

RAILROAD COMMISSION OF TEXAS
INFORMATION TECHNOLOGY SERVICES DIVISION
USER'S GUIDE



DIGITAL MAP INFORMATION

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The Information Technology Services Division (ITS) developed this publication for the general public in response to inquiries concerning the availability of digital map data. Any request for assistance with using the manual will be given every consideration.

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I. GENERAL INFORMATION

IDENTIFICATION

Developed For: Users of RRC Mapping Information

By: RRC of Texas, Information Technology
Services Division, Bowden Hight, Dir.

Computer: Digital Alpha Workstation,
UNIX 5.1 Operating System

OUTPUT MEDIA

The Digital Well Location Mapping information is available for output onto the following mediums:

CD-ROM (Compact Disk)
FTP (File Transfer Protocol-Binary Transfer)

TAR and GZIP

The Railroad Commission uses the UNIX commands TAR and GZIP on all GIS export files. TAR, an acronym for "tape archiving", is commonly used to combine - or "archive" -- two or more files for storage or distribution. The RRC uses GZIP to compress TAREd files.

RRC GIS data files can be uncompressed and unarchived on UNIX operating systems with the following commands:

```
gunzip <file_name>.tar.gz  
tar xf <file_name>.tar
```

The Railroad Commission has successfully uncompressed and unarchived GIS export files using WinZip 6.3 and PKZip 2.6 on an IBM-compatible PC. It is assumed more recent versions of both WinZip and PKZip retain their previous extract capabilities.

Once the original RRC GIS digital data file is uncompressed and unarchived, the user will have all requested data layers in the appropriate format for a particular county.

Disk Size Requirements

Documentation for the UNIX command GZIP states, in part, "The GZIP command uses the Lempel-Ziv algorithm used in the ZIP and PKZIP commands. The amount of compression obtained depends on the size of the input and the distribution of common substrings." GZIP compresses the typical RRC shapefile data set 55% - 65% and .E00 files 80% - 90%. Therefore, users should expect and plan for uncompressed RRC GIS export files to occupy, depending on the export format, anywhere from 1.5 to almost twice the disk space of the compressed files.

Also, ESRI software users should be aware that ArcInfo and ArcView may require considerable amounts of free disk space to successfully execute commands. For example, ArcInfo documentation states that the CLEAN command "requires free disk space around 13 times the size of (the) <in_cover> to create temporary scratch files."

SYSTEM DESCRIPTION

The Railroad Commission of Texas exports double-precision map data from ARC/INFO version 8.0.2 mounted on a Digital Alpha workstation operated by UNIX ver. 5.1. Exports are to Environmental Systems Research Institute's (ESRI) ARC/INFO interchange file (.E00) and shapefile (.SHP) formats.

Interchange files, used to transfer ARC/INFO coverage information amongst machines, is a fixed-length ASCII file. Each interchange file has an .E00 file extension and contains all coverage information and appropriate INFO file information.

Shapefiles, developed by ESRI for use with its ARCVIEW software, store a feature's geographic location and attribute information. The shapefile format is a collection of three different files:

<shape_file>.SHP - contains a feature's geometry.

<shape_file>.SHX - contains a feature's geometry index.

<shape_file>.DBF - contains a feature's dBase attribute information.

ESRI considers their interchange file format to be proprietary and the shapefile format cannot be adequately explained here. If necessary, users can access detailed information about both file formats at:

<http://www.geocities.com/~vmushinskiy/fformats/fformats.htm>

ARCVIEW shapefiles are created from the RRC's ARC/INFO map data. Features are translated from ARC/INFO to ARCVIEW in the following manner:

A/I Feature Class	A/V Shapefile	Type
Points	Type 1 -	Point
Arcs	Type 3 -	Line
Polygons	Type 5 -	Polygon
Region	Type 5 -	Polygon
Annotation	NOT SUPPORTED	

Region subclasses (.PAT<subclass name>) were not supported by ESRI prior to Rev. 7.0 and will not import into ARC/INFO versions prior to Rev. 7.0.

Annotation subclasses will import into versions prior to Rev. 6.0 but will not function the same way they do at Rev. 6.0.

PC ARC/INFO, Rev. 3.4.2D or higher, will import RRC double-precision .E00 interchange files but will create single-precision coverages.

ArcCAD 11.2 and 11.3 and versions of PC ARC/INFO prior to Rev. 3.4.2D require single-precision interchange files. Please contact the Railroad Commission for assistance.

COORDINATE SYSTEM

The Railroad Commission exports all map data to the Geographic projection (Latitude/Longitude). The following parameters define the Geographic projection:

Projection:	Geographic
Units:	Decimal Degrees
Datum:	NAD27

DISCLAIMER

The digital mapping data described in this manual were generated by the Geographic Information System of the Railroad Commission of Texas and are provided for informational purposes only. Base map information was obtained directly from U.S. Geological Survey 7.5 minute quadrangle maps. Patent Survey lines from Texas General Land Office maps were interpreted as accurately as possible over the U.S. Geological Survey base. Oil and gas well data or pipeline data (if included) were obtained from public records of the Railroad Commission. The mapping system from which this data were extracted is currently under development and is continually being updated and refined. These data are intended solely for the internal use of the Railroad Commission, which makes no claim as to its accuracy or completeness. Users are responsible for checking the accuracy, completeness, currency, and/or suitability of this data.

II. DISCUSSION OF FILES

AVAILABLE MAP DATA

Please note that GIS feature layers may not necessarily exist in all counties. If a GIS feature layer - such as ship channels or government lands - does not exist in a particular county, you will not receive a file for that feature layer. The absence of feature layers in particular counties are already accounted for in the data pricing.

The digital data used to create the files was taken from the forms system within the RRC, from the General Land Office (GLO) county survey maps, and, United States Geological Survey (USGS) quadrangle maps.

ESRI's export formats are recognized and accepted industry-wide and are easily imported to and used in many GIS and CAD software packages. However, the user is responsible for confirming that their specific GIS or CAD software fully supports the importation and use of either interchange files or shapefiles.

Available digital map data layers includes:

1. Basemap:
 - a. Airports
 - b. Cemeteries
 - c. Cities
 - d. Government Lands
 - e. Political Boundaries (Includes, where applicable, county, state, offshore and gulf area boundaries.)
 - f. Railroads
 - g. Roads
 - h. Ship Channels
 - i. Subdivisions
 - j. Surveys (Includes, where applicable, abstracts and bay tracts.)
 - k. Water Features
 - l. Offshore Surveys (where applicable)
2. Wells:
 - a. Utility Well Locations
 - b. Surface Well Locations
 - c. Bottom Well Locations
 - d. For horizontal and directional wells, arcs connecting surface and bottom locations.
3. Pipelines:
 - a. Pipelines - Abandoned
 - b. Pipelines - Liquid
 - c. Pipelines - Gas

FILE NAMING CONVENTIONS

The archived and compressed files you receive from the Railroad Commission are named as follows:

1. The 1st letter is an "R"
2. The county FIPS code follows the initial letter.
3. If you ordered .E00 interchange files, "_e00" follows the FIPS number
4. If you ordered .SHP shapefiles, "_shp" follows the FIPS number
5. All files have the suffix ".tar.gz"

Examples:

- a. Harris County exported to .E00 files: r201_e00.tar.gz
- b. County FIPS code 307 exported to .SHP files: c307_shp.tar.gz

A. Exports by County FIPS Code to ArcInfo .E00 interchange files:

- | | |
|------------------------------------------|------------------------|
| 1. Airport arcs: | air<fips_number>.e00 |
| 2. Cemetery arcs/points: | cem<fips_number>.e00 |
| 3. City arcs: | cit<fips_number>.e00 |
| 4. County Boundary arcs/polys/regions: | cty<fips_number>.e00 |
| 5. Government Land arcs: | gov<fips_number>.e00 |
| 6. Railroad arcs: | rail<fips_number>.e00 |
| 7. Road arcs: | road<fips_number>.e00 |
| 8. Ship Channel arcs: | ship<fips_number>.e00 |
| 9. Subdivision arcs/points: | subd<fips_number>.e00 |
| 10. Survey arcs/polygons/regions: | surv<fips_number>.e00 |
| 11. Water arcs/polygons: | watr<fips_number>.e00 |
| 12. Wells: | |
| Utility Well points: | well<fips_number>u.e00 |
| Surface Well points: | well<fips_number>s.e00 |
| Bottom Well points: | well<fips_number>b.e00 |
| Surface/Bottom arcs: | well<fips_number>l.e00 |
| 13. Pipeline arcs: | pipe<fips_number>.e00 |
| 14. Offshore Surveys arcs/polys/regions: | offs<fips_number>.e00 |

B. Exports by County FIPS Code to ArcView Shape files:

- | | |
|--------------------------|-----------------------------------|
| 1. Airport arcs: | air<fips_number>l.shp; .shx; .dbf |
| 2. Cemetery arcs: | cem<fips_number>l.shp; .shx; .dbf |
| points: | cem<fips_number>p.shp; .shx; .dbf |
| 3. City arcs: | cit<fips_number>l.shp; .shx; .dbf |
| 4. County Boundary arcs: | cty<fips_number>l.shp; .shx; .dbf |
| polygons: | cty<fips_number>a.shp; .shx; .dbf |
| coastal regions: | cty<fips_number>g.shp; .shx; .dbf |
| county regions: | cty<fips_number>h.shp; .shx; .dbf |
| gulf areas regions: | cty<fips_number>i.shp; .shx; .dbf |
| offshore regions: | cty<fips_number>j.shp; .shx; .dbf |
| state regions: | cty<fips_number>k.shp; .shx; .dbf |
| 5. Government Land arcs: | gov<fips_number>l.shp; .shx; .dbf |

6. Railroad arcs:	rail<fips_number>l.shp; .shx; .dbf
7. Road arcs:	road<fips_number>l.shp; .shx; .dbf
8. Ship Channel arcs:	ship<fips_number>l.shp; .shx; .dbf
9. Subdivision arcs:	subd<fips_number>l.shp; .shx; .dbf
points:	subd<fips_number>p.shp; .shx; .dbf
10. Survey arcs:	surv<fips_number>l.shp; .shx; dbf
polygons:	surv<fips_number>a.shp; .shx; dbf
abstract region:	surv<fips_number>s.shp; .shx; dbf
baytract region:	surv<fips_number>b.shp; .shx; dbf
11. Water arcs:	watr<fips_number>l.shp; .shx; .dbf
polygons:	watr<fips_number>a.shp; .shx; .db
12. Wells:	
Utility Well points:	well<fips_number>u.shp; .shx; .dbf
Surface Well points:	well<fips_number>s.shp; .shx; .dbf
Bottom Well points:	well<fips_number>b.shp; .shx; .dbf
Surface/Bottom arcs:	well<fips_number>l.shp; .shx; .dbf
13. Pipelines arcs:	pipe<fips_number>l.shp; .shx; .dbf
14. Offshore Survey arcs:	offs<fips_number>l.shp; .shx; .dbf
polys:	offs<fips_number>a.shp; .shx; .dbf
tracts region:	offs<fips_number>t.shp; .shx; .dbf

In addition to the data files described above, metadata is generated for each extracted layer.

C. Exports by County FIPS Code to ArcInfo .E00 interchange files:

In the case of export to e00 files a metadata file name *metadata.xml* is incorporated into each export file and is fully compatible with the metadata viewing and editing tools available in ArcGIS. In addition, the metadata is written to an HTML file using the following naming conventions:

1. Airport:	air<fips_number>.html
2. Cemetery:	cem<fips_number>.html
3. City:	cit<fips_number>.html
4. County Boundary:	cty<fips_number>.html
5. Government Land:	gov<fips_number>.html
6. Railroad:	rail<fips_number>.html
7. Road:	road<fips_number>.html
8. Ship Channel:	ship<fips_number>.html
9. Subdivision:	subd<fips_number>.html
10. Surveys:	surv<fips_number>.html
11. Water:	watr<fips_number>.html
12. Wells:	well<fips_number>.html
13. Pipeline:	pipe<fips_number>.html
14. Offshore Surveys:	offs<fips_number>.html

The HTML files are also written in a Frequently Asked Questions (FAQ) format. These files use the initials FAQ before the corresponding HTML files.

D. Exports by County FIPS Code to ArcView Shape files:

In the case of export to ArcView shapefiles, both an HTML file and an SGML file are created (since ArcGIS does not handle XML metadata files correctly for shapefiles), suign the foollowing naming conventions. The SGML data can be imported into ArcGIS using the *metadata import* function:

1. Airport:	air<fips_number>.html air<fips_number>.sgml
2. Cemetery:	cem<fips_number>.html cem<fips_number>.sgml
3. City:	cit<fips_number>.html cit<fips_number>.sgml
4. County Boundary:	cty<fips_number>.html cty<fips_number>.sgml
5. Government Land:	gov<fips_number>.html gov<fips_number>.sgml
6. Railroad:	rail<fips_number>.html rail<fips_number>.sgml
7. Road:	road<fips_number>.html road<fips_number>.sgml
8. Ship Channel:	ship<fips_number>.html ship<fips_number>.sgml
9. Subdivision:	subd<fips_number>.html subd<fips_number>.sgml
10. Surveys:	surv<fips_number>.html surv<fips_number>.sgml
11. Water:	watr<fips_number>.html watr<fips_number>.sgml
12. Wells:	well<fips_number>.html well<fips_number>.sgml
13. Pipeline:	pipe<fips_number>.html pipe<fips_number>.sgml
14. Offshore Surveys:	offs<fips_number>.html offs<fips_number>.sgml

The HTML files are also written in a Frequently Asked Questions (FAQ) format. These files use the initials FAQ before the corresponding HTML files.

In either case, the HTML metadata can be viewed using any web browser tool and is not dependent upon ArcGIS.

III. RAILROAD COMMISSION MAPPING TERMS

MAPPING TERMS USED AT THE RRC

Survey

A survey is a certified measured description of a piece of land. The term sometimes refers to the land itself. In Texas, original surveys were performed as part of the patenting process whereby land was transferred from the public domain. These "*patent surveys*," recorded at the Texas General Land Office, constitute an official land grid for the State and are the basis for subsequent land surveys.

Block

A block is a defined set of original land surveys. A block has an identifying name and/or number, and surveys within it are usually consecutively numbered, mile-square sections. Land grants from the State of Texas to railroad companies were often patented in blocks and sections. The term block is also used as a unit of a subdivision, i.e., subdivision/block/lot.

Section

A section refers to a square land survey measuring exactly one mile on each side. Some of the land transferred from the public domain by the state of Texas was surveyed and patented in units of square miles. The Texas General Land Office officially considers these units sections. Also, it was common that larger land grants, such as school lands and capitol lands, were subsequently surveyed into square mile units for the convenience of sale; these surveys are also called sections. In addition, the term "*section*" is commonly used to describe surveys in a group that have been assigned consecutive survey numbers, even though some of them do not have the proper shape or size to truly be sections.

Abstract

In Texas, the term abstract refers to an original land survey describing an area transferred from the public domain by either the Republic of Texas or the State of Texas. These surveys are recorded in the "*State Abstract of Land Titles*," which is maintained by the Texas General Land Office. Each survey so recorded is assigned an abstract number, which is unique within the county in which the survey falls. Because Texas has never performed a uniform statewide land survey, these original surveys called "*Patent Surveys*" constitute the State's Official Land Survey System.

IV. FILE LAYOUT AND DATA DICTIONARY

DATA DICTIONARY

This data dictionary defines unique RRC map attribute items and is structured as follows:

<ITEM NAME> <INPUT WIDTH, OUTPUT WIDTH, TYPE {NUMBER_OF_DECIMALS}>

Item Name:

The name of an attribute item in a data file

Input Width:

Number of spaces (or bytes) used to store item values.

Output Width:

Number of spaces used to display the item values.

Type:

One of the following data types:

- B - Whole numbers stored as binary integers.
- C - Character
- D - Dates
- F - Decimal numbers stored in internal floating-point.
- I - Integers
- N - Decimals

Number_of_Decimals:

Number of digits to the right of the decimal place for data types holding decimals.

GENERAL ARC ATTRIBUTE INFORMATION

All coverage arc attribute tables (<COVERAGE_NAME.AAT>) have the following two items:

DTYPE: (2,3,B)

Data type. All data types are given in Appendix A. (Arcs where DTYPE and LTYPE both = 0, are USGS quad boundary arcs.)

LTYPE: (2,3,B)

Line type. All line types are given in Appendix A. (Arcs where DTYPE and LTYPE both = 0, are USGS quad boundary arcs.)

COUNTY BOUNDARY ATTRIBUTE INFORMATION

Data Items in the <COVERAGE_NAME>.PATCOASTAL AND
<COVERAGE_NAME>.PATOFFSHORE:

FIPS: (3,3,C)

Federal Information Processing Standard code (FIPS) is a three character county code. FIPS codes are listed in Appendix B.

COUNTYNAME1: (14,14,C)

(named C_NAME1 in shape files) The county name is in upper case letters.

DISTRICT: (2,2,C)

RRC field office territories or designated areas.

SPZONE: (1,1,C)

The State Plane Coordinate System is based on the Lambert Conformal Conic projection. This coordinate system includes five horizontal state plane coordinate zones following the county boundaries throughout Texas. Measurements are in feet. The zones are named and numbered as follows:

<u>STATE PLANE ZONE</u>	<u>ZONE NAME</u>	<u>ZONE NUMBER</u>	<u>FIPS ZONE</u>
1	North	5326	4201
2	North Central	5351	4202
3	Central	5376	4203
4	South Central	5401	4204
5	South	5426	4205

COUNTYNAME2: (14,14,C)

(Named C_NAME2 in shape files). The county name where only the first letter of the name is capitalized.

DATA ITEMS IN THE <COVERAGE_NAME>.PATGULFAREAS:

FIPS: (3,3,C)

Three character county code. FIPS codes are listed in Appendix B.

AREANAME: (50,50,C)

The FIPS code and county name for a gulf area. FIPS codes and names are listed in Appendix B.

RAILROAD ATTRIBUTE INFORMATION

DATA ITEMS IN THE <COVERAGE_NAME>.AAT:

RAIL_COID: (4,5,B)

Railroad company identification number

SURVEY ATTRIBUTE INFORMATION

DATA ITEMS IN THE <COVERAGE_NAME>.PATABSTRACT:

ANUM: (12,12,C)

Abstract number. The Anum is comprised of the county FIPS code and the abstract number. Assigned to the surveyed parcel by the General Land Office at the time of patenting. If the abstract number field contains a "?" or is blank, then no abstract number was found.

L1SURNAM: (32,32,C)

Survey name. The name of the original grantee or the name of the company, individual or eleemosynary institution that is common among a formed group of surveys as shown on the General Land Office (GLO) county patent survey map or the GLO State Abstract of Land Titles.

L2BLOCK: (10,10,C)

Block Number. The number or letter used in description of a group of surveys identified as a Block on the GLO map. Example: 101

L3SURNUM: (8,8,C)

Section number. Further describes an abstracted surveyed parcel. Or, when preceded by "SUR", a surveyed parcel further divided into numbered abstracted areas. Example: SUR 101

L4SURNAM: (32,32,C)

Sub-Survey name of the grantee when the survey is a part of a larger refined area surveyed by a common party, and is only added if it is shown on the GLO map. A scrap file number corresponding to GLO records may also appear in the field.

L5SFOMF: (9,9,C)

Scrap or mineral file number from the GLO Abstract of Land Titles

FIPS: (3,3,C)

Three character county code. FIPS codes are listed in Appendix B.

DATA ITEMS IN THE <COVERAGE_NAME>.PATBAYTRACT:

BAYNUM: (9,9,C)

Provided by the General Land Office

BAYID: (3,3,C)

Bay area name abbreviations.

TRACTNUM: (6,6,C)

Provided by the General Land Office

WATER ATTRIBUTE INFORMATION

DATA ITEM IN THE <COVERAGE_NAME>.PAT:

TYPE: (1,1,C)

Identifies a polygon as either land (L) or water (W).

WELL ATTRIBUTE INFORMATION

For some historical wells, fields such as APINUM and CWELLNUM may be blank due to the limited amount of research time to capture this information.

UTILITY WELLS:

API: (8,8,C)

Eight character field equivalent to APINUM minus the 2 digit STATE Code and minus the 2 digit STCODE.

COUNTY: (3,3,C)

Three character FIPS county code. FIPS codes are listed in Appendix B.

RELIAB: (2,2,C)

Indicates the reliability of the well spot (the accuracy of the location of the well). Valid reliability codes are listed in Appendix C.

SURFACE-ID: (4,7,B)

Surface well identification number.

WELLID: (5,5,C)

Character field equal to APINUM's last five digits.

BOTTOM WELLS:

API: (8,8,C)

Eight character field equivalent to APINUM minus the 2 digit STATE and minus 2 digit STCODE.

API10: (10,10,C)

Ten character field equivalent to APINUM minus the 2 digit STATE Code.

APINUM: (12,12,C)

The American Petroleum Institute (API) number of the wellbore in which the well is located. This 12-digit number includes a two-digit state code (Texas=42), an eight-digit API code, and a two-digit sidetrack code. (A sidetrack code identifies wells drilled from within a wellbore.)

BOTTOM-ID: (4,7,B)

Bottom well identification number.

COUNTY: (3,3,C)

Three character FIPS county code. FIPS codes are listed in Appendix B.

CWELLNUM: (6,6,C)

Current well number as assigned by the operator.

OUT_FIPS: (1,1,C)

If given the value "Y", indicates a bottom well location in a county other than that indicated by the FIPS code portion of the API number.

LAT: (8,12,F,7)

Latitudinal position of the well. Datum is 1927.

LONG: (8,12,F,7)

Longitudinal position of the well. Datum is 1927.

RADIOACT: (1,1,C)

Whether the well is radioactive (if the bore contains any known radioactive material).

- Y - well is radioactive.
- N - well is not radioactive.

RELIAB: (2,2,C)

Indicates the reliability of the well spot (the accuracy of the location of the well). Valid reliability codes are listed in Appendix C.

STATE: (2,2,C)

Two character API-assigned identifier. Texas = 42

STCODE: (2,2,C)

Side Track Code. Side tracks are numbered incrementally from 1 to 9, then from A through Z.

<u>POSITION 1:1</u>	<u>POSITION 2:2</u>
D = Directional	1 to 9 or,
H = Horizontal	A to Z
W = Well	

SURFACE-ID: (4,7,B)

Surface well identification number.

SYMNUM: (2,3,B)

Indicates the type of well under Datatype 50 in Appendix A.

WELLID: (5,5,C)

Character field equal to APINUM's last five digits.

WELLID7: (7,7,C)

Character field equal to APINUM's last five digits plus STCODE.

SURFACE WELLS:

API: (8,8,C)

Eight character field equivalent to APINUM minus the 2 digit STATE Code and minus the 2 digit STCODE.

COUNTY: (3,3,C)

Three character FIPS county code. FIPS codes are listed in Appendix B.

LAT: (8,12,F,7)

Latitudinal position of the well. Datum is 1927.

LONG: (8,12,F,7)

Longitudinal position of the well. Datum is 1927.

RELIAB: (2,2,C)

Indicates the reliability of the well spot (the accuracy of the location of the well). Valid reliability codes are listed in Appendix C.

SURFACE-ID: (4,7,B)

Surface well identification number.

SYMNUM: (2,3,B)

Indicates the type of well under Data type 50 in Appendix A.

WELLID: (5,5,C)

Character field equal to APINUM's last five digits.

WELL ARCS:

API_NUM: (12,12,C)

The American Petroleum Institute (API) number of the wellbore in which the well is located. This 12-digit number includes a two-digit state code (Texas=42), an eight-digit API code, and a two-digit sidetrack code. (A sidetrack code identifies wells drilled from within a wellbore.)

BOTT-ID: (4,7,B)

Bottom well identification number.

LTYPE: (2,3,B)

Line type of the directional well line

SURF-ID: (4,7,B)

Surface well identification number.

PIPELINE ATTRIBUTE INFORMATION

The Texas Railroad Commission is currently in the process of modifying and updating pipeline attributes to conform to the National Pipeline Mapping System (NPMS). Users of RRC pipeline data can expect specific items within the pipeline attribute table to be updated at any time.

DATA ITEMS IN THE <PIPELINE>.AAT

LENGTH: (8,18,F)

Pipeline segment length in map units.

OPS_ID: (5,5,I)

Accounting number assigned by the U.S. Department of Transportation Office of Pipeline Safety to the company that physically operates the pipeline system.

P5_NUM: (6,6,C)

P5 number - A six-digit number generated and used by the RRC to identify a pipeline operator.

OPER_NM: (40,40,C)

Operator Name - Name of the firm that operates the facility.

SYS_NM: (40,40,C)

System Name - Name of a single pipeline system.

SUBSYS_NM: (40,40,C)

Subsystem Name - A unique name for a smaller sub-section of a pipeline system. A subset of SYS_NM

PLINE_ID: (20,20,C)

Pipeline ID - This is an identifier for a specific section of the pipeline within a pipeline system.

DIAMETER: (5,5,N)

Nominal diameter of the pipeline segment, in inches.

COMMODITY1: (3,3,C)

Abbreviation for the primary commodity carried by the pipeline system.

HG = Hydrogen gas
CRD = Crude Oil
LPG = Liquid Petroleum Gas
NG = Natural Gas
PRD = Product
AA = Anhydrous Ammonia
CO2 = Carbon Dioxide
NGL = Natural Gas Liquids
HVL = Highly Volatile Liquid
EMT = Empty

COMMODITY2: (3,3,C)

Abbreviation for the secondary commodity carried by the pipeline system. Same as Commodity1, except EMT is not valid.

COMMODITY3: (3,3,C)

Abbreviation for the tertiary commodity carried by the pipeline system. Same as Commodity1 except EMT is not valid.

CMDTY_DESC: (40,40,C)

Commodity Description - Descriptive information of the commodities carried by the pipeline system. Appendix D has a complete listing of specific products within the commodity categories.

INTERSTATE: (1,1,C)

Designates a pipeline as either inter or intrastate. "Y" indicates an interstate pipeline, "N" indicates an intrastate pipeline.

STATUS_CD: (1,1,C)

Status Code - Identifies the current status of the pipeline segment. "I" = in service, "B" = abandoned, "R" = retired.

QUALITY_CD: (1,1,C)

Quality Code - Operator's estimate of the positional accuracy of the submitted pipeline segment. "E"=excellent: within 50 feet, "V"=very good: 50-300 feet, "G"=good: 301-500 feet, "P"=poor: 501-1000 feet, "U"=unknown.

T4PERMIT: (5,5,C)

RRC assigned five-digit pipeline permit number.

SYSTYPE: (1,1,C)

Abbreviation for the system type description.

- G = Gas Gathering
- K = Carbon Dioxide
- L = Crude Gathering
- O = Crude Transmission
- P = Non_HVL Liquid Products
- Q = HVL Products
- T = Gas Transmission

See Appendix D for full listing of systypes.

COUNTY: (3,3,C)

The County FIPS code. FIPS codes are listed in Appendix B.

COM_CARRIER: (1,1,C)

Common Carrier - Declaration of common carrier or gas utility status.

Y = it is a common carrier OR gas utility

N = it is neither

SYS-ID: (6,6,C)

System ID - A six-digit RRC-generated system identifier. This item may not be present in all pipeline attribute files. The first number is the region number. Second is the system-type number. A four digit RRC assigned sequence number completes the item.

<u>Region Numbers</u>	<u>Region Name</u>
1	Amarillo
2	Midland
3	Kilgore
4	Austin
5	Houston
6	Dallas
7	Corpus Christi
8&9	Multi-Regional

<u>System Type Number</u>	<u>System Type Name</u>
3	Gas
4	Liquid
5	

NPMS_SYS_ID: (8,8,I)

National Pipeline Mapping System (System ID) - Unique ID for the pipeline system to which the segment belongs, assigned by the National Repository.

ALBERS_MILES: (4,8,F)

Mileage of the pipeline segment calculated using the Albers projection.

SUBREPOS_CD: (2,2,C)

Code for the NPMS repository that processed the polyline segment. (TX)

V. APPENDIX A

DATA AND LINE TYPE ASSIGNMENTS

This appendix lists all data and line types. Data and line types are RRC defined data categories relevant to RRC mapping. Line types are listed beneath data types. For example, data type 10 represents the general data type, political boundaries. Line type 37 of data type 10 represents national political boundaries; line type 2 of data type 10 represents state political boundaries, etc.

Data Type

	Data Type Name:
10	POLITICAL BOUNDARIES 2 - State 3 - County 21 - City 37 - National 58 - Offshore - Three League Line
11	POLITICAL BOUNDARY ANNOTATION 29 - County, State 81 - Town 84 - City 113 - Major Cities
12	ORIGINAL LAND SURVEYS 5 - Block Line 6 - Overlap Block Lines 7 - Survey, Section Lines 8 - Abstract Division Lines 28 - Offshore Abstract Division 29 - Offshore Tract, Survey Line 30 - Offshore Block Line 32 - Offshore Overlap Tract, Survey Line 77 - Annotation Outline Arrow 113 - Overlap Survey, Section Lines 126 - Survey Annotation Outline
13	SURVEY ANNOTATION 2 - Ex. Small Survey 5 - Small Survey 6 - Small Offshore Tract/Survey 55 - Medium Survey, Section 56 - Medium Offshore Tract/Survey 62 - Medium Survey, Section 64 - Small Overlap Survey 96 - Abstract Annotation for Multi-Parcel Abstracts 102 - Large Block, Grant, League 111 - Large Offshore Block 112 - Large Block, Grant, League

- 17** **WATER FEATURES**
10 - Creeks
11 - Coastline
12 - Canals
27 - Rivers
31 - Lakes
35 - Original River Course Under Lake
55 - Dam Structures
- 18** **WATER ANNOTATION**
42 - Creeks and Small Lakes
44 - Rivers and Lakes
- 19** **TRANSPORTATION LINES**
14 - Heavy/Medium Duty
15 - Unimproved Roads
16 - Light Duty Roads and Streets
17 - Railroads
24 - Ship Channel
- 20** **TRANSPORTATION ANNOTATION**
2 - Highways
14 - Railroads
103 - Highways
107 - Ship Channel
- 21** **TRANSPORTATION SYMBOLS**
30 - State Highway/3 digit
31 - State Highway/4 digit
32 - Interstate Highway
33 - Farm or Ranch Road
34 - Park or Recreational Road
35 - U.S. Highway
- 24** **GOVERNMENT LAND**
116 - Parks and Military Reservations
- 25** **GOVERNMENT LAND ANNOTATION**
26 - Small
30 - Medium
32 - Large
- 26** **CEMETERIES**
36 - Cemetery Boundary

27	CEMETERY ANNOTATION 69 - Cemetery Name
28	CEMETERY SYMBOLS 48 - Cemetery Symbol
29	AIRPORTS 36 - Runways and Boundaries
30	AIRPORT ANNOTATION 69 - Airport Name
31	SUBDIVISION LINES 9 - Subdivision Lot Line 124 - Subdivision Outline 125 - Subdivision Labor Line
32	SUBDIVISION ANNOTATION 117 - Ex. Small Subdivision 118 - Small Subdivision 119 - Medium Subdivision 120 - Large Subdivision
50	OIL & GAS WELLS 2 Permitted Location 3 Dry Hole 4 Oil Well 5 Gas Well 6 Oil/Gas Well 7 Plugged Oil Well 8 Plugged Gas Well 9 Canceled Location 10 Plugged Oil/Gas Well 11 Injection/Disposal Well 12 Core Test 13 Directional Surface Location 15 Radioactive Well 16 Sulfur Core Test 17 Storage from Oil 18 Storage from Gas 19 Shut-In Well (Oil) 20 Shut-In Well (Gas) 21 Injection/Disposal From Oil 22 Injection/Disposal From Gas 23 Injection/Disposal From Oil/Gas 24 Offshore Platform 36 Geothermal Well 73 Brine Mining Well 74 Water Supply Well 75 Water Supply from Oil 76 Water Supply from Gas

77 Water Supply from Oil/Gas
78 Observation Well
79 Observation from Oil
80 Observation from Gas
81 Observation from Oil/Gas
88 Storage Well
89 Service Well
90 Service from Oil
91 Service from Gas
92 Service from Oil/Gas
103 Storage from Oil/Gas
104 Injection/Disposal from Storage
105 Injection/Disposal from Storage/Oil
106 Injection/Disposal from Storage/Gas
107 Injection/Disposal from Storage/Oil/Gas
108 Observation from Storage
109 Observation from Storage/Oil
110 Observation from Storage/Gas
111 Observation from Storage/Oil/Gas
112 Service from Storage
113 Service from Storage/Oil
114 Service from Storage/Gas
115 Service from Storage/Oil/Gas
116 Plugged Storage
117 Plugged Storage/Oil
118 Plugged Storage/Gas
119 Plugged Storage/Oil/Gas
121 Brine Mining from Oil
122 Brine Mining from Gas
123 Brine Mining from Oil/Gas
124 Injection/Disposal from Brine Mining
125 Injection/Disposal from Brine Mining/Oil
126 Injection/Disposal from Brine Mining/Gas
127 Injection/Disposal from Brine Mining/Oil/Gas
128 Observation from Brine Mining
129 Observation from Brine Mining/Oil
130 Observation from Brine Mining/Gas
131 Observation from Brine Mining/Oil/Gas
132 Service from Brine Mining
133 Service from Brine Mining/Oil
134 Service from Brine Mining/Gas
135 Service from Brine Mining/Oil/Gas
136 Plugged Brine Mining
137 Plugged Brine Mining/Oil
138 Plugged Brine Mining/Gas
139 Plugged Brine Mining/Oil/Gas
140 Storage/Brine Mining
141 Storage/Brine Mining/Oil
142 Storage/Brine Mining/Gas

143 Storage/Brine Mining/Oil/Gas
144 Inj/Disposal from Storage/Brine Mining
145 Inj/Disposal from Storage/Brine Mining/Oil
146 Inj/Disposal from Storage/Brine Mining/Gas
147 Inj/Disposal from Storage/Brine Mining/Oil/Gas
148 Observation from Storage/Brine Mining
149 Observation from Storage/Brine Mining/Oil
150 Observation from Storage/Brine Mining/Gas
151 Observation from Storage/Brine Mining/Oil/Gas
152 Plugged Storage/Brine Mining
153 Plugged Storage/Brine Mining/Oil
154 Plugged Storage/Brine Mining/Gas
155 Plugged Storage/Brine Mining/Oil/Gas

56

DIRECTIONAL DRILL LINES

25 - Horizontal Drainhole Line
42 - Directional Well Line
43 - Directional Well Line

57

GRAPHIC WELL SYMBOLS

12 - Core Test
13 - Directional Surface Location
15 - Radioactive Symbol
16 - Sulphur Core Test
86 - Horizontal Drainhole
87 - Sidetrack Well Surface Location

OIL & GAS WELLS SYMBOLOGY
 GRAPHICAL REPRESENTATION OF SYMNUM

1		20		39	+	58	+	77	WS	
2		21		40	+	59	+	78	OB	
3		22		41	+	60	+	79	OB	
4		23		42	+	61	+	80	OB	
5		24		43	+	62	+	81	LB	
6		25	+	44	+	63	+	82	+	
7		26	+	45	+	64	+	83	+	
8		27	+	46	+	65	+	84	+	
9		28	+	47	+	66	+	85	+	
10		29	^{LM}	48		67	+	86		
11		30	+	49	+	68	+	87		
12		31	+	50	+	69		88		
13		32	+	51	+	70		89	SV	
14	+	33		52	+	71		90	SV	
15		34	+	53	+	72	+	91	SV	
16		35	+	54	+	73	BR	92	SV	
17		36		55	+	74	WS	93	+	
18		37	+	56	+	75	WS	94	+	
19		38	+	57	+	76	WS	95	+	

96	+	111 ^{CB}	124 ^{BR}	136 ^{BR}	148 ^{CB}
97	+	112 ^{SV}	125 ^{BR}	137 ^{BR}	149 ^{CB}
98	+	113 ^{SV}	126 ^{BR}	138 ^{BR}	150 ^{CB}
99	+	114 ^{SV}	127 ^{BR}	139 ^{BR}	151 ^{CB}
103		115 ^{SV}	128 ^{CB}	140 ^{BR}	152 ^{BR}
104		116	129 ^{CB}	141 ^{BR}	153 ^{BR}
105		117	130 ^{CB}	142 ^{BR}	154 ^{BR}
106		118	131 ^{CB}	143 ^{BR}	155 ^{BR}
107		119	132 ^{SV}	144 ^{BR}	
108 ^{CB}		121 ^{BR}	133 ^{SV}	145 ^{BR}	
109 ^{CB}		122 ^{BR}	134 ^{SV}	146 ^{BR}	
110 ^{CB}		123 ^{BR}	135 ^{SV}	147 ^{BR}	

VI. APPENDIX B

County FIPS Codes

COUNTY	FIPS Code
Anderson	001
Andrews	003
Angelina	005
Aransas	007
Archer	009
Armstrong	011
Atascosa	013
Austin	015
Bailey	017
Bandera	019
Bastrop	021
Baylor	023
Bee	025
Bell	027
Bexar	029
Blanco	031
Borden	033
Bosque	035
Bowie	037
Brazoria	039
Brazos	041
Brewster	043
Briscoe	045
Brooks	047
Brown	049
Burleson	051
Burnet	053
Caldwell	055
Calhoun	057
Callahan	059
Cameron	061
Camp	063
Carson	065
Cass	067
Castro	069
Chambers	071
Cherokee	073
Childress	075
Clay	077
Cochran	079
Coke	081
Coleman	083
Collin	085
Collingsworth	087
Colorado	089
Comal	091
Comanche	093
Concho	095
Cooke	097
Coryell	099

Cottle	101
Crane	103
Crockett	105
Crosby	107
Culberson	109
Dallam	111
Dallas	113
Dawson	115
Deaf Smith	117
Delta	119
Denton	121
Dewitt	123
Dickens	125
Dimmitt	127
Donley	129
Duval	131
Eastland	133
Ector	135
Edwards	137
Ellis	139
El Paso	141
Erath	143
Falls	145
Fannin	147
Fayette	149
Fisher	151
Floyd	153
Foard	155
Fort Bend	157
Franklin	159
Freestone	161
Frio	163
Gaines	165
Galveston	167
Garza	169
Gillespie	171
Glasscock	173
Goliad	175
Gonzales	177
Gray	179
Grayson	181
Gregg	183
Grimes	185
Guadalupe	187
Hale	189
Hall	191
Hamilton	193
Hansford	195
Hardeman	197
Hardin	199
Harris	201
Harrison	203
Hartley	205

Haskell	207
Hays	209
Hemphill	211
Henderson	213
Hidalgo	215
Hill	217
Hockley	219
Hood	221
Hopkins	223
Houston	225
Howard	227
Hudspeth	229
Hunt	231
Hutchinson	233
Irion	235
Jack	237
Jackson	239
Jasper	241
Jeff Davis	243
Jefferson	245
Jim Hogg	247
Jim Wells	249
Johnson	251
Jones	253
Karnes	255
Kaufman	257
Kendall	259
Kenedy	261
Kent	263
Kerr	265
Kimble	267
King	269
Kinney	271
Kleberg	273
Knox	275
Lamar	277
Lamb	279
Lampasas	281
La Salle	283
Lavaca	285
Lee	287
Leon	289
Liberty	291
Limestone	293
Lipscomb	295
Live Oak	297
Llano	299
Loving	301
Lubbock	303
Lynn	305
McCulloch	307
McLennan	309
McMullen	311

Madison	313
Marion	315
Martin	317
Mason	319
Matagorda	321
Maverick	323
Medina	325
Menard	327
Midland	329
Milam	331
Mills	333
Mitchell	335
Montague	337
Montgomery	339
Moore	341
Morris	343
Motley	345
Nacogdoches	347
Navarro	349
Newton	351
Nolan	353
Nueces	355
Ochiltree	357
Oldham	359
Orange	361
Palo Pinto	363
Panola	365
Parker	367
Parmer	369
Pecos	371
Polk	373
Potter	375
Presidio	377
Rains	379
Randall	381
Reagan	383
Real	385
Red River	387
Reeves	389
Refugio	391
Roberts	393
Robertson	395
Rockwall	397
Runnels	399
Rusk	401
Sabine	403
San Augustine	405
San Jacinto	407
San Patricio	409
San Saba	411
Schleicher	413
Scurry	415
Shakelford	417

Shelby	419
Sherman	421
Smith	423
Somervell	425
Starr	427
Stephens	429
Sterling	431
Stonewall	433
Sutton	435
Swisher	437
Tarrant	439
Taylor	441
Terrell	443
Terry	445
Throckmorton	447
Titus	449
Tom Green	451
Travis	453
Trinity	455
Tyler	457
Upshur	459
Upton	461
Uvalde	463
Val Verde	465
Van Zandt	467
Victoria	469
Walker	471
Waller	473
Ward	475
Washington	477
Webb	479
Wharton	481
Wheeler	483
Wichita	485
Wilbarger	487
Willacy	489
Williamson	491
Wilson	493
Winkler	495
Wise	497
Wood	499
Yoakum	501
Young	503
Zapata	505
Zavala	507

OFFSHORE COUNTY AREAS	FIPS CODE
South Padre Island-SB	600
North Padre Island-SB	601
Mustang Island-SB	602
Matagorda Island-SB	603
Brazos-SB	604
Galveston-SB	605
High Island-SB	606
South Padre Island-LB	700
North Padre Island-LB	701
Mustang Island-LB	702
Matagorda Island-LB	703
Brazos-LB	704
Brazos-S	705
Galveston-LB	706
Galveston-S	707
High Island-LB	708
High Island-S	709
High Island-E	710
High Island-E-S	711
Mustang Island-E	712
North Padre Island-E	713
South Padre Island-E	714
Sabine Pass	715

VII. APPENDIX C

WELL RELIABILITY CODES

The reliability of a well's location is determined by the source used to spot the well into the Well Location Database. Valid codes are:

CODES

- 10 Historic Map (non-RRC)
- 15 RRC Hardcopy Map
- 16 Spotted from Reliability Code 15 wells
- 17 Location adjusted during survey maintenance
- 20 WELLBORE Distances
- 25 Unit or hearing plat, plat with form for another well, or form for this well without a plat.
- 30 Operator reported location (distances without plat or plat without distances).
- 40 Operator reported location (distances and plat).
- 45 Field Inspection by RRC personnel.
- 48 Spotted from Reliability Code 50 wells
- 50 U.S.G.S. 7.5 minute quad or aerial photograph.
- 55 Coordinates from operator.
- 59 Coordinates - RRC personnel reported 2D GPS (Accuracy of 200 - 300 feet.)
- 60 Coordinates - RRC personnel reported 3D GPS (Accuracy of about 15 feet.)

VIII. APPENDIX D

COMMODITY DESCRIPTIONS AND SYSTYPES

<u>COMMODITY DESCRIPTION</u>	<u>COMMODITY</u>	<u>SYSTYPE</u>
Acetylene	PRD	Q
Acetylene Off Gas	PRD	T
Alcohols	PRD	P
Ammonia	AA	P
Anhydrous Ammonia	AA	P
Anhydrous HCL	PRD	P
Benzenes	PRD	P
Brine	PRD	Y
Butanes	HVL	Q
Butadiene		
Butane/Butylene		
Butane/Distillates		
Butane/Pentane		
Butylene		
Iso-Butane		
Isobutane		
Carbon Dioxide	CO2	K
Chemical Grade Propylene	HVL	Q
Chlorine Gas	PRD	Q
Condensate	NGL	Q
Slop Oil Water		
Crude	CRD	L (Gathering)
Crude	CRD	O (Transmission)
O/G		
Oil		
Petroleum		
Cyclohexane	PRD	P
Diesels	PRD	P
Dripolene	HVL	Q
Ethanes	HVL	Q
Ethylene	HVL	Q
Ethylene (Gas)	PRD	T
E/P Mix	LPG	Q
E/P Propane		
Ethane/Propane		
Ethane/Propane Mix		
P/P Mix		
EPBC		
Feedstock	HVL	P
Fuel Oil	PRD	P
Bistone		
Fuel Gas		
Fuel Oil/Natural Gas		
Fuel Oils/Gas		
Fuel Residum		

Gasoline	PRD	P
Gasoline/Diesel/Jet		
Gasoline/Fuel Oils		
High Purity Ethane	HVL	Q
Hydrogen Chloride	PRD	T
Hydrogen Gas	HG	T
Liquid Hydrogen		
Pure H2		
Raw H2		
Isobutane	HVL	Q
Jet Fuel	PRD	P
Kerosene	PRD	P
LPG	LPG	Q
Raw LPG		
Methanol/MTBE	PRD	P
MTBE	PRD	P
Natural Gas	NG	T (Transmission)
Natural Gas	NG	G (Gathering)
Dry Gas		
Natural		
Natural Gas/Cond		
Sweet Gas		
Synthesis		
Natural Gas Liquids	NGL	Q
Refinery Off Gas		
Nitrogen	PRD	P
Oxygen	PRD	T
Oxygen/Nit.		
Pentanes	HVL	Q
Propane	HVL	Q
Methyl Propane		
Propadiene		
Propane/Butane		
Propane/LPG		
Propane/Propylene		
Propyne		
Propylene	HVL	Q
Propylene Oxide	PRD	P

Refined Products	PRD	P
Acrylonitrile		
Cutter Stock		
Cyclohexane		
Deisohex Stock		
Distillates		
Dripline		
Feed Gas		
HCL Acid Anhydrous		
Hexene		
HPG		
Isoprene		
Methanol		
MTBE		
Naptha		
Products		
Raffinate		
RPG		
Tertiary Butyl Alcohol		
Toluene		
TBA	PRD	P

SYSTYPES

- A = Offshore (Liquids)
- B = Apartment Complexes
- C = Compressor Station
- D = Distribution
- E = Interstate Transmission Gas
- F = Non-Jurisdictional Gathering
- G = Gas Gathering
- H = Government (Housing Authority)
- I = LP Gas Distribution
- J = Direct Sales Customer
- K = Carbon Dioxide Pipelines
- O = Crude Transmission
- M = Municipal Distribution
- N = City Not Served
- L = Crude Gathering
- P = Product Lines (NOT Highly Volatile)
- Q = Other Liquid Lines (Highly Volatile)
- S = Municipal Supply Line
- T = Transmission
- U = Underground Liquid Storage
- V = Underground Gas Storage
- W = Mobile Home Parks
- X = Liquefied Natural Gas
- Y = Brine
- Z = Offshore (Gas) Gathering

IX. APPENDIX E

8.3 NAMING CONVENTIONS

The 8.3 naming convention stipulates that, exclusive of the filename suffix, a digital filename cannot be more than 8 characters long.

Although some computer operating systems and software programs accept file names longer than 8 characters, the Railroad Commission adheres to the 8.3 naming convention for a number of reasons.

1. ESRI, the manufacturer of ArcInfo and ArcView, suggests that their users adhere to the 8.3 naming convention. ESRI, in various ways and to various extents, codes its software to enforce compliance with the 8.3 naming convention.
2. All RRC GIS data are compressed. Unfortunately, some decompression software packages truncate long filenames such as, "county2031.shp" to meaningless names like, "county2~1.shp"
3. The Railroad Commission is committed to making its digital data accessible and usable to as wide an audience as possible. Adherence to the 8.3 naming convention ensures that at least one major hurdle of data portability is cleared.