



Digital Mining Claim Density Map for Federal Lands in Washington: 1996

by Paul C. Hyndman¹ and Harry W. Campbell²

Open-File Report 99-408
Version 0.9

1999

This report is preliminary and has not been reviewed for conformity with U.S. Geological Survey editorial standards. Any use of trade, product, or firm names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

This digital map, identified as “Digital Mining Claim Density Map for Federal Lands in Washington: 1996,” has been approved for release and publication by the Director of the USGS. Although the digital map has been reviewed and is substantially complete, the USGS reserves the right to revise the data pursuant to further analysis and review. The databases are released on condition that neither the USGS nor the U.S. Government may be held liable for any damages resulting from their use.

Manuscript approved August 26, 1999

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

¹ U.S. Geological Survey, Spokane, WA 99201

² Retired, U.S. Geological Survey, Spokane, WA 99201

CONTENTS

INTRODUCTION	3
DATA SOURCES, PROCESSING, AND ACCURACY	4
Data Sources	4
Processing	4
Accuracy	4
MINING CLAIM DENSITY MAP CONTENTS.....	6
REFERENCES	6
OBTAINING DIGITAL DATA.....	7
By Anonymous FTP	7
By the World Wide Web	7
METADATA	8
Description of SINGLE precision coverage wa_clms.....	8
Description of Arc/Info wa_clms.rel relate structure	9
Formal metadata for the mine claim density map and associated files.....	9
Figure 1. --- Open (black) and closed (gray) status of mining claims in Washington for 1996.....	3
Table 1. Mining claim totals by type and status in Washington (database linked to digital map).....	5
Table 2. Mining claim totals by type and status in Washington (wa_clms.clms database)	5
Table 3. Field structure and descriptions of specific fields for the digital map.....	6
Table 4. Field structure and descriptions for the mine claim density database	6
Table 5. Files available with this Open-File Report.....	7

INTRODUCTION

This report describes a digital map generated by the U.S. Geological Survey (USGS) to provide digital spatial mining claim density information for federal lands in Washington as of March 1997. Mining claim data is earth science information deemed to be relevant to the assessment of historic, current, and future ecological, economic, and social systems. There is no paper map included in this Open-File report.

In accordance with the Federal Land Policy and Management Act of 1976 (FLPMA), all unpatented mining claims, mill, and tunnel sites must be recorded at the appropriate BLM State office. BLM maintains a cumulative computer listing of mining claims in the Mining Claim Recordation System (MCRS) database with locations given by meridian, township, range, and section. A mining claim is considered closed when the claim is relinquished or a formal BLM decision declaring the mining claim null and void has been issued and the appeal period has expired. All other mining claims filed with BLM are considered to be open and actively held. The digital map (figure 1.) with the mining claim density database available in this report are suitable for geographic information system (GIS)-based regional assessments at a scale of 1:100,000 or smaller.

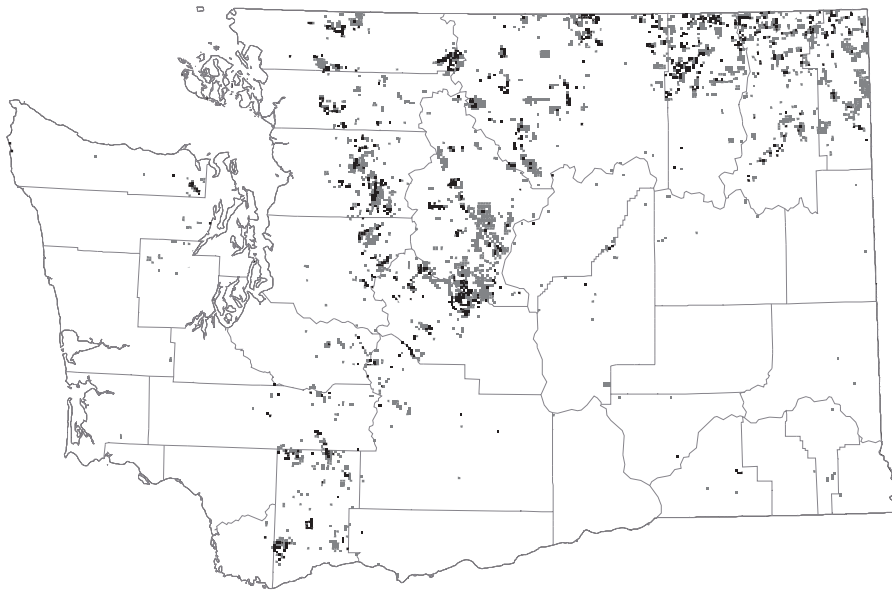


Figure 1. --- Open (black) and closed (gray) status of mining claims in Washington for 1996.

DATA SOURCES, PROCESSING, AND ACCURACY

Data Sources

The mining claim density database of federal lands in Washington is one of 13 statewide databases published in the U.S. Geological Survey Open-File Report 99-325. The database contains information identifying 1) the meridian, township, range, and section (MTRS) designation, a unique record identifier, 2) the number and type of claims (lode, placer, mill site, tunnel site) within each section, and 3) the status of the claims (open is held by a claimant, closed is no longer held). The original mine claim data used to create the databases in OF99-325 were acquired from the BLM in March 1997. An official quarterly release of the MCRS mine claim data for Washington is available by specific request from the:

United States Department of the Interior
Bureau of Land Management
Mining Claim Recordation System Coordinator
NI-112, Denver Federal Center
P.O. Box 25047
Denver, CO 80225-0047

The statewide Public Land Survey (PLS) digital map of Washington, wapls.e00, was used to create the digital mining claim density map. The digital map was in Arc/Info export format and was acquired as legacy data from the U.S. Bureau of Mines (USBM) which was closed by Congress in February 1996. No metadata information was available with this digital file. The PLS is assumed to be from 1:100,000 scale sources.

Processing

The digital file, wapls.e00, was imported using Arc/Info, version 7.1.1 (Environmental Systems Research Institute, Inc., Redlands, California), a commercially available GIS software, as an Arc/Info coverage into a workspace on a Sun Ultra 1 with Solaris 2.5.1 operating software. Each section of the new digital PLS contained a unique identifier corresponding in form to the MTRS in the mining claim density database. This digital map had been used for an older mining claim density database created by the USBM. The older data, which was directly attached to the coverage, was removed and the current database (blm_wa.dbf) from OF99-325 was linked, using a relate file, with the digital PLS of Washington. The linking process connected the data in the database to their corresponding sections in the digital map. The result was a digital mining claim density map (figure 1.) with the attributes of the current database. A subset of the digital map, that part containing mine claim density data, was created and named wa_clms. This step was necessary because the PLS acquired from the USBM is not public domain data. However, subsets of the PLS, such as the one in this report, can be released provided that the PLS of the state cannot be recreated from the subset. The relate file was renamed wa_clms.rel and the database of Washington from OF99-325 was renamed wa_clms.clms. The renaming allows the database and the relate file to be included in the single export file, wa_clms.e00, created when packaging the digital map for others.

Figure 1 displays the sections of the PLS containing claims and their status for this digital map. The map can be queried regarding its other attributes and can be used in investigating relationships with other digital data.

Accuracy

Several factors can affect the accuracy of the mining claim density database and digital map. The original data from BLM may contain errors. Two possible sources of error in the database are 1) incorrect position of the mining claim submitted by the claimant, and 2) input errors from the data entry papers to the computer database.

The digital map of the PLS of Washington may contain errors. Possible errors include 1) misidentified sections, 2) sections with no identifying information, and 3) sections missing from the PLS digital map. These errors would result in incorrect locations of the mining claim density data or failure of the data to be connected with the digital map.

Tables 1 and 2, summarize the number of mining claims by type and status for the digital map and the database. The total number of claims in the digital map (table 1) do not agree with the total number of claims in the mining claim density database from OF99-325 (table 2). Some contributing factors may be 1) failure of the data to find a section to combine with in the digital map, or 2) sections occurring as multiple parts due to irregular state boundaries, shorelines, or to non-PLS land surveys. The first type of error results in a decrease in the expected number of claims in the digital map. The second results in an increase. Both sources of error may be present. A ratio of the grand totals of all claims of Table 1 to Table 2 should show the degree of fit of the digital map totals to the original database totals. A value equal to 1 indicates a 100% fit. A value less than 1 indicates data was lost. A value greater than 1 indicates multi-part sections may be in the digital PLS map. The table shows that the digital map contains 50,976 mining claims but the database contains 50,595 mining claims. A ratio of the two numbers, 1.0075, indicates a very good fit.

Table 1. Mining claim totals by type and status in Washington (database linked to digital map)

Type of Claim	DIGITAL MAP DATABASE CLAIM TOTALS				
	LODE	PLACER	MILL	TUNNEL	ALL CLAIMS
Number of Open Mining Claims	8,373	587	159	30	9,149
Number of Closed Mining Claims	39,244	2,378	151	54	41,827
Grand Totals	47,617	2,965	310	84	50,976

Table 2. Mining claim totals by type and status in Washington (wa_clms.clms database)

Type of Claim	DENSITY DATABASE CLAIM TOTALS				
	LODE	PLACER	MILL	TUNNEL	ALL CLAIMS
Number of Open Mining Claims	8,293	579	158	30	9,060
Number of Closed Mining Claims	38,982	2,350	150	53	41,535
Grand Totals	47,275	2,929	308	83	50,595

Another concern regarding accuracy involves the visual representation of the data to a viewer. The digital map does not accurately represent the aerial extent of the lands covered by a mining claim because the presence of one mining claim, about 20 acres for a lode claim, will 'color in' the entire section (640 acres) it occurs in. A section is typically 1 square mile. The visual representation of one claim is magnified by a factor of 32 times its actual size. The best digital map resolution available at this time is to the section. Any area calculations done with the digital map for mining claims will likely be unreliable. Specific information about a particular area should be acquired from the BLM State office.

Additionally, the positional accuracy of a mining claim is generalized to one section in the PLS even if it crosses into another section. Mining claims generally follow geologic features and usually do not conform to the PLS lines. The procedure used by Campbell (1996) chooses the first section listed for a mining claim in the MCRS as the section of position. This method insures that each claim is counted only once. The digital PLS map may have been derived from 1:100,000 source maps. It is considered accurate enough for geographic representations for the purposes of regional assessments at a scale of 1:100,000 or smaller.

MINING CLAIM DENSITY MAP CONTENTS

Table 3 contains the structure and descriptions of specific fields within the digital map, wa_clms. Table 4 contains the structure and descriptions of specific fields within the mining claim density database, wa_clms.clms. The italicized field in bold type, ***mtrs***, is common to both the PLS and the database and is used by the relate file to link the database to the digital map.

Table 3. Field structure and descriptions of specific fields for the digital map

COLUMN	ITEM NAME	WIDTH	OUTPUT	TYPE	DEC	DESCRIPTION
1	area	4	12	Floating	3	Internal Arc/Info polygon area
5	Perimeter	4	12	Floating	3	Internal Arc/Info polygon perimeter
9	wa_clms#	4	5	Binary	-	Internal Arc/info polygon number
13	wa_clms-id	4	5	Binary	-	User-defined polygon number
17	<i>mtrs</i> ¹	18	18	Character	-	Meridian+Township+Range+Section

¹ For example, '33 30.0N 29.2E05' is Meridian 33 (Willamette), Township 30 North, Range 29 ½ East, Section 5

Table 4. Field structure and descriptions for the mine claim density database

COLUMN	ITEM NAME	WIDTH	OUTPUT	TYPE	DEC	DESCRIPTION
17	<i>mtrs</i> ¹	18	18	Character	-	Meridian+Township+Range+Section
35	nolc ²	4	4	Binary	-	Number of Open Lode Claims ²
39	nopc	4	4	Binary	-	Number of Open Placer Claims
43	nomc	4	4	Binary	-	Number of Open Mill site Claims
47	notc	4	4	Binary	-	Number of Open Tunnel Claims
51	toc	4	4	Binary	-	Total number of Open Claims
55	nclc	4	4	Binary	-	Number of Closed Lode Claims
59	ncpc	4	4	Binary	-	Number of Closed Placer Claims
63	ncmc	4	4	Binary	-	Number of Closed Mill site Claims
67	nctc	4	4	Binary	-	Number of Closed Tunnel Claims
71	tcc	4	4	Binary	-	Total number of Closed Claims
75	tc	4	4	Binary	-	Total number of Claims of all kinds

¹ For example, '33 30.0N 29.2E05' is Meridian 33 (Willamette), Township 30 North, Range 29 ½ East, Section 5

² in a section of the PLS

REFERENCES

Campbell, Harry W., 1996, Procedure from making a mining claim density map from BLM claim recordation digital data: U.S. Geological Survey Open-File Report 96-736, 13 p.

Hyndman, Paul C. and Harry W. Campbell, 1999, Digital databases containing mining claim density information for Arizona, California, Colorado, Idaho, Montana, Nebraska, New Mexico, Nevada, Oregon, South Dakota, Utah, Washington, and Wyoming created from the BLM Mining Claim Recordation System: 1996: U.S. Geological Survey Open-File Report 99-325, 21 p.

OBTAINING DIGITAL DATA

The digital mining claim density map of Washington, wa_clms, is provided with this report in Arc/Info EXPORT format as wa_clms.e00. The mining claim density database, wa_clms.clms, and the relate file, wa_clms.rel, are contained in the export file. A metadata file, wa_clms.met, occurs separately. These files and this report are available from the USGS public access FTP site and the World Wide Web site on the Internet. Table 4 lists the files and their sizes.

Table 5. Files available with this Open-File Report

FILE NAME	FILE TYPE	SIZE IN KILOBYTES
of99-408.pdf	PDF file	462
wa_clms.e00	Arc/Info export	3,525
wa_clms.met	Metadata	31

By Anonymous FTP

Do the following steps to obtain the files for OF99-408 by anonymous ftp. Windows users may need to start FTP in the MSDOS window.

STEP (type the words between the quotes)	REASON
cd to your_local_directory	Go to a directory to receive the WinZip file – you may need to make a directory first
'ftp wrgis.wr.usgs.gov'	Make ftp connection with the USGS computer, WRGIS
Name: 'anonymous'	Use 'anonymous' as your user name
Password: <i>your email address</i>	Use your email address as a password (<u>you@email_address</u>)
'cd pub/open-file'	Go down to the pub/open-file directory
'cd of99-408'	Go down to the specific open file directory
'binary'	Type the word 'binary' to change the transfer type to binary mode
'get of99-408.exe'	Copy the self-extracting file across the Internet to the receiving directory on your computer
'bye'	Close the ftp connection

Extracting the files from the of99-408.exe self-extracting file is accomplished by typing the name of the file, 'of99-408', and pressing the 'Enter' key. The files will unload automatically.

By the World Wide Web

The files for this report can be obtained over the Internet at URL <http://wrgis.wr.usgs.gov/open-file/>. Do the following steps to obtain the files for OF99-408 by the World Wide Web:

STEP	REASON
Attach to the internet with your web browser	This connects you to the internet.
Type 'http://wrgis.wr.usgs.gov/open-file/'	Make sure the internet address looks like this to connect with the USGS computer, WRGIS
Find the report in the listing and click on of99-407	This opens a page with instructions and information

Follow the instructions for downloading the data
and this report

for downloading the report
You should receive the report to your computer

METADATA

Following are 1) an Arc/Info description of the digital map, wa_clms, 2) a description of the relate file, and 3) the formal metadata for the digital map and associated files.

Description of SINGLE precision coverage wa_clms

FEATURE CLASSES					
Feature Class	Subclass	Number of Features	Attribute data (bytes)	Spatial Index?	Topology?
-----	-----	-----	-----	-----	-----
ARCS		10530			
POLYGONS		3372	34		Yes
NODES		7670			

SECONDARY FEATURES

Tics	298
Arc Segments	13679
Polygon Labels	3310

TOLERANCES

Fuzzy = 57.858 V

Dangle = 0.000 N

COVERAGE BOUNDARY

Xmin = 126854.922
Ymin = 523581.938

Xmax = 705431.188
Ymax = 898825.938

STATUS

The coverage has not been Edited since the last BUILD or CLEAN

COORDINATE SYSTEM DESCRIPTION

Projection	ALBERS
Datum	NAD27
Units	METERS
Spheroid	CLARKE1866
Parameters:	
1 ST Standard Parallel	43 0 0.00
2 nd Standard Parallel	48 0 0.00
Longitude of central meridian	-117 0 0.00
Latitude of projection's origin	41 0 0.00
False easting (meters)	700000.00000
False northing (meters)	0.00000

Description of Arc/Info wa_clms.rel relate structure

Relation	= WA_CLMS
Table-Id	= wa_clms.clms
Database	= info
Item	= MTRS
Column	= mtrs
Type	= ORDERED
Access	= RO

Formal metadata for the mine claim density map and associated files

The following metadata describes the mining claim density map:

Identification_Information:

Citation:

Citation_Information:

Originator: Paul C. Hyndman
Originator: Harry W. Campbell
Publication_Date: 1999

Title:

Digital mining claim density map for Federal lands
in Washington: 1996

Edition: Version 1.0

Geospatial_Data_Presentation_Form: map and database

Description:

Abstract:

The mining claim density data of federal lands in Washington are combined with the digital Washington Public Land Survey (PLS) to create a digital map of the density of mine claims in Open-File Report 99-408.

The mining claim density data of federal lands in Washington was one of 13 western states released in Open-File Report 99-325. The database for Washington was converted to an Arc/Info file and connected with the PLS by an Arc/Info relate.

As stated in OF 99-325, "These mining claim density databases were created from data obtained in March 1997, from the Mining Claim Recordation System (MCRS) of the Bureau of Land Management. These databases provide mining claim density information in a tabular form. They quantify the status of mining claim activity for 1996 and include information on mining claim activity since 1976. The databases contain information identifying 1) the general location of mining claims within the Public Land Survey System (PLS), 2) the number and type of claims (lode, placer, mill site, tunnel site), and 3) the status of the claims (open is held, closed is no longer held by a claimant)".

Combining the database with a digital PLS coverage of Washington enables a user to spatially display the mine claim data as a digital map and compare it with other spatial themes.

Purpose:

The digital map was developed to spatially research mining claim activity on federal lands in Washington and to investigate interrelationships of mining claim activity with physical and social science concerns.

This digital map is not to be considered as a legal representation of survey lines and corners or of mining claim boundaries.

Supplemental_Information: This data is in Arc/Info 7.1 format

Data_Set_Part:

Part_Type: Arc/Info export file

Part_Name: wa_clms.e00

Part_Description: This Arc/Info export file contains the coverage

wa_clms, the database wa_clms.clms, and the relate wa_clms.rel.
This digital map contains only those parts of the Washington PLS which contain mine claim density data. The original PLS of Washington was acquired from the U.S. Bureau of Mines when it was closed by Congress

in 1996. The Bureau of Mines purchased the PLS of Washington from a private company. The data is proprietary and cannot be released in its complete form.

Data_Set_Part:

Part_Type: Arc/Info database

Part_Name: wa_clms.clms

Part_Description: This database contains mine claim density information for federal lands in the state, from 1976 through 1996. It is one of several state databases from OF 99-325.

Data_Set_Part:

Part_Type: Arc/Info relate

Part_Name: wa_clms.rel

Part_Description: This file contains the parameters needed to relate the database, wa_clms.clms to the digital map database, wa_clms.pat. The structure of the relate is:

RELATION	= WA_CLMS
TABLE-ID	= wa_clms.clms
DATABASE	= info
ITEM	= MTRS
COLUMN	= mtrs
TYPE	= ORDERED
ACCESS	= RO

Time_Period_of_wantent:

Time_Period_Information:

Range_of_Dates/Times:

Beginning_Date: 1976

Ending_Date: 1997

Currentness_Reference: Release date of data by the Bureau of Land Management in March, 1997

Status:

Progress: Complete

Maintenance_and_Update_Frequency: None planned

Spatial_Domain:

Bounding_Coordinates:

West_Bounding_Coordinate: -125 00 00

East_Bounding_Coordinate: -117 00 00

North_Bounding_Coordinate: 49 00 00

South_Bounding_Coordinate: 45 30 00

Keywords:

Theme:

Theme_Keyword_Thesaurus: None

Theme_Keyword: mining claim density

Theme_Keyword: lode

Theme_Keyword: placer

Theme_Keyword: mill site

Theme_Keyword: tunnel site

Theme_Keyword: mine claim

Place:

Place_Keyword_Thesaurus: None

Place_Keyword: Washington

Access_Constraints: None

Use_Constraints:

Users should contact the BLM for current data. The U.S. Geological Survey makes no warranties related to the accuracy of the data and users are required to determine suitability of use for any particular purpose. This digital map is not to be construed as a legal representation of mining claim boundaries. The PLS data is assumed to be from 1:100,000 scale base maps. The map should not be used at scales larger than 1:100,000.

The user must obtain current information on mining claims from the Washington State Office of the Bureau of Land Management for the area of interest since the mining claim density data is not current. The information in the database does not provide the legal location or status of individual mining claims.

Any hardcopies utilizing this data set shall clearly indicate their source. If the user has modified the data in any way they are obligated to describe the types of modifications they have performed on the hardcopy map. User specifically agrees not to misrepresent this data set, nor to imply that changes they made were approved by

the U.S. Geological Survey.

Point_of_contact:

Contact_Information:

Contact_Person_Primary:

Contact_Person: Paul Hyndman

Contact_Organization: U.S. Geological Survey

Contact_Position: Geologist

Contact_Address:

Address_Type: mailing and physical address

Address: 904 W. Riverside Ave., Rm. 202

City: Spokane

State_or_Province: Washington

Postal_Code: 99201

Country: U.S.A.

Contact_Voice_Telephone: 509-368-3100 or 509-368-3118

Contact_Facsimile_Telephone: 509-368-3199

Contact_Electronic_Mail_Address: phyndman@usgs.gov

Contact_Instructions: General office phone is 509-368-3100

Data_Set_Credit:

Cheryl Laudenbach, Denver Service Center, BLM, provided the original mining claim data from the Mining Claim Recordation Database. The data was used to create the mining claim density databases in OF 99-325.

Native_Data_Set_Environment: Solaris 2.5.1, Sun Ultra 1, Arc/Info 7.1.2

Data_Quality_Information:

Attribute_Accuracy:

Attribute_Accuracy_Report:

OF 99-325 reports that the attributes of the mining claim data from BLM data, claims per section, do not represent the exact number of claims in each section. Some claims overlap into adjoining sections and/or townships. In order to count each claim only once, it was necessary to choose one section for each claim to be identified with. Therefore, the first section listed in the BLM database for a particular claim was chosen as the section the claim was counted in.

The accuracy was tested by summing each category of claim in the mining claim database and comparing the sum to those from the original BLM database. The sums for each category matched.

No attempt was made to determine the accuracy of BLM's database.

Completeness_Report:

None of the data from BLM was omitted. The data is considered complete for the purpose of determining mining claim density in this State.

Logical_Consistency_Report:

The data set is a derived subset of the original BLM data. No modifications to the BLM data were made.

Positional_Accuracy:

Horizontal_Positional_Accuracy:

Horizontal_Positional_Accuracy_Report:

A claim may be within a section or it may straddle two, three, or four sections. In order to count each claim only once, it was necessary to choose one section for each claim to be identified with. Therefore, the first section listed in the BLM database for a particular claim was chosen as the section the claim was counted in.

Lineage:

Source_Information:

Source_Citation:

Citation_Information:

Originator:

U.S. Geological Survey

Publication_Date: 1999

Title: Digital databases containing mining claim density information for Arizona, California, Colorado, Idaho, Montana, Nebraska, New Mexico, Nevada, Oregon, South Dakota, Utah, Washington, and Wyoming created from the BLM Mining Claim Recordation System: 1996

Edition: 1

Geospatial_Data_Presentation_Form: tabular database

Series_Information:

Series_Name: Open-File Report

Issue_Identification: OF 99-325

Publication_Information:

Publication_Place: Denver, Colorado
 Publisher: U.S. Geological Survey
 Other_Citation_Details:
 Original data from the Bureau of Land Management Mine Claim
 Recordation Database (MCRD)
 Online_Linkage: URL = <http://wrgis.wr.usgs.gov/open-file/of99-325>
 Type_of_Source_Media: digital file
 Source_Time_Period_of_wantent:
 Time_Period_Information:
 Range_of_Dates/Times:
 Beginning_Date: 1976
 Ending_Date: 199703
 Source_Currentness_Reference:
 The data were copied from BLM's MCRD database on March, 1997.
 The data are cumulative from 1976, when the database was created.
 Source_Citation_Abbreviation: USGS OF99-325
 Source_Contribution:
 This database contributed the mine claim density information
 needed to create a spatial mine claim density map.

Process_Step:
 Process_Description:
 The mine claim density database of Washington was released as part of
 the U.S. Geological Open-File Report, OF 99-325. It was imported as
 an Arc/Info table, wa_clms.clms, using the command, dbaseinfo. A
 relate, wa_clms.rel, was made to connect the database to the PLS of
 Washington. This report can be found at URL:
 <http://wrgis.wr.usgs.gov/open-file/>
 Process_Date: 1997-1998

Data_Quality_Information:
 Completeness_Report:
 The digital PLS of Washington is assumed to be complete.
 Logical_Consistency_Report:
 The PLS in this report is a derived subset of the original PLS. Only
 those sections containing mine claim density data are included in this
 report.
 Positional_Accuracy:
 Horizontal_Positional_Accuracy:
 Horizontal_Positional_Accuracy_Report:
 No attempt was made to check the positional accuracy of the digital
 PLS. The PLS is assumed to have come from 1:100,000 scale sources.

Lineage:
 Source_Information:
 Source_Citation:
 Citation_Information:
 Originator:
 Uncertain. Digital PLS of Washington was obtained from the
 U.S. Bureau of Mines at its closure in 1996. The data may have
 been purchased from Geographic Information, Inc. in 1984. The
 digital PLS is considered copyrighted and cannot be released in a
 form that would enable someone to reconstruct the PLS. Portions
 can be released in paper or digital form.
 Publication_Date:
 Title: none
 Geospatial_Data_Presentation_Form: map
 Type_of_Source_Media: digital file
 Source_Time_Period_of_wantent:
 Time_Period_Information:
 Single_Date/Time:
 Calendar_Date: 1988
 Source_Currentness_Reference:
 The PLS may not be current with regard to section lines and corners.
 Source_Citation_Abbreviation: none
 Source_Contribution:
 The U.S. Bureau of Mines contributed the digital PLS of Washington. It
 did not include metadata or other documentation.

Process_Step:
 Process_Description:
 The Washington PLS contained a field, mtrs, to which the mine claim
 density database could be attached. The data was attached through the
 use of a relate, wa_clms.rel. An example of commands for using the
 relate in ArcEdit for selecting all claims in the **Total Claims (tc)**

```

        field is:
        'relate restore wa_clms.rel'
        'editcover wa_clms'
        'sel wa_clms//tc'
    Process_Date: 1997
    Spatial_Data_Organization_Information:
        Indirect_Spatial_Reference:
        Direct_Spatial_Reference_Method:
        Point_and_Vector_Object_Information:
            SDTS_Terms_Description:
                SDTS_Point_and_Vector_object_Type: Point
                Point_and_Vector_Object_Count: 7670
                SDTS_Point_and_Vector_object_Type: String
                Point_and_Vector_Object_Count: 10530
                SDTS_Point_and_Vector_object_Type: GT-polygon composed of chains
                Point_and_Vector_Object_Count: 3372
    Spatial_Reference_Information:
        Horizontal_Coordinate_System_Definition:
            Geodetic_Model:
                Horizontal_Datum_Name: North American Datum of 1927
                Ellipsoid_Name: Clarke 1866
            Planar:
                Map_Projection:
                    Albers Equal Area:
                        Standard_Parallel: 43 0 0
                        Standard_Parallel: 48 0 0
                        Longitude_of_Central_Meridian: -117 0 0
                        Latitude_of_Projection-Origin: 41 0 0
                        False_Easting: 700000.0
                        False_Northing: 0.0
    Entity_and_Attribute_Information:
        Detailed_Description:
            Entity_Type:
                Entity_Type_Label: wa_clms.clms
                Entity_Type_Definition:
                    Summary of values for number and type of mining claims in each section
                    from OF99-325. The data is tied to an MTRS code which represents the
                    Meridian + Township + Range + Section. This code provides a unique
                    identifier for each Section of the PLS.
                Entity_Type_Definition_Source:
                    The Bureau of Land Management is the official
                    source for PLS designations and surveys and for
                    the mining claim data.
    Attribute:
        Attribute_Label: MTRS
        Attribute_Definition:
            A concatenation of Meridian, Township, Range, and
            Section of the PLS
        Attribute_Definition_Source: Bureau of Land Management
        Attribute_Domain_Values:
            Enumerated_Domain:
                Enumerated_Domain_Value: MMTTT.TDRRR.RESS__
                Enumerated_Domain_Value_Definition:
                    MTRS is an 18-character field which is a concatenation
                    of meridian (M), Township (T), township direction (D),
                    range (R), range direction (E), and section (S). The form
                    of the field is MMTTT.TDRRR.RESS__. The last two spaces
                    were included in the beginning of the study but were not utilized.

                    MM = the FIPS code for meridian. FIPS stands for the Federal
                    Information Processing Standard. The code for the meridian is:

                    33 - Willamette

                    TTT.T = BLM Township designation as 'TTT.T' may include a fraction
                    of a Township. For example, Township 1 would be '__1.0'.
                    Township 27.5 would be '_27.2'. The '.2' is a 1/2 township.

                    D = BLM Township direction may be North (N) or South (S).

                    RRR.R = BLM Range designation as 'RRR.R' which may include a

```

fraction of a Range See Township (T) for example.

E = BLM Range direction may be East (E) or West (W).

SS = BLM Section number. For example, section 1 is '_1' and section 35 is '35'. Generally the highest section number is 36, but there are exceptions in several States.

Enumerated_Domain_Value_Definition_Source:

Hyndman and Campbell, 1999

Attribute:

Attribute_Label: NOLC

Attribute_Definition:

Number of Open (or recorded) Lode Claims within a section

Attribute_Definition_Source: Hyndman and Campbell, 1999

Attribute_Domain_Values:

Range_Domain:

Range_Domain_Minimum: 0

Range_Domain_Maximum: 194

Attribute:

Attribute_Label: NOPC

Attribute_Definition:

Number of Open (or recorded) Placer Claims within a section

Attribute_Definition_Source: Hyndman and Campbell, 1999

Attribute_Domain_Values:

Range_Domain:

Range_Domain_Minimum: 0

Range_Domain_Maximum: 64

Attribute:

Attribute_Label: NOMC

Attribute_Definition:

Number of Open (or recorded) Mill site Claims within a section

Attribute_Definition_Source: Hyndman and Campbell, 1999

Attribute_Domain_Values:

Range_Domain:

Range_Domain_Minimum: 0

Range_Domain_Maximum: 132

Attribute:

Attribute_Label: NOTC

Attribute_Definition:

Number of Open (or recorded) Tunnel site Claims within a section

Attribute_Definition_Source: Hyndman and Campbell, 1999

Attribute_Domain_Values:

Range_Domain:

Range_Domain_Minimum: 0

Range_Domain_Maximum: 4

Attribute:

Attribute_Label: TOC

Attribute_Definition:

Total number of Open (or recorded) Claims of all types within a section

Attribute_Definition_Source: Hyndman and Campbell, 1999

Attribute_Domain_Values:

Range_Domain:

Range_Domain_Minimum: 0

Range_Domain_Maximum: 194

Attribute:

Attribute_Label: NCLC

Attribute_Definition:

Number of Closed (or terminated and closed) Lode Claims within a section

Attribute_Definition_Source: Hyndman and Campbell, 1999

Attribute_Domain_Values:

Range_Domain:

Range_Domain_Minimum: 0

Range_Domain_Maximum: 241

Attribute:

Attribute_Label: NCPC

Attribute_Definition:
 Number of Closed (or terminated and closed)
 Placer Claims within a section
 Attribute_Definition_Source: Hyndman and Campbell, 1999
 Attribute_Domain_Values:
 Range_Domain:
 Range_Domain_Minimum: 0
 Range_Domain_Maximum: 109
 Attribute:
 Attribute_Label: NCMC
 Attribute_Definition:
 Number of Closed (or terminated and closed)
 Mill site Claims within a section
 Attribute_Definition_Source: Hyndman and Campbell, 1999
 Attribute_Domain_Values:
 Range_Domain:
 Range_Domain_Minimum: 0
 Range_Domain_Maximum: 192
 Attribute:
 Attribute_Label: NCTC
 Attribute_Definition:
 Number of Closed (or terminated and closed)
 Tunnel site Claims within a section
 Attribute_Definition_Source: Hyndman and Campbell, 1999
 Attribute_Domain_Values:
 Range_Domain:
 Range_Domain_Minimum: 0
 Range_Domain_Maximum: 3
 Attribute:
 Attribute_Label: TCC
 Attribute_Definition:
 Total number of Closed (or terminated and closed)
 Claims of all types within a section
 Attribute_Definition_Source: Hyndman and Campbell, 1999
 Attribute_Domain_Values:
 Range_Domain:
 Range_Domain_Minimum: 0
 Range_Domain_Maximum: 241
 Attribute:
 Attribute_Label: TC
 Attribute_Definition:
 Total number of all Claims of all types
 within a section
 Attribute_Definition_Source: Hyndman and Campbell, 1999
 Attribute_Domain_Values:
 Range_Domain:
 Range_Domain_Minimum: 1
 Range_Domain_Maximum: 313
 Detailed_Description:
 Entity_Type:
 Entity_Type_Label: wa_clms.pat
 Entity_Type_Definition:
 Summary of values for number and type of mining claims in each section
 from OF99-325. The data is tied to an MTRS code which represents the
 Meridian + Township + Range + Section. This code provides a unique
 identifier for each Section of the PLS.
 Entity_Type_Definition_Source:
 The Bureau of Land Management is the official
 source for PLS designations and surveys and for
 the mining claim data.
 Attribute:
 Attribute_Label: area
 Attribute_Definition:
 The area of each polygon in the coverage
 Attribute_Definition_Source: Arc/Info
 Attribute_Domain_Values:
 Range_Domain:
 Range_Domain_Minimum: not determined
 Range_Domain_Maximum: not determined
 Attribute:
 Attribute_Label: perimeter

Attribute_Definition:
Length of perimeter of each polygon in the coverage
Attribute_Definition_Source: Arc/Info
Attribute_Domain_Values:
Range_Domain:
Range_Domain_Minimum: not determined
Range_Domain_Maximum: not determined

Attribute:
Attribute_Label: wa_clms#
Attribute_Definition:
Internal polygon tracking number
Attribute_Definition_Source: Arc/Info
Attribute_Domain_Values:
Range_Domain:
Range_Domain_Minimum: not determined
Range_Domain_Maximum: not determined

Attribute:
Attribute_Label: wa_clms-id
Attribute_Definition:
Polygon tracking number which can be modified by user
Attribute_Definition_Source: Arc/Info
Attribute_Domain_Values:
Range_Domain:
Range_Domain_Minimum: not determined
Range_Domain_Maximum: not determined

Attribute:
Attribute_Label: MTRS
Attribute_Definition:
A concatenation of Meridian, Township, Range, and
Section of the PLS
Attribute_Definition_Source: Bureau of Land Management
Attribute_Domain_Values:
Enumerated_Domain:
Enumerated_Domain_Value: MMTT.TDRRR.RESS__
Enumerated_Domain_Value_Definition:
MTRS is an 18-character field which is a concatenation
of meridian (M), Township (T), township direction (D),
range (R), range direction (E), and section (S). The form
of the field is MMTT.TDRRR.RESS__. The last two spaces
were included in the beginning of the study but were not utilized.

MM = the FIPS code for meridian. FIPS stands for the Federal
Information Processing Standard. The code for the meridian is:

33 - Willamette

TTT.T = BLM Township designation as 'TTT.T' may include a fraction
of a Township. For example, Township 1 would be '__1.0'.
Township 27.5 would be '__27.2'. The '.2' is a 1/2 township.

D = BLM Township direction may be North (N) or South (S).

RRR.R = BLM Range designation as 'RRR.R' which may include a
fraction of a Range See Township (T) for example.

E = BLM Range direction may be East (E) or West (W).

SS = BLM Section number. For example, section 1 is '_1' and
section 35 is '35'. Generally the highest section number is 36,
but there are exceptions in several States.

Enumerated_Domain_Value_Definition_Source:
Hyndman and Campbell, 1999

Distribution_Information:
Distributor:
Contact_Information:
Contact_Person_Primary:
Contact_Person: Paul Hyndman
Contact_Organization: U.S. Geological Survey
Contact_Position: Geologist
Contact_Address:
Address_Type: mailing and physical address

Address: W. 904 Riverside Avenue, Room 202
City: Spokane
State_or_Province: Washington
Postal_Code: 99201
Country: USA
Contact_Voice_Telephone: 509-368-3118
Contact_Facsimile_Telephone: 509-368-3199
Contact_Electronic_Mail_Address: phyndman@usgs.gov
Contact_Instructions: Main phone number is 509-368-3100

Resource_Description: Open-File Report 99-408

Distribution_Liability:

The U.S. Geological Survey (USGS) provides this data "as is."
The USGS makes no guarantee or warranty concerning the accuracy of information contained in the geographic data. The USGS further makes no warranties, either expressed or implied as to any other matter whatsoever, including, without limitation, the condition of the product, or its fitness for any particular purpose. The burden for determining fitness for use lies entirely with the user. Although this data has been processed successfully on computers at the USGS, no warranty, expressed or implied, is made by the USGS regarding the use of this data on any other system, nor does the fact of distribution constitute or imply any such warranty.

In no event shall the USGS have any liability whatsoever for payment of any consequential, incidental, indirect, special, or tort damages of any kind, including, but not limited to, any loss of profits arising out of use of or reliance on the geographic data or arising out of the delivery, installation, operation, or support by the USGS.
Technical_Prerequisites: The user should have GIS software capable of reading Arc/Info export files

Distributor:

Contact_Information:

Contact_Organization_Primary:

Contact_Organization: U.S. Geological Survey Information Services

Contact_Address:

Address_Type: mailing and physical address

Address:

Open-File Reports

Box 2586

City: Denver

State_or_Province: CO

Postal_Code: 80225

Country: USA

Contact_Voice_Telephone: 1-303-202-4200

Contact_Facsimile_Telephone: 1-303-202-4693

Resource_Description: Open-File Report 99-408

Distribution_Liability:

The U.S. Geological Survey (USGS) provides this data "as is."
The USGS makes no guarantee or warranty concerning the accuracy of information contained in the geographic data. The USGS further makes no warranties, either expressed or implied as to any other matter whatsoever, including, without limitation, the condition of the product, or its fitness for any particular purpose. The burden for determining fitness for use lies entirely with the user. Although this data has been processed successfully on computers at the USGS, no warranty, expressed or implied, is made by the USGS regarding the use of this data on any other system, nor does the fact of distribution constitute or imply any such warranty.

In no event shall the USGS have any liability whatsoever for payment of any consequential, incidental, indirect, special, or tort damages of any kind, including, but not limited to, any loss of profits arising out of use of or reliance on the geographic data or arising out of the delivery, installation, operation, or support by the USGS.
Technical_Prerequisites: The user should have software GIS software capable of reading Arc/Info export files.

Distributor:

Contact_Information:

Contact_Organization_Primary:

Contact_Organization: U.S.G.S. Earth Science Information Office

Contact_Address:

Address_Type: mailing and physical address
 Address: 904 West Riverside Avenue, Rm 135
 City: Spokane
 State_or_Province: WA
 Postal_Code: 99201
 Country: USA
 Contact_Voice_Telephone: 509-368-3130
 Contact_Facsimile_Telephone: 509-353-2872
 Contact_Electronic_Mail_Address: esnfic@mailmcanl.wr.usgs.gov
 Hours_of_Service: 8:00 a.m. - 4:30 p.m. Pacific time zone
 Resource_Description: Open-File Report 99-408
 Distribution_Liability:
 The U.S. Geological Survey (USGS) provides this data "as is."
 The USGS makes no guarantee or warranty concerning the accuracy of information contained in the geographic data. The USGS further makes no warranties, either expressed or implied as to any other matter whatsoever, including, without limitation, the condition of the product, or its fitness for any particular purpose. The burden for determining fitness for use lies entirely with the user. Although this data has been processed successfully on computers at the USGS, no warranty, expressed or implied, is made by the USGS regarding the use of this data on any other system, nor does the fact of distribution constitute or imply any such warranty.

 In no event shall the USGS have any liability whatsoever for payment of any consequential, incidental, indirect, special, or tort damages of any kind, including, but not limited to, any loss of profits arising out of use of or reliance on the geographic data or arising out of the delivery, installation, operation, or support by the USGS.
 Technical_Prerequisites: The user should have software GIS software capable of reading Arc/Info export files.
 Metadata_Reference_Information:
 Metadata_Date: 19990423
 Metadata_Review_Date: 199904
 Metadata_Contact:
 Contact_Information:
 Contact_Person_Primary:
 Contact_Person: Paul Hyndman
 Contact_Organization: U.S. Geological Survey
 Contact_Position: Geologist
 Contact_Address:
 Address_Type: mailing and physical address
 Address: W. 904 Riverside Avenue, Room 202
 City: Spokane
 State_or_Province: Washington
 Postal_Code: 99201
 Country: USA
 Contact_Voice_Telephone: 509-368-3118
 Contact_Facsimile_Telephone: 509-368-3199
 Contact_Electronic_Mail_Address: phyndman@usgs.gov
 Hours_of_Service: 8am to 4:30pm
 Contact_Instructions: Main phone is 509-368-3100
 Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial Metadata
 Metadata_Standard_Version: FGDC-STD-001-1998
 Metadata_Time_Convention: local time
 Metadata_Access_Constraints: none
 Metadata_Use_Constraints: none