



1183 East Canvasback Drive  
Terre Haute, IN 47802

June 8, 2012

Mr. Scott Fowler  
Illinois Department of Natural Resources  
Office of Mines and Minerals  
Land Reclamation Division  
One Natural Resources Way  
Springfield, IL 62702-1271

RE: Bulldog Mine  
UCMP-1 Permit Application For  
Administrative Completeness Review

Dear Mr. Fowler:

Sunrise Coal Company, LLC is pleased to submit an underground mining permit application for Bulldog Mine located in Vermilion County, Illinois. Enclosed, please find one (1) copy of a completed UCMP-1 Permit Application for administrative completeness review.

If you have any questions or require additional information please contact Scott Gambill. He can be contacted at 812-398-2200 ex. 109 or by email at [sgambill@sunrisecoal.com](mailto:sgambill@sunrisecoal.com).

Sincerely,

A handwritten signature in cursive script that reads "Brent K. Bilsland".

Brent K. Bilsland  
President

Enclosure



**SUNRISE COAL**  
LLC

1183 East Canvasback Drive  
Terre Haute, IN 47802

Mr. Earnest Ashby  
Permit Coordinator  
Land Reclamation Division  
Office of Mines and Minerals  
One Natural Resources Way  
Springfield, IL 62702

May 22, 2012

Re: Permit #429 - Mine Name Clarification

Dear Mr. Ashby:

Sunrise Coal, LLC is providing for clarification with Permit Application #429, that any and all referenced documentation with the mine name "Allerton Mine" should be considered the same as the new mine name of "Bulldog Mine". All future correspondence will now be referenced with the new mine name of Bulldog Mine for Permit Application #429.

If you have any questions or require additional information please contact Scott Gambill. He can be contacted at 812-398-2200 ex. 109 or by email at [sgambill@sunrisecoal.com](mailto:sgambill@sunrisecoal.com). Thank you for your assistance with this matter.

Sincerely,



Brent K. Bilisland  
President  
Sunrise Coal, LLC

Enclosure



## **BULLDOG MINE**

**PERMIT No. 429**

# **UCM-1 PERMIT APPLICATION FOR COMPLETENESS REVIEW**

**JUNE 2012**

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State of Illinois  
Department of Natural Resources  
Office of Mines and Minerals  
Land Reclamation Division  
One Natural Resources Way  
Springfield, IL 62702-1271

APPLICATION FOR SURFACE COAL MINING AND RECLAMATION OPERATIONS  
PERMIT - UNDERGROUND OPERATIONS  
UCM-1

PART I

(Application to be submitted 120 days (180 days for NPDES) prior to the desired effective date of the permit)

DATE: June 8, 2012

NOTICE

This state agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Ill. Rev. Stat. 1989, ch. 96 1/2, par. 7901 et seq. Disclosure of this information is voluntary, however failure to comply may result in this form not being processed. This form has been approved by the Forms Management Center.

1) A) General Information

(~~I~~)(We)(The) Sunrise Coal, LLC  
(Name of Company, Corporation, Partnership or Individual)  
1183 Canvasback Dr.  
Terre Haute, IN 47802 812-299-2800  
(Address) (Telephone Number)

hereby submit application # \_\_\_\_\_ for a permit to mine during a permit term of Five (5) years.

Type of Application:

- Underground Mining  
 Revision No. \_\_\_\_\_ to Permit No. \_\_\_\_\_  
 Shadow Area Addition  
 Renewal No. \_\_\_\_\_ to Permit No. \_\_\_\_\_  
 Transfer of Permit No. \_\_\_\_\_  
 Acres to be added under renewal

Applicant's Social Security No. \_\_\_\_\_ (Voluntary) and/or Federal Employer Identification No. 37-1449270

Name of Mine Bulldog Mine

MSHA ID No. 11-03249

List the Mine Safety and Health Administration (MSHA) number(s) for all mine associated structures that require MSHA approval.

**MSHA numbers for mine associated structures requiring MSHA approval have not been assigned.**

I, Brent K. Bilslund President  
Name Signature Title

under penalties of perjury declare that I have examined this application, including accompanying statements and documents and to the best of my knowledge it is true, and correct. (Signee must be at least a vice president or duly authorized representative for NPDES 35 Ill. Adm. Code 309.103(e))

This application is also to be used to apply for a:

IEPA Subtitle D (State) Permit Yes \_\_\_\_\_ No X NPDES Yes X No \_\_\_\_\_

New X

Renewal No. \_\_\_\_\_ Date: \_\_\_\_\_

Renewal No. \_\_\_\_\_ Date: \_\_\_\_\_

Modification No. \_\_\_\_\_ Date: \_\_\_\_\_

Modification No. \_\_\_\_\_ Date: \_\_\_\_\_

If this is an application for a NPDES permit, the Consolidated Permits Program - Application Form 2C (renewal), Form 2D (new), or Form 2E (sanitary) must be completed.

1) B) I Brent K. Bilslund  
(vice president or his duly authorized representative)

hereby waive my right of the 90-day permit issuance deadline as required by the Illinois Environmental Protection Act, Section 39(a)(4) and the Illinois Pollution Control Board Rules and Regulations, 35 Ill. Adm. Code 309.225(c).

1) C) Who will be the operator of the permit site?

Name Sunrise Coal, LLC

Pursuant to 62 Ill. Adm. Code 1701.5 an operator is any person engaged in coal mining who removes or intends to remove more than 250 tons of coal.

If the operator is different from the applicant, provide the following information.

1) Operator's address \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

2) Operator's telephone No. \_\_\_\_\_

3) Operator's Social Security No. \_\_\_\_\_ (voluntary) and/or Federal Employer Identification No. \_\_\_\_\_

1) D) Who will extract coal under this permit?

Name **Sunrise Coal, LLC**

If different from applicant or operator provide the following:

1) Address \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

2) Telephone No. \_\_\_\_\_

3) Social Security No. \_\_\_\_\_ (Voluntary) and/or Federal Employer Identification No. \_\_\_\_\_

1) E) Who will pay abandoned mine land reclamation fees?

Name **Sunrise Coal, LLC**

If the person paying the abandoned mine land reclamation fee is different from the applicant, provide the following information.

1) Address \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

2) Telephone No. \_\_\_\_\_

3) Payee's Social Security No. \_\_\_\_\_ (voluntary) and/or Federal Employer Identification No. \_\_\_\_\_

1) F) The permittee requests a permit on the following area as shown on the permit map.

Mine Address	Pit No. or Name	Acres to be Permitted	Sec.	Twp.	Range	County
<b>Same as Corporate Address</b>	<b>Bulldog Mine</b>	<b>237.2</b>	<b>26</b>	<b>18N</b>	<b>14W</b>	<b>Vermilion</b>
		<b>153.1</b>	<b>35</b>			

Total Acres **390.3**

1) G) Indicate the type of disturbance and associated acreage.

<u>Type of Disturbance</u>	<u>Acres</u>
Deep Mine Entries, Ventilation, Air Shafts.....	<b>0.5</b>
Mine Waste Areas .....	<b>84.4</b>
Processing Areas & Support Facilities .....	<b>43.3</b>
Access, Haul Roads, & Transport Facilities.....	<b>7.1</b>
Soil Storage Areas .....	<b>47.5</b>
Diversions- <b>Ditches and Ponds</b> .....	<b>36.0</b>
<b>Other-Undeveloped Support Areas</b> .....	<b>103.2</b>
Not to be Disturbed .....	<b>68.3</b>
Total Permit Acreage.....	<b>390.3</b>

1) H) For each phase (permit) of the proposed surface coal mining and reclamation operation over the life of the mine provide the anticipated or actual starting and termination date and the anticipated number of acres to be affected. Designate the boundaries of each phase on the pre-mining land use map or other designated map.

Phases (Permits)	Starting Date	Termination Date	Acres to be Affected
<b>Phase 1</b>	<b>January 2013</b>	<b>2023</b>	<b>390.3</b>

2) A) Provide name and address of every legal or equitable owner of record of the permit area, and the mineral property to be mined.

**Please refer to Attachment I-2A.**

2) B) Provide name and address of the owner of record for all surface and subsurface areas contiguous to any part of the proposed permit area.

**Please refer to Attachment I-2B.**

2) C) Show location of owners of record of those lands, both surface and subsurface, included in or contiguous to the permit area on premining land use map or another map, if necessary.

**Please refer to the Hydrology Map, Map A for both surface and subsurface owners in and contiguous to the permit and shadow areas.**

3) A) Provide name and address of any holder of record of leasehold interest for the permit area, and the mineral property to be mined.

3) B) Provide a statement of all lands, interest in lands, options or pending bids on interest held or made by the applicant for lands which are contiguous to the permit area.

**None**

- 4) Provide name and address of any purchaser of record under a real estate contract of the property for the permit area.
- 5) A) The applicant is: \_\_\_\_\_ corporation, \_\_\_\_\_ partnership, \_\_\_\_\_ single proprietorship, **Limited Liability Company** association or other business entity.

**Attachment I-5 contains a copy of Sunrise Coal's business registration with the Illinois Secretary of State.**

- 5) B) For the resident agent who will accept service of process for the applicant provide the following information.
- 1) Name of resident agent **Davis & Delanois Law Office**
- 2) Address **800 Oak Street**  
**P.O. Box 344**  
**Danville, IL 61834**
- 3) Telephone No. **(217) 446-5255**
- 4) Social Security No. \_\_\_\_\_ (voluntary) and/or Federal Employer Identification No. **37-1354260**

6) OWNERSHIP AND CONTROL INFORMATION

Ownership and control is evidenced by being the permittee of a surface coal mining operation, or by being the owner of record of 50 percent or more of an entity controlling a surface coal mining operation or by having any relationship which gives direct or indirect authority over an entity controlling a surface coal mining operation.

Ownership and control is presumed if an entity is an officer or director; is an operator of a surface coal mining operation; has the authority to commit the financial or real property assets or working resources of an entity; is the owner of record of ten (10) through fifty (50) percent of an entity; is a general partner of a partnership; owns or controls coal to be mined by another entity and has the right to receive that coal after mining; or has the authority to determine how the surface coal mining operations will be conducted.

For an entity to refute a presumed ownership and control relationship, the entity must demonstrate to the satisfaction of the Department that the entity subject to the presumption does not have the authority directly or indirectly to determine the manner in which the relevant surface coal mining operation is conducted.

- 6) A) For each entity who owns or controls the applicant provide the following information.

**Please refer to Attachment I-6.**

- 1) Name of entity \_\_\_\_\_



2) Address \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

3) Social Security No. \_\_\_\_\_ (voluntary) and/or Federal  
Employer Identification No. \_\_\_\_\_

4) The entity's specific ownership and control relationship with the  
applicant \_\_\_\_\_

If more than one ownership and control relationship exists, list each relationship separately  
under this part providing all information requested.

a) Percentage of ownership if any \_\_\_\_\_

b) Location in organizational structure \_\_\_\_\_

c) Position title \_\_\_\_\_

i) Date position was assumed \_\_\_\_\_

ii) Date of departure from position \_\_\_\_\_

6) B) For each surface coal mining and reclamation operation in the United States either presently owned  
or controlled or owned or controlled within the five (5) years preceding the date of the application  
by the entity listed in (A) above provide the following information.

**Please refer to Attachment I-6.**

1) Name \_\_\_\_\_

2) Address \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

3) Name of regulatory authority \_\_\_\_\_

4) Identification number \_\_\_\_\_

a) Social security No. \_\_\_\_\_ (voluntary) and/or Federal  
Employer Identification No. \_\_\_\_\_

b) Federal permit No. \_\_\_\_\_

c) State permit No. \_\_\_\_\_

d) MSHA No. \_\_\_\_\_ and date of issuance \_\_\_\_\_

7) For each surface coal mining operation in the United States owned or controlled by the applicant  
provide the following information.

**Please refer to Attachment I-6.**

a) Name of Operation \_\_\_\_\_

b) Address of Operation \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

c) Name of regulatory authority \_\_\_\_\_

d) Identification number: \_\_\_\_\_

i) Social Security No. \_\_\_\_\_ (voluntary) and/or Federal  
Employer Identification No. \_\_\_\_\_

ii) Federal permit No. \_\_\_\_\_

iii) State permit No. \_\_\_\_\_

iv) MSHA No. \_\_\_\_\_ and date of issuance \_\_\_\_\_

8) A) Has the applicant, any subsidiary, affiliate or entity controlled by or under common control with the applicant had:

1) A State or Federal coal mining permit suspended or revoked in the five (5) years prior to the date of submission of the application?

Yes \_\_\_\_\_ No   X  

2) A forfeiture of a performance bond under a coal mining permit?

Yes \_\_\_\_\_ No   X  

8) B) If the response to A)1) or 2) was yes, provide the following information:

1) Provide the identification number of the permit.

2) Provide the date of permit issuance.

3) Provide the date of permit suspension or revocation and/or the date of bond forfeiture.

4) Provide the name of regulatory authority who suspended or revoked the permit and/or forfeited the bond.

5) Provide a statement of the reason for the suspension, revocation and/or forfeiture action.

6) Provide the current status of the permit and/or bond.

7) For any administrative or judicial proceedings initiated concerning the suspension, revocation, and/or forfeiture provide the following:

a) Date of proceeding,

b) Location of proceeding, and

c) Current status of proceedings.

C) If the response to A)2) was yes, provide information on the applicant's present financial condition to provide assurances satisfactory to the Department that forfeiture will not again be necessary.

9) Violation history

**Please refer to *Attachment I-9*.**

9) A) For the three (3) year period preceding the date of submission of the application, provide a listing of Notices of Violation received for any provision of the Federal Act or any Federal State law, rule, or regulation pertaining to air or water environmental protection incurred in connection with any surface coal mining operations. The listing shall include the following:

1) Notice of violation number or other identifier.

2) Date of NOV issuance.

3) Permit identification number.

4) MSHA number.

5) Name of entity to whom NOV was written.

6) Name of regulatory authority or agency which issued the NOV.

7) A brief description of the alleged violation.

8) For any administrative or judicial proceedings initiated concerning the violation, provide the following:

a) Type of proceedings.

b) Date of proceedings

c) Location of proceedings.

d) Current status of proceedings.

9) Actions, if any, to abate the alleged violation.

9) B) For any unabated cessation orders or unabated air and water quality violation notices received prior to the date of submission of the application for any surface coal mining and reclamation operation owned or controlled by the applicant or by any entity which owns or controls the applicant, provide a listing of the unabated cessation orders or violation notices which include the following:

1) Cessation order or notice of violation number or other identifier.

2) Date of CO or NOV issuance.

- 3) Permit identification number.
  - 4) MSHA number
  - 5) Name of entity to whom CO or NOV was written
  - 6) Name of regulatory authority or agency which issued the CO or NOV.
  - 7) A brief description of the alleged cessation order or violation.
  - 8) For any administrative or judicial proceedings initiated concerning the cessation order or violation, provide the following:
    - a) Type of proceedings.
    - b) Date of proceedings
    - c) Location of proceedings
    - d) Current status of proceedings.
  - 9) Actions, if any, to abate the alleged cessation order or violation.
- 10) Affidavits, Certifications, Insurance Certificate
- 10) A) Complete affidavit regarding applicant's legal right to enter and begin surface coal mining and reclamation operations in the permit area and whether that right is the subject of pending litigation. Identify the documents upon which affidavit is based by type and date of execution and identify specific lands to which each document pertains and explain the legal rights claimed by the applicant (Section 1778.15(a)). If the private mineral estate to be mined has been severed from the private surface estate, provide copies of the documents required under Section 1778.15(B)(1)-(3). On the permit map or other designated map show the boundaries of land within the permit area upon which the applicant has the legal right to enter and begin mining activities.

**Please refer to the attached affidavit.**

- 10) B) Complete certification for engineering aspects of the application. In addition to the general certification, three specific certifications are included which are applicable only if the box in front of each is marked. The first two cover special permit requirements and should be marked only when they occur for the proposed permit. The third certification covers the Illinois Environmental Protection Agency permit requirements. In most cases, an Illinois registered engineer will be required to certify I.E.P.A. permit requirements. Except as otherwise provided all maps, plans and cross-sections included in the permit application shall be prepared by, or under the direction of, and sealed by a qualified registered professional engineer licensed under the Illinois Professional Engineering Act, a qualified registered structural engineer licensed under the Illinois Structural Engineering Act or if authorized by state law, a qualified registered professional land surveyor licensed under the Illinois Land Surveyors Act with assistance from experts in related fields.

**Please refer to the attached Engineering Certification.**

- 10) C) A certificate of liability insurance or evidence that the applicant is self-insured is required prior to permit issuance. The certificate may be submitted with the application or when fee and bond are submitted. Minimum insurance coverage required is for bodily injury \$300,000 for each occurrence, and \$500,000 aggregate and for property damage \$300,000 each occurrence, and \$500,000 aggregate.

**Please refer to the attached Certificate of Liability Insurance.**

- 11) Provide a draft copy of proposed newspaper notice, and the name of local newspaper of general circulation in which advertisement of the application will be published. Certificate of publication is to be submitted not later than four weeks after the last date of publication.

**Please refer to the attached draft copy of the newspaper notice. The Public Notice will be published in *The Sidell Reporter*, a newspaper of general circulation located in Sidell, Illinois.**

- 12) Areas Designated Unsuitable for Mining

- 12) A) Does proposed permit area include and/or shadow area include --

Areas designated unsuitable for surface coal mining and reclamation operations, or under study for designation in an administrative proceeding as unsuitable for surface coal mining and reclamation operations? (Sections 1762 and 1764)

Yes \_\_\_\_\_ No   X  

- 12) B) Does proposed permit area include and/or shadow area include --

- 12) B) 1) Lands within boundaries of the National Park System, National Wildlife Refuge System, the National System of Trails, the National Wilderness Preservation System, the Wild and Scenic Rivers System, and National Recreation Areas, etc. (Section 1761.11(a))?

Yes \_\_\_\_\_ No   X  

- 12) B) 2) National Forest land?

Yes \_\_\_\_\_ No   X  

- 12) B) 3) Any land which will adversely affect any publicly-owned park or places included in the National Register of Historic Places, etc. (per Sections 1761.11(c))?

Yes \_\_\_\_\_ No   X  

If yes, complete Part II, Section 10, B) and C).

- 12) B) 4) Any public roads which are to be removed, relocated or temporarily closed?

Yes \_\_\_\_\_ No   X  

Indicate on the pre-mining land use map or other designated map the location of the public

roads and attach a copy of the written agreement from the appropriate authority authorizing the relocation, removal or temporary closure. Describe the measures to be used to insure that the interest of the public and land owners affected will be protected.

12) C) Within the proposed permit area and/or shadow area (for planned subsidence) will Surface Coal Mining and Reclamation operations be located --

12) C) 1) Within 100 feet of the right-of-way line of any public road?  
Yes \_\_\_\_\_ No  X

If yes, explain proposed procedures for complying with regulation Section 1761.12(c), including request for variance, if relevant. Provide location of public roads on pre-mining land use map or other designated map. Describe the measures to be used to insure that the interest of the public and land owners affected will be protected.

**Coal mining and reclamation operations will be conducted within 100 feet of the outside right-of-way lines of 100 East Road, 200 East Road, and 800 North Road. Effective February 26, 2003, the procedures for conducting Surface Coal Mining and Reclamation operations within 100 feet of the right-of-way line of a public road are located in Section 1761.11(d) and Section 1761.14. The applicant will comply with all requirements of Section 1761.11(d) and Section 1761.14.**

**A Public Notice published in a newspaper of general circulation will provide a comment period for the local road authority with jurisdiction over the public roads. Any person with an interest that is or may be adversely affected by the proposed mining operation within 100 feet of the right-of-way line of the public roads will also have an opportunity to comment as a result of the Public Notice.**

12) C) 2) Within 300 feet measured horizontally from any occupied dwelling?  
Yes \_\_\_\_\_ No  X

**One (1) occupied dwelling is located within 300 feet of the permit boundary. All mining operations will observe a 300 foot setback from the dwelling as shown on the *Surface Drainage Map, Map D*.**

If so, is waiver provided meeting requirements of Section 1761.12(d)?

12) C) 3) Within 300 feet measured horizontally of any public building, school, church, community or institutional building or public park?  
Yes \_\_\_\_\_ No  X

12) C) 4) Within 100 feet measured horizontally of a cemetery?  
Yes \_\_\_\_\_ No  X

12) D) Are valid existing rights claimed for any part of the permit area?  
Yes \_\_\_\_\_ No  X

If yes, provide documentation to substantiate claim.

(I) (We) Brent K. Bilsland  
(Individual or Individuals)

under penalties of perjury declare on behalf of the applicant, Sunrise Coal, LLC, that said applicant has valid documents which bestow upon the applicant a legal right to enter and commence surface coal mining and reclamation operations upon lands contained in the proposed permit area, and the shadow area, and such legal right is not in any way the subject of pending court litigation.

Dated this 8 day of June, 2012.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
**President**  
Title

**Parcel 6 and 12:**

Warranty Deed dated November 17, 2011 and effective December 15, 2011 by and between Nancy Ann Ready, and unmarried adult, of Dallas County, in the State of Texas and Sunrise Coal, LLC, an Indiana limited liability company duly admitted to do business in the State of Illinois, recorded on December 15, 2011 as instrument 11-09897 in the office of the Recorder of Vermilion County, Illinois.

**Parcel 7:**

Warranty Deed dated December 30, 2011 and effective December 30, 2011 by and between Kizer Family Farms, L.P., an Illinois Limited Partnership, by C. Scott Kizer, President of Kizer Management, Inc., its General Partner and Sunrise Coal, LLC, an Indiana Limited Liability Company, duly admitted to do business in the State of Indiana, recorded on December 30, 2011 as instrument 11-10450 in the office of the Recorder of Vermilion County, Illinois.

**Parcel 8:**

Warranty Deed dated December 2, 2011 and effective March 2, 2012 by and between Brian R. Lindley and Sunrise Coal, LLC, an Indiana limited liability company duly admitted to do business in the State of Illinois, recorded on December 2, 2011 as instrument 11-09537 in the office of the Recorder of Vermilion County, Illinois.

**ENGINEERING CERTIFICATION**

I hereby certify the engineering design used in preparation of this application, attachments, and supplements were done by me or under my direct supervision.

I further certify to the best of my knowledge all such design is in accordance with all applicable local, state and federal laws, rules and regulations. I have placed an "X" in the box below if that item is relevant.

Whereas the Reclamation Plan calls for an alternative land use, I also certify the plans to conform to applicable accepted standards for adequate land stability, drainage, vegetative cover, and aesthetic design appropriate for the post-mining use of the site.

Whereas the operation proposes disposal of spoil or waste materials in areas other than mining workings or excavations, I also certify such fills are designed in accordance with recognized professional standards and all applicable laws.

Certification of the Illinois Environmental Protection Agency-35 Ill. Adm. Code 405-104(a) Permit. In my professional judgment, the plans and specifications submitted as part of this application describe an operation which will meet all applicable effluent and water quality standards. I certify that I am familiar with all of the plans, specifications, reports, and maps submitted as part of this application and that said plans, etc. are accurate insofar as they represent existing conditions.

<b>INDIVIDUAL P.E. CERTIFICATION</b>	
<u>Stephen J. Glodo</u>	<u>062.033420</u>
Name	Illinois Registration Number (Seal)
<u>Midwest Reclamation Resources, Inc.</u>	<u>(618) 687-5590</u>
Firm	Telephone Number
<u>1023 N. 14<sup>th</sup> Street</u>	<u>Murphysboro, IL 62966</u>
Address	
_____ Signature	_____ Date

<b>PROFESSIONAL DESIGN FIRM CERTIFICATION</b>	
Complete if applicable. If not, respond <u>NA</u> .	
<u>X</u> As an employee of a "professional design firm" as defined by the Illinois Department of Financial and Professional Regulation, I certify that the professional design firm is registered and in good standing with the Illinois Department of Financial and Professional Regulation.	
<u>Midwest Reclamation Resources, Inc.</u>	<u>184.002832</u>
Professional Design Firm Name	Professional Design Firm Number

**Sunrise Coal, LLC**  
**Bulldog Mine**  
**Application for Permit No. 429**





## Public Notice

### Public Notice of Filing of Application for Permit to Conduct Surface Coal Mining and Reclamation Operations

Sunrise Coal, LLC, 1183 Canvasback Dr., Terre Haute, IN 47802 has filed with the County Clerk's office in Vermilion County, Illinois a copy of the application for Permit No. 429, Bulldog Mine. The 390.3 acre permit area is located in Section(s) 26 and 35, Township 18 North, Range 14 West, Vermilion County, Illinois. The shadow area is located in Section(s) 18, Township 17 North, Range 13 West, Section(s) 1, 2, 3, 10, 11, 12, 13, 14, 15, 23, 24, 25 and 26, Township 17 North, Range 14 W, and Section(s) 10, 13, 15, 22, 23, 24, 25, 26, 27, 34, 35 and 36, Township 18 North, Range 14 West, Vermilion County, Illinois. The permit and shadow areas are contained on the Homer, Allerton and Sidell, Illinois U.S. Geological Survey 7.5 minute quadrangle maps.

Mining activities, which may include access roads, drainage ditches and sediment control structures, erosion control structures, soil stockpiles, spoil deposition, and associated reclamation activities will be conducted within 100 feet of the outside right-of-way lines of 100 East Road, 200 East Road, and 800 North Road.

Copies of the application for the permit are available for inspection at:

Illinois Department of Natural Resources  
Office of Mines and Minerals  
Land Reclamation Division  
503 East Main Street  
Benton, IL 62812

Illinois Department of Natural Resources  
Office of Mines and Minerals  
Land Reclamation Division  
One Natural Resources Way  
Springfield, IL 62702-1271

Office of Vermilion County Clerk  
6 North Vermilion Street  
Courthouse Annex – 1st Floor  
Danville, Illinois 61832

Written comments, objections, or requests for informal conferences and public hearings on the application may be submitted to Illinois Department of Natural Resources, Office of Mines and Minerals, Land Reclamation Division, One Natural Resources Way, Springfield, IL 62702-1271.

UNDERGROUND MINING AFFIDAVIT  
(Required by 62 Ill. Adm. Code 1778.15(f))

(I)(We), **Brent K. Bilsland** under penalties of perjury, declare on behalf of the applicant, **Sunrise Coal, LLC**, that said applicant has or will possess prior to mining, documents which bestow upon the applicant all necessary rights to conduct underground mining operations within the approved and proposed shadow area. Documents in support of granting the rights herein claimed by the applicant will be provided to the Department upon request.

Date **June 8, 2012**

Signature \_\_\_\_\_ Title **President**

Sworn and subscribed before me

this \_\_\_\_ day of \_\_\_\_\_

\_\_\_\_\_  
Notary Public

\_\_\_\_\_  
My commission expires

Sunrise Coal, LLC  
Bulldog Mine  
Permit No. 429

# ATTACHMENT I-2A

PERMIT AND SHADOW AREA  
SURFACE AND SUBSURFACE OWNERSHIP

Sunrise Coal, LLC  
Bulldog Mine, Permit No. 429  
Permit and Shadow Area Property Ownership

Map ID #	Owner	Section(s)	Township	Range	Surface Owned	Mineral Owned	Surface Rights	Mineral Rights	ROE Type
1, 76	Cunningham Children's Home Foundation Attn: Brian Waibel 3002 W Windsor Rd Champaign, IL 61822	23,24, 26, 27	18 North	14 West	X	X	No Control	X	Lease
2, 116	O.T.C., Inc C/O Scott O'Neill 3449 Lincoln Trail Rd Fithian, IL 61844	23, 26	18 North	14 West	X	X	No Control	X	Lease
3	Jack P. Smith 7116 Claybrook Dallas, TX 75231	23, 26	18 North	14 West	X	X	No Control	No Control	N/A
4	Donald P. Allen 13638 N 200 E Rd Fairmount, IL 61841	26	18 North	14 West	X	X	No Control	No Control	N/A
5	Marilyn Craver, Trust PO Box 707 Champaign, IL 61824	26	18 North	14 West	X	X	No Control	No Control	N/A
6, 7, 8, 12	Sunrise Coal, LLC 1183 Canvasback Dr. Terre Haute, In 47802	26, 35	18 North	14 West	X	6,8,12 Sunrise	Control	X	Deed
					7-Sunrise	7-Kizer	7-Sunrise Control	X	Lease
9, 10, 19, 45	Gary & Nedra Pridemore 7561 N 100 E Rd Homer, IL 61849	35, 36	18 North	14 West	X	X	No Control	X	Lease

Sunrise Coal, LLC  
Bulldog Mine, Permit No. 429  
Permit and Shadow Area Property Ownership

Map ID #	Owner	Section(s)	Township	Range	Surface Owned	Mineral Owned	Surface Rights	Mineral Rights	ROE Type
11 ,42	Barbara Gerdes 52 CR 2700 E Broadlands, IL 61816	35, 36	18 North	14 West	X	X	No Control	No Control	N/A
13	Jeff Ward 7886 N 200 E Rd Homer, IL 61849	35	18 North	14 West	X	X	No Control	No Control	N/A
14, 47	Joan F. & Harry Allen, Trust 761 CR 100 N Champaign, IL 61822	35, 36	18 North	14 West	X	X	No Control	X	Lease
15, 31, 32	Paul & Susan Messman 2476 CR 1150 N Homer, IL 61849	35, 36	18 North	14 West	X	X	No Control	X	Lease
16	Jean P. Zenke 34257 Pioneer Ave Aitkin, MN 56431	35	18 North	14 West	X	X	No Control	No Control	N/A
17	Jerry Messman 2718 CR 700 N Homer, IL 61849	35	18 North	14 West	X	X	No Control	X	Lease
18	Neal Easton, etal 7197 N 100 E Rd Homer, IL 61849	35	18 North	14 West	X	X	No Control	X	Lease
20	William & Jeanette Hart 474 Marcus Dr Lewisville, TX 75057	25	18 North	14 West	X	X	No Control	X	Lease
21	Inuka, Inc 7327 N 500 E Rd Fairmount , IL 61841	25	18 North	14 West	X	X	No Control	X	Lease

Sunrise Coal, LLC  
Bulldog Mine, Permit No. 429  
Permit and Shadow Area Property Ownership

Map ID #	Owner	Section(s)	Township	Range	Surface Owned	Mineral Owned	Surface Rights	Mineral Rights	ROE Type
22	Eldon & Marjorie Craddock 901 S Scarborough St Sidney, IL 61877	25	18 North	14 West	X	X	No Control	X	Lease
23, 121	J. Tyler & Timothy J. Trisler 3746 E 800 N Rd Fairmount, IL 61841	24, 25	18 North	14 West	X	X	No Control	X	Lease
26, 30	Julie Catlett 3322 E 800 N Rd Fairmount, IL 61841	25	18 North	14 West	X	X	No Control	X	Lease
27	Larry & Judy Frick 902 S Main St Homer, IL 61849	25	18 North	14 West	X	X	No Control	X	Lease
28	Randy Frick RR 1, Box 34 Longview, IL 61852	25	18 North	14 West	X	X	No Control	X	Lease
29	Trisler Seed Farms, Inc 3274 E 800 N Rd Fairmount, IL 61841	25	18 North	14 West	X	X	No Control	X	Lease
33	Jerry & Constance Messman 2718 CR 700 N Homer, IL 61849	36	18 North	14 West	X	X	No Control	X	Lease
34, 39	Delores Hageman 2444 N 600 E Rd Sidell, IL 61876	36	18 North	14 West	X	X	No Control	No Control	N/A
36, 89	Jay Hageman 7558 N 300 E Rd Fairmount, IL 61841	34, 36	18 North	14 West	X	X	No Control	X	Lease

Sunrise Coal, LLC  
Bulldog Mine, Permit No. 429  
Permit and Shadow Area Property Ownership

Map ID #	Owner	Section(s)	Township	Range	Surface Owned	Mineral Owned	Surface Rights	Mineral Rights	ROE Type
37	Doug & Connie Chew 6270 N 600 E Rd Sidell, IL 61876	36	18 North	14 West	X	X	No Control	X	Lease
38, 90	Eagco, Inc 7558 N 300 E Rd Fairmount, IL 61841	34, 36	18 North	14 West	X	X	No Control	X	Lease
40	Linda Pierce PO Box 508 Sidney, IL 61877	36	18 North	14 West	X	X	No Control	X	Lease
41	Joseph Hageman 2444 N 600 E Rd Sidell, IL 61876	36	18 North	14 West	X	X	No Control	No Control	N/A
43	Stewart Messman, etal 1014 W Hill St Champaign, IL 61821	36	18 North	14 West	X	X	No Control	No Control	N/A
44	Timothy & Pamela Tighe 7039 N 200 E Rd Homer, IL 61849	36	18 North	14 West	X	X	No Control	No Control	N/A
48	Harbourt, Christopher & Susan 6917 N 200 E Rd Homer, IL 61849	1	17 North	14 West	X	X	No Control	No Control	N/A
49	Anthony & Tracey Beck 913 E 550 N Rd Allerton, IL 61810	1	17 North	14 West	X	X	No Control	X	Lease
50	Sara Jo Cast PO Box 673 Catlin, IL 61817	1	17 North	14 West	X	X	No Control	X	Lease



Sunrise Coal, LLC  
Bulldog Mine, Permit No. 429  
Permit and Shadow Area Property Ownership

Map ID #	Owner	Section(s)	Township	Range	Surface Owned	Mineral Owned	Surface Rights	Mineral Rights	ROE Type
51	First Midwest trust No. 2763, Attn: Melissa Panzeca 9684 Zig Zag Rd Cincinnati, OH 45252	1	17 North	14 West	X	X	No Control	X	Lease
52	First Midwest Bank Attn: Melissa Panzeca 9684 Zig Zag Rd Cincinnati, OH 45252	1	17 North	14 West	X	X	No Control	X	Lease
53	Melissa Panzeca 9684 Zig Zag Rd Cincinnati, OH 45252	1	17 North	14 West	X	X	No Control	X	Lease
54	Busey trust Co Attn: Brian Waibel 3002 W Windsor Rd Champaign, IL 61822	1	17 North	14 West	X	X	No Control	X	Lease
55	Shirley Tighe Attn: John and Carolyn Wemlinger 16 Schooner Ct Nogales, AZ 85621	1, 2, 11, 12	17 North	14 West	X	X	No Control	No Control	N/A
56, 58, 62	Beck Ranch, LP Attn: Anthony Beck 913 E 550 North Rd Allerton, IL 61810	2, 10, 11, 14	17 North	14 West	X	X	No Control	X	Lease
57	S. Shull 1456 E 700 North Rd Homer, IL 61849	2	17 North	14 West	X	X	No Control	No Control	N/A
59	Inuka, Inc Attn: John Mills 7327 N 500 E Rd	2	17 North	14 West	X	X	No Control	X	Lease

Sunrise Coal, LLC  
Bulldog Mine, Permit No. 429  
Permit and Shadow Area Property Ownership

Map ID #	Owner	Section(s)	Township	Range	Surface Owned	Mineral Owned	Surface Rights	Mineral Rights	ROE Type
	Fairmount, IL 61841								
60	O.K.D. Farm, Inc Attn: Madge Warters 6292 N 100 East Rd, POB 19 Allerton, IL 61810	2, 3	17 North	14 West	X	X	No Control	X	Lease
61	Julie A. Happ, est. 6737 N Vermilion West Rd. Homer, IL 61849	3	17 North	14 West	X	X	No Control	No Control	N/A
63	Marjorie Craddock 901 S Scarborough St Sidney, IL 61877	11	17 North	14 West	X	X	No Control	X	Lease
64	Bruce & Douglas Darr 8695 E. 980 North Rd. Fairmount, IL 61841	11	17 North	14 West	X		No Control	X	Lease
					X				
65	Maddox Farms, Inc 6035 N 600 E Rd Sidell, IL 61876	12	17 North	14 West	X	X	No Control	X	Lease
66	Eldon Craddock 901 S Scarborough St Sidney, IL 61877	12	17 North	14 West	X	X	No Control	X	Lease
67	Rodney & Britta Maddox 2499 E. 500 North Rd. Allerton, IL 61810	12	17 North	14 West	X	X	No Control	X	Lease

Sunrise Coal, LLC  
Bulldog Mine, Permit No. 429  
Permit and Shadow Area Property Ownership

Map ID #	Owner	Section(s)	Township	Range	Surface Owned	Mineral Owned	Surface Rights	Mineral Rights	ROE Type
68	E. & E. Weidemann 169 Huntley Rd Buffalo, NY 14215	12	17 North	14 West	X	X	No Control	No Control	N/A
69	Scott Rowand 5641 N. 200 East Rd. Allerton, IL 61810	12	17 North	14 West	X	X	No Control	No Control	N/A
71	John & Janet Terry, Trust P.O. Box 542016 Omaha, NE 68154	12	17 North	14 West	X	X	No Control	No Control	N/A
72	Linda McCrone 108 Franklin St Georgetown, IL 61846	12	17 North	14 West	X	X	No Control	X	Lease
73	Robert & Kathryn Banta 100 W North St Ridge Farm, IL 61870	13	17 North	14 West	X	X	No Control	X	Lease
		18	17 North	13 West					
74	Alexander Family Properties P.O. Box 540 Terre Haute, IN 47808	13	17 North	14 West	X	X	No Control	No Control	N/A
75	Russell K. Newlin, etal 4663 W Vermilion Allerton, IL 61810	15	17 North	14 West	X	X	No Control	X	Lease
77	Beck's Superior Hybrids, Inc 6767 E. 276th St. Atlanta, IN 46031	23, 24	17 North	14 West	X	Unknown	No Control	No Control	N/A
78	Carl & Helen Burgener 301 Prospect Ave San Francisco, CA 94110	24	17 North	14 West	X	X	No Control	No Control	N/A

Sunrise Coal, LLC  
Bulldog Mine, Permit No. 429  
Permit and Shadow Area Property Ownership

Map ID #	Owner	Section(s)	Township	Range	Surface Owned	Mineral Owned	Surface Rights	Mineral Rights	ROE Type
79	Dorothy L. Pepper 38 Woodland Hills Bismarck, IL 61814	24	17 North	14 West	X	X	No Control	No Control	N/A
80	Joe & Janet Ford 3858 E 600 N Rd Allerton, IL 61810	24	17 North	14 West	X	X	No Control	X	Lease
81	Goodall Farms, Inc 3503 N 470 East Rd. Sidell, IL 61876	24	17 North	14 West	X	X	No Control	No Control	N/A
82	Jeff & Debra Ford 707 S Chicago Sidell, IL 61876	25	17 North	14 West	X	X	No Control	X	Lease
83	Beck's Superior Hybrids, Inc Attn: Lawrence Beck 6767 E. 276th St. Atlanta, IN 46031	14, 23, 26	17 North	14 West	X	X	No Control	X	Lease
84	Phyllis Sinclair 290 Chase St. Sonoma, CA 95476	27	18 North	14 West	X	X	No Control	No Control	N/A
85	Frieda Block 210 S. Ellen Homer, IL 61849	27	18 North	14 West	X	X	No Control	No Control	N/A
86	Laverne Allen Attn: Ron Allen 783 E. 800 North Rd. Homer, IL 61849	27	18 North	14 West	X	X	No Control	X	Lease
87	Edgar & Rose Kizer 310 N Josephine Homer, IL 61849	27, 34	18 North	14 West	X	X	No Control	X	Lease

Sunrise Coal, LLC  
Bulldog Mine, Permit No. 429  
Permit and Shadow Area Property Ownership

Map ID #	Owner	Section(s)	Township	Range	Surface Owned	Mineral Owned	Surface Rights	Mineral Rights	ROE Type
88	Douglas O'Neill 1073 Catlin-Homer Rd Homer IL 61849	34	18 North	14 West	X	X	No Control	X	Lease
91	Gerhardt Mohr 7464 N 100 E Rd Homer IL 61849	34	18 North	14 West	X	X	No Control	No Control	N/A
92	Lisbeth Zumkeller 7352 N 100 E Rd Homer IL 61849	34	18 North	14 West	X	X	No Control	No Control	N/A
93	David Mohr 1265 Range View Rd Estes Park, CO 80517	34	18 North	14 West	X	X	No Control	X	Lease
94	Elizabeth Heskett P.O. Box 542016 Omaha, NE 68154	34	18 North	14 West	X	X	No Control	No Control	N/A
95	Richard L. Knight PO Box 88 Sidney IL 61877	3, 10	18 North	14 West	X	X	No Control	X	Lease
96	Faye Messman 3706 Gina Dr. Bloomington, IL 61704	10	18 North	14 West	X	X	No Control	No Control	Option to Purchase
97	Cecil Sy 480 E. 1150 North Rd. Homer, IL 61849	10, 15	18 North	14 West	X	X	No Control	X	Lease
98, 99	Roxie A. O'Neill, Trust 1714 Tin Cup Rd Mahomet, IL 61853	10, 15	18 North	14 West	X	X	No Control	X	Lease

Sunrise Coal, LLC  
Bulldog Mine, Permit No. 429  
Permit and Shadow Area Property Ownership

Map ID #	Owner	Section(s)	Township	Range	Surface Owned	Mineral Owned	Surface Rights	Mineral Rights	ROE Type
100	Kemberly A. Kensell 10923 Vermilion West Rd. Homer, IL 61849	15	18 North	14 West	X	X	No Control	X	Lease
101	David & Giese, Trust Attn: Virginia Davis 210 E. Thomaras Ave. A Savoy, IL 61874	15	18 North	14 West	X	X	No Control	X	Lease
104	James & Eleanor Smith, Trust 13474 N. 130 East Rd. Homer, IL 61849	15	18 North	14 West	X	X	No Control	No Control	N/A
105	N. Craver Jr. P.O. Box 707 Champaign, IL 61824	15	18 North	14 West	X	X	No Control	X	Lease
106	Marjorie & Walter Clem, etal 1003 E. Mumford Dr. Urbana, IL 61801	15	18 North	14 West	X	X	No Control	No Control	N/A
107	Terry & Janice Wolfe, etal Trust 2761 CR 1100 N Homer, IL 61849	15	18 North	14 West	X	X	No Control	X	Lease
108	Christopher & Jenny Kirschner 1113 CR 2375 E Homer, IL 61849	15	18 North	14 West	X	X	No Control	X	Lease
109	Marilyn Dalenberg & Carol Ghiselli 18920 100th Ave. N Maple Grove, MN 55311	15	18 North	14 West	X	X	No Control	No Control	N/A
110	Frederick & Alice K. Messman, Trust 612 County Rd. 2500 East Homer, IL 61849	22	18 North	14 West	X	X	No Control	No Control	N/A

Sunrise Coal, LLC  
Bulldog Mine, Permit No. 429  
Permit and Shadow Area Property Ownership

Map ID #	Owner	Section(s)	Township	Range	Surface Owned	Mineral Owned	Surface Rights	Mineral Rights	ROE Type
111	Robert & Marilyn Lee 999 County Rd. 2500 East Homer, IL 61849	22	18 North	14 West	X	X	No Control	No Control	N/A
112	John Craver & Holly Diedrich P.O. Box 707 Champaign, IL 61824	22	18 North	14 West	X	X	No Control	X	Lease
113	O'Neill Farms, Inc C/O Scott O'Neill 3449 Lincoln Trail Rd Fithian, IL 61844	22	18 North	14 West	X	X	No Control	X	Lease
114	Harold Reed 616 W 4th St Homer, IL 61849	22	18 North	14 West	X	X	No Control	X	Lease
115	Eugene O'Neill 3449 Lincoln Trail Rd Fithian, IL 61844	23	18 North	14 West	X	X	No Control	X	Lease
117	Kenneth McElwee 2194 CR 1100 N Sidney IL 61877	23	18 North	14 West	X	X	No Control	No Control	N/A
118	Cynthia Adkins 110 E University Champaign, IL 61820	23	18 North	14 West	X	X	No Control	No Control	N/A
119	Maplelawn Land, LLC 714 Hanover Close Zionsville, IN 46077	23	18 North	14 West	X	X	No Control	X	Lease
120	James & Sheryll Craig 10295 E 370 N Rd Indianaola, IL 61850	13	18 North	14 West	X	X	No Control	X	Lease

Sunrise Coal, LLC  
Bulldog Mine, Permit No. 429  
Permit and Shadow Area Property Ownership

Map ID #	Owner	Section(s)	Township	Range	Surface Owned	Mineral Owned	Surface Rights	Mineral Rights	ROE Type
122	Barbara Phillips Attn: Donald Allen Farm Manager 13638 N 200 E Rd Fairmount , IL 61841	24	18 North	14 West	X	X	No Control	No Control	N/A
123	Marital Non-X Trust Attn: Vernon Rohrscheib 11914 N. 2500 East Rd. Fairmount , IL 61841	24	18 North	14 West	X	X	No Control	No Control	N/A
124	C. Douglas Miller 8430 N 980 East Rd Indianola, IL 61850	24	18 North	14 West	X	X	No Control	X	Lease
125	Donald Kizer, Trust 2384 Abington Columbus, OH 43221	24	18 North	14 West	X	X	No Control	No Control	N/A
126	Daisy Easton 7197 N 100 E Rd Homer, IL 61849	35	18 North	14 West	X	X	No Control	No Control	N/A
127	Carey Hall 303 W. North Danville, IL 61832	11	17 North	14 West	X	X	No Control	No Control	N/A
128	Michele Hall 431 Love Danville, IL 61832	11	17 North	14 West	X	X	No Control	No Control	N/A
129	Timothy & Heidi Craddock 3000 E. 500 North Rd. Allerton, IL 61810	13	17 North	14 West	X	X	No Control	No Control	N/A
130	Steven & Peggy Craddock 3092 E. 500 North Rd. Allerton, IL 61810	18	17 North	13 West	X	X	No Control	No Control	N/A



Sunrise Coal, LLC  
Bulldog Mine, Permit No. 429  
Permit and Shadow Area Property Ownership

Map ID #	Owner	Section(s)	Township	Range	Surface Owned	Mineral Owned	Surface Rights	Mineral Rights	ROE Type
131	J & J Ford 707 S Chicago Sidell, IL 61876	25	17 North	14 West	X	X	No Control	X	Lease
132	J. Trisler 3746 E 800 N Rd Fairmount , IL 61841	24	18 North	14 West	X	X	No Control	X	Lease
133	Matthew Stoudt & Kathryn Rainge 2875 E. 900 North Rd. Fairmount , IL 61841	24	18 North	14 West	X	X	No Control	No Control	N/A
134	David Reed 9233 Vermilion West Homer, IL 61849	22	18 North	14 West	X	X	No Control	No Control	N/A
135	John Patrick Ryan 8578 N 300 E Rd Fairmount , IL 61841	25	18 North	14 West	X	X	No Control	No Control	N/A
136	Troy Chew 2490 E 700 N Rd Homer, IL 61849	1	17 North	14 West	X	X	No Control	No Control	N/A

Sunrise Coal, LLC  
Bulldog Mine, Permit No. 429  
Government and Utilities Possessing Interests Within Permit and Shadow Areas

Government/Utility
Ameren Illinois P.O. Box 66893 St. Louis, MO 63166-6893
AT&T 208 South Akard Street Dallas, TX 75202
Eastern Illini Electric Cooperative 330 W Ottawa Paxton, IL 60957
Norfolk Southern Corporation c/o Jim Skeens 800 Princeton Ave Bluefield, WV 24701

Sunrise Coal, LLC  
Bulldog Mine  
Permit No. 429

# ATTACHMENT I-2B

PERMIT AREA CONTIGUOUS PROPERTY OWNERSHIP

Sunrise Coal, LLC  
Bulldog Mine, Permit No. 429  
Permit Area Contiguous Property Ownership

Map ID#	Owner	Surface	Mineral	Sections(s)	Township	Range	County
1	Cunningham Children's Home Foundation Attn: Brian Waibel 3002 W Windsor Rd Champaign, IL 61822	X	X	26	18 North	14 West	Vermilion
2	O.T.C., Inc C/O Scott O'Neill 3449 Lincoln Trail Rd Fithian, IL 61844	X	X	26	18 North	14 West	Vermilion
4	Donald P. Allen 13638 N 200 E Rd Fairmount, IL 61841	X	X	26	18 North	14 West	Vermilion
5	Marilyn Craver, Trust PO Box 707 Champaign, IL 61824	X	X	26	18 North	14 West	Vermilion
13	Jeff Ward 7886 N 200 E Rd Homer, IL 61849	X	X	35	18 North	14 West	Vermilion
14	Joan F. & Harry Allen, trust 761 CR 100 N Champaign, IL 61822	X	X	35	18 North	14 West	Vermilion
19	Gary & Nedra Pridemore 7561 N 100 E Rd Homer, IL 61849	X	X	35	18 North	14 West	Vermilion
11	Barbara Gerdes 52 CR 2700 E Broadlands, IL 61816	X	X	35	18 North	14 West	Vermilion

Sunrise Coal, LLC  
Bulldog Mine, Permit No. 429  
Permit Area Contiguous Property Ownership

Map ID#	Owner	Surface	Mineral	Sections(s)	Township	Range	County
---	Vermilion County 2732 Batestown Rd Oakwood, IL 61858	X		26, 35	18 North	14 West	Vermilion

Sunrise Coal, LLC  
Bulldog Mine  
Permit No. 429

# ATTACHMENT I-5

SECRETARY OF STATE APPROVAL TO TRANSACT  
BUSINESS IN THE STATE OF ILLINOIS



OFFICE OF THE SECRETARY OF STATE

---

JESSE WHITE • Secretary of State

NOVEMBER 30, 2006

0204283-5

JERRY A. DAVIS  
800 OAK ST.  
DANVILLE, IL 61832-0000

RE SUNRISE COAL, LLC

DEAR SIR OR MADAM:

IT IS OUR PLEASURE TO APPROVE YOUR REQUEST TO TRANSACT BUSINESS IN THE STATE OF ILLINOIS. ENCLOSED PLEASE FIND AN APPROVED APPLICATION OF ADMISSION.

THE LIMITED LIABILITY COMPANY MUST FILE AN ANNUAL REPORT PRIOR TO THE FIRST DAY OF ITS ANNIVERSARY MONTH (MONTH OF QUALIFICATION) NEXT YEAR. A PRE-PRINTED ANNUAL REPORT FORM WILL BE SENT TO THE REGISTERED AGENT AT THE ADDRESS SHOWN ON THE RECORDS OF THIS OFFICE APPROXIMATELY 60 DAYS PRIOR TO ITS ANNIVERSARY MONTH.

SINCERELY YOURS,

A handwritten signature in cursive script that reads "Jesse White".

JESSE WHITE  
SECRETARY OF STATE

DEPARTMENT OF BUSINESS SERVICES  
LIMITED LIABILITY COMPANY DIVISION  
TELEPHONE (217)524-8008

JW:LLC

Form **LLC-45.5**

December 2004

**Illinois  
Limited Liability Company Act  
Application for Admission to Transact Business**

FILE # 0204-283-5

**Secretary of State Jesse White**  
Department of Business Services  
Limited Liability Division  
Room 351 Howlett Building  
501 S. Second St.  
Springfield, IL 62756  
www.cyberdriveillinois.com

Payment must be made by certified check, cashier's check, Illinois attorney's C.P.A.'s check or money order payable to Secretary of State.

**SUBMIT IN DUPLICATE**  
Must be typewritten

---

This space for use by Secretary of State.

Filing Fee: \$ 500  
Penalty: \$  
Approved:

This space for use by Secretary of State.

**FILED**

**NOV 30 2006**

**JESSE WHITE  
SECRETARY OF STATE**

1. Limited Liability Company name: Sunrise Coal, LLC  
Must comply with Section 1-10 of ILLCA or item 2 below applies.

2. Assumed name, other than the true company name, under which the company proposes to transact business in Illinois:  
\_\_\_\_\_  
If applicable, form LLC-1.20, Application to Adopt an Assumed Name, must be completed and attached to this application.

3. Jurisdiction of organization: State of Indiana

4. Date of organization: November 1, 2002

5. Period of duration: Perpetual

6. Address, including county, of the office required to be maintained in the jurisdiction of its organization or, if not required, of the principal place of business (P.O. Box alone or c/o is unacceptable):

4461 State Road 46

Number	Street	Suite #
<u>Terre Haute, Indiana</u>	<u>47802</u>	<u>Vigo</u>
City/State	ZIP Code	County

7. Registered agent: Jerry A. Davis

First Name	Middle Name	Last Name
<u>Jerry</u>	<u>A.</u>	<u>Davis</u>

Registered office: 800 Oak Street

Number	Street	Suite #
<u>800</u>	<u>Oak</u>	<u>Street</u>
<u>Danville</u>	<u>Vermilion</u>	<u>Illinois</u>
<u>61832</u>		
City	County	ZIP Code

(P.O. Box alone or c/o is unacceptable.)

8. If applicable, date on which the company first did business in Illinois: \_\_\_\_\_

(continued on back page)



## LLC-45.5

9. Purpose or purposes for which the company is organized and proposes to conduct business in Illinois: (Include the Business Code # from IRS Form 1065.)

IRS Code #212110.

The purpose for which the Company is formed is to transact any and all lawful business for  
which limited liability companies may be organized under the Act.

10. The Limited Liability Company:  
 is managed by a manager or managers  
 has management vested in the member or members
11. The Illinois Secretary of State is, hereby, appointed the agent of the Limited Liability Company for service of process under the circumstances set forth in subsection (b) of Section 1-50 of the Illinois Limited Liability Company Act.
12. This application is accompanied by a Certificate of Good Standing or Existence, as well as a copy of the Articles of Organization, as amended, duly authenticated within the last 60 days, by the officer of the state or country wherein the LLC is formed.
13. If the period of duration is a date certain and is not stated in the Articles of Organization from the domestic state, a copy of that page from the Operating Agreement stating the date also must be submitted.
14. The undersigned affirms, under penalties of perjury, having authority to sign hereto, that this application for admission to transact business is to the best of my knowledge and belief, true, correct and complete.

Dated November 10, 2006  
Month/Day Year

*Ronald Laswell*

Signature (Must comply with Section 5-45 of ILLCA.)

Ronald Laswell, Member

Name and Title (type or print)

If applicant is a company or other entity, state name of company and indicate whether it is a member or manager of the LLC. Please refer to Sections 178.20(d) of the Administrative Rules.

Sunrise Coal, LLC  
Bulldog Mine  
Permit No. 429

# ATTACHMENT I-6

OWNERSHIP AND CONTROL INFORMATION

Revised: 01/16/2009

**Sunrise Coal, LLC**

OFFICER, PARTNER, DIRECTOR OR OTHER PERSON PERFORMING FUNCTIONS SIMILAR TO A DIRECTOR OF THE APPLICANT:

<u>Name</u>	<u>Address</u>	<u>Title</u>	<u>Date of Office</u>
Ronald E. Laswell	c/o Sunrise Coal, LLC 1183 East Canvasback Drive Terre Haute, IN 47802 812-299-2800	Vice-Pres. Managing Member (Director)	Start Date - 07/31/06
Brent K. Bilsland	c/o Sunrise Coal, LLC 1183 East Canvasback Drive Terre Haute, IN 47802 812-299-2800	President Managing Member (Director)	Start Date - 07/31/06
Lawrence Martin	c/o Sunrise Coal, LLC 1183 East Canvasback Drive Terre Haute, IN 47802 812-299-2800	CFO	Start Date – 1/29/08
Victor Stabio	c/o Sunrise Coal, LLC 1183 East Canvasback Drive Terre Haute, IN 47802 812-299-2800	Secretary Managing Member (Director)	Start Date – 07/31/06
David Hardie	c/o Sunrise Coal, LLC 1183 East Canvasback Drive Terre Haute, IN 47802 812-299-2800	Managing Member (Director)	Start Date – 07/31/06
Bryan Lawrence	c/o Sunrise Coal, LLC 1183 East Canvasback Drive Terre Haute, IN 47802 812-299-2800	Managing Member (Director)	Start Date – 07/31/06

Sunrise Coal, LLC  
Bulldog Mine  
Permit No. 429

# ATTACHMENT I-9

VIOLATION HISTORY

Revision Date: 12/06/2010

**Sunrise Coal, LLC**

**NOTICE OF VIOLATIONS**

- (1) (a) State or federal permit identification, MSHA number and any other identifying number(s).  
**Howesville Mine, U-29, MSHA # 12-02354**
- (b) Dates of issuance of the violation notice and the MSHA number.  
**04/13/05 #N50413-U-029 1 of 1**
- (c) The name of the person to whom the violation notice was issued.  
**Ray Pittman**
- (d) Identity of the issuing regulatory authority, department or agency.  
**IDNR DIVISION OF RECLAMATION**
- (e) A description of the violation alleged in the notice.  
**Surface water discharge from disturbed area prior to completion and certification of sediment basin.**
- (f) Current status of the proceedings and of the violation notice.  
**The NOV was terminated 04/25/05**
- (g) Date, location and type of any administrative or judicial proceedings initiated concerning the violation and the current status of those proceedings.  
**None**
- (h) Actions taken by any person to abate the violation.  
**Sediment basin was completed and construction certification completed and submitted to the Division of Reclamation.**
- (2) (a) State or federal permit identification, MSHA number and any other identifying number(s).  
**Howesville Mine, U-29, MSHA # 12-02354**
- (b) Dates of issuance of the violation notice and the MSHA number.  
**05/11/05 #N50511-U-029 1 of 1**
- (c) The name of the person to whom the violation notice was issued.  
**Ray Pittman**
- (d) Identity of the issuing regulatory authority, department or agency.  
**IDNR DIVISION OF RECLAMATION**
- (e) A description of the violation alleged in the notice.  
**Failure to monitor surface water and ground water in first quarter of 2005 and submit data on water tests.**
- (f) Current status of the proceedings and of the violation notice.  
**The NOV was terminated 05/31/2005**
- (g) Date, location and type of any administrative or judicial proceedings initiated concerning the violation and the current status of those proceedings.  
**None**
- (h) Actions taken by any person to abate the violation.  
**Water samples were obtained from the monitor wells and surface site and the test results were submitted to the Division of Reclamation.**

Revision Date: 12/06/2010

**Sunrise Coal, LLC****NOTICE OF VIOLATIONS**

- (3) (a) State or federal permit identification, MSHA number and any other identifying number(s).  
**Howesville Mine, U-29, MSHA # 12-02354**
- (b) Dates of issuance of the violation notice and the MSHA number.  
**04/13/06 #N60412-U-29 1 of 2**
- (c) The name of the person to whom the violation notice was issued.  
**Certified Mail to Ron Laswell**
- (d) Identity of the issuing regulatory authority, department or agency.  
**IDNR DIVISION OF RECLAMATION**
- (e) A description of the violation alleged in the notice.  
**Failure to construct coal refuse pile/cell in accordance with the approved plan.**
- (f) Current status of the proceedings and of the violation notice.  
**The NOV has been terminated 06/28/2006**
- (g) Date, location and type of any administrative or judicial proceedings initiated concerning the violation and the current status of those proceedings.  
**None**
- (h) Actions taken by any person to abate the violation.  
**Remedial activities were completed.**
- (4) (a) State or federal permit identification, MSHA number and any other identifying number(s).  
**Howesville Mine, U-29, MSHA # 12-02354**
- (b) Dates of issuance of the violation notice and the MSHA number.  
**04/13/06 #N60412-U-29 2 of 2**
- (c) The name of the person to whom the violation notice was issued.  
**Certified Mail to Ron Laswell**
- (d) Identity of the issuing regulatory authority, department or agency.  
**IDNR DIVISION OF RECLAMATION**
- (e) A description of the violation alleged in the notice.  
**Failure to provide Director with a copy of refuse pile inspection reports as required by 312 IAC 25-6-100.**
- (f) Current status of the proceedings and of the violation notice.  
**The NOV has been terminated 06/28/2006**
- (g) Date, location and type of any administrative or judicial proceedings initiated concerning the violation and the current status of those proceedings.  
**None**
- (h) Actions taken by any person to abate the violation.  
**An inspection was completed and report submitted.**

Revision Date: 12/06/2010

**Sunrise Coal, LLC**

**NOTICE OF VIOLATIONS**

- (5) (a) State or federal permit identification, MSHA number and any other identifying number(s).  
**Howesville Mine, U-29, MSHA # 12-02354**
- (b) Dates of issuance of the violation notice and the MSHA number.  
**01/19/07 #N70119-U-29**
- (c) The name of the person to whom the violation notice was issued.  
**Certified Mail to Ron Laswell**
- (d) Identity of the issuing regulatory authority, department or agency.  
**IDNR DIVISION OF RECLAMATION**
- (e) A description of the violation alleged in the notice.  
**Failure to notify properties on which mining would take place within six months.**
- (f) Current status of the proceedings and of the violation notice.  
**The NOV has been terminated 02/15/2007**
- (g) Date, location and type of any administrative or judicial proceedings initiated concerning the violation and the current status of those proceedings.  
**None**
- (h) Actions taken by any person to abate the violation.  
**Notices were mailed to surface owners and copies were sent to the Division.**
- 
- (6) (a) State or federal permit identification, MSHA number and any other identifying number(s).  
**Howesville Mine, U-29, MSHA # 12-02354**
- (b) Dates of issuance of the violation notice and the MSHA number.  
**09/14/07 #N50913-U-029 1 OF 1**
- (c) The name of the person to whom the violation notice was issued.  
**Certified Mail to Ron Laswell**
- (d) Identity of the issuing regulatory authority, department or agency.  
**IDNR DIVISION OF RECLAMATION**
- (e) A description of the violation alleged in the notice.  
**Failure to monitor Sediment Basin**
- (f) Current status of the proceedings and of the violation notice.  
**The NOV has been terminated 10/11/2005**
- (g) Date, location and type of any administrative or judicial proceedings initiated concerning the violation and the current status of those proceedings.  
**None**
- (h) Actions taken by any person to abate the violation.  
**Monthly monitoring reports for Basin were submitted**

Revision Date: 12/06/2010

**Sunrise Coal, LLC**

**NOTICE OF VIOLATIONS**

- (7) (a) State or federal permit identification, MSHA number and any other identifying number(s).  
**Carlisle Mine, U-28, MSHA # 12-02349**
- (b) Dates of issuance of the violation notice and the MSHA number.  
**06/14/07 #N70614-U-028 1 OF 1**
- (c) The name of the person to whom the violation notice was issued.  
**Certified Mail to Ron Laswell**
- (d) Identity of the issuing regulatory authority, department or agency.  
**IDNR DIVISION OF RECLAMATION**
- (e) A description of the violation alleged in the notice.  
**Failure to get approval of IBR3 prior to disturbance**
- (f) Current status of the proceedings and of the violation notice.  
**The NOV has been terminated 06/17/2007**
- (g) Date, location and type of any administrative or judicial proceedings initiated concerning the violation and the current status of those proceedings.  
**None**
- (h) Actions taken by any person to abate the violation.  
**Bond was submitted and IBR was approved**
- (8) (a) State or federal permit identification, MSHA number and any other identifying number(s).  
**Carlisle Mine, U-28, MSHA # 12-02349**
- (b) Dates of issuance of the violation notice and the MSHA number.  
**01/24/08 #N80123-U-028 1 OF 1**
- (c) The name of the person to whom the violation notice was issued.  
**Certified Mail to Ron Laswell**
- (d) Identity of the issuing regulatory authority, department or agency.  
**IDNR DIVISION OF RECLAMATION**
- (e) A description of the violation alleged in the notice.  
**Condition of Permit – Part IV.L Refuse Disposal Plan  
 Failure to conduct monthly proctor and density testing as stated in permit. Missed  
 August 2007 Test.**
- (f) Current status of the proceedings and of the violation notice.  
**The NOV has been terminated 01/24/2008**
- (g) Date, location and type of any administrative or judicial proceedings initiated concerning the violation and the current status of those proceedings.  
**None**
- (h) Actions taken by any person to abate the violation.  
**Test had resumed and was taken first week of September.**



Revision Date: 12/06/2010

**Sunrise Coal, LLC**

**NOTICE OF VIOLATIONS**

- (9) (a) State or federal permit identification, MSHA number and any other identifying number(s).  
**Carlisle Mine, U-28, MSHA # 12-02349**
- (b) Dates of issuance of the violation notice and the MSHA number.  
**03/05/08 #N080226-U-028 1 OF 2**
- (c) The name of the person to whom the violation notice was issued.  
**Certified Mail to Ron Laswell**
- (d) Identity of the issuing regulatory authority, department or agency.  
**IDNR DIVISION OF RECLAMATION**
- (e) A description of the violation alleged in the notice.  
**Did not follow condition of Permit \_Part IV.L. Did not recompact failed test on coarse gob pile.**
- (f) Current status of the proceedings and of the violation notice.  
**The NOV has been terminated 03/05/2008**
- (g) Date, location and type of any administrative or judicial proceedings initiated concerning the violation and the current status of those proceedings.  
**None**
- (h) Actions taken by any person to abate the violation.  
**Administratively terminated with understanding that future failed test areas would be compacted before applying any additional refuse.**
- 10) (a) State or federal permit identification, MSHA number and any other identifying number(s).  
**Carlisle Mine, U-28, MSHA # 12-02349**
- (b) Dates of issuance of the violation notice and the MSHA number.  
**03/05/08 #N080226-U-028 2 OF 2**
- (c) The name of the person to whom the violation notice was issued.  
**Certified Mail to Ron Laswell**
- (d) Identity of the issuing regulatory authority, department or agency.  
**IDNR DIVISION OF RECLAMATION**
- (e) A description of the violation alleged in the notice.  
**Failure to provide 6 month notices to owners and occupants of surface property and structures above underground workings.**
- (f) Current status of the proceedings and of the violation notice.  
**The NOV has been terminated 03/26/2008**
- (g) Date, location and type of any administrative or judicial proceedings initiated concerning the violation and the current status of those proceedings.  
**None**
- (h) Actions taken by any person to abate the violation.  
**Verified that 6 month notices had been sent and were current at this time.**

Revision Date: 12/06/2010

**Sunrise Coal, LLC**

**NOTICE OF VIOLATIONS**

- 11) (a) State or federal permit identification, MSHA number and any other identifying number(s).  
**Carlisle Mine, U-28, MSHA # 12-02349**
- (b) Dates of issuance of the violation notice and the MSHA number.  
**10/01/08 #N80930-U-028 1 OF 1**
- (c) The name of the person to whom the violation notice was issued.  
**Certified Mail to Ron Laswell**
- (d) Identity of the issuing regulatory authority, department or agency.  
**IDNR DIVISION OF RECLAMATION**
- (e) A description of the violation alleged in the notice.  
**Off Bonded Area – Operator was travelling with mining equipment from Bonded area across Non-Bonded area.**
- (f) Current status of the proceedings and of the violation notice.  
**The NOV has been terminated 10/29/2008**
- (g) Date, location and type of any administrative or judicial proceedings initiated concerning the violation and the current status of those proceedings.  
**None**
- (h) Actions taken by any person to abate the violation.  
**Operator ceased to travel across Non-Bonded area.**
- 12) (a) State or federal permit identification, MSHA number and any other identifying number(s).  
**Carlisle Mine, U-28, MSHA # 12-02349**
- (b) Dates of issuance of the violation notice and the MSHA number.  
**9/01/09 #N90901-U-028 1 OF 1**
- (c) The name of the person to whom the violation notice was issued.  
**Certified Mail to Ron Laswell**
- (d) Identity of the issuing regulatory authority, department or agency.  
**IDNR DIVISION OF RECLAMATION**
- (e) A description of the violation alleged in the notice.  
**Not giving surface landowner 6 months written notice prior to underground mining activities below the property.**
- (f) Current status of the proceedings and of the violation notice.  
**The NOV has been terminated 9/02/2009.**
- (g) Date, location and type of any administrative or judicial proceedings initiated concerning the violation and the current status of those proceedings.  
**None**
- (h) Actions taken by any person to abate the violation.  
**The notice to the landowner had been sent, but increased production resulted in mining the property prior to 6 months.**

Revision Date: 12/06/2010

**Sunrise Coal, LLC**

**NOTICE OF VIOLATIONS**

- 13) (a) State or federal permit identification, MSHA number and any other identifying number(s).  
**Carlisle Mine, U-28, MSHA # 12-02349**
- (b) Dates of issuance of the violation notice and the MSHA number.  
**10/07/2009 #N91007-U-028 1 OF 1**
- (c) The name of the person to whom the violation notice was issued.  
**Certified Mail to Ron Laswell**
- (d) Identity of the issuing regulatory authority, department or agency.  
**IDNR DIVISION OF RECLAMATION**
- (e) A description of the violation alleged in the notice.  
**Failure to maintain and meet federal and state discharge limits. Pond C was discharging water near pH 4.0.**
- (f) Current status of the proceedings and of the violation notice.  
**The NOV has been terminated 10/19/2009.**
- (g) Date, location and type of any administrative or judicial proceedings initiated concerning the violation and the current status of those proceedings.  
**None**
- (h) Actions taken by any person to abate the violation.  
**The operator currently maintains and treats acid water runoff from the coarse refuge pile prior to discharge into Pond C.**
- 
- 14) (a) State or federal permit identification, MSHA number and any other identifying number(s).  
**Carlisle Mine, U-28, MSHA # 12-02349**
- (b) Dates of issuance of the violation notice and the MSHA number.  
**2/25/2010 #N100225-U-028 1 OF 1**
- (c) The name of the person to whom the violation notice was issued.  
**Certified Mail to Ron Laswell**
- (d) Identity of the issuing regulatory authority, department or agency.  
**IDNR DIVISION OF RECLAMATION**
- (e) A description of the violation alleged in the notice.  
**Conducting mine operations off permit and off bonded areas south of the U-28-2 permit.**
- (f) Current status of the proceedings and of the violation notice.  
**The NOV has been terminated 3/8/2010.**
- (g) Date, location and type of any administrative or judicial proceedings initiated concerning the violation and the current status of those proceedings.  
**None**
- (h) Actions taken by any person to abate the violation.  
**The operator provided correspondence stating intent to stay within permitted and bonded areas when conducting mining operations.**

Revision Date: 12/06/2010

**Sunrise Coal, LLC**

**NOTICE OF VIOLATIONS**

- 15) (a) State or federal permit identification, MSHA number and any other identifying number(s).  
**Carlisle Mine, U-28, MSHA # 12-02349**
- (b) Dates of issuance of the violation notice and the MSHA number.  
**10/20/2010 #N101019-U-028 1 OF 1**
- (c) The name of the person to whom the violation notice was issued.  
**Certified Mail to Ron Laswell**
- (d) Identity of the issuing regulatory authority, department or agency.  
**IDNR DIVISION OF RECLAMATION**
- (e) A description of the violation alleged in the notice.  
**Conducting mine operations off permit and off bonded areas south of the U-28-2 permit. Portions of slurry line and silt fencing off permitted area.**
- (f) Current status of the proceedings and of the violation notice.  
**The NOV has been terminated 10/22/2010.**
- (g) Date, location and type of any administrative or judicial proceedings initiated concerning the violation and the current status of those proceedings.  
**None**
- (h) Actions taken by any person to abate the violation.  
**The operator removed silt fencing and re-placed the portion of slurry line back on permitted and bonded area.**

Part II

PREMINING INFORMATION

Premining information is to be displayed on premining land use map unless otherwise indicated.

- 1) Describe how the permit area perimeter will be marked and discuss the method or system employed to locate permit area perimeter and set markers along it. Designate a reference point outside the permit area. Provide a description of the reference point and a sketch relating the reference point to the permit area perimeter.

**The permit area will be marked with either steel fence posts or PVC Pipe to identify the permit perimeter. Please refer to *Surface Drainage Map, Map D* for reference point locations, and relationship to the mining area.**

- 2) Provide slope measurements to represent existing land surface configuration of proposed permit area as required under Section 1783.25(a)(11)(A-D). A soils map of medium intensity prepared to SCS specifications or a contoured aerial photo may be submitted in lieu of Section 1782.25(a)(11)(A-D).

**A soils map of medium intensity prepared to NRCS specifications will be submitted in lieu of Section 1783.25(a)(11)(A-D). The attached *Soils Map, Map C* is a 1 inch equals 400 feet scale map of the permit area.**

- 3) A) Has previous mining activity occurred within the permit area and/or adjacent areas?  
Yes \_\_\_\_\_ No   X

If yes, provide the following information, if available:

- 3) A) 1) Type of mining, surface, underground, or both?
- 3) A) 2) What coal seam or other mineral(s) were extracted?
- 3) A) 3) What was the extent of coal or other mineral(s) removed? Delineate on the pre-mining land use map, or other designated map, the areas disturbed by previous mining activities, including active, inactive or abandoned underground mine work along with any mine opening to the surface.

Identify for each area the type of mining and the approximate date of extraction.

- 3) A) 4) Identify on all maps submitted with the application areas where surface coal mining operations were conducted prior to August 3, 1977; after August 3, 1977 and prior to May 3, 1978; after May 3, 1978 and prior to February 1, 1983; and any permanent regulatory program permit issued after February 1, 1983.
- 3) A) 5) Identify the land uses preceding mining.

- 4) Give the acreage of each land use within the proposed permit area, employing land use categories of Section 1701.5 listed below, and delineate on premining land use map existing land uses in the proposed permit area and within 1,000 feet adjacent to it. Include on the premining land use map the location of all buildings and identify the current use of these buildings.

**Please refer to the *Pre-Mining Map, Map B* and the table below.**

**Bulldog Mine  
Permit No. 429  
Pre-Mining Land Use/Capability Table**

<b>Land Use/Capability</b>	<b>Permit Area</b>
Cropland Prime Farmland	389.0
Industrial/Commercial Negative Determination	1.3
<b>Total</b>	<b>390.3</b>

- 5) Have any of the land uses changed within the last five years?  
Yes \_\_\_\_\_ No   **X**

If yes, indicate the acreage and changes of land uses.

- 6) A) Provide a narrative of land capability and productivity of the proposed permit area prior to mining which shall provide an analysis of:
- 6) A) 1) The capability of the land to support a variety of uses, giving consideration to soil and foundation characteristics, topography, vegetative cover and hydrology;

**Please refer to *Attachment II-6A1* for a soil resource analysis plan.**

- 6) A) 2) The productivity of the total area expressed as average yield of food, fiber, forage, or wood products under high level management.

**This information may be found in *Attachment II-6A2*, “Estimated Yields for Vermilion County”**

**Crop productivity data contained in the table was obtained from the following source:  
Olson, K.R., Lang, J.M., University of Illinois, College of Agricultural, Consumer and Environmental Sciences, Office of Research, Optimum Crop Productivity Ratings for Illinois Soil, Bulletin 811, August, 2000, 1/26/2010 Amended Table S2rev.**

**Deciduous tree growth data was obtained from the USDA – NRCS - Electronic Field Office Technical Guide.**

- 6) B) Where the narrative of land capability and productivity employs the U.S.D.A Natural Resources Conservation Service (NRCS) Land-Capability Classification (Agriculture Handbook No. 210) in conjunction with the soil information provided under Part II 12) of this part, soil interpretation sheets or published soil survey or complete soil information chart for

productivity from Circular 1156 are to be submitted for each soil type occurring in the permit area.

**This information may be found in *Attachment II-6A2, "Estimated Yields for Vermilion County"***

**Crop productivity data contained in the table was obtained from the following source: Olson, K.R., Lang, J.M., University of Illinois, College of Agricultural, Consumer and Environmental Sciences, Office of Research, Optimum Crop Productivity Ratings for Illinois Soil, Bulletin 811, August, 2000, 1/26/2010 Amended Table S2rev.**

**Deciduous tree growth data was obtained from the USDA – NRCS - Electronic Field Office Technical Guide.**

- 7) Provide a description of the existing land uses and land classifications under local law, if any, for the proposed permit and adjacent areas.

**The applicant is not aware of any local land use zoning laws.**

- 8) Provide fish and wildlife resource information for the proposed permit area and any adjacent areas. Prior to initiation of studies to obtain fish and wildlife resource information, the applicant must contact the Department for a determination of what fish and wildlife resources information will be required. Pursuant to 62 Ill. Adm. Code 1784.21(a)(1) and (2), the Department will determine the level of detail and the areas of study. Site-specific resource information will be required by the Department if either the permit area or adjacent area is likely to include threatened or endangered species or their critical habitats or habitats of unusually high value for fish and wildlife.

The applicant should complete the description of plant communities within the permit area and adjacent area, requested in Part II 9), below, prior to contacting the Department for a determination of the fish and wildlife resource information.

**Please refer to the report titled *Site Specific, Pre-Mining Assessment, Endangered and Threatened Species in Attachment V-3B1* and the report titled *Site Specific Wetland and Stream Resources Pre-Mining Assessment in Attachment V-3B3*.**

- 9) Give a description of the plant communities within the proposed permit area and delineate on a vegetation map the vegetative types occurring within the proposed permit area and within any proposed reference area. Where a map or aerial photograph is required provide coverage of sufficient adjacent areas to allow evaluation of vegetation as important habitat for fish and wildlife for those species of fish and wildlife identified under Section 1784.21. The description shall include information adequate to predict the potential for reestablishing vegetation.

**Vegetative types of the proposed permit area and adjacent areas are noted on the *Pre-Mining Map, Map B*.**

**The pre-mining vegetation types fall into one (1) basic category: cropland.**

**Plant communities in the cropland areas are represented by monocultures of corn, soybeans and wheat.**

**Please refer to the report titled *Site Specific, Pre-Mining Assessment, Endangered and Threatened Species in Attachment V-3B1* and the report titled *Site Specific Wetland and Stream Resources Pre-Mining Assessment in Attachment V-3B3*.**

- 10) A) Pursuant to 62 Ill. Adm. Code 1783.12(a), provide a description of the cultural, archeological and historic resources listed or eligible for listing on the National Register of Historic Places and any known archeological features within the proposed permit, adjacent areas, and shadow area (for planned subsidence). The description of the cultural, historic and archeological resources occurring within the permit area and adjacent areas shall be based upon available data, including data of State and local archeological, historical and cultural preservation agencies.

**A separate report addressing cultural, archaeological and historic resources listed or eligible for listing on the National Register of Historic Places, and any known archaeological features within the proposed permit and adjacent areas is in the process of being completed. A copy of the report will be forwarded to the Department under separate cover. The report will be available for viewing, at the Illinois Department of Natural Resources, Office of Mines and Minerals, Springfield, Illinois office.**

- 10) B) 1) Pursuant to 62 Ill. Adm. Code 1783.12(b):

- 10) B) 1) a) State whether there is a substantial likelihood of currently unknown resources which would be eligible for the National Register of Historic places within the proposed permit, or adjacent areas or shadow area (for planned subsidence).

**It is not anticipated that there is a substantial likelihood of currently unknown resources that would be eligible for the National Register of Historic places within the proposed permit, or adjacent areas.**

- 10) B) 1) b) Provide a plan detailing the manner in which additional information will be gathered by the applicant to enable the Department to identify and evaluate such resources.

**Please see the response to Part II, Question 10)A).**

- 10) B) 2) Please Note: If the Department determines that the Part II 10)A) resource information is not adequate to make the required finding under 62 Ill. Adm. Code 1773.15(c)(12) because information available to the Department indicates a substantial likelihood of currently unknown resources within the permit area or adjacent areas which would be eligible for the National Register of Historic Places, the Department will require the applicant to submit additional information to enable the Department to identify and evaluate the potential resources. Such information might include the results of field investigations of the permit area and adjacent area if it is determined by the Department, in consultation with the Illinois State Historic Preservation Agency, that the field investigation will provide the information required under Part II 10)A).

**Please see the response to Part II, Question 10)A).**

**The applicant believes the information provided in the response to Part II(10)(A) is adequate to make the required finding under 62 Ill. Adm. Code 1773.15(c)(12). However, the applicant is aware the Department may require the applicant to submit additional**



**information to enable the Department to identify and evaluate the potential resources within the permit area or adjacent areas that may be eligible for the National Register of Historic Places.**

- 10) C) For the permit area and/or shadow area (for planned subsidence) locate on the vegetation map or the land use map the following:

The boundaries of any publicly owned parks, locations of any cultural resources, historical resources listed or eligible for listing on the National Register of Historic Places.

**Please see the response to Part II, Question 10)A).**

**No publicly owned parks or cultural resources, historical resources listed or eligible for listing on the National Register of Historic places are known to exist within or adjacent to the proposed permit area.**

**The shadow area is proposed for unplanned subsidence.**

- 10) D) Provide a map showing the location of known Archeological site(s) listed on or eligible for listing on the National Register of Historic Places. Provide identifying field markings to be employed to insure that the site(s) will not be disturbed by surface coal mining and reclamation operations. The map is to be submitted in separate cover from the rest of the application. The Department will hold the map as a confidential document.

**Please see the response to Part II, Question 10)A).**

- 10) E) Provide a plan for publicly owned park(s), or place(s) identified above in paragraph(c) that may be adversely affected by the proposed operation describing the measures to be employed:

- 10) E) 1) To prevent adverse impacts caused by underground mining related activities including, but not limited to, loss or destruction of historic artifacts and damage to historic structures or property;  
or

**Please see the response to Part II, Question 10)A).**

- 10) E) 2) If valid existing rights exist or joint agency approval is to be obtained under 62 Ill. Adm. Code 1761.12(e), to minimize adverse impacts.

**None are known to exist within the permit area.**

- 11) For the permit area and/or shadow area (for planned subsidence) locate on the vegetation map or land use map the boundaries of any public or private cemeteries or Indian burial grounds.

**No public or private cemeteries or Indian burial grounds are known to exist within the permit area.**

**The shadow area is proposed for unplanned subsidence.**

- 12) A) Provide the location of surface and subsurface man-made features within, passing through, or passing over the proposed permit and shadow areas on the pre-mining land use map or other designated map.

Such features should include but are not limited to major electric transmission lines, pipelines, agricultural drainage tile fields, gas and oil wells, and water wells. For gas, oil and water wells provide the depth, if available, of the well.

**All surface and subsurface features known by the applicant to exist are shown on the Hydrology Map, Map A, and/or Shadow Area Map, Map S.**

**Several oil and gas wells located within and in the vicinity of the permit and shadow areas are listed on the Illinois State Geological Survey website. The listed wells were drilled between 1937 and 1976. One well does not have a drilling date available. The listed wells are shown on the Hydrology Map, Map A. Attachment II-12A contains well information obtained from the website, and a table that reflects the current well status.**

**Water well depths are listed in this application in Part III 2)B)1), Table III-A, Private Water Wells.**

- 12) B) Provide the elevation and location of all monitoring stations used to gather data for water quality and quantity, fish and wildlife, and air in preparation of the application.

**Please refer to Hydrology Map, Map A for the location of water monitoring stations.**

- 13) Soils Information Map

- 13) A) Does the submitted soils map represent a map developed by the Natural Resources Conservation Service?

Yes  No

If no, explain. If SCS map has been modified, explain (Example - photographically enlarged; soil map units recorrelated; area affected after initial mapping). Soil map scale must be 1" = 400' unless otherwise approved by the Department.

**The submitted soils map represents a map developed by the Natural Resources Conservation Service. The attached Soils Map, Map C is a 1 inch equals 400 feet scale map of the permit area.**

- 13) B) Are any of the identified map units correlated as prime farmland by SCS criteria?

Yes  No

If yes, provide acreage by completing soil information chart.

**Please refer to the "Soils Information Chart" at the end of Part II.**

**A total of 1.3 acres of prime farmland soils in the permit area meet the negative determination exemption criteria requirements of Section 1785.17. Attachment II-13B is a request for negative determination for 1.3 acres.**

- 13) C) Submit, by completing soils information chart, acreage totals of each map unit (soil type and slope classification) and land use capability classes in the permit area and the percent slope range of each lettered slope classification used on the soil map.

Please refer to the “Soils Information Chart” at the end of Part II.

- 13) D) Indicate the average topsoil thickness of each of the soil map units to be affected. Locate on soils map the test holes for soil horizon thickness sampling. The topsoil replacement thickness (inches) will be 12.0” .

The following table reflects the pre-mining topsoil thickness for each of the soil map units within the proposed permit area. Individual test hole locations are shown on the *Soils Map, Map C*.

Weighted average calculations based on the topsoil thicknesses shown below and the total acreage for each soil type reveals an average of 12 inches of topsoil is present on the permit area. The average topsoil thickness will be 12 inches.

Soil Mapping Unit	Average Depth (Inches)
56B2	10.0
67A	13.2
152A	12.4
154A	12.9
171B	13.2

- 13) E) List the soil types and acreages of areas that will require the B and/or portions of the C horizon to be removed and replaced in order to establish the root medium necessary to achieve soil productivity consistent with the proposed post-mining land use.

Alternatively, a narrative description explaining why specific soil type acres information for reclamation plan achievement is not necessary may be provided instead.

**It is not anticipated that it will be necessary to remove and replace any of the B and/or C horizon soil types in order to establish the root medium necessary to achieve soil productivity on reclaimed areas.**

- 13) F) Are selected overburden materials proposed to be used in lieu of or as a supplement to the A-horizon?

Yes \_\_\_\_\_ No X

If yes, provide the appropriate information required under Section 1785.21(b). Also, identify source of the substitute materials and the topsoils to be substituted away from on a separate soils map unless the Department grants permission to describe the area in narrative form or to use the soils map provided in Part II 13(A). Explain why the proposed plan will provide the best available material of equal or better quality than present topsoil or surface existing material. This section must be addressed when re-affecting previously disturbed areas.

Sunrise Coal, LLC  
 Bulldog Mine  
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SOILS INFORMATION CHART								
Soil Mapping Unit	Soil Name	Slope Class	Land Use Cap.	Prime Farmland Soils		High Capability Soils	Other	Totals
				Prime Farmland	Negative Determined			
56B2	Dana	B	Ile	11.1	-	-	-	11.1
67A	Harpster	A	IIw	5.2	-	-	-	5.2
152A	Drummer	A	IIw	214.9	-	-	-	214.9
154A	Flanagan	A	I	156.0	1.3	-	-	157.3
171B	Catlin	B	Ie	1.8	-	-	-	1.8
<b>Totals</b>				<b>389.0</b>	<b>1.3</b>	<b>-</b>	<b>-</b>	<b>390.3</b>

Sunrise Coal, LLC  
Bulldog Mine  
Permit No. 429

# ATTACHMENT II-6A1

SOIL RESOURCE ANALYSIS PLAN



# Soil Tech, Inc.

*Soil & Environmental Services*

5144 W. Timberwood  
Newburgh, IN 47630  
Office: (812) 858-7003  
Fax: (812) 858-0888

**January 31, 2012**

**Scott Gambill  
Sunrise Coal, LLC  
1466 East S.R. 58  
Carlisle, Indiana 47838**

**RE: Allerton Mine – New Permit  
Soil Resources Analysis Plan  
Vermilion County, Illinois**

**Dear Mr. Gambill:**

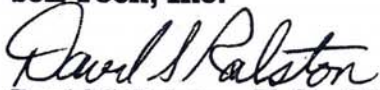
You requested that Soil Tech field sample soils and prepare this "Soil Resources Analysis Plan" for the proposed underground mining facility at Allerton Mine. The surface facilities for the underground mine will be located five miles northeast of Allerton, in Vermilion County. The purpose of the plan is to provide a foundation document on which soil-handling decisions can be made for the proposed surface facilities and the refuse-disposal area that will support the underground coal mining operation.

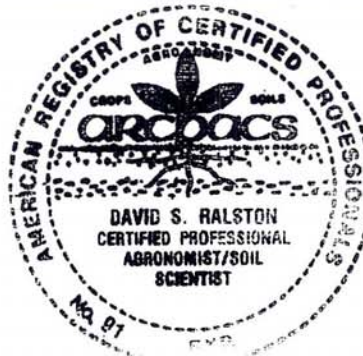
Sunrise Coal, LLC, requested specific information on the soils where the coal refuse will be placed south of Co. Rd. 200N and west of Co. Rd. 200E, and on the source of borrow materials for cover of the refuse pile and for final reclamation of the site. In addition, the company requested field data on the thickness of the existing A-horizon topsoil for the dominant soil series within the permit.

Soil Tech used a Giddings hydraulic sampling unit to obtain representative profiles of the dominant soil map units under the refuse disposal area. This report presents the analysis of the laboratory results by map unit and makes recommendations on how best to combine the soil horizons during reclamation. This report is intended to provide a reference source for both the permit submittal and the reclamation personnel operating equipment.

Call if you have questions or need additional information on the plan.

Sincerely,  
**Soil Tech, Inc.**

  
David S. Ralston, Ph.D., CPAg/SSc  
President



**SUNRISE COAL, LLC**  
**ALLERTON MINE**  
**NEW PERMIT**  
**SOIL RESOURCES ANALYSIS PLAN**

**January 31, 2012**

**Prepared by**  
**Soil Tech, Inc.**  
**Newburgh, Indiana 47630**  
**812-858-7003**

**SOIL RESOURCES ANALYSIS PLAN  
ALLERTON MINE – NEW PERMIT**

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2	Certification Letter by David S. Ralston	
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## **Soil Resources Analysis Plan**

### **1.0 Introduction**

Allerton Mine, operated by Sunrise Coal, LLC, will be located about five miles northeast of Allerton, Illinois. The surface facilities will be located on both sides of Co. Rd. 200N between Co. Rd. 100E and Co. Rd. 200E, as shown on the Google Earth map (Attachment 1).

Soil Tech, Inc., was requested to sample the soil resources for the new permit area at the Allerton Mine. In addition, Soil Tech was requested to make recommendations on how the soils can best be utilized and reclaimed to achieve the requirements of the mining permit. A truck-mounted Giddings hydraulic soil sampler was used to obtain samples to a depth of 12 feet. The soil samples were sent to Key Agricultural Services, Macomb, Illinois, for laboratory analysis.

This report is intended to provide a reference document to be used both for the permit submittal and by the reclamation personnel in the field. It will contain both the lab data and the analysis of combined soil horizons that can be used in defining the reclamation process.

The certification letter for David S. Ralston, Ph.D., for this report is presented in Attachment 2. Dr. Ralston sampled the soils in the field and prepared this report. He is an ARCPACS Certified Professional Soil Scientist and Agronomist with over 35 years of experience in the evaluating soils for coal mining operations.

### **2.0 Sampling Plan**

Representative sampling sites were identified for the dominant soil-mapping units and are shown on the soils map (Attachment 3). Drummer and Flanagan make up 95.5% of the soils in the permit area, with the remaining 4.5% comprised of Dana (2.7%), Harpster (1.4%), and Catlin (0.4%). Sampling sites were concentrated on the dominate soil series – Drummer, Flanagan, and Dana. The NRCS web soil survey report was generated to provide the preliminary breakout of soil map units in the Allerton permit (Attachment 4).

The Drummer and Flanagan soils are located on the broad-flat areas and in the depressions. The Drummer-Flanagan soils are poorly-drained and somewhat-poorly-drained soils that formed in loess over

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glacial outwash or loamy till on till plains. The typical profile is black topsoil over gray, mottled subsoil on stratified gray silt loam and loam calcareous glacial outwash. The underlying material is stratified loam and silt loam calcareous glacial outwash.

Soil profile samples were obtained for ten sites on 12 December 2011, using a Giddings hydraulic soil sampler. An open core tube was used to sample the top four feet, and then an auger was used to obtain deeper soil samples to a maximum depth of 12 feet.

Soil samples were sent to Key Agricultural Services, Macomb, Illinois, for analysis. The pH, buffer pH, phosphorus (P1 and P2), potassium, organic matter, and texture were analyzed for each. Gravel was not an issue for the samples, so only the deepest sample was evaluated for material greater than 2mm. Samples having a pH higher than 7.5 were also analyzed for free calcium carbonate content. The laboratory data are included in Attachment 6 in the Appendix.

### **3.0 Results and Analyses**

Table 3.0 presents a listing of the soil profiles for the sampling sites. The table identifies the soil series for each site and identifies the horizon for each sampling depth. Data are provided for the dominant soil series in the Allerton Mine permit. Table 3.0 also lists the field-measured thickness of topsoil for the sampling sites.

#### **3.1 Soil Profile Summary by Soil Series**

Table 3.1 provides a summary listing of the physical and chemical properties by soil series and depth for Dana, Drummer, and Flanagan. Dana series has silt loam topsoil with silty clay loam subsoil. The underlying glacial till is stratified loam and silt loam.

Flanagan on the rises has a topsoil texture that is border line between silt loam and silty clay loam at 27% clay. The subsoil average is a heavy silty clay loam. The underlying glacial till ranges from loam to clay loam, and averages silt loam. The glacial till has free calcium carbonate that averages 14.4% in the 4- to 8-foot depth and averages 21% for the 8- to 12-foot depth.

Drummer series in the depressions has a silty clay loam topsoil and subsoil with clay contents averaging 32%. The underlying glacial till has a loam and silt loam texture. The free carbonates average 12% in the 4- to 8-foot depth and 20% for the 8- to 12-foot depth.

### **3.2 Topsoiling Materials**

The existing topsoil will be stockpiled for use as the final cover in reclamation. Topsoil thickness generally ranges between 9 and 14 inches, and most areas have at least a foot of topsoil. The Bt1 upper subsoil has high organic matter and is often nearly as dark as the A horizon, but the heavier silty clay loam subsoil texture is less desirable for mixing with the topsoil.

Data for the existing A-horizon topsoil is presented in Table 3.1. The average pH of the topsoil is 6.3, which is desirable for plant growth. The phosphorus and potassium content of the existing topsoil are in the high range. The average texture of the topsoil is silt loam for the Dana series and silty clay loam for Drummer and Flanagan series. The existing topsoil will provide an excellent material for use in reclaiming both the mine facilities site and the refuse disposal site activities.

The organic matter content of the Drummer, Flanagan, Dana topsoil is between 1.7 and 3.7 % and averages 2.8%. The high organic matter reflects the influence of the prairie vegetation under which the soils developed. These soils are highly productive for agriculture and will make an excellent material for use in reclaiming the site.

The thickness of the A-horizon for the dominant soil series within the surface facilities permit is listed in Table 3.1. The measured thickness ranges from 9 inches for to 13 inches for the ridges and 12 to 15 inches for the depressions. Most of the relatively flat, till plain soils have an A-horizon thickness of between 10 and 15 inches.

### **3.3 Rooting Media Materials**

The proposed source of rooting media is the existing subsoil and glacial outwash and till for the Drummer, Flanagan, and Dana soils. The rooting media will consist of the subsoil and glacial materials to a maximum depth of 12 feet.

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The average pH of the subsoil is 6.7, and the phosphorus content is low. The potassium level is in the high range. The organic matter average for the subsoil is 1.1 %. The average subsoil texture is silty clay loam.

The data for the glacial outwash to a depth of 12 feet are also presented in Table 3.3. The data are summarized for 4- to 8-feet and 8- to 12-feet. The calcium carbonate content of 15% and 21% in the glacial outwash is causing the relatively high pH of 8.0 and low available phosphorus. The glacial outwash in the 4- to 8-foot depth has an average texture of loam, and the deeper glacial materials have an average texture of silt loam.

The percent calcium carbonate equivalent averages 15 to 21% percent. The free carbonates in the glacial materials will be an advantage for achieving the low permeability of the rooting media used as the liner and soil cover layer for the refuse pile.

The phosphorus and potassium levels of the glacial outwash are in the low to medium range, due to the high saturation of calcium on the soil cation exchange sites. The texture of the glacial outwash is loam and silt loam, with average clay content of 21.5% and average sand content of 29.6%.

Table 3.3 shows a weighted average blend of 3 feet of subsoil and 8 feet of glacial outwash material. The average texture is silt loam, and the pH is 7.2. The average calcium carbonate content is 15 percent.

#### **4.0 Recommendations**

The existing prairie-derived topsoil will make an excellent soil for reclaiming the areas affected by mining activities within the support facilities area for the Allerton Mine. The thickness of the topsoil for the relatively flat areas ranges from 9 to 14 inches, and the average thickness is closer to 12 inches.

No supplemental topsoiling materials are proposed for this plan, but data are provided for the upper part of the subsoil to show that the physical and chemical properties are suitable for revegetation. All the topsoil will be removed for storage for use in covering the refuse pile and for reclaiming the disturbed area in the permit.

Rooting media to be used for cover of the refuse pile and for reclamation will consist of the existing subsoil and glacial outwash and

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till to a maximum depth of 12 feet. The texture of the glacial rooting media materials is silt loam and loam. The existing high levels of free carbonates in the soil between 4 and 12 feet deep will help reduce permeability of the soil under the refuse pile and will provide a good capping soil for the pile. The combination of an average of 20% clay and the free carbonates will help in achieving the reduced permeability of both the liner and the capping soil.

## **5.0 Summary & Conclusions**

Soil resources at the Allerton Mine permit site range from nearly-level to gently-sloping loess over glacial outwashes that developed under prairie vegetation. Soil data contained in Table 3.1 show that the existing topsoil is the best soil material for use in reclaiming the areas affected for the proposed refuse disposal site for the underground mine.

Topsoil removal thickness will range from 9 to 14 inches for the prairie soils. Topsoil replacement for most areas will average 12 inches. Agronomic soil tests will be taken at the time of reclamation to determine the soil nutrients needed to supplement the vegetation being planted.

Rooting media will be used to cover the refuse pile prior to replacement of topsoil. The rooting media will consist of a mixture of subsoil, loess, and glacial outwash to a maximum borrow depth of 12 feet. Data in Table 3.2 show that the proposed mixture of existing subsoil and deeper glacial outwash materials will provide a suitable cover material for the refuse pile. The soil will have a loam or silt loam texture with an average of 20% clay and sufficient free carbonates to reduce the permeability of water through the profile.

In conclusion, the proposed method of replacing high-organic topsoil on rooting media consisting of subsoil and glacial outwash will provide suitable cover material for the refuse pile and for reclaiming areas affected by the surface facilities for the underground operation.

SUNRISE COAL, LLC  
ALLERTON MINE PERMIT  
TABLE 3.0  
SOIL CHARACTERIZATION DATA

Site Location	Soil Series	Sample ID	Depth ft	Horizon	Soil pH(1:1)	Buffer pH	Organic Matter %	Phosphorus P-1 lb/a	Phosphorus P-2 lb/a	Potassium K lb/a	%Ca	%CCE	Tons CCE t/1000t	>2mm %	Sand %	Silt %	Clay %	Texture Class
Sunrise Coal Allerton Mine Sampled 12 December 2011																		
SC01-154A	154A - Flanagan	1 - 1	0 - 1.1	A	5.82	6.65	1.9	10	18	248	67.4				7.6	65.0	27.4	SILTY CLAY LOAM
DSR1	silt loam	1 - 2	1.1 - 2.1	Bt1	6.04	6.63	1.7	4	8	446	57.5				3.2	55.8	41.0	SILTY CLAY
12/12/2011	0 - 2%	1 - 3	2.1 - 4.0	Bt2	6.91	6.98	0.7	4	112	296	63.0				13.9	60.2	25.9	SILT LOAM
		1 - 4	4 - 8	C1	7.94	7.00	0.1	4	34	176	79.0	16.13	161.3		27.8	50.1	22.1	SILT LOAM
		1 - 5	8 - 12	C2	8.07	7.00	0.1	4	10	150	85.5	21.67	216.7	0.77	28.9	50.1	21.0	SILT LOAM
SD02-152A	152A - Drummer	2 - 1	0 - 1.0	A	6.33	6.71	3.8	26	104	400	67.7				5.6	59.4	35.0	SILTY CLAY LOAM
DSR1	silty clay loam	2 - 2	1.0 - 2.0	Bt1	6.98	7.00	1.6	6	98	310	68.7				4.9	60.3	34.8	SILTY CLAY LOAM
10/28/2011	0 - 2%	2 - 3	2.0 - 4.0	Bt2	8.11	7.00	1.1	4	28	332	75.4	11.09	110.9		3.1	66.3	30.6	SILTY CLAY LOAM
		2 - 4	4 - 8	C1	8.22	7.00	0.1	8	62	210	80.3	18.15	181.5		28.8	50.9	20.3	SILT LOAM
		2 - 5	8 - 12	C2	8.24	7.00	0.1	6	20	152	85.7	21.67	216.7	1.05	28.6	54.3	17.1	SILT LOAM
SC03-56B2	56B2 - Dana	3 - 1	0 - 0.9	A	5.54	6.73	1.8	20	26	202	67.0				9.1	64.2	26.7	SILT LOAM
DSR1	silt loam	3 - 2	0.9 - 2.0	Bt1	5.71	6.68	1.0	6	24	282	58.2				8.2	63.8	28.0	SILTY CLAY LOAM
12/12/2011	2 - 5%	3 - 3	2.0 - 4.0	Bt2	6.17	6.86	0.2	6	92	200	59.5				57.9	26.6	15.5	SANDY LOAM
		3 - 4	4 - 8	C1	8.05	7.00	0.1	4	50	132	69.0	13.10	131.0		43.8	40.7	15.5	LOAM
		3 - 6	8 - 12	C2	8.07	7.00	0.1	4	54	128	85.9	21.67	216.7	0.66	31.1	55.9	13.0	SILT LOAM
SC04-152A	152A - Drummer	4 - 1	0 - 1.0	A	6.23	6.72	3.3	20	52	368	67.3				10.8	53.8	35.4	SILTY CLAY LOAM
DSR1	silty clay loam	4 - 2	1.0 - 2.0	BA	6.59	6.87	1.1	4	42	318	66.1				15.3	53.9	30.8	SILTY CLAY LOAM
12/12/2011	0 - 2%	4 - 3	2.0 - 4.0	Bt2	7.15	7.00	0.9	4	116	376	61.8	2.02	20.2		7.7	57.3	35.0	SILTY CLAY LOAM
		4 - 4	4 - 8	C1	7.97	7.00	0.1	6	90	208	70.4	8.06	80.6		33.9	43.3	22.8	LOAM
		4 - 5	8 - 12	C2	8.18	7.00	0.1	6	58	154	84.1	18.15	181.5	1.01	32.5	48.2	19.3	LOAM
SC05-154A	154A - Flanagan	5 - 1	0 - 1.1	A	6.31	6.80	3.7	38	92	290	72.4				11.0	60.0	29.0	SILTY CLAY LOAM
DSR1	silt loam	5 - 2	1.1 - 2.0	Bt1	6.71	6.91	1.7	6	60	362	69.3				8.5	60.4	31.1	SILTY CLAY LOAM
12/12/2011	0 - 2%	5 - 3	2.0 - 4.0	Bt2	7.16	7.00	0.7	6	118	370	64.4	2.02	20.2		16.3	25.8	57.9	CLAY
		5 - 4	4 - 8	C1	7.58	7.00	0.6	14	150	336	63.8	2.52	25.2		17.3	52.8	29.9	SILTY CLAY LOAM
		5 - 5	8 - 12	C2	8.02	7.00	0.1	6	50	204	82.6	17.14	171.4	0.77	22.7	50.2	27.1	CLAY LOAM
SC06-152A	152A - Drummer	6 - 1	0 - 1.0	A	7.10	7.00	2.9	12	72	356	80.9	1.51	15.1		13.7	55.2	31.1	SILTY CLAY LOAM
DSR1	silty clay loam	6 - 2	1.0 - 2.0	Bt1	7.24	7.00	1.2	4	64	294	74.2	2.52	25.2		15.1	53.9	31.0	SILTY CLAY LOAM
12/12/2011	0 - 2%	6 - 3	2.0 - 4.0	Bt2	7.39	7.00	0.7	4	138	368	63.2	2.52	25.2		15.0	58.0	27.0	SILT LOAM
		6 - 4	4 - 8	C1	7.93	7.00	0.1	10	136	250	64.6	8.06	80.6		24.2	52.9	22.9	SILT LOAM
		6 - 5	8 - 12	C2	8.11	7.00	0.1	6	54	182	82.9	20.16	201.6	1.92	30.0	51.1	18.9	SILT LOAM

SUNRISE COAL, LLC  
ALLERTON MINE PERMIT  
TABLE 3.0  
SOIL CHARACTERIZATION DATA

Site Location	Soil Series	Sample ID	Depth ft	Horizon	Soil pH(1:1)	Buffer pH	Organic Matter %	Phosphorus		Potassium		%Ca	%CCE	Tons CCE t/1000t	>2mm %	Sand %	Silt %	Clay %	Texture Class
								P-1 lb/a	P-2 lb/a	K lb/a									
SC07-154A DSR1 12/12/2011	56B2 - Dana silt loam 2 - 5%	7 - 1	0 - 0.8	A	5.90	6.79	1.7	14	28	228	74.2								SILT LOAM
		7 - 2	0.8 - 1.9	Bt1	6.12	6.77	1.1	4	8	278	67.8								SILTY CLAY LOAM
		7 - 3	1.9 - 4.0	Bt2	7.70	7.00	0.1	4	32	162	73.9	12.60	126.0			13.8	54.4	31.8	SILTY CLAY LOAM
		7 - 4	4 - 8	C1	8.13	7.00	0.1	4	10	126	87.3	29.23	292.3			26.0	51.1	22.9	SILT LOAM
		7 - 5	8 - 12	C2	7.92	7.00	0.1	4	22	106	88.4	24.19	241.9	0.60		27.6	49.9	22.5	LOAM
SC08-152A DSR1 12/12/2011	152A - Drummer silty clay loam 0 - 2%	8 - 1	0 - 1.1	A	6.48	6.83	2.4	12	38	324	76.3					14.0	58.9	27.1	SILTY CLAY LOAM
		8 - 2	1.1 - 2.0	Bt1	6.74	6.92	1.3	6	44	366	68.3					10.3	58.4	31.3	SILTY CLAY LOAM
		8 - 3	2.0 - 4.0	Bt2	7.37	7.00	0.9	4	140	384	65.8	1.51	15.1			10.0	60.9	29.1	SILTY CLAY LOAM
		8 - 4	4 - 8	C1	8.29	7.00	0.1	6	70	124	80.3	13.61	136.1			31.3	49.8	18.9	LOAM
		8 - 6	8 - 12	C3	8.27	7.00	0.1	4	32	148	87.1	21.67	216.7	1.76		30.4	49.9	19.7	LOAM
SC09-154A DSR1 12/12/2011	154A - Flanagan silt loam 0 - 2%	9 - 1	0 - 1.0	A	7.26	7.00	2.2	12	28	284	84.3	1.01	10.1			10.3	63.1	26.6	SILT LOAM
		9 - 2	1.0 - 2.0	Bt1	6.46	6.84	1.3	6	10	358	65.3					4.7	59.8	35.5	SILTY CLAY LOAM
		9 - 3	2.0 - 4.0	Bt2	6.91	6.98	0.6	6	24	246	65.4					25.3	52.2	22.5	SILT LOAM
		9 - 4	4 - 8	C1	8.08	7.00	0.1	4	36	76	80.2	19.66	196.6			43.5	46.6	9.9	LOAM
		9 - 5	8 - 12	C3	8.17	7.00	0.1	4	34	102	86.1	22.68	226.8	0.85		25.0	58.6	16.4	SILT LOAM
SC10-154A DSR1 12/12/2011	154A - Flanagan silt loam 0 - 2%	10 - 1	0 - 1.1	A	7.28	7.00	1.7	26	54	310	87.4	1.51	15.1			9.6	65.6	24.8	SILT LOAM
		10 - 2	1.1 - 2.1	Bt1	6.58	6.86	1.8	6	12	384	74.8					2.0	63.9	34.1	SILTY CLAY LOAM
		10 - 3	2.1 - 4.0	Bt2	7.92	7.00	0.1	4	68	130	75.4	20.16	201.6			17.9	65.9	16.2	SILT LOAM
		10 - 4	4 - 8	C1	8.25	7.00	0.1	4	30	134	84.3	19.66	196.6			19.4	51.3	29.3	SILTY CLAY LOAM
		10 - 5	8 - 12	C3	8.21	7.00	0.1	4	30	122	86.3	23.19	231.9	0.98		25.5	52.4	22.1	SILT LOAM

%CCE = Percent Calcium Carbonate Equivalent

- Notes:
1. DSR1 = Sampled by David Ralston, Soil Tech, Inc., Newburgh, Indiana, using a Giddings hydraulic soil probe and auger unit
  2. DSR2 = Sampled by David Ralston using a 3" diameter hand bucket auger
  3. Soil samples analyzed by Key Agricultural Services, Macomb, Illinois using standard procedures

SUNRISE COAL, LLC  
ALLERTON MINE PERMIT  
TABLE 3.1  
SOIL DATA ANALYSIS BY SOIL SERIES AND DEPTH

Site Location	Soil Series	Sample ID	Depth ft	Horizon	Soil pH(1:1)	Buffer pH	Organic Matter %	Phosphorus P-1 lb/a	Phosphorus P-2 lb/a	Potassium K lb/a	%Ca	%CCE	Tons CCE t/1000t	>2mm %	Sand %	Silt %	Clay %	Texture Class
<b>Sunrise Coal Allerton Mine Sampled 12 December 2011</b>																		
<b>Data analysis for 56 - Dana topsoil</b>																		
56	Dana	3 - 1	0 - 0.9	A	5.54	6.73	1.8	20	26	202	67.0			9.1	64.2	26.7		SILT LOAM
56	Dana	7 - 1	0 - 0.8	A	5.90	6.79	1.7	14	28	228	74.2			8.5	66.8	24.7		SILT LOAM
56	Dana		0 - 0.9	A	5.68	6.76	1.7	17	27	215	70.6			8.8	65.5	25.7		SILT LOAM
<b>Data analysis for 56 - Dana subsoil</b>																		
56	Dana	3 - 2	0.9 - 2.0	Bt1	5.71	6.68	1.0	6	24	282	58.2			8.2	63.8	28.0		SILTY CLAY LOAM
56	Dana	3 - 3	2.0 - 4.0	Bt2	6.17	6.86	0.2	6	92	200	59.5			57.9	26.6	15.5		SANDY LOAM
56	Dana	7 - 2	0.8 - 1.9	Bt1	6.12	6.77	1.1	4	8	278	67.8			18.0	49.4	32.6		SILTY CLAY LOAM
56	Dana	7 - 3	1.9 - 4.0	Bt2	7.70	7.00	0.1	4	32	162	73.9	12.60	126.0	13.8	54.4	31.8		SILTY CLAY LOAM
56	Dana		0.9 - 4.0	B	6.07	6.83	0.6	5	39	230.5	64.8	12.60	126.0	24.5	48.6	27.0		SILTY CLAY LOAM
<b>Data analysis for 56 - Dana C-horizon 4 - 12'</b>																		
56	Dana	3 - 4	4 - 8	C1	8.05	7.00	0.1	4	50	132	69.0	13.10	131.0	43.8	40.7	15.5		LOAM
56	Dana	7 - 4	4 - 8	C1	8.13	7.00	0.1	4	10	126	87.3	29.23	292.3	26.0	51.1	22.9		SILT LOAM
56	Dana	3 - 6	8 - 12	C2	8.07	7.00	0.1	4	54	128	85.9	21.67	216.7	0.66	31.1	55.9	13.0	SILT LOAM
56	Dana	7 - 5	8 - 12	C2	7.92	7.00	0.1	4	22	106	88.4	24.19	241.9	0.60	27.6	49.9	22.5	LOAM
56	Dana		4 - 12	C	8.04	7.00	0.1	4	34	123	82.6	22.05	220.5	0.63	32.1	49.4	18.5	LOAM
<b>Data analysis for 154 - Flanagan topsoil</b>																		
154	Flanagan	1 - 1	0 - 1.1	A	5.82	6.65	1.9	10	18	248	67.4			7.6	65.0	27.4		SILTY CLAY LOAM
154	Flanagan	5 - 1	0 - 1.1	A	6.31	6.80	3.7	38	92	290	72.4			11.0	60.0	29.0		SILTY CLAY LOAM
154	Flanagan	9 - 1	0 - 1.0	A	7.26	7.00	2.2	12	28	284	84.3	1.01	10.1	10.3	63.1	26.6		SILT LOAM
154	Flanagan	10 - 1	0 - 1.1	A	7.28	7.00	1.7	26	54	310	87.4	1.51	15.1	9.6	65.6	24.8		SILT LOAM
154	Flanagan		0 - 1.1	A	6.28	6.86	2.4	21.5	48	283	77.9	1.26	12.6	9.6	63.4	27.0		SILTY CLAY LOAM
<b>Data analysis for 154 - Flanagan subsoil</b>																		
154	Flanagan	1 - 2	1.1 - 2.1	Bt1	6.04	6.63	1.7	4	8	446	57.5			3.2	55.8	41.0		SILTY CLAY
154	Flanagan	1 - 3	2.1 - 4.0	Bt2	6.91	6.98	0.7	4	112	296	63.0			13.9	60.2	25.9		SILT LOAM
154	Flanagan	5 - 2	1.1 - 2.0	Bt1	6.71	6.91	1.7	6	60	362	69.3			8.5	60.4	31.1		SILTY CLAY LOAM
154	Flanagan	5 - 3	2.0 - 4.0	Bt2	7.16	7.00	0.7	6	118	370	64.4	2.02	20.2	16.3	25.8	57.9		CLAY
154	Flanagan	9 - 2	1.0 - 2.0	Bt1	6.46	6.84	1.3	6	10	358	65.3			4.7	59.8	35.5		SILTY CLAY LOAM
154	Flanagan	9 - 3	2.0 - 4.0	Bt2	6.91	6.98	0.6	6	24	246	65.4			25.3	52.2	22.5		SILT LOAM
154	Flanagan	10 - 2	1.1 - 2.1	Bt1	6.58	6.86	1.8	6	12	384	74.8			2.0	63.9	34.1		SILTY CLAY LOAM
154	Flanagan	10 - 3	2.1 - 4.0	Bt2	7.92	7.00	0.1	4	68	130	75.4	20.16	201.6	17.9	65.9	16.2		SILT LOAM
154	Flanagan		1.1 - 4.0	Bt	6.59	6.90	1.1	5.25	51.5	324	66.9	11.09	110.9	11.5	55.5	33.0		SILTY CLAY LOAM
<b>Data analysis for 154 - Flanagan C1 - 4 to 8'</b>																		
154	Flanagan	1 - 4	4 - 8	C1	7.94	7.00	0.1	4	34	176	79.0	16.13	161.3	27.8	50.1	22.1		SILT LOAM
154	Flanagan	5 - 4	4 - 8	C1	7.58	7.00	0.6	14	150	336	63.8	2.52	25.2	17.3	52.8	29.9		SILTY CLAY LOAM
154	Flanagan	9 - 4	4 - 8	C1	8.08	7.00	0.1	4	36	76	80.2	19.66	196.6	43.5	46.6	9.9		LOAM
154	Flanagan	10 - 4	4 - 8	C1	8.25	7.00	0.1	4	30	134	84.3	19.66	196.6	19.4	51.3	29.3		SILTY CLAY LOAM
154	Flanagan		4 - 8	C1	7.89	7.00	0.2	6.5	62.5	180.5	76.8	14.49	144.9	27.0	50.2	22.8		SILT LOAM



SUNRISE COAL, LLC  
ALLERTON MINE PERMIT  
TABLE 3.1  
SOIL DATA ANALYSIS BY SOIL SERIES AND DEPTH

Site Location	Soil Series	Sample ID	Depth ft	Horizon	Soil pH(1:1)	Buffer pH	Organic Matter %	Phosphorus P-1 lb/a	Phosphorus P-2 lb/a	Potassium K lb/a	%Ca	%CCE	Tons CCE t/1000t	>2mm %	Sand %	Silt %	Clay %	Texture Class
<b>Data analysis for 154 - Flanagan C2 - 8 -to 12'</b>																		
154	Flanagan	1 - 5	8 - 12	C2	8.07	7.00	0.1	4	10	150	85.5	21.67	216.7	0.77	28.9	50.1	21.0	SILT LOAM
154	Flanagan	5 - 5	8 - 12	C2	8.02	7.00	0.1	6	50	204	82.6	17.14	171.4	0.77	22.7	50.2	27.1	CLAY LOAM
154	Flanagan	9 - 5	8 - 12	C3	8.17	7.00	0.1	4	34	102	86.1	22.68	226.8	0.85	25.0	58.6	16.4	SILT LOAM
154	Flanagan	10 - 5	8 - 12	C3	8.21	7.00	0.1	4	30	122	86.3	23.19	231.9	0.98	25.5	52.4	22.1	SILT LOAM
154	Flanagan		8 - 12	C2	8.11	7.00	0.1	4.5	31	144.5	85.1	21.17	211.7	0.84	25.5	52.8	21.7	SILT LOAM
<b>Data analysis for 152 - Drummer topsoil</b>																		
152	Drummer	2 - 1	0 - 1.0	A	6.33	6.71	3.8	26	104	400	67.7				5.6	59.4	35.0	SILTY CLAY LOAM
152	Drummer	4 - 1	0 - 1.0	A	6.23	6.72	3.3	20	52	368	67.3				10.8	53.8	35.4	SILTY CLAY LOAM
152	Drummer	6 - 1	0 - 1.0	A	7.10	7.00	2.9	12	72	356	80.9	1.51	15.1		13.7	55.2	31.1	SILTY CLAY LOAM
152	Drummer	8 - 1	0 - 1.1	A	6.48	6.83	2.4	12	38	324	76.3				14.0	58.9	27.1	SILTY CLAY LOAM
152	Drummer		0 - 1.0	A	6.44	6.82	3.1	17.5	66.5	362	73.1	1.51	15.1		11.0	56.8	32.2	SILTY CLAY LOAM
<b>Data analysis for 152 - Drummer subsoil</b>																		
152	Drummer	2 - 2	1.0 - 2.0	Bt1	6.98	7.00	1.6	6	98	310	68.7				4.9	60.3	34.8	SILTY CLAY LOAM
152	Drummer	2 - 3	2.0 - 4.0	Bt2	8.11	7.00	1.1	4	28	332	75.4	11.09	110.9		3.1	66.3	30.6	SILTY CLAY LOAM
152	Drummer	4 - 2	1.0 - 2.0	BA	6.59	6.87	1.1	4	42	318	66.1				15.3	53.9	30.8	SILTY CLAY LOAM
152	Drummer	4 - 3	2.0 - 4.0	Bt2	7.15	7.00	0.9	4	116	376	61.8	2.02	20.2		7.7	57.3	35.0	SILTY CLAY LOAM
152	Drummer	6 - 2	1.0 - 2.0	Bt1	7.24	7.00	1.2	4	64	294	74.2	2.52	25.2		15.1	53.9	31.0	SILTY CLAY LOAM
152	Drummer	6 - 3	2.0 - 4.0	Bt2	7.39	7.00	0.7	4	138	368	63.2	2.52	25.2		15.0	58.0	27.0	SILT LOAM
152	Drummer	8 - 2	1.1 - 2.0	Bt1	6.74	6.92	1.3	6	44	366	68.3				10.3	58.4	31.3	SILTY CLAY LOAM
152	Drummer	8 - 3	2.0 - 4.0	Bt2	7.37	7.00	0.9	4	140	384	65.8	1.51	15.1		10.0	60.9	29.1	SILTY CLAY LOAM
152	Drummer		1.0 - 4.0	Bt1	7.02	6.97	1.1	4.5	83.75	343.5	67.9	3.93	39.3		10.2	58.6	31.2	SILTY CLAY LOAM
<b>Data analysis for 152 - Drummer C1 - 4 to 8'</b>																		
152	Drummer	2 - 4	4 - 8	C1	8.22	7.00	0.1	8	62	210	80.3	18.15	181.5		28.8	50.9	20.3	SILT LOAM
152	Drummer	4 - 4	4 - 8	C1	7.97	7.00	0.1	6	90	208	70.4	8.06	80.6		33.9	43.3	22.8	LOAM
152	Drummer	6 - 4	4 - 8	C1	7.93	7.00	0.1	10	136	250	64.6	8.06	80.6		24.2	52.9	22.9	SILT LOAM
152	Drummer	8 - 4	4 - 8	C1	8.29	7.00	0.1	6	70	124	80.3	13.61	136.1		31.3	49.8	18.9	LOAM
152	Drummer		4 - 8	C1	8.08	7.00	0.1	7.5	89.5	198	73.9	11.97	119.7		29.6	49.2	21.2	LOAM
<b>Data analysis for 152 - Drummer C2 - 8 to 12'</b>																		
152	Drummer	2 - 5	8 - 12	C2	8.24	7.00	0.1	6	20	152	85.7	21.67	216.7	1.05	28.6	54.3	17.1	SILT LOAM
152	Drummer	4 - 5	8 - 12	C2	8.18	7.00	0.1	6	58	154	84.1	18.15	181.5	1.01	32.5	48.2	19.3	LOAM
152	Drummer	6 - 5	8 - 12	C2	8.11	7.00	0.1	6	54	182	82.9	20.16	201.6	1.92	30.0	51.1	18.9	SILT LOAM
152	Drummer	8 - 6	8 - 12	C3	8.27	7.00	0.1	4	32	148	87.1	21.67	216.7	1.76	30.4	49.9	19.7	LOAM
152	Drummer		8 - 12	C2	8.20	7.00	0.1	5.5	41	159	85.0	20.41	204.1	1.44	30.4	50.9	18.8	SILT LOAM

SUNRISE COAL, LLC  
 ALLERTON MINE PERMIT  
 TABLE 3.2  
 SOIL DATA ANALYSIS FOR A-HORIZON TOPSOIL

Site Location	Soil Series	Sample ID	Depth ft	Horizon	Soil pH(1:1)	Buffer pH	Organic Matter %	Phosphorus P-1 lb/a	Phosphorus P-2 lb/a	Potassium K lb/a	%Ca	%CCE	Tons CCE t/1000t	>2mm %	Sand %	Silt %	Clay %	Texture Class
<u>Sunrise Coal Allerton Mine Sampled 12 December 2011</u>																		
<u>Data analysis for 56 - Dana topsoil</u>																		
			Acres =	11														
56	Dana	3 - 1	0 - 0.9	A	5.54	6.73	1.8	20	26	202	67.0			9.1	64.2	26.7		SILT LOAM
56	Dana	7 - 1	0 - 0.8	A	5.90	6.79	1.7	14	28	228	74.2			8.5	66.8	24.7		SILT LOAM
56	Dana		0 - 0.9	A	5.68	6.76	1.7	17	27	215	70.6			8.8	65.5	25.7		SILT LOAM
<u>Data analysis for 154 - Flanagan topsoil</u>																		
			Acres =	167														
154	Flanagan	1 - 1	0 - 1.1	A	5.82	6.65	1.9	10	18	248	67.4			7.6	65.0	27.4		SILTY CLAY LOAM
154	Flanagan	5 - 1	0 - 1.1	A	6.31	6.80	3.7	38	92	290	72.4			11.0	60.0	29.0		SILTY CLAY LOAM
154	Flanagan	9 - 1	0 - 1.0	A	7.26	7.00	2.2	12	28	284	84.3	1.01	10.1	10.3	63.1	26.6		SILT LOAM
154	Flanagan	10 - 1	0 - 1.1	A	7.28	7.00	1.7	26	54	310	87.4	1.51	15.1	9.6	65.6	24.8		SILT LOAM
154	Flanagan		0 - 1.1	A	6.28	6.86	2.4	21.5	48	283	77.9	1.26	12.6	9.6	63.4	27.0		SILTY CLAY LOAM
<u>Data analysis for 152 - Drummer topsoil</u>																		
			Acres =	229														
152	Drummer	2 - 1	0 - 1.0	A	6.33	6.71	3.8	26	104	400	67.7			5.6	59.4	35.0		SILTY CLAY LOAM
152	Drummer	4 - 1	0 - 1.0	A	6.23	6.72	3.3	20	52	368	67.3			10.8	53.8	35.4		SILTY CLAY LOAM
152	Drummer	6 - 1	0 - 1.0	A	7.10	7.00	2.9	12	72	356	80.9	1.51	15.1	13.7	55.2	31.1		SILTY CLAY LOAM
152	Drummer	8 - 1	0 - 1.1	A	6.48	6.83	2.4	12	38	324	76.3			14.0	58.9	27.1		SILTY CLAY LOAM
152	Drummer		0 - 1.0	A	6.44	6.82	3.1	17.5	66.5	362	73.1	1.51	15.1	11.0	56.8	32.2		
<u>Potential blended topsoil for storage and replacement</u>																		
Weighted average topsoil blend			Total acres =	407	6.32	6.83	2.8	19.1	57.8	325.6	75.0	1.4	13.7	0.00	10.4	59.8	29.8	SILTY CLAY LOAM

SUNRISE COAL, LLC  
ALLERTON MINE PERMIT  
TABLE 3.3  
EXISTING SUBSOIL AND PROPOSED ROOTING MEDIA

Site Location	Soil Series	Sample ID	Depth ft	Horizon	Soil pH(1:1)	Buffer pH	Organic Matter %	Phosphorus P-1 lb/a	Phosphorus P-2 lb/a	Potassium K lb/a	%Ca	%CCE	Tons CCE t/1000t	>2mm %	Sand %	Silt %	Clay %	Texture Class		
<b>Sunrise Coal Allerton Mine Sampled 12 December 2011</b>																				
<b>Data analysis for 56 - Dana subsoil</b> Acres = 11																				
56	Dana	3 - 2	0.9 - 2.0	Bt1	5.71	6.68	1.0	6	24	282	58.2			8.2	63.8	28.0		SILTY CLAY LOAM		
56	Dana	3 - 3	2.0 - 4.0	Bt2	6.17	6.86	0.2	6	92	200	59.5			57.9	26.6	15.5		SANDY LOAM		
56	Dana	7 - 2	0.8 - 1.9	Bt1	6.12	6.77	1.1	4	8	278	67.8			18.0	49.4	32.6		SILTY CLAY LOAM		
56	Dana	7 - 3	1.9 - 4.0	Bt2	7.70	7.00	0.1	4	32	162	73.9	12.60	126.0	13.8	54.4	31.8		SILTY CLAY LOAM		
56	Dana		0.9 - 4.0	B	6.07	6.83	0.6	5	39	230.5	64.8	12.60	126.0	24.5	48.6	27.0		SILTY CLAY LOAM		
<b>Data analysis for 154 - Flanagan subsoil</b> Acres = 167																				
154	Flanagan	1 - 2	1.1 - 2.1	Bt1	6.04	6.63	1.7	4	8	446	57.5			3.2	55.8	41.0		SILTY CLAY		
154	Flanagan	1 - 3	2.1 - 4.0	Bt2	6.91	6.98	0.7	4	112	296	63.0			13.9	60.2	25.9		SILT LOAM		
154	Flanagan	5 - 2	1.1 - 2.0	Bt1	6.71	6.91	1.7	6	60	362	69.3			8.5	60.4	31.1		SILTY CLAY LOAM		
154	Flanagan	5 - 3	2.0 - 4.0	Bt2	7.16	7.00	0.7	6	118	370	64.4	2.02	20.2	16.3	25.8	57.9		CLAY		
154	Flanagan	9 - 2	1.0 - 2.0	Bt1	6.46	6.84	1.3	6	10	358	65.3			4.7	59.8	35.5		SILTY CLAY LOAM		
154	Flanagan	9 - 3	2.0 - 4.0	Bt2	6.91	6.98	0.6	6	24	246	65.4			25.3	52.2	22.5		SILT LOAM		
154	Flanagan	10 - 2	1.1 - 2.1	Bt1	6.58	6.86	1.8	6	12	384	74.8			2.0	63.9	34.1		SILTY CLAY LOAM		
154	Flanagan	10 - 3	2.1 - 4.0	Bt2	7.92	7.00	0.1	4	68	130	75.4	20.16	201.6	17.9	65.9	16.2		SILT LOAM		
154	Flanagan		1.1 - 4.0	Bt	6.59	6.90	1.1	5.25	51.5	324	66.9	11.09	110.9	11.5	55.5	33.0		SILTY CLAY LOAM		
<b>Data analysis for 152 - Drummer subsoil</b> Acres = 229																				
152	Drummer	2 - 2	1.0 - 2.0	Bt1	6.98	7.00	1.6	6	98	310	68.7			4.9	60.3	34.8		SILTY CLAY LOAM		
152	Drummer	2 - 3	2.0 - 4.0	Bt2	8.11	7.00	1.1	4	28	332	75.4	11.09	110.9	3.1	66.3	30.6		SILTY CLAY LOAM		
152	Drummer	4 - 2	1.0 - 2.0	BA	6.59	6.87	1.1	4	42	318	66.1			15.3	53.9	30.8		SILTY CLAY LOAM		
152	Drummer	4 - 3	2.0 - 4.0	Bt2	7.15	7.00	0.9	4	116	376	61.8	2.02	20.2	7.7	57.3	35.0		SILTY CLAY LOAM		
152	Drummer	6 - 2	1.0 - 2.0	Bt1	7.24	7.00	1.2	4	64	294	74.2	2.52	25.2	15.1	53.9	31.0		SILTY CLAY LOAM		
152	Drummer	6 - 3	2.0 - 4.0	Bt2	7.39	7.00	0.7	4	138	368	63.2	2.52	25.2	15.0	58.0	27.0		SILT LOAM		
152	Drummer	8 - 2	1.1 - 2.0	Bt1	6.74	6.92	1.3	6	44	366	68.3			10.3	58.4	31.3		SILTY CLAY LOAM		
152	Drummer	8 - 3	2.0 - 4.0	Bt2	7.37	7.00	0.9	4	140	384	65.8	1.51	15.1	10.0	60.9	29.1		SILTY CLAY LOAM		
152	Drummer		1.0 - 4.0	Bt1	7.02	6.97	1.1	4.5	83.75	343.5	67.9	3.93	39.3	10.2	58.6	31.2		SILTY CLAY LOAM		
<b>Potential blended subsoil for storage and replacement</b>																				
<b>Weighted average subsoil blend</b>					Total acres =	407	6.74	6.94	1.1	4.8	69.3	332.4	67.4	7.1	71.0	0.00	11.1	57.1	31.8	SILTY CLAY LOAM
<b>Data analysis for 56 - Dana C-horizon 4 - 12'</b>																				
56	Dana	3 - 4	4 - 8	C1	8.05	7.00	0.1	4	50	132	69.0	13.10	131.0	43.8	40.7	15.5		LOAM		
56	Dana	7 - 4	4 - 8	C1	8.13	7.00	0.1	4	10	126	87.3	29.23	292.3	26.0	51.1	22.9		SILT LOAM		
154	Flanagan	1 - 4	4 - 8	C1	7.94	7.00	0.1	4	34	176	79.0	16.13	161.3	27.8	50.1	22.1		SILT LOAM		
154	Flanagan	5 - 4	4 - 8	C1	7.58	7.00	0.6	14	150	336	63.8	2.52	25.2	17.3	52.8	29.9		SILTY CLAY LOAM		
154	Flanagan	9 - 4	4 - 8	C1	8.08	7.00	0.1	4	36	76	80.2	19.66	196.6	43.5	46.6	9.9		LOAM		
154	Flanagan	10 - 4	4 - 8	C1	8.25	7.00	0.1	4	30	134	84.3	19.66	196.6	19.4	51.3	29.3		SILTY CLAY LOAM		
152	Drummer	2 - 4	4 - 8	C1	8.22	7.00	0.1	8	62	210	80.3	18.15	181.5	28.8	50.9	20.3		SILT LOAM		

SUNRISE COAL, LLC  
ALLERTON MINE PERMIT  
TABLE 3.3  
EXISTING SUBSOIL AND PROPOSED ROOTING MEDIA

Site Location	Soil Series	Sample ID	Depth ft	Horizon	Soil pH(1:1)	Buffer pH	Organic Matter %	Phosphorus P-1 lb/a	Phosphorus P-2 lb/a	Potassium K lb/a	%Ca	%CCE	Tons CCE t/1000t	>2mm %	Sand %	Silt %	Clay %	Texture Class
152	Drummer	4 - 4	4 - 8	C1	7.97	7.00	0.1	6	90	208	70.4	8.06	80.6		33.9	43.3	22.8	LOAM
152	Drummer	6 - 4	4 - 8	C1	7.93	7.00	0.1	10	136	250	64.6	8.06	80.6		24.2	52.9	22.9	SILT LOAM
152	Drummer	8 - 4	4 - 8	C1	8.29	7.00	0.1	6	70	124	80.3	13.61	136.1		31.3	49.8	18.9	LOAM
Glacial till average			4 - 8	C1	7.99	7.00	0.2	6.4	66.8	177.2	75.9	14.82	148.2		29.6	49.0	21.5	LOAM
<u>Potential rooting media mix of subsoil and upper 4 feet of glacial till - Assume 3' subsoil mixed with 4' glacial till</u>																		
Rooting media mix to 8 feet					7.08	7.0	0.5	5.7	67.9	243.7	72.3	11.5	115.1	0.00	21.7	52.4	25.9	SILT LOAM
56	Dana	3 - 6	8 - 12	C2	8.07	7.00	0.1	4	54	128	85.9	21.67	216.7	0.66	31.1	55.9	13.0	SILT LOAM
56	Dana	7 - 5	8 - 12	C2	7.92	7.00	0.1	4	22	106	88.4	24.19	241.9	0.60	27.6	49.9	22.5	LOAM
154	Flanagan	1 - 5	8 - 12	C2	8.07	7.00	0.1	4	10	150	85.5	21.67	216.7	0.77	28.9	50.1	21.0	SILT LOAM
154	Flanagan	5 - 5	8 - 12	C2	8.02	7.00	0.1	6	50	204	82.6	17.14	171.4	0.77	22.7	50.2	27.1	CLAY LOAM
154	Flanagan	9 - 5	8 - 12	C3	8.17	7.00	0.1	4	34	102	86.1	22.68	226.8	0.85	25.0	58.6	16.4	SILT LOAM
154	Flanagan	10 - 5	8 - 12	C3	8.21	7.00	0.1	4	30	122	86.3	23.19	231.9	0.98	25.5	52.4	22.1	SILT LOAM
152	Drummer	2 - 5	8 - 12	C2	8.24	7.00	0.1	6	20	152	85.7	21.67	216.7	1.05	28.6	54.3	17.1	SILT LOAM
152	Drummer	4 - 5	8 - 12	C2	8.18	7.00	0.1	6	58	154	84.1	18.15	181.5	1.01	32.5	48.2	19.3	LOAM
152	Drummer	6 - 5	8 - 12	C2	8.11	7.00	0.1	6	54	182	82.9	20.16	201.6	1.92	30.0	51.1	18.9	SILT LOAM
152	Drummer	8 - 6	8 - 12	C3	8.27	7.00	0.1	4	32	148	87.1	21.67	216.7	1.76	30.4	49.9	19.7	LOAM
Glacial till average			8 - 12	C2	8.11	7.00	0.1	4.8	36.4	144.8	85.4	21.22	212.2		28.2	52.1	19.7	SILT LOAM
<u>Potential rooting media mix of subsoil and upper 4 feet of glacial till - Assume 3' subsoil mixed with 8' glacial till</u>																		
Rooting media mix to 12 feet					7.25	7.0	0.4	5.4	56.4	207.8	77.1	15.0	150.4	0.00	24.1	52.3	23.6	SILT LOAM



Google earth





# Soil Tech, Inc.

*Soil & Environmental Services*

5144 W. Timberwood  
Newburgh, IN 47630  
Office: (812) 858-7003  
Fax: (812) 858-0888

## Attachment 2

**January 31, 2012**

**Scott Gambill  
Sunrise Coal, LLC  
1466 East S.R. 58  
Carlisle, Indiana 47838**

**RE: Allerton Mine – New Permit  
Soil Resources Analysis Plan  
Certification of Soil Data**

**Dear Mr. Gambill:**

This letter is to certify that the laboratory data are for sampling sites identified on the Soil Resources Map for the Allerton Mine. Soil sampling sites are identified on the map and are listed in Table 3.0.

Soils were sampled on 12 December 2011 by David Ralston using a truck-mounted Giddings hydraulic soil sampling equipment. Samples were sent to Key Agricultural Services in Macomb, Illinois, for analysis. The lab used standard agronomic procedures for analysis.

The laboratory data are presented in Attachment 4 in Appendix A. The data are summarized in Table 3.0.

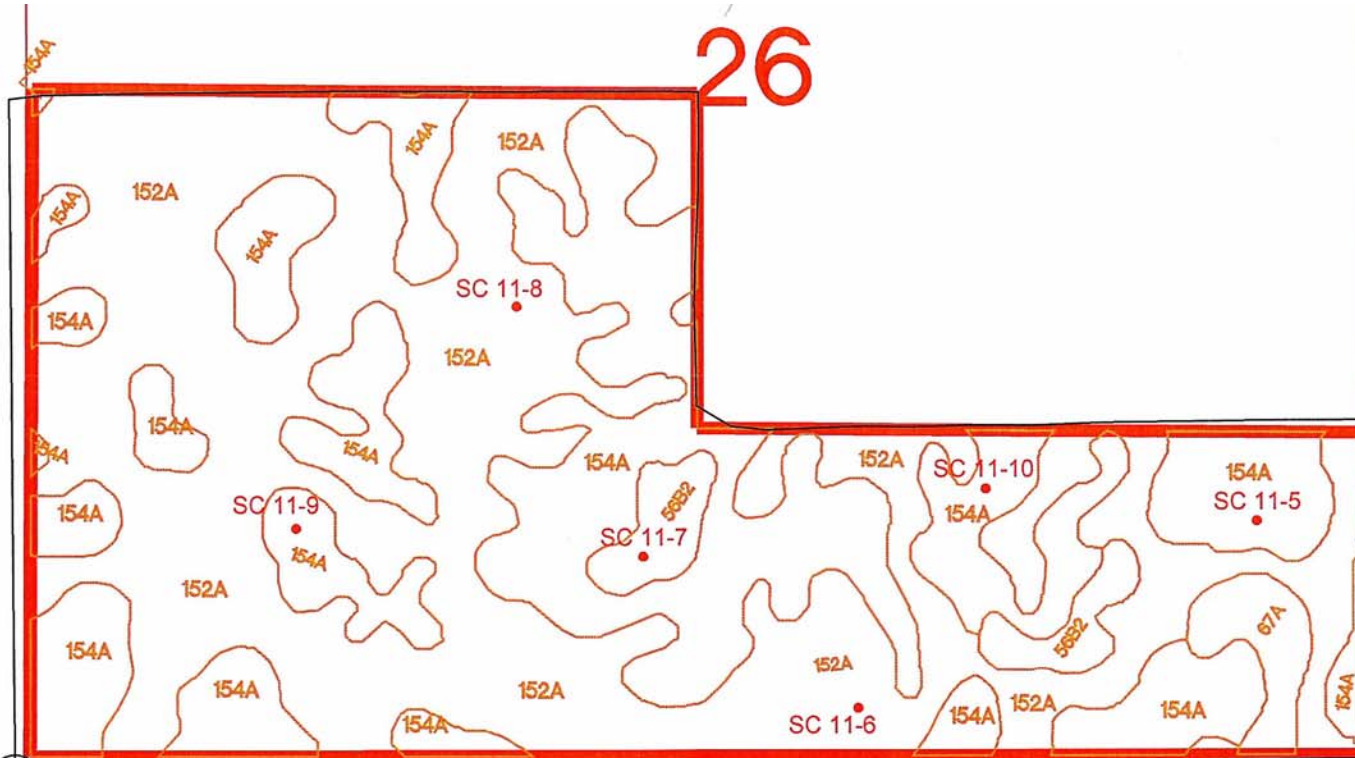
Call if you have questions or need additional information on this plan.

Sincerely,  
**Soil Tech, Inc.**

**David S. Ralston, Ph.D., CPAg/SSc  
President**




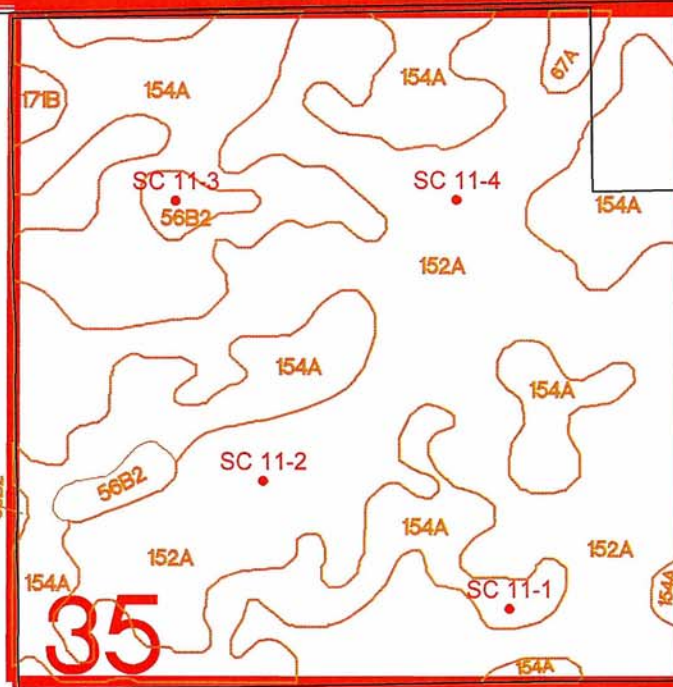
26



**Sunrise Coal, LLC - Allerton Mine  
Soil Map Units**

- 56B2 - Dana Silt Loam (2-5%)
- 67A - Harpster SiCL (0 - 2%)
- 152A - Drummer SiCL (0-2%)
- 154A - Flanagan Silt Loam (0-2%)
- 171B - Catlin Silt Loam (2-5%)

SC 11-2  Soil sampling site location by  
Soil Tech, Inc. - 12 Dec 2011



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## Official Series Description - DANA Series

Page 1 of 4

LOCATION DANA

IL+IN OH

Established Series  
Rev. TJE-SEW-AAC  
10/2009

56

**DANA SERIES**

The Dana series consists of very deep, moderately well drained soils that formed in loess or other silty materials and in the underlying loamy calcareous till on till plains. Permeability is moderate. Slope ranges from 0 to 12 percent. Mean annual air temperature is 10 degrees C (50 degrees F), and mean annual precipitation is 838 mm (33 inches).

**TAXONOMIC CLASS:** Fine-silty, mixed, superactive, mesic Oxyaquic Argiudolls

**TYPICAL PEDON:** Dana silt loam - on a north-east facing slope of 3 percent in a cultivated field at an elevation of about 706 feet above MSL. (Colors are for moist soil unless otherwise stated.)

**Ap**--0 to 28 cm (0 to 11 inches); very dark grayish brown (10YR 3/2) silt loam, brown (10YR 4/3) dry; moderate fine granular structure; friable; common very fine and fine roots throughout; moderately acid; clear smooth boundary. [25 to 46 cm (10 to 18 inches) thick]

**Bt1**--28 to 38 cm (11 to 15 inches); dark yellowish brown (10YR 4/4) silty clay loam; moderate fine subangular blocky structure; friable; common very fine and fine roots throughout; common distinct very dark gray (10YR 3/1) organic coatings on faces of peds; many distinct dark brown (10YR 3/3) organo-clay films on faces of peds; slightly acid; clear smooth boundary.

**Bt2**--38 to 64 cm (15 to 25 inches); yellowish brown (10YR 5/4) silty clay loam; moderate fine prismatic structure parting to moderate fine angular blocky; firm; common very fine and fine roots between peds; many distinct brown (10YR 4/3) clay films on faces of peds; moderately acid; clear smooth boundary.

**Bt3**--64 to 81 cm (25 to 32 inches); brown (10YR 5/3) silty clay loam; moderate medium prismatic structure parting to moderate medium angular blocky; firm; common very fine and fine roots between peds; common medium vesicular and tubular pores; few distinct dark brown (10YR 3/3) organo-clay films on faces of peds and in pores; many distinct brown (10YR 4/3) clay films on faces of peds; common fine faint light brownish gray (10YR 6/2) iron depletions in the matrix; common medium distinct yellowish brown (10YR 5/6) masses of oxidized iron in the matrix; common fine and medium spherical black (7.5YR 2.5/1) weakly cemented iron-manganese nodules throughout; slightly acid; clear smooth boundary. [Combined thickness of the Bt horizon is 31 to 71 cm (12 to 28 inches).]

**2Bt4**--81 to 97 cm (32 to 38 inches); brown (10YR 5/3) clay loam; moderate medium prismatic structure; firm; few very fine and fine roots between peds; common medium vesicular and tubular pores; few distinct very dark grayish brown (10YR 3/2) organo-clay films along root channels and pores; many distinct brown (10YR 4/3) clay films on faces of peds; common medium faint light brownish gray (10YR 6/2) iron depletions in the matrix; many medium distinct yellowish brown (10YR 5/6) masses of oxidized iron in the matrix; common fine and medium spherical black (7.5YR 2.5/1) weakly cemented iron-manganese nodules throughout; 3 percent fine and medium gravel; neutral; clear smooth boundary.



**2Bt5**--97 to 135 cm (38 to 53 inches); brown (10YR 5/3) clay loam; moderate coarse prismatic structure; firm; few very fine and fine roots between peds; common medium and coarse vesicular and tubular pores; few prominent very dark gray (10YR 3/1) organo-clay films along root channels and pores; many distinct dark grayish brown (10YR 4/2) clay films on faces of peds; common medium distinct gray (10YR 6/1) iron depletions in the matrix; many medium distinct dark yellowish brown (10YR 4/6) masses of oxidized iron in the matrix; few medium spherical black (7.5YR 2.5/1) weakly cemented iron-manganese nodules throughout; 7 percent fine and medium gravel; neutral; clear smooth boundary.

**2Bt6**--135 to 147 cm (53 to 58 inches); brown (10YR 5/3) clay loam; weak coarse angular blocky structure; firm; few very fine and fine roots between peds; common medium and coarse vesicular and tubular pores; few prominent very dark gray (10YR 3/1) organo-clay films along root channels and pores; common distinct dark grayish brown (10YR 4/2) clay films on faces of peds; common medium distinct gray (10YR 6/1) iron depletions in the matrix; many medium distinct yellowish brown (10YR 5/6) masses of oxidized iron in the matrix; few medium spherical black (7.5YR 2.5/1) weakly cemented iron-manganese nodules throughout; 7 percent fine and medium gravel; neutral; clear smooth boundary. [Combined thickness of the 2Bt horizon is 25 to 76 cm (10 to 30 inches).]

**2C**--147 to 203 cm (58 to 80 inches); pale brown (10YR 6/3) loam; massive; firm; few fine and medium vesicular and tubular pores; common medium distinct gray (10YR 6/1) iron depletions in the matrix; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; common medium irregular brown (10YR 4/3) iron-manganese accumulations on horizontal fracture planes; few fine to coarse rounded yellowish red (5YR 5/8) weakly cemented iron-manganese nodules throughout; few medium spherical black (7.5YR 2.5/1) weakly cemented iron-manganese nodules throughout; common medium rounded and irregular white (10YR 8/1) weakly cemented calcium carbonate nodules throughout; 7 percent fine and medium gravel; violently effervescent; slightly alkaline.

**TYPE LOCATION:** Edgar County, Illinois; about 4 miles north and 2.5 miles east of Newman, Illinois; 1,810 feet north and 750 feet east of the southwest corner of sec. 10, T. 16 N., R. 14 W.; USGS Newman topographic quadrangle; lat. 39 degrees, 51 minutes, 21 seconds N., and long. 87 degrees, 56 minutes, 05 seconds W.; UTM Zone 16S 0420042E 4411965N; NAD 83.

**RANGE IN CHARACTERISTICS:** The depth to the base of the argillic horizon ranges from 81 to 152 cm (32 to 60 inches). The depth to carbonates ranges from 102 to 152 cm (40 to 60 inches). The depth to horizons with more than 20 percent fine sand or coarser ranges from 60 to 102 cm (22 to 40 inches). The average silt content in the horizons formed in till is less than 50 percent. The mollic epipedon is 25 to 46 cm (10 to 18 inches) thick. The particle-size control section ranges from 27 to 35 percent clay and less than 15 percent fine sand or coarser.

The Ap or A horizon has hue of 10YR, value of 2 or 3 (4 or 5 dry), and chroma of 1 or 2. It is typically silt loam. Severely eroded pedons are silty clay loam. Reaction ranges from moderately acid to neutral.

The BA horizon, where present, has hue of 10YR, value of 4, and chroma of 3. It is silt loam or silty clay loam

The Bt horizon has hue of 10YR, value of 4 or 5, and chroma of 3 to 6. It is silty clay loam. Clay content ranges from 27 to 35 percent and sand content is less than 15 percent. Reaction ranges from strongly acid to neutral.

The 2Bt horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 3 or 4. It is clay loam. Clay

content ranges from 27 to 35 percent, silt content ranges from 33 to 45 percent, and sand content ranges from 20 to 40 percent. Content of rock fragments ranges from 1 to 7 percent. Reaction ranges from moderately acid to neutral.

The 2BC horizon, where present, has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 3 or 4. Reaction ranges from neutral to moderately alkaline and carbonates are commonly present. The 2C horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 3 to 6. It is dominantly loam but is clay loam in the upper part of some pedons. Clay content ranges from 15 to 30 percent, silt content ranges from 40 to 50 percent, and sand content ranges from 20 to 45 percent. Content of rock fragments ranges from 1 to 15 percent. Reaction is slightly alkaline or moderately alkaline and carbonates are present.

**COMPETING SERIES:** These are the Assumption, Aviston, Barrington, Blackberry, Buckhart, Catlin, Clare, Danabrook, Geryune, Graymont, Harrison, Keltner, Saybrook, and Tonanang series. Assumption soils average more than 30 percent clay in the lower part of the series control section. Aviston soils have less than 20 percent sand in the lower part of the series control section. Barrington, Blackberry, and Clare soils are stratified in the lower half of the series control section with textures containing more than 40 percent sand. Buckhart soils have less than 7 percent sand throughout the series control section. Catlin and Harrison soils are deeper than 102 cm (40 inches) to horizons containing more than 20 percent sand. Danabrook and Geryune soils have hue of 7.5YR and average more than 40 percent sand in the lower half of the series control section. Graymont and Saybrook soils have carbonates within a depth of 102 cm (40 inches) and are typically less than 81 cm (32 inches) to the base of the argillic horizon. Keltner soils have a paralithic contact within the series control section and has more than 30 percent clay in the lower part. Tonanang soils have more than 15 percent rock fragments in the lower part of the series control section.

**GEOGRAPHIC SETTING:** Dana soils formed in loess or other silty materials and the underlying loamy, calcareous till and are on till plains of Wisconsinan Age. Slope ranges from 0 to 12 percent. Mean annual air temperature ranges from 8 to 12 degrees C (46 to 54 degrees F), mean annual precipitation ranges from 737 to 1016 mm (29 to 40 inches), frost-free period ranges from 160 to 180 days, and elevation ranges from 600 to 1,020 feet above mean sea level.

**GEOGRAPHICALLY ASSOCIATED SOILS:** These are the Catlin, Drummer, Flanagan, Raub, and Wyanet soils. Catlin soils are on similar landform positions where the loess mantle is thicker. The poorly drained Drummer soils are in depressions and drainageways. The somewhat poorly drained Flanagan and Raub soils are on lower landform positions. The well drained Wyanet soils are on backslopes below the Dana soils where the loess mantle is thinner.

**DRAINAGE AND SATURATED HYDRAULIC CONDUCTIVITY:** Moderately well drained. A perched seasonal high water table is at a depth of 2.0 to 3.5 feet at some time between February and April in most years. The potential for surface runoff is negligible to medium. Saturated hydraulic conductivity is moderately high to high (4.23 to 14.11 micrometer per second). Permeability is moderate.

**USE AND VEGETATION:** Mostly cropped to corn, soybeans, or small grains. A few small areas are used for pasture and hay. Native vegetation is tall prairie grasses, chiefly blue stem.

**DISTRIBUTION AND EXTENT:** Central and east-central Illinois and west-central Indiana. The series is of large extent in MLRA 108 and is of moderate extent in MLRA 111.

**MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE:** Indianapolis, Indiana

**SERIES ESTABLISHED:** Vermillion County, Indiana, 1930.

**REMARKS:** Diagnostic horizons and features recognized in this pedon are:  
mollic epipedon - the zone from 0 to 11 inches (Ap horizon); argillic horizon - the zone from 11 to 58 inches (Bt1, Bt2, Bt3, 2Bt4, 2Bt5, 2Bt6 horizons); redoximorphic features consist of iron depletions below a depth of 25 inches;  
udic moisture regime; mesic temperature regime.

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National Cooperative Soil Survey  
U.S.A.

LOCATION HARPSTER

IL+IA IN MN

Established Series  
 Rev. JBF-JWS-JCD  
 01/2009

67

## HARPSTER SERIES

The Harpster series consists of very deep, poorly drained soils formed in calcareous loess or glacial drift. They are on nearly level or depressional parts of outwash plains, till plains, glacial lake plains, or stream terraces. Slope ranges from 0 to 2 percent. Mean annual precipitation is about 890 mm (35 inches), and mean annual air temperature is about 10 degrees C (50 degrees F).

**TAXONOMIC CLASS:** Fine-silty, mixed, superactive, mesic Typic Calciaquolls

**TYPICAL PEDON:** Harpster silty clay loam - in a cultivated field at an elevation of 220 meters (722 feet) above mean sea level. (Colors are for moist soil unless otherwise stated.)

**Apk**--0 to 23 cm (0 to 9 inches); black (10YR 2/1) silty clay loam, dark gray (10YR 4/1) dry; weak fine granular structure; friable; common very fine roots; many snail shells; strongly effervescent (20 percent calcium carbonate); moderately alkaline; abrupt smooth boundary.

**Ak**--23 to 46 cm (9 to 18 inches); very dark gray (10YR 3/1) silty clay loam, gray (10YR 5/1) dry; weak fine and medium granular structure; firm; common very fine roots; many snail shells; strongly effervescent (18 percent calcium carbonate); moderately alkaline; clear smooth boundary. [(Combined thickness of the A horizon is 25 to 48 cm (10 to 19 inches).]

**Bg1**--46 to 64 cm (18 to 25 inches); dark grayish brown (2.5Y 4/2) silty clay loam; weak fine and medium angular blocky structure; firm; common very fine roots; many distinct very dark gray (10YR 3/1) organic coatings on faces of peds; common fine distinct light olive brown (2.5Y 5/4) masses of oxidized iron in the matrix; few snail shells; slightly effervescent (7 percent calcium carbonate); moderately alkaline; gradual smooth boundary.

**Bg2**--64 to 79 cm (5 to 31 inches); dark gray (5Y 4/1) silty clay loam; moderate medium prismatic structure parting to moderate fine and medium angular blocky; firm; few very fine roots; many distinct very dark gray (10YR 3/1) organic coatings on faces of peds; few fine prominent dark yellowish brown (10YR 4/4) and few fine distinct olive (5Y 4/4) masses of oxidized iron-manganese in the matrix; few snail shells; slightly effervescent (5 percent calcium carbonate); slightly alkaline; gradual smooth boundary.

**Bg3**--79 to 91 cm (31 to 36 inches); dark gray (5Y 4/1) silty clay loam; weak coarse prismatic structure parting to weak medium angular blocky; firm; few very fine roots; common distinct very dark gray (10YR 3/1) organic coatings on faces of peds; common medium distinct olive (5Y 4/4) masses of oxidized iron-manganese and few fine prominent yellowish brown (10YR 5/6) masses of oxidized iron in the matrix; 2 percent gravel; slightly effervescent (2 percent calcium carbonate); slightly alkaline; gradual smooth boundary.

**Bg4**--91 to 104 cm (36 to 41 inches); 40 percent olive brown (2.5Y 4/4), 35 percent olive yellow (2.5Y 6/6), and 25 percent gray (5Y 5/1) silty clay loam; weak coarse angular blocky structure; firm; few very

fine roots; 2 percent gravel; slightly effervescent (2 percent calcium carbonate); slightly alkaline; gradual smooth boundary. [Combined thickness of the Bg horizon is 25 to 89 cm (10 to 35 inches).]

**Cg1**--104 to 142 cm (41 to 56 inches); 55 percent gray (5Y 5/1), 40 percent light olive brown (2.5Y 5/6), and 5 percent dark yellowish brown (10YR 4/4) silt loam; massive; firm; 1 percent gravel; strongly effervescent (16 percent calcium carbonate); moderately alkaline; clear smooth boundary.

**2Cg2**--142 to 152 cm (56 to 60 inches); gray (10YR 5/1) loam; massive; friable; 5 percent gravel; strongly effervescent; moderately alkaline.

**TYPE LOCATION:** Ford County, Illinois; about 4.8 kilometers (3 miles) southwest of Gibson City; 261 meters (855 feet) south and 21 meters (70 feet) west of the northeast corner of sec. 20, T. 23 N., R. 7 E.; USGS Gibson City West topographic quadrangle; lat. 40 degrees 26 minutes 24 seconds N. and long. 88 degrees 25 minutes 23 seconds W., NAD 27; UTM Zone 16, 379305 easting and 4477570 northing, NAD 83.

**RANGE IN CHARACTERISTICS:** The depth to the base of soil development ranges from 56 to 117 cm (22 to 46 inches). The mollic epipedon ranges from 25 to 61 cm (10 to 24 inches) in thickness and includes the upper part of the B horizon in some pedons. A calcic horizon is typically at the surface or within a depth of 41 cm (16 inches) and has a calcium carbonate equivalent of 15 to 40 percent. These soils commonly contain small snail shells in part or all of the series control section. The depth to horizons with greater than 15 percent sand ranges from 91 to 152 cm (36 to 60 inches). The particle-size control section averages between 27 and 35 percent clay. Reaction is slightly alkaline or moderately alkaline. Gravel content is less than 10 percent.

The Apk or Ak horizon has hue of 10YR, 2.5Y, 5Y, or is neutral; value of 2 to 3; and chroma of 0 or 1. It typically is silty clay loam but is silt loam in some pedons.

The Bg horizon has hue of 10YR, 2.5Y, 5Y, or is neutral; value of 3 to 6; and chroma of 0 to 2. Redoximorphic features generally have higher chroma. Texture is typically silty clay loam, but includes silt loam, clay loam, and loam in the lower part. Clay content ranges from 22 to 35 percent.

The Cg or 2Cg horizon has hue of 7.5YR, 10YR, 2.5Y, or 5Y; value of 4 to 6; and chroma of 1 to 8. It commonly has redoximorphic features. Texture is typically silt loam or loam, but strata of sandy loam, very fine sandy loam, or clay loam is present in some pedons. Clay content ranges from 15 and 30 percent and sand content ranges from 5 to 55 percent.

**COMPETING SERIES:** These are the Chipman, Leen, Logan, Prophetstown, and Spaulding series. Chipman, Leen, and Logan soils are dry for more than 20 consecutive days in all parts of the soil moisture control section in at least 6 out of 10 years. Prophetstown soils contain 18 to 27 percent clay in the particle-size control section. Spaulding soils contain less than 7 percent sand in the lower part of the series control section.

**GEOGRAPHIC SETTING:** Harpster soils are on nearly level or slightly depressional parts of till plains, outwash plains, lake plains, or stream terraces. Slopes typically are less than 1 percent but range to as much as 2 percent. The soils formed in calcareous silty material derived from loess or glacial drift. Mean annual air temperature ranges from 7 to 11 degrees C (45 to 52 degrees F), mean annual precipitation ranges from 740 to 1020 mm (29 to 40 inches), frost-free period ranges from 140 to 180 days, and elevation ranges from 165 to 311 meters (540 to 1,020 feet) above mean sea level.

**GEOGRAPHICALLY ASSOCIATED SOILS:** These are the Brenton, Drummer, Elburn, Hartsburg and Pella soils. None of these soils have calcic horizons. The somewhat poorly drained Brenton and Elburn soils are on higher parts of the landform. The poorly drained Drummer soils generally are on slightly higher lying parts of till plains or outwash plains. The poorly drained Hartsburg and Pella soils are on similar depressional areas on outwash plains or till plains.

**DRAINAGE AND SATURATED HYDRAULIC CONDUCTIVITY:** Poorly drained. Where drained, an apparent seasonal high water table is 15 cm (0.5 foot) above the surface to 31 cm (1.0 foot) below the surface at some time between January and May in most years. In undrained conditions, an apparent seasonal high water table is 15 cm (0.5 foot) above the surface to 15 cm (0.5 foot) below the surface at some time between November and June in most years. The potential for surface runoff is negligible. Saturated hydraulic conductivity is moderately high or high (4.23 to 14.11 micrometers per second). Permeability is moderate.

**USE AND VEGETATION:** Most areas are cultivated. Corn and soybeans are the principal crops. Native vegetation is hydrophytic herbaceous vegetation.

**DISTRIBUTION AND EXTENT:** Central and northern Illinois, east and north-central Iowa, and south-central Minnesota and west-central Indiana. Harpster soils are of moderate extent in MLRAs 95B, 103, 104, 108A, 108B, 110, and 111D.

**MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE:** Indianapolis, Indiana.

**SERIES ESTABLISHED:** Ford County, Illinois, 1929.

**REMARKS:** Some pedons in the Harpster series do not have a calcic horizon that has 5 percent greater calcium carbonate content than the C horizon, but all pedons have at least 5 percent less calcium carbonate equivalent in some horizon below the calcic horizon. Flooded and nonponded phases are currently recognized. These soils will be evaluated during MLRA updating to determine if new series needed.

Diagnostic horizons and features recognized in this pedon are: mollic epipedon - the zone from the surface of the soil to a depth of 46 cm (18 inches) (Apk and Ak horizons); cambic horizon - the zone from approximately 46 to 104 cm (18 to 41 inches) (Bg1, Bg2, Bg3, and Bg4 horizons); calcic horizon - the zone from the surface of the soil to a depth of about 46 cm (18 inches) (Apk and Ak horizons); aquic conditions - redoximorphic features present in the zone from approximately 46 to 152 cm (18 to 60 inches) (Bg1, Bg2, Bg3, Bg4, Cg1, and Cg2 horizons).

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National Cooperative Soil Survey  
U.S.A.

LOCATION DRUMMER

IL+IN OH WI

Established Series  
Rev. JBF-JDA-TJE  
12/2008

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## DRUMMER SERIES

The Drummer series consists of very deep, poorly drained soils formed in loess or other silty material and in the underlying loamy stratified outwash on nearly level or depressional parts of outwash plains, stream terraces, and till plains. Slope ranges from 0 to 2 percent. Mean annual precipitation is about 940 mm (37 inches), and mean annual air temperature is about 11 degrees C (52 degrees F).

**TAXONOMIC CLASS:** Fine-silty, mixed, superactive, mesic Typic Endoaquolls

**TYPICAL PEDON:** Drummer silty clay loam - on a south-facing concave slope with less than 1 percent gradient under grass at an elevation of about 218 meters (715 feet) above mean sea level. (Colors are for moist soil unless otherwise stated.)

**Ap**--0 to 18 cm (0 to 7 inches); black (10YR 2/1) silty clay loam, dark gray (10YR 4/1) dry; weak fine granular structure; firm; many fine roots; moderately acid; clear smooth boundary.

**A**--18 to 36 cm (7 to 14 inches); black (10YR 2/1) silty clay loam, dark gray (10YR 4/1) dry; moderate fine subangular blocky structure parting to weak fine granular; firm; many fine and medium roots throughout; slightly acid; clear smooth boundary. [Combined thickness of the A horizons is 25 to 56 cm (10 to 22 inches)].

**BA**--36 to 48 cm (14 to 19 inches); very dark gray (10YR 3/1) silty clay loam, gray (10YR 5/1) dry; moderate fine and medium subangular blocky structure; firm; many fine and medium roots; few fine faint very dark grayish brown (2.5Y 3/2) masses of oxidized iron-manganese in the matrix; slightly acid; gradual smooth boundary. [0 to 20 cm (0 to 8 inches) thick]

**Bg**--48 to 64 cm (19 to 25 inches); dark gray (10YR 4/1) silty clay loam; moderate fine prismatic structure parting to moderate fine angular blocky; firm; many fine roots; common fine distinct and prominent yellowish brown (10YR 5/6) masses of oxidized iron in the matrix; many worm holes; neutral; gradual smooth boundary.

**Btg1**--64 to 81 cm (25 to 32 inches); grayish brown (2.5Y 5/2) silty clay loam; weak fine and medium prismatic structure parting to moderate fine angular blocky; firm; many fine roots; common distinct dark gray (N 4/0) clay films on faces of peds; many medium distinct yellowish brown (10YR 5/4) masses of oxidized iron-manganese in the matrix; neutral; gradual wavy boundary.

**Btg2**--81 to 104 cm (32 to 41 inches); gray (N 5/0) silty clay loam; weak medium prismatic structure parting to weak medium angular blocky; firm; few fine roots; few distinct dark gray (N 4/0) clay films on faces of peds; many medium prominent yellowish brown (10YR 5/4) masses of oxidized iron-manganese in the matrix; neutral; clear wavy boundary. [Combined thickness of the Bg horizon and Btg horizons is 51 to 119 cm (20 to 47 inches).]

**2Btg3**--104 to 119 cm (41 to 47 inches); gray (N 5/0) loam; weak coarse subangular blocky structure; friable; few fine roots; few distinct dark gray (10YR 4/1) clay films on faces of peds; common medium prominent yellowish brown (10YR 5/6) masses of oxidized iron in the matrix; 4 percent fine gravel; neutral; abrupt wavy boundary. [10 to 25 cm (4 to 10 inches) thick]

**2Cg**--119 to 152 cm (47 to 60 inches); dark gray (10YR 4/1) stratified loam and sandy loam; massive; friable; many medium prominent olive brown (2.5Y 4/4) masses of oxidized iron-manganese in the matrix; many medium distinct gray (N 5/0) iron depletions in the matrix; slightly alkaline.

**TYPE LOCATION:** Champaign County, Illinois; on the University of Illinois south farm 1 mile south of Urbana; 1,600 feet east and 300 feet north of the southwest corner of sec. 19, T. 19 N., R. 9 E.; USGS Urbana topographic quadrangle; lat. 40 degrees 05 minutes 04.1 seconds N., long. 88 degrees 13 minutes 58.2 seconds W.; UTM Zone 16T 0394894 easting 4437861 northing; NAD 83.

**RANGE IN CHARACTERISTICS:** The depth to the base of soil development ranges from 102 to 165 cm (40 to 65 inches). The depth to horizons with greater than 15 percent sand ranges from 102 to 152 cm (40 to 60 inches). The dominant clay mineral in the upper part of the series control section is smectite and in the lower part is illite. The particle-size control section averages between 20 and 35 percent clay and less than 15 percent fine sand or coarser. The mollic epipedon ranges from 25 to 61 cm (10 to 24 inches) in thickness and extends into the upper part of the B horizon in many pedons. Rock fragments are less than 15 percent in the lower part of the series control section. Depth to carbonates is greater than 102 cm (40 inches).

The Ap, A, and/or AB horizon has hue of 10YR, 2.5Y, 5Y, or is neutral; value of 2 to 3; and chroma of 0 to 2. It is silty clay loam and less commonly is silt loam. Clay content ranges from 20 to 35 percent. Reaction ranges from moderately acid to slightly alkaline.

Some pedons have an AB horizon rather than a BA horizon.

The Bg, Btg, and/or BA horizon has hue of 10YR, 2.5Y, 5Y, or is neutral; value dominantly of 4 or 5, but ranges to 3 in the upper part and to 6 in the lower part; and chroma dominantly of 1 or 2, but ranging from 0 to 4. Texture is silty clay loam in the upper part and silty clay loam or silt loam in the lower part. Clay content ranges from 20 to 35 percent. Reaction ranges from moderately acid to slightly alkaline.

The 2Bg, 2Btg, and/or 2BCg horizon has hue of 7.5YR, 10YR, 2.5Y, 5Y, or is neutral; value of 4 to 6; and chroma of 0 to 2. Some pedons have nearly equal proportions of low chroma and high chroma colors in the matrix. Texture is commonly loam or silt loam, and most pedons contain strata of sandy loam, clay loam, silty clay loam, sandy clay loam, or fine sandy loam. Clay content ranges from 15 to 33 percent and sand content ranges from 15 to 55 percent. Content of rock fragments is less than 7 percent. Reaction ranges from slightly acid to moderately alkaline.

The 2Cg and/or 2C horizon has hue of 7.5YR, 10YR, 2.5Y, 5Y, or is neutral; value of 4 to 7; and chroma of 0 to 8. It typically is stratified. Textures include loam, sandy loam, sandy clay loam, clay loam, silt loam, and silty clay loam. Some pedons have thin strata of loamy sand. Clay content ranges from 10 to 32 percent and sand content ranges from 15 to 80 percent. Content of rock fragments is less than 15 percent. Reaction ranges from neutral to moderately alkaline.

**COMPETING SERIES:** These are the Chalmers, Chetomba, Dolbee, Dunham, Elpaso, Elvira, Garwin, Gillet Grove, Hartsburg, Madelia, Marcus, Mascoutah, Maxcreek, Maxfield, Ossian, Patton, Pella, Rushmore, Sable, and Wacousta series. Chalmers, Maxcreek and Maxfield soils are less than 40 inches



to subhorizons that average more than 15 percent sand. Chetomba, Madelia, Pella, Rushmore, and Wacousta soils contain carbonates at depths less than 40 inches. Dolbee and Elvira soils formed in silty alluvial sediments on flood plains and river terraces and are subject to flooding. Dolbee soils do not have stratification and typically have less sand in the substratum than the Drummer soils. Elvira soils have high concentrations of iron and manganese oxides in the solum. Dunham soils average more than 15 percent gravel in the lower part of the series control section. Elpaso and Gillett\_Grove soils have a well graded sand fraction in the lower part of the series control section. Garwin, Hartsburg, Marcus, Mascoutah, Ossian, and Sable soils average less than 15 percent sand in the lower part of the series control section. Patton soils average less than 25 percent sand in the lower part of the series control section, and the sand fraction is dominantly fine and very fine sand.

**GEOGRAPHIC SETTING:** Drummer soils are on nearly level or depressional parts of outwash plains, stream terraces, and till plains of Wisconsinan Age. Slope ranges from 0 to 2 percent. Drummer soils formed in 40 to 60 inches of loess or other silty material and in the underlying loamy stratified outwash. Mean annual air temperature ranges from 46 to 54 degrees F., mean annual precipitation is 29 to 40 inches, frost free days range from 140 to 180 days, and the elevation ranges from 500 to 1020 feet above mean sea level.

**GEOGRAPHICALLY ASSOCIATED SOILS:** These are Blackberry, Brenton, Catlin, Clare, Dana, Elburn, Flanagan, Lisbon, Plano, Proctor, Raub, Saybrook, and Sidell soils. The associated soils are on higher positions on the landform. The somewhat poorly drained Elburn, moderately well drained Blackberry, and well drained Plano soils form a drainage sequence with Drummer soils. The somewhat poorly drained Brenton, moderately well drained Clare and well drained Proctor soils have a thinner mantle of loess. The moderately well drained Catlin, Dana, and Saybrook soils, the somewhat poorly drained Flanagan, Lisbon, and Raub soils, and the well drained Sidell soils formed in loess and in the underlying loamy till.

**DRAINAGE AND SATURATED HYDRAULIC CONDUCTIVITY:** Poorly drained. In drained conditions, an apparent seasonal high water table is 15 cm (0.5 foot) above the surface to 31 cm (1.0 foot) below the surface at some time between January and May in most years. In undrained conditions, an apparent seasonal high water table is 15 cm (0.5 foot) above the surface to 15 cm (0.5 foot) below the surface at some time between November and June in most years. The potential for surface runoff is negligible to low. Water ponds on these soils for brief periods during the spring. Saturated hydraulic conductivity is moderately high to high (4.23 to 14.11 micrometers per second). Permeability is moderate.

**USE AND VEGETATION:** Most areas are cropped. Corn and soybeans are the principal crops. Some areas are used for growing small grain or meadow. Native vegetation is hydrophytic grasses, reeds, and sedges.

**DISTRIBUTION AND EXTENT:** Northern and central Illinois, northwestern Indiana, southwestern Ohio and southeastern Wisconsin. The extent is large in MLRAs 95B, 108, 110, 111, and 114; more than 500,000 acres have been correlated in Illinois to date.

**MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE:** Indianapolis, Indiana.

**SERIES ESTABLISHED:** Ford County, Illinois, 1929.

**REMARKS:** Diagnostic horizons and features recognized in this pedon are:  
mollic epipedon - the zone from the surface to a depth of 48 cm (19 inches) (Ap, A, and BA horizons);  
cambic horizon - the zone from approximately 48 to 119 cm (19 to 47 inches) (Bg, Btg1, Btg2, and

2Btg3 horizons);  
aquic conditions - redoximorphic features present in the zone from approximately 36 to 152 cm (14 to 60 inches) (BA, Bg, Btg1, Btg2, 2Btg3, and 2Cg horizons).

**ADDITIONAL DATA:** SSIR No. 19, pp. 92-109. University of Illinois Agricultural Experiment Station Bulletin 665, Profile No. 29.

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National Cooperative Soil Survey  
U.S.A.

LOCATION FLANAGAN

IL+IN

Established Series  
 Rev. JBF-SLE-SEW  
 09/2008

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## FLANAGAN SERIES

The Flanagan series consists of very deep, somewhat poorly drained soils that formed in loess or other silty material and the underlying loamy calcareous till on till plains. Slope ranges from 0 to 7 percent. Mean annual air temperature is 11 degrees C (51 degrees F), and mean annual precipitation is 889 mm (35 inches).

**TAXONOMIC CLASS:** Fine, smectitic, mesic Aquic Argiudolls

**TYPICAL PEDON:** Flanagan silt loam - on a 1 percent convex south-facing slope in a grass border of the University of Illinois experimental plots at an elevation of about 223 meters (730 feet) above mean sea level. (Colors are for moist soil unless otherwise stated.)

**A1**--0 to 20 cm (0 to 8 inches); very dark gray (10YR 3/1) silt loam, gray (10YR 5/1) dry; moderate medium granular structure; friable; slightly acid; gradual smooth boundary.

**A2**--20 to 38 cm (8 to 15 inches); very dark brown (10YR 2/2) silt loam, dark grayish brown (10YR 4/2) dry; moderate medium granular structure; friable; slightly acid; clear smooth boundary. [Combined thickness of the A horizon is 25 to 46 cm (10 to 18 inches).]

**A3**--38 to 46 cm (15 to 18 inches); very dark grayish brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) dry; moderate medium granular structure; friable; slightly acid; clear smooth boundary. [ 0 to 15 cm (0 to 6 inches) thick]

**Bt1**--46 to 58 cm (18 to 23 inches); dark grayish brown (10YR 4/2) silty clay loam; moderate fine subangular blocky structure; firm; many distinct very dark grayish brown (10YR 3/2) organo-clay films on faces of peds; few fine faint brown (10YR 4/3) iron-manganese accumulations in the matrix; moderately acid; clear smooth boundary.

**Bt2**--58 to 81 cm (23 to 32 inches); dark grayish brown (10YR 4/2) silty clay loam; moderate medium subangular blocky structure; firm; many distinct very dark grayish brown (10YR 3/2) organo-clay films on faces of peds; common fine faint brown (10YR 5/3 and 10YR 4/3) iron-manganese accumulations in the matrix; moderately acid; clear smooth boundary.

**Bt3**--81 to 97 cm (32 to 38 inches); yellowish brown (10YR 5/4) silty clay loam; moderate medium subangular blocky structure; firm; many distinct very dark grayish brown (10YR 3/2) organo-clay films on faces of peds; common fine faint light yellowish brown (10YR 6/4) and distinct yellowish brown (10YR 5/6) masses of oxidized iron in the matrix; slightly acid; clear smooth boundary.

**Bt4**--97 to 114 cm (38 to 45 inches); 40 percent yellowish brown (10YR 5/6), 30 percent light brownish gray (10YR 6/2), and 30 percent brown (10YR 5/3) silt loam; weak medium subangular blocky structure; friable; common distinct very dark grayish brown (10YR 3/2) organo-clay films on faces of

ped; slightly acid; gradual smooth boundary. [Combined thickness of the Bt horizon is 66 to 102 cm (26 to 40 inches).]

**2Bt5**--114 to 125 cm (45 to 49 inches); 35 percent yellowish brown (10YR 5/4), 35 percent light olive brown (2.5Y 5/4), and 30 percent light brownish gray (10YR 6/2) silt loam; weak coarse subangular blocky structure; firm; few distinct dark grayish brown (10YR 4/2) clay films on faces of ped; 5 percent fine gravel; neutral; abrupt smooth boundary. [8 to 38 cm (3 to 15 inches) thick]

**2C**--125 to 152 cm (49 to 60 inches); yellowish brown (10YR 5/4) loam; massive; firm; common medium rounded white (10YR 8/1) weakly cemented calcium carbonate nodules throughout; common fine and medium distinct light brownish gray (10YR 6/2) iron depletions in the matrix; 5 percent fine gravel; slightly effervescent; slightly alkaline.

**TYPE LOCATION:** Champaign County, Illinois; about 1 mile south of Champaign on University of Illinois south farm; 1,607 feet east and 1,405 feet north of the southwest corner, sec. 19, T. 19 N., R. 9 E.; USGS Urbana topographic quadrangle; lat. 40 degrees, 5 minutes, 14 seconds N., and long. 88 degrees, 13 minutes, 57 seconds W.; NAD 27; UTM Zone 16T, 0394923 easting and 4438169 northing, NAD 83.

**RANGE IN CHARACTERISTICS:** The depth to the base of the argillic horizon ranges from 114 to 165 cm (45 to 65 inches). The depth to horizons with more than 10 percent sand ranges from 102 to 152 cm (40 to 60 inches). Soil development extends into the glacial till. The depth to carbonates ranges from 114 to 165 cm (45 to 65 inches). The mollic epipedon is 25 to 61 cm (10 to 24 inches) thick and includes the upper part of the B horizon in some pedons. The particle-size control section averages between 35 and 42 percent clay and less than 10 percent fine sand or coarser.

The A and Ap horizons have hue of 10YR, value of 2 or 3 (4 or 5 dry), and chroma of 1 or 2. They commonly are silt loam but in some pedons it is silty clay loam. Clay content ranges from 20 to 30 percent. Reaction ranges from neutral to strongly acid.

Some pedons have an AB or BA horizon.

The Bt has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 to 6. It is dominantly silty clay loam, but some subhorizons are silty clay or silt loam. Clay content ranges from 35 to 42 percent. It is neutral to moderately acid.

The 2Bt has hue of 7.5YR, 10YR, or 2.5Y, value of 4 to 6, and chroma of 1 to 6. Redoximorphic features are present. It is loam, clay loam, silt loam, or silty clay loam. Clay content ranges from 20 to 30 percent and sand content ranges from 15 to 40 percent. Individual subhorizons have up to 40 percent clay. Gravel content ranges from 1 to 15 percent. Reaction is slightly acid to slightly alkaline and some pedons contain carbonates in the lower part.

The 2C horizon has hue of 7.5YR, 10YR, 2.5Y, or 5Y, value of 4 to 6, and chroma of 2 to 6. It commonly is loam but includes clay loam, silt loam, or silty clay loam. It is slightly alkaline or moderately alkaline and contains carbonates.

**COMPETING SERIES:** These are the Biddle, Herrick, Ipava, Macksburg, Malvern, and Timewell, soils. Biddle, Herrick, Ipava, Malvern, and Timewell soils average less than 15 percent sand in the lower part of the series control section. Macksburg soils do not have carbonates within a depth of 165 cm (65 inches).

**GEOGRAPHIC SETTING:** Flanagan soils are on convex slopes of till plains of Wisconsinan Age. Slopes are typically between 0 and 4 percent but range to 7 percent. The soils formed in 102 to 152 cm (40 to 60 inches) of loess and the underlying calcareous till. Mean annual temperature ranges from 8 to 12 degrees C (46 to 54 degrees F); mean annual precipitation ranges from 737 to 889 mm (29 to 35 inches); frost-free period ranges from 160 to 180 days; and elevation ranges from 207 to 311 meters (680 to 1020 feet) above mean sea level.

**GEOGRAPHICALLY ASSOCIATED SOILS:** These are the Catlin, Dana, Drummer, Milford, Raub, and Saybrook soils. The moderately well drained Catlin soils and the poorly drained Drummer soils are on nearby landscapes and form a drainage sequence. The moderately well drained Dana and Saybrook soils and somewhat poorly drained Raub soils are on nearby parts of the till plain where loess is thinner than 102 cm (40 inches). The poorly drained and very poorly drained Milford soils are lower on the landscape in lacustrine areas.

**DRAINAGE AND SATURATED HYDRAULIC CONDUCTIVITY:** Somewhat poorly drained. An apparent seasonal high water table is at a depth of 31 to 61 cm (1 to 2 feet) at some time between January and May in most years. The potential for surface runoff is low to high. Saturated hydraulic conductivity is moderately high (1.41 to 4.23 micrometers per second). Permeability is moderately slow.

**USE AND VEGETATION:** Most areas of Flanagan soils are used to grow corn and soybeans. Native vegetation is prairie grasses.

**DISTRIBUTION AND EXTENT:** Flanagan soils are in central and north-central Illinois and in west-central Indiana. The acreage is of large extent (more than 540,000 acres correlated to date) in MLRAs 95B, 108A, and 110.

**MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE:** Indianapolis, Indiana

**SERIES ESTABLISHED:** DeWitt County, Illinois, 1937.

**REMARKS:** Diagnostic horizons and features recognized in this pedon are:  
mollic epipedon - the zone from the surface to 18 inches. (A1, A2, and AB horizons);  
argillic horizon - the zone from 18 to 49 inches (Bt1, Bt2, Bt3, Bt4, and 2Bt5 horizons);  
aquic conditions - redoximorphic features in horizons below the mollic epipedon; udic moisture regime;  
mesic temperature regime.

**ADDITIONAL DATA:** For series typical pedon refer to University of Illinois laboratory samples 17882-17890. Data for 13 additional pedons is in the database of soils sampled by the University of Illinois.

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National Cooperative Soil Survey  
U.S.A.

LOCATION CATLIN IL

Established Series  
 Rev. JCD-SLE-AAC  
 03/2011

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## CATLIN SERIES

The Catlin series consists of very deep, moderately well drained soils on till plains. These soils formed in loess or other silty material and in the underlying loamy calcareous till. Slope ranges from 0 to 15 percent. The mean annual temperature is 8.3 degrees C (47 degrees F), and the mean annual precipitation is 890 mm (35 inches).

**TAXONOMIC CLASS:** Fine-silty, mixed, superactive, mesic Oxyaquic Argiudolls

**TYPICAL PEDON:** Catlin silt loam on a southwest-facing 2 percent slope in a cultivated field at an elevation of 253 meters (830 feet) above mean sea level. (Colors are for moist soil unless otherwise stated.)

**Ap--**0 to 28 cm (0 to 11 inches); very dark brown (10YR 2/2) silt loam, grayish brown (10YR 5/2) dry; moderate fine granular structure; friable; neutral; abrupt smooth boundary. [25 to 51 cm (10 to 20 inches) thick]

**BA--**28 to 46 cm (11 to 18 inches); brown (10YR 4/3) silt loam; weak medium prismatic structure parting to moderate fine and medium subangular blocky; friable; few faint dark brown (10YR 3/3) organic coatings on faces of peds; common distinct light gray (10YR 7/1) (dry) silt coatings on faces of peds; moderately acid; clear smooth boundary. [0 to 20 cm (0 to 8 inches) thick]

**Bt1--**46 to 58 cm (18 to 23 inches); brown (10YR 5/3) silty clay loam; weak medium prismatic structure parting to strong fine and medium subangular blocky; friable; many faint brown (10YR 4/3) clay films on faces of peds; few distinct light gray (10YR 7/1) (dry) silt coatings on faces of peds; strongly acid; clear smooth boundary.

**Bt2--**58 to 79 cm (23 to 31 inches); yellowish brown (10YR 5/4) silty clay loam; moderate medium prismatic structure parting to strong medium angular and subangular blocky; firm; few distinct very dark brown (10YR 2/2) organo-clay films on surfaces along root channels; many faint brown (10YR 4/3) clay films on faces of peds; few distinct light gray (10YR 7/1) (dry) silt coatings on faces of peds; few black (N 2.5/) weakly cemented iron-manganese concretions throughout; few fine faint brown (7.5YR 4/4) and common fine distinct yellowish brown (10YR 5/6) masses of oxidized iron in the matrix; moderately acid; clear smooth boundary.

**Bt3--**79 to 91 cm (31 to 36 inches); yellowish brown (10YR 5/4) silty clay loam; strong medium prismatic structure parting to strong medium angular and subangular blocky; firm; common prominent grayish brown (2.5Y 5/2) clay films on faces of peds; few distinct light gray (10YR 7/1) (dry) silt coatings on faces of peds; few black (N 2.5/) weakly cemented iron-manganese concretions throughout; few fine faint brown (7.5YR 4/4) extremely weakly cemented iron-manganese accumulations and distinct yellowish brown (10YR 5/6) masses of oxidized iron in the matrix; slightly acid; clear smooth boundary.

**Bt4--**91 to 112 cm (36 to 44 inches); yellowish brown (10YR 5/4), brown (7.5YR 4/4), and light brownish gray (2.5Y 6/2) silty clay loam; weak coarse prismatic structure parting to moderate coarse subangular blocky; firm; many faint grayish brown (2.5Y 5/2) clay films on faces of pedis; common distinct light gray (10YR 7/1) (dry) silt coatings on faces of pedis; few distinct very dark brown (10YR 2/2) organo-clay films on surfaces along root channels; slightly acid; abrupt smooth boundary. [Combined thickness of the Bt horizon is 64 to 107 cm (25 to 42 inches).]

**2Bt5--**112 to 124 cm (44 to 49 inches); dark yellowish brown (10YR 4/4) clay loam; weak coarse subangular blocky structure; firm; few faint brown (10YR 5/3) clay films on vertical faces of pedis; few distinct very dark brown (10YR 2/2) organo-clay films on surfaces along root channels; slightly alkaline; clear smooth boundary. [13 to 51 cm (5 to 20 inches) thick]

**2C--**124 to 152 cm (49 to 60 inches); yellowish brown (10YR 5/4) loam; massive; firm; common fine distinct yellowish brown (10YR 5/6) masses of oxidized iron in the matrix; 5 percent gravel; strongly effervescent; moderately alkaline.

**TYPE LOCATION:** Ogle County, Illinois; about 1 1/2 miles south and 2 1/2 miles east of Monroe Center; 650 feet south and 571 feet east of the northwest corner of sec. 36, T. 42 N., R. 2 E.; USGS Fairdale topographic quadrangle; lat. 42 degrees 04 minutes 38 seconds N., and long. 88 degrees 57 minutes 17 seconds W., UTM Zone 16338307 Easting and 4660199 Northing; NAD83.

**RANGE IN CHARACTERISTICS:**

Thickness of mollic epipedon: 25 to 51 cm (10 to 20 inches)

Depth to carbonates: 102 to 152 cm (40 to 60 inches)

Depth to horizons with more than 15 percent sand (loess or other silty material): 102 to 152 cm (40 to 60 inches)

Depth to the base of the argillic horizon: 114 to 165 cm (45 to 65 inches)

Particle-size control section: averages 27 and 35 percent clay

Ap, A, and/or AB horizons:

Hue: 10YR

Value: 2 or 3

Chroma: 1 to 3

Texture: silt loam or silty clay loam

Clay content: averages 18 to 30 percent

Sand content: averages 0 to 8 percent

Reaction: strongly acid to neutral

BA horizon (where present):

Hue: 10YR or 2.5Y

Value: 3 to 5

Chroma: 3 or 4

Texture: silt loam or silty clay loam

Bt horizon:

Hue: 10YR or 2.5Y

Value: 3 to 5

Chroma: 3 or 4

Texture: commonly silty clay loam, but ranges to silt loam in upper and/or lower subhorizons of some pedons.

Clay content: averages 24 to 35 percent

Sand content: averages 0 to 8 percent

Reaction: strongly acid to neutral

2Bt, 2BC, and/or 2C horizons:

Hue: 10YR, 2.5Y or 7.5YR

Value: 4 or 5

Chroma: 2 to 8

Texture: clay loam, loam, silty clay loam or silt loam

Clay content: averages 20 to 35 percent

Sand content: averages 15 to 40 percent

Gravel content: less than 10 percent

Reaction: slightly acid to moderately alkaline

**COMPETING SERIES:** These are the Assumption, Aviston, Barrington, Blackberry, Buckhart, Clare, Dana, Danabrook, Geryune, Graymont, Harrison, Keltner, Saybrook, and Totanang soils. Assumption and Harrison soils do not have carbonates within a depth of 152 cm (60 inches). Aviston soils have less than 15 percent sand in the lower part of the series control section. Barrington, Blackberry, and Clare soils have horizons in the middle or lower part of the series control section with sand content greater than 40 percent. Buckhart soils have less than 7 percent sand throughout the series control section. Dana, Danabrook, Geryune, Graymont and Saybrook soils have horizons with more than 15 percent sand within a depth of 102 cm (40 inches). Keltner soils have a paralithic contact within a depth of 152 cm (60 inches). Totanang soils have more than 10 percent rock fragments in the lower part of the series control section.

**GEOGRAPHIC SETTING:** Catlin soils are on relatively undissected loess covered till plains. Slope typically is between 3 and 7 percent, but ranges from 0 to 15 percent and are convex. Catlin soils formed in 102 to 152 cm (40 to 60 inches) of loess or other silty material and in the underlying loamy calcareous till. The mean annual air temperature ranges from 7.8 to 12.8 degrees C (46 to 55 degrees F), mean annual precipitation ranges from 890 to 1016 mm (35 to 40 inches), frost free period ranges from 150 to 180 days, and elevation ranges from 207 to 305 meters (680 to 1000 feet) above sea level.

**GEOGRAPHICALLY ASSOCIATED SOILS:** These are the competing Saybrook soils and the Drummer, Elburn, Flanagan, and Plano soils. The poorly drained Drummer soils and the somewhat poorly drained Flanagan soils are on lower lying parts of the landscape and form a drainage sequence with Catlin soils. The Plano and somewhat poorly drained Elburn soils are on adjacent or nearby outwash plains. Saybrook soils are on similar nearby landscapes where the loess mantle is thinner.

**DRAINAGE AND SATURATED HYDRAULIC CONDUCTIVITY:** Moderately well drained. An apparent seasonal high water table is 61 to 107 cm (2.0 to 3.5 feet) below the surface at some time between February and April in most years. The potential for surface runoff is low or medium. Saturated hydraulic conductivity is moderately high to high (4.23 to 14.11 micrometers per second). Permeability is moderate.

**USE AND VEGETATION:** Almost all areas used to grow corn and soybeans. Native vegetation is prairie grass.

**DISTRIBUTION AND EXTENT:** Catlin soils are in central and northern Illinois. LRR M, MLRAs 95B, 105, 108A, 108B, 110, and 115C. They are of large extent (more than 305,000 acres are correlated).

**MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE:** Indianapolis, Indiana



**SERIES ESTABLISHED:** Vermilion County, Illinois, 1932.

**REMARKS:** Diagnostic horizons and features recognized in this pedon are:  
mollic epipedon - from a depth of 0 to 28 cm (0 to 11 inches) (Ap horizon);  
argillic horizon - from a depth of 46 to 124 cm (18 to 49 inches) (Bt1, Bt2, Bt3, Bt4, and 2Bt5 horizons).

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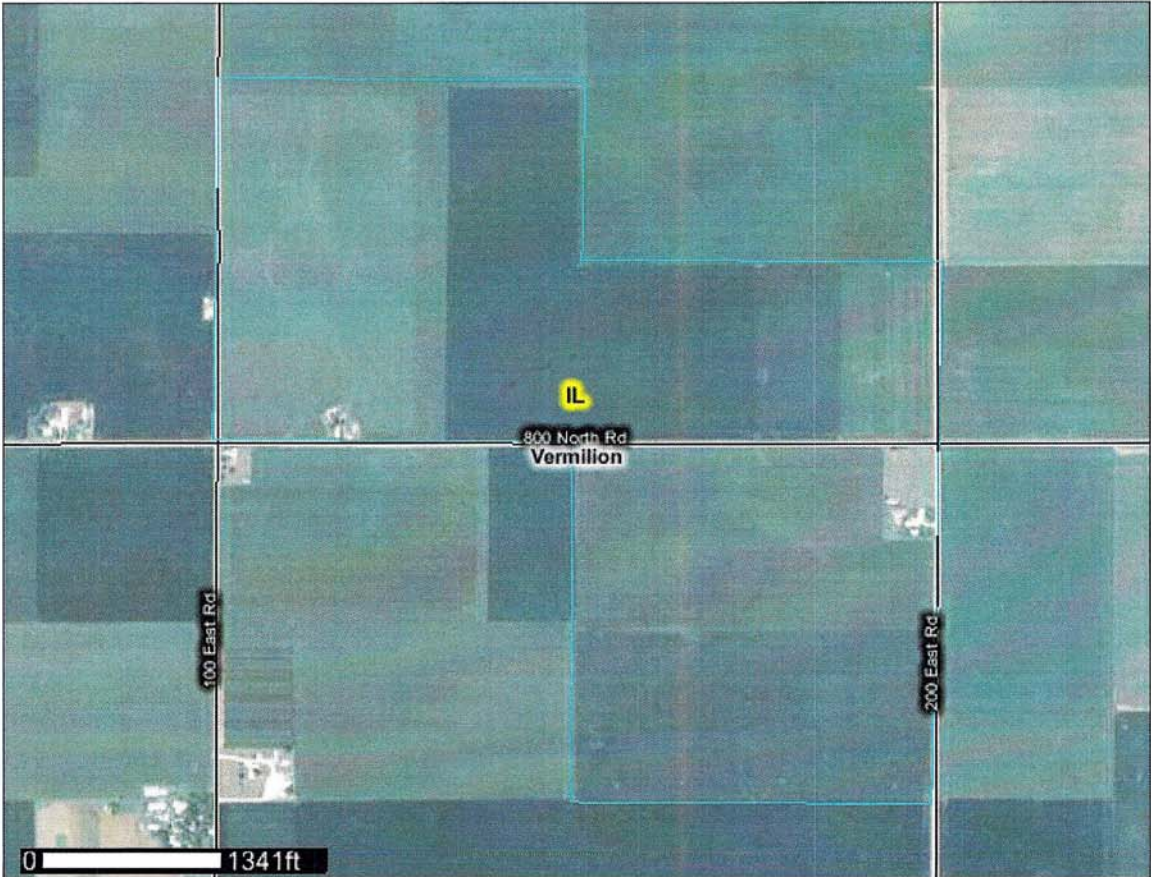
National Cooperative Soil Survey  
U.S.A.



A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

# Custom Soil Resource Report for Vermilion County, Illinois

## Sunrise Coal Mine



## Preface

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Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://soils.usda.gov/sqi/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<http://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist ([http://soils.usda.gov/contact/state\\_offices/](http://soils.usda.gov/contact/state_offices/)).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Soil Data Mart Web site or the NRCS Web Soil Survey. The Soil Data Mart is the data storage site for the official soil survey information.

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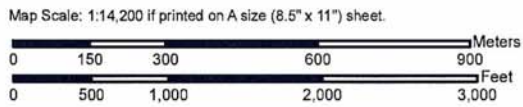
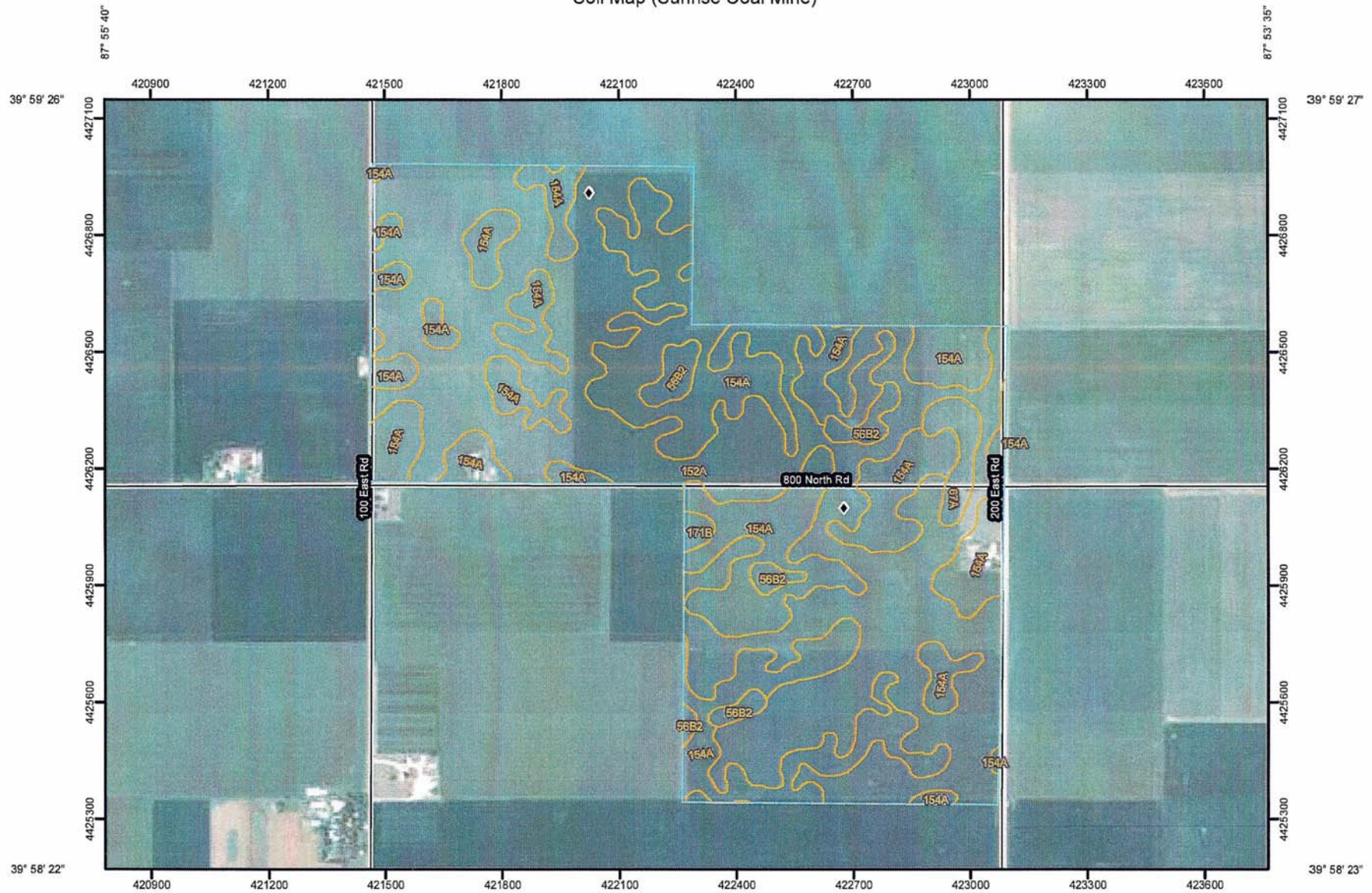
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## **Soil Map**

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The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

### Custom Soil Resource Report Soil Map (Sunrise Coal Mine)



## Custom Soil Resource Report

## MAP LEGEND

<b>Area of Interest (AOI)</b>	 Area of Interest (AOI)	 Very Stony Spot
<b>Soils</b>	 Soil Map Units	 Wet Spot
<b>Special Point Features</b>	 Blowout	 Other
 Borrow Pit	 Gully	<b>Special Line Features</b>
 Clay Spot	 Short Steep Slope	 Other
 Closed Depression	<b>Political Features</b>	 Cities
 Gravel Pit	<b>Water Features</b>	 Streams and Canals
 Gravelly Spot	<b>Transportation</b>	 Rails
 Landfill	 Interstate Highways	 US Routes
 Lava Flow	 Major Roads	 Local Roads
 Marsh or swamp		
 Mine or Quarry		
 Miscellaneous Water		
 Perennial Water		
 Rock Outcrop		
 Saline Spot		
 Sandy Spot		
 Severely Eroded Spot		
 Sinkhole		
 Slide or Slip		
 Sodic Spot		
 Spoil Area		
 Stony Spot		

## MAP INFORMATION

Map Scale: 1:14,200 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:12,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>  
 Coordinate System: UTM Zone 16N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Vermilion County, Illinois  
 Survey Area Data: Version 7, Jan 28, 2011

Date(s) aerial images were photographed: 7/31/2007

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.



## Custom Soil Resource Report

**Map Unit Legend (Sunrise Coal Mine)**

Vermilion County, Illinois (IL183)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
56B2	Dana silt loam, 2 to 5 percent slopes, eroded	11.0	2.7%
67A	Harpster silty clay loam, 0 to 2 percent slopes	6.2	1.5%
152A	Drummer silty clay loam, 0 to 2 percent slopes	228.6	55.2%
154A	Flanagan silt loam, 0 to 2 percent slopes	166.6	40.3%
171B	Catlin silt loam, 2 to 5 percent slopes	1.6	0.4%
<b>Totals for Area of Interest</b>		<b>413.9</b>	<b>100.0%</b>

**Map Unit Descriptions (Sunrise Coal Mine)**

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

## Custom Soil Resource Report

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

## Custom Soil Resource Report

**Vermilion County, Illinois****56B2—Dana silt loam, 2 to 5 percent slopes, eroded****Map Unit Setting***Elevation: 590 to 930 feet**Mean annual precipitation: 32 to 40 inches**Mean annual air temperature: 48 to 54 degrees F**Frost-free period: 160 to 180 days***Map Unit Composition***Dana and similar soils: 94 percent***Description of Dana****Setting***Landform: Ground moraines**Landform position (two-dimensional): Shoulder, summit**Landform position (three-dimensional): Interfluvium**Down-slope shape: Convex**Across-slope shape: Convex**Parent material: Loess over till***Properties and qualities***Slope: 2 to 5 percent**Depth to restrictive feature: More than 80 inches**Drainage class: Moderately well drained**Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)**Depth to water table: About 24 to 42 inches**Frequency of flooding: None**Frequency of ponding: None**Calcium carbonate, maximum content: 40 percent**Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)**Sodium adsorption ratio, maximum: 6.0**Available water capacity: High (about 9.2 inches)***Interpretive groups***Land capability (nonirrigated): 2e***Typical profile***0 to 7 inches: Silt loam**7 to 34 inches: Silty clay loam**34 to 53 inches: Clay loam**53 to 80 inches: Loam***67A—Harpster silty clay loam, 0 to 2 percent slopes****Map Unit Setting***Elevation: 540 to 930 feet**Mean annual precipitation: 32 to 40 inches*

## Custom Soil Resource Report

*Mean annual air temperature:* 46 to 54 degrees F  
*Frost-free period:* 150 to 180 days

**Map Unit Composition**

*Harpster and similar soils:* 97 percent

**Description of Harpster****Setting**

*Landform:* Outwash plains, ground moraines, lake plains, stream terraces, depressions

*Landform position (two-dimensional):* Toeslope

*Landform position (three-dimensional):* Tread, talf

*Down-slope shape:* Linear, concave

*Across-slope shape:* Linear, concave

*Parent material:* Calcareous fine-silty colluvium over glacial drift

**Properties and qualities**

*Slope:* 0 to 2 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Poorly drained

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high  
 (0.60 to 2.00 in/hr)

*Depth to water table:* About 0 to 12 inches

*Frequency of flooding:* None

*Frequency of ponding:* Frequent

*Calcium carbonate, maximum content:* 40 percent

*Available water capacity:* High (about 12.0 inches)

**Interpretive groups**

*Land capability (nonirrigated):* 2w

**Typical profile**

*0 to 18 inches:* Silty clay loam

*18 to 41 inches:* Silty clay loam

*41 to 56 inches:* Silt loam

*56 to 60 inches:* Loam

**152A—Drummer silty clay loam, 0 to 2 percent slopes****Map Unit Setting**

*Elevation:* 590 to 930 feet

*Mean annual precipitation:* 32 to 40 inches

*Mean annual air temperature:* 48 to 54 degrees F

*Frost-free period:* 160 to 180 days

**Map Unit Composition**

*Drummer and similar soils:* 90 percent

**Description of Drummer****Setting**

*Landform:* Outwash plains, stream terraces

## Custom Soil Resource Report

*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Talf  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Loess over stratified loamy outwash

**Properties and qualities**

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Poorly drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high  
 (0.60 to 2.00 in/hr)  
*Depth to water table:* About 0 to 12 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* Frequent  
*Calcium carbonate, maximum content:* 15 percent  
*Available water capacity:* High (about 9.0 inches)

**Interpretive groups**

*Land capability (nonirrigated):* 2w

**Typical profile**

*0 to 14 inches:* Silty clay loam  
*14 to 41 inches:* Silty clay loam  
*41 to 47 inches:* Loam  
*47 to 60 inches:* Stratified loam to sandy loam

**154A—Flanagan silt loam, 0 to 2 percent slopes****Map Unit Setting**

*Elevation:* 590 to 930 feet  
*Mean annual precipitation:* 32 to 40 inches  
*Mean annual air temperature:* 48 to 54 degrees F  
*Frost-free period:* 160 to 180 days

**Map Unit Composition**

*Flanagan and similar soils:* 94 percent

**Description of Flanagan****Setting**

*Landform:* Ground moraines  
*Landform position (two-dimensional):* Summit  
*Landform position (three-dimensional):* Rise  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Loess over till

**Properties and qualities**

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Somewhat poorly drained

## Custom Soil Resource Report

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.60 in/hr)

*Depth to water table:* About 12 to 24 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum content:* 40 percent

*Available water capacity:* High (about 9.1 inches)

**Interpretive groups**

*Land capability (nonirrigated):* 1

**Typical profile**

*0 to 18 inches:* Silt loam

*18 to 38 inches:* Silty clay loam

*38 to 45 inches:* Silt loam

*45 to 49 inches:* Silt loam

*49 to 60 inches:* Loam

**171B—Catlin silt loam, 2 to 5 percent slopes****Map Unit Setting**

*Elevation:* 590 to 1,020 feet

*Mean annual precipitation:* 33 to 40 inches

*Mean annual air temperature:* 45 to 52 degrees F

*Frost-free period:* 150 to 180 days

**Map Unit Composition**

*Catlin and similar soils:* 94 percent

**Description of Catlin****Setting**

*Landform:* Ground moraines, end moraines

*Landform position (two-dimensional):* Summit, backslope

*Landform position (three-dimensional):* Interfluvium

*Down-slope shape:* Convex

*Across-slope shape:* Convex

*Parent material:* Loess over till

**Properties and qualities**

*Slope:* 2 to 5 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Moderately well drained

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.60 in/hr)

*Depth to water table:* About 24 to 42 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum content:* 25 percent

*Available water capacity:* High (about 11.5 inches)

**Interpretive groups**

*Land capability (nonirrigated):* 2e

Custom Soil Resource Report

**Typical profile**

*0 to 11 inches:* Silt loam

*11 to 45 inches:* Silty clay loam

*45 to 57 inches:* Clay loam

*57 to 70 inches:* Loam

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Custom Soil Resource Report

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Sunrise Coal, LLC  
Bulldog Mine  
Permit No. 429

# ATTACHMENT II-6A2

ESTIMATED YIELDS FOR VERMILION COUNTY

## ESTIMATED YIELDS FOR VERMILION COUNTY

SOIL MAPPING UNIT		ADJUSTMENT PER BULLETIN 811, TABLE S3		PRODUCTIVITY OF SOILS UNDER OPTIMUM MANAGEMENT LEVELS PER BULLETIN 811, TABLE S2, REVISED 12/21/2007						° ANNUAL TREE GROWTH DECIDUOUS	
Soil Number	Soil Name	<sup>a</sup> Subsoil Rooting	<sup>b</sup> Optimum Management Adjustment %	Corn bu/ac	Soybeans bu/ac	Wheat bu/ac	<sup>c</sup> Alfalfa Hay ton/ac	<sup>d</sup> Grass-Legume Hay ton/ac	Crop Productivity Index	Site Index avg	Volume of Wood Fiber cu ft/ac
56B2	Dana silt loam, 2-5% slopes, eroded	FAV	95	171	53	66	5.96	0.00	124	--	--
67A	Harpster silty clay loam, 0-2% slopes	FAV	100	182	57	68	0.00	5.39	133	--	--
152A	Drummer silty clay loam, 0-2% slopes	FAV	100	195	63	73	0.00	5.64	144	--	--
154A	Flanagan silt loam, 0-2% slopes	FAV	100	194	63	77	0.00	5.90	144	--	--
171B	Catlin silt loam, 2-5% slopes	FAV	99	185	58	72	6.70	0.00	137	--	--

Crop yields are those that can be expected under an optimum level of management.

Cells not containing a numerical value indicate the soil type is not generally suited for this use.

<sup>a</sup>UNF = unfavorable; FAV = favorable

<sup>b</sup>Based on information supplied in Bulletin 811, Table S3, optimum crop productivities have been adjusted by the percentage shown to reflect subsoil quality, steepness of slopes and erosion.

<sup>c</sup>Soils in the poorly drained group were not rated for alfalfa and are shown with zeros, 0.00.

<sup>d</sup>Soils in the well drained group were not rated for grass-legume and are shown with zeros, 0.00.

<sup>e</sup>“Potential productivity” of common trees is expressed as a site index and as a volume number. The “site index” is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. The “volume of wood fiber” is the yield likely to be produced by the most important tree species. This number, expressed as cubic feet per acre per year and calculated at the age of culmination of the mean annual increment (CMAI), indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand.

Sunrise Coal, LLC  
Bulldog Mine  
Permit No. 429

# ATTACHMENT II-12A

PRIVATE OIL AND GAS WELL DATA

## Private Oil and Gas Well Status

Well ID	Current Well Status	Well Distance From Shadow Area
OGW-1	Dry, Abandoned	2306'
OGW-2	Dry, Abandoned	281'
OGW-3	Stratigraphic Test Hole	1852'
OGW-4	Structure Test Hole	2718'
OGW-5	Dry, Abandoned, Plugged	3132'

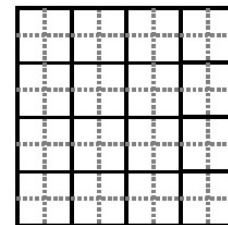
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## ILLINOIS STATE GEOLOGICAL SURVEY

Page 1

	Top	Bottom
Pennsylvanian	105	
Salem	609	
Osage	682	
Rockford	1272	
New Albany	1276	
Tully	1361	
Geneva	1426	
Total Depth		1464
<p>Dry and abandoned.</p> <p>Drilling Time Log filed.</p> <p>Company Sample Study filed.</p> <p>Sample set # 60806 0'- 1450'</p> <div style="border: 1px solid blue; padding: 2px; margin: 10px auto; width: fit-content;"> <p style="color: blue; font-size: small;">Get Scout Check Ticket for this well.</p> </div>		
<b>Permit Date:</b>	August 13, 1976	<b>Permit #:</b> 2831

**COMPANY** Corley, W. Andrew  
**FARM** Smith, Frank **NO. 1**  
**DATE DRILLED** September 10, 1976 **COUNTY NO. 22082**  
**AUTHORITY**  
**ELEVATION** 681' KB  
**LOCATION** 330'S line, 330'E line of NE NW  
**COUNTY** VERMILION



13-18N-14W

NAD 83 Geographic Coordinates (Obtained from ISGS Website)  
 Latitude: 40.023012  
 Longitude: -87.892973

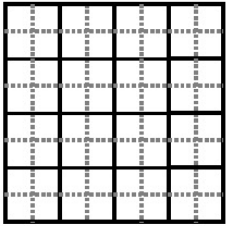
PRIVATE OIL/GAS WELL #OGW-2

ILLINOIS STATE GEOLOGICAL SURVEY

Page 1

	Top	Bottom
Total Depth		1462
Dry and abandoned.		
Driller's Log filed.		
Survey Sample Study filed.		
Sample Study filed.		
Sample set # 2085 102'- 1452'		
Permit Date: January 1, 1937	Permit #:	

COMPANY Myers A M Etal  
 FARM Foreman, Newt NO. 1  
 DATE DRILLED COUNTY NO. 00180  
 AUTHORITY  
 ELEVATION 677' GL  
 LOCATION 200'S line, 200'E line of SW  
 COUNTY VERMILION



13-18N-14W

NAD 83 Geographic Coordinates (Obtained from ISGS Website)  
 Latitude: 40.011768  
 Longitude: -87.892462

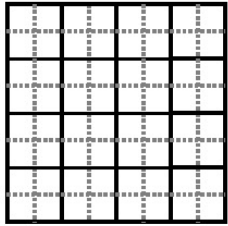
PRIVATE OIL/GAS WELL #OGW-3

ILLINOIS STATE GEOLOGICAL SURVEY

Page 1

	Top	Bottom
STRATIGRAPHIC TEST		
Total Depth		43
Sample set # 22418 8'- 162'		
Permit Date:	Permit #:	

COMPANY owner  
 FARM Trisler, J. L. & Blanche NO. 2  
 DATE DRILLED COUNTY NO. 01152  
 AUTHORITY  
 ELEVATION 680' TM  
 LOCATION NW NE NW  
 COUNTY VERMILION



31-18N-13W

NAD 83 Geographic Coordinates (Obtained from ISGS Website)  
 Latitude: 39.981201  
 Longitude: -87.875383



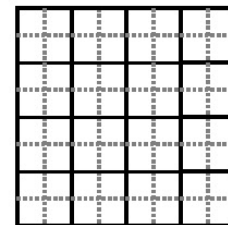
# PRIVATE OIL/GAS WELL #OGW-4

## ILLINOIS STATE GEOLOGICAL SURVEY

Page 1

	Top	Bottom
STRUCTURE TEST		
Total Depth		873
Electric Log filed.		
Company Sample Study filed.		
<div style="border: 1px solid blue; padding: 2px; display: inline-block;"> <a href="#">Image viewing help: New users please read this.</a> </div>		
<div style="border: 1px solid blue; padding: 2px; display: inline-block; margin-right: 10px;"> <a href="#">GET IMAGE</a> </div> Induction Electric Log		
Sample set # 58034 130'- 870'		
<b>Permit Date:</b> August 27, 1971	<b>Permit #:</b> 6764	

**COMPANY** Peoples Gas Light & Coke Co.  
**FARM** Cress, D. NO. 1  
**DATE DRILLED** September 1, 1971 **COUNTY NO.** 01731  
**AUTHORITY**  
**ELEVATION** 712' GL  
**LOCATION** 53'N line, 96'W line of NW  
**COUNTY** VERMILION



35-17N-14W

NAD 83 Geographic Coordinates (Obtained from ISGS Website)  
 Latitude: 39.894238  
 Longitude: -87.918442



Sunrise Coal, LLC  
Bulldog Mine  
Permit No. 429

# ATTACHMENT II-13B

PRIME FARMLAND NEGATIVE DETERMINATION REQUEST



June 8, 2012

Mr. Scott Fowler  
Illinois Department of Natural Resources  
Office of Mines and Minerals  
Land Reclamation Division  
524 South Second Street  
Springfield, IL 62701-1787

RE: Negative Determination Request

Dear Mr. Fowler:

Pursuant to 62 Ill. Adm. Code 1785.17, Sunrise, LLC seeks a negative determination for the prime farmlands noted on the "Soils Information Chart" in Part II, and soils maps included with this request. These areas, containing 1.3 acres, include industrial/commercial areas not historically cropped.

Pre-mining aerial photos indicate, and site visits verify, the industrial/commercial areas were not used for cropland for any five years or more out of the ten years immediately preceding the acquisition, including purchase, lease, or option, of the lands for the purpose of conducting or allowing through resale, lease or option, the conduct of surface coal mining and reclamation operations.

Based upon the above, Sunrise Coal, LLC, respectfully requests the described acres be determined not to have been historically used for cropland purposes, thus, not prime farmland.

Sincerely,

Brent K. Bilsland  
President

XC: Midwest Reclamation Resources, Inc.