Indiana's Data Management Systems

Presented at

Intergovernmental Meeting on Coal Combustion Materials

Golden, Colorado

April 15 - 16, 2002

CCW Disposal In Indiana

- Currently, there are 15 surface mines approved for CCW disposal
- Of the 15 mines, only 8 have had CCW disposed
- Presently, 4 mines are actively disposing
- 2 additional permits are presently in technical review

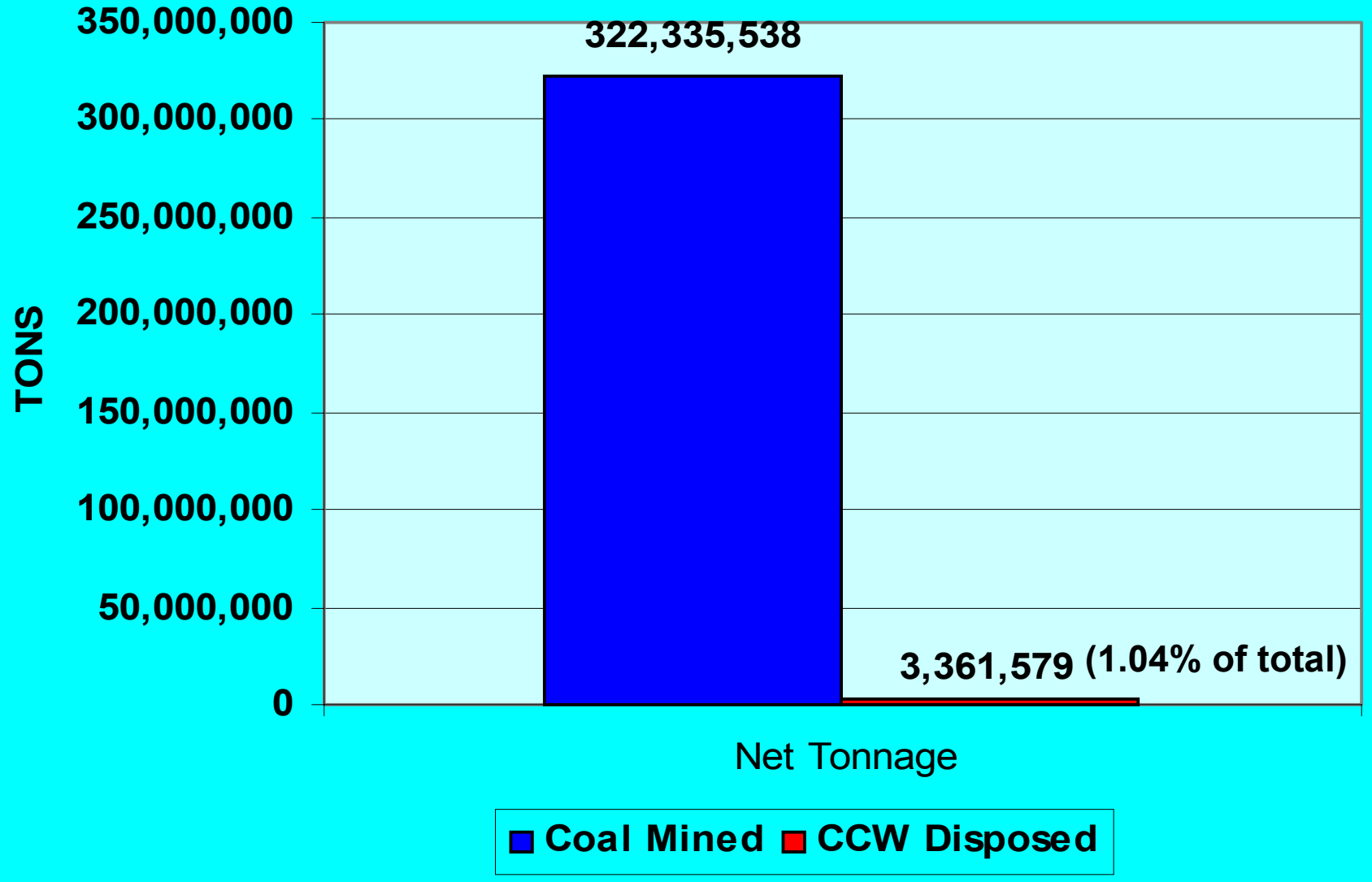
CCW Disposal In Indiana

- ***Memorandum 92-1***

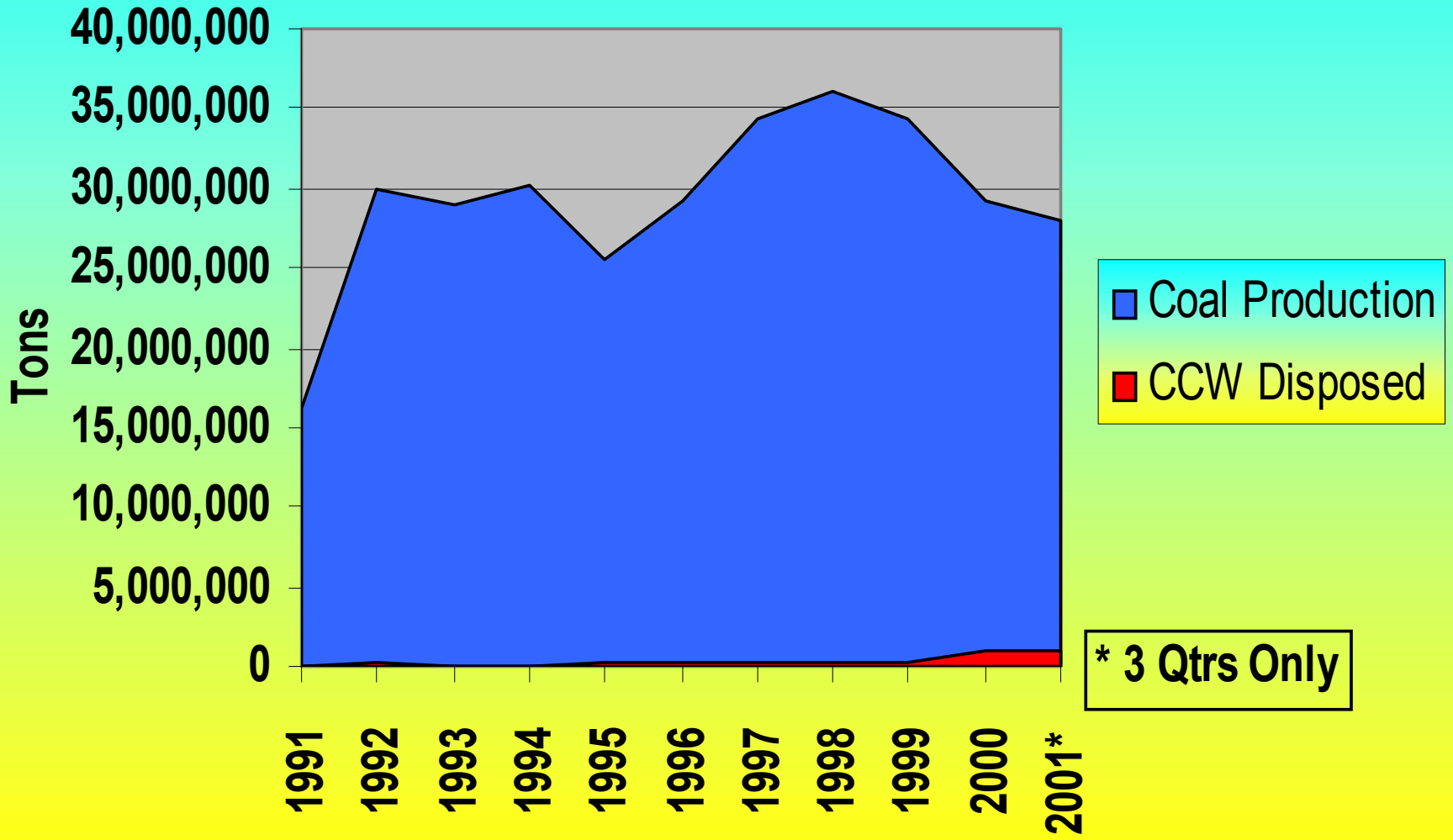
  Policy providing requirements for CCW disposal through existing authority of IC 14-34 & 312 IAC 25

  - New or significant revision to an existing permit **requiring public notice, opportunity for comments and appeals**
  - Approval by landowners where disposal is to take place
  - Disposal limited to CCW generated in Indiana or from the burning of Indiana coal
  - Extensive geologic and hydrogeologic characterization

Coal Mined and CCW Disposed at Mines in Indiana Since 1991



Coal Production and Coal Mine CCW Disposal



Surface
Spoil
CCW
Shale

Mine Advance
Highwall
CCW
Spoil
Subsoil

Indiana's CCW Database

Indiana's CCW Database

- **Initial bulk, 18-hr and 30-day leachate analyses are entered into the database once the CCW permit is approved**
- **During disposal bulk, 18-hr and 30-day leachate analyses submitted in the quarterly reports are entered into the database**

CCW Disposal In Indiana

- **CCW characterization for each waste stream/type**
  - **Bulk analysis:**

Al	Mn	F^-	pH
As	Hg	Fe	Pb
Ba	Ni	Na	Cl^-
Cd	Se	SO_4^{-2}	TDS
K	Zn	SO_3^{-2}	V
Cr	Ag	B	potential acidity
Cu	Mo	Mg	TOC

MPC calculation

Net neutralization potential

Neutralization potential

CCW Disposal In Indiana

- **18-hr and 30-day leachate analyses:**

Al	**Mn**	**F^-**	**pH**
As	**Hg**	**Fe**	**Pb**
Ba	**Ni**	**Na**	**Cl^-**
Cd	**Se**	**SO_4^{-2}**	**TDS**
K	**Zn**	**SO_3^{-2}**	**V**
Cr	**Ag**	**B**	**TOC**
Cu	**Mo**	**Mg**	**MPC calculation**

ASTM Method D3987-85 Shake Extraction of Solid Waste

CCW Disposal In Indiana

CCW leaching elements at concentrations exceeding ¼ RCRA standards cannot be disposed

CCW Disposal In Indiana

- **Baseline (minimum of 6 months)**
  - **<u>Ground Water</u>**

Al	Mn	F^-	pH (field)
As	Hg	Fe	pH (lab)
Ba	Ni	Na	Sp. Conductivity
Cd	Se	SO_4^{-2}	TDS
Ca	Zn	SO_3^{-2}	Alkalinity
Cr	Ag	B	Acidity
Cu	Mo	Mg	TOC
Pb	Cl^-	SWE	Cat/Anion Balance
Hardness			Temperature

CCW Disposal In Indiana

- **Surface Water**

Al	Mn	F^-	pH (field)
As	Hg	Fe	pH (lab)
Ba	Ni	Na	Sp. Conductivity
Cd	Se	SO_4^{-2}	TDS
Ca	Zn	SO_3^{-2}	Alkalinity
Cr	Ag	B	Acidity
Cu	Mo	Mg	TOC
Pb	Cl^-	TSS	Cat/An Balance
Temperature			Discharge rate

FlyAsh Database Program

File Edit View Insert Format Records Tools Window Help

Flyash Main Menu

IDNR Flyash Project

Indiana Department of Natural Resources

Divison of Reclamation

- Add New Analysis to Database
- Modify / Delete Analysis
- Report Menu
- Exit Flyash Program

Form View FLTR NUM

Start epa2002.ppt Flyash Main Menu MainEntry : Form EN 4:10 PM

FlyAsh Database Program

File Edit View Insert Format Records Tools Window Help

MainEntry : Form

Page1 | Page2 | Page3 | Page4

Facility Name: Cinergy/PSI - Gibson

Facility Type: UTILITY

Waste Type: FLYASH

- FLYASH
- BOTTOMASH
- BOILERSLAG
- MIXTURE
- OTHER

Other Type:

Mixture Type:

Mixture Ratio (Types):

Entered By (Initials):

Verified By (Initials):

Date:

Record: 1 of 1

Form View

NUM OVR

Start | epa2002_1.ppt | Flyash Main Menu | MainEntry : Form | EN 2:09 PM

FlyAsh Database Program

File Edit View Insert Format Records Tools Window Help

MainEntry : Form

Page1 | Page2 | Page3 | Page4

Facility Name: Cinergy/PSI - Gibson

Facility Type: UTILITY

Waste Type: MIXTURE

Other Type:

Mixture Type: FLYASH/BOTTOMASH

Mixture Ratio (Types):

Entered By (Initials):

Verified By (Initials):

Date:

- SCRUBBER SLUDGE
- FIXATED SCRUBBER SLUDGE
- FLUIDIZED BED/FLYASH
- FLUIDIZED BEDBOTTOM/FLYASH
- FLYASH/BOTTOMASH
- POZ-O-TEC
- FILTERCAKE
- FILTERCAKE/FLYASH

Record: 1 of 1

Form View NUM OVR

Start | epa2002_1.ppt | Flyash Main Menu | MainEntry : Form | EN 2:12 PM

FlyAsh Database Program

File Edit View Insert Format Records Tools Window Help

MainEntry : Form

Page1 | Page2 | Page3 | Page4

Facility Name: Cinergy/PSI - Gibson

Facility Type: UTILITY

Waste Type: MIXTURE

Other Type:

Mixture Type: FLYASH/BOTTOMASH

Mixture Ratio (Types):

Entered By (Initials): dd

Date: 03/27/2002

Verified By (Initials):

Date:

Record: 1 of 1

Form View

NUM

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FlyAsh Database Program

File Edit View Insert Format Records Tools Window Help

MainEntry : Form

Page1 | Page2 | Page3 | Page4

Cinergy/PSI - Gibson | UTILITY | MIXTURE

PARAMETERSAMPLEINFO Subform

Analysis ID	Analysis Type	Sample Location	Sample Collection Date	Date Lab Received	Reporting Date	Notes
1297	18 HOUR LEACHATE	West Pond	1/10/2002	1/15/2002	1/20/2002	
(Number)						

Record: 1 of 1

Record: 1 of 1

Form View

NUM

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FlyAsh Database Program

File Edit View Insert Format Records Tools Window Help

MainEntry : Form

Page1 | Page2 | Page3 | Page4

Cinergy/PSI - Gi | UTILITY | MIXTURE | Sample Date | Report Date

18 HOUR LEACHATE | West Pond | 1/10/2002 | 1/20/2002

PARAMETERINFO Subform

Parameter ID	Parameter Name	Qualifier	Parameter Value	Analysis ID
28492	Arsenic			1297
(AutoNumber)				1297

Arsenic	1.25	
Barium	25.00	
Beryllium		0.00
Bicarbonate		
Boron		
Bulk Density		0.00
Cadmium	0.25	
Calcium		

Record: 1 of 1

Record: 1 of 1

Form View

NUM

Start | Microsoft PowerPoint - [d... | Flyash Main Menu | MainEntry : Form | EN | 2:50 PM

FlyAsh Database Program

File Edit View Insert Format Records Tools Window Help

MainEntry : Form

Page1 | Page2 | Page3 | Page4

Cinergy/PSI - Gi | UTILITY | MIXTURE | Sample Date | Report Date

18 HOUR LEACHATE | West Pond | 1/10/2002 | 1/20/2002

PARAMETERINFO Subform

Parameter ID	Parameter Name	Qualifier	Parameter Value	Analysis ID
28492	Arsenic	<	0.005	1297
(AutoNumber)				1297

Record: 1 of 1

Record: 1 of 1

Form View NUM

Start | Microsoft PowerPoint - [d... | Flyash Main Menu | MainEntry : Form | EN 2:51 PM

FlyAsh Database Program

File Edit View Insert Format Records Tools Window Help

MainEntry : Form

Page1 | Page2 | Page3 | Page4

Cinergy/PSI - Gibson | UTILITY | MIXTURE

18 HOUR LEACHATE | 1297

Permit Information

	Permit ID	Permit Number	NonSig Number	Analysis ID
	1770	P-031	10	1297
*	(toNumber)			

Record: 1 of 1

Record: 1 of 1

Form View NUM

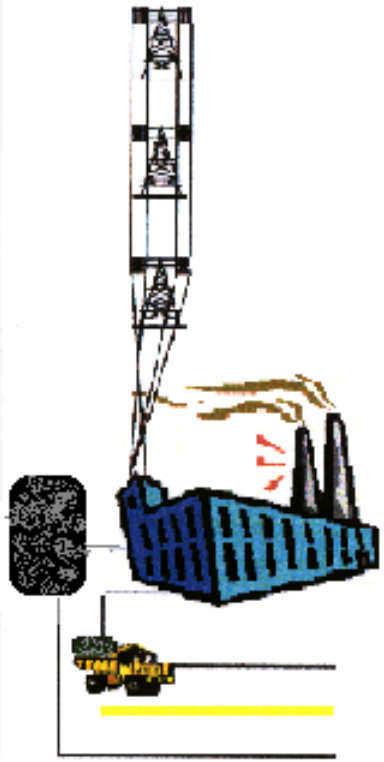
Start | Microsoft PowerPoint - [d... | Flyash Main Menu | MainEntry : Form | EN 2:52 PM

FlyAsh Database Program

File Edit View Insert Format Records Tools Window Help

Flyash Main Menu

IDNR Flyash Project



Indiana Department of Natural Resources

Divison of Reclamation

- Add New Analysis to Database
- Modify / Delete Analysis
- Report Menu
- Exit Flyash Program

Form View FLTR NUM

Start Microsoft PowerPoint - [ep... Flyash Main Menu EN 4:19 PM

FlyAsh Database Program - [REPORTMENU : Form]

File Edit View Insert Format Records Tools Window Help

REPORT MENU

Data Entry Reports

Print the Verify Report

Analysis Reports

Print All Relative Data Report

Faclity Selection Report

Print Permit Selection Report

Sample Collection Date Report

Facility/Analysis/Waste Type Selection Report

Facility/Analysis/Waste Type/Sample Date Selection Report

Facility/Analysis/Waste Type/Permit Selection

These Reports can be very large, several hundred pages,especially the first one!!

Record: 1 of 1

Form View

NUM

Start epa2002.ppt Flyash Main ... REPORT... EN 8:03 AM

FlyAsh Database Program - [Facility_PreCross_Input_Permit : Form]

File Edit View Insert Format Records Tools Window Help

Tahoma 8

Facility/Waste/Analysis Input Screen For Date Period Cross Tab Report

Facility Name: IPL - Petersburg

Analysis Type: 30 DAY LEACHATE

Waste Type: MIXTURE

Permit Number: S-321

If Waste Type = MIXTURE

Mixture Type: FILTERCAKE/FLYASH

If Waste Type = OTHER

OTHER TYPE:

Run Selection Query

Run Selection Mixture Query

Run Selection Other Waste Query

Run Cross Tab Query

Run Selection CrossTab Mixture Query

Run Selection CrossTab Other Waste Query

Record: 1 of 1

FlyAsh Database Program - [Relative_Data_PreCross_Permit_Mixture_Crosstab : Crosstab Query]

File Edit View Insert Format Records Tools Window Help

ParameterName	1114 10/23/200	1226 1/26/2001	1247 5/1/2001	165 11/24/1992	168 11/24/1992	174 8/24/1998	189 1/31/2000	198 1/31/2000	284 4/19/2000
Acidity	< 100	< 100	< 100						
Acidity as CaCO3				6	< 5	< 1			
Acidity Total							950	750	< 100
Alkalinity	40	67.6	60				29	58	60
Aluminum	0.776	1.36	1.26			0.16	0.0578	1.2	0.982
Arsenic	0.112	0.344	0.282	< 0.005	0.037	0.2	0.182	0.191	0.169
Barium	0.149	0.142	0.268	0.06	0.23	< 1	0.152	0.198	0.114
Boron	6.01	6.18	4.71	1.9	1.1	6.1	5.26	5.63	6.57
Cadmium	< 0.0012	< 0.0012	< 0.0012	< 0.005	< 0.005	< 0.005	< 0.0012	0.00139	< 0.0012
Chloride	7.53	22.6	17.5	10	23	< 10	8.8	19.6	12.6
Chromium	< 0.001	0.00716	0.00739	< 0.01	0.03	< 0.05	0.0014	0.0149	0.00217
Copper	< 0.0033	< 0.0033	< 0.0033	0.02	0.03	< 0.1	< 0.0033	0.00744	< 0.0033
Fluoride	1.88	1.74	1.95	4.7	0.76	3.6	2.15	1.65	2.39
Iron	< 0.023	< 0.023	< 0.023	0.02	0.05	< 0.1	< 0.023	< 0.023	< 0.023
Lead	< 0.0022	< 0.0022	< 0.0022	< 0.08	< 0.08	< 0.015	0.00246	< 0.0022	< 0.00658
Magnesium	5.57	0.808	0.576			9.5	6.87	0.553	0.445
Manganese	0.00972	0.00082	< 0.0007	0.05	0.01	0.088	0.0115	0.000801	< 0.0007
Mercury	< 0.002	< 0.0002	< 0.002	< 0.0005	< 0.0005	< 0.002	< 0.002	< 0.002	< 0.002
Molybdeum	0.392	0.606	0.54	< 0.1	0.3	0.19	0.263	0.484	0.581
Nickel	< 0.0049	< 0.0049	< 0.0049	< 0.01	< 0.1	< 0.1	< 0.0049	< 0.0049	< 0.0049
pH (Client)	9								
pH (Standard Unit)		9.91	9.95	6.8	11.02	7.76	9.17	10.5	10.1
Potassium	3.22	4.16	6.37			< 5	2.49	5.7	3.91
Selenium	0.0682	0.0586	0.0345	0.005	< 0.005	0.067	0.0578	0.0514	0.0535
Silicon Dioxide (%)									
Silver	< 0.00068	< 0.00068	< 0.00068	< 0.01	< 0.01	< 0.1	0.00157	0.00245	< 0.00068
Sodium	6.62	5.84	4.99	4.4	7.2	5.7	2.3	6.55	4.22
Sulfate	646	510	604	670	180	450	448	498	422
Sulfide	< 0.1	< 0.1	< 1	< 0.1	< 0.1	2.8	2.4	< 2.4	3.2
Total Dissolved Solids	1080	790	1020	1000	620	888	604	734	790
Total Organic Carbon	4	4.5	< 1	2.7	3.5	< 1	1.7	1.1	2.7
Vanadium	0.0875	0.245	0.174			< 0.5	0.048	0.226	0.237
Zinc	< 0.0034	< 0.0034	0.01	0.03	< 0.02	< 0.1	< 0.0034	< 0.0034	< 0.0034

Record: 1 of 33

Datasheet View NUM

Microsoft Excel - PatFix.xls

Permit S-321 - Pride Mine

30 Day Leachate

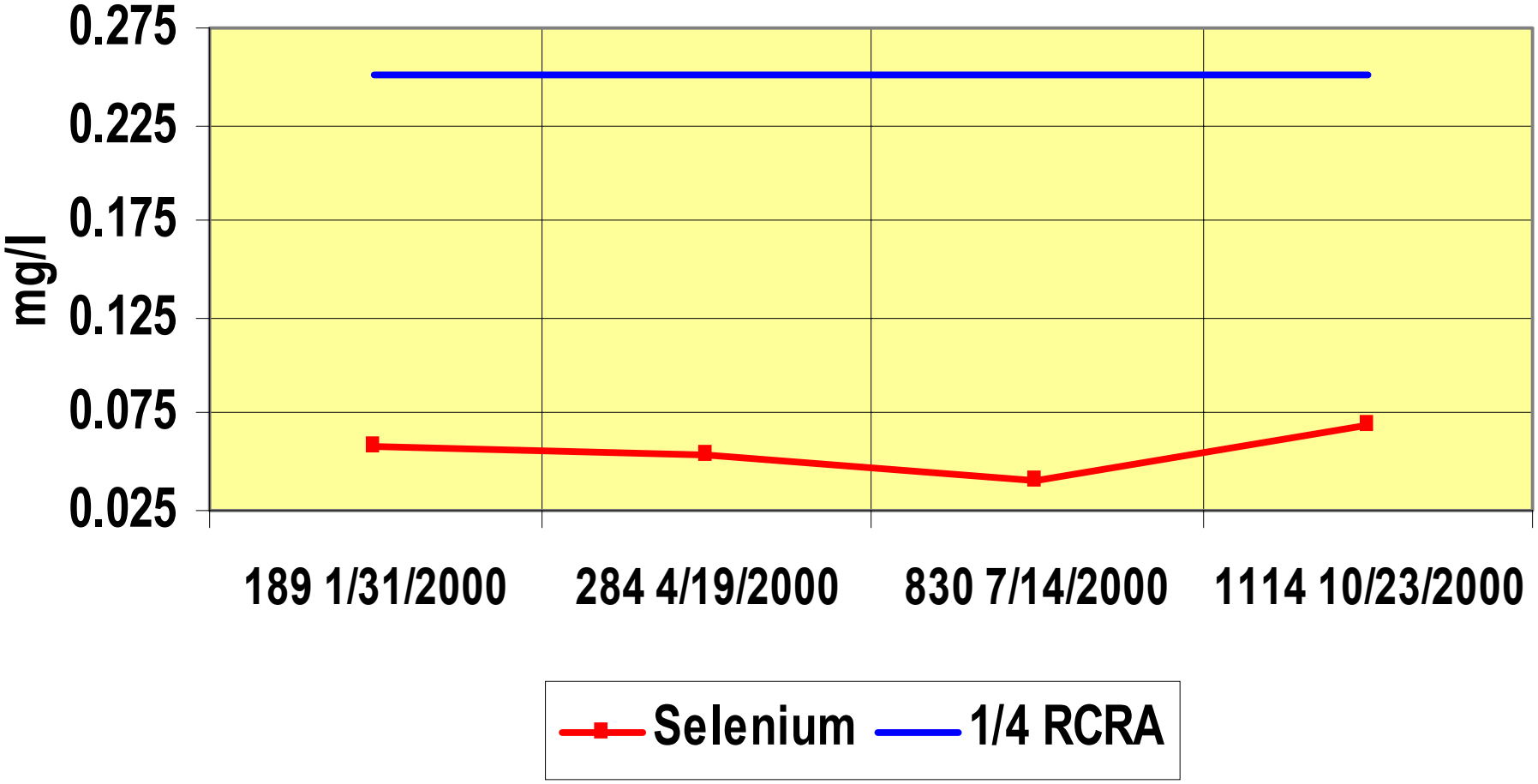
Quarters 1 - 4 Year 2000

Parameter Name		189 1/31/2000		284 4/19/2000		830 7/14/2000		1114 10/23/2000	Count	Maximum	Minimum	St. Dev.
Acidity Total		950	<	100	<	100	<	100	4	950	100	425.0000
Alkalinity		29		60		108		40	4	108	29	34.9416
Aluminum		0.0578		0.982		1.09		0.776	4	1.09	0.0578	0.4644
Arsenic		0.182		0.169		0.188		0.112	4	0.188	0.112	0.0348
Barium		0.152		0.114		0.228		0.149	4	0.228	0.114	0.0480
Boron		5.26		6.57		4.49		6.01	4	6.57	4.49	0.9047
Cadmium	<	0.0012	<	0.0012		0.00124	<	0.0012	4	0.00124	0.0012	0.0000
Chloride		8.8		12.6		11.8		7.53	4	12.6	7.53	2.4089
Chromium		0.0014		0.00217		0.0264	<	0.001	4	0.0264	0.001	0.0124
Copper	<	0.0033	<	0.0033		0.00719	<	0.0033	4	0.00719	0.0033	0.0019
Fluoride		2.15		2.39		2.13		1.88	4	2.39	1.88	0.2084
Iron	<	0.023	<	0.023	<	0.023	<	0.023	4	0.023	0.023	0.0000
Lead		0.00246	<	0.00658	<	0.0022	<	0.0022	4	0.00658	0.0022	0.0022
Magnesium		6.387		0.445		0.0357		5.57	4	6.387	0.0357	3.3339
Manganese		0.0115	<	0.0007		0.00106		0.00972	4	0.0115	0.0007	0.0057
Mercury	<	0.002	<	0.002	<	0.002	<	0.002	4	0.002	0.002	0.0000
Molybdenum		0.263		0.581		0.657		0.392	4	0.657	0.263	0.1791
Nickel	<	0.0049	<	0.0049	<	0.0049	<	0.0049	4	0.0049	0.0049	0.0000
pH(Standard Unit)		9.17		10.1		10.8		9	4	10.8	9	0.8412
Potassium		2.49		3.91		6.75		3.22	4	6.75	2.49	1.8641
Selenium		0.0578		0.0535		0.0415		0.0682	4	0.0682	0.0415	0.0111
Silver		0.00157	<	0.00068	<	0.00068	<	0.00068	4	0.00157	0.00068	0.0004
Sodium		2.3		4.22		6.3		6.62	4	6.62	2.3	2.0112
Sulfate		448		422		229		646	4	646	229	170.5762
Sulfide		2.4		3.2		12.4	<	0.1	4	12.4	0.1	5.4119
Total Dissolved Solids		604		790		576		1080	4	1080	576	231.9964
Total Organic Carbon		1.7		2.7		1.5		4	4	4	1.5	1.1442
Vanadium		0.048		0.237		0.3		0.0875	4	0.3	0.048	0.1198
Zinc	<	0.0034	<	0.0034	<	0.0034	<	0.0034	4	0.0034	0.0034	0.0000

Sheet1 Sheet2 Sheet3

Ready

S-321 Pride Mine - (Selenium)
Quarters 1 - 4, 2000
30 Day Leachate



Indiana's CCW Database

- **Data in the CCW Database are tracked by:**
  - **Facility / Generator**
  - **Waste type (flyash, bottom ash, etc.)**
  - **Analysis type (bulk, 18-hr, 30-day)**
  - **Analysis date**
  - **Permit number**

Indiana's CCW Database

- **Future features of the CCW Database:**
  - **Electronic transfer of data from labs via permittee**
  - **Selection of up to 10 parameter queries**
  - **Unsurpassed graphing and statistical capabilities**

Indiana's CCW Database R:Base

R:BASE 6.1 - [N:\Mine\Mine.DAT]

Form - AshEdit

Forms Edit

EDIT FORM FOR FLY ASH DATA

Press Shift F8 to move into section below

Permit	S-168	Company	Black Beauty Coal Company
Revision Type	SIG	Mine	Miller Creek
Revision Numbe	6	County(s)	GREENE
Location	Approximately two miles northeast of Switz City		
Annual Disposal	1.1M yds		
Total volume to be dispose	12.12M yds		
Method(s)	Backfill and 1 Monofill-Spoil Depression		

Notes

1. Disposal request denied on nonsig 207 for Crawfordsville Electric and for Inland Steel due to outdated analyses. These will be handled as new nonsigs when the updated analyses are submitted. 2. Nonsig 206, approved 2-2-97, moved the ash storage area to the tipple. 3. Nonsig 228, approved 12-03-97, deleted monofill #1 and added monofill #2 plus noted new monitoring well 3A to replace well 3. 4. Nonsig 262 added new monitoring well 7A replacing monitoring well 7 after it was mined through. 5. Nsig 261, approved 2-24-99, installation of Well MW-7 replaces MW-1A. 6. Nsig 263, approved 04-12-99, Map showing location of New Well MW-7R, shown on map as 22MW-7. 7. Nsig#223, approved 5/20/97, adds disposal of coal fines (<1000 tons) from IU to CCW disposal plan. 8. Nsig #231, approved 8/6/97, revised Part IV.F. 9. Nsig#233, approved 9/17/97, log, etc for MW-7.

Waste Types:

387	Fly / Bottom Ash
391	Boiler Slag

Press SHIFT F8 to move to next page for Ash Sources

No editable data in this table | NUM | 1:55 PM

FLY ASH DATA FOR A SINGLE PERMIT

Permit Number S-168 SIG 6

Company Name Black Beauty Coal Company

Mine Name Miller Creek

County(s) GREENE

Location Approximately two miles northeast of Switz City

ASH SOURCES

Company / Plant / City / State	Tons	If Applicable, Nonsignificant Revision	
PSI, Gibson Station, Princeton, IN			
Quantum Chemical (Millennium/Equistar),, Tuscola, IL	20K yds/yr	NSIG	207
Ball State,, Muncie, IN	2K yds/yr	NSIG	207
Indiana University,, Bloomington, IN	7K to 8K yds/yr	NSIG	207
Crawfordsville EP&L,, Crawfordsville, IN	1.5K yds/yr	NSIG	227
Inland Steel,, Gary, IN	PENDING - 80K yds/yr	NSIG	207
General Motors,, Marion, IN	2.4K yds/yr	NSIG	211
Eli Lilly (Lafayette), Tippecanoe Lab, Shadeland, IN	6K to 8K yds/yr	NSIG	218
Eli Lilly, Clinton Lab, Clinton, IN	6K to 8K yds/yr	NSIG	226
AmerenCIPS, Hudsonville Power Station, Hudsonville, IL	75K yds/yr	NSIG	246
Weston Paper Company,, Terre Haute, IN	6K yds/yr	NSIG	252
Griffin Industries, Newberry Plant, Newberry, IN	DENIED - 3.6K tons/yr	NSIG	271
A.E. Staley, Sagamore (North) Plant, Lafayette, IN	6K tons/yr	NSIG	279
A.E. Staley, South Plant, Lafayette, IN	7K tons/yr	NSIG	279
No disposal,,, IN	00		

*** End of Report (Ashperm1)

Report Date: 01/28/2002

FLY ASH DISPOSAL TONNAGE FOR ONE YEAR

For The Year Of: 2000

For All Coal Companies Disposing Ash

Quarter 1

Permit	Company	Mine			
P-031	Public Service, Indiana	Universal Ash			***Total Tons***
Source:	PSI	Wabash River Station	Terre Haute	IN	20,318.00
S-126	Solar Sources, Inc.	Prides Creek			***Total Tons***
Source:	PSI	Noblesville Station	Noblesville	IN	7,150.00
S-135	Black Beauty Coal Company	Viking			***Total Tons***
Source:	IP&L	Petersburg Station	Petersburg	IN	33,000.51
S-168	Black Beauty Coal Company	Miller Creek			***Total Tons***
Source:	Ball State		Muncie	IN	1,936.20
Source:	Indiana University		Bloomington	IN	1,550.14
Source:	Crawfordsville EP&L		Crawfordsville	IN	176.96
Source:	Eli Lilly (Lafayette)	Tippecanoe Lab	Shadeland	IN	1,443.65
Source:	Eli Lilly	Clinton Lab	Clinton	IN	2,166.57
Source:	Weston Paper Company		Terre Haute	IN	1,953.98
Source:	A.E. Staley	Sagamore (North) Plant	Lafayette	IN	346.30
Source:	A.E. Staley	South Plant	Lafayette	IN	654.09
S-312	Foertsch Construction Co., Inc.	Little Sandy #10			***Total Tons***
Source:	IP&L (only approved source)	Petersburg Station	Petersburg	IN	52,029.00
S-318	Vigo Coal Company, Inc.	Cypress Creek Mine			***Total Tons***
Source:	Sigeco	Culley Station (Alcoa)	Evansville	IN	33,502.00
S-321	B.B. Mining, Inc.	Pride Mine			***Total Tons***
Source:	IP&L (SIG #1)	Petersburg Station	Petersburg	IN	94,941.40
					==========
				Total Tons Of Fly Ash Disposed For A Quarter:	251,168.80

Quarter 2

Permit	Company	Mine			
P-031	Public Service, Indiana	Universal Ash			***Total Tons***
Source:	PSI	Wabash River Station	Terre Haute	IN	65,990.00
S-126	Solar Sources, Inc.	Prides Creek			***Total Tons***
Source:	PSI	Noblesville Station	Noblesville	IN	[illegible]

R:BASE 6.1 - [N:\Mine\Mine.DAT]

Fly Ash Data Fly Ash Reports Soil Data

Report - AshTonP

Report Date: 01/28/2002

FLY ASH DISPOSAL TONNAGE FOR ONE PERMIT

Permit: S-126
Company: Solar Sources, Inc.
Mine: Prides Creek

Year 1995

Quarter 1				Tonnage
Source: Hoosier Energy	Ratts Plant	Peterburg	IN	0.00
Source: PSI	Edwardsport Station	Edwardsport	IN	0.00
			Total Tons For The Quarter:	0.00

Quarter 2				Tonnage
Source: Hoosier Energy	Ratts Plant	Peterburg	IN	26,717.81
Source: PSI	Edwardsport Station	Edwardsport	IN	0.00
			Total Tons For The Quarter:	26,717.81

Quarter 3				Tonnage
Source: Hoosier Energy	Ratts Plant	Peterburg	IN	12,822.48
Source: PSI	Edwardsport Station	Edwardsport	IN	11,128.60
			Total Tons For The Quarter:	23,951.08

Quarter 4				Tonnage
Source: Hoosier Energy	Ratts Plant	Peterburg	IN	38,949.08
Source: PSI	Edwardsport Station	Edwardsport	IN	18,581.00
			Total Tons For The Quarter:	57,530.08

Total Tons Disposed For 1995 108,198.97

Year 1996

Quarter 1				Tonnage
Source: Hoosier Energy	Ratts Plant	Peterburg	IN	0.00
Source: PSI	Edwardsport Station	Edwardsport	IN	0.00
			Total Tons For The Quarter:	0.00

Quarter 2				Tonnage
Source: Hoosier Energy	Ratts Plant	Peterburg	IN	0.00
Source: PSI	Edwardsport Station	Edwardsport	IN	0.00
			Total Tons For The Quarter:	0.00

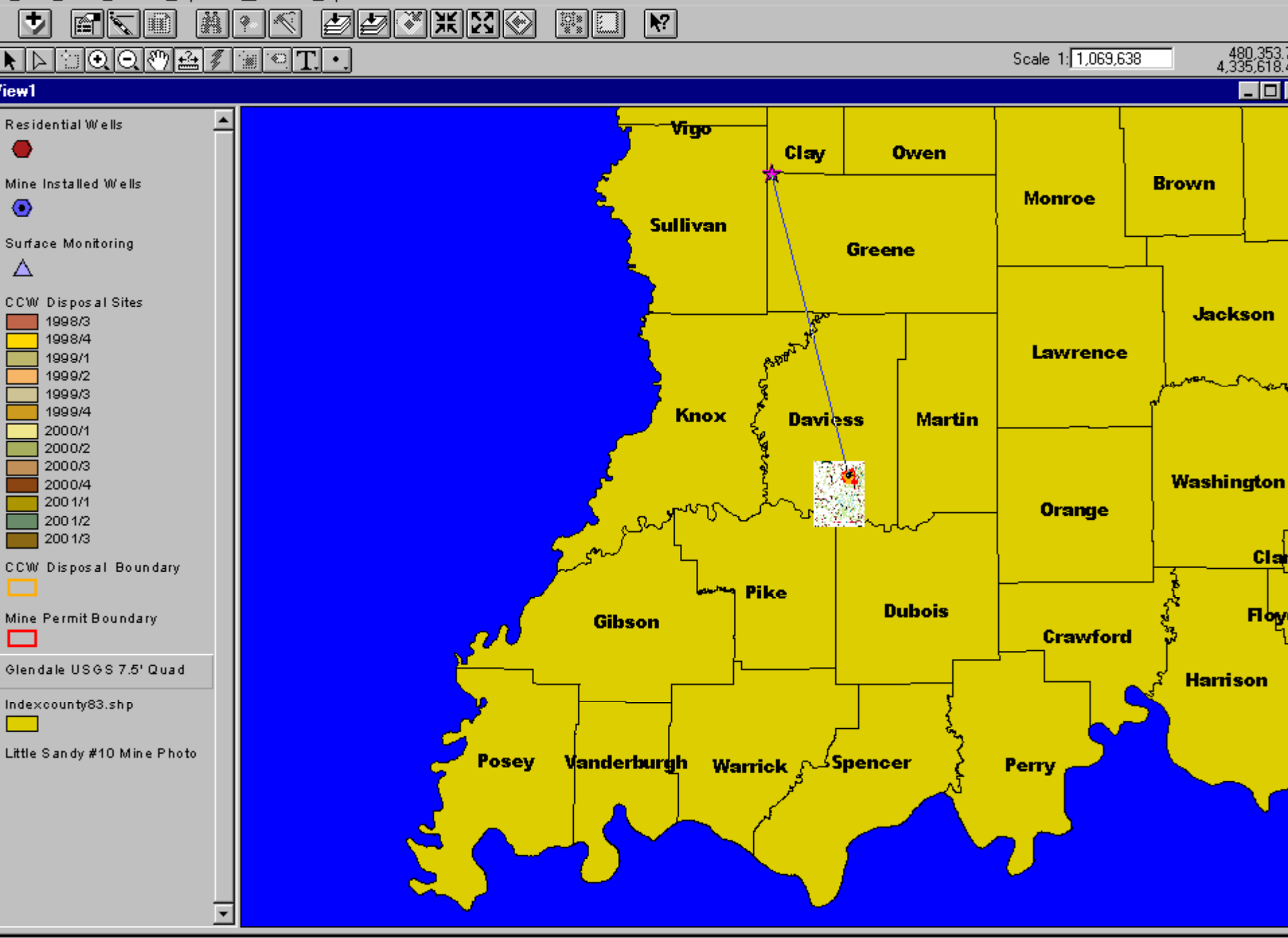
Quarter 3	Tonnage

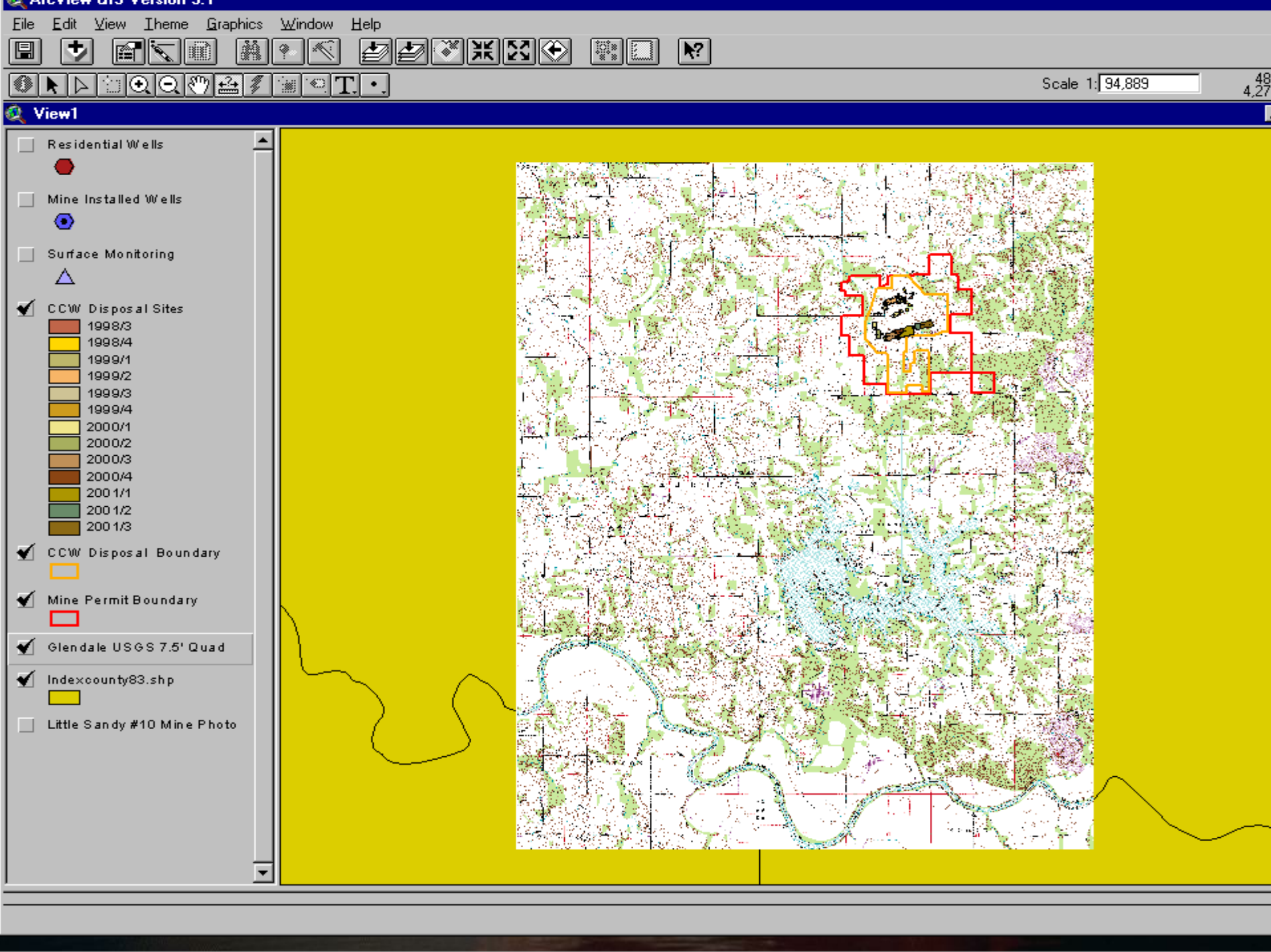
[Esc] [PgDn] [PgUp] [up] [down] [left] [right] [F2]-FitToScreen NUM 12:01 P

Geographic Information Systems

Geographic Information Systems

- **Current GIS work:**
  - ✓ **Transferring coal mine permit boundaries onto topo maps and/or aerial photos**
  - ✓ **Transferring pertinent permit data (monitoring and residential wells, surface water monitoring points, bond release info, etc.) into system**
  - ✓ **Depicting CCW disposal locations within the mined areas**
  - ✓ **Application development (making system user-friendly)**
  - ✓ **Linking location data to database and spreadsheet info**


Scale 1: 1,069,638
480,353.7
4,335,618.4
View1
Residential Wells
Mine Installed Wells
Surface Monitoring
CCW Disposal Sites
1998/3
1998/4
1999/1
1999/2
1999/3
1999/4
2000/1
2000/2
2000/3
2000/4
2001/1
2001/2
2001/3
CCW Disposal Boundary
Mine Permit Boundary
Glendale USGS 7.5' Quad
Indexcounty83.shp
Little Sandy #10 Mine Photo
Vigo
Clay
Owen
Monroe
Brown
Sullivan
Greene
Jackson
Lawrence
Knox
Daviess
Martin
Washington
Orange
Pike
Dubois
Gibson
Crawford
Harrison
Posey
Vanderburgh
Warrick
Spencer
Perry
nent Length: 40.31 mi Length: 40.31 mi


File Edit View Theme Graphics Window Help
Scale 1: 94,889
View1
Residential Wells
Mine Installed Wells
Surface Monitoring
CCW Disposal Sites
1998/3
1998/4
1999/1
1999/2
1999/3
1999/4
2000/1
2000/2
2000/3
2000/4
2001/1
2001/2
2001/3
CCW Disposal Boundary
Mine Permit Boundary
Glendale USGS 7.5' Quad
Indexcounty83.shp
Little Sandy #10 Mine Photo

ArcView GIS Version 3.1

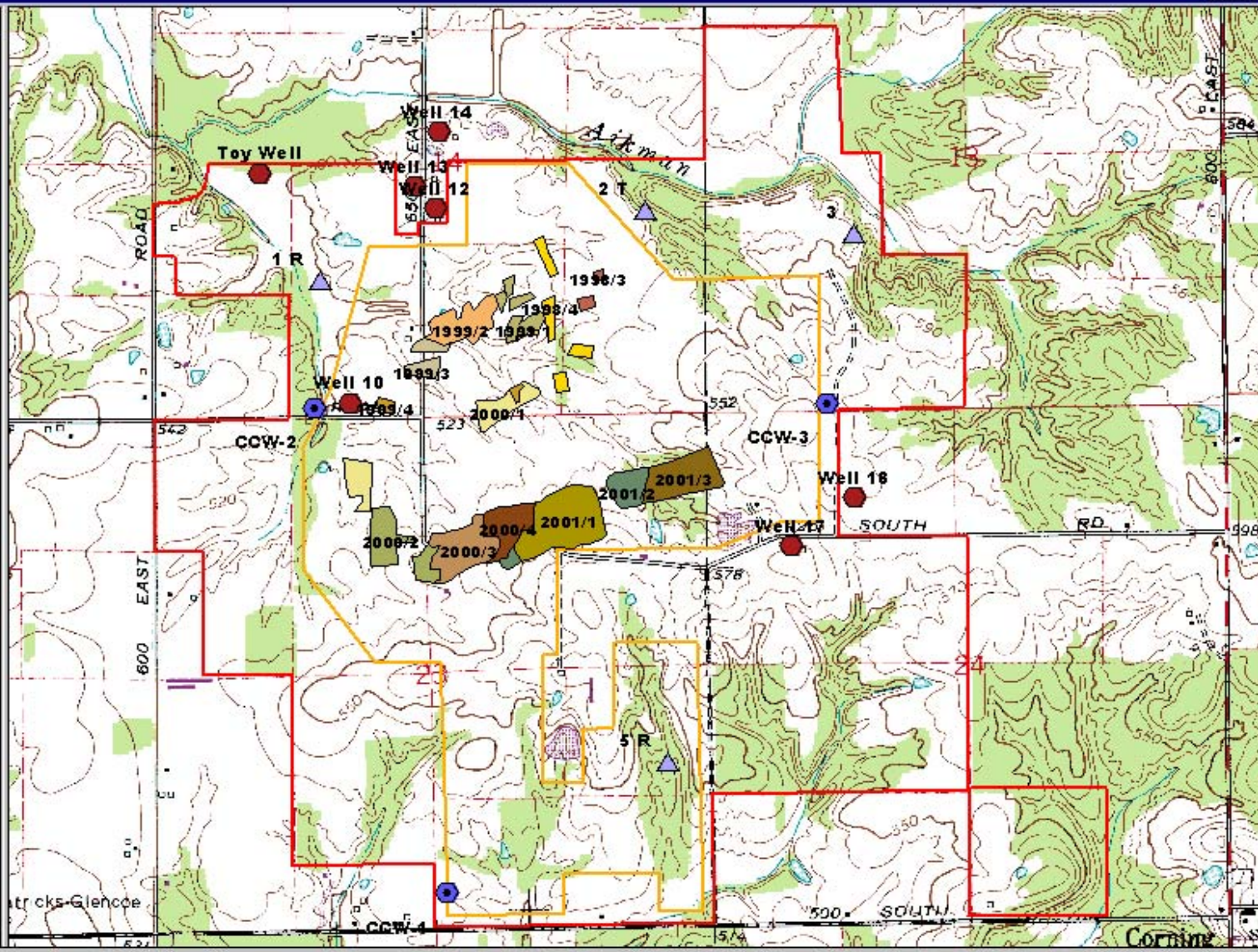
File Edit View Theme Graphics Window Help

Scale 1: 18,466

494,893.89
4,272,740.62

View1

- Residential Wells
- Mine Installed Wells
- Surface Monitoring
- CCW Disposal Sites
  - 1998/3
  - 1998/4
  - 1999/1
  - 1999/2
  - 1999/3
  - 1999/4
  - 2000/1
  - 2000/2
  - 2000/3
  - 2000/4
  - 2001/1
  - 2001/2
  - 2001/3
- CCW Disposal Boundary
- Mine Permit Boundary
- Glendale USGS 7.5' Quad
- Little Sandy #10 Mine Photo



ArcView GIS Version 3.1

File Edit View Theme Graphics Window Help

Scale 1: 18,466

495,035.58
4,271,465.42

View1

- Residential Wells
- Mine Installed Wells
- Surface Monitoring
- CCW Disposal Sites
  - 1998/3
  - 1998/4
  - 1999/1
  - 1999/2
  - 1999/3
  - 1999/4
  - 2000/1
  - 2000/2
  - 2000/3
  - 2000/4
  - 2001/1
  - 2001/2
  - 2001/3
- CCW Disposal Boundary
- Mine Permit Boundary
- Glendale USGS 7.5' Quad
- Little Sandy #10 Mine Photo

ArcView GIS Version 3.1

File Edit Table Field Window Help

3 of 13 selected

View1

- Residential Wells
- Mine Installed Wells
- Surface Monitoring
- CCW Disposal Sites
  - 1998/3
  - 1998/4
  - 1999/1
  - 1999/2
  - 1999/3
  - 1999/4
  - 2000/1
  - 2000/2
  - 2000/3
  - 2000/4
  - 2001/1
  - 2001/2
  - 2001/3
- CCW Disposal Boundary
- Mine Permit Boundary
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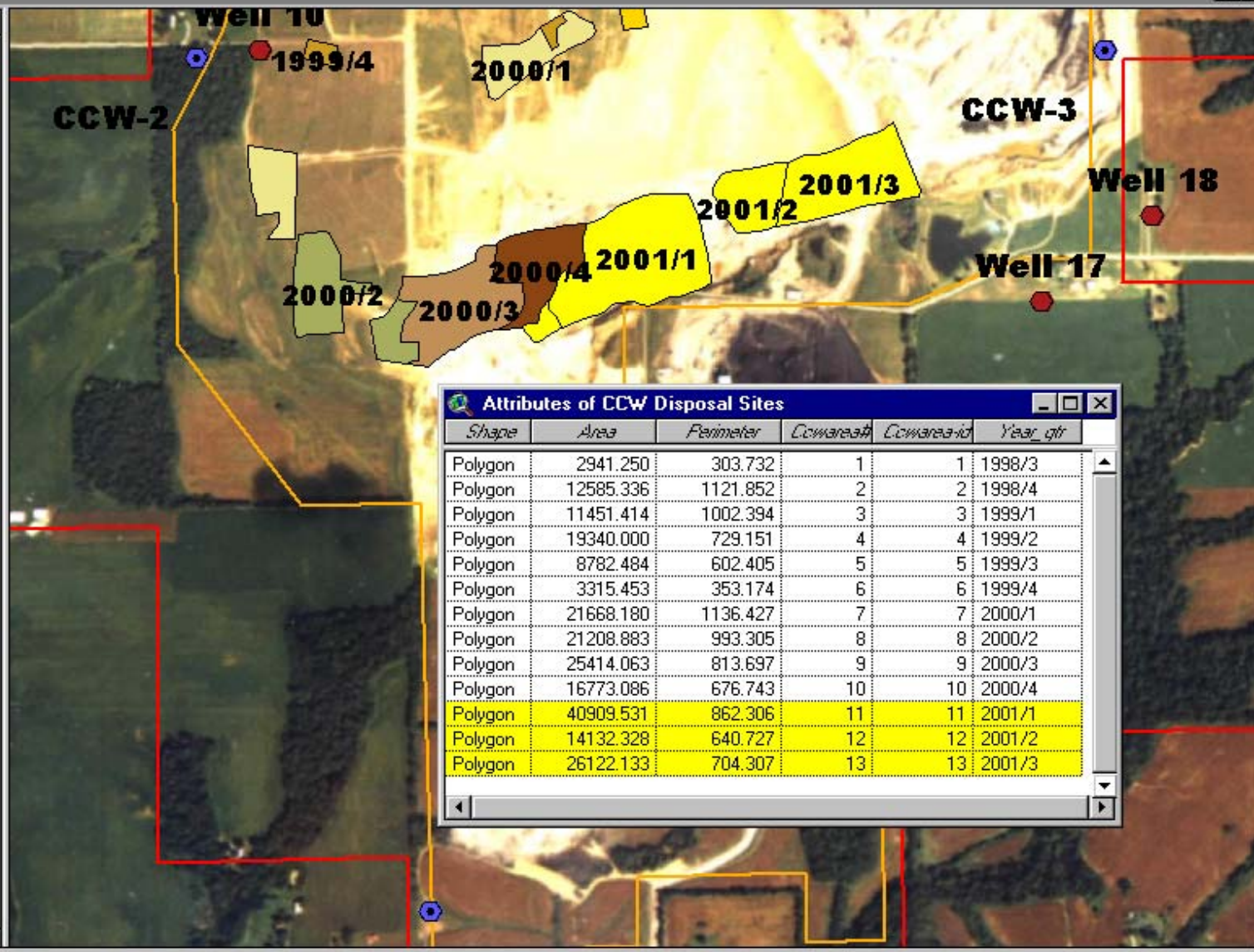
- Little Sandy #10 Mine Photo



Attributes of CCW Disposal Sites

Shape	Area	Perimeter	Ccwarea#	Ccwarea-id	Year_qtr
Polygon	2941.250	303.732	1	1	1998/3
Polygon	12585.336	1121.852	2	2	1998/4
Polygon	11451.414	1002.394	3	3	1999/1
Polygon	19340.000	729.151	4	4	1999/2
Polygon	8782.484	602.405	5	5	1999/3
Polygon	3315.453	353.174	6	6	1999/4
Polygon	21668.180	1136.427	7	7	2000/1
Polygon	21208.883	993.305	8	8	2000/2
Polygon	25414.063	813.697	9	9	2000/3
Polygon	16773.086	676.743	10	10	2000/4
Polygon	40909.531	862.306	11	11	2001/1
Polygon	14132.328	640.727	12	12	2001/2
Polygon	26122.133	704.307	13	13	2001/3

ArcView GIS Version 3.1

File Edit View Theme Graphics Window Help

Scale 1: 10,485

497,171.78
4,271,689.86

View1

- Residential Wells
- Mine Installed Wells
- Surface Monitoring
- CCW Disposal Sites
  - 1998/3
  - 1998/4
  - 1999/1
  - 1999/2
  - 1999/3
  - 1999/4
  - 2000/1
  - 2000/2
  - 2000/3
  - 2000/4
  - 2001/1
  - 2001/2
  - 2001/3
- CCW Disposal Boundary
- Mine Permit Boundary
- Glendale USGS 7.5' Quad
- Little Sandy #10 Mine Photo

Well 10
1999/4
2000/1
CCW-2
CCW-3
2001/3
2001/2
Well 18
2000/4
2001/1
Well 17
2000/2
2000/3
5 R

Identify Results

1: Residential Wells - Well

Shape	Point
Area	0.000
Perimeter	0.000
Reswellpnt#	6
Reswellpnt-id	6
X-coord	497172.594
Y-coord	4271684.000
Well_Name	Well 17
AshdataY/N	Y

Clear Clear All

Geographic Information Systems

- **Future GIS considerations:**
  - ✓ **GIS and spreadsheet charting working in tandem**
  - ✓ **Hydrology parameter contouring using additional GIS tools**
  - ✓ **Modeling with GIS and/or specialized hydrology software**

Indiana's Water Database

Microsoft Access

File Edit View Insert Format Records Tools Window Help

frmSwitchMain : Form

INDIANA DIVISION OF RECLAMATION

WATER DATABASE

Form View

NUM

Microsoft Access

File Edit View Insert Format Records Tools Window Help

frmSwitchDataEntry

Data Entry Menu

Forms	Queries	Reports
Monitoring Points	All Permits And Monitoring Points	Your Day of Work
Water Samples	All Data For One Permit	Laboratories
Laboratories	All Water Data For One Permit - Spreadsheet	Data On One Monitoring Point
Date Verification		Find Duplicates On One Point

Form View NUM

Start epa2002.ppt frmSwitchMain : F... frmSwitchData... EN 4:09 PM

Microsoft Access

File Edit View Insert Format Records Tools Window Help

frmPreMonitor

Edit Form For Existing Water Samples

Enter A Permit Number: s-321

Choose A Monitoring Point: FW-1

Open Form For 1024x768

Open Form For 800x600

Menu

Reports

Your Day of Work

Date Verification

FW-1	G
FW-1488	G
FW-1488A	G
FW-1489	G
FW-1A	G
FW-2	G
FW-3	G
FW-7	G
RC-1	G
W-10	G
W-11	G
W-12	G
W-14	G
W-16/17	G
W-18	G
W-19	G
W-20	G
W-21/22	G
W-21/22 Inside	G
W-23/24	G

Form View

NUM

Start epa2002.ppt frmSwitchMain : F... frmSwitchDataEntry frmPreMonitor EN 4:11 PM

Microsoft Access

File Edit View Insert Format Records Tools Window Help

frmMonitor800x600

Installed | 2051

Notes On Point: monthly monitoring until past 1000 feet

Permit and Point Name Of Current Owner

S-321 | FW-1

Lab Laboratory Not Known

Sample Date 8/19/1994

Mine Status Baseline

Ash Data? N

Data Entry Initials

Data Entry Completed

Returned From Insp

Notes On Sample:

Parameter	Qualifier	Value
Manganese		1.66
SWE		417.11
Field_pH		7.04
Sp_Con		944
TDS		612
Alkalinity		324
Acid		82.4
Chloride		10.4
Iron		1.8
Sulfate		287
Hardness		502
Tape_Down		19.45
Temperature		16

Record: 1 of 13

Record: 1 of 68

Form View FLTR NUM

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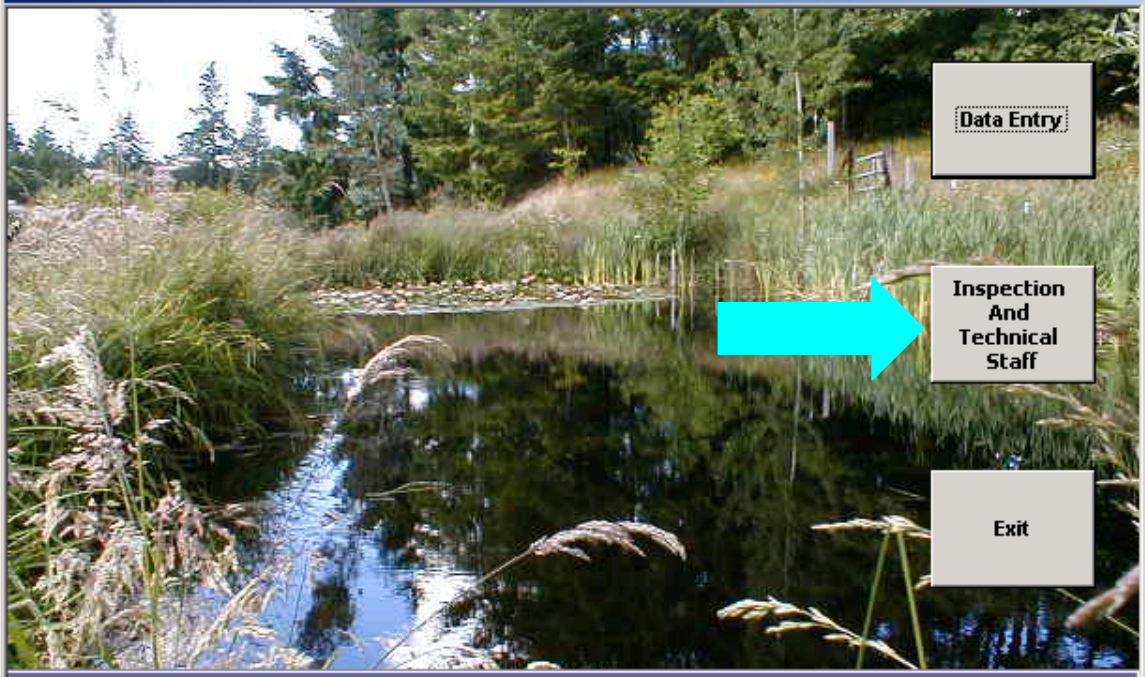
Microsoft Access

File Edit View Insert Format Records Tools Window Help

frmSwitchMain : Form



INDIANA DIVISION OF RECLAMATION

WATER DATABASE

Form View

NUM

Microsoft Access

File Edit View Insert Format Records Tools Window Help

frmSwitchInspTech

Inspection and Technical Staff

Forms	Queries	Reports	Graphs
Lifetime Monitoring For One Point	All Permits And Monitoring Points	Data For One Monitoring Point	Graph One Parameter For One Point
Change In Frequency On A Monitoring Point	All Water Data For One Permit	Data For One Permit	
	All Water Data For One Permit - Spreadsheet	Choose Parameters For One Monitoring Point	
		Permit Monitoring Requirements	
		Laboratories	

Record: 1 of 1

Form View

NUM

Microsoft Access

File Edit View Insert Format Records Tools Window Help

frmPrePointInsp

Edit Form For Existing Monitoring Points

Enter A Permit Number: s-321

Choose A Monitoring Point: FW-2

Open Form

FW-2	G
FW-3	G
FW-7	G
RC-1	G
W-10	G
W-11	G
W-12	G
W-14	G
W-16/17	G
W-18	G
W-19	G
W-20	G
W-21/22	G
W-21/22	G
W-23/24	G
W-25	G
W-26	G
W-26A	G
W-3	G
W-7	G

nical Staff

Reports

Graphs

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nitoring Point

Graph One Parameter For One Point

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Record: 1 of 1

Form View

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Start epa2002.ppt frmSwitchMa... frmSwitchIns... frmPrePoi... EN 4:18 PM

Microsoft Access

File Edit View Insert Format Records Tools Window Help

tblPointInsp

Permit	Point Name (and alias names)	Current	Transfer Date
S-321	FW-2	Y	
S-321	FGW-2	N	1/1/2000

UTME 476045.21875 UTMN 4266253 Point Type Installed

Monitor Time Frames Throughout Life of Permit: through phase III

Frequency Schedule For Life of Permit: quarterly

Parameter List To Be Monitored: aluminum, arsenic, barium, cadmium, calcium, chromium, copper, lead, manganese, nickel, selenium, zinc, water level, field pH, lab pH, apec. Cond., TDS, total alkalinity, total acidity, silver, molybdenum, iron, sodium, sulfide, boron, magnesium, total organic carbon, cation/anion difference, sulfate, total hardness, chloride, fluoride,

Notes: This point was previous named FGW-2. Ash point.

All Monitoring Time Frames For This Point

FLTR NUM

Start epa2002... frmSwitch... frmSwitch... frmPrePoi... tblPoint... EN 4:21 PM

Microsoft Access

File Edit View Insert Format Records Tools Window Help

frmSwitchInspTech

Inspection and Technical Staff

Forms	Queries	Reports	Graphs
Lifetime Monitoring For One Point	All Pe Monit	Data For One Monitoring Point	Graph One Parameter For One Point
Change In Frequency On A Monitoring Point	All Water Data For One Permit	Data For One Permit	
	All Water Data For One Permit - Spreadsheet	Choose Parameters For One Monitoring Point	
		Permit Monitoring Requirements	
		Laboratories	

Record: 1 of 1

Form View

NUM

Microsoft Access

File Edit View Insert Format Records Tools Window Help

frmRptOnOnePoint

REPORT OF PARAMETERS FOR A SPECIFIC MONITORING POINT FOR ALL SAMPLE DATES

Enter A Permit Number: S-168

Choose A Monitoring Point: SW-3S

Print Data For All Parameters

Print Data For Limited Parameters (Mine Drainage)

Print Data And Statistics For One Parameter On This Point

nical Staff

Reports

Graphs

For One oring Point

Graph One Parameter For One Point

For One Permit

hoose neters For Monitoring Point

Monitoring irements

Laboratories

Record: 1 of 1

Form View

NUM

Microsoft Access

File Edit View Tools Window Help

100% Close

rptOnOnePoint

Parameters For One Monitoring Point

Permit	Point	Sample Date	Acid	Alkalinity	Aluminum	Arsenic	Barium	Bicarb	Boron	Cadmium	Calcium	Carbon	Cat_Ion	Chloride	Chlorine	Chromiu	Copper	Field_pH	Flow	Fluoride
S-168	SW-3S																			
		6/5/1996	<10	290	1		0.084	200	0.19	0.0003	66			16		0.004	0.012			0.29
		7/7/1996																	0	
		8/6/1996																	0	
		9/30/1996	<10	456	94.85	0.029	0.372		0.648	<0.001	25.2			1.7		0.073	0.061	7.6		0.31
		10/9/1996	<10	125	3.95	<0.01	0.071		0.085	<0.001	30.2			2.4		<0.01	<0.01	6.9		<0.2
		1/14/1997	<1	148	5.47	<0.01	0.11		0.714	<0.001	140.7		37.4	3.5		<0.01	<0.01	7.1		0.24
		4/8/1997	<10	109	1.1	<0.01	0.05		0.11	<0.01	26		<17.8	3.7		<0.01	<0.01	7.6	0.25	<0.2
		10/6/1997																	0	
		1/26/1998	13	62	0.74	<0.005	0.06		0.2	<0.002	69			17		0.009	<0.005	7.5		<0.2
		6/22/1998	<10	77	0.94	<0.003	0.05		0.09	<0.002	27		6.6	17		<0.002	0.003	7.7		0.2
		8/26/1998																	0	
		10/13/1998																	0	
		2/22/1999	<10	62	3.2	0.006	0.05		0.05	<0.002	31		15.9	6.1		0.003	0.004	7.9	0	0.2
		5/4/1999	<10	140	0.88	<0.003	0.07		0.08	<0.002	49		7.4	10		0.002	0.003	8.1	0	0.3
		7/21/1999																	0	
		10/12/1999	<10	81	0.46	<0.002	0.03		0.12	<0.002	84		7.1	4		<0.002	<0.002	7.82		0.3
		3/10/2000	<10	100	1.7	<0.002	0.038		0.047	<0.002	51			8		<0.002	<0.002	8.87	0	8.07
		4/18/2000	<10	87	1	<0.002	0.045		<0.02	<0.002	33			7		<0.002	<0.002	6.98	1.2	<0.2
		8/11/2000	<1	110	0.897	0.003	0.049		0.122	<0.002	35				12	<0.002	<0.002	7.8	0.01	<0.2
		11/17/2000	<1	87	2.1	<0.002	0.061		0.089	<0.002	38			12		<0.002	<0.002	8.7	0	<0.2
		2/20/2001	35	83	2.3	<0.002	0.04		0.004	<0.002	30			11		<0.002	<0.002	7.22	1	<0.2
		4/18/2001																	0	
		5/1/2001	85	144	1.42	<0.002	0.02		0.02	<0.002	51.3			14.2		<0.002	<0.002	8.61	0	0.28

Page: 1

Ready NUM

Microsoft Access

File Edit View Insert Format Records Tools Window Help

frmRptOnOnePoint

REPORT OF PARAMETERS FOR A SPECIFIC MONITORING POINT FOR ALL SAMPLE DATES

Enter A Permit Number: S-168

Choose A Monitoring Point: SW-3S

Print Data For All Parameters

Print Data For Limited Parameters (Mine Drainage)

Print Data And Statistics For One Parameter On This Point

nical Staff

Reports

Graphs

For One oring Point

Graph One Parameter For One Point

For One Permit

hoose neters For Monitoring Point

Monitoring irements

Laboratories

Record: 1 of 1

Form View

NUM

Microsoft Access

File Edit View Tools Window Help

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rptLimitedData

Limited Parameters Report

Permit	Monitoring Point Name	Sample Date	Acid	Alkalinity	Chloride	Field_pH	Lab_pH	Hardness	Iron	Manganese	Sp_
S-168	SW-3S	6/5/1996	<10	290	16		7.76		1.5	0.59	
		9/30/1996	<10	456	1.7	7.6			29.98	0.78	
		10/9/1996	<10	125	2.4	6.9			<0.5	<0.1	
		1/14/1997	<1	148	3.5	7.1			1.08	0.19	
		4/8/1997	<10	109	3.7	7.6	7.2		0.87	0.07	
		1/26/1998	13	62	17	7.5			0.95	0.12	
		6/22/1998	<10	77	17	7.7	7.06		1.2	0.13	
		2/22/1999	<10	62	6.1	7.9	7.67		2.4	0.09	
		5/4/1999	<10	140	10	8.1	7.96		1.4	0.55	
		10/12/1999	<10	81	4	7.82	7.66		0.36	0.02	
		3/10/2000	<10	100	8	8.87	0.026		0.83	0.033	
		4/18/2000	<10	87	7	6.98	7.6		0.65	0.13	
		8/11/2000	<1	110		7.8	7.51		0.359	0.332	
		11/17/2000	<1	87	12	8.7	7.5		1.56	0.1	
		2/20/2001	35	83	11	7.22	7.2		1.05	0.19	
		5/1/2001	85	144	14.2	8.61	8.32		1.34	0.65	

Page: 1

Laboratories

Record: 1 of 1

Ready NUM

Microsoft Access

File Edit View Insert Format Records Tools Window Help

frmRptOnOnePoint

REPORT OF PARAMETERS FOR A SPECIFIC MONITORING POINT FOR ALL SAMPLE DATES

Enter A Permit Number: S-168

Choose A Monitoring Point: SW-3S

Print Data For All Parameters

Print Data For Limited Parameters (Mine Drainage)

Print Data And Statistics For One Parameter On This Point

nical Staff

Reports

Graphs

For One oring Point

Graph One Parameter For One Point

For One Permit

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Monitoring irements

Laboratories

Record: 1 of 1

Form View

NUM

Microsoft Access

File Edit View Tools Window Help

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frmRpt

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Chro
Copp
Field_
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Fluor
Hardi
Iron
Lab_
Lake_
Lead
Magn

rptOnOnePointOneParam

One Parameter On One Monitoring Point

Permit	Monitoring Point Name	Parameter	Sample Date	Qualifier	Value
S-168	*SW-3S*	*Boron*			
			6/5/1996		0.19
			9/30/1996		0.648
			10/9/1996		0.085
			1/14/1997		0.714
			4/8/1997		0.11
			1/26/1998		0.2
			6/22/1998		0.09
			2/22/1999		0.05
			5/4/1999		0.08
			10/12/1999		0.12
			3/10/2000		0.047
			4/18/2000	<	0.02
			8/11/2000		0.122
			11/17/2000		0.089
			2/20/2001		0.0043
			5/1/2001		0.02

STATISTICAL ANALYSIS:	
Mean (Average) *	.16183
Minimum	.00430
Maximum	.71400
Count	16
Standard Deviation	.21029

Page: 1

Ready NUM

Microsoft Access

File Edit View Insert Format Records Tools Window Help

frmSwitchInspTech

Inspection and Technical Staff

Forms	Queries	Reports	Graphs
Lifetime Monitoring For One Point	All Permits And Monitoring Points	Data For One Monitoring Point	Graph One Parameter For One Point
Change In Frequency On A Monitoring Point	All Water Data For One Permit	Data For One Permit	
	All Water Data For One Permit - Spreadsheet	Choose Parameters For One Monitoring Point	
		Permit Monitoring Requirements	
		Laboratories	

Record: 1 of 1

Form View

NUM

Microsoft Access

File Edit View Insert Format Records Tools Window Help

frmSwitchInspTech

Lifetime Monitoring For One Point

All Permits And Monitoring Points

Data For One Monitoring Point

Graph One Parameter For One Point

Change In Frequency On A Monitoring Point

All Water Data For One Permit

Data For One Permit

All Water Data For One Permit - Spreadsheet

Choose Parameters For One Monitoring Point

Permit Monitoring Requirements

Laboratories

Enter Parameter Value

Enter A Permit

S-321

OK

Cancel

Record: 1 of 1

Form View

NUM

Start epa2002.ppt frmSwitchMain : Form frmSwitchInspTech EN 7:38 AM

Microsoft Access

File Edit View Tools Window Help

Fit Close

rptMonitor

Monitoring Schedule For Permit S-321

Point Name: 001		Point Type: Basin	S
Time Frame	Through phase III		
Frequency	undetermined		
Parameter List			
Notes	NOT YET CONSTRUCTED		
Point Name: 002		Point Type: Basin	S
Time Frame	THROUGH PHASE III		
Frequency	UNDETERMINED		
Parameter List			
Notes	NOT YET CONSTRUCTED		
Point Name: 003		Point Type: Basin	S
Time Frame	THROUGH PHASE III		
Frequency	UNDETERMINED		
Parameter List			
Notes	NOT YET CONSTRUCTED		
Point Name: 004		Point Type: Basin	S
Time Frame	through phase III		
Frequency	quarterly		
Parameter List	aluminum, arsenic, barium, cadmium, calcium, chromium, copper, lead, manganese, nickel, selenium, zinc, water level, field pH, lab pH, spec. Cond., TDS, total alkalinity, total acidity, silver, molybdenum, iron, sodium, sulfide, boron, magnesium, total organic carbon, cation/anion difference, sulfate, total hardness, chloride, fluoride, bicarbonate, potassium, mercury, vanadium and temp		
Notes	Only testing for CCTP parameters started in 1000, prior to this it was only tested as NPDES point		
Point Name: 17-1-S-04		Point Type: Domestic	G
Time Frame	When active mining is within 1000 feet		
Frequency	monthly until past 1000 feet; then quarterly through phase III		
Parameter List	field pH, temp., water level, total acidity, total alkalinity, spec. cond., TDS, iron, manganese, sulfate, chloride and total hardness		
Notes	SELL AMS domestic well, monthly monitoring, activity within 1000' feet		

Tuesday, January 11, 1991 Report rptMonitor based on rptMonitor Page 1 of 11

Page: 1

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Microsoft Access

File Edit View Tools Window Help

100% Close

rptMonitor

Notes

Point Name: CMW-02 **Point Type: Installed** **G**

Time Frames: through phase III

Frequency: quarterly

Parameter List: aluminum, arsenic, barium, cadmium, calcium, chromium, copper, lead, manganese, nickel, selenium, zinc, water level, field pH, lab pH, apec. Cond., TDS, total alkalinity, total acidity, silver, molybdenum, iron, sodium, sulfide, boron, magnesium, total organic carbon, cation/anion difference, sulfate, total hardness, chloride, fluoride, bicarbonate, potassium, mercury, vanadium and temp.

Notes: ASH POINT

Point Name: CMW-02A **Point Type: Installed** **G**

Time Frames: THROUGH PHASE III RELEASE

Frequency: QUARTERLY

Parameter List: aluminum, arsenic, barium, cadmium, calcium, chromium, copper, lead, manganese, nickel, selenium, zinc, water level, field pH, lab pH, apec. Cond., TDS, total alkalinity, total acidity, silver, molybdenum, iron, sodium, sulfide, boron, magnesium, total organic carbon, cation/anion difference, sulfate, total hardness, chloride, fluoride, bicarbonate, potassium, mercury, vanadium and temp.

Notes: ASH POINT.

Point Name: CMW-03 **Point Type: Installed** **G**

Time Frames: THROUGH PHASE III RELEASE

Frequency: QUARTERLY - ONE ASH BASELINE PRIOR TO ASH DISPOSAL

Parameter List: aluminum, arsenic, barium, cadmium, calcium, chromium, copper, lead, manganese, nickel, selenium, zinc, water level, field pH, lab pH, apec. Cond., TDS, total alkalinity, total acidity, silver, molybdenum, iron, sodium, sulfide, boron, magnesium, total organic carbon, cation/anion difference, sulfate, total hardness, chloride, fluoride, bicarbonate, potassium, mercury, vanadium and temp.

Notes: ASH POINT. NOT INSTALLED YET AS OF 12/12/01.

Point Name: CMW-03A **Point Type: Installed** **G**

Time Frames: THROUGH PHASE III RELEASE

Page: 3

Ready NUM

Microsoft Access

File Edit View Insert Format Records Tools Window Help

frmSwitchInspTech

Inspection and Technical Staff

Forms	Queries	Reports	Graphs
Lifetime Monitoring For One Point	All Permits And Monitoring Points	Data For One Monitoring Point	Graph One Parameter For One Point
Change In Frequency On A Monitoring Point	All Water Data For One Permit	Data For One Permit	
	All Water Data For One Permit - Spreadsheet	Choose Parameters For One Monitoring Point	
		Permit Monitoring Requirements	
		Laboratories	

Record: 1 of 1

Form View

NUM

Microsoft Access

File Edit View Insert Format Records Tools Window Help

frmSwitchInspTech

frmGraph

GRAPHING A SINGLE PARAMETER FOR A SPECIFIC MONITORING POINT

Enter A Permit Number: s-318

Choose A Monitoring Point: CY-27

CY-27	G
CY-28	G
CY-29	G
CY-31	G
CY-32	G
CY-33	G
GW-34	G
GW-35	G

Choose A Parameter: Bariu

IF YOU WISH TO LIMIT DATE
ALL SAMPLES IN DATABAS

Start: 1/1/1970 End: 1/1/2010

Now Graph Data

Record: 1 of 1

taff

Graphs

Graph One Parameter For One Point

Form View

NUM

Start | epa2002_1.ppt | frmSwitchMain : F... | frmSwitchInspTech | frmGraph | EN 8:58 AM

Microsoft Excel - ExcelGraph.XLT

File Edit View Insert Format Tools Chart Window Help

"Parameter: ...

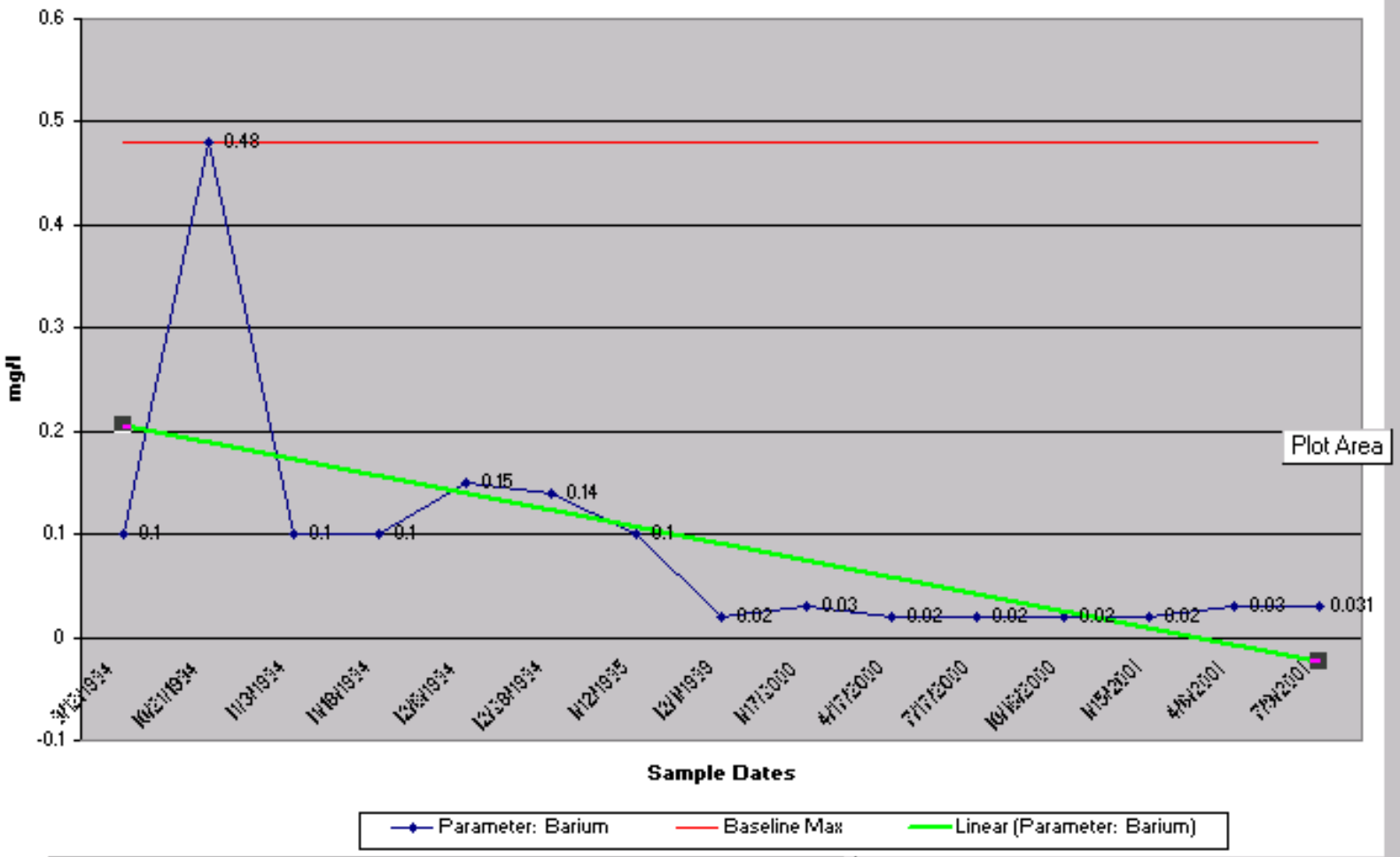

Chart1 qryGraph

Ready NUM

Start epa2002_1.... frmSwitchMa... frmSwitchIns... frmGraph Microsoft ... EN 3:56 PM

Indiana's Water Database

- **Future features of the Water Database:**
  - ✓ **More statistical analyses**
  - ✓ **Addition of Indiana's Ground Water Quality Standards**
  - ✓ **Improved graphing capabilities**
  - ✓ **Add programming to capture and report on missing samples based on monthly, quarterly or annual frequencies**