

# APPENDIX F

## Environmental Considerations

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## Appendix F-1: MAP-21

The following are the Metropolitan Transportation Plan environmental-related elements in the MAP-21 legislation.

### **PUBLIC LAW 112–141—July 6, 2014**

### **MOVING AHEAD FOR PROGRESS IN THE 21ST CENTURY ACT.**

#### **§ 1201. Metropolitan transportation planning**

(i) DEVELOPMENT OF TRANSPORTATION PLAN.—

(2) TRANSPORTATION PLAN. — A transportation plan under this section shall be in a form that the Secretary determines to be appropriate and shall contain, at a minimum, the following:

(D) MITIGATION ACTIVITIES.—

(i) IN GENERAL. — A long-range transportation plan shall include a discussion of types of potential environmental mitigation activities and potential areas to carry out these activities, including activities that may have the greatest potential to restore and maintain the environmental functions affected by the plan.

(ii) CONSULTATION. — The discussion shall be developed in consultation with Federal, State, and tribal wildlife, land management, and regulatory agencies.

(5) CONSULTATION.—

(A) IN GENERAL.—In each metropolitan area, the metropolitan planning organization shall consult, as appropriate, with State and local agencies responsible for land use management, natural resources, environmental protection, conservation, and historic preservation concerning the development of a long-range transportation plan.

(B) ISSUES. — The consultation shall involve, as appropriate—

(i) comparison of transportation plans with State conservation plans or maps, if available; or

(ii) comparison of transportation plans to inventories of natural or historic resources, if available.

## Appendix F-2: CETAS Meeting Minutes

### CETAS Draft Technical Meeting Notes

May 15, 2007

Flanders Building – Room 228  
123 NW Flanders, Portland

#### Members (in attendance):

Hal Gard, ODOT	Susan Haupt, ODOT	Michelle Eraut, FHWA
Yvonne Vallette, EPA	Charlotte Kucera, NMFS	David Leal, USFWS
Joyce Cohen, ODOT	Eric Metz, DSL	Michael Turaski, USACE
Corey Saxon, DEQ	Mollie Manion, SHPO	Art Marin, ODFW

#### Guests:

Rod Thompson, ODOT	Dan Ferke, ODOT	Tim Burkhardt, CH2MHILL
Susan Whitney, ODOT	John Raasch, ODOT	Mike Baker, ODOT
John Wiebke, DEA	Jerry Marmon, ODOT	Barbara Fraser, ODOT
Greg Holthoff, ODOT	Patti Caswell, ODOT	Claire Carder, ODOT
Tyler Deke, Bend MPO	Darcy McNamara, Consultant	Emily Moshofsky, ODOT
Ron Weinman, Clackamas County	Larry Conrad, Clackamas County	Linda Wannamaker, Wannamaker Consulting
Kay Van Sickle, Otak	Isaac Sanders, ODFW	

**Meeting Facilitator:** Susan Haupt, ODOT

**Note Taker:** Donette Miranda, HDR

*Excerpt from minutes:*

**Agenda Item:** Bend MPO Long-Range Plan Consultation

**Lead:** Tyler Deke, Bend MPO

#### Handouts:

General Data, PowerPoint Presentation, Draft Environmental Considerations Chapter Report Structure, and Maps

#### Notes:

Tyler Deke (Bend MPO) gave an overview of the Bend area.

#### Historic

- Native American encampments along Deschutes River
- High desert vegetation
- US Forest Service and National Monument land

- City of Bend incorporated in 1904

#### Current

- Low density urban
- Small farms and ranches

#### Bend MPO

- Second smallest in the state
- Member Agencies
  - City of Bend
  - Deschutes County
  - ODOT

David asked if the City of Redmond will be added at some point. Tyler stated that Redmond would not meet the population density criteria, but could under the Deschutes County designation. Bend is currently undergoing a major UGB expansion. The MPO boundary will need to expand to accommodate.

A TSP is not adopted. The area is not within an air quality nonattainment area, plan updates are required every five years. The plan will be adopted then revised to reflect the Bend UGB expansion. The expansion will impact which projects have funding.

There has been a lot of data collection and map development. Now analysis and impact discussion is occurring.

The product is map based. Each section will have a summary, methodology, findings, and mitigation options.

#### Bend:

- High desert
- Deschutes River
- Cascades
- Rain/snow precipitation

The community visioning process has been completed. There are site specific documents and plans. Used bend UGB study area as the study area boundary.

Utilities will be added to the zoning map if possible.

An NPDES permit was obtained in January. Stormwater was discharged directly into the Deschutes and underground with little or no treatment. Drainage is becoming a big issue. Impervious surface areas are being calculated. TMDLS are due in 2008, so they will not be included in this planning project. Any retrofits will have to comply with the new standards. The potential for hazardous material issues is significant. Could have major groundwater contamination. Data points are from an original set that has not been ground truthed and is not very accurate. The second is from a set that is being ground truthed and is accurate.

The drill holes do not contribute too much to the Deschutes baseflow. Stormwater may have an impact, but how much is unknown. Stormwater is going to a shallow aquifer on top of the drinking water.

Portions of the Deschutes is 303(d) listed for temperature, pH, DO, and chlorophyll A. The main reason is due to flow regime. The Deschutes has five irrigation diversions. Flow is low from April to October, which is when the issues occur, particularly temperature issues. Tumalo Creek is to the northwest . About 30 to 40 percent of the households are on septic (approximately 8,000 to 12,000 households. There are plans to get households on sewer.

Irrigation service areas do not service all areas. Canals are dry from October to April. There are four dams and five diversions in the area. Diversions started construction in 1901. The city was incorporated in 1904. In 1906 fish were plentiful. In 1912 hatcheries were being built to replenish the fisheries. Dams were in place by 1920. Fish passage is spotty. One dam is 35 feet tall with no fish ladder and there is not great fish ladder potential. One diversion has a good fish screen. All have some element to prevent fish from getting into the canals, but with varying degrees of success.

Bull trout were historically present, but not currently. Native redband trout are present and brook trout and brown trout have been introduced. Art stated that Steelhead Falls precludes anadromous fish migration. He suggested the team use Streamnet data. David stated that there is bull trout critical habitat. Data can be obtained from the USFWS website. Art stated that there is no EFH there.

There are no upland wetlands. All wetlands are associated with the river and riparian areas. NWI data was used for the county as LWI data was not available. Areas of special interest include rock outcroppings under Goal 5 and rivers of special interest. Buffers vary from 30 to 100 feet. The deer and elk range is from the county. They tend to not enter the city. The Open Space Conservation zone has air and water regulations and unique qualities. Bull trout and eagle are the two species with recovery plans. Spotted frog is in the county, as are bats and sage grouse. There may be lamprey and mussels.

There are no known listed plant species in the MPO. There are a lot of invasive species. David suggested they double check the eagle databases. Nesting sites are pretty well mapped out.

Approximately half the drinking water is from wells that are 300 feet or more deep. There are well protection areas. Water reallocation is being discussed in terms of drinking water capacity for anticipated future population. The bigger issue is outside of Bend. There is an issue in Prineville. Canals are now being lined to prevent leakage. There are three water providers in the city.

Fire evacuation routes are a serious issue. Access routes cannot be limited too much for fire evacuation. There are aggregate mines in the MPO area.

There have been attempts at filtration systems to filter stormwater. Soils in the area are very porous and water shoots through. Mazama ash is in the soil. Filtration ponds have been built on some impervious soils and ended up filling with stagnant waters and not draining. 75 percent of the deep aquifer is from snowmelt. There is interest in mapping the change in snow pack.

Air quality issues are from wood burning stoves and agricultural fires. The DEQ website showed that the area exceeded PM10 on one day last year, which did not trigger a designation. There is interest in additional monitoring throughout the region. Car testing is not required. There are wood burning stove regulations in Bend and standards have to be met. Wood burning stoves are rarely put in new construction. The area has minor inversion layers.

Scenic resources include the byway, state and federal waterways, and upland and water landscape management areas, which regulate scenic views.

There are two historic sensitivity areas, two historic districts downtown. SHPO will be contacted on a case by case basis. The Klamath, Burns Paiute, and Warm Springs tribes have been contacted.

There are parks, trails, parks 4(f), historic 6(f), refuges 4(f), and boat ramps 4(f) in the area. Susan stated that she can help the MPO determine which resources are 4(f) and 6(f).

The MPO has EJ layers, but not here. There are low-income populations, but they are not sure about minority populations yet.

A detailed analysis of how projects overlay on resources has not yet been done. A draft project map has been completed. The project list is fairly in alignment with the Bend and Deschutes TSPs. The only new projects are the connection between 27<sup>th</sup> and Empire, Murphy Road extension, and an access road into the Gopher Gulch area. There is interest in extending the road from Century Road up to Highway 20. Land use changes at the north end of the MPO will impact transportation systems. There will also be changes at the south end of the MPO, which will segment projects. The city is following the state's UGB process for expansion. Issues are coming down to transportation access and sanitary sewer. Sanitary sewer will dominate.

Initial findings include potential impact areas. Wildlife crossings will be a bigger issue if the MPO expands. Stormwater costs are not being estimated right now. There is a lot of discussion around cost estimates. A consultant has been hired. There are huge discrepancies in cost estimates.

The MPO is moving forward to collect additional data. Not all data is readily available or may be difficult to get it. Applying recovery plans on a localized basis can be challenging. The MPO does not have good data about where species on lists are

located or if they exist in or adjacent to the study area. Environmental resources have not been addressed at this level in the past, but more on a project or regional level.

**Questions/Comments:**

Charlotte stated that it appears no NMFS species are in this area due to upstream dams, which is unique among MPOs. She suggested that the MPO state that in the documentation. Eric said that there is local interest in reestablishing steelhead. Art said that steelhead will not be able to access this area. Yvonne asked if there was an LWI for Bend. Darcy McNamara (Consultant) said Bend does, but there are not any wetlands [*note: actual statement should be that there are no wetlands other than the identified wetlands in the riparian zone of the Deschutes River. There are identified NWI wetlands in the County (outside the city limits, but it is doubtful they are actually wetlands and are most likely mapping artifacts - dm.*] Michelle said that it would be helpful to include transportation projects, by phase, on some of the maps. Tyler said that they plan to by the final submission. Michelle mentioned that the public comment period will be open if resource agencies are interested. Tyler said that the MPO efforts are on the city website. The intention is to have a draft done by the first week of June and the comment period in June. Adoption will occur in late June, which will only meet federal requirements, not state requirements. Michelle stated that it was insightful to consider the UGB expansion and buffer. Tyler said it came to light when considering large mammal range issues. A lot of the UGB expansion area will be designated as urban reserve. Michelle said that an illustrative list might be beneficial to include on some of the maps. Barbara asked what the timeline was for the other part of the planning process. Tyler stated that the goal is to have the state compliance plan done by the end of the fiscal year. They have compiled a lot of data. It is a matter of how to package it and what it implies. May not do anything with the state compliance plan until the UGB expansion is finalized.



## Appendix F-3: Federally Listed Species and Migratory Birds of Concern in Deschutes County

There are a total of 9 federally listed threatened, endangered, or candidate species in Deschutes County (Table F-3-1). Species on this list would be considered in an effects analysis for future transportation projects. The effects analysis could include species that exist in another geographic area.

**Table F-3-1:** Federally Listed Threatened, Endangered, and Proposed Candidate Species Which May Occur within Deschutes County, Oregon

Species	Status
<b>Amphibians</b>	
Oregon Spotted Frog ( <i>Rana pretiosa</i> )	Threatened
<b>Birds</b>	
Greater sage-grouse ( <i>Centrocercus urophasianus</i> )	Candidate
Northern Spotted owl ( <i>Strix occidentalis caurina</i> )	Threatened
Yellow-Billed Cuckoo ( <i>Coccyzus americanus</i> )	Proposed Threatened
<b>Conifers and Cycads</b>	
Whitebark pine ( <i>Pinus albicaulis</i> )	Candidate
<b>Fishes</b>	
Bull Trout ( <i>Salvelinus confluentus</i> )	Threatened
Oregon chub ( <i>Oregonichthys crameri</i> )	Threatened
<b>Mammals</b>	
Fisher ( <i>Martes pennanti</i> )	Candidate
Gray wolf ( <i>Canis lupus</i> )	Endangered

Source: U.S. Fish and Wildlife Service Information, Planning and Conservation System (IPAC) Trust Resources List. Accessed July 30, 2014.

Table F-3-2 identifies the critical habitats that are within Deschutes County. The Oregon Spotted frog critical habitat is within the BMPO. Proposed critical habitat for the Oregon spotted frog is within the BMPO – extending along the Deschutes River from the western BMPO boundary to the Colorado Avenue bridge.

**Table F-3-2: Critical Habitats within Deschutes County**

<b>Species</b>	<b>Critical Habitat Type</b>
Oregon Spotted frog ( <i>Rana pretiosa</i> )	Proposed
Northern Spotted owl ( <i>Strix occidentalis caurina</i> )	Final designated
Bull Trout ( <i>Salvelinus confluentus</i> )	Final designated

Source: U.S. Fish and Wildlife Service Information, Planning and Conservation System (IPAC) Trust Resources List. Accessed July 30, 2014.

There are 10 migratory birds of concern in Deschutes County (Table F-3-3).

**Table F-3-3: Migratory Birds of Concern**

<b>Species Name</b>	<b>Seasonal Occurrence in Project Area</b>
Brewer's Sparrow ( <i>Spizella breweri</i> )	Breeding
Calliope Hummingbird ( <i>Stellula calliope</i> )	Breeding
Cassin's Finch ( <i>Carpodacus cassinii</i> )	Year-round
Least Bittern ( <i>Ixobrychus exilis</i> )	Breeding
Olive-Sided flycatcher ( <i>Contopus cooperi</i> )	Breeding
Pinyon Jay ( <i>Gymnorhinus cyanocephalus</i> )	Year-round
Purple Finch ( <i>Carpodacus purpureus</i> )	Year-round, Wintering
Rufous hummingbird ( <i>selasphorus rufus</i> )	Breeding
Williamson's Sapsucker ( <i>Sphyrapicus thyroideus</i> )	Breeding
Willow Flycatcher ( <i>Empidonax traillii</i> )	Breeding

Source: U.S. Fish and Wildlife Service Information, Planning and Conservation System (IPAC) Trust Resources List. Accessed July 30, 2014.

## Appendix F-4: Rare, Threatened, and Endangered Species in Deschutes County

Scientific Name	Common Name	Global Rank*	State Rank*	Federal Status*	State Status*	ORBIC List*
<b>VERTEBRATES</b>						
<i>Ambystoma mavortium melanostictum</i>	Blotched tiger salamander	G5T4	S2?			3
<i>Anaxyrus boreas</i>	Western toad	G4	S4		SV	4
<i>Aneides ferreus</i>	Clouded salamander	G3G4	S3S4		SV	4
<i>Ascaphus truei</i>	Coastal tailed frog	G4	S3	SOC	SV	4
<i>Batrachoseps wrighti</i>	Oregon slender salamander	G3	S3	SOC	SV	4
<i>Rana cascadae</i>	Cascades frog	G3G4	S3S4	SOC	SV	4
<i>Rana pretiosa</i>	Oregon spotted frog	G2	S2	T	SC	1
<i>Accipiter gentilis</i>	Northern goshawk	G5	S3S4	SOC	SV	4
<i>Aechmophorus occidentalis</i>	Western grebe	G5	S3B,S2S3N			4
<i>Aegolius funereus</i>	Boreal owl	G5	S3?			3
<i>Amphispiza bilineata</i>	Black-throated sparrow	G5	S3B			4
<i>Aquila chrysaetos</i>	Golden eagle	G5	S3			4
<i>Artemisiospiza belli</i>	Sage sparrow	G5	S4B		SC	4
<i>Asio flammeus</i>	Short-eared owl	G5	S3			3
<i>Athene cunicularia hypugaea</i>	Western burrowing owl	G4T4	S3B	SOC	SC/SV	4
<i>Bucephala albeola</i>	Bufflehead	G5	S2B,S5N			2
<i>Bucephala islandica</i>	Barrow's goldeneye	G5	S3B,S3N			4
<i>Buteo regalis</i>	Ferruginous hawk	G4	S3B	SOC	SC/SV	4
<i>Buteo swainsoni</i>	Swainson's hawk	G5	S3B		SV	4
<i>Centrocercus urophasianus</i>	Greater sage-grouse	G3G4	S3	C	SV	2
<i>Chlidonias niger</i>	Black tern	G4	S3B	SOC		4
<i>Chordeiles minor</i>	Common nighthawk	G5	S5B		SC	4
<i>Coccyzus americanus</i>	Yellow-billed cuckoo	G5	SHB	C	SC	2-ex
<i>Contopus cooperi</i>	Olive-sided flycatcher	G4	S2S3B	SOC	SV	4
<i>Dryocopus pileatus</i>	Pileated woodpecker	G5	S4		SV	4
<i>Empidonax traillii adastus</i>	Willow flycatcher	G5T5	S3B	SOC	SV	4
<i>Falco peregrinus anatum</i>	American peregrine falcon	G4T4	S2B		SV	2

Scientific Name	Common Name	Global Rank*	State Rank*	Federal Status*	State Status*	ORBIC List*
<i>Falco peregrinus tundrius</i>	Arctic peregrine falcon	G4T3	SNR		SV	2
<i>Grus canadensis tabida</i>	Greater sandhill crane	G5T4	S3S4B		SV	4
<i>Haliaeetus leucocephalus</i>	Bald eagle	G5	S4B,S4N		SV	4
<i>Icteria virens</i>	Yellow-breasted chat	G5	S4B	SOC	SC	4
<i>Lanius ludovicianus</i>	Loggerhead shrike	G4	S3B,S2N		SV	4
<i>Melanerpes lewis</i>	Lewis's woodpecker	G4	S2B,S2?N	SOC	SC	2
<i>Numenius americanus</i>	Long-billed curlew	G5	S3B		SV	4
<i>Oreortyx pictus</i>	Mountain quail	G5	S3S4	SOC	SV	4
<i>Oreoscoptes montanus</i>	Sage thrasher	G5	S3S4B			4
<i>Otus flammeolus</i>	Flammulated owl	G4	S3B		SV	4
<i>Picoides albolarvatus</i>	White-headed woodpecker	G4	S2	SOC	SC	2
<i>Picoides arcticus</i>	Black-backed woodpecker	G5	S3		SV	4
<i>Picoides dorsalis</i>	American three-toed woodpecker	G5	S3		SV	4
<i>Pinicola enucleator</i>	Pine grosbeak	G5	S2?			3
<i>Regulus satrapa</i>	Golden-crowned kinglet	G5	S3			4
<i>Sialia mexicana</i>	Western bluebird	G5	S4B,S4N		SV	4
<i>Spizella breweri</i>	Brewer's sparrow	G5	S3B			4
<i>Sterna forsteri</i>	Forster's tern	G5	S3B			4
<i>Strix nebulosa</i>	Great gray owl	G5	S3		SV	4
<i>Strix occidentalis caurina</i>	Northern spotted owl	G3T3	S3	LT	LT	1
<i>Sturnella neglecta</i>	Western meadowlark	G5	S4		SC	4
<i>Tympanuchus phasianellus columbianus</i>	Columbian sharp-tailed grouse	G4T3	S1	SOC	SC	2
<i>Oncorhynchus mykiss gairdneri</i>	Inland Columbia Basin redband trout	G5T4	S3	SOC	SV	4
<i>Salvelinus confluentus</i> pop. 14	Bull trout (Odell Lake SMU)	G4T2Q	S2	LT	SC	1
<i>Salvelinus confluentus</i> pop. 17	Bull trout (Willamette SMU)	G4T2Q	S2	LT	SC	1
<i>Salvelinus confluentus</i> pop. 18	Bull trout (Deschutes SMU)	G4T2T3	S2S3	LT	SV	1
<i>Brachylagus idahoensis</i>	Pygmy rabbit	G4	S2?	SOC	SV	2
<i>Canis lupus</i>	Gray wolf	G4G5	S1S2	PS:LE	LE	2
<i>Corynorhinus townsendii</i>	Townsend's big-eared bat	G3G4	S2	SOC	SC	2
<i>Euderma maculatum</i>	Spotted bat	G4	S2	SOC	SV	2

Scientific Name	Common Name	Global Rank*	State Rank*	Federal Status*	State Status*	ORBIC List*
<i>Gulo gulo</i>	Wolverine	G4	S1	PT	LT	2
<i>Lasionycteris noctivagans</i>	Silver-haired bat	G5	S3S4	SOC	SV	4
<i>Lasiurus cinereus</i>	Hoary bat	G5	S3		SV	4
<i>Lepus californicus</i>	Black-tailed jack rabbit	G5	S4		SV	4
<i>Lepus townsendii</i>	White-tailed jackrabbit	G5	S4?		SV	3
<i>Lynx canadensis</i>	Canada lynx	G5	S1?	LT		2
<i>Martes caurina</i> pop. 1	Pacific Marten - Interior Population	G4G5T4T5	S3S4		SV	4
<i>Myotis evotis</i>	Long-eared myotis	G5	S4	SOC		4
<i>Myotis volans</i>	Long-legged myotis	G5	S3	SOC	SV	4
<i>Myotis yumanensis</i>	Yuma myotis	G5	S3	SOC		4
<i>Ovis canadensis nelsoni</i>	Desert bighorn sheep	G4T4	SX			2-ex
<i>Pekania pennanti</i>	Fisher	G5	S2	PS:C	SC	2
<i>Sciurus griseus</i>	Western gray squirrel	G5	S4		SV	4
<i>Sorex preblei</i>	Preble's shrew	G4	S3?	SOC		3
<i>Ursus arctos horribilis</i>	Grizzly bear	G4T3T4	SX	LT		2-ex
<i>Vulpes macrotis</i>	Kit fox	G4	S1		LT	2
<i>Vulpes vulpes necator</i>	Sierra Nevada red fox	G5T1T2	S1			1
<i>Crotalus oreganus</i>	Western rattlesnake	G5	S5		SC	4
<i>Sceloporus graciosus graciosus</i>	Northern sagebrush lizard	G5T5	S5	SOC	SV	4
<b>INVERTEBRATES</b>						
<i>Anodonta californiensis</i>	California floater (mussel)	G3Q	S2	SOC		2
<i>Gonidea angulata</i>	Western ridged mussel	G3	S2S3			2
<i>Margaritifera falcata</i>	Western pearlshell	G4G5	S4			4
<i>Juga hemphilli</i> ssp. 1	Indian Ford juga (snail)	G2T1	S1			1
<i>Pristiloma crateris</i>	Crater Lake tightcoil (snail)	G2	S2			1
<i>Pristiloma wascoense</i>	Shiny tightcoil (snail)	G3	S2			2
<i>Sixeonotus</i> sp. 1	A plant bug	G2	S1?			3
<i>Calliopsis barri</i>	A miner bee	GNR	S1			2
<i>Perdita accepta</i>	A miner bee	GNR	S1?			1
<i>Rhyacophila chandleri</i>	A caddisfly	G3	S3			2
<i>Rhyacophila kincaidi</i>	A caddisfly	G4G5	S1S2			3
<i>Rhyacophila rickeri</i>	A caddisfly	G3G4	S1S2			3
<b>NON-VASCULAR PLANTS</b>						

Scientific Name	Common Name	Global Rank*	State Rank*	Federal Status*	State Status*	ORBIC List*
Harpanthus flotovianus	Liverwort	G5	S1			2
Jungermannia polaris	Liverwort	G4	S1			2
Nardia japonica	Liverwort	G5	S2			2
Rivulariella gemmipara	Liverwort	G2	S2			1
Bruchia bolanderi	Moss	G3	S2			3
Buxbaumia aphylla	Moss	G4G5	S3			3
Conostomum tetragonum	Moss	G5	S1			2
Helodium blandowii	Moss	G5	S3			4
Schistidium heterophyllum	Moss	G3G4	SNR			3
Tomentypnum nitens	Moss	G5	S3			4
Calicium abietinum	Lichen	G4G5	S3			4
Cladidium bolanderi	Lichen	G4	S1			2
Stenocybe major	Lichen	G4	S3			4
Usnea lambii	Lichen	G4G5	S1			3
Alpova alexsmithii	Fungus	G2	S2			1
Brauniellula albipes	Fungus	G3	S1			3
Chrysomphalina grossula	Fungus	G3G4	S1?			3
Cortinarius wiebeae	Fungus	G2	S2			3
Elaphomyces subviscidus	Fungus	G2G3	S1S2			3
Fevansia aurantiaca	Fungus	G1	S1			3
Gamundia leucophylla	Fungus	G3?	S1			3
Gastroboletus ruber	Fungus	G3	S3			3
Gautieria magnicellaris	Fungus	G5?	S1			3
Helvella crassitunicata	Fungus	G3	S2			2
Hydnotrya inordinata	Fungus	G2	S2			3
Polyozellus multiplex	Fungus	G4G5	S3			4
Pseudorhizina californica	Fungus	G4	S2			2
Rhizopogon atroviolaceus	Fungus	G2G3	S2S3			3
Rhizopogon flavofibrillosus	Fungus	G2G3	S2			3
Rhizopogon semireticulatus	Fungus	G2G3	S2			3
Rhizopogon subpurpurascens	Fungus	G2G3	S2			3
<b>VASCULAR PLANTS</b>						
Agoseris elata	Tall agoseris	G4	S1			2
Allium bisceptrum	Two-stemmed onion	G4G5	S4			4
Arnica viscosa	Shasta arnica	G4	S2			2

Scientific Name	Common Name	Global Rank*	State Rank*	Federal Status*	State Status*	ORBIC List*
<i>Artemisia ludoviciana</i> ssp. <i>estesii</i>	Estes' artemisia	G5T3	S3	SOC		4
<i>Astragalus lemmonii</i>	Lemmon's milk-vetch	G2	S1			1
<i>Astragalus misellus</i> var. <i>misellus</i>	Pauper milk-vetch	G4T2?	S2?			1
<i>Astragalus peckii</i>	Peck's milk-vetch	G3	S3		LT	1
<i>Botrychium pumicola</i>	Pumice grape-fern	G3	S3		LT	1
<i>Callitriche fassettii</i>	Fassett's water-starwort	G1Q	SNR			3
<i>Camissonia pusilla</i>	Washoe suncup	G3G4	S2			2
<i>Carex bebbii</i>	Bebb's sedge	G5	S4			4
<i>Carex capitata</i>	Capitate sedge	G5	S2			2
<i>Carex diandra</i>	Lesser panicled sedge	G5	S1			2
<i>Carex lasiocarpa</i> var. <i>americana</i>	Slender sedge	G5T5	S2			2
<i>Castilleja chlorotica</i>	Green-tinged paintbrush	G3	S3			1
<i>Castilleja rupicola</i>	Cliff paintbrush	G3G4	S3	SOC		4
<i>Chamerion latifolium</i>	Broad-leaved willow-herb	G5	S3			4
<i>Collomia larsenii</i>	Talus collomia	G4	S4			4
<i>Cypripedium montanum</i>	Mountain lady's-slipper	G4	S3S4			4
<i>Douglasia laevigata</i>	Smooth-leaved douglasia	G3	SNR			3
<i>Draba aureola</i>	Golden alpine draba	G4	S4			4
<i>Elatine brachysperma</i>	Short-seeded waterwort	G5	S1			2
<i>Elmera racemosa</i> var. <i>racemosa</i>	Yellow coralbells	G4G5T4	S4			4
<i>Elodea nuttallii</i>	Nuttall's waterweed	G5	SNR			3
<i>Epilobium luteum</i>	Yellow willow-herb	G5	S3			4
<i>Erigeron cascadenis</i>	Cascade daisy	G4	S4			4
<i>Gentiana newberryi</i> var. <i>newberryi</i>	Newberry's gentian	G4T3T4	S2			2
<i>Hieracium horridum</i>	Shaggy hawkweed	G4	S1			2
<i>Hierochloe odorata</i>	Holy grass	G5	S3			4
<i>Lilaea scilloides</i>	Flowering quillwort	G5?	S3?			4
<i>Limosella acaulis</i>	Owyhee mudwort	G5	SNR			3
<i>Lycopodium annotinum</i>	Stiff clubmoss	G5	S3			4
<i>Mimulus jepsonii</i>	Jepson's monkeyflower	G4	S3			4
<i>Myriophyllum sibiricum</i>	Common water-milfoil	G5	S3			4
<i>Nama densum</i> var.	Compact fiddleleaf	G5T5	SNR			3

Scientific Name	Common Name	Global Rank*	State Rank*	Federal Status*	State Status*	ORBIC List*
parviflorum						
<i>Penstemon peckii</i>	Peck's penstemon	G3	S3	SOC		1
<i>Pilularia americana</i>	American pillwort	G5	S2			2
<i>Pinus albicaulis</i>	Whitebark pine	G3G4	S3?	C		4
<i>Poa lettermanii</i>	Letterman's bluegrass	G4	SNR			3
<i>Poa stenantha</i>	Narrow-flower bluegrass	G5	SNR			3
<i>Poa suksdorfii</i>	Suksdorf's bluegrass	G4	SNR			3
<i>Polystichum kruckebergii</i>	Kruckeberg's sword-fern	G4	S4			4
<i>Potamogeton berchtoldii</i>	Slender pondweed	G5	S3?			4
<i>Pyrola dentata</i>	Toothleaf pyrola	G4	S2?			2
<i>Scheuchzeria palustris</i> ssp. <i>americana</i>	Scheuchzeria	G5T5	S2			2
<i>Silene suksdorfii</i>	Suksdorf's campion	G4	S4			4
<i>Smelowskia ovalis</i> var. <i>ovalis</i>	Shortfruited smelowskia	G5T4	S4			4
<i>Spartina pectinata</i>	Prairie cordgrass	G5	SNR			3
<i>Sphenopholis obtusata</i>	Prairie wedgegrass	G5	SNR			3
<i>Stuckenia filiformis</i> ssp. <i>alpina</i>	Northern slender-leaved pondweed	G5T5	SNR			3
<i>Stuckenia filiformis</i> ssp. <i>occidentalis</i>	Western slender-leaved pondweed	G5T5	S3			4
<i>Thelypodium howellii</i> ssp. <i>howellii</i>	Howell's thelypody	G2T2	S1	SOC		1

\* For a description of the code, see: <http://orbic.pdx.edu/documents/2013-codes.pdf>

Source: Oregon Biodiversity Information Center 2013 Rare, Threatened, and Endangered Species in Oregon List. Accessed August 6, 2014.



## Appendix F-5: Deschutes County Weed List

### Deschutes County Weed Policy and Classification System

“NOXIOUS WEED” means any weed designated by the Deschutes County Board of Commissioners that is injurious to public health, agriculture, range, recreation, wildlife, or any public or private property; any weed that impacts and displaces desirable vegetation, such as Threatened and Endangered Plant Species, wildlife habitat, and livestock.

It is acknowledged that certain noxious weeds have become so thoroughly established and are spreading so rapidly on state, county, and federally owned lands, as well as on private land, that they may have been declared by Oregon Revised Statute 570.505 to be a menace to public welfare. Steps leading to eradication where possible, are necessary. It is further recognized that the responsibility for such eradication and/or intensive control rests not only on the private landowner and operator, but also the county, state and federal government.

### Noxious Weed Control Rating System

Noxious Weeds, for the purpose of this system, shall be designated “A”, “B” or “C”

1. An “A” designated weed is: a priority noxious weed designated by the Deschutes Weed Board as a target weed species on which the Weed Control District will comply with a state wide management plan and/or implement a county wide plan for intensive control and monitoring. An “A” rated weed may also be a weed of known economic or ecological importance which occurs in small enough infestations to make eradication/containment possible; or one that is not known to occur here, but its presence in neighboring counties make future occurrence here seem imminent.

Recommended Action: Infestations are subject to intensive control when and where found.

2. A “B” designated weed is: a weed of economic importance, which is both locally abundant and abundant in neighboring counties.

Recommended Action: Moderate control and or monitoring at the county level.

3. A “C” designated weed is: a weed that has the potential to cause harm to agriculture production and transportation systems.

Recommended Action: Control and monitoring at the county level.

### **“A” Rated Weeds**

African Rue	Peganum harmala
Buffalobur +	Solanum rostratum
Common Houndstongue	Cynoglossum officinale
Dyer’s Woad **	Isatis tinctoria

Eurasian Milfio +  
False Brome  
Giant Cane (Giant Reed)  
Hydrilla  
Leafy Spurge +  
Meadow Knapweed  
Mediterranean Sage +  
Medusahead Rye +  
Musk Thistle \*\*  
Orange Hawkweed +  
Perennial Pepperweed +  
Purple Loosestrife +  
Rush Skeletonweed  
Russian Knapweed +  
Saltcedar Tamarix +  
Scotch Thistle +  
Squarrose Knapweed  
Sulfur Cinquefoil  
Tansy Ragwort +  
Ventenata +  
Whitetop; Hoary Cress +  
Wild Carrot +  
Yellow Floating Heart  
Yellow Starthistle \*\*

#### **“B” Rated Weeds**

Canada Thistle +  
Dalmation Toadflax +  
Diffuse Knapweed +  
Kochia (annual) +  
Myrtle Spurge +  
Poison Hemlock +  
Puncturevine +  
Ribbon Grass +  
Russian Thistle +  
Scotch Broom  
Spotted Knapweed +  
Yellow Toadflax or “Butter and Eggs” +  
Yellowflag Iris +

#### **“C” Rated Weeds**

Bur Buttercup +  
Bull Thistle +  
Cheat Grass (Downy brome) +  
Common Mullein +  
Dodder +

Myriophyllum spicatum  
Brachypodium sylvaticum  
Arundo donax  
Hydrilla verticillata  
Euphorbia esula  
Centaurea pratensis  
Salvia aethiopis  
Taeniatherum caputmedusae  
Carduus nutans  
Hieracium aurantiacum  
Lepidium latifolium  
Lythrum salicaria  
Chondrilla juncea  
Acroptilon repens  
Tamarix ramosissima  
Onopordum acanthium  
Centaurea virgata  
Potentilla recta  
Senecio jacobaea  
Ventenata dubia  
Lepidium draba  
Daucus carota  
Nymphoides peltata  
Centaurea solstitialis

Cirsium arvense  
Linaria dalmatica  
Centaurea diffusa  
Kochia scoparia  
Euphorbia myrsinites  
Conium maculatum  
Tribulus terrestris  
Phalaris arundinacea var. picta  
Salsola spp.  
Cytisus scoparius  
Centaurea biedersteinii  
Linaria vulgaris  
Iris pseudacorus

Ranunculus testiculatus  
Cirsium vulgare  
Bromus tectorum  
Verbascum thapsus  
Cuscuta spp.

Field Bindweed +	Convolvulus arvensis
Filaree Redstem +	Erodium cicutarium
Horseweed +	Conyza Canadensis
Poverty Sumpweed +	Iva axillaries
Quackgrass +	Agropyron repens
Reed Canary Grass +	Phalaris arundinacea
South American Waterweed +	Elodea densa
Spiny Cocklebur +	Xanthium spinosum
St Johnswort +	Hypericum perforatum
Sweet Clover(s) -Only on Right of Ways +	Melilotus officinalis
Western Water-Hemlock / +	Cicuta douglasii+

**+ Currently in the County**

**\*\* All known populations have been treated**

**/ Natives but Poisonous to Animals or Humans**

## Appendix F-6: Individually Listed Properties on the National Register of Historic Places

Name of Property	Year Built	Address
Drake Park Historic District	1910	District
Old Town Historic District	Various	District
Emil & Ottilie Wienecke House	1924	1325 NW Federal Street
Jonathan N B Gerking House	1906	66725 Gerking Market Road
United States Post Office (Old)	1932	745 NW Wall Street
Bend Amateur Athletic Club Gymnasium	1917	520 NW Wall Street
Bend High School (Old)	1925	520 NW Wall Street
Boyd, Charles, Ranch House, Bunk House, Ice House	1905	20410 Rivermall Avenue
Congress Apartments	1924	221, 223, 225, 227, 229 NW Congress Street
Peter Byberg House	1916	153 NW Jefferson Place
Deschutes County Library	1938	507 NW Wall Street
Downing Building	1920	1033-1035 NW Bond Street
Hope-Van Allen House	1927	352 NW Drake Road
Simpson E. Jones House	1924	1535 NW Awbrey Road
Thomas McCann House	1915	440 NW Congress Street
Robert Moore House	1921	545 NW Congress Street
O'Kane Building	1916	115 NW Oregon Avenue
New Taggart Hotel	1911	215 NW Greenwood Avenue
George Palmer Putnam and Dorothy Binney House	1911	606 NW Congress Street
Reid School	1914	460 NW Wall Street
Evan Andreas Sather House	1911	7 NW Tumalo Avenue
N. P. (Nicholas Paul). Smith Pioneer Hardware	1909	935-937 Wall Street
B. A. (Byron A."Dutch" and Ruth) Stover House	1924	1 NW Rocklyn Road
Trinity Episcopal Church	1929	469 NW Wall Street

Source: Oregon State Historic Preservation Office: <http://heritagedata.prd.state.or.us/historic/>

## Appendix F-7: Historic Designations

### City of Bend Historic and Cultural Resources Designated by the City Council

<u>File Number</u>	<u>Historic Site / Name</u>	<u>Address</u>	<u>Tax Map Number</u>
1848 TL/08700	<b>1813 Rock</b> <i>in museum</i>	129 NW Idaho Ave.	17-12-32CA
	1813		
126 TL/05100	<b>Drake, A.M. Lodge</b> <i>demolished</i>	Drake Park	17-12-32BD
	1901		
44 TL/08600	<b>Bend Athletic Club Gym*</b>	520 NW Wall St.	17-12-32CA
	1918		
10 TL/00132	<b>Oregon Trunk Railroad Passenger Depot</b>	313 Shevlin-Hixon Drive	18-12-0500
	1911 moved		
22 TL/07100	<b>Bend School Landmark</b>	Drake Park	17-12-32BD
	1877 <i>demolished</i>		
18 TL/01500	<b>Bend Water &amp; Light Co. Powerhouse and Dam</b>	Foot of Vermont St.	17-12-32AC
	1909		
25 TL/03200	<b>Bend Woolen Mill</b>	1854 NE Division St.	17-12-29DD
	1923		
24 TL/05100	<b>Central Oregon Pioneers Landmark</b>	Pioneer Park	17-12-32AB
	1923		
118 TL/07300	<b>Downing Hotel and Café*</b>	1033 NW Bond St.	17-12-32AC
	1920 <i>listed on the National Register of Historic Places in November 2004</i>		
20	<b>First Presbyterian Church*</b> 157 NW Franklin Ave.		17-12-32DB TL/11001
	1912		
39 TL/01800	<b>Foley Landmark</b>	Pilot Butte State Park	17-12-34
	<i>Land donated in 1928 to public in his honor</i>		
113 TL/00200	<b>French, A. L. House*</b>	429 NW Georgia	17-12-32CD
	1912		
267 TL/04400	<b>Hoovers Universal Garage</b>	124-128 NW Greenwood	17-12-32AC
	1915		
23 TL/07100	<b>Johns Landmark</b>	Drake Park	17-12-32BD
	1928 <i>drowning</i>		

109	<b>Kenwood School</b>	701 NW Newport Ave.	17-12-32BC
TL/04900	1920		
119	<b>Liberty Theater*</b>	849 NW Wall St.	17-12-32BD
TL/06200	1917		
115	<b>Lucas, A. C. House</b>	42 NW Hawthorne Ave.	17-12-32DA
TL/01800	1910 ( <i>first brick house in Bend</i> )		
125	<b>Steidl and Tweet Dam</b>	Division St. near Yale Ave.	17-12-29AD
TL/04300	<b>(DCMID Irrigation Dam)</b>		
	1912		
272	<b>McCann, Thomas House*</b>	440 NW Congress St.	17-12-32CB
TL/03200	1915		
120	<b>Trinity Episcopal Church*</b>	469 NW Wall St.	17-12-32CA
TL/04000	1929		
281	<b>Niswonger, C. P. House</b>	44 NW Irving	17-12-32AD
TL/04800	1910		
19	<b>O’Kane Building*</b>	115 NW Oregon Ave.	17-12-32AC
TL/06200	1916		
11	<b>Oregon Trunk Freight</b>	Division St.	17-12-32AD
TL/05000	<b>Warehouse Site</b>		
	1912 <i>demolished</i>		
121	<b>Putnam, George Palmer House*</b>	606 NW Congress St.	17-12-32CA
TL/02900	1911		
288	<b>Pilot Butte Inn Site*</b>	1133 NW Wall St.	17-12-32AC
TL/01400	1902, 1903, 1916 <i>demolished June 15, 1973</i>		
13	<b>Tucker, A. J. Blacksmith Shop</b>	200-202 NW Greenwood	17-12-32AC
TL/02700	1919		
102	<b>Reed, James E. House</b>	45 NW Greeley Ave.	17-12-32DA
TL/05300	1904		
21	<b>Reid School*</b>	129 NW Idaho Ave.	17-12-32CA
TL/08700	1914		
135	<b>St. Francis Catholic Church*</b>	494 NW Lava Rd.	17-12-32DB
TL/11900	1920 ( <i>2001 NRHP</i> )		
16	<b>Shevlin Hixon Mill Site*</b>	Shevlin Center	18-12-
05BB TL/00300	1915 <i>demolished</i>		
123	<b>Smith, N. P. Hardware Store *</b>	935-937 NW Wall St.	17-12-32BD
TL/06800	1910		

93	<b>U.S. Post Office*</b>	777 NW Wall St.	17-12-32CA
	TL/08300		
	1932		
90	<b>Weist Home Site Landmark</b>	1315 NE 3rd St.	17-12-33BB
	TL/06400		
	1914, <i>demolished</i>		
12	<b>West, John I. Building</b>	130 NW Greenwood Ave.	17-12-32AC
	TL/04300		
	1911		
14	<b>Wright Hotel*</b>	215 NW Greenwood Ave.	17-12-32AC
	TL/07700		
	1911, <i>partially demolished in 1989</i>		
	Adopted August 17, 1988		
	Resolution 1857		
110	<b>Sawyer, Robert House</b>	434 Drake Rd.	17-12-32BC
	TL/01000		
	1913		
103	<b>Sather, Evan A. House*</b>	7 NW Tumalo	17-12-32CB
	TL/12900		
	1911		
116	<b>Allen, Herbert E. House*</b>	875 Brooks St.	17-12-32BD
	TL/04900		
	<i>1904 (Oldest house in Bend. Officially named the Goodwillie, Allen-Rademacher house)</i>		
	Adopted April 17, 1991		
	Resolution 1963		
280	<b>Nelson, August Building</b>	838 NW Bond St.	17-12-32DB
	TL/03700		
	1916		
133	<b>Cozy Hotel</b>	327 NW Greenwood	17-12-32AC
	TL/07500		
	1917		
15	<b>Brooks-Scanlon Office</b>	15 SW Colorado Ave	18-12-05BB
	TL/00200	<b>Building Site</b> (Lumberman's Hospital)	
	1919 <i>demolished in 1987 to make way for new office building</i>		
17	<b>Brooks-Scanlon Crane Shed</b>	721 SW Industrial Way	18-12-05BA
	TL/00600		
	1937 <i>demolished illegally on August 19, 2004</i>		
249	<b>Brooks-Scanlon Mill "A" Sawmill</b>	805 SW Industrial Way	18-12-05BA
	TL/00400		
	1915 (Removed from resource list by City Council in 2006.)		
124	<b>Boyd, Charles Homestead*</b>	20410 Bend River Mall	17-12-21C
	TL/00902		
	1905-1909 <i>moved to make way for Bend River Mall</i>		
	Revised March 3, 1993		
	Bend Area General Plan		
247	<b>Old Bend High School*</b>	520 NW Wall St.	17-12-32CA
	TL/08600		

	1914		
269	<b>Keyes, John P. House*</b>	912 NW Riverside Blvd	17-12-32CA
	TL/02600		
	1912		
276	<b>Mountain View (Mayne) Hospital*</b>	515 NW Kansas Ave.	17-12-32CB
	TL/01900		
	1919		
291	<b>Moore, Robert D. House*</b>	545 NW Congress St.	17-12-32CB
	TL/02700		
	(Shevlin-Hixon Exec. House)		
	1921		
294	<b>Stover, Ruth and Dutch A. House*</b>	1 NW Rocklyn Road	17-12-32BD
	TL/03200		
	1927		
260	<b>Deschutes County Library*</b>	507 NW Wall St.	17-12-32CA
	TL/08500		
	1938		
	Adopted March 3, 1993		
	Resolution 2057		
101	<b>Delaware Grocery*</b>	845 NW Delaware	17-12-32CD
	TL/13000		
	1923		
98	<b>Bend Clinic</b>	731 NW Franklin Ave.	17-12-32CA
	TL/01300		
	1924		
107	<b>O'Donnell Building</b>	933 NW Wall St.	17-12-32BD
	TL/06700		
	1912		
111	<b>Pierson, Pete Blacksmith Shop</b>	211 NW Greenwood	17-12-32AC
	TL/08700		
	1923	(at the corner of Harriman)	
122	<b>Spheir, D. H. Building</b>	901 NW Bond St	17-12-32AC TL/05700
	1917	(at the corner of Minnesota)	
	Adopted January 15, 1992		
	Resolution 2001		
No #	<b>Nels and Lillian Andersen House</b>	63160 Nels Anderson Rd	17-12-21B0
	Adopted July 15, 2009		
	Ordinance NS-2123		

\* Property is also listed on the National Register of Historic Places



## Appendix F-8: Properties Funded with Land and Water Conservation Fund Grants

<b>Grant Title</b>	<b>Grant Sponsor</b>	<b>Amount</b>	<b>Date Approved</b>
Columbia Park Development	City of Bend	\$5,792.50	11/3/1966
Columbia Park Development #2	City of Bend	\$5,525	12/5/1968
Columbia Park Development Phase 3	City of Bend	\$4,800	11/17/1969
Dutch Stover Park	City of Bend	\$3,750	6/25/1970
Dutch Stover Park Development	City of Bend	\$4,925	10/27/1970
Dutch Stover Park, Phase 2	City of Bend	\$7,970	12/8/1971
Bend Swimming Pool Rehabilitation	City of Bend	\$39,128	5/5/1972
Vince Genna Stadium Lights	City of Bend	\$18,695.67	7/16/1973
Juniper Park Tennis Courts & Landscaping	City of Bend	\$36,000	1/24/1975
Mirror Pond Acquisition	City of Bend	\$59,854	5/23/1974
Shevlin Park Water System	City of Bend	\$7,404.84	6/26/1974
Ponderosa Park Picnic Area	Bend Park and Recreation District	\$17,104.72	6/23/1977
Juniper Park Covered Pool	Bend Park and Recreation District	\$737,338.82	1/17/1978
Skyline Park Development, Phase 1	Bend Park and Recreation District	\$93,710.84	8/24/1978
Hollinshead Acquisition Development	Bend Park and Recreation District	\$90,365	1/26/1984
Kiwanis Park Development	Bend Park and Recreation District	\$47,666.83	12/4/1984
Hillside Park Phase 2	Bend Park and Recreation District	\$15,967.25	4/26/1990
Sawyer Park Bridge Access & Safety Improvements	Bend Park and Recreation District	\$102,500	8/22/2003

Source: United States Department of the Interior, National Park Service, Land & Water Conservation Fund: Detailed Listing of Grants Grouped by County. Available at: <http://waso-lwcf.nrcr.nps.gov/public/index.cfm>. Accessed July 30, 2014. Properties within the BMPO boundary only.

## Appendix F-9: Metadata for Maps

Compiled by: Jude Fulghum, City of Bend, Engineering/GIS Department

### **Layers Included on All Maps:**

The following layers are included on all maps. These layers were created locally in 2007, either by the City of Bend or Deschutes County GIS departments under the direction of planning staff for the initial development of the Environmental Considerations chapter of the Bend Metropolitan Transportation Plan.

- Bend City Limits
- Study Area Boundary
- Arterial/Collector Roads- Bend has many roundabouts located on arterial and collector streets which are shown as circles
- State Highways
- Deschutes River

The layer, MPO Boundary, found on all maps was given to the City by the Oregon Department of Transportation (ODOT).

The Deschutes County GIS department also created several other layers present on many of the maps:

- Streams
- Railroad
- Canals

Metadata applicable to specific map layers includes:

Map 1: Relief Map: Hillshade relief layer supplied by Deschutes County GIS department. This file was created in 1998.

Map 2: Zoning: Zoning layer created and updated by Deschutes County GIS department. City of Bend information derived from City Zoning Ordinance.

### Map 3: Utilities:

- Pressure and gravity sewer line data was obtained from the City of Bend and represents those lines 10" in diameter or larger.
- Water line information was obtained from the City of Bend and shows those lines 8" in diameter or larger.
- Gravity interceptor information was provided to the City of Bend by an outside consultant working on the development of the City's Sewer Master Plan.

- Avion water lines were obtained from Avion Water in May 2006, and include lines with 8" diameter or greater.

#### Map 4: Stormwater:

- River drainage layer drawn by City of Bend GIS staff based on catch basin system with flow to the Deschutes River. See notes below regarding the accuracy of catch basin data.
- City of Bend stormwater data only provided for locations for which the City is responsible for maintaining (i.e., structures found on private property are not included). Accuracy of drill hole, drywell, and catchbasin layers based on the following:
  - All locations prior to May 2003 were entered by hand, based on flat maps updated by City of Bend street department,
  - All locations between May 2003 and April 2005 were determined by GPS position, with accuracy of approximately 1 meter, and typically only reflects new construction,
  - All locations after April 2005 were determined by GPS position, with accuracy of approximately 1 inch, and typically only reflects new construction (or occasional update of existing data).
- Deschutes County stormwater data was obtained from the Deschutes County GIS department and shows locations on County owned properties within the study boundary. Classifications of feature types are slightly different from the City's. The City obtains a GPS feature for each type; the County has one feature that may include more than one type. Please see the legend of this map for symbology.

#### Map 5: Water Quality:

- The top five (5) drainage problem areas were identified as part of the City of Bend Master Plan workshop in January, 2007.
- The DEQ 2002 303(d) streams GIS coverage was obtained from the Department of Environmental Quality (DEQ) and reflects 2002 data. According to DEQ, the list includes data submitted by individuals, organizations and government agencies as well as DEQ's own monitoring information.
- Subbasin information was generated for the City of Bend by MWH, a private consulting firm, contracted to develop the City's Sewer Master Plan. Subbasin information is reflected as of September 14, 2005.

#### Map 6: Environmental Health:

- Information regarding the location of the wells was obtained from the Deschutes County GIS department and represents the Public Water System groundwater well, infiltration gallery, and spring locations used for drinking water. The layer includes Department of Environmental Quality (DEQ) and Oregon Department of Human Services' (DHS) Drinking Water Program Source Water Assessment results for systems active in June 1999.
- Location of service stations was obtained using Deschutes County GIS department layers, and was based on a query through the County's factor book

(property class and stat class codes) which describes improvements on Deschutes County properties. The query singled out all properties identified as commercial automotive Service Stations, but may be incomplete.

- Well protection area information was obtained from the Department of Environmental Quality (DEQ) in 2005 and may have inaccuracies based on lack of groundtruthing of well locations.
- Avion Water District boundary obtained from GIS department at Avion Water. Roats boundary drawn based on flat map information provided by Roats Water. City of Bend boundary based on remainder of area within City's city limits.

Map 7: Irrigation Service Areas: Sources for GIS layers for boundary lines for the four irrigation districts affected by the study are listed below. Note that irrigation boundaries may overlap each other as some districts serve customers of other districts.

- Central Oregon Irrigation District (COID): obtained directly from the District's GIS department,
- Arnold Irrigation District: obtained from Geo-Spatial Solutions, a GIS consulting firm located in Bend, Oregon specializing in water resource issues,
- Swalley and Tumalo Irrigation Districts: obtained from the Deschutes County GIS department and verified as current by Geo-Spatial Solutions.

Map 8: Fish Passage:

- Source for the information on bridges in the study area was derived from the National Bridge Inventory System which was supplied to the Deschutes County GIS department by the Oregon Department of Transportation (ODOT).
- Dam and diversion locations verified by the City of Bend.

Map 9: Natural Resource Protection Areas:

- Approved Waterway Overlay Zone (WOZ) and Upland and River Areas of Special Interest (ASI) layers for the City of Bend were originally created by the Deschutes County GIS department based on formal ordinances approved by the City of Bend's City Council.
- County ASI data was obtained from the Deschutes County GIS department.
- City Significant Goal 5 Wetlands were created in late 2000 as the result of a Riverway project grant. The GIS layers were created from maps drawn as the result of a wetland inventory conducted by an outside consultant as part of that grant.
- The NWI Wetlands layer was obtained from the Deschutes County GIS department, and reflects wetlands area location and classification as defined by the U.S. Fish & Wildlife Service.
- The Open Space Conservation and Wildlife Area layers were obtained from the Deschutes County GIS department and are compiled from their zoning ordinance.
- Eagle nest vicinity information supplied by the Oregon Department of Fish and Wildlife (ODFW) from the Isaacs and Anthony databases.

Map 10: Vegetation: The vegetation information was obtained from the Deschutes County GIS department and presents the current distribution of ecological systems (as defined by NatureServe, [www.natureserve.org](http://www.natureserve.org)) in Deschutes County.

Map 11: Natural Hazards:

- The earthquake fault line was obtained from Deschutes County's GIS department.
- 100 foot contour line data was obtained from Deschutes County's GIS department (for areas outside of the City of Bend). 50 foot contour lines within the City of Bend were supplied by 3Di, a consulting firm hired by the City to fly an aerial view of the city limits and provide topographic information resulting from that flight (flown in April, 2005).
- Slope data was obtained from the Deschutes County GIS department and depict slopes with a 25% grade or greater.
- Surface mine and surface mining impact area information was obtained from the Deschutes County GIS department. The surface mine information is part of the zoning ordinance, and the impact area represents a half mile buffer around the surface mining zones.
- Fire history information was obtained from the Deschutes County GIS department and depicts historical wildfire locations in the study area from 1908 through 2006.
- FEMA 100 foot floodplain information was obtained from the Deschutes County GIS department and is based on Flood Insurance Rate Maps published by the Federal Emergency Management Agency (FEMA).

Map 12: Soil Conductivity: Hydrologic soil group information was obtained from the U.S. Department of Agriculture and, according to USDA, "represent estimates of runoff potential with soils being assigned to one of four groups according to the rate of water filtration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-term storms".

Map 13: Scenic Resources:

- The Federal Wild and Scenic Waterway and the Oregon Scenic Waterway layers were obtained from Deschutes County's GIS department and represent waterways designated as scenic by either the United States Congress or the Oregon legislature.
- The two County Landscape Management layers were also obtained from Deschutes County's GIS department and represent corridors identified in the Comprehensive Plan and Zoning maps as important to the maintenance of natural and scenic resources.
- The Cascade Lakes National Scenic Byway information was obtained from the Deschutes National Forest based on the road's selection in 1989 as a National Scenic Byway by Scenic America.

#### Map 14: Cultural Resource Protection:

- Historical designations identify properties with significant historical and cultural heritage values. Properties are identified as historic resources by the Deschutes County Landmark Commission and Bend City Council. Some historic resources shown are granted status through the National Register of Historic Places while others do not have the same level of protection granted through the National Register.
- The Central Oregon Heritage Group High Sensitivity Area information was obtained from the Bureau of Land Management.
- Craftsman style bungalow information was obtained through the Des Chutes Historical Center, and was prepared in November, 1999.

#### Map 15: Public Lands and Trails:

- The trail system layer was obtained from Deschutes GeoGraphics, an outside consultant hired by the City of Bend in 2006 to create an updated bike and trail system map. This layer was originally sent to the consultant on 8/3/05 by the Bend Park and Recreation District, but was modified in the process of creating the City's bike and ped plan. Some alignments were changed, but the majority of trail additions were included. This layer is displayed along with an additional layer updated and given to the City by the Bend Park and Recreation District in April, 2007.
- Park Area information consists of two GIS layers. "Other Parks" was obtained from the Deschutes County GIS department and includes parcel outlines of parks, state parks, city parks, rural parks, as well as campgrounds, trailheads, boat launches, and other features. Laid over this layer is "Bend Metro Parks" which is a GIS layer received from Bend Park and Recreation District in April, 2007.
- The remaining layers (County Land, Federal Land, State Land, Public Lands) associated with government owned land were obtained from the Deschutes County GIS department and are based on parcel ownership.

Map 16: Percent of Minority Households: Information regarding the percent of minority households was obtained from the Oregon Department of Transportation (ODOT), although ODOT did not create and does not maintain this GIS data. The original data was created by the Oregon Geospatial Enterprise Office (GEO) from Year 2000 census blockgroup boundaries, using US Census Bureau information. "Minority households" refers to non-White and White Hispanic persons.

Map 17: Percent of Low Income Households: Information regarding the percent of minority households was obtained from the Oregon Department of Transportation (ODOT), although ODOT did not create and does not maintain this GIS data. The original data was created by the Oregon Geospatial Enterprise Office (GEO) from Year 2000 census blockgroup boundaries, using US Census Bureau information. Data refers to the percent of persons in households with incomes below the poverty threshold, as defined by the US Environmental Protection Agency in the "National Guidance for Conducting Environmental Justice Analyses" document (1998).

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## **Appendix F-11: Maps**

The following maps are based on data collected in 2007 for the initial development of the Environmental Considerations chapter of the Bend Metropolitan Transportation Plan.

- Map 1: Relief Map
- Map 2: Zoning
- Map 3: Utilities
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