



Louisiana Parish Well Reference

Operations Manual and Tutorial

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Technical Notes

System Requirements

Minimum: Intel 80386 or equivalent processor, 8MB RAM, MS Windows 3.1, 50MB free space on hard drive (after installation, 25MB), CD-ROM, and 640x480 Video Display resolution.

Recommended: Any system sold today is more than adequate to run this application. Set the video resolution to 1024x768 or higher for best results.

Installation

The ArcView Data Publisher software used to create this product will install the necessary files to your hard drive and create icons on the Windows Start Menu. It may be necessary to exit all other programs including antivirus programs, for installation.

The Louisiana Parish Well Reference, hereafter referred to as the LPWR, operates under any version of the Microsoft Windows operating systems. However, during installation in MS Windows 95/98/Me the xcopy32 procedures stop with a window that does not automatically close. Just click on the X in the upper right section of the window and the installation will proceed normally.

The SETUP.EXE program will automatically execute once the CD is inserted into the drive. If it fails to execute use Windows Explorer and double click on the SETUP.EXE file located in the root directory of the CD.

It is important to check the box in the DATA install window. The data must be installed onto a hard disk or the program will not function correctly. Due to programming constraints the box is unchecked by default.

The program sets two directory environmental variables; TEMP and HOME. HOME defaults to [drive]:\LPWR??\ and TEMP defaults to [drive]:\LPWR??\DATA\TEMP where ?? is the parish number. The TEMP directory is created as a work space for temporary files.

ESRI created Arcview Data Publisher v2.1 and Arcview 2.1b before Microsoft Windows 95/98/Me/NT4/2000/XP were released. Some problems may be encountered using these operating systems. It is recommended that the latest service packs be installed. However, the program has been tested on clean installs of all version of Microsoft Windows without problems.

Technical Support

The ReadMe file will have any known bugs and technical notes that existed at the time of printing.

Before calling technical support, read the ReadMe file and either run or read the tutorial. Technical support is not available for problems covered in the tutorial or the ReadMe file.

Updated technical notes, program updates and other information will be available at the Central Gulf Region PTTC website:

<http://www.cgrpttc.lsu.edu/lpwr>

Limited Installation Technical Support is available from Central Gulf Region PTTC from 8:30 am - 4:00 pm CST at 225-578-4553.

General Information

About the LPWR

LUW Codes were not used by Louisiana prior to 1940. Production prior to 1940 was published at the field level annually. Monthly production wasn't published until 1952 but for consistency we have maintained the annual format until 1976. From 1977 published reports have used the LUW code method.

We have created a 7 digit LUW code to account for codes prior to the current system. An example would be a well that only produce from 1953-1956 would never have had a LUW code assigned to it by the Louisiana Department of Natural Resources.

Seven digits were chosen so they would not conflict with DNR's LUW codes. The initial digit is the difference. It will be either a; 1, 2, 3 or 4 to indicate a Lease, Unit, Well or Field LUW Type.

Published field production data crosses parish boundaries. LUW production data does not.

Well serial numbers beginning with 999000 are set aside for internal use by the Louisiana Department of Natural Resources.

Overview

This program was created in ArcView v2.1b and uses ArcView Data Publisher v2.1 to create a single use program of an ArcView project. This program has two interfaces. One is a custom interface that we call the Louisiana Parish Well Reference (LPWR) interface and the second is the limited version interface of the ArcView program. The custom interface was created to allow **anyone** to access the well and production database. Data access has been simplified and strict limitations exist on how the data can be output. For advanced users and regular users of ArcView there is a limited ArcView interface, what we shall call the Data Publisher interface. This interface allows greater flexibility in accessing the data, customization of maps and charts, and editing and adding themes. Output limitations do exist. No new data sets can be created and no exports of selected data from this module are allowed, changes to the project cannot be made. If ArcView is available, new projects may be created by using the data supplied in the LPWR.

Tips & Suggestions

- When restoring the LPWR program from a minimized screen the color palette window opens. To close the window just double click on the upper left corner of the window.
- To print reports, charts, maps and other information save the information to a file first then using Windows Explorer, text editor or wordprocessing program to open the file and then print.
- After long periods of use program performance may slow. If this occurs restart

Windows to clear out temporarily saved files. Rebooting the computer may be required in some instances.

- Pressing the "Reset" button should clear most errors. If reset fails to clear the problem you may have to restart Windows, when Windows reopens clear extra programs from memory, (such as IM clients, utility programs, system monitors, etc.) and go directly into the Louisiana Parish Well Reference before using any other program.
- If the well selection box is blank. Press "Reset" to clear the variables. Select the well in question then run a well summary report. If there are no LUW codes present then the selection should be blank. If a LUW code is present try a production report again. The selections should be available.
- Use the maximum screen resolution possible. The display was designed with a resolution of 1024x768. Using a higher resolution allows for a larger viewing area.
- If the MOPROD.DBF file is erased from the TEMP directory just recopy it from the CD. The charting function will not work without this file.
- Read the accompanying ESRI Microsoft Write files for additional information on Arcview, including tips on troubleshooting. They are located in the directory [home]\PROGRAM\ETC or visit their web site at <http://www.esri.com>.
- Visit our web site at <http://www.cgrpttc.lsu.edu/> for Central Gulf information and <http://www.cgrpttc.lsu.edu/lpwr/> for current LPWR information, updates, etc. Questions and comments are always welcome.

Tutorial

This tutorial covers the LPWR custom interface in detail. It demonstrates how to get well information and production information, a chart of production, print a map of selected wells directly from the screen or by using the map layout screen, save the information for future use or use by another program, and output the information in the various report formats

The standard ArcView/Data Publisher interface is covered in other sources.

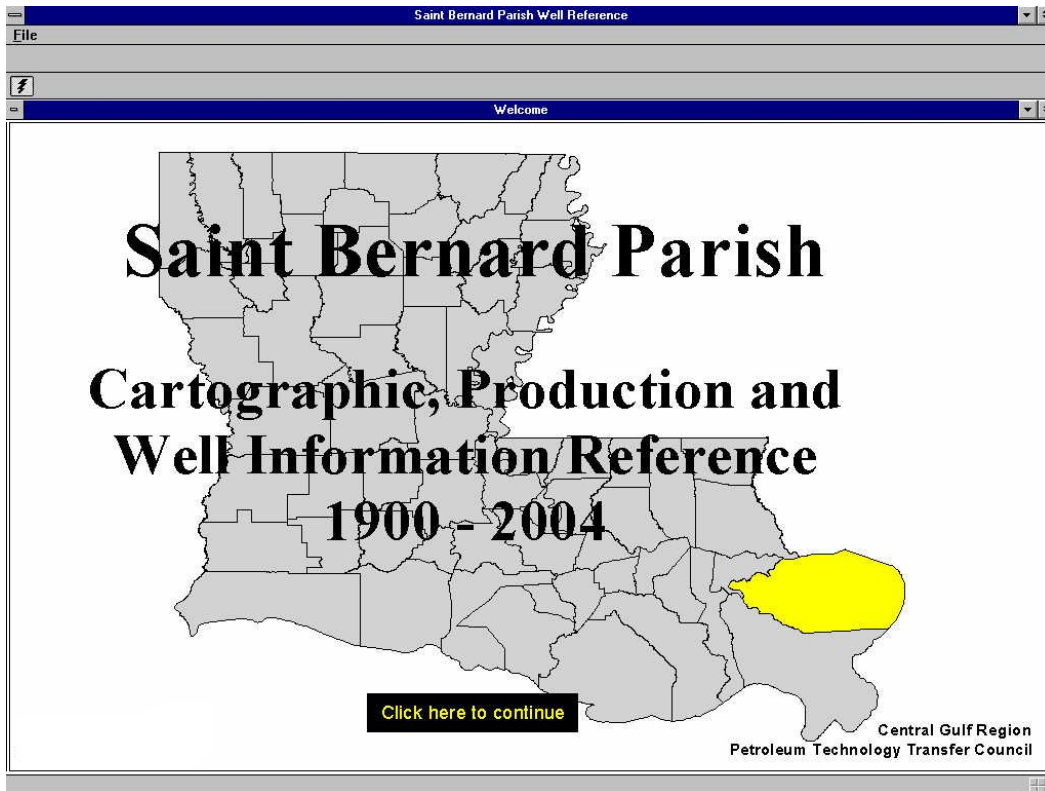
The entire tutorial takes approximately one hour for experienced computer users.

To begin

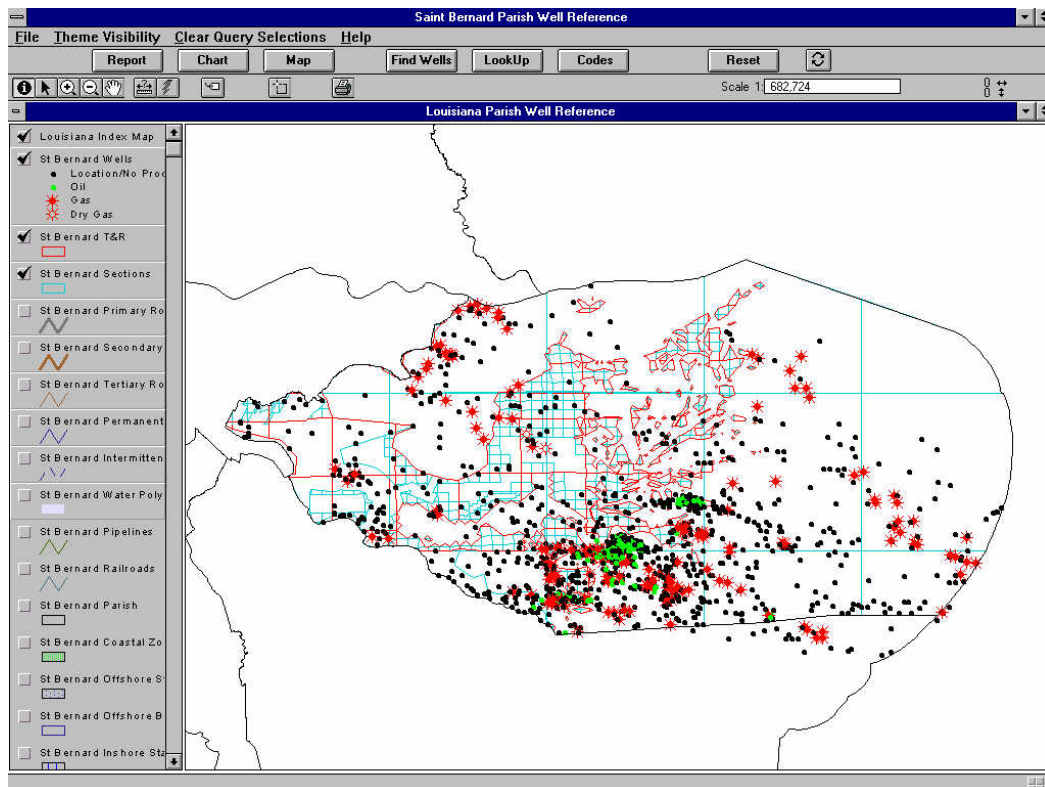
Open the LPWR by double clicking on the Louisiana Parish Well Reference **icon** in the Louisiana Parish Well Reference **folder** from the Start Menu.

For illustrative purposes, many of our examples contain references to St. Bernard Parish. However, any parish name may be substituted and any specific example used may easily be replaced to display similar results.

The program opens with the title “Louisiana Parish Well Reference” and the Welcome window. The Welcome window contains an image of Louisiana, and the title of the project, for example, “Saint Bernard Parish, Cartographic, Production and Well information Reference, 1900 – 2004. Clicking on the File pull-down menu and selecting exit terminates the program. Moving the mouse cursor onto the Welcome window causes it to change shape from an arrow to a lightning bolt. ESRI uses the lightning bolt to signify an action. Clicking on the **Click here to continue** box will advance to the main program screen.



LPWR Opening Screen for the St. Bernard Parish Reference.



LPWR Main Window for St. Bernard Parish

The main window is divided into the following sections:

- title bar
- menu bar
- button bar
- tool bar
- theme window
- display window
- information bar

The top bar is the **Main Project Title Bar**, which contains the standard MS Windows functions on the left and right edges.



The **Menu Bar** is below the **Title Bar**. Clicking on a word will activate a pull-down menu.



The **Menu Bar** contains the following pull-down menus: **File**, **Theme Visibility**, **Clear Query Selections**, and **Help**.

Below the **Menu Bar** is the **Button Bar**. Clicking on a menu button activates a function.

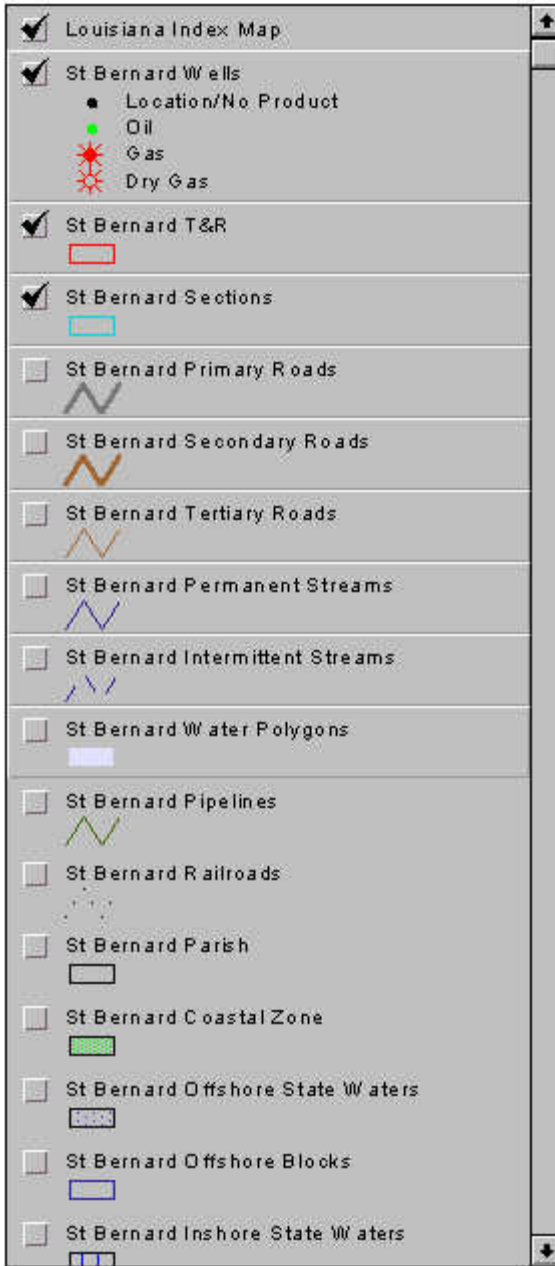


The **Button Bar** contains; **Report**, **Chart**, **Map**, **Find Wells**, **LookUp**, **Codes**, **Reset** and **SwitchGUI** functions.

Below the **Button Bar** is the **Tool Bar**. Clicking on a tool button activates a tool.



The **Tool Bar** contains: **Identify Well**, **Arrow**, **Zoom In**, **Zoom Out**, **Pan**, **Measure**, **Label**, **Box** and **Print**. On the right side the map scale and cursor location are displayed.



Along the left side of the main window is list of themes. St. Bernard Parish is displayed here but the base themes are the same for all parishes.

The themes are: Wells, T&R (Township & Range), Sections, Primary Roads, Secondary Roads, Tertiary Roads, Permanent Streams, Intermittent Streams, Water Polygons, Pipelines, Railroads, Parish, Coastal Zone, Offshore State Waters, Offshore Blocks, Inshore State Waters and Directional Lines.

Themes are the method used to graphically interact with the project.

To make a theme visible click the box to the left of the theme name. Visible themes are also used to create map legends.

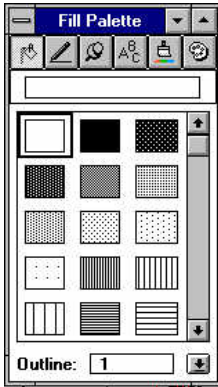
Exercise: “Click” on the little box to the left of the Permanent Streams name. Notice that the Permanent Streams theme is now displayed on the map view as blue lines. To see them more clearly, uncheck the Wells theme by clicking on its box.

Checked themes are visible in the map window. Active themes have a **raised appearance**. Active themes are important because queries and searches are performed only on them. Clicking on the theme area will activate only that theme. To activate multiple themes hold the Shift key and click

on each theme.

Exercise: Activate the Wells theme by clicking on its name. Notice that all the other themes have been inactivated and only the Wells theme has the raised appearance. To reactivate other themes hold the Shift key and click on T&R, Sections, Primary Roads, and Secondary Roads. Notice how all the themes have a raised appearance.

There are 18 themes in the LPWR. Unless the screen resolution is set very high, only a few themes will be displayed. To view the rest of the theme list, use the slide button or click on the arrows that are on the right side of the list.

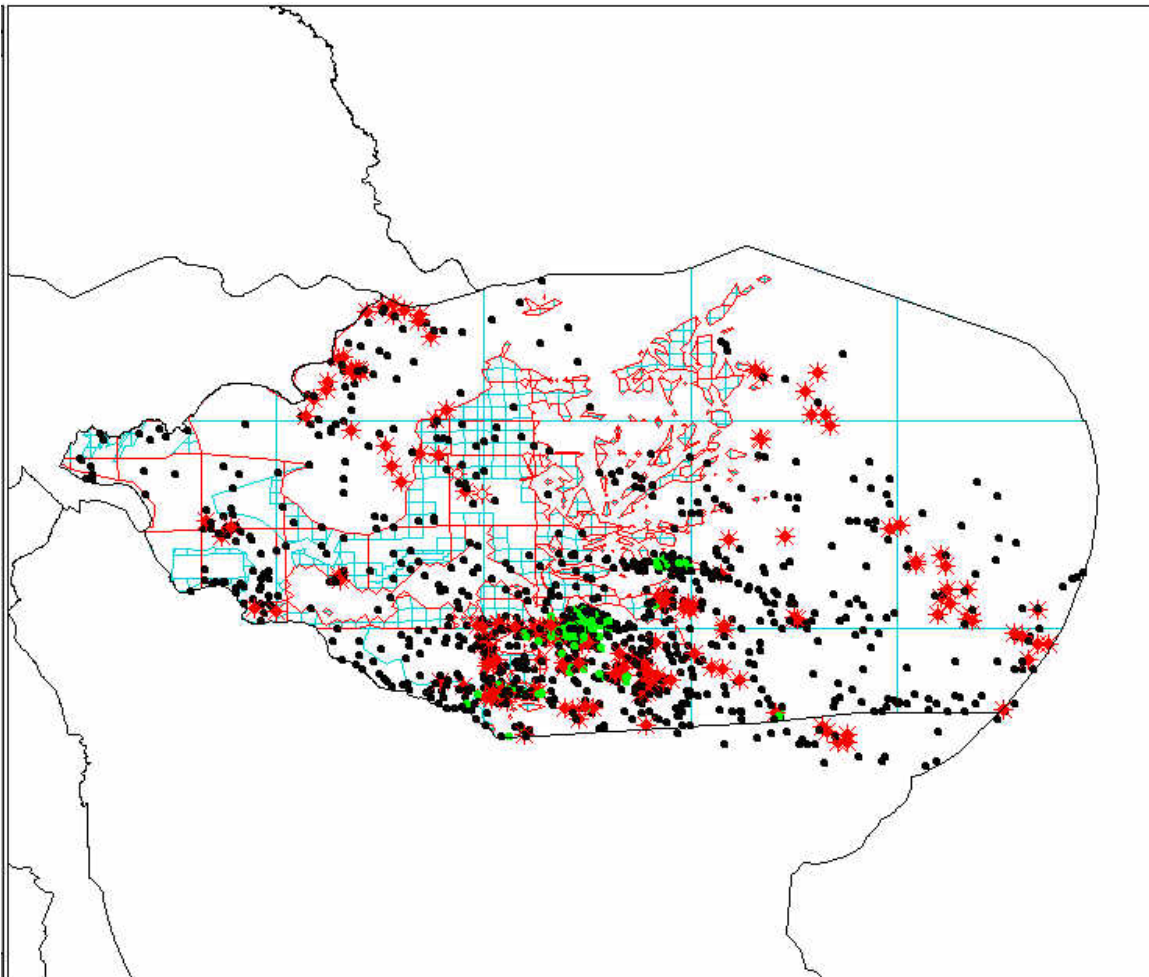


Color schemes or symbols that are difficult to read may be adjusted by **double clicking** on the theme. This will activate the **Symbol Palette** window, where colors, patterns, lines, symbols, and text may be adjusted.

Any time the program window is minimized the **Symbol Palette** appears. Use the Close or Minimize window function to remove it from the display.

Symbol Palette

To the right of the theme menu is the main screen or the map view. Since the LPWR is a graphical interface for the ArcView geographic information system the map screen is where the majority of activity will occur.



Main map and display window for St. Bernard Parish

This window displays the Louisiana Index Map, Wells, Township & Range and Sections themes.

Along the bottom of the main window is an **Information Bar**. Any time the cursor

hovers over a button or tool icon, a brief explanation of its function is displayed.

Information bar

The theme window, map window and information bar comprise the main interface window.

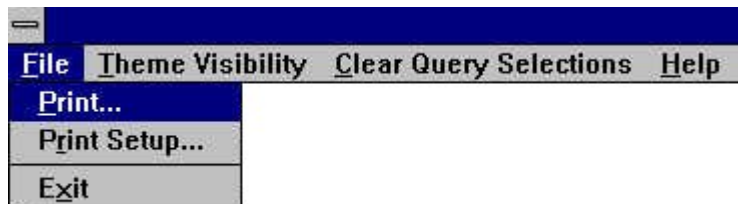
Placing the cursor on the seam between the theme window and map window allows either window to be enlarged or reduced.

Menu Bar

File Menu

File has three menu selections:

- Print - Prints the active screen
- Prints Setup – configures your printer using the Windows Setup function.
- Exit – exits the program.



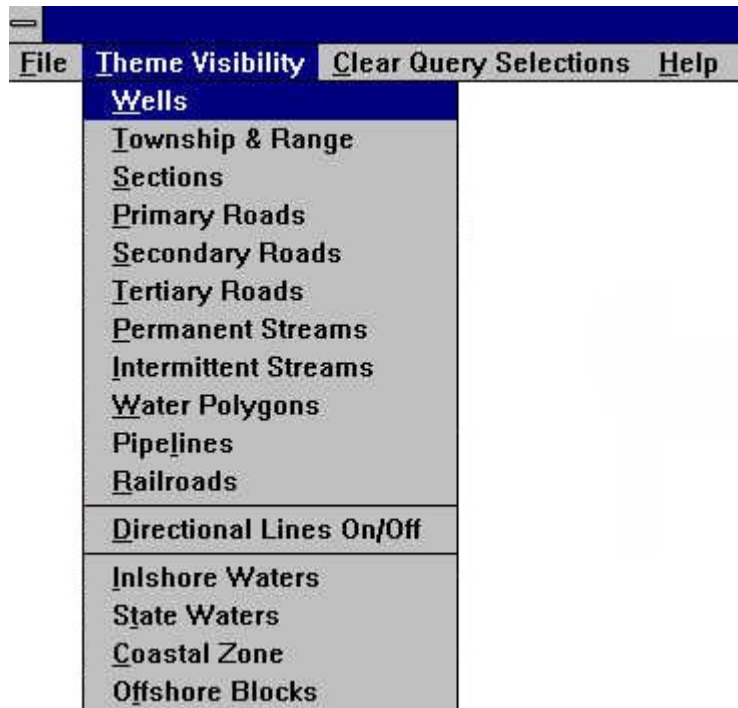
File pull-down menu

Theme Visibility Menu

The themes shown can be turned on or off one at a time. More than one theme can be on the map at a time. Theme drawing may be interrupted or stopped at any time by selecting it again from the menu. No waiting is required for the item to complete drawing to stop it.

- **Wells** – Well symbols.
- **Township/Range** – Township and range lines.
- **Sections** – Section lines.
- **Primary Roads** – Interstate Highways and Federal Highways only.
- **Secondary Roads** - State Highways and Multilane Highways.
- **Tertiary Roads** - All other roads including parish roads, city streets, country lanes and trails.
- **Permanent Streams** - Rivers, streams canals and creeks that normally do not go dry throughout the course of the year.
- **Intermittent Streams** - Waterways that do go dry intermittently.

- **Water Polygons** - Lakes, large rivers and swamps.
- **Pipelines** – Pipelines in the parish
- **Railroads** – The rail lines in the parish.
- **Directional lines** - Shows directional lines for directional wells. Best used with well symbols on.
- **Inshore Waters** - Inland waters of the state.
- **State Waters** - Offshore state waters to 3 mile limit.
- **Coastal zone** - Coastal zone boundary.
- **Offshore Blocks** - Offshore blocks.

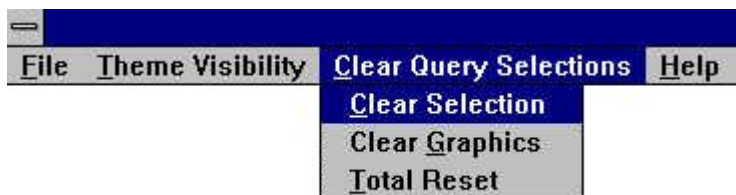


Theme Visibility pull-down menu

Clear Query Selections Menu

The following selections appear:

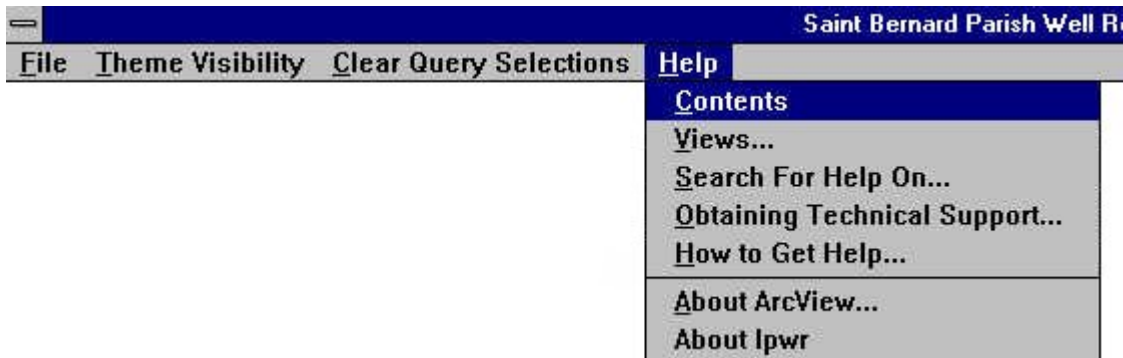
- **Clear selection** - Clears selection when a query is used.
- **Clear graphics** - Clears labels and all graphics from the map view.
- **Total Reset** - Clears all internal variables and selections and restores screen to main view. Same as reset button on main screen.



Clear Query Selections

Help Menu

The last pull-down menu is **Help**. This is ArcViews' regular online help menu for the Data Publisher interface and is not covered in detail in this tutorial; however, program version and contact information is displayed in the **About LPWR** menu.




Help pull-down menu

Button Bar

The **Button Bar** consists of seven wide custom buttons and one small button.



A brief online description of each button on the interface can be found in the lower left-hand side of the LPWR interface window. When the mouse cursor is over the button the description will appear. The large buttons are as follows:

- **Report** – Queries the database for well and production data.
- **Chart** - Makes a chart or graph of production data. Log production vs. time.
- **Map** - Makes a map of selected data.
- **Find Wells** – Displays wells using selected criteria.
- **LookUp** – Displays a list of cross-indexed data.
- **Codes** – Displays the codes used in the LPWR.
- **Reset** – Resets to the main screen.
-  – The **SwitchGUI** button changes from the custom interface to the ArcView/Data Publisher interface and vice versa.

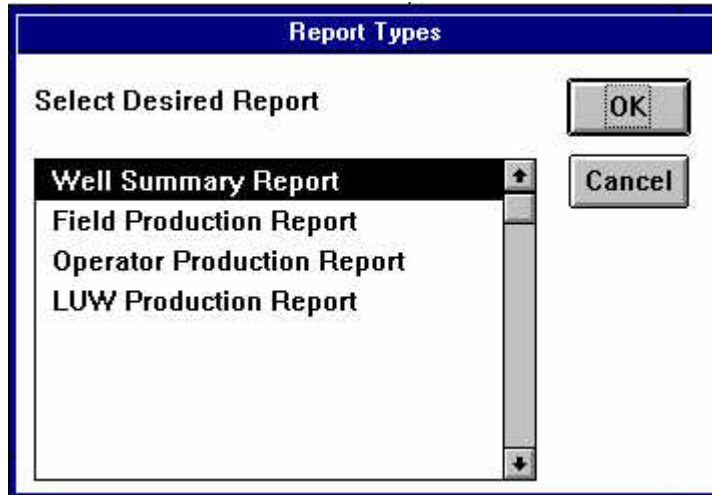
Report Button

Clicking on the **Report Button** displays a window with selections for four types of reports:

- **Well Summary** – displays current well information.
- **Field Production** – displays field production by year for a field using LUW

summation or by published data.

- **Operator Production** – displays operator production by field or parish.
- **LUW Production** – displays production by Lease/Unit/Well code.

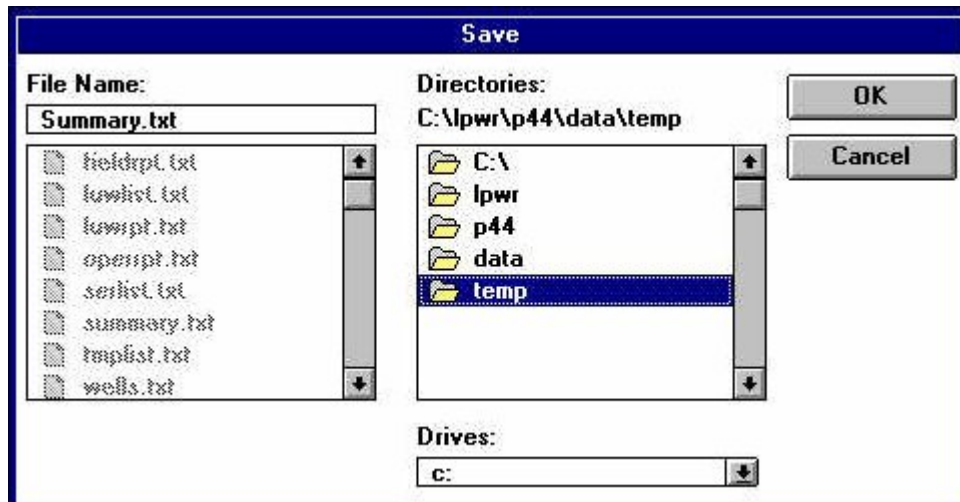


Report button dialog box

There are several ways to gather information for generating reports. The first method is the direct data query using known information for input into the report. Known information could be: well serial, field code, operator code or LUW code.

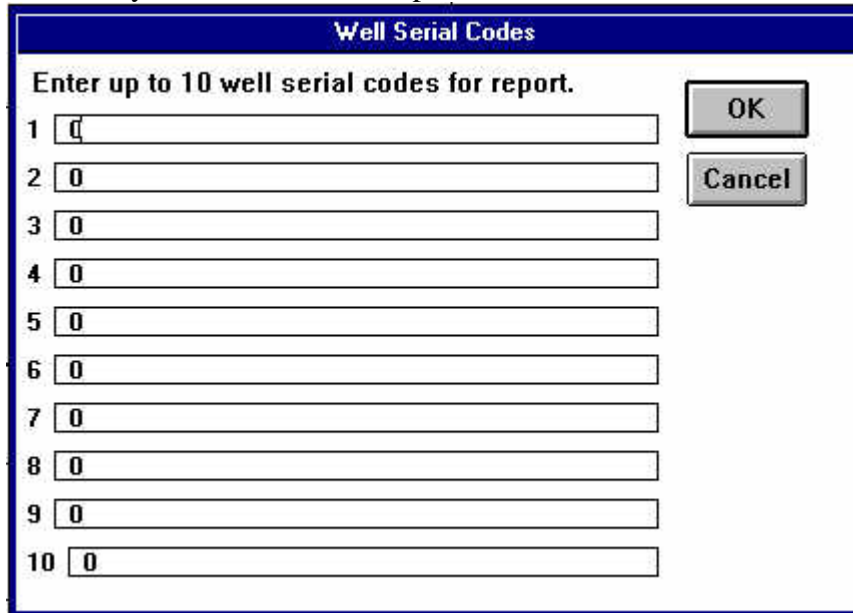
Exercise: Click the **REPORT Button**. Select **Well Summary Report** from the list. Click **OK**. A **Save File Window** appears. The **Save File Window** permits reports to be saved to any directory. The default directory is the `x:\lpwryy\p\data\temp` directory and the default file name is `SUMMARY.TXT`. Where `x:` is the drive that the program was installed on, typically `C:` and `yy` is the parish number.

For this example use the defaults. Click **OK** to proceed.



Save file dialog box for St. Bernard Parish

If this is the first time the report has been executed, a data entry screen appears where up to 10 serial codes may be entered for the report.



Well Serial Codes

Enter up to 10 well serial codes for report.

1

2

3

4

5

6

7

8

9

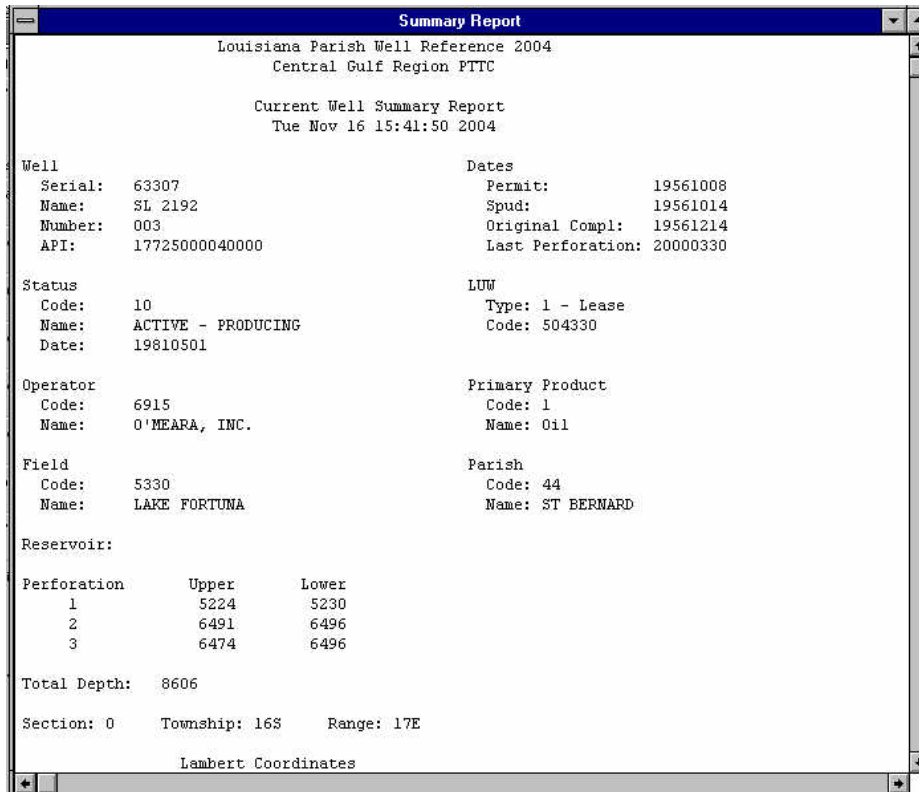
10

OK

Cancel

Well serial code dialog box

Enter a well serial number in the first row then click **OK**. Two windows appear. The **Summary Report Window** containing the information from the query and a **Printing Window**.



Summary Report

Louisiana Parish Well Reference 2004
Central Gulf Region PTTC

Current Well Summary Report
Tue Nov 16 15:41:50 2004

Well	Dates
Serial: 63307	Permit: 19561008
Name: SL 2192	Spud: 19561014
Number: 003	Original Compl: 19561214
API: 17725000040000	Last Perforation: 20000330

Status	LW
Code: 10	Type: 1 - Lease
Name: ACTIVE - PRODUCING	Code: 504330
Date: 19810501	

Operator	Primary Product
Code: 6915	Code: 1
Name: O'MEARA, INC.	Name: Oil

Field	Parish
Code: 5330	Code: 44
Name: LAKE FORTUNA	Name: ST BERNARD

Reservoir:

Perforation	Upper	Lower
1	5224	5230
2	6491	6496
3	6474	6496

Total Depth: 8606

Section: 0 Township: 16S Range: 17E

Lambert Coordinates

Well summary report for Well 63307 in St. Bernard Parish

The Well Summary Report contains the following information: well serial number, well name, well number, API number; well status and date, current operator, field, permit date, spud date, original completion date, last perforation date; current LUW code; primary product; parish code and name; total number of perforations for the well, the last three (3) perforations of the well and the producing sand; total depth; section, township and range; Lambert coordinates; and latitude and longitude in decimal degrees.

The smaller **Printing** window, which displays after a few seconds, is an informational window with tips on printing your report. Click **OK** to close the window.



Printing tip dialog box

The preferred and suggested method for printing is to open the file using a text editor, such as Notepad, or a word processing program, such as WordPad, to print the file. This has the added advantage of allowing notes or comments to be added to the report.

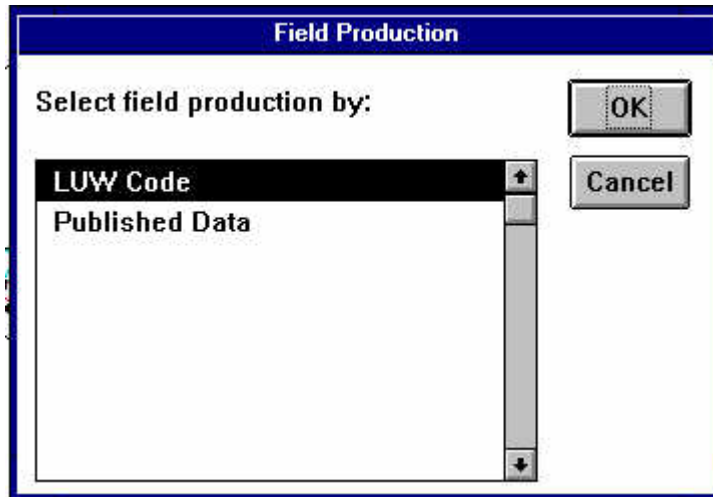
Exercise: Close any open windows. Click the **Report** button and select **Field Production**. There are 2 methods to retrieve the field production data; by **LUW Code** or by **Published Data**. LUW Code uses monthly data submitted by operators using the standard Louisiana Department of Natural Resources reporting forms. Published Data is annual data that has been printed in Louisiana Department of Natural Resources published reports.

Whichever method is selected, the **Save** window will appear using the default filename, FIELDRPT.TXT, then a **Field Selection** window. After selecting a field, a starting date and ending date must be entered for the report. The default starting date, in YYYYMM format, is 190001 and the ending date, in YYYYMM format, is 200412. January 1900 and December 2004 were chosen as the start and end dates for convenience. Changes are made by deleting the current entry and entering the desired one.

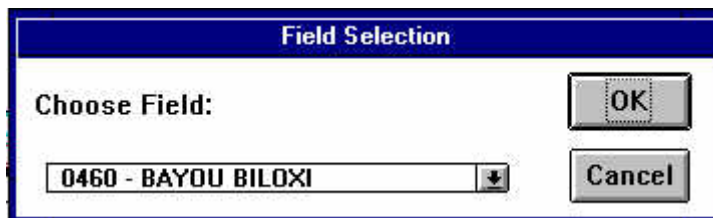
Select the **LUW Code** method then select a field from the list. Use the default dates by clicking **OK** for each one.

Production will be displayed from the beginning of recorded information until its end. The data is displayed by month for each year with a yearly total. At the bottom of the report a yearly summation is displayed. Use the cursor to resize the window and the slide bar to view all the data. At this time there is only oil and gas production data. Oil

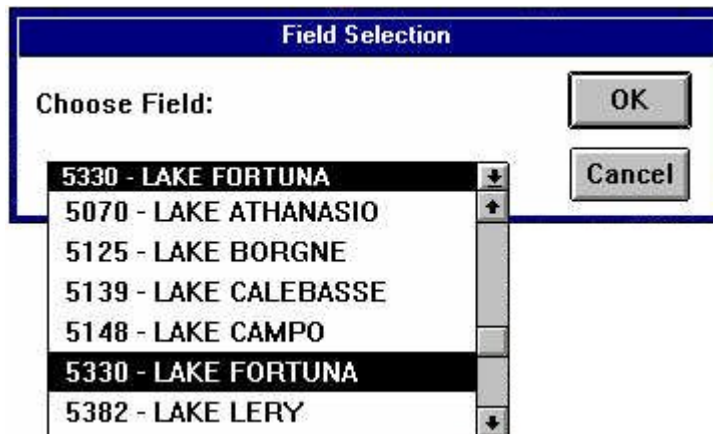
production is the total of crude and condensate in barrels (bbl) and gas production is the total of casinghead gas and gas in thousand cubic feet (mcf).



Field production report selection dialog box



Field selection dialog box for St. Bernard Parish



**Field selection dialog box showing field 5330 - LAKE FORTUNA,
St. Bernard Parish**

From Date

Please Enter The 'FROM' Production Date
as YYYYMM

From date dialog box

To Date

Please Enter The 'TO' Production Date
as YYYYMM

To date dialog box

Field Production Report

Louisiana Parish Well Reference
Central Gulf Region PTTC

Production Report for Field Code 5330
LAKE FORTUNA
Wed Nov 17 09:47:32 2004

Date	Monthly Production	
	Oil Production (bbl)	Gas Production (mcf)
195703	3287	0
195704	2818	1409
195705	2514	1257
195706	2097	1049
195707	2439	1220
195708	2092	1047
195709	1881	941
195710	1969	985
195711	2065	1033
195712	2058	1029

**LUW Code field production report for Field 5330, Lake Fortuna,
St. Bernard Parish**

Exercise, continued: Without closing the report window, click the **Report** button and select the **Published Data** method next. Select **OK** to overwrite the file in the **Save** window. The previous window has been placed under all the other windows. Minimize the LPWR program window to view both field production reports. This allows comparison of the results side-by-side.

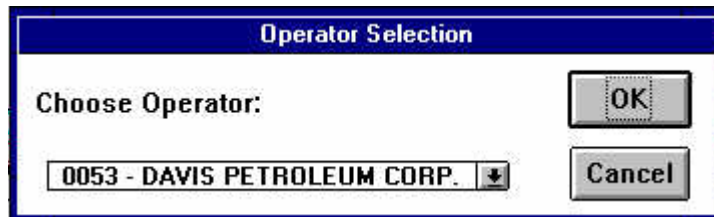
The **Published Data** report has annual oil production, condensate production, CTC condensate production, casinghead gas production, gas production, the offshore zone and comments.

Year	Oil Production (bbl)	Condensate Production (bbl)	CTC Condensate Production (bbls)	Casinghead Gas Production (mcf)	Gas Production (mcf)	Offshore Zone	Comments
1957	23221	0	0	9970	0	0	
1958	26205	0	0	13059	71430	0	
1959	88917	422	0	25573	174499	0	
1960	141470	9823	0	31278	192958	0	
1961	252438	22037	0	94898	223671	0	
1962	251511	4353	0	88321	163397	0	
1963	276737	4385	0	92223	98954	0	
1964	279972	163	0	95855	27523	0	
1965	187586	0	0	65899	415	0	
1966	229543	0	0	75613	0	0	
1967	247925	0	0	81645	18000	0	

Published data field production report for Field 5330, Lake Fortuna, St. Bernard Parish

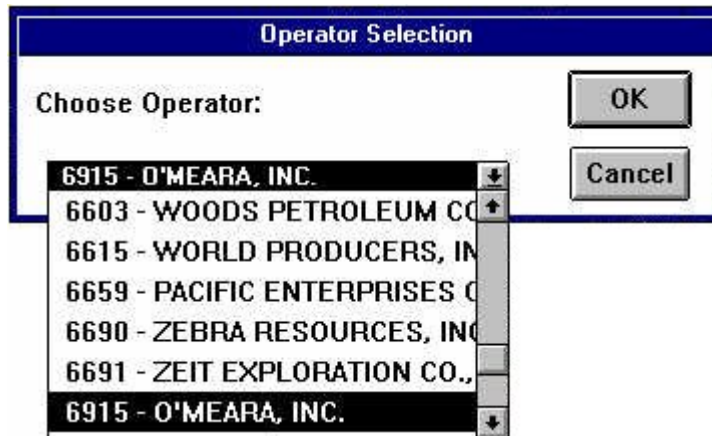
Differences in the data between the **LUW Code** method and the **Published Data** method may be attributed to uncorrected data entry or differences in reporting. The **Published Data** ends at 1976 after this date the Louisiana Department of Conservation uses the LUW production method.

Exercise: The example is the **Operator Production Report**. Close report windows, click **Report**, and then select **Operator Production Report**. If the **Save** window appears, click **OK** to continue. The default file name for this report is: OPERRPT.TXT.



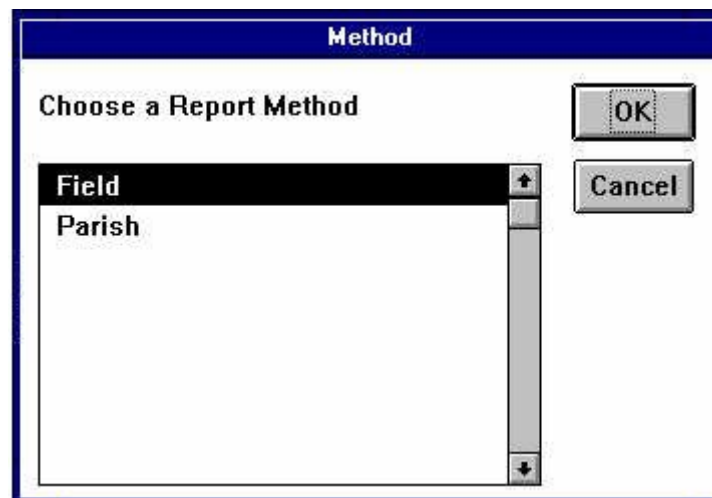
Operator selection dialog box

For demonstration purposes only, select any operator. This example uses operator 6915 – O’Meara, Inc. And select the default start and end dates.



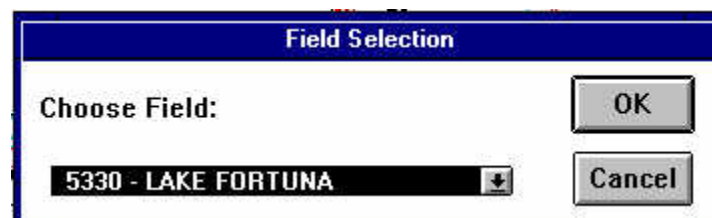
Operator selection dialog box showing operator 6915 - O'MEARA, INC.

The next window displayed is the **Report Method for Production** for the selected operator. The choice is **Field** or **Parish**. **Field** displays production for that operator for a particular field and **Parish** will display production for that operator for the whole parish.



Operator production report method selection dialog box

Select **Field** and the Field Selection window appear. In this case there is only one choice.



Field selection dialog box for St. Bernard Parish

Operator Production Report		
Louisiana Parish Well Reference 2004		
Central Gulf Region PTTC		
Production Report for Operator Code 6915		
O'MEARA, INC.		
For Field 5330 - LAKE FORTUNA		
Wed Nov 17 11:24:44 2004		
Monthly Production		
Date	Oil Production (bbl)	Gas Production (mcf)
200010	5689	1695
200011	6344	3221
200012	6140	4254
T:2000	18173	9170
200101	6223	4109
200102	5308	4693
200103	3959	3265
200104	5115	4122

Operator production report for operator 6915, O'Meara, Inc. for field 5330, Lake Fortuna, St. Bernard Parish

Exercise: Close the report windows, then click on **Report** and select **LUW Production Report**. If the **Save** window appears, click **OK** to continue. The default file name for this report is; LUWRPT.TXT. The LUW code input window is displayed. You can enter up to 10 LUW codes for your report. Enter a LUW code, 504330 in this example, click **OK** and select the default dates.

LUW Codes	
Enter up to 10 LUW codes for report.	
1	<input type="text" value="0"/>
2	<input type="text" value="0"/>
3	<input type="text" value="0"/>
4	<input type="text" value="0"/>
5	<input type="text" value="0"/>
6	<input type="text" value="0"/>
7	<input type="text" value="0"/>
8	<input type="text" value="0"/>
9	<input type="text" value="0"/>
10	<input type="text" value="0"/>
<input type="button" value="OK"/> <input type="button" value="Cancel"/>	

LUW code input dialog box

The data display includes the oil and gas production and the number of wells producing into that LUW code.

Date	Monthly Production		Number of Producing Wells
	Oil Production (bbl)	Gas Production (mcf)	
195703	3287	0	1
195704	2818	1409	1
195705	2514	1257	1
195706	2097	1049	1
195707	2439	1220	1
195708	2092	1047	1
195709	1881	941	1
195710	1969	985	1
195711	2065	1033	1
195712	2058	1029	1
T: 1957	23220	9970	

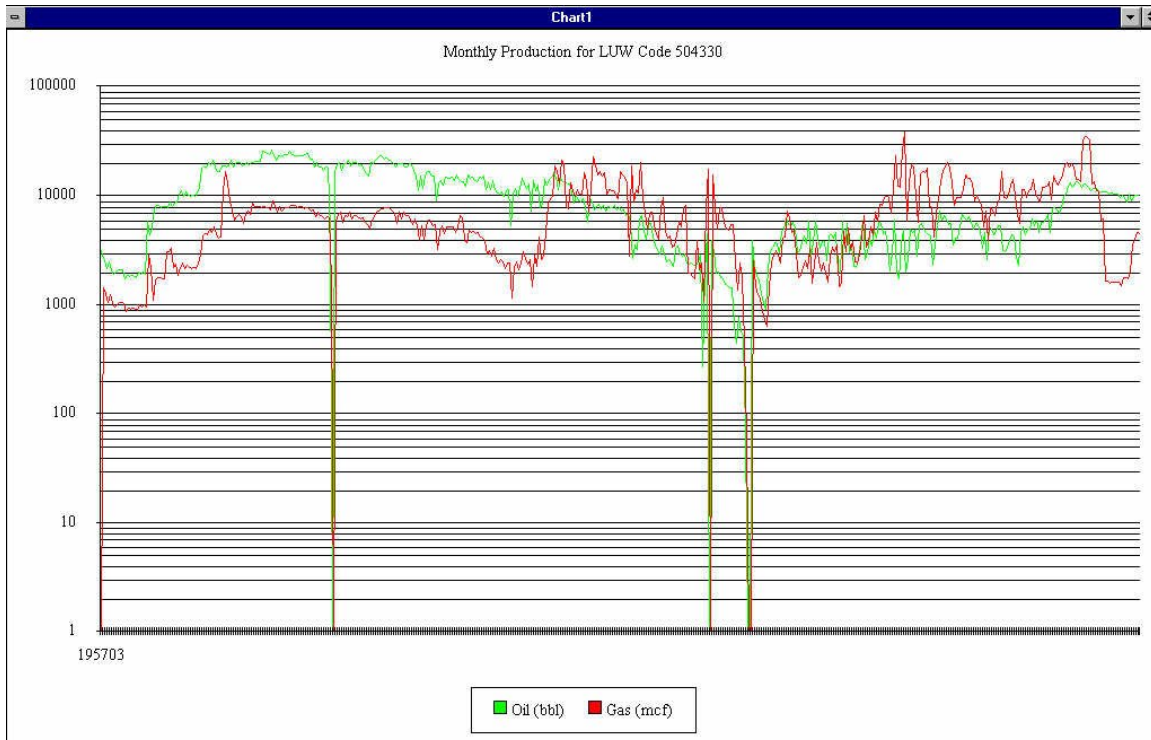
LUW production report for LUW Code 504330, St. Bernard Parish

Chart Button

Exercise: Close the report windows and then click on the **Chart** button. Enter 504330 and click **OK**. Select **OK** for the default dates.

LUW code dialog box for production graph

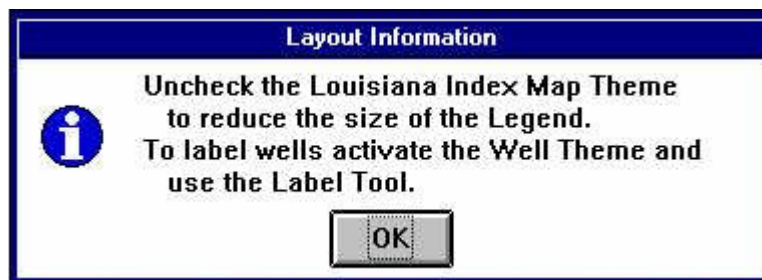
A simple log graph of oil and gas production over time is displayed. Only the start date is displayed on the X-axis.



Log production graph for LUW code 504330, St. Bernard Parish

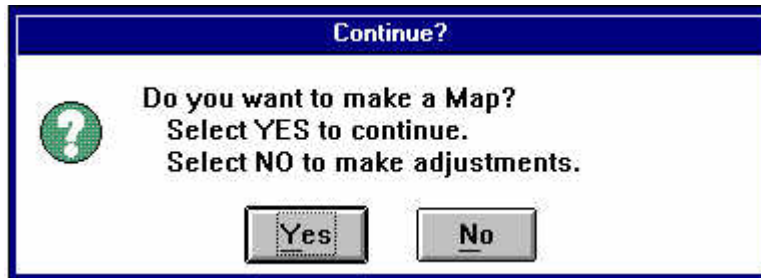
Map Button

Exercise: Close the **Chart Window**, and then click the **Map** button. This is also known as a layout. This example will generate a map of the main window. An informational window is displayed outlining two important tips to consider when generating a map. Click **OK** to continue.



Map tip informational dialog box

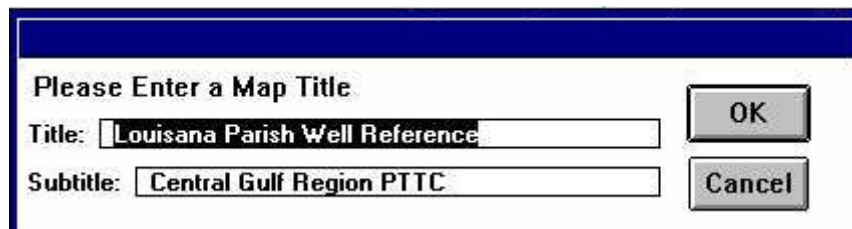
The next window allows for making adjustments. The primary adjustment is to **uncheck** the Louisiana Index Map theme so the legend created for the map will not list all of the parishes in the state.



Map adjustment dialog box

In this case select No then **uncheck** the Louisiana Index Map theme. Once this has been done, click the Map button again. Click **OK** on the Layout information window and select **Yes** on the map adjustment window.

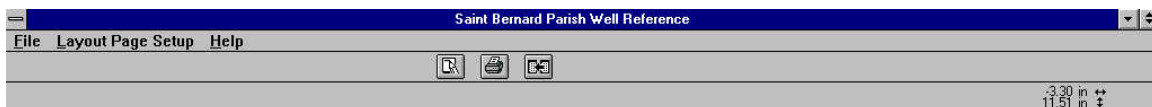
The next window to appear is the **Map Title** window. Here custom labels may be added to the map.



Map title dialog box

For this example use the default titles and click **OK**. A map is generated with the title and subtitle along with the current date and time displayed along the top, a compass arrow with the program information in the lower left corner, the map scale in the center below the map, and the legend in the lower right corner.

The map window contains a different set of control bars.



Map window control bars

Map Window Control Bars

File Menu

- Print – Outputs the map to a printer or a file.
- Print Setup – Switches to the Windows printer setup window.
- Export – Saves the map under different file formats.
- Exit – Quits the Louisiana Parish Well Reference program.

Layout Page Setup

- Layout Size – Page adjustment options: size, units, width, height, orientation, margins and resolutions.

Help

- Contents – Standard ArcView help window.
- Layouts – Help on layouts.
- Search For Help On – Standard ArcView search help window.
- Obtaining Technical Support – Information on using ESRI’s help system.
- How to Get Help – Information on using the context sensitive help system
- About ArcView – Licensing and version information about this program.

Tool Bar Buttons



“Print Setup” – printer setup



“Print” – print the map



“Go” – return to the Welcome screen

Location Bar

Under the tool bar to the far right is the cursor location for the map.

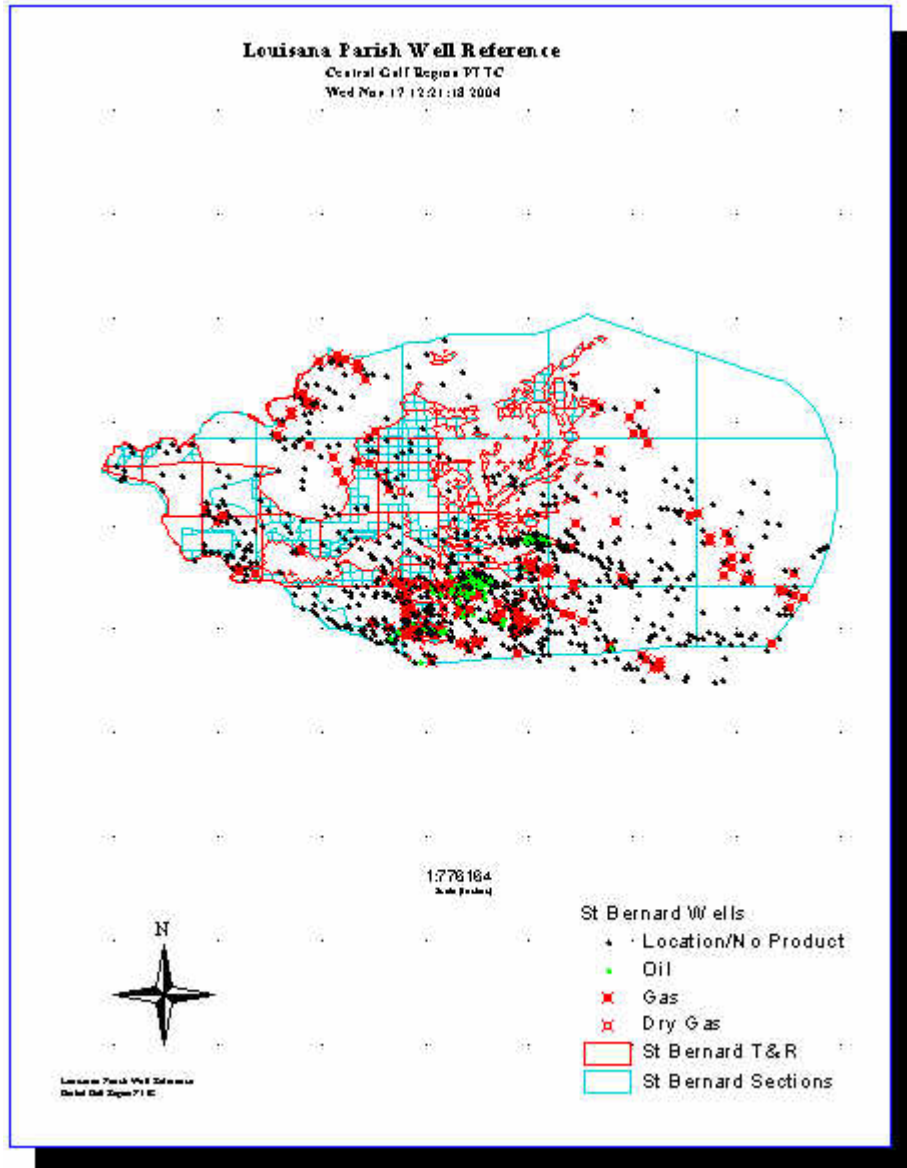
12.73 in ↔
11.53 in ⇕

Cursor location for map layout

After a few seconds an informational window appears displaying options for printing or saving the map.



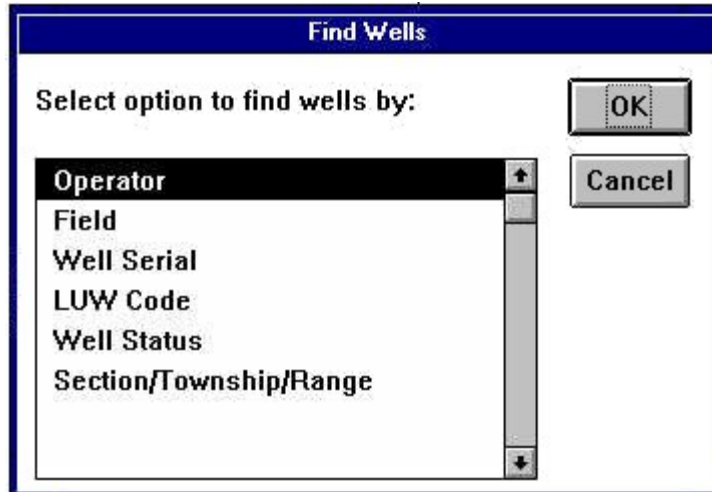
Layout informational dialog box



Layout window displaying map for St. Bernard Parish

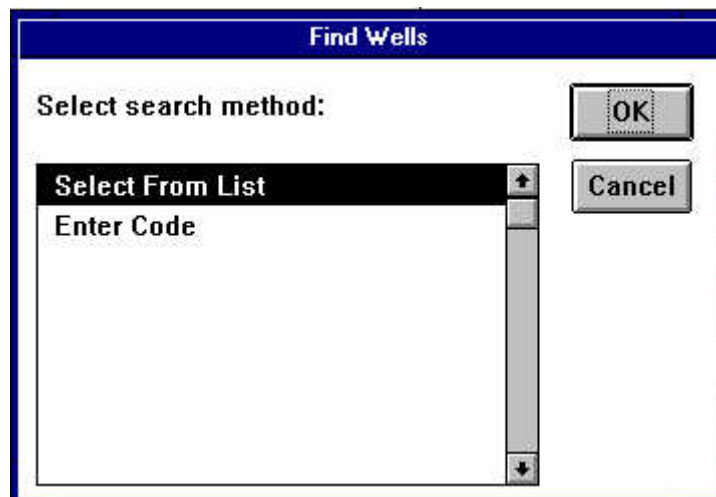
Find Wells Button

The **Find Wells Button** along with the **Report Button** and the “**Box**” tool will probably be the most used buttons. The **Find Wells Button** displays wells on the map window by searching for wells using: Operator, Field, Well Serial Number, LUW Code, Well Status or Section/Township/Range.



Find Wells selection dialog box

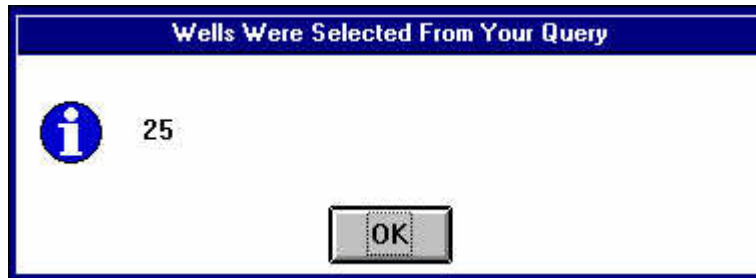
After selecting a search option, the next window selects a search method. Choices are to select from a list or to enter the code manually.



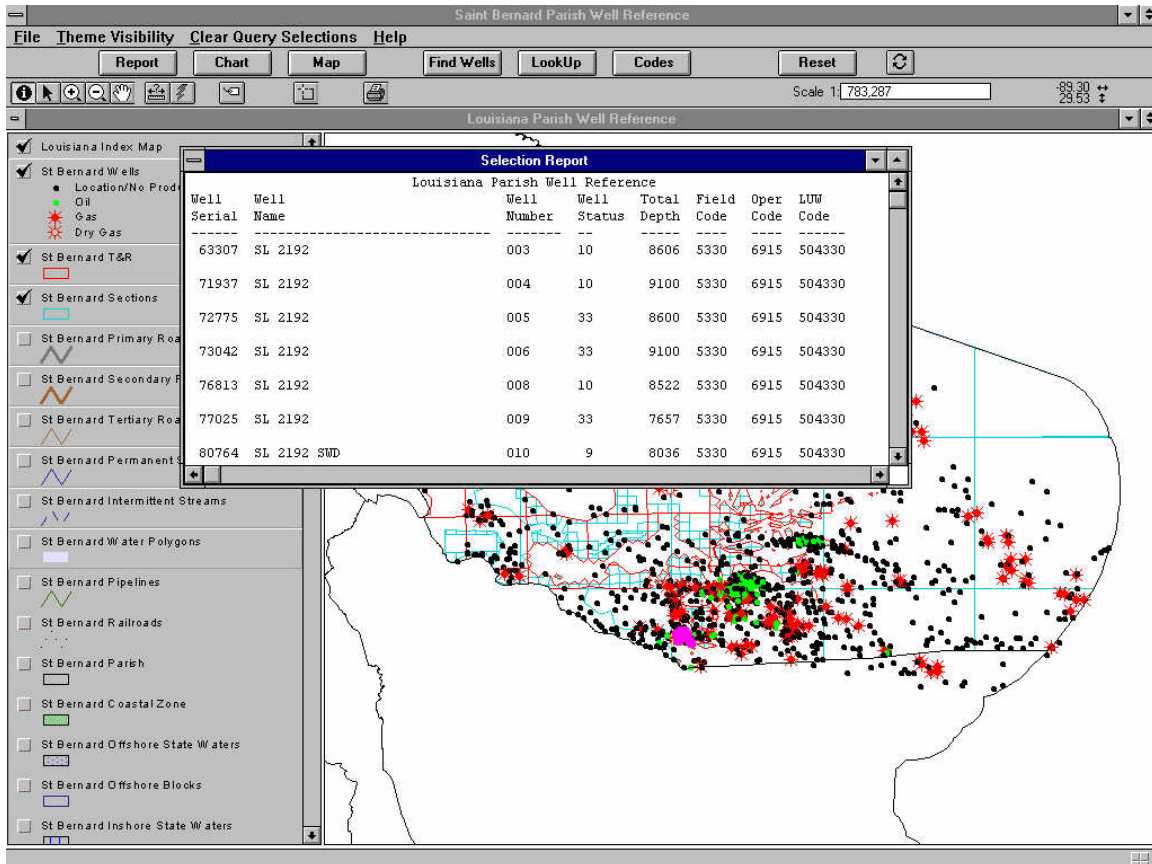
Find wells search dialog box

After a method is chosen, the program searches the well data base and plots a magenta dot or a yellow well symbol at the well location that matches the search criteria. An informational window appears displaying the number of wells found. Click **OK** to continue. Then a Selection Report window is displayed with the following information: Well Serial, Well Name, Well Number, Well Status, Total Depth, Field Code, Operator Code and LUW Code.

As an example, selecting by operator and entering 6915, the following results are returned:



Number of wells found informational dialog box



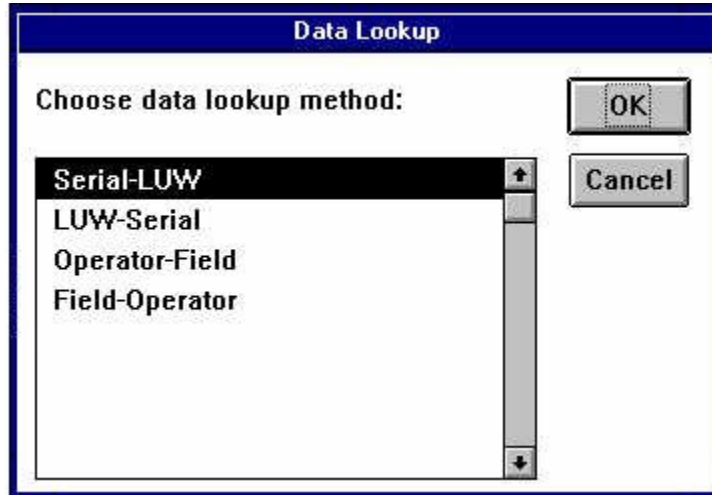
Find wells by operator 6915 in St. Bernard Parish

LookUp Button

The **LookUp** Button displays a cross index of information on:

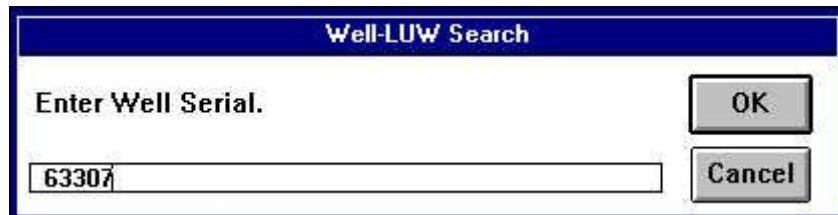
- Serial-LUW – Displays a list of LUW codes associated with a particular well serial code.
- LUW-Serial – Displays a list of well serial numbers associated with a particular LUW code.
- Operator-Field – Displays a list of fields for a particular operator.
- Field-Operator – Displays a list of operators for a particular field.

The Serial-LUW and LUW-Serial lookups are important for determining what wells are producing into which LUWs since production information is reported by LUW code for Louisiana.

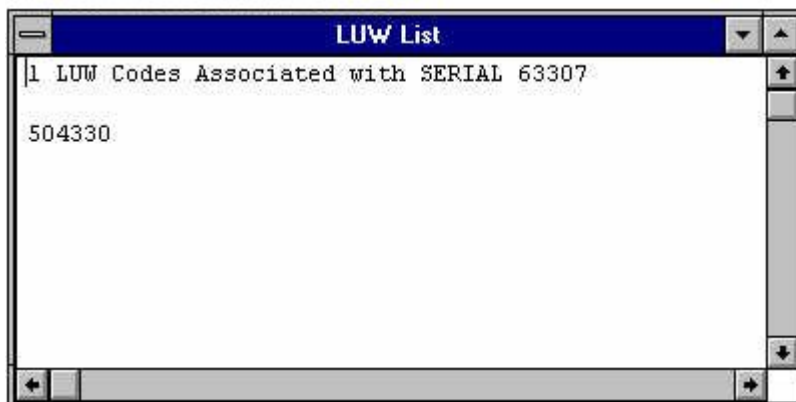


Data lookup selection dialog box

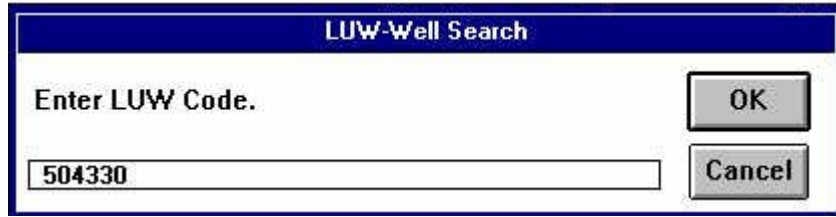
For the sample well 63307, performing a Serial-LUW lookup displays one LUW code for this well, 504330; however, performing a LUW-Serial lookup displays 17 wells that are assigned into that LUW code.



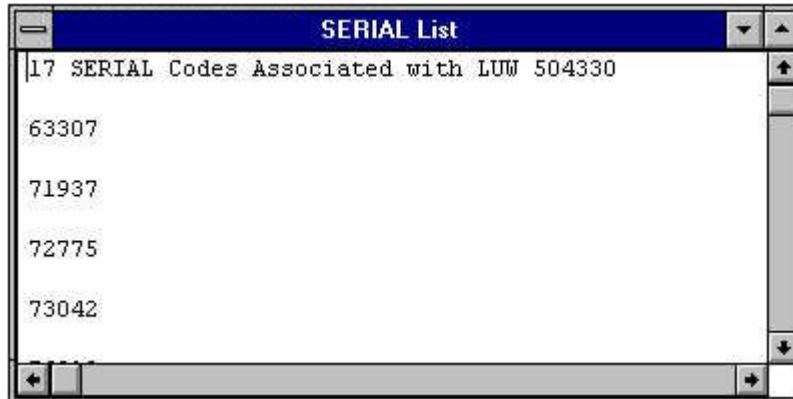
Well serial input dialog box



LUW code list for well 63307 for St. Bernard Parish



LUW code input dialog box



Well serial number list for LUW code 504330 for St. Bernard Parish

Codes Button

The **Codes Button** displays a list of descriptions for codes used in the program. Selecting one displays a list of codes and their meanings.


- Operator Codes – operators.
- Field Codes – fields.
- Well Status Codes – well status.
- LUW Type Codes – LUW types.

Reset Button

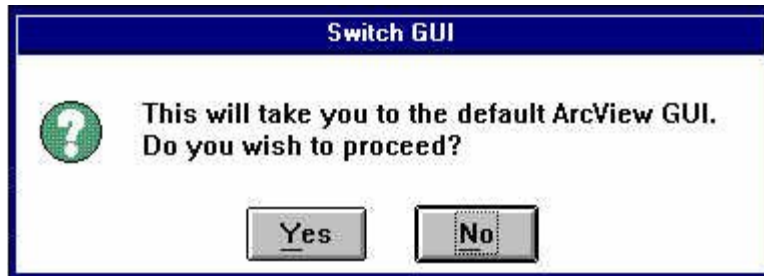
Clicking on the **Reset Button** clears all selections and graphics and sets the program to the beginning screen. This is useful for starting over or to clear away any problems that may have occurred while using the program.



Switch GUI Button

The **Over/Under Arrows Button**, , changes interfaces. The default custom interface was developed to simplify using the Louisiana Parish Well Reference; however, for experienced users or those wishing to have greater access into the program clicking this button will transfer you to the ArcView/Data Publisher interface. A confirmation window

appears that asks if you really want to switch interfaces. Click Yes to switch or No to remain in the custom interface.



Switch to ArcView/Data Publisher interface dialog box



ArcView/Data Publisher menu, button and tool bars





Switch to LPWR custom interface dialog box


Tool Bar




LPWR Tool Bar

 **“Identify Well”** – Displays data directly from the well data file in table form. It will display all the wells near the selection point. The parish well theme must be selected for this tool to work.

 **“Arrow”** - Used to select objects and to reposition them.

 **“Magnify Plus”** – Zoom into a point or an area on the map.

 **“Magnify Minus”** – Zoom out from a point or area on the map.



“**Hand**” – Pans or moves the map around without changing the zoom settings.



“**Ruler**” – Measures the distance between two points. The result is displayed on the **Information Bar** in the lower left portion of the screen.



“**Label**” – Adds a label to the map that includes the well serial, well name, well number and total depth of the well.



“**Box**” – Selects wells in the box drawn. It will generate a selection report and display the selected wells in yellow symbols.



“**Print**” - Prints the active window.

On the right side of the **Tool Bar** is an informational area that includes the map scale and the cursor location in latitude and longitude degrees.

Scale 1: 783,287

Map scale in inches

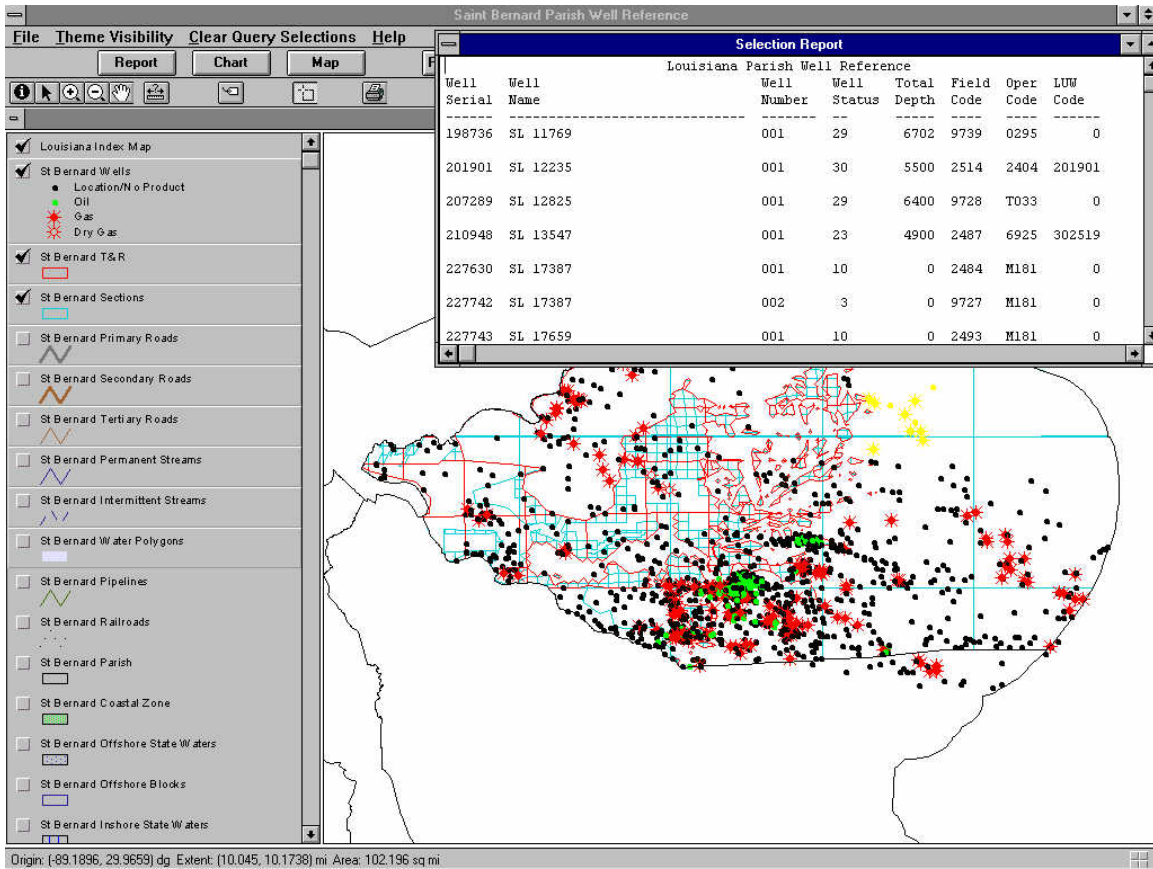
-89.06 ↔
30.47 ↓

Map location of cursor in degrees latitude and longitude

The following exercises use the **Box** tool.

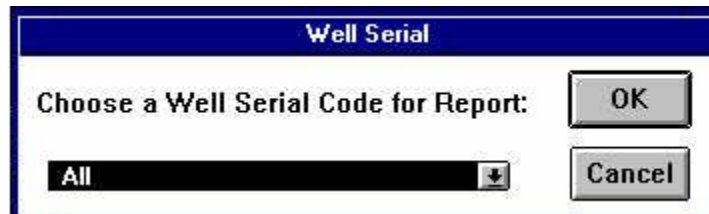
Report generating example using the Box tool:

Click **Reset** to start with a clean working area. Click on the **Box** tool. Select a sparsely populated area on the map such as the one in the figure. The wells selected are in yellow symbols and a Selection Report window is displayed.



Box tool selection results for St. Bernard Parish

Next click on **Report**. Select **Well Summary Report**. Use the default name and click **OK**. Click **OK** to replace the existing file. A new window has appeared. When using the **Box** tool the only selections that are available are the ones generated by the tool. If more than one well is selected the first option will be **All**. Choosing this will generate a report using all of the wells selected by the **Box** tool. Otherwise, choose a well from the list to generate a report.



Well serial selections using the Box tool

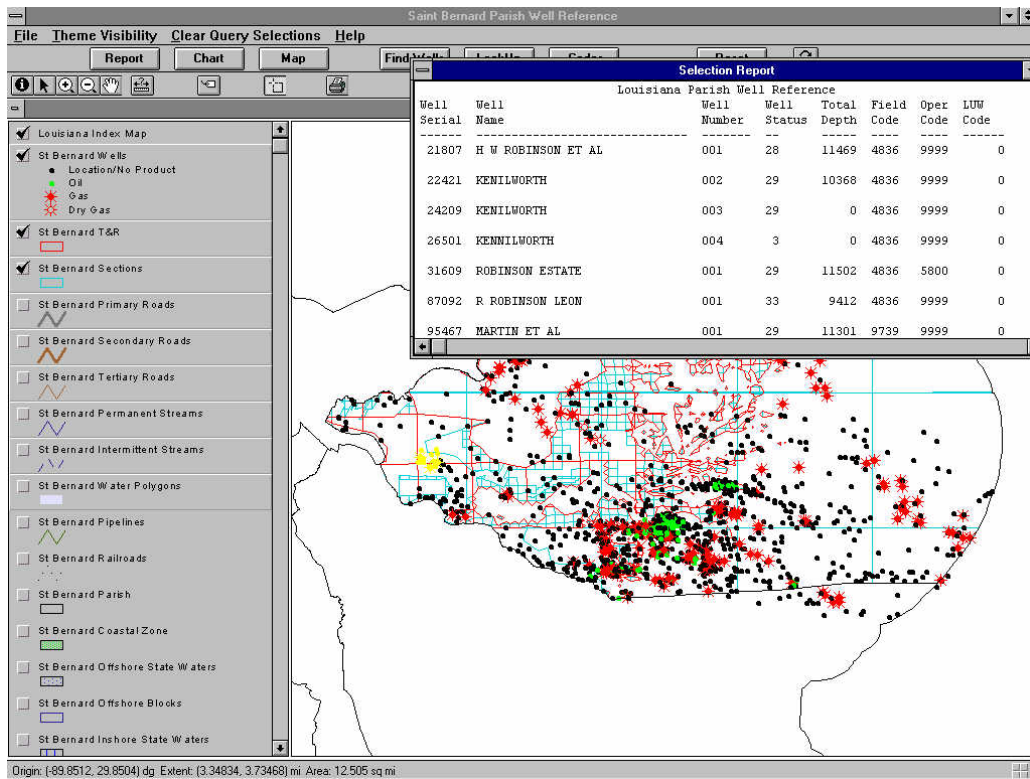
Whichever report is generated, a list of options selected will be presented by using the tool. In this case, selecting **Well Summary Report** presents a list of selected wells with the wells displayed in yellow. If **Field** were chosen, a list of fields in the selected area would be displayed. If **Operator** were chosen, a list of operators in the selected area would be displayed. And if **LUW** codes were chosen, a list of LUW codes in the selected

area would be displayed.

As long as the selected wells are displayed, all report generating will use those selected wells. To use a new set either click on **Clear Selection** from the **Clear Query Selections** pull-down menu or click on **Reset**.

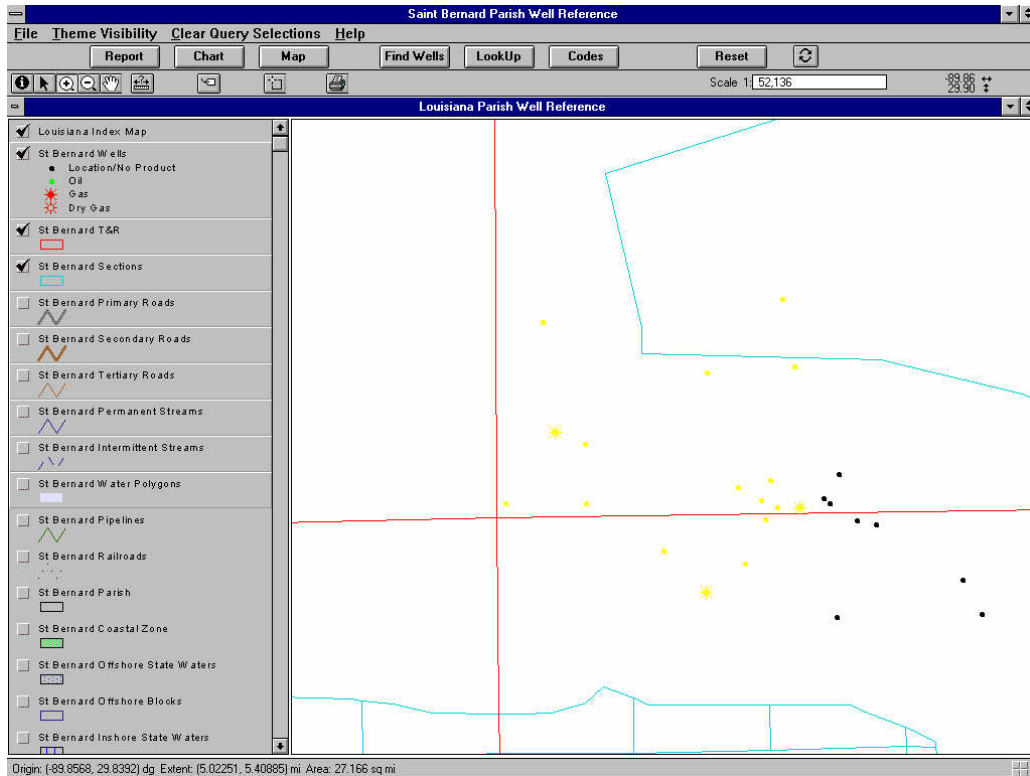
Map making example using the Box tool:

Click **Reset** to start. Click on the **Box** tool. Select a sparsely populated area on the map such as the one in the figure. The wells selected are in yellow symbols and a **Selection Report Window** is displayed.



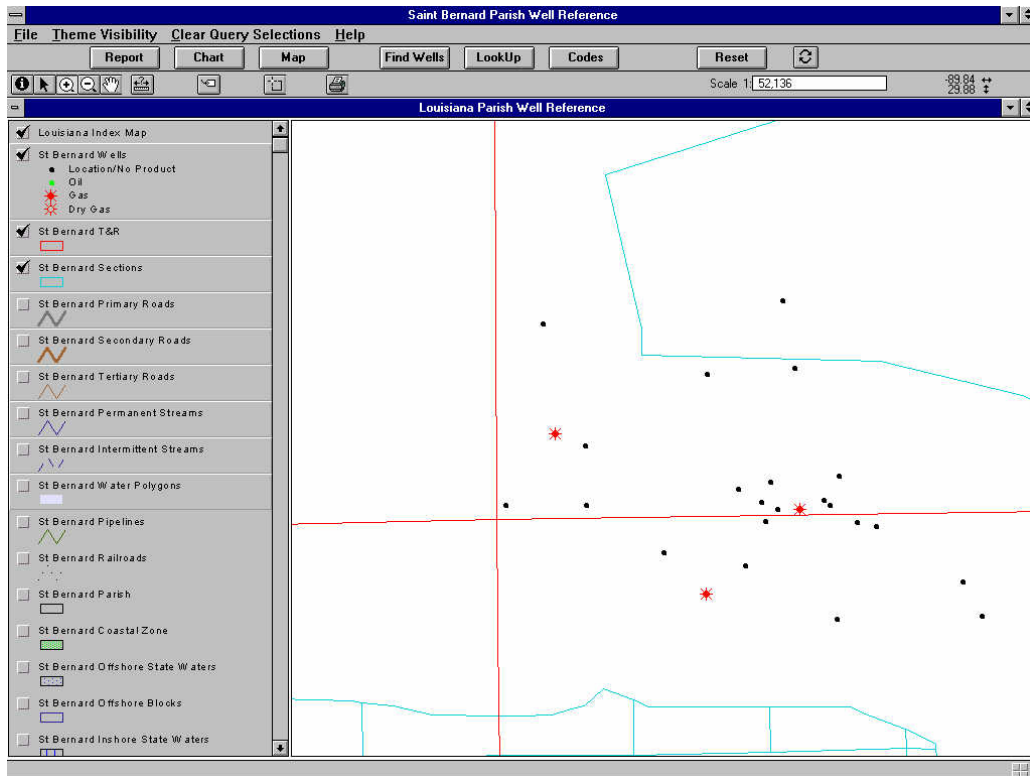
Box tool selection results for St. Bernard Parish

Using the **Zoom In** tool, select the area around the **Box** tool results.



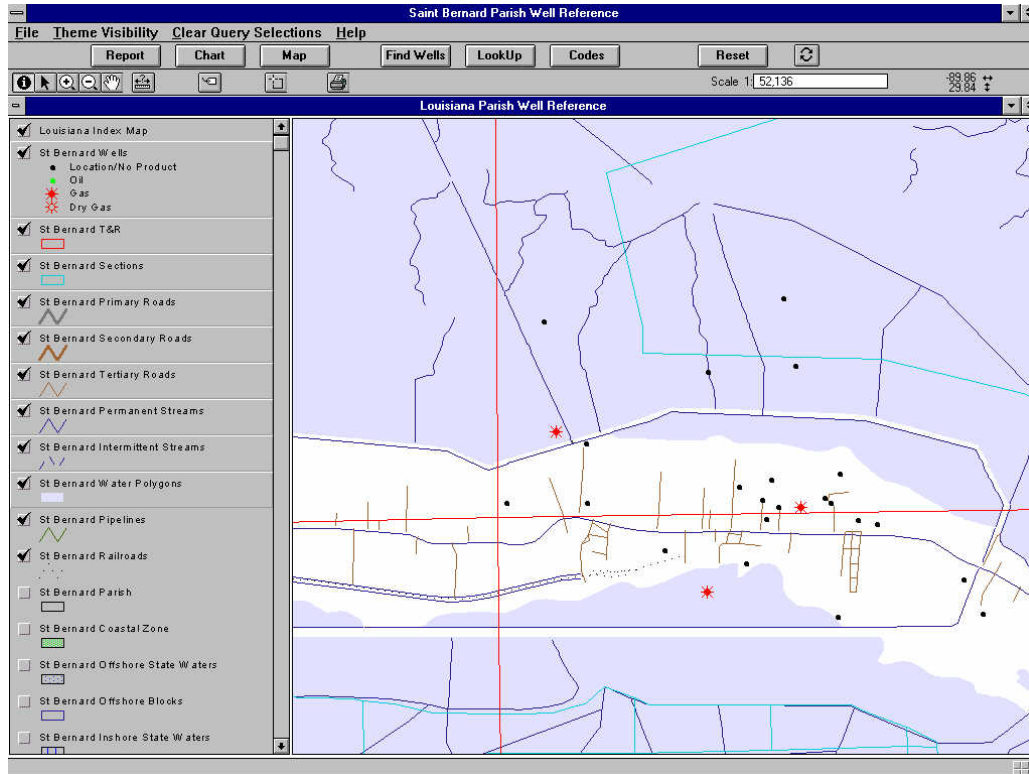
Zoom In tool results for St. Bernard Parish

Since the yellow symbols are difficult to see, use the **Clear Query Selections** pull-down menu and select **Clear Graphics**.



Clear Graphics results for St. Bernard Parish

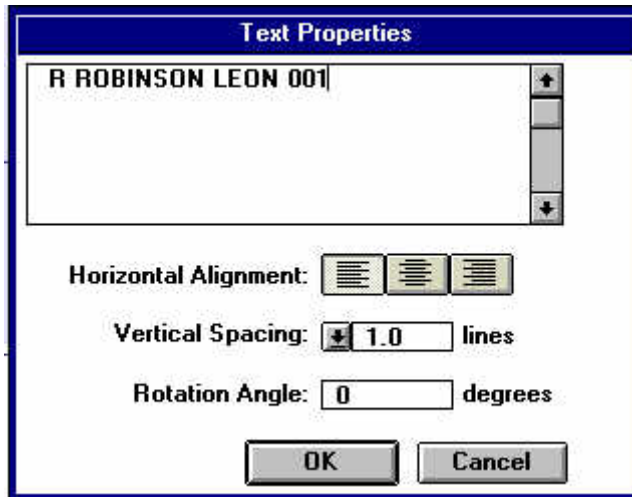
Next, activate the following themes; Primary Roads, Secondary Roads, Tertiary Roads, Permanent Streams, Intermittent Streams, Water Polygons, Pipelines and Railroads by holding the Shift key and clicking on the themes.



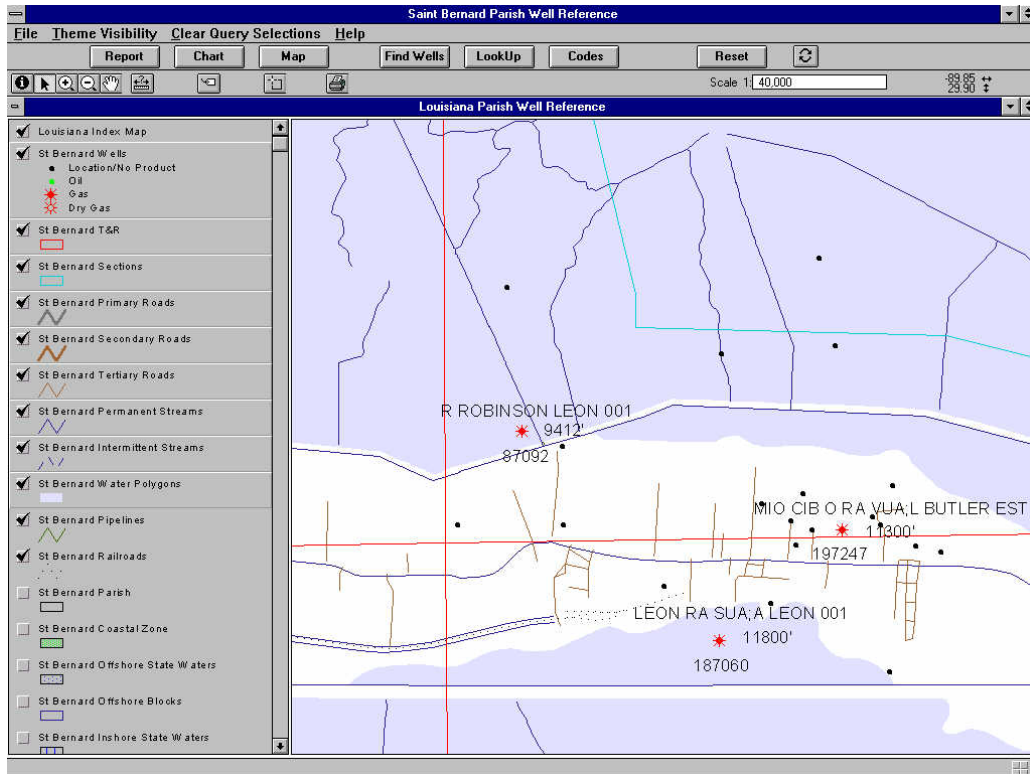
Map window showing additional active themes for St. Bernard Parish

Add labels next. Select the **Label** tool and click on the red gas wells. As can be seen, the labels are difficult to read. Reset the map scale. Enter 40000 in the scale window on the **Tool Bar**. Using the **Arrow** tool, select the various labels and move them so they do not overlap.

Double clicking on a label will open up a text properties window. The following items may then be adjusted: the text being displayed, the horizontal alignment, vertical spacing and rotation angle.

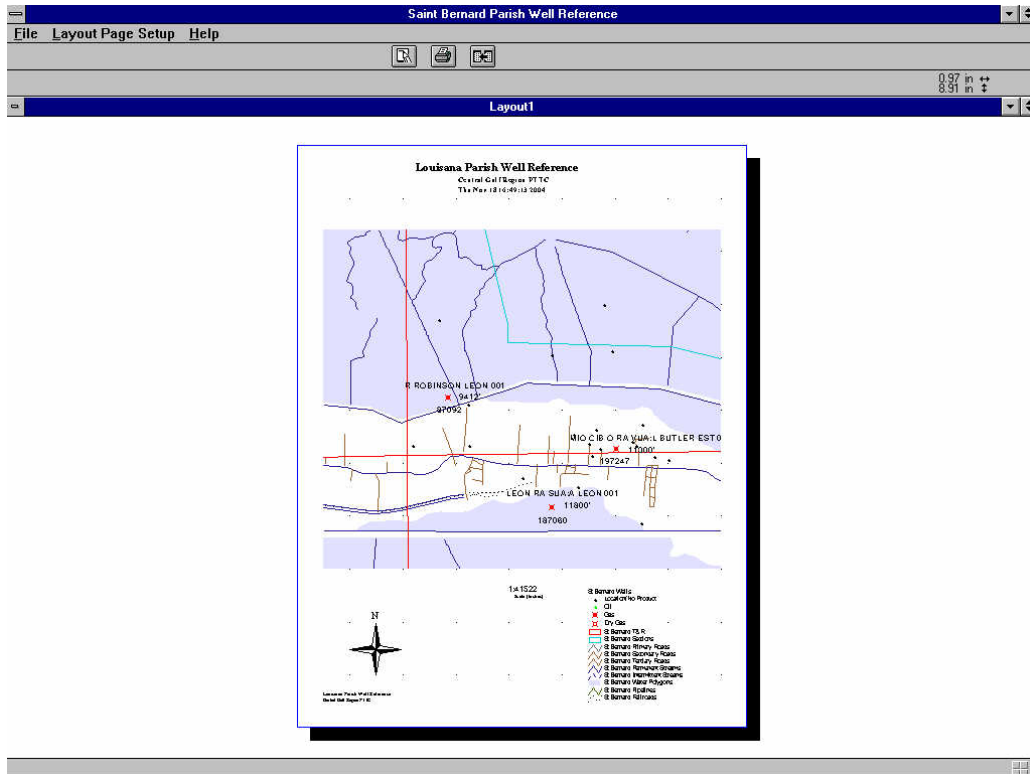


Text properties window



Map with gas wells labeled in St. Bernard Parish

Hold the **Shift** key and left click the **Pipelines** and **Railroads** themes to activate them and uncheck the **Louisiana Index Map** theme. Click the **Map Button** to generate a map. Click through the dialog boxes.



Map of tutorial exercise

Using the **File** pull-down menu, select **Export**. An **Export Window** dialog box appears. It is just like the Save File dialog box except that you must enter a name for the file, there is no default name. Enter **tutorial1** as the name. Select **OK** to save. If the LPWR program is minimized, use Windows Explorer to browse to the save directory to find the exported map as **tutorial1.wmf**. An image editing program such as Paint may be used to edit the image even further. It can then be placed into a report using a word processing program such as WordPad.

This completes the tutorial on the **Louisiana Parish Well Reference**. We hope you find this product easy to use and beneficial. A list of books provided by ESRI on using ArcView is located in Appendix A.

Questions, comments and suggestions are always welcome.

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APPENDIX A – List of Publications

101 ArcView/Avenue Scripts: The Disk (Version 3)

by John Alexander and Valerie Warwick.

OnWord Press, 1997.

ArcView Exercise Book (Version 2.x)

by Pat Hohl and Brad Mayo.

OnWord Press, 1996, 350 pp.

ArcView GIS Exercise Book (Version 3)

by Pat Hohl and Brad Mayo.

OnWord Press, 1997.

ArcView GIS/Avenue Developer's Guide

by Amir Razavi.

OnWord Press, 1997.

ArcView/Avenue Developer's Guide (Version 2.x)

by: Amir Razavi.

OnWord Press, 1995, 274 pp.

ArcView/Avenue Programmer's Reference (Version 2.x)

Class Hierarchy Quick Reference and 101 Scripts. by Amir Razavi, John Alexander and Valerie Warwick.

OnWord Press, 1995, 400 pp.

ArcView/Avenue Programmer's Reference (Version 3)

by Amir Razavi, John Alexander and Valerie Warwick.

OnWord Press, 1997, 500 pp.

Getting to Know ArcView GIS

GeoInformation International, 1997, 675 pp.

by Scott Hutchinson and Larry Daniel.

OnWord Press, 1995, 350 pp.

Inside ArcView GIS

by Scott Hutchinson and Larry Daniel.

OnWord Press, 1996, 407 pp.

APPENDIX B - Directory and File Descriptions

This section will describe the directory structure and provide file descriptions for those wishing to import the data into other applications and for general knowledge.

The Default root directory for the entire LPWR program is: \LPWR?? where ?? is the Louisiana parish number.

DBF files are dBase IV data files. The file structure information explains the layout of the data file for general knowledge and importing purposes.

The record layout is as follows:

DATA	DATA	DATA FIELD	
FIELD	TYPE	LENGTH	DESCRIPTION

DATA FIELD is the abbreviated name for the data.

DATA TYPE refers to the content of the data. C is character data and N is numeric.

LENGTH refers to the size of the data. Character data only contains a single number to indicate length. Numeric data also contains decimal point information. If the decimal point information is a zero (0) it can be considered integer data. If it is a non-zero number it is a floating point number.

DATA FIELD DESCRIPTION is the expanded name of the DATA FIELD.

The directory and file descriptions:

INFO directory contains information files.

MANUAL.PDF file contains the manual and tutorial information. It requires Adobe Acrobat reader to view.

MAIN directory contains the Welcome screen and introductory information.

LEGENDS directory contains additional legend information.

PTTC1.AVL - main legend file.

ALTP TTC1.AVL - alternate legend file. Reverses well symbol colors.

MAPDATA directory contains map information files in ArcView shape and data files.

Primary directory contains parish outline, parish township & range, parish sections, coastal zone, inshore, 3 mile, offshore and directional line files.

Secondary directories (LA???) - where ??? is the Louisiana federal parish code) contain the following information:

air strips*, intermittent streams, parish boundaries^, permanent

streams, pipe lines, public land survey^, sections^, power lines*, primary roads, railroads, secondary roads, tertiary roads, township/range^, water polygons.

* - no pregenerated theme.

^ - duplicates.

PRODDATA directory contains production files.

??LUW.DBF file contains the parish LUW production data. Where ?? is the Louisiana parish code.

DATA FIELD	DATA TYPE	LENGTH	DATA FIELD DESCRIPTION
LUW_CODE	N	7.0	LUW Code
LUW_TYPE	N	3.0	LUW Type
NUM_WELLS	N	2.0	Number of Wells
PARISH_COD	N	2.0	Parish Code
OIL_PROD	N	18.0	Oil Production (bbls)
GAS_PROD	N	18.0	Gas Production (mcf)
PROD_DATE	N	6.0	Production Date (yyyymm)
FIELD_COD	N	4.0	Field Code
OPER_CODE	C	5	Operator Code

??FLD.DBF file contains the published field production data. Where ?? is the Louisiana parish code.

DATA FIELD	DATA TYPE	LENGTH	DATA FIELD DESCRIPTION
CODE	N	4.0	Field Code
YEAR	N	4.0	Year
OIL	N	8.0	Crude oil production (bbls)
COND	N	8.0	Condensate production (mcf)
CTC	N	8.0	CTC Condensate Production (bbls)
CASE	N	8.0	Casinghead Gas Production (mcf)
GAS	N	8.0	Natural Gas Production (mcf)
ZONE	N	1.0	Offshore Zone
COMMENTS	C	99	Comments

REFDATA directory contains the reference data files.

FIELD.DBF file contains the field codes and names.

DATA	DATA	DATA FIELD
------	------	------------

FIELD	TYPE	LENGTH	DESCRIPTION
CODE	N	4.0	Field Code
NAME	C	34	Field Name

OPER.DBF file contains the operator codes and names.

DATA FIELD	DATA TYPE	LENGTH	DATA FIELD DESCRIPTION
CODE	C	4	Operator Code
NAME	C	32	Operator Name

OPR_FLD.DBF file contains the operator codes and associated field codes.

DATA FIELD	DATA TYPE	LENGTH	DATA FIELD DESCRIPTION
OPER	C	4	Operator Code
FIELD	N	4.0	Field Code

PARISH.DBF file contains the parish codes and names.

DATA FIELD	DATA TYPE	LENGTH	DATA FIELD DESCRIPTION
CODE	N	2.0	Parish Code
FED_ID	C	9	Federal County Code
PARISH	C	20	Parish Name

P_FLD.DBF file contains the field codes and associated parish codes.

DATA FIELD	DATA TYPE	LENGTH	DATA FIELD DESCRIPTION
FIELD	N	4.0	Field Code
PARISH	N	2.0	Parish Code

P_LUW.DBF file contains the LUW codes and associated parish codes.

DATA FIELD	DATA TYPE	LENGTH	DATA FIELD DESCRIPTION
LUW	N	7.0	LUW Code
PARISH	N	2.0	Parish Code

P_OPR.DBF file contains the operator codes and associated parish codes.

DATA FIELD	DATA TYPE	LENGTH	DATA FIELD DESCRIPTION
OPER	C	6	Operator Code
PARISH	N	2.0	Parish Code

P_SER.DBF file contains the well serial codes and associated parish codes.

DATA FIELD	DATA TYPE	LENGTH	DATA FIELD DESCRIPTION
SERIAL	N	6.0	Well Serial Code
PARISH	N	2.0	Parish Code

P_STR.DBF file contains the Section/Township/Range codes and associated parish codes.

DATA FIELD	DATA TYPE	LENGTH	DATA FIELD DESCRIPTION
SECTION	N	3.0	Section
TOWNSHI	C	3	Township
RANGE	C	3	Range
PARISH	N	2.0	Parish Code

SER_LUW.DBF file contains the well serial and LUW codes.

DATA FIELD	DATA TYPE	LENGTH	DATA FIELD DESCRIPTION
SERIAL	N	6.0	Well Serial Code
LUW	N	7.0	LUW Code

WSTATUS.DBF file contains the well status codes and names.

DATA FIELD	DATA TYPE	LENGTH	DATA FIELD DESCRIPTION
CODE	N	2.0	Well Status Code
STATUS	C	60	Well Status Name

WELLDATA directory contains the well information data files.

P0??WLS.DBF file contains the parish well data file. Where ?? is the Louisiana parish

code.

DATA FIELD	DATA TYPE	LENGTH	DATA FIELD DESCRIPTION
WELL_SER	N	6.0	Well Serial Code
COMMENTS	C	50	Notes about the well
COORDINATE	N	1.0	Coordinate System Code
LAMB_X_TG	N	7.0	Surface Lambert X
LAMB_Y_TG	N	7.0	Surface Lambert Y
ZONE_TG	C	1	Surface Zone
LAT_DD	N	12.5	Latitude in Decimal Degrees
LONG_DD	N	12.5	Longitude in Decimal Degrees
WELL_NAME	C	30	Well Name
WELL_NUM	C	7	Well Number
API_NUM	C	14	API Number
PERMIT_DAT	N	8.0	Permit Date YYYYMMDD
SPUD_DATE	N	8.0	Spud Date YYYYMMDD
ORG_DATE	N	8.0	Origination Date YYYYMMDD
STATUS	N	2.0	Well Status Code
STAT_DATE	N	8.0	Status Date YYYYMMDD
FIELD_CODE	N	4.0	Field Code
OPER_CODE	C	6	Operator Code
PARISH_COD	N	2.0	Parish Code
PRI_PROD_C	N	1.0	Primary Product Code
LAST_DATE	N	8.0	Last Completion Date YYYYMMDD
M_DEPTH	N	5.0	Measured Depth
SECTION	N	3.0	Section
TOWNSHIP	C	3	Township
RANGE	C	3	Range
BH_M_DEP	N	5.0	Deepest Measured Bottom Hole Depth
BH_TV_DEP	N	5.0	Deepest True Vertical Bottom Hole Depth
ZONE_BH	C	1	Bottom Hole Zone
LAMB_X_BH	N	7.0	Bottom Hole Lambert X
LAMB_Y_BH	N	7.0	Bottom Hole Lambert Y
LUW_TYPE	N	1.0	LUW Type
LUW_CODE	N	7.0	LUW Code
SAND1	C	15	Producing Sand 1
UP_PERF_1	N	5.0	Upper Perforation 1
LOW_PERF_1	N	5.0	Lower Perforaton 1
SAND2	C	15	Producing Sand 2
UP_PERF_2	N	5.0	Upper Perforation 2
LOW_PERF_2	N	5.0	Lower Perforaton 2
SAND3	C	15	Producing Sand 3
UP_PERF_3	N	5.0	Upper Perforation 3
LOW_PERF_3	N	5.0	Lower Perforaton 3

NUM_PERF N 2.0 Number of Perforations

TEMP directory contains the temporary data files.

MOPROD.DBF file contains the monthly production data for use by the charting feature.

DATA FIELD	DATA TYPE	LENGTH	DATA FIELD DESCRIPTION
DATE	N	6.0	Date in YYYYMM
OIL_PROD	N	11.0	Oil Production
GAS_PROD	N	11.0	Gas Production

- FIELDRPT.TXT - ASCII text file of field production report.
- LUWLIST.TXT - ASCII text file of the Serial-LUW Lookup results.
- LUWRPT.TXT - ASCII text file of luw production report.
- OPERRPT.TXT - ASCII text file of operator production report.
- SERLIST.TXT - ASCII text file of the LUW-Serial Lookup results.
- SUMMARY.TXT - ASCII text file of well summary report.
- TMPLIST - ASCII text file for temporary data.
- WELLS.TXT - ASCII text file of selected wells by using the box tool.