TERRESTRIAL ECOSYSTEM MAPPING OF COLDSTREAM - VERNON

For portions of map sheets **082L.014, 082L.015, 082L.024, 082L.025, 082L.034** and **082L.035**

Scale 1:20,000

2007

Introduction

This project provides detailed ecosystem mapping of the District of Coldstream, portions of the City of Vernon, and Kalamalka Park and Protected Area and Cougar Canyon Ecological Reserve. Project boundaries extend from the northern edge City of Vernon, west to the Bella Vista - Goose Lake Range, east to the edge of the District of Coldstream and south to the Vernon Commonage and District of Lake Country.

This detailed ecosystem mapping will provide baseline information for land use planning products such as a Sensitive Ecosystems map. Wildlife habitat maps were produced for the following at-risk species: Great Basin Spadefoot, Painted Turtle, Gopher Snake, Western Rattlesnake, Swainson's Hawk, Long-billed Curlew, Western Screech-owl, Yellow-breasted Chat, Grasshopper Sparrow, Spotted Bat, and Badger.

Mapping used the provincially recognised methodology in *Standard for Terrestrial Ecosystem Mapping in British Columbia* (Resources Inventory Committee 1998). Fieldwork was completed in June – July 2007 (survey intensity level 4).

Map Unit Boundaries

Ecosection Map Unit	Study area boundary
Biogeoclimatic Map Unit	Plot location symbol ◆
Ecosystem Map Unit	

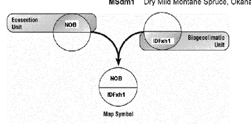
Ecosection and Biogeoclimatic Unit Symbols

Ecosections:

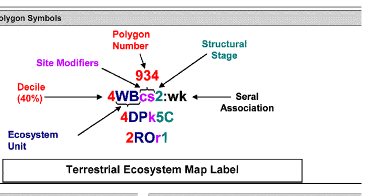
NOB	North Okanagan Basin
NOH	North Okanagan Highlands
SHB	Shuswap Basin

Biogeoclimatic Units:

IDFdm1	Dry Mild Interior Douglas-fir, Kettle Variant
IDFmw1	Moist Warm Interior Douglas-fir, Okanagan Variant
IDFxh1	Very Dry Hot Interior Douglas-fir, Okanagan Variant
MSdm1	Dry Mild Montane Spruce, Okanagan Variant



Ecosystem Polygon Symbols



Terrestrial Ecosystem Map Label

Site Modifiers

Code	Criteria
a	Active floodplain
c	Coarse-textured soils
d	Deep soils (>1m)
f	Fine-textured soil
g	Site occurs in a gully
j	Gentle to moderate slope (<25%)
k	Cool aspect (25% - 100% slope, 285° - 135°)
n	Colluvial or fluvial fan
p	Occurs on organic (peat) at least 15cm deep
q	Very steep cool aspect (>100% slope, 285° - 135°)
r	Ridged or ridge crest
s	Shallow soil (20 – 100cm to bedrock)
t	Terrace or fluvial plains or benches
v	Very shallow soil (<20 cm. to bedrock)
w	Warm aspect (>25% slope, 135° - 285°)
x	Drier than typical
y	Moister than typical
z	Very steep warm aspect (>100% slope, 135° - 285°)

Structural Stages

Code	Structural stage
1	Non-vegetated / sparsely vegetated (<10% cover)
2	Herb
3	Shrub/Herb
4	Pole/Sapling; dense, single layered forests
5	Young Forest; more open than stage 4; may have a few mature trees
6	Mature Forest; dominated by mature trees with some scattered old trees
7	Old Forest (generally >250 years old); dominated by old trees; generally open forests

Ecosystem Units

IDFdm1 Interior Douglas-fir dry mild Kettle variant

Map Code	Site Series	Ecosystem Unit Name	Assumed Modifiers	Typical Conditions
DP	04	Douglas-fir – Pinegrass – Kinnikinnick	d, j, m	Drier forests on gentle slopes.
DT	01	Douglas-fir – Lodgepole pine – Pinegrass – Twinflower	d, j, m	Mesic and near mesic forests. Seral forests dominated by lodgepole pine, mature forests dominated by Douglas-fir.
DW	03	Douglas-fir / Ponderosa pine – Bluebunch wheatgrass - Pinegrass	d, m, w	Open grassy forests on warm slopes.
SB	00	Selaginella – Bluebunch wheatgrass	j, v	This grassland ecosystem commonly occurs on gently sloping, unfractured, low relief bedrock outcrops.
SD	06	Hybrid white spruce – Douglas-fir – Dogwood - Gooseberry	d, j, m	Moist forests often associated with creeks and gullies.
SO	00	Saskatoon – Mock orange Talus	c, d	This shrubby ecosystem is associated with steep, blocky talus slopes.
SP	05	Douglas-fir – Western larch – Spruce - Pinegrass	d, j, m	Moist forests on lower and toe slopes and seepage sites.
WJ	02	Bluebunch wheatgrass – Junegrass	d, m, w	Steep, warm grassland slopes.

Ecosystem Units

IDFmw1 Interior Douglas-fir moist warm subzone Okanagan variant

Map Code	Site Series	Ecosystem Unit Name	Assumed Modifiers	Typical Conditions
BM	00	Bulrush Marsh	d, f, j	This bulrush dominated wetland occurs as a fringe along ponds and other wetland ecosystems.
CT	00	Cattail Marsh	d, j, m	Marsh ecosystem occurring as a fringe on ponds or in small depressions.
DF	01	Douglas-fir / Western redcedar – Falsebox – Prince's pine	d, j, m	Forested ecosystem associated with mesic gently sloping sites.
DP	04	Douglas-fir – Pinegrass – Feathermoss	d, j, m	Forested ecosystem occurring on moderate warm aspects.
DS	02	Douglas-fir / Ponderosa pine – Snowberry – Bluebunch wheatgrass	d, j, m	Forested ecosystem occurring on very shallow soils.
FW	00	Idaho fescue – Bluebunch wheatgrass	d, j, m	Grassland ecosystem occurring on gentle slopes and cool aspects.
PP	03	Douglas-fir – Penstemon – Pinegrass	d, m, w	Forested ecosystem occurring on steep warm aspects.
RD	06	Western redcedar – Devil's club – Foamflower	d, j, m	Forested ecosystem occurring on moist lower and toe slopes with subsurface seepage.
RF	00	Prairie Rose – Idaho fescue	d, j, m	Shrubby ecosystem occurring in moisture collecting depressions in grassland areas.
RR	05	Western redcedar / Douglas-fir - Dogwood	d, j, m	Forested ecosystem occurring on gentle receiving sites.
SB	00	Selaginella – Bluebunch wheatgrass	j, v	Grassland ecosystem commonly occurring on gently sloping, unfractured bedrock outcrops.
SE	00	Sedge Meadow	d, j, p	Generalized wetland ecosystem on peat, dominated by sedges.
SO	00	Saskatoon – Mock orange Talus	c, d	Shrubby ecosystem associated with steep, blocky talus slopes.
WB	00	Bluebunch wheatgrass – Balsamroot	d, m, w	Grassland ecosystem occurring on warm aspects with deep, medium-textured soils
Ws01	00	Mountain alder – Skunk cabbage – Lady fern	d, j, m	Swamp wetland ecosystem occurring on moist sites with subsurface water flow.

Ecosystem Units

IDFxh1 Interior Douglas-fir very dry hot subzone Okanagan variant

Map Code	Site Series	Ecosystem Unit Name	Assumed Modifiers	Typical Conditions
AS	98	Trembling aspen – Snowberry – Kentucky bluegrass	d, j, m	Trembling aspen ecosystem occurring in large, broad depressions in grassland areas.
BM	00	Bulrush Marsh	d, f, j	Wetland ecosystem occurring as a fringe along ponds and other wetlands.
BN	96	Kentucky bluegrass – Stiff needlegrass	d, j, m	Grassland ecosystem found in small moist depressions.
BR	00	Baltic Rush Marsh-Meadow	d, f, j	Marsh-meadow occurring along the edges of ponds and shallow open water and wet depressions.
CD	00	Black cottonwood / Douglas-fir – Snowberry –Dogwood	d, j, m	Forest ecosystem found on floodplains and as a fringe along the edge of ponds and lakes.
CG	00	Reed Canary Grass Marsh	d, j, m	Marsh dominated by reed canarygrass, may have been dominated by other marsh vegetation species at an earlier time.
CT	00	Cattail Marsh	d, j, m	Marsh ecosystem occurring as a fringe on ponds or in small depressions.
CW	00	Choke cherry – Bluebunch wheatgrass	j, v	Shrubby ecosystem occurring on fractured rock bluffs.
DP	01	Douglas-fir / Ponderosa pine – Pinegrass	d, j, m	Forested ecosystem associated with mesic gently sloping sites.
DS	07	Douglas-fir / Ponderosa pine – Snowberry – Spirea	d, j, m	Moist shrubby, forested ecosystem associated with gentle lower sites and gullies.
DW	03	Douglas-fir – Ponderosa pine – Bluebunch wheatgrass – Pinegrass	d, m, w	Dry, forested ecosystem with grassy understory commonly occurring on warm aspects.
FO	00	Douglas-fir / Ponderosa pine – Saskatoon – Mock orange	c, d	Shrubby, forested ecosystem occurring on moderate, rocky slopes.
FW	91	Idaho fescue – Bluebunch wheatgrass	d, j, m	Grassland ecosystem occurring on gentle slopes and cool aspects.
PB	02	Douglas-fir – Ponderosa pine – Bluebunch wheatgrass – Balsamroot	m, s, w	Dry forested ecosystem associated with warm slopes, and very shallow soils.
RF	97	Prairie Rose – Idaho fescue	d, j, m	Shrubby ecosystem commonly occurring in moisture collecting depressions in grassland areas.
RS	00	Western red cedar - Douglas-fir – False Solomon's Seal	d, j, m	Forested ecosystem associated with creeks and gullies in areas with cold air drainage.
SA	00	Antelope brush – Selaginella	j, m, s	Shrubby ecosystem occurring on very shallow soil pockets on fractured rock outcrops.
SB	00	Selaginella – Bluebunch wheatgrass	j, v	Grassland ecosystem commonly occurring on gently sloping, unfractured bedrock outcrops.
SD	08	Hybrid white Spruce – Douglas-fir – Douglas maple – Dogwood	d, j, m	Moist forested ecosystem associated with gullies, creeks and the edges of ponds and wetlands.
SO	00	Saskatoon – Mock orange Talus	c, d	Shrubby ecosystem associated with steep, blocky talus slopes.
SP	04	Douglas-fir – Ponderosa pine – Snowbrush – Pinegrass	d, j, m	Forested ecosystem associated with submesic sites.
WB	93	Bluebunch wheatgrass – Balsamroot	d, m, w	Grassland ecosystem occurring on warm aspects.
WS	09	Willow – Sedge Wetland	d, j, m	Shrubby swamp or sedge marsh wetland ecosystem occurring at the edges of ponds and other wetlands.
Ws01	00	Mountain alder – Skunk cabbage – Lady fern	d, j, m	Swamp wetland ecosystem occurring on moist sites with subsurface water flow.

Ecosystem Units

MSdm1 Montane Spruce dry mild subzone Okanagan variant

Map Code	Site Series	Ecosystem Unit Name	Assumed Modifiers	Typical Conditions
DP	02	Douglas-fir – Big sage - Pinegrass	j, r, s	Forested ecosystem occurring on shallow soil crests and ridges.
PG	03	Lodgepole pine – Grouseberry – Cladonia	d, j, m	Forested ecosystem common on moderate to steep warm aspects.
PP	04	Lodgepole pine – Pinegrass – Kinnikinnick	d, j, m	Forested ecosystem occurring on slightly drier sites.
SF	01	Hybrid white spruce – Falsebox – Feathermoss	d, j, m	Forested ecosystem associated with mesic, gently sloping sites.
SG	06	Hybrid white spruce – Gooseberry	d, j, m	Forested ecosystem associated with moist, gently sloping sites.
SH	07	Hybrid white spruce – Trapper's tea – Horsetail	d, j, m	Forested ecosystem occurring on level sites with a high water table.
SO	00	Saskatoon – Mock orange	c, d	Shrubby ecosystem associated with steep, blocky talus slopes.
WS	08	Willow – Sedge	d, j, p	Generic shrubby swamp or sedge fen wetland occurring on organic soils

Ecosystem Units

Non-vegetated, sparsely vegetated, and anthropogenic units in all subzones

Map Code	Ecosystem Unit Name	Typical Conditions
BE	Beach	An area of sorted sediments, created by wave action, along the lakeshore.
BI	Blockfield	Level or gently sloping areas covered by angular blocks of rock that have not undergone significant downslope movement.
CB	Cutbank	A part of a road corridor or river course situated upslope of the road or river, which is created by excavation and/or erosion of the hillside.
CF	Cultivated field	A flat or gently rolling, non-forested open areas that are subject to human agricultural practices.
CL	Cliff	A steep, vertical or overhanging rock face.
CN	Canal	An artificial watercourse created for transportation, drainage, and/or irrigation purposes.
CO	Cultivated orchard	An agricultural area composed of single or multiple fruit bearing tree species planted in rows.
ES	Exposed soil	An area of exposed soil that is not included in any of the other definitions.
GC	Golf course	Flat to gently rolling grass covered fairways, separated by rows of shrubs and trees, used for golf.
GP	Gravel Pit	An area exposed through the removal of sand and gravel.
LA	Lake	A body of fresh water > 2m deep > 5ha.
OW	Shallow open water	Permanent shallow open water < 2m deep, lacking emergent plant cover. May dry up some summers if mapped with an 'x' modifier.
PD	Pond	Small body of water > 2m deep < 5ha.
RE	Reservoir	An artificial basin of water created by a human-made structure such as a dam, berm, dyke, or wall.
RN	Railway Surface	A railway with fixed rails for single or multiple rail lines.
RO	Rock outcrop	A sparsely vegetated, gentle to steep, bedrock escarpment or outcropping.
RW	Rural	An area where the residences are intermixed with forested or agricultural lands.
RZ	Road surface	An area cleared and compacted for the purposes of transporting goods and services by vehicle.
TA	Talus	Angular rock fragments accumulated at the foot of steep rock slopes due to rock fall.
UR	Urban/Suburban	An area in which residences and other human developments cover the landscape.

Grassland Seral Associations

Ecosystem Unit	Code	Name	Description
FW	fc	*Idaho fescue – cheatgrass*	Mid and late seral sites dominated by Idaho fescue and invasive annual bromes, especially cheatgrass, and a variety of native grassland forbs.
	kc	*Knapweed – Cheatgrass*	Early and very early seral sites dominated by invasive alien plants. There are few or no native bunchgrasses remaining on these sites.
	nc	*Columbia needlegrass – cheatgrass*	Early seral sites dominated by Columbia needlegrass and invasive annual bromes and a variety of native grassland forbs.
	wk	*Bluebunch wheatgrass – Knapweed*	Mid- to late-seral sites dominated by bluebunch wheatgrass with some knapweed or cheatgrass or other invasive alien plants.
SB	cg	*Cheatgrass*	Mid- to early-seral sites with cheatgrass, sulphur cinquefoil or other invasive alien plants and selaginella and rusty steppe moss.
WB	kc	*Knapweed – Cheatgrass*	Early and very early seral sites dominated by invasive alien plants. There are few or no native bunchgrasses remaining on these sites.
	nc	*Columbia needlegrass – cheatgrass*	Early seral sites dominated by Columbia needlegrass and invasive annual bromes and a variety of native grassland forbs.
	wk	*Bluebunch wheatgrass – Knapweed*	Mid- to late-seral sites dominated by bluebunch wheatgrass with some knapweed or cheatgrass or other invasive alien plants.

Data Sources

This mapping project is based on 1:15,000 colour stereo aerial photography from Geographic Data BC taken in 1994 and updated based on field work in 2007. Base map is from Terrain Resource Inventory Mapping (TRIM) from Geographic Data BC. Survey Intensity 4 was used with a total of 13% polygon inspection. Five full plots, 84 ground inspections, and 325 visual inspections were completed in the field.

Credits

Participating Agencies: Allan Brooks Nature Center, City of Vernon, District of Coldstream, Regional District of the North Okanagan, Greater Vernon Services Commission, BC Ministry of Environment, and the Canadian Wildlife Service.

Ecosystem mapping: Kristi Iverson, R.P.Bio. (Iverson & MacKenzie Biological Consulting Ltd.)

Bioterrain mapping: Polly Uunila, P.Geo. (Polar Geoscience)

Digitizing and Cartography: Bon Lee (Baseline Geomatics Inc., Victoria, B.C.).

Funding: The Real Estate Foundation of BC, City of Vernon, District of Coldstream, Regional District of the North Okanagan, Greater Vernon Services Commission, BC Ministry of Environment, and the Canadian Wildlife Service.

Citation

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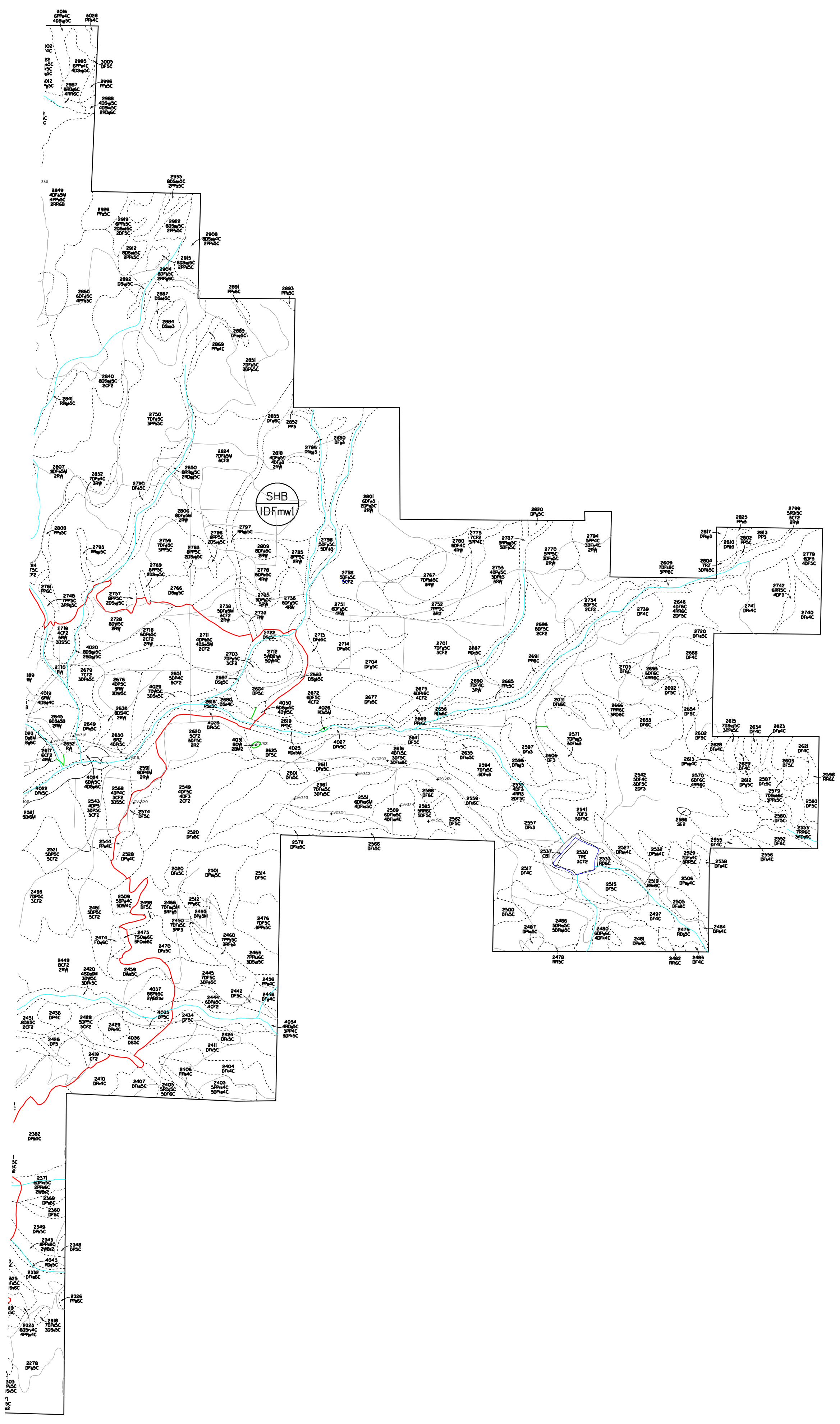

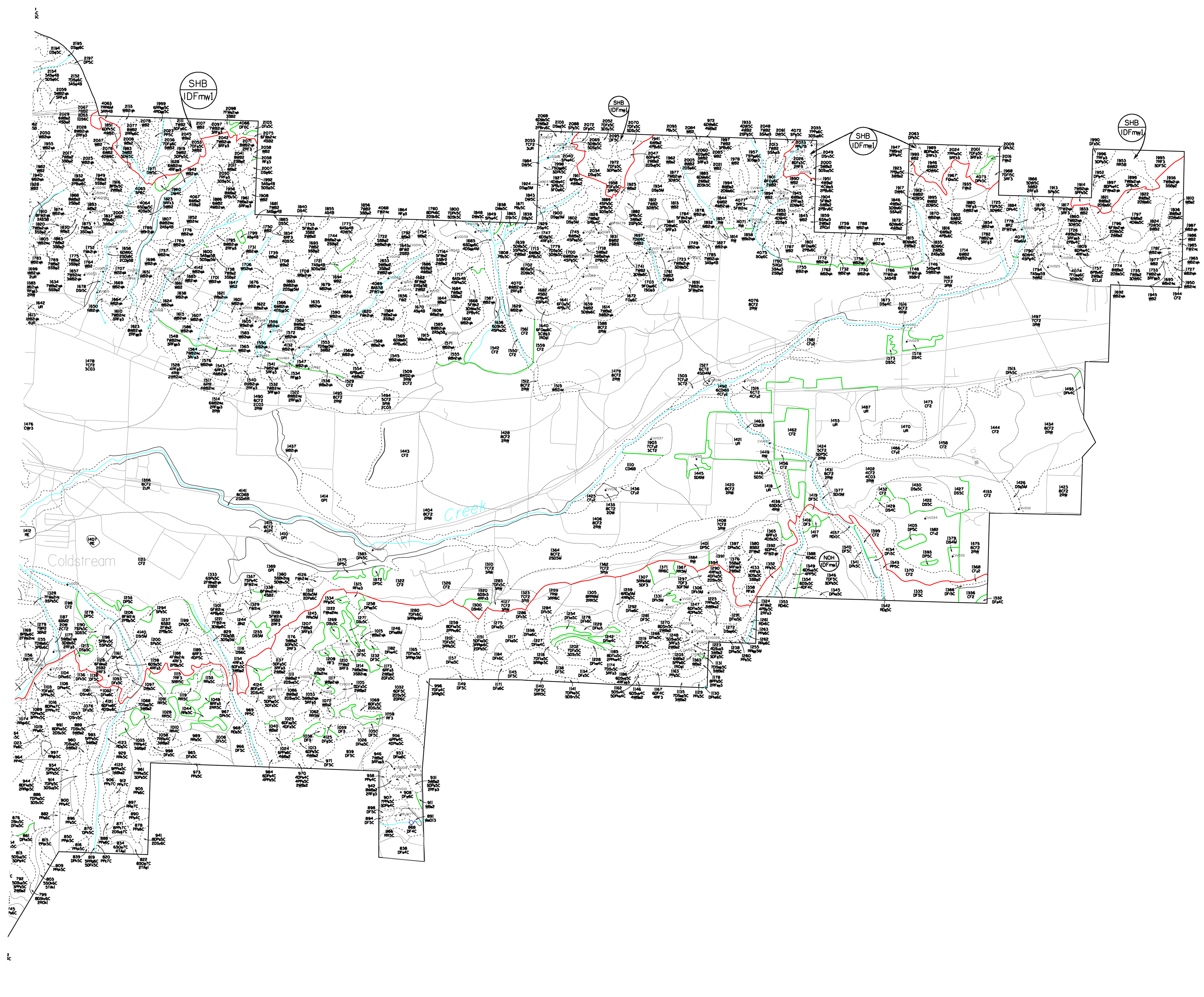
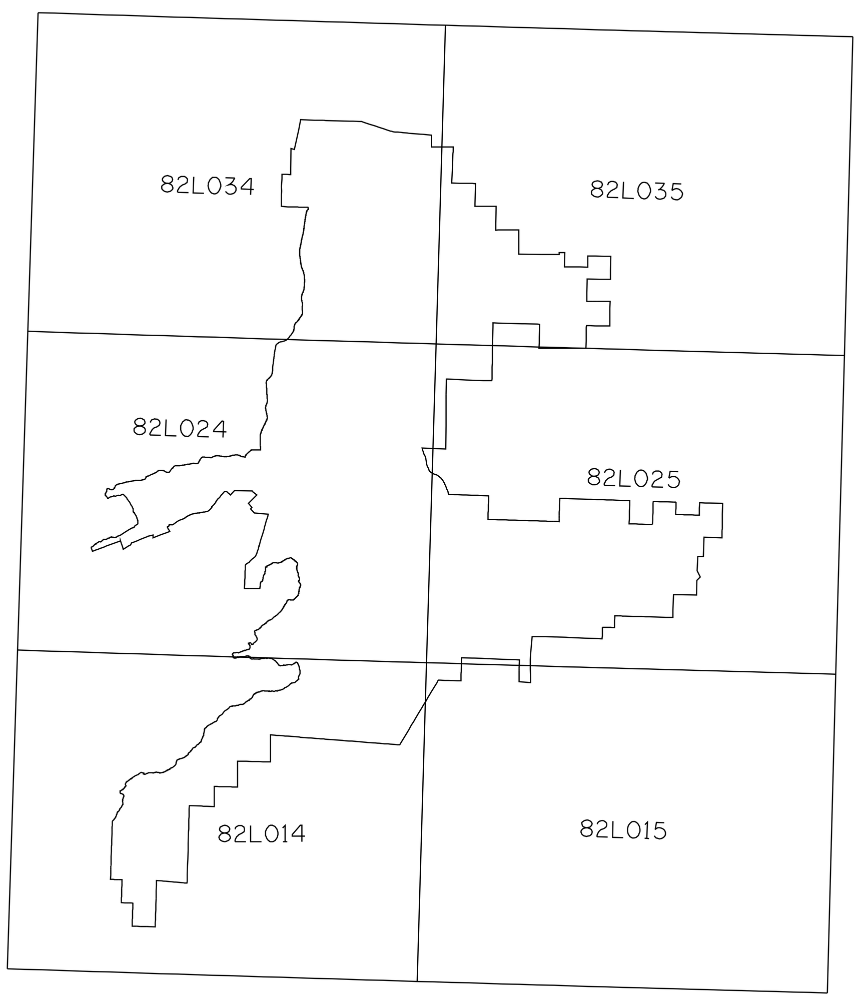
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