine the adequacy of the information;
- (c) Determine the significance of resource sites; and
- (d) Adopt a list of significant resource sites.

(2) Collect information about Goal 5 resource sites: The inventory process begins with the collection of existing and available information, including inventories, surveys, and other applicable data about potential Goal 5 resource sites. If a PAPA or periodic review work task pertains to certain specified sites, the local government is not required to collect information regarding other resource sites in the jurisdiction. When collecting information about potential Goal 5 sites, local governments shall, at a minimum:

- (a) Notify state and federal resource management agencies and request current resource information; and
- (b) Consider other information submitted in the local process.

(3) Determine the adequacy of the information: In order to conduct the Goal 5 process, information about each potential site must be adequate. A local government may determine that

the information about a site is inadequate to complete the Goal 5 process based on the criteria in this section. This determination shall be clearly indicated in the record of proceedings. The issue of adequacy may be raised by the department or objectors, but final determination is made by the commission or the Land Use Board of Appeals, as provided by law. When local governments determine that information about a site is inadequate, they shall not proceed with the Goal 5 process for such sites unless adequate information is obtained, and they shall not regulate land uses in order to protect such sites. The information about a particular Goal 5 resource site shall be deemed adequate if it provides the location, quality and quantity of the resource, as follows:

- (a) Information about location shall include a description or map of the resource area for each site. The information must be sufficient to determine whether a resource exists on a particular site. However, a precise location of the resource for a particular site, such as would be required for building permits, is not necessary at this stage in the process.
 - (b) Information on quality shall indicate a resource site's value relative to other known examples of the same resource. While a regional comparison is recommended, a comparison with resource sites within the jurisdiction itself is sufficient unless there are no other local examples of the resource. Local governments shall consider any determinations about resource quality provided in available state or federal inventories.
 - (c) Information on quantity shall include an estimate of the relative abundance or scarcity of the resource.
- (4) Determine the significance of resource sites: For sites where information is adequate, local governments shall determine whether the site is significant. This determination shall be adequate if based on the criteria in subsections (a) through (c) of this section, unless challenged by the department, objectors, or the commission based upon contradictory information. The determination of significance shall be based on:
- (a) The quality, quantity, and location information;
 - (b) Supplemental or superseding significance criteria set out in OAR 660-023-0090 through 660-023-0230; and
 - (c) Any additional criteria adopted by the local government, provided these criteria do not conflict with the requirements of OAR 660-023-0090 through 660-023-0230.
- (5) Adopt a list of significant resource sites: When a local government determines that a particular resource site is significant, the local government shall include the site on a list of significant Goal 5 resources adopted as a part of the comprehensive plan or as a land use regulation. Local governments shall complete the Goal 5 process for all sites included on the resource list except as provided in OAR 660-023-0200(7) for historic resources, and OAR 660-023-0220(3) for open space acquisition areas.
- (6) Local governments may determine that a particular resource site is not significant, provided they maintain a record of that determination. Local governments shall not proceed with the Goal 5 process for such sites and shall not regulate land uses in order to protect such sites under Goal 5.

(7) Local governments may adopt limited interim protection measures for those sites that are determined to be significant, provided:

(a) The measures are determined to be necessary because existing development regulations are inadequate to prevent irrevocable harm to the resources on the site during the time necessary to complete the ESEE process and adopt a permanent program to achieve Goal 5; and

(b) The measures shall remain effective only for 120 days from the date they are adopted, or until adoption of a program to achieve Goal 5, whichever occurs first.

Stat. Auth.: ORS 183 & [ORS 197](#)

Stats. Implemented: [ORS 197.040](#) & [ORS 197.225](#) - [ORS 197.245](#)

Hist.: LCDC 2-1996, f. 8-30-96, cert. ef. 9-1-96

660-023-0040

ESEE Decision Process

(1) Local governments shall develop a program to achieve Goal 5 for all significant resource sites based on an analysis of the economic, social, environmental, and energy (ESEE) consequences that could result from a decision to allow, limit, or prohibit a conflicting use. This rule describes four steps to be followed in conducting an ESEE analysis, as set out in detail in sections (2) through (5) of this rule. Local governments are not required to follow these steps sequentially, and some steps anticipate a return to a previous step. However, findings shall demonstrate that requirements under each of the steps have been met, regardless of the sequence followed by the local government. The ESEE analysis need not be lengthy or complex, but should enable reviewers to gain a clear understanding of the conflicts and the consequences to be expected. The steps in the standard ESEE process are as follows:

(a) Identify conflicting uses;

(b) Determine the impact area;

(c) Analyze the ESEE consequences; and

(d) Develop a program to achieve Goal 5.

(2) Identify conflicting uses. Local governments shall identify conflicting uses that exist, or could occur, with regard to significant Goal 5 resource sites. To identify these uses, local governments shall examine land uses allowed outright or conditionally within the zones applied to the resource site and in its impact area. Local governments are not required to consider allowed uses that would be unlikely to occur in the impact area because existing permanent uses occupy the site. The following shall also apply in the identification of conflicting uses:

(a) If no uses conflict with a significant resource site, acknowledged policies and land use regulations may be considered sufficient to protect the resource site. The determination that there are no conflicting uses must be based on the applicable zoning rather than ownership of the site.

(Therefore, public ownership of a site does not by itself support a conclusion that there are no conflicting uses.)

(b) A local government may determine that one or more significant Goal 5 resource sites are conflicting uses with another significant resource site. The local government shall determine the level of protection for each significant site using the ESEE process and/or the requirements in OAR 660-023-0090 through 660-023-0230 (see OAR 660-023-0020(1)).

(3) Determine the impact area. Local governments shall determine an impact area for each significant resource site. The impact area shall be drawn to include only the area in which allowed uses could adversely affect the identified resource. The impact area defines the geographic limits within which to conduct an ESEE analysis for the identified significant resource site.

(4) Analyze the ESEE consequences. Local governments shall analyze the ESEE consequences that could result from decisions to allow, limit, or prohibit a conflicting use. The analysis may address each of the identified conflicting uses, or it may address a group of similar conflicting uses. A local government may conduct a single analysis for two or more resource sites that are within the same area or that are similarly situated and subject to the same zoning. The local government may establish a matrix of commonly occurring conflicting uses and apply the matrix to particular resource sites in order to facilitate the analysis. A local government may conduct a single analysis for a site containing more than one significant Goal 5 resource. The ESEE analysis must consider any applicable statewide goal or acknowledged plan requirements, including the requirements of Goal 5. The analyses of the ESEE consequences shall be adopted either as part of the plan or as a land use regulation.

(5) Develop a program to achieve Goal 5. Local governments shall determine whether to allow, limit, or prohibit identified conflicting uses for significant resource sites. This decision shall be based upon and supported by the ESEE analysis. A decision to prohibit or limit conflicting uses protects a resource site. A decision to allow some or all conflicting uses for a particular site may also be consistent with Goal 5, provided it is supported by the ESEE analysis. One of the following determinations shall be reached with regard to conflicting uses for a significant resource site:

(a) A local government may decide that a significant resource site is of such importance compared to the conflicting uses, and the ESEE consequences of allowing the conflicting uses are so detrimental to the resource, that the conflicting uses should be prohibited.

(b) A local government may decide that both the resource site and the conflicting uses are important compared to each other, and, based on the ESEE analysis, the conflicting uses should be allowed in a limited way that protects the resource site to a desired extent.

(c) A local government may decide that the conflicting use should be allowed fully, notwithstanding the possible impacts on the resource site. The ESEE analysis must demonstrate that the conflicting use is of sufficient importance relative to the resource site, and must indicate why measures to protect the resource to some extent should not be provided, as per subsection (b) of this section.

Stat. Auth.: ORS 183 & [ORS 197](#)
Stats. Implemented: [ORS 197.040](#) & [ORS 197.225](#) - [ORS 197.245](#)
Hist.: LCDC 2-1996, f. 8-30-96, cert. ef. 9-1-96

660-023-0050

Programs to Achieve Goal 5

(1) For each resource site, local governments shall adopt comprehensive plan provisions and land use regulations to implement the decisions made pursuant to OAR 660-023-0040(5). The plan shall describe the degree of protection intended for each significant resource site. The plan and implementing ordinances shall clearly identify those conflicting uses that are allowed and the specific standards or limitations that apply to the allowed uses. A program to achieve Goal 5 may include zoning measures that partially or fully allow conflicting uses (see OAR 660-023-0040(5)(b) and (c)).

(2) When a local government has decided to protect a resource site under OAR 660-023-0040(5)(b), implementing measures applied to conflicting uses on the resource site and within its impact area shall contain clear and objective standards. For purposes of this division, a standard shall be considered clear and objective if it meets any one of the following criteria:

- (a) It is a fixed numerical standard, such as a height limitation of 35 feet or a setback of 50 feet;
- (b) It is a nondiscretionary requirement, such as a requirement that grading not occur beneath the dripline of a protected tree; or
- (c) It is a performance standard that describes the outcome to be achieved by the design, siting, construction, or operation of the conflicting use, and specifies the objective criteria to be used in evaluating outcome or performance. Different performance standards may be needed for different resource sites. If performance standards are adopted, the local government shall at the same time adopt a process for their application (such as a conditional use, or design review ordinance provision).

(3) In addition to the clear and objective regulations required by section (2) of this rule, except for aggregate resources, local governments may adopt an alternative approval process that includes land use regulations that are not clear and objective (such as a planned unit development ordinance with discretionary performance standards), provided such regulations:

- (a) Specify that landowners have the choice of proceeding under either the clear and objective approval process or the alternative regulations; and
- (b) Require a level of protection for the resource that meets or exceeds the intended level determined under OAR 660-023-0040(5) and 660-023-0050(1).

Stat. Auth.: ORS 183 & [ORS 197](#)
Stats. Implemented: [ORS 197.040](#) & [ORS 197.225](#) - [ORS 197.245](#)
Hist.: LCDC 2-1996, f. 8-30-96, cert. ef. 9-1-96

660-023-0060

Notice and Land Owner Involvement

Local governments shall provide timely notice to landowners and opportunities for citizen involvement during the inventory and ESEE process. Notification and involvement of landowners, citizens, and public agencies should occur at the earliest possible opportunity whenever a Goal 5 task is undertaken in the periodic review or plan amendment process. A local government shall comply with its acknowledged citizen involvement program, with statewide goal requirements for citizen involvement and coordination, and with other applicable procedures in statutes, rules, or local ordinances.

Stat. Auth.: ORS 183 & [ORS 197](#)

Stats. Implemented: [ORS 197.040](#) & [ORS 197.225](#) - [ORS 197.245](#)

Hist.: LCDC 2-1996, f. 8-30-96, cert. ef. 9-1-96

660-023-0070

Buildable Lands Affected by Goal 5 Measures

(1) If measures to protect significant resource sites inside urban growth boundaries affect the inventory of buildable lands in acknowledged plans required by Goals 9, 10 and 14, a local government outside of the Metro UGB, and Metro inside the Metro UGB, prior to or at the next periodic review, shall:

(a) Amend its urban growth boundary to provide additional buildable lands sufficient to compensate for the loss of buildable lands caused by the application of Goal 5;

(b) Redesignate other land to replace identified land needs under Goals 9, 10, and 14 provided such action does not take the plan out of compliance with other statewide goals; or

(c) Adopt a combination of the actions described in subsections (a) and (b) of this section.

(2) If a local government redesignates land for higher density under subsections (1)(b) or (c) of this rule in order to meet identified housing needs, the local government shall ensure that the redesignated land is in locations appropriate for the housing types, and is zoned at density ranges that are likely to be achieved by the housing market.

(3) Where applicable, the requirements of [ORS 197.296](#) shall supersede the requirements of sections (1) and (2) of this rule.

Stat. Auth.: ORS 183 & [ORS 197](#)

Stats. Implemented: [ORS 197.040](#) & [ORS 197.225](#) - [ORS 197.245](#)

Hist.: LCDC 2-1996, f. 8-30-96, cert. ef. 9-1-96

660-023-0080

Metro Regional Resources

(1) For purposes of this rule, the following definitions apply:

(a) "Metro" is the Metropolitan Service District organized under ORS Chapter 268, and operating under the 1992 Metro Charter, for 24 cities and certain urban portions of Multnomah, Clackamas, and Washington counties.

(b) "Regional resource" is a site containing a significant Goal 5 resource, including but not limited to a riparian corridor, wetland, or open space area, which is identified as a regional resource on a map adopted by Metro ordinance.

(2) Local governments shall complete the Goal 5 process in this division for all regional resources prior to or during the first periodic review following Metro's adoption of a regional resources map, unless Metro adopts a regional functional plan by ordinance to establish a uniform time for all local governments to complete the Goal 5 process for particular regional resource sites.

(3) Metro may adopt one or more regional functional plans to address all applicable requirements of Goal 5 and this division for one or more resource categories and to provide time limits for local governments to implement the plan. Such functional plans shall be submitted for acknowledgment under the provisions of [ORS 197.251](#) and [197.274](#). Upon acknowledgment of Metro's regional resource functional plan, local governments within Metro's jurisdiction shall apply the requirements of the functional plan for regional resources rather than the requirements of this division.

Stat. Auth.: ORS 183 & [ORS 197](#)

Stats. Implemented: [ORS 197.040](#) & [ORS 197.225](#) - [ORS 197.245](#)

Hist.: LCDC 2-1996, f. 8-30-96, cert. ef. 9-1-96

660-023-0090

Riparian Corridors

(1) For the purposes of this rule, the following definitions apply:

(a) "Fish habitat" means those areas upon which fish depend in order to meet their requirements for spawning, rearing, food supply, and migration.

(b) "Riparian area" is the area adjacent to a river, lake, or stream, consisting of the area of transition from an aquatic ecosystem to a terrestrial ecosystem.

(c) "Riparian corridor" is a Goal 5 resource that includes the water areas, fish habitat, adjacent riparian areas, and wetlands within the riparian area boundary.

(d) "Riparian corridor boundary" is an imaginary line that is a certain distance upland from the top bank, for example, as specified in section (5) of this rule.

(e) "Stream" is a channel such as a river or creek that carries flowing surface water, including perennial streams and intermittent streams with defined channels, and excluding man-made irrigation and drainage channels.

(f) "Structure" is a building or other major improvement that is built, constructed, or installed, not including minor improvements, such as fences, utility poles, flagpoles, or irrigation system components, that are not customarily regulated through zoning ordinances.

(g) "Top of bank" shall have the same meaning as "bankfull stage" defined in OAR 141-085-0010(12).

(h) "Water area" is the area between the banks of a lake, pond, river, perennial or fish-bearing intermittent stream, excluding man-made farm ponds.

(2) Local governments shall amend acknowledged plans in order to inventory riparian corridors and provide programs to achieve Goal 5 prior to or at the first periodic review following the effective date of this rule, except as provided in OAR 660-023-0250(5).

(3) Local governments shall inventory and determine significant riparian corridors by following either the safe harbor methodology described in section (5) of this rule or the standard inventory process described in OAR 660-023-0030 as modified by the requirements in section (4) of this rule. The local government may divide the riparian corridor into a series of stream sections (or reaches) and regard these as individual resource sites.

(4) When following the standard inventory process in OAR 660-023-0030, local governments shall collect information regarding all water areas, fish habitat, riparian areas, and wetlands within riparian corridors. Local governments may postpone determination of the precise location of the riparian area on lands designated for farm or forest use until receipt of applications for local permits for uses that would conflict with these resources. Local governments are encouraged, but not required, to conduct field investigations to verify the location, quality, and quantity of resources within the riparian corridor. At a minimum, local governments shall consult the following sources, where available, in order to inventory riparian corridors along rivers, lakes, and streams within the jurisdiction:

- (a) Oregon Department of Forestry stream classification maps;
- (b) United States Geological Service (USGS) 7.5-minute quadrangle maps;
- (c) National Wetlands Inventory maps;
- (d) Oregon Department of Fish and Wildlife (ODFW) maps indicating fish habitat;
- (e) Federal Emergency Management Agency (FEMA) flood maps; and
- (f) Aerial photographs.

(5) As a safe harbor in order to address the requirements under OAR 660-023-0030, a local government may determine the boundaries of significant riparian corridors within its jurisdiction using a standard setback distance from all fish-bearing lakes and streams shown on the documents listed in subsections (a) through (f) of section (4) of this rule, as follows:

- (a) Along all streams with average annual stream flow greater than 1,000 cubic feet per second (cfs) the riparian corridor boundary shall be 75 feet upland from the top of each bank.
- (b) Along all lakes, and fish-bearing streams with average annual stream flow less than 1,000 cfs, the riparian corridor boundary shall be 50 feet from the top of bank.
- (c) Where the riparian corridor includes all or portions of a significant wetland as set out in OAR 660-023-0100, the standard distance to the riparian corridor boundary shall be measured from, and include, the upland edge of the wetland.
- (d) In areas where the top of each bank is not clearly defined, or where the predominant terrain consists of steep cliffs, local governments shall apply OAR 660-023-0030 rather than apply the safe harbor provisions of this section.
- (6) Local governments shall develop a program to achieve Goal 5 using either the safe harbor described in section (8) of this rule or the standard Goal 5 ESEE process in OAR 660-023-0040 and 660-023-0050 as modified by section (7) of this rule.
- (7) When following the standard ESEE process in OAR 660-023-0040 and 660-023-0050, a local government shall comply with Goal 5 if it identifies at least the following activities as conflicting uses in riparian corridors:
- (a) The permanent alteration of the riparian corridor by placement of structures or impervious surfaces, except for:
- (A) Water-dependent or water-related uses; and
- (B) Replacement of existing structures with structures in the same location that do not disturb additional riparian surface area; and
- (b) Removal of vegetation in the riparian area, except:
- (A) As necessary for restoration activities, such as replacement of vegetation with native riparian species;
- (B) As necessary for the development of water-related or water-dependent uses; and
- (C) On lands designated for agricultural or forest use outside UGBs.
- (8) As a safe harbor in lieu of following the ESEE process requirements of OAR 660-023-0040 and 660-023-0050, a local government may adopt an ordinance to protect a significant riparian corridor as follows:
- (a) The ordinance shall prevent permanent alteration of the riparian area by grading or by the placement of structures or impervious surfaces, except for the following uses, provided they are designed and constructed to minimize intrusion into the riparian area:
- (A) Streets, roads, and paths;
- (B) Drainage facilities, utilities, and irrigation pumps;

(C) Water-related and water-dependent uses; and

(D) Replacement of existing structures with structures in the same location that do not disturb additional riparian surface area.

(b) The ordinance shall contain provisions to control the removal of riparian vegetation, except that the ordinance shall allow:

(A) Removal of non-native vegetation and replacement with native plant species; and

(B) Removal of vegetation necessary for the development of water-related or water-dependent uses;

(c) Notwithstanding subsection (b) of this section, the ordinance need not regulate the removal of vegetation in areas zoned for farm or forest uses pursuant to statewide Goals 3 or 4;

(d) The ordinance shall include a procedure to consider hardship variances, claims of map error, and reduction or removal of the restrictions under subsections (a) and (b) of this section for any existing lot or parcel demonstrated to have been rendered not buildable by application of the ordinance; and

(e) The ordinance may authorize the permanent alteration of the riparian area by placement of structures or impervious surfaces within the riparian corridor boundary established under subsection (5)(a) of this rule upon a demonstration that equal or better protection for identified resources will be ensured through restoration of riparian areas, enhanced buffer treatment, or similar measures. In no case shall such alterations occupy more than 50 percent of the width of the riparian area measured from the upland edge of the corridor.

Stat. Auth.: ORS 183 & 197

Stats. Implemented: ORS 197.040 & 197.225 - 197.245

Hist.: LCDC 2-1996, f. 8-30-96, cert. ef. 9-1-96; LCDD 3-2004, f. & cert. ef. 5-7-04

660-023-0100

Wetlands

(1) For purposes of this rule, a "wetland" is an area that is inundated or saturated by surface water or ground water at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

(2) Local governments shall amend acknowledged plans and land use regulations prior to or at periodic review to address the requirements of this division, as set out in OAR 660-023-0250(5) through (7). The standard inventory process requirements in OAR 660-023-0030 do not apply to wetlands. Instead, local governments shall follow the requirements of section (3) of this rule in order to inventory and determine significant wetlands.

(3) For areas inside urban growth boundaries (UGBs) and urban unincorporated communities (UUCs), local governments shall:

(a) Conduct a local wetlands inventory (LWI) using the standards and procedures of OAR 141-086-0110 through 141-086-0240 and adopt the LWI as part of the comprehensive plan or as a land use regulation; and

(b) Determine which wetlands on the LWI are "significant wetlands" using the criteria adopted by the Division of State Lands (DSL) pursuant to ORS 197.279(3)(b) and adopt the list of significant wetlands as part of the comprehensive plan or as a land use regulation.

(4) For significant wetlands inside UGBs and UUCs, a local government shall:

(a) Complete the Goal 5 process and adopt a program to achieve the goal following the requirements of OAR 660-023-0040 and 660-023-0050; or

(b) Adopt a safe harbor ordinance to protect significant wetlands consistent with this subsection, as follows:

(A) The protection ordinance shall place restrictions on grading, excavation, placement of fill, and vegetation removal other than perimeter mowing and other cutting necessary for hazard prevention; and

(B) The ordinance shall include a variance procedure to consider hardship variances, claims of map error verified by DSL, and reduction or removal of the restrictions under paragraph (A) of this subsection for any lands demonstrated to have been rendered not buildable by application of the ordinance.

(5) For areas outside UGBs and UUCs, local governments shall either adopt the statewide wetland inventory (SWI; see [ORS 196.674](#)) as part of the local comprehensive plan or as a land use regulation, or shall use a current version for the purpose of section (7) of this rule.

(6) For areas outside UGBs and UUCs, local governments are not required to amend acknowledged plans and land use regulations in order to determine significant wetlands and complete the Goal 5 process. Local governments that choose to amend acknowledged plans for areas outside UGBs and UUCs in order to inventory and protect significant wetlands shall follow the requirements of sections (3) and (4) of this rule.

(7) All local governments shall adopt land use regulations that require notification of DSL concerning applications for development permits or other land use decisions affecting wetlands on the inventory, as per [ORS 227.350](#) and 215.418, or on the SWI as provided in section (5) of this rule.

(8) All jurisdictions may inventory and protect wetlands under the procedures and requirements for wetland conservation plans adopted pursuant to [ORS 196.668](#) et seq. A wetlands conservation plan approved by the director of DSL shall be deemed to comply with Goal 5 (ORS 197.279(1)).

Stat. Auth.: ORS 183 & [ORS 197](#)

Stats. Implemented: [ORS 197.040](#) & [ORS 197.225](#) - [ORS 197.245](#)

Hist.: LCDC 2-1996, f. 8-30-96, cert. ef. 9-1-96