

Spatial Viewer
ArcView, MapInfo,
Mge, ArcInfo, etc.

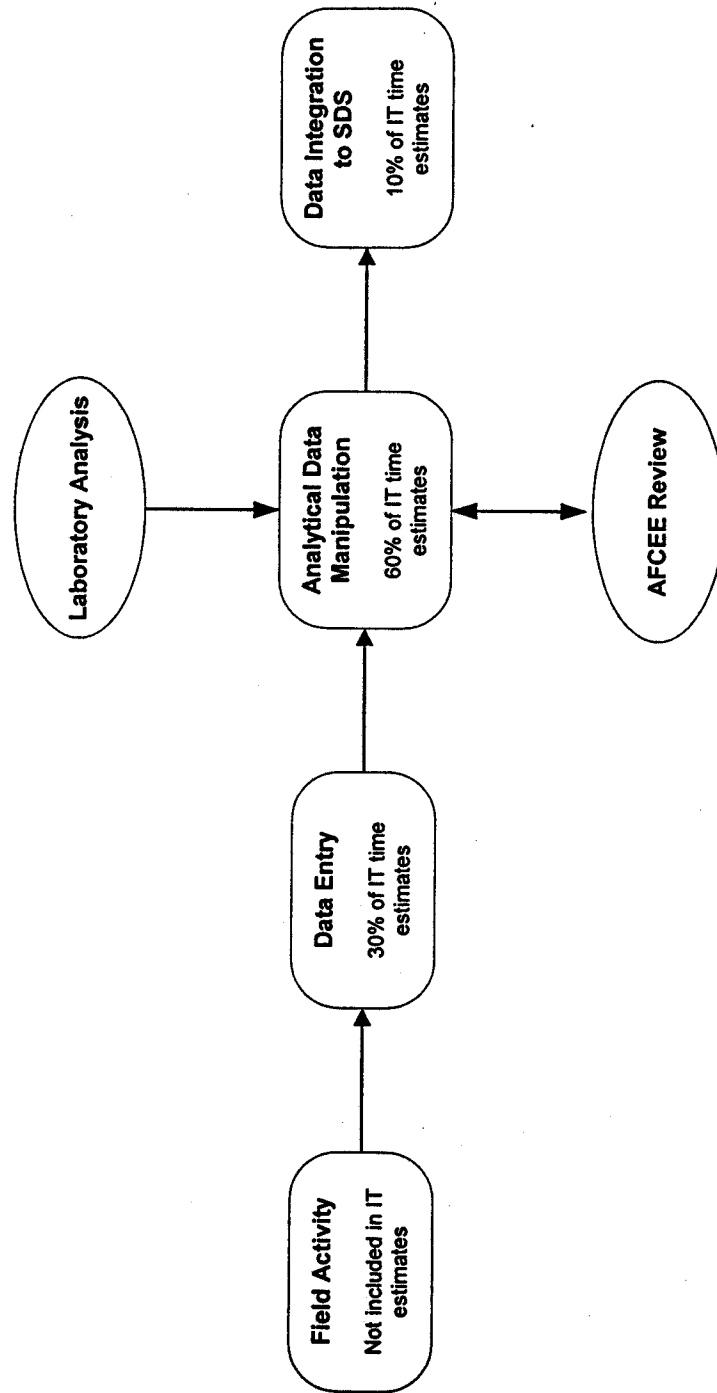
**Geographic view of
the information stored in
the IS (SQL Server 7)**

Data Viewer
Access, FoxPro,
etc.

**Tabular view of
the information stored in
the IS (SQL Server 7)**

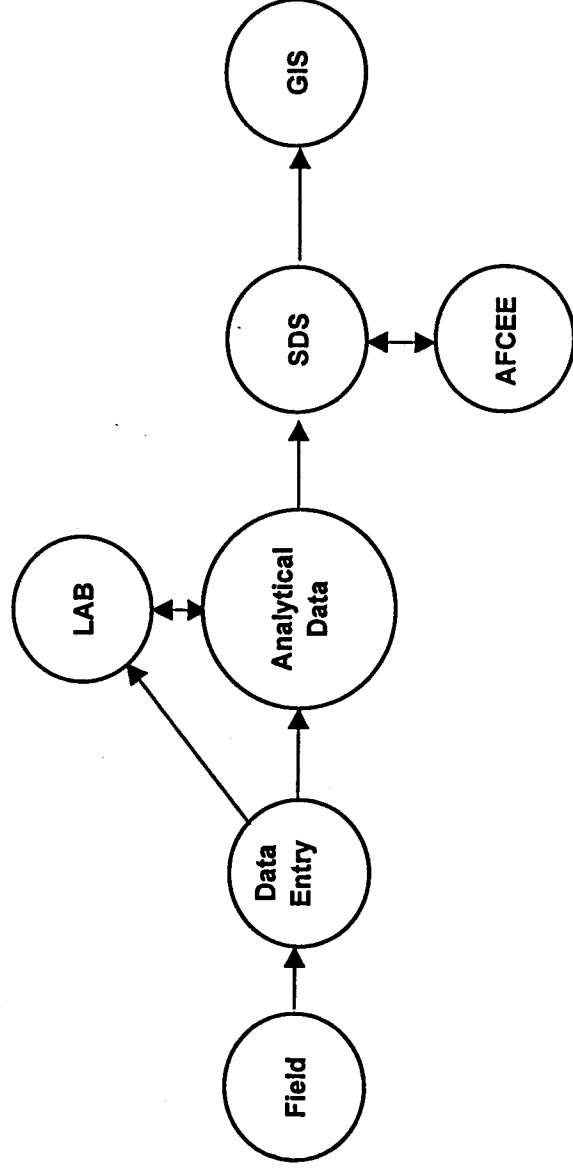
IS
Sql Server7

**Repository for ALL
data. Robust RDBMS
and standards (SDS).**



Data Activity Process	Description	Task Time (minutes) ^(e)	Current Time Saving Options
Field Activity			
1	Record location and location coordinates from GPS (in GPS and logbook)	1	
2	Record ambient conditions, personnel, field instrument calibrations and drilling equipment in logbook	5	
3	Record boring lithology depths and/or well completion information in logbook	10	
4	Record sample ID date, time, sample type (normal or QC), collection and media in logbook	5	
5	Record chain of custody information per cooler (sample IDs, depths, analytical methods) on COC	5	Automating this function utilizing Access forms or VB
	<i>Total estimated, Average time for Field Activity Task</i>	26	
Data Entry			
1	Enter metadata information (unique per sampling job)	2	Automated using Access forms
2	Enter coordinate information (northing, easting, location ID). Computer generates coordinate ID	1	Automated using Access forms
3	Enter lithologic information (descriptions, sample ID, depths)	20	Automated using Access forms
4	Enter sample information (sample ID, coordinate ID, sample depth, sample type)	2	Automated using Access forms
5	Enter well information (screening interval, depths, completion date)	10	Automated using Access forms
	<i>Total estimated, Average time for Data Entry Task</i>	35	
Analytical Data			
1	After receiving disks (or text files via email), open Upload form in the master database.	0.5	Automated using Access forms
2	Click in empty field for "Sample" file and click on Browse.	0.5	Automated using Access forms
3	Find the path of the sample text file to upload and click Open.	0.5	Automated using Access forms
4	Do the same for the Results and Test files.	0.5	Automated using Access forms
5	Click Upload.	0	Automated using Access forms
6	If you have multiple lab packages to upload, rename the temp files under the Tables tab, i.e. temp_test1. Repeat steps 2 through 5.	1	Automated using Access forms
7	Close the Upload form.	0	Automated using Access forms
8	Click on the Tables tab in the database; if there are errors uploading, then there will be error tables created. Resolve any errors with data validators and/or lab. ^(e)	20	

Topic: Getting Data Into The GIS



Existing Process: Paper Records & Transcription

Time Factor: 2 Hrs/ Sample

Complexity: 32 Steps

Errors*: 5/100 samples

The existing process is highly structured and is based on traditional practices of field data entry, transcription and database integration.

The process is dependent on multiple error checking routines that propagate errors until the final data entry stage. Logbook records are secure and not exposed to the risk of primary data loss if stored properly.

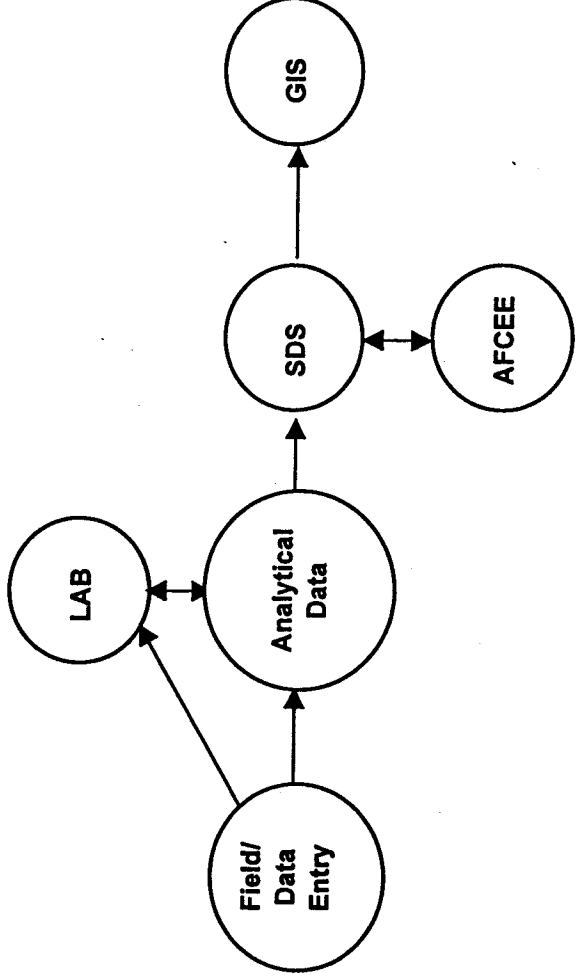
The Hardware capabilities include:

1. Field grade Trimble GPS attaining submeter accuracy. Coordinate readings are maintained in logbooks

This process, while stable, requires redundant quality control steps to ensure data integrity.

* Estimate

Topic: Getting Data Into The GIS



Alternative 1: Digital Field Logging

Time Factor: 1.66 Hrs/ Sample

Complexity: 30 Steps

Errors*: 2/100 samples

This alternative assumes the use of a Personal Digital Assistant to record data in data fields for transfer to the project database and analytical database.

The system is based on a Windows CE forms application using simple input from built-down boxes and hand entry. Hand entry is dependent upon stylus recognition of the operating system. The data are transferred to a PC for and quality controlled.

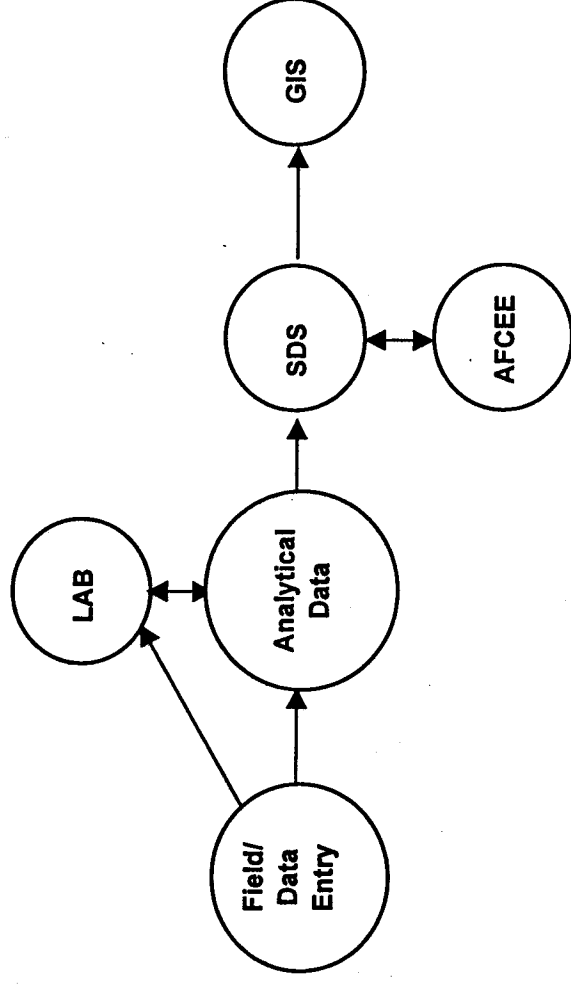
The Hardware capabilities include:

1. Integrated GPS (limited accuracy)
2. Lightweight form factor from handheld computers to Compaq PDA

These systems are gaining acceptance as field data entry tools. Specific GIS related software supports seamless integration with ArcView GIS.

* Estimate

Topic: Getting Data Into The GIS



Alternative 2: Digital Field Computing

Time Factor:

1.5 Hrs/ Sample

Complexity:

27 Steps

Errors*:

1/100 samples

This alternative assumes the use of a laptop computer to input data directly into a database for transfer to the analytical laboratory and validation by the project chemist and database analyst.

The system is enabled using a Visual Basic dialog system supporting input control, user identification, and error checking. The database is a subset of the project database and is supported by automatic verification and synchronization of field input data with the project database.

The Hardware capabilities include:

1. Integrated GPS
2. Use of Laptop ports for digital camera's
3. Potential alternative inputs via pen-based systems and voice commands.

These systems are in commonly used to map utility and facility infrastructure. Environmental record applications have also been developed for compliance with EPA reporting requirements.