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

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Open-File Report 99-543
Version 1.0

1999

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

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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 Idaho 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 Bureau of Land Management (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.

DATA SOURCES, PROCESSING, AND ACCURACY

Data Sources

The mining claim density database of federal lands in Idaho 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 Idaho 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 Idaho, plss.e00, was used to create the digital mining claim density map. The digital map was in Arc/Info export format and is available on the Internet at URL http://www.idwr.state.id.us/gisdata or by specific request from the:

Idaho Department of Water Resources
1301 N. Orchard Street
Boise, Idaho 83706

Processing

The digital file, plss.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 digital PLS was given a unique section identifier corresponding in form to the MTRS in the mining claim density database, blm_id.dbf. The mining claim density database from OF99-325 was imported as an Info file and linked, using a relate file, with the digital PLS of Idaho. 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. The relate file was named id_clms.rel and the database of Idaho from OF99-325 was renamed id_clms.clms. The renaming allows the database and the relate file to be included in the single export file, id_clms.e00, created when packaging the digital map for others.
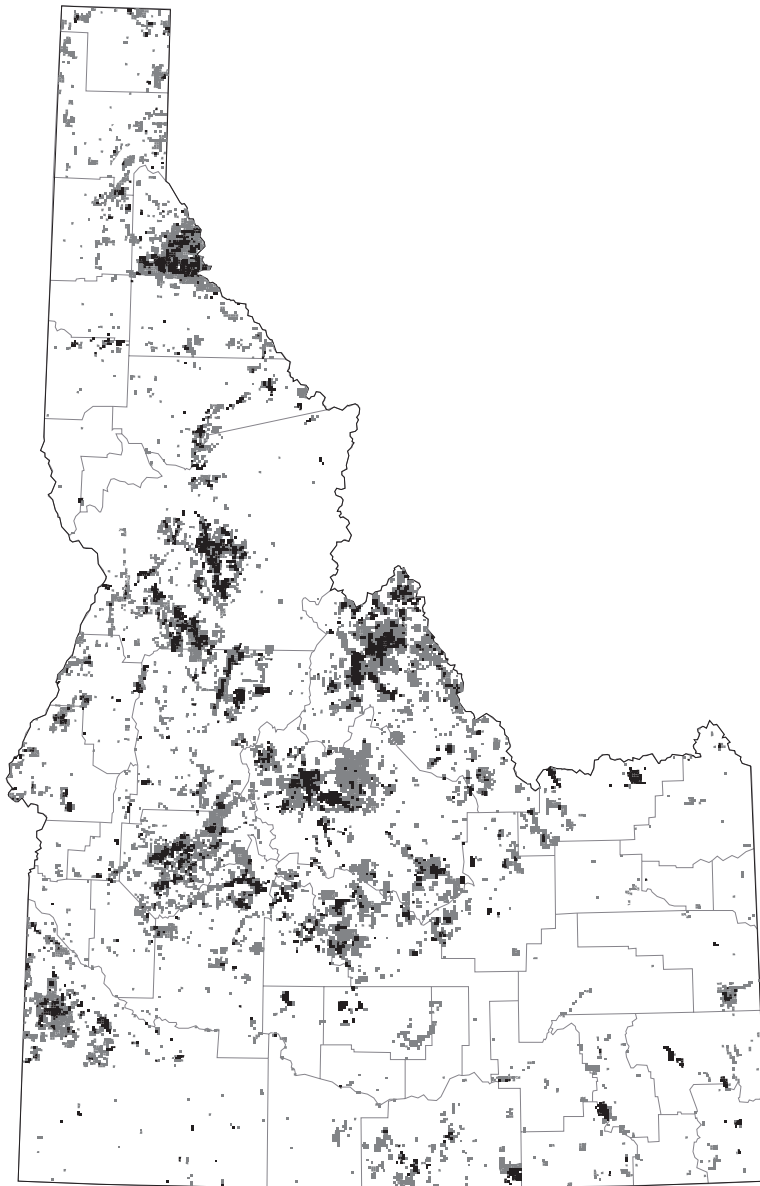

Figure 1. --- Open (black) and closed (gray) status of mining claims in Idaho for 1996.

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 Idaho 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) does 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. The digital map does contain sections with multiple parts. 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 177,687 mining claims but the database contains 177,091 mining claims. The ratio of the two numbers, 1.0034, indicates a very good fit.

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

Type of Claim	DIGITAL MAP DATABASE CLAIM TOTALS				
	LODE	PLACER	MILL	TUNNEL	ALL CLAIMS
Number of Open Mining Claims	17,560	2,668	554	8	20,790
Number of Closed Mining Claims	137,395	16,473	2,722	307	156,897
Grand Totals	154,955	19,141	3,276	315	177,687

Table 2. Mining claim totals by type and status in Idaho (id_clms.clms database)

Type of Claim	DENSITY DATABASE CLAIM TOTALS				
	LODE	PLACER	MILL	TUNNEL	ALL CLAIMS
Number of Open Mining Claims	17,557	2,670	554	8	20,789
Number of Closed Mining Claims	137,093	16,189	2,713	307	156,302
Grand Totals	154,650	18,859	3,267	315	177,091

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 (typically 640 acres or 1 square mile) it occurs in. 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 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 lists the structure and descriptions of specific fields within the digital map, id_clms. Table 4 contains the structure and descriptions of specific fields within the mining claim density database, id_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	Id_clms#	4	5	Binary	-	Internal Arc/info polygon number
13	id_clms-id	4	5	Binary	-	User-defined polygon number
17	num	6	6	Integer	-	Undetermined
23	township	3	3	Integer	-	Township designation
26	tdir	2	2	Character	-	Township direction – **N**orth or **S**outh
28	range	3	3	Integer	-	Range designation
31	r_partial	4	4	Character	-	Partial Range designation - 1/2
35	rdir	2	2	Character	-	Range direction – **E**ast or **W**est
37	section	3	3	Integer	-	Section number
40	t	2	2	Character	-	Character version of Township
42	r	2	2	Character	-	Character version of Range
44	s	2	2	Character	-	Character version of Section
46	tr	6	6	Character	-	Concatenation of T and R fields
52	trs	8	8	Character	-	Concatenation of T, R, and S fields
60	***mtrs***[1]	18	18	Character	-	**M**eridian+**T**ownship+**R**ange+**S**ection

[1] For example, '08 30.0N 24.2E05' is Meridian 08, Township 30 North, Range 24 ½ East, Section 5
Idaho contains the Boise Meridian (08).

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

COLUMN	ITEM NAME	WIDTH	OUTPUT	TYPE	DEC	DESCRIPTION
1	**mtrs**[1]	18	18	Character	-	**M**eridian+**T**ownship+**R**ange+**S**ection
19	nolc[2]	4	4	Binary	-	**N**umber of **O**pen **L**ode **C**laims [2]
23	nopc	4	4	Binary	-	**N**umber of **O**pen **P**lacer **C**laims
27	nomc	4	4	Binary	-	**N**umber of **O**pen **M**ill site **C**laims
31	notc	4	4	Binary	-	**N**umber of **O**pen **T**unnel **C**laims
35	toc	4	4	Binary	-	**T**otal number of **O**pen **C**laims
39	nclc	4	4	Binary	-	**N**umber of **C**losed **L**ode **C**laims
43	ncpc	4	4	Binary	-	**N**umber of **C**losed **P**lacer **C**laims
47	ncmc	4	4	Binary	-	**N**umber of **C**losed **M**ill site **C**laims
51	nctc	4	4	Binary	-	**N**umber of **C**losed **T**unnel **C**laims
55	tcc	4	4	Binary	-	**T**otal number of **C**losed **C**laims
59	tc	4	4	Binary	-	**T**otal number of **C**laims of all kinds

[1] For example, '08 30.0N 24.2E05' is Meridian 08, Township 30 North, Range 24 ½ East, Section 5
Idaho contains the Boise Meridian (08).

[2] in a section of the PLS

REFERENCES

Campbell, Harry W., 1996, Procedure for 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, aa p.

Idaho Department of Water Resources, 1993, Coverage PLSS -- Public Land Survey Sections for Idaho: Idaho Department of Water Resources digital map PLSS.E00.

OBTAINING DIGITAL DATA

The digital mining daim density map of Idaho, id_clms, is provided with this report in Arc/Info EXPORT format as id_clms.e00. The mining claim density database, id_clms.clms, and the relate file, id_clms.rel, are contained in the export file. A metadata file, id_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 5 lists the files and their sizes.

Table 5. Files available with this Open-File Report

FILE NAME	FILE TYPE	SIZE IN KILOBYTES
of_id.pdf	PDF document	276
id_clms.e00	Arc/Info export	14,095
id_clms.met	Metadata	35

By Anonymous FTP

Do the following steps to obtain the files for OF99-543 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: *your email address*	Use your email address as a password (you@email_address)
'cd pub/open-file'	Go down to the pub/open-file directory
'cd of99-543'	Go down to the specific open file directory
'binary'	Type the word 'binary' to change the transfer type to binary mode
'get of99-543.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 of99-543.exe self-extracting file is accomplished by typing the name of the file, 'of99-543', 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 OF99-543 by the World Wide Web:

STEP	REASON
Attach to the internet with your web browser	This connects you to the internet.
'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 of99-543	This opens a page with instructions and information for downloading the report
Follow the instructions for downloading the data and this report	You should receive the report to your computer

METADATA

Following are 1) an Arc/Info description of the digital map, id_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 id_clms

FEATURE CLASSES

Feature Class	Subclass	Number of Features	Attribute data (bytes)	Spatial Index?	Topology?
ARCS		31431	28		
POLYGONS		11075	82		Yes
NODES		21426			

SECONDARY FEATURES

Tics	3009
Arc Segments	38194
Polygon Labels	10896

TOLERANCES

Fuzzy = 78.210 V   Dangle = 0.000 N

COVERAGE BOUNDARY

Xmin = 242431.578   Xmax = 740361.312
Ymin = 98702.492   Ymax = 880804.938

STATUS

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

COORDINATE SYSTEM DESCRIPTION

Projection	TRANSVERSE
Datum	NAD27
Units	METERS
Spheroid	CLARKE1866

Parameters:

Scale factor at central meridian	0.9996000
Longitude of central meridian	-114 0 0.00
Latitude of origin	42 0 0.00
False easting (meters)	500000.00000
False northing (meters)	100000.00000

Description of Arc/Info id_clms.rel relate structure

```
Relation        = ID_CLMS
Table-Id        = id_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 and database for Federal lands
        in Idaho: 1996
      Edition: Version 1.0
      Geospatial_Data_Presentation_Form: map and database
  Description:
    Abstract:
      The mining claim density data of federal lands in Idaho are
      combined with the digital Idaho Public Land Survey (PLS) to create
      a digital map of the density of mine claims in Open-File Report 99-543.

      The mining claim density data of federal lands in Idaho was one of
      13 western states released in Open-File Report 99-325.  The database for
      Idaho 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 Idaho 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 document mining claim
      activity on federal lands in Idaho 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: id_clms.e00
      Part_Description: This Arc/Info export file contains the coverage
```

```
           id_clms, the database id_clms.clms, and the relate id_clms.rel.
            The original digital PLS export file, plss.e00, came from
            the Idaho Department of Water Resources, State of Idaho.
      Data_Set_Part:
        Part_Type: Arc/Info database
        Part_Name: id_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: id_clms.rel
        Part_Description: This file contains the parameters needed to relate the
          database, id_clms.clms to the digital map database, id_clms.pat.  The
          structure of the relate is:
              RELATION              = ID_CLMS
              TABLE-ID              = id_clms.clms
              DATABASE              = info
              ITEM                  = MTRS
              COLUMN                = mtrs
              TYPE                  = ORDERED
              ACCESS                = RO
Time_Period_of_Content:
  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: -117 30 00
    East_Bounding_Coordinate: -111 00 00
    North_Bounding_Coordinate: 49 00 00
    South_Bounding_Coordinate: 42 00 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: Idaho
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 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
  Idaho 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.

    The digital PLS map of Idaho came from the Idaho Department of Water
    Resources, State of Idaho.

  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, Idaho
                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_Content:
            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 Idaho was released as part of
            the U.S. Geological Open-File Report, OF 99-325.  It was imported as
            an Arc/Info table, id_clms.clms, using the command, dbaseinfo.  A
            relate, id_clms.rel, was made to connect the database to the PLS of
            Idaho.  This report can be found at URL:
            http://wrgis.wr.usgs.gov/open-file/of99-543
          Process_Date: 1997-1998
Data_Quality_Information:
  Completeness_Report:
    The digital PLS of Idaho 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 came from 1:100,000 scale sources.
  Lineage:
    Source_Information:
      Source_Citation:
        Citation_Information:
          Originator: Idaho Department of Water Resources
          Publication_Date: 1993
          Title: Coverage PLSS - Public Land Survey Sections for Idaho
          Geospatial_Data_Presentation_Form: map
          Publication_Information:
            Publication_Place: Boise, Idaho
            Publisher: Idaho Department of Water Resources, State of Idaho
          Online_Linkage: URL http://www.idwr.state.id.us/gisdata>
      Type_of_Source_Media: digital file
      Source_Time_Period_of_Content:
        Time_Period_Information:
          Single_Date/Time:
            Calendar_Date: 1993
        Source_Currentness_Reference:
          The PLS is assumed to be current with regard to section lines.
      Source_Citation_Abbreviation: PLSS.E00
      Source_Contribution:
        The IDWR contributed the digital map needed for attaching the mine
        claim density data to make the digital mine claim density map.
    Process_Step:
      Process_Description:
        The Idaho PLS did not contain a field, mtrs, to which the mine
        claim density database could be attached.  The polygon attribute
```

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        table, id_pls.pat was converted with the 'infodbase' command to a
        dBase table.  Some fields were renamed by this process and also
        changed from binary to floating point format.  Id_pls# was renamed
        id_pls_ and changed in format.  The authors used dbase to compile
        the field, mtrs, from existing fields.  All fields except id_pls_,
        the equivalent of id_pls# in the original id_pls.pat, and mtrs were
        then dropped from the file.  The dBase file was converted back to
        an info file using the 'dbaseinfo' command.  A field named id_pls#,
        in binary format, was added to match the structure of id_pls# in
        id_pls.pat.  This field was populated with the values of id_pls_ which
        made it identical to the original id_pls# in id_pls.pat.  The field,
        id_pls_ was then dropped from the file and only id_pls# and mtrs
        remained.  The mtrs field was joined to the original id_pls.pat by
        using the command 'joinitem' with the common field being id_pls#.
        The data from id_clms.clms was linked through the use of a relate,
        id_clms.rel.  An example of commands for using the relate in ArcEdit
        for selecting all claims in the Total Claims (tc) field is:
        'restore relate id_clms.rel'
        'editcover id_clms'
        'sel id_clms//tc > 0'
      Process_Date: 1997
Spatial_Data_Organization_Information:
  Direct_Spatial_Reference_Method: Vector
  Point_and_Vector_Object_Information:
    SDTS_Terms_Description:
      SDTS_Point_and_Vector_object_Type: Point
      Point_and_Vector_Object_Count: 21426
      SDTS_Point_and_Vector_object_Type: String
      Point_and_Vector_Object_Count: 31431
      SDTS_Point_and_Vector_object_Type: GT-polygon composed of chains
      Point_and_Vector_Object_Count: 11075
Spatial_Reference_Information:
  Horizontal_Coordinate_System_Definition:
    Geodetic_Model:
      Horizontal_Datum_Name: North American Datum of 1927
      Ellipsoid_Name: Clarke 1866
      Semi-major_Axis: 6378206.4
      Denominator_of_Flatening_Ratio: 294.98
    Planar:
      Map_Projection:
        Map_Projection_Name: Transverse Mercator
        Transverse_Mercator:
          Scale_Factor_at_Central_Meridian: 0.99960
          Longitude_of_Central_Meridian: -114 0 0
          Latitude_of_Projection_Origin: 42 0 0
          False_Easting: 500000.0
          False_Northing: 100000.0
      Planar_Coordinate_Information:
        Planar_Coordinate_Encoding_Method: coordinate pair
        Coordinate_Representation:
          Abscissa_Resolution: 9.985668182373
          Ordinate_Resolution: 9.985668182373
        Planar_Distance_Units: meters
Entity_and_Attribute_Information:
  Detailed_Description:
    Entity_Type:
      Entity_Type_Label: id_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:

          08 - Boise Meridian

          TTT.T = BLM Township designation as 'TTT.T' may include a fraction
          of a Township.  For example, Township 1 would be '__1.0'.
          Township 24.5 would be '_24.2'.  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: 147
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: 36
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: 80
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: 1
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: 182
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: 908
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: 115
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: 155
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: 7
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: 991
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: 1010
```

```
Detailed_Description:
  Entity_Type:
    Entity_Type_Label: id_clms.pat
    Entity_Type_Definition:
      Polygon attribute table for the digital map, id_clms.  This digital
      map is derived from the digital map, plss, from IDWR.  All fields
      are represented and one field, mtrs, was added by the authors.
      the mtrs field allows the mine claim density database to be linked
      to the digital map.  The MTRS code 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: id_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: id_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: acres
    Attribute_Definition:
      The amount of acres contained in each polygon
    Attribute_Definition_Source: IDWR
    Attribute_Domain_Values:
      Range_Domain:
        Range_Domain_Minimum: not determined
        Range_Domain_Maximum: not determined
  Attribute:
    Attribute_Label: num
    Attribute_Definition: not determined
    Attribute_Definition_Source: IDWR
    Attribute_Domain_Values:
      Range_Domain:
        Range_Domain_Minimum: not determined
        Range_Domain_Maximum: not determined
  Attribute:
    Attribute_Label: township
    Attribute_Definition: township number
    Attribute_Definition_Source: IDWR
```

```
      Attribute_Domain_Values:
        Range_Domain:
          Range_Domain_Minimum: 0
          Range_Domain_Maximum: 65
Attribute:
  Attribute_Label: tdir
  Attribute_Definition: direction from the principle baseline
  Attribute_Definition_Source: IDWR
  Attribute_Domain_Values:
    Enumerated_Domain:
      Enumerated_Domain_Value: N, S
      Enumerated_Domain_Value_Definition: N(orth)/S(outh)
      Enumerated_Domain_Value_Definition_Source: IDWR
Attribute:
  Attribute_Label: range
  Attribute_Definition: range number
  Attribute_Definition_Source: IDWR
  Attribute_Domain_Values:
    Range_Domain:
      Range_Domain_Minimum: 0
      Range_Domain_Maximum: 46
Attribute:
  Attribute_Label: r_partial
  Attribute_Definition: refers to partial ranges
  Attribute_Definition_Source: IDWR
  Attribute_Domain_Values:
    Enumerated_Domain:
      Enumerated_Domain_Value: 1/2
      Enumerated_Domain_Value_Definition: half-range designation
      Enumerated_Domain_Value_Definition_Source: IDWR
Attribute:
  Attribute_Label: section
  Attribute_Definition: section number
  Attribute_Definition_Source: IDWR
  Attribute_Domain_Values:
    Range_Domain:
      Range_Domain_Minimum: 1
      Range_Domain_Maximum: 36
Attribute:
  Attribute_Label: t
  Attribute_Definition: character version of 'township' field
  Attribute_Definition_Source: IDWR
  Attribute_Domain_Values:
    Range_Domain:
      Range_Domain_Minimum: 0
      Range_Domain_Maximum: 65
Attribute:
  Attribute_Label: r
  Attribute_Definition: character version of 'range' field
  Attribute_Definition_Source: IDWR
  Attribute_Domain_Values:
    Range_Domain:
      Range_Domain_Minimum: 0
      Range_Domain_Maximum: 46
Attribute:
  Attribute_Label: s
  Attribute_Definition: character version of 'section' field
  Attribute_Definition_Source: IDWR
  Attribute_Domain_Values:
    Range_Domain:
      Range_Domain_Minimum: 1
      Range_Domain_Maximum: 36
Attribute:
  Attribute_Label: tr
  Attribute_Definition: concatenation of 't' and 'r' fields
  Attribute_Definition_Source: IDWR
  Attribute_Domain_Values:
    Range_Domain:
      Range_Domain_Minimum: not determined
      Range_Domain_Maximum: not determined
Attribute:
```

```
        Attribute_Label: trs
        Attribute_Definition: concatenation of 't', 'r', and 's' fields
        Attribute_Definition_Source: IDWR
        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: 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:

              08 - Boise Meridian

              TTT.T = BLM Township designation as 'TTT.T' may include a fraction
              of a Township.  For example, Township 1 would be '__1.0'.
              Township 24.5 would be '_24.2'.  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 99-543
  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
```

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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
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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 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 99-543
Distribution_Liability:
  The U.S. Geological Survey (USGS) provides this data "as is."
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  for use lies entirely with the user. Although this data has been
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  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.

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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 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@mailmcan1.wr.usgs.gov
    Hours_of_Service: 8:00 a.m. - 4:30 p.m. Pacific time zone
Resource_Description: Open-File Report 99-543
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
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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 files.
Metadata_Reference_Information:
  Metadata_Date: 19990416
  Metadata_Review_Date: 19990809
  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