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## Large Filing Separator Sheet

Case Number : 05-360-EL-BSB  
05-361-EL-BTX

File Date : 2/7/06

Section : 2 of 4

Number of Pages : 166

Description of Document :  
TRANSCRIPT

Geological Survey at 614-265-6576.

<<Cincinnati Gas and Electric Substation.doc>>

New 138 kV Transmission Line

The hillsides in the project area are underlain by Kope Formation bedrock and colluvial soils derived from the Kope Formation. Soils developed on, or derived from, the Kope Formation are highly prone to landsliding, especially under disturbed-slope conditions. Any construction activity on slopes in the project area should be preceded by a thorough geotechnical assessment of site conditions. The attached portion of the ODNR, Division of Geological Survey's bedrock geology map of the New Richmond quadrangle shows the outcrop area of the Kope Formation at the project site. A copy of this map can be obtained from the Division of Geological Survey at 614-265-6576.

<<Cincinnati Gas and Electric Transmission Line.doc>>

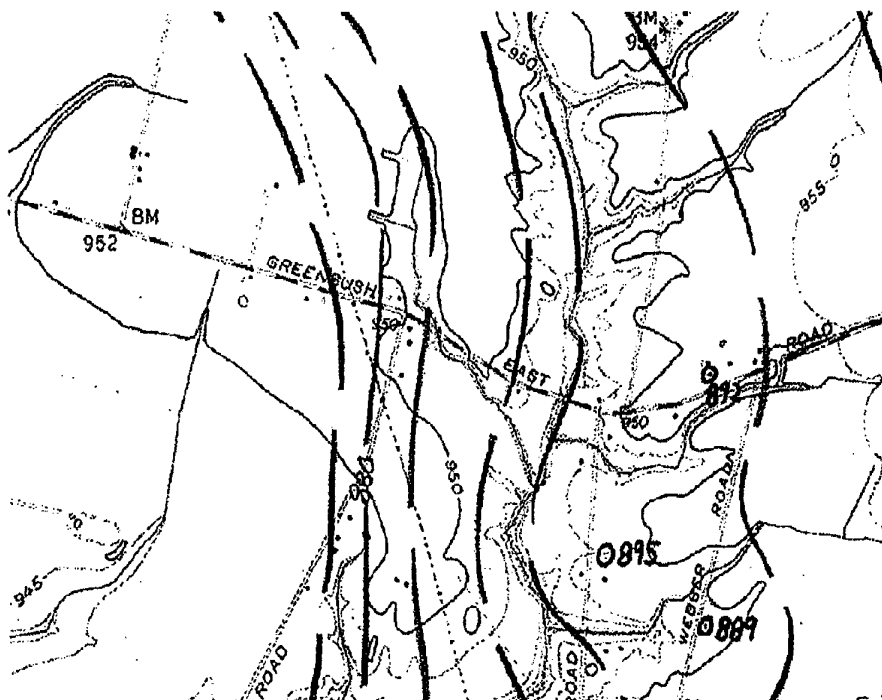
Special Flood Hazard Area: The proposed project may or may not be located in a Special Flood Hazard Area. To assist you in this determination, please contact the community's floodplain administrator. A list of community floodplain administrators can be found on the ODNR - Division of Water website at <http://www.dnr.state.oh.us/water/floodpln/>. To view a copy of a Flood Insurance Rate Map for your project area, you can either contact the community floodplain administrator, or obtain a copy online from the FEMA Flood Map Store at <http://store.msc.fema.gov/>.

ODNR appreciates the opportunity to provide these comments. Please contact Randy Sanders at 614.265.6344 if you have questions about these comments or need additional information.

Randall E. Sanders  
Environmental Administrator  
Division of Real Estate & Land Management  
Ohio Department of Natural Resources  
1952 Belcher Drive C-4  
Columbus Ohio 43224  
614.265.6344  
fax 614.267.4764  
[randy.sanders@dnr.state.oh.us](mailto:randy.sanders@dnr.state.oh.us)



Cincinnati Gas and Electric Substation.c Cincinnati Gas and Electric Transmission Line.



#### Explanation

• 880 Water well data point located by Jack A. Leuw.

+ Exposure of bedrock

○ Exposure of glacial drift

Solid contour lines in areas of thin glacial drift.

Dashed contour lines in areas of thick glacial drift.

Prepared in cooperation with the Department of the Interior  
United States Geological Survey  
Cooperative Geologic Mapping Program (CGMP/ROMAP)

#### Contour Interval

950
940
930
920
910
900
890
880
870
860
850
840

UNITED STATES GEOLOGICAL SURVEY  
WASHINGTON, D. C. 20508

STATE OF OHIO, DEPARTMENT OF NATURAL RESOURCES, DIVISION OF GEOLOGICAL SURVEY	
OPEN-FILE MAP: BT-8408	
TITLE: BEDROCK TOPOGRAPHY OF THE MOUNT GRAB, OHIO	
QUADRANGLE	
Date completed: 12-16-93	Geology by: Gregory A. Schumacher
Data fieldwork conducted: _____ to _____	
<small>The information contained on this map was prepared by the State of Ohio and is subject to revision. The Ohio Geological Survey has no responsibility for the accuracy of the information contained on this map or for the use of the information for purposes not intended by the State of Ohio.</small>	



## United States Department of the Interior

### FISH AND WILDLIFE SERVICE

Ecological Services  
6950 Americana Parkway, Suite H  
Reynoldsburg, Ohio 43068-4127  
(614) 469-6923/Fax: (614) 469-6919

August 11, 2004

Mr. Allan M. Hale  
URS Corporation  
36 East 7<sup>th</sup> Street, Suite 2300  
Cincinnati, OH 45202-4434

Dear Mr. Hale:

This is in response to your June 29, 2004 letter requesting information we may have regarding the occurrence or possible occurrence of Federally-listed threatened or endangered species within the vicinity of the proposed construction of a substation located at the corner of Hillcrest Road and Greenbush East Road in Brown County, Ohio. The new substation will require approximately seven miles of transmission line to the Eastwood substation in Clermont County. Per our conversation August 11, 2004, the transmission line will be above ground. This preliminary request for information will be used to develop a preferred and alternative route within the study area. There are no Federal wildlife refuges, wilderness areas, or Critical Habitat within the vicinity of this project.

The Service recommends that once the preferred and alternative route have been developed, requests for threatened and endangered species information submitted to the Service's Ohio Field Office include the following information: 1) location data including latitude and longitude of project area, site address, and county; 2) a detailed project description, including layout of any new construction; 3) a detailed description of onsite habitat, including the size, location, and quality (when available) of streams, wetlands, forested areas and other natural areas, and proposed impacts; 4) a description of the forested habitat onsite, including type of forest, and presence of dead trees, split branches or trunks, and exfoliating bark, and proposed impacts; 5) photographs representative of all cover types on the site and encompassing views of the entire site (photocopies are acceptable); and 6) a topographic map with the project area identified. This information may enable our staff to fully evaluate potential impacts to any threatened or endangered species which may occur within the vicinity of the project.

**ENDANGERED SPECIES COMMENTS:** The proposed project lies within the range of the **Indiana bat (*Myotis sodalis*)**, a Federally-listed endangered species. Since first listed as endangered in 1967, their population has declined by nearly 60%. Several factors have contributed to the decline of the Indiana bat including the loss and degradation of suitable hibernacula, human disturbance during hibernation, pesticides, and the loss and degradation of forested habitat, particularly stands of large, mature trees. Fragmentation of forest habitat may also contribute to declines. Summer habitat requirements for the species are not well defined but the following are considered important:

1. Dead or live trees and snags with peeling or exfoliating bark, split tree trunk and/or branches, or cavities, which may be used as maternity roost areas.
2. Live trees (such as shagbark hickory and oaks) which have exfoliating bark.
3. Stream corridors, riparian areas, and upland woodlots which provide forage sites.



Should the proposed site contain trees or associated habitats exhibiting any of the characteristics listed above, we recommend that the habitat and surrounding trees be saved wherever possible. If the trees must be cut, further coordination with this office is recommended. Additionally, suitable bat roost trees should not be cut between April 15 and September 15.

If desirable trees are present and must be cut, mist net or other surveys may be warranted to determine if bats are present. Any survey should be designed and conducted in coordination with the Endangered Species Coordinator for this office. The survey should be conducted in June or July, since the bats would only be expected in the project area from approximately April 15 to September 15.

A portion of the study area includes Clermont County which lies within the range of the **running buffalo clover** (*Trifolium stoloniferum*), a Federally-listed endangered species. This species can be found in partially shaded woodlots, mowed areas (lawns, parks, cemeteries), and along streams and trails. Running buffalo clover requires periodic disturbance and a somewhat open habitat to successfully flourish, but cannot tolerate full-sun, full-shade, or severe disturbance. Should the proposed project impact any of the habitat types described above, further coordination with this office may be required.

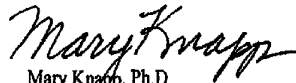
The proposed site is also within the range of the **rayed bean mussel** (*Villosa fabalis*), a Federal Candidate species. The Service is providing the following information regarding this species in the event there are potential stream impacts associated with the construction of this project. The rayed bean is generally known from smaller, headwater creeks, but records exist in larger rivers. They are usually found in or near shoal or riffle areas, and in the shallow, wave-washed areas of lakes. Substrates typically include gravel and sand, and they are often associated with, and buried under the roots of, vegetation, including water willow (*Justicia americana*) and water milfoil (*Myriophyllum* sp.). The rayed bean has been recorded in the East Fork of the Little Miami River, and is potentially present in its tributaries. Should the proposed project directly or indirectly impact any of the habitat types described above, further coordination with this office may be required.

The proposed project lies within the range of the **sheepnose mussel** (*Plethobasus cyphus*), a Federal Candidate species. The sheepnose mussel is primarily a larger-stream species. Due to the project location, no impacts to this species are anticipated. Relative to this species, this precludes the need for further action on this project as required by the 1973 Endangered Species Act, as amended.

This technical assistance letter is submitted in accordance with provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the Endangered Species Act of 1973, as amended, and is consistent with the intent of the National Environmental Policy Act of 1969, and the U.S. Fish and Wildlife Service's Mitigation Policy.

If you have any questions regarding our response or if you need additional information, please contact Karyn Tremper at extension 13.

Sincerely,

  
Mary Knapp, Ph.D.  
Supervisor

cc: ODNR, DOW, SCEA Unit, Columbus, OH

**Ohio Historic Preservation Office**

567 East Hudson Street  
Columbus, Ohio 43211-1030  
614/ 298-2000 Fax: 614/ 298-2037

Visit us at [www.ohiohistory.org](http://www.ohiohistory.org)



**OHIO  
HISTORICAL  
SOCIETY**  
SINCE 1885

August 16, 2004

Aaron Geckle  
URS Corporation  
36 E. Seventh Street, Suite 2300  
Cincinnati, Ohio 45202

Dear Mr. Geckle:

Re: Proposed Cincinnati Gas and Electric Substation  
Hillcrest Road and Greenbush East Road, Brown County, Ohio

This is in response to your letter of June 29, 2004 concerning the proposed project. Our comments are submitted in accordance with the provisions of Section 106 of the National Historic Preservation Act of 1966 (36 CFR 800).

A check of our records shows no previously recorded sites or surveys in your study area. A number of prehistoric sites have been identified south of the project area suggesting that sites may be present in the project area. You indicate that a preliminary survey will be conducted. Please include photographs and information about buildings in the area of potential effects. We look forward to the report of the investigation.

If you have any questions please contact me at (614) 298-2043 or [jquinlan@ohiohistory.org](mailto:jquinlan@ohiohistory.org).

Sincerely,

Julie Quinlan, Program Reviews Manager  
Resource Protection and Review

**4906-15-04 Technical data**

(A) Site/route alternatives. Information on the location, major features, and the topographic, geologic, and hydrologic suitability of site/route alternatives shall be submitted by the applicant. This information may be derived from the best available reference materials.

(1) Geography and topography. The applicant shall provide map(s) of not less than 1:24,000 scale, including the area one thousand feet on each side of a transmission line alignment, and the area within the immediate vicinity of a substation site or compressor station site, which shall include the following features:

(a) The proposed transmission line alignments, including proposed turning points.

(b) The proposed substation or compressor station site locations.

(c) Major highway and railroad routes.

(d) Identifiable air transportation facilities, existing or proposed.

(e) Utility corridors.

(f) Proposed permanent access roads.

(g) Lakes, ponds, reservoirs, streams, canals, rivers, and swamps.

(h) Topographic contours.

(i) Soil associations or series.

(j) Population centers and legal boundaries of cities, villages, townships, and counties.

(2) Slope and soil mechanics. The applicant shall:

(a) Provide a brief, but specific description of the soils in the areas depicted on the above map(s) where slopes exceed twelve per cent. This information may be extracted from published sources.

(b) Discuss the rationales as to suitability of the soils for foundation construction.

(B) Layout and construction. The applicant shall provide information on the proposed layout and preparation of route/site alternatives, and the description of the proposed major structures and their installation as detailed below.

(1) Site activities. The applicant shall describe the proposed site clearing, construction methods and reclamation operations, including:

- (a) Surveying and soil testing.
- (b) Grading and excavation.
- (c) Construction of temporary and permanent access roads and trenches.
- (d) Stringing of cable and/or laying of pipe.
- (e) Removal and disposal of construction debris such as crates, pallets, etc.
- (f) Post-construction reclamation.

(2) Layout for associated facilities. The applicant shall:

(a) Provide a map of 1:2,400 scale of the site of major transmission line associated facilities such as substations, compressor stations and other stations, showing the following proposed features:

- (i) Final grades after construction, including the site and access roads.
- (ii) Proposed location of major structures and buildings.
- (iii) Fenced-in or secured areas.
- (iv) Estimated overall dimensions.

(b) Describe reasons for the proposed layout and any unusual features.

(c) Describe plans for any future modifications in the proposed layout, including the nature and approximate timing of contemplated changes.

(C) Transmission equipment. The applicant shall provide a description of the proposed transmission lines, as well as switching, capacity, metering, safety and other equipment pertinent to the operation of the proposed electric power and gas transmission lines and associated facilities. Include any provisions for future expansion.

(1) Provide the following data for electric power transmission lines:

- (a) Design voltage.
- (b) Tower designs, pole structures, conductor size and number per phase, and insulator arrangement.
- (c) Base and foundation design.
- (d) Cable type and size, where underground.
- (e) Other major equipment or special structures.

(2) Provide a description for electric power transmission substations that includes a single-line diagram and a description of the proposed major equipment, such as:

- (a) Breakers.
- (b) Switchgear.
- (c) Bus arrangement and structures.
- (d) Transformers.
- (e) Control buildings.
- (f) Other major equipment.

(3) Provide the following data for gas transmission lines:

- (a) Maximum allowable operating pressure.
- (b) Pipe material.
- (c) Pipe dimensions and specifications.
- (d) Other major equipment.

(4) Provide a description of gas transmission facilities such as:

- (a) Control buildings.
  - (b) Heaters, odorizers, and above-ground facilities.
  - (c) Any other major equipment.
-

Effective: 12/15/2003

R.C. 119.032 review dates: 09/30/2003 and 09/30/2008

Promulgated Under: 111.15

Statutory Authority: 4906.03

Rule Amplifies: 4906.06, 4906.03

Prior Effective Dates: 12/27/76, 11/6/78, 7/7/80, 7/7/88, 8/28/98

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## 4906-15-04 TECHNICAL DATA

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### (A) Alternative Sites/Routes of Projects

#### (1) Geography and Topography

A map at 1:24,000 scale, including the area 1,000 feet from the boundaries of the proposed substation sites, is presented as Figure 04-1. This map was developed from the Mount Orab, Ohio 1960 (photorevised 1982) United States Geological Survey (USGS) 7-1/2 minute topographic map. The data on this map was updated using information from a field reconnaissance conducted by URS in June 2004, and digital aerial orthophotographs provided by the USGS (1994).

(a) *Transmission Line:* The proposed alignments for the associated 138 kV transmission line coming into the Hillcrest Substation are given on Figure 04-1. The complete candidate routes of the Hillcrest-Eastwood 138 kV transmission line, including all of the proposed turning points, are included in the concurrent Hillcrest-Eastwood 138 kV Electric transmission line OPSB Application (PUCO Case 05-361-EL-BTX). Note that the 300-foot wide swath extending from Greenbush East Road to the substation yard is part of the transmission line route and is evaluated fully in that Application.

(b) *Proposed Substation Locations:* The proposed candidate locations for the Hillcrest Substation switchyard are shown on Figure 04-1. The Preferred Site is located north of Greenbush East Road and east of Driver-Collins Road. The Alternate Site is located at the southwest corner of the intersection of Greenbush East Road and Hillcrest Road.

(c) *Major Highway and Railroad Routes:* No interstates, U.S. or state highways, or railroads were identified within 1,000 feet of the candidate sites. U.S. Route 68 is located approximately 4,500 feet to the west of the sites, with State Route 32 approximately 2

miles to the south. The Norfolk and Western Railroad is located approximately two and a half miles south of the sites. Greenbush East Road is adjacent to the north of the Alternate Site and is approximately 1,200 feet to the south of the proposed substation fence-line on the Preferred Site. Hillcrest Road is adjacent to the east of the Alternate Site.

(d) ***Air Transportation Facilities:*** No existing or proposed air transportation facilities were identified within 1,000 feet of either candidate site. The Clermont County Airport is located approximately 10 miles west-northwest of the Preferred and Alternate Sites.

(e) ***Utility Corridors:*** The Stuart-Foster transmission line will be tapped by the project and crosses a portion of both the Preferred and Alternate Sites running northwest to southeast. The alignment of this existing 345 kV transmission line is shown on Figure 04-1.

(f) ***Proposed Permanent Access Roads:*** Construction of a permanent gravel access road will be required from Greenbush East Road to the fence-line of the Preferred Site and from Hillcrest Road or Greenbush East Road to the fence-line of the Alternate Site.

(g) ***Lakes, Ponds, Reservoirs, Streams, Canals, Rivers, and Swamps:*** A full description of the lakes, ponds, reservoirs, streams, canals, rivers, and swamps (i.e. wetlands) located within 1,000 feet of the proposed Preferred and Alternate Sites is provided in Section 4906-15-07(B)(3) of this Application. No wetlands, streams, or other water bodies are located on or will be affected by either candidate substation site.

(h) ***Topographic Contours:*** The topographic contours of the study area, provided at 10-foot intervals, are shown on Figure 04-1. The topography of the study area is relatively flat, with elevations ranging from 955 feet to 945 feet. No steep slopes are located within the proposed construction areas for the proposed Preferred or Alternate Sites.



(i) ***Soil Associations Crossed by the Preferred and Alternate Sites:*** Descriptions of the soil associations and series underlying the Preferred and Alternate Sites can be found in Section 4906-15-07(B)(4) of this Application. Figure 07-2 shows the soil series in the study area. No soil conditions were found that would potentially limit the construction feasibility of the proposed project.

(j) ***Population Centers and Legal Boundaries:*** Population centers and legal boundaries within the vicinity of the proposed Preferred and Alternate Sites are shown in Figure 04-1. Both the Preferred and Alternate Sites are located in unincorporated portions of Green Township, in Brown County in southwestern Ohio. Population estimates and projections for Brown County and Green Township are provided in Table 06-1.

(2) **Slope and Soil Mechanics**

Slopes on the Preferred and Alternate Sites do not exceed 12 percent. Slope mechanics are not expected to cause problems.

(B) **Layout and Construction**

(1) **Site Activities**

(a) ***Surveying and Soil Testing:*** The selected site will be surveyed to establish the site contours and perimeter. The surveying will be completed using conventional and/or aerial methods. Substation boundaries will be staked prior to construction. Soil testing will be performed for the substation at the certificated site. No soil suitability issues related to the project at either candidate site are expected.

(b) ***Grading and Excavation:*** Minimal excavation and grading is expected as both candidate sites are practically flat. The substation yard and access drive will be raised 6 to 12 inches above the existing grade to assist in providing drainage from the site. A gravel

base will be established within the fence line of the new substation and along the access road.

(c) **Access Roads and Trenches:** For the Preferred Site a gravel access road will be constructed from Greenbush East Road to the substation yard, or in the case of the Alternate Site from Hillcrest Road or Greenbush East Road. No trenches are proposed as part of this project.

(d) **Stringing of Cable:** Cable installation to and from and within the substation will be accomplished using tension stringing and manual methods.

(e) **Removal and Disposal of Construction Debris:** As construction work proceeds, the construction area will be kept clean of all rubbish and debris resulting from the work. Refuse and cleared vegetation will be properly disposed of in an approved landfill or other appropriate location.

(f) **Post Construction Reclamation:** After construction, the fenced area of the substation will be marked with "high voltage" signage. Areas between the fence line and property boundary will be seeded and landscaped appropriately.

(g) **Other Site Activities:** Equipment foundations (piles and concrete pads) will be installed following site grading and excavation activities. Once the foundations are in place the substation equipment will be brought in by truck and erected using truck mounted cranes and bucket trucks.

## **(2) Layout for Associated Facilities**

(a) **Map of Associated Facilities:** Maps of the Hillcrest Substation initial layout and projected ultimate layout on the Preferred Site are provided in Appendix 04-1. The facility layout will be similar for the Alternate Site if selected, with the exception that the Hillcrest Eastwood 138 kV transmission line will exit the site to the northwest.

(b) ***Reasons for Proposed Layout and Unusual Features:*** The Hillcrest Substation equipment will be positioned on the candidate sites to minimize the amount of 345 kV line construction. The 345 kV A-frame take-off structures will straddle the existing 345 kV transmission line centerline. The 345 kV ring bus will be built to provide a high level of reliability while keeping the station footprint relatively small. In addition, a 138 kV bus will be built using a box structure. This type of box construction is both cost and space effective. The layout on the Preferred Site will also allow for possible future transmission and distribution additions as required. There are no unusual features associated with construction of this project.

(c) ***Future Modification Plans:*** No additions beyond the initial layout are expected before 2010 although the need for facility expansion at Hillcrest Substation will be dictated by actual growth rates in Clermont and Brown Counties over the next 20 years. Possible future modification plans include three additional 138 kV circuits and four 34.5 kV distribution circuits. The projected future modifications for this substation are shown on the ultimate layout drawing as given in Appendix 04-1. The additions include busses for three additional 138 kV lines, an additional 345/138 kV transformer, two 138/34.5 kV transformers with two 34.5 kV circuits per transformer, two 138 kV capacitor banks, and a bus tie breaker.

(C) **Transmission Equipment**

(1) **Electric Transmission Line Data**

An outage on the Stuart-Foster 345 kV transmission line (circuit no. F4511) of three weeks duration is planned for spring 2007 to tap the line into Hillcrest Substation and install the circuit breakers. There will also be a short outage in spring 2008 to commission the Hillcrest Substation.

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Further details regarding the electric transmission line interconnections with the Hillcrest-Eastwood 138 kV transmission line are provided under separate cover (PUCO Case Number 05-361-EL-BTX).

**(2) Electric Transmission Substation Data**

**(a) Breakers:** Three 345 kV, 2000 ampere, 50 kiloamperes, Sulfur Hexafluoride (SF6) circuit breakers.

**(b) Switchgear:** None anticipated.

**(c) Bus Arrangement and Structures:** The Hillcrest Substation 345 kV bus arrangement will be a 3-position ring with the capability to expand to 4-position. The 138 kV bus arrangement will be two straight busses with a bus tie breaker built using box-bay type structures. The construction will include a transformer low-side breaker feeding a short bus section with one feeder breaker.

The projected ultimate arrangement includes 5 breakers per bus (one transformer low-side breaker, two 138 kV feeder breakers, one 138 kV capacitor bank breaker and a 138/34.5 kV transformer high-side supply breaker). The ultimate layout also includes two 34.5 kV distribution busses. Each of these busses will be built using a box-bay type structure and will include two 34.5 kV feeder breakers.

**(d) Transformers:** The initial construction will have one 345/138 kV, 400 MVA auto-transformer. The ultimate arrangement adds a second 345/138 kV 400 MVA auto-transformer and two 138/34.5 kV, 60 MVA transformers.

**(e) Control Buildings:** The control building will be a 28 by 44 foot pre-engineered, metal-sided enclosure.

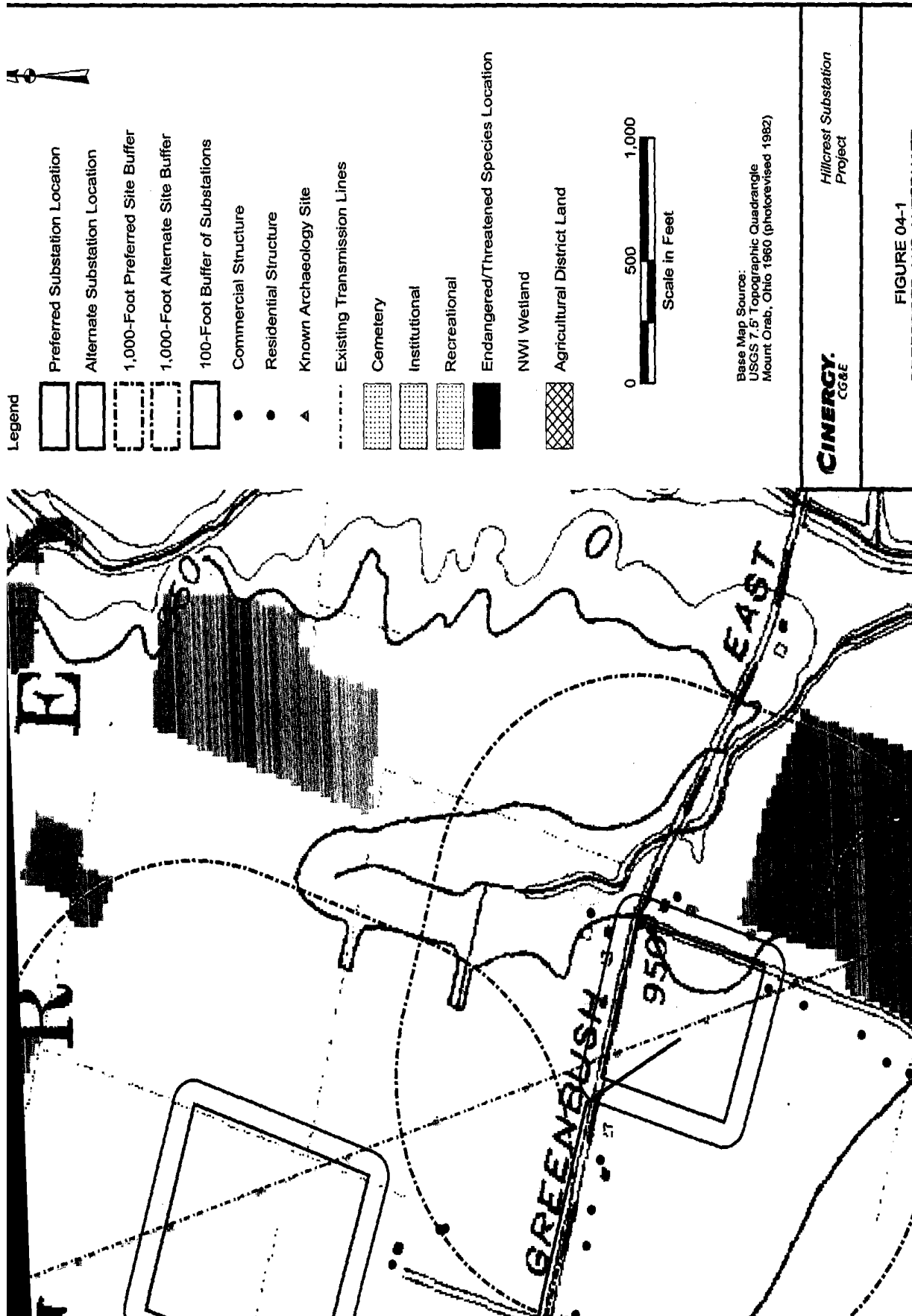
(f) *Other Major Equipment:* One station power auxiliary transformer (138 kV/120-240 V, 100 KVA).

(3) **Gas Transmission Line Data**

Not Applicable

(4) **Gas Transmission Facilities**

Not Applicable

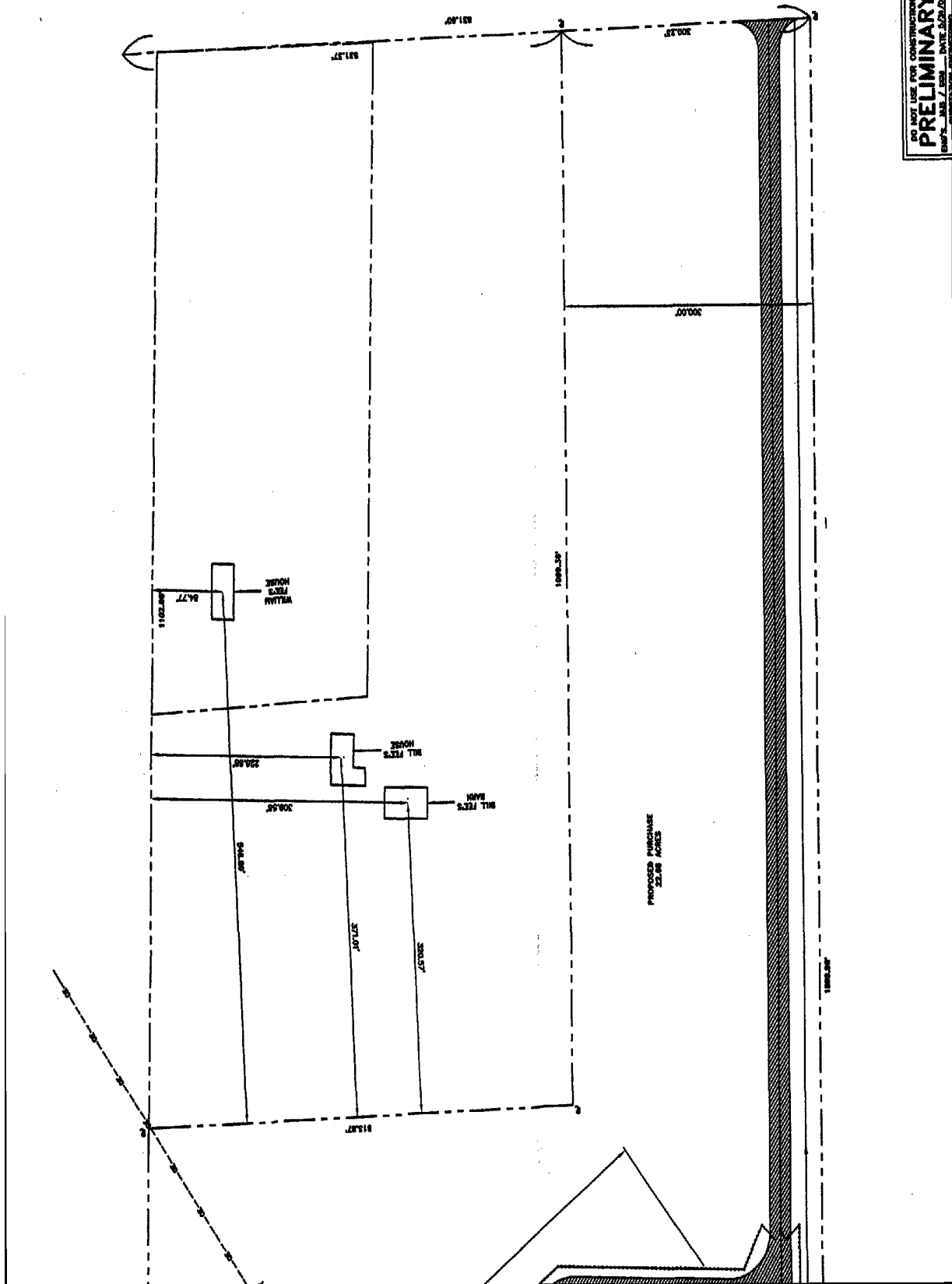


**APPENDIX 04-1**

**SUBSTATION LAYOUTS**







**4906-15-05 Financial data.**

(A) Ownership. The applicant shall state the current and proposed ownership status of the proposed facility, including sites, rights-of-way, structures, and equipment. The information shall cover sole and combined ownerships, any leases, options to purchase, or franchises, and shall specify the extent, terms, and conditions of ownership, or other contracts or agreements.

(B) Electric capital costs. The applicant shall submit estimates of applicable capital and intangible costs for the various components of electric power transmission facility alternatives. The data submitted shall be classified according to the federal energy regulatory commission uniform system of accounts prescribed by the public utilities commission of Ohio for the utility companies, unless the applicant is not an electric light company, a gas company or a natural gas company as defined in Chapter 4905. of the Revised Code (in which case, the applicant shall file the capital costs classified in the accounting format ordinarily used by the applicant in its normal course of business). The estimates shall include:

- (1) Land and land rights.
- (2) Structures and improvements.
- (3) Substation equipment.
- (4) Poles and fixtures.
- (5) Towers and fixtures.
- (6) Overhead conductors.
- (7) Underground conductors and insulation.
- (8) Underground-to-overhead conversion equipment.
- (9) Right-of-way clearing and roads, trails, or other access.

(C) Gas capital cost. The applicant shall submit estimates of applicable capital and intangible costs for the various components of gas transmission facility alternatives. The data submitted shall be classified according to the federal energy regulatory commission uniform system of accounts prescribed by the public utilities commission of Ohio for utility companies, unless the applicant is not an electric light company, a gas company or a natural gas company as defined in Chapter 4905. of the Revised Code (in which case, the applicant shall file the capital costs classified in the accounting format ordinarily used by the applicant in its normal course of business). The estimates shall include:

- (1) Land and land rights.
- (2) Structures and improvements.

(3) Pipes.

(4) Valves, meters, boosters, regulators, tanks, and other equipment.

(5) Roads, trails, or other access.

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Effective: 12/15/2003

R.C. 119.032 review dates: 09/30/2003 and 09/30/2008

Promulgated Under: 111.15

Statutory Authority: 4906.03

Rule Amplifies: 4906.06, 4906.03

Prior Effective Dates: 12/27/76, 11/6/78, 7/7/80, 3/14/83, 1/15/85, 7/7/88, 6/5/93, 8/28/98

#### 4906-15-05 FINANCIAL DATA

##### (A) Ownership

The Cincinnati Gas & Electric Company (CG&E) will own, operate, and maintain the Hillcrest Substation. CG&E will own the land required for the project. The Preferred Site is currently under option. Two of the lots comprising the Alternate Site are currently owned by CG&E and the remaining two adjoining parcels will be purchased if this site should be certificated by the OPSB.

##### (B) Electric Capital Costs

Estimates of applicable capital and intangible project costs for the Preferred and Alternate Sites are identified in Table 05-1.

**TABLE 05-1  
ESTIMATES OF APPLICABLE INTANGIBLE AND CAPITAL COSTS  
FOR THE PREFERRED AND ALTERNATE SITES**

FERC Account Number	Description	Preferred Site	Alternate Site
350	Land <sup>1</sup>	\$ 125,000	\$ 280,000
353	Transmission Station Equipment	\$5,786,000	\$5,786,000
421	Other Costs <sup>2</sup>	\$ 233,000	\$ 234,000
<b>TOTAL</b>		<b>\$6,144,000</b>	<b>\$6,300,000</b>

<sup>1</sup> Estimated costs for account 350 include purchase of property and/or easements, acquisition, surveying, clearing, and overhead.

<sup>2</sup> Estimated costs for account 421 represent an estimate of the first year tax on the project.

##### (C) Gas Capital Cost

This Application is for an electric substation. Therefore this section is not applicable.

**4906-15-06 Socioeconomic and land use impact analysis.**

(A) The applicant shall conduct a literature search and map review for the area within one thousand feet on each side of each proposed transmission line centerline and within one thousand feet of the perimeter of each substation or compressor station designed to identify specific land use areas as required in paragraph (B)(3) of this rule. On-site investigations shall be conducted within one hundred feet of each side of each proposed transmission line centerline and within one hundred feet of the perimeter of each substation or compressor station to characterize the potential effects of construction, operation, and maintenance of the proposed facility.

(B) The applicant shall provide, for each of the site/route alternatives and adjacent areas, map(s) of not less than 1:24,000 scale, including the area one thousand feet on each side of a transmission alignment, and the area within the immediate vicinity of a substation site, which map(s) shall include the following features:

- (1) Proposed transmission line alignments, including proposed turning points.
- (2) Proposed substation or compressor station locations.
- (3) General land use within the area, including, but not limited to:
  - (a) Residential use.
  - (b) Commercial use.
  - (c) Industrial use.
  - (d) Cultural use (as identified in paragraph (F) of this rule).
  - (e) Agricultural use.
  - (f) Recreational use.
  - (g) Institutional use (e.g., schools, hospitals, churches, government facilities, etc.).
- (4) Transportation corridors.
- (5) Existing utility corridors.
- (6) Noise-sensitive areas.
- (7) Agricultural land (including agricultural district land) existing at least sixty days prior to submission of the application located within each transmission line right-of-way or within each site boundary.

(C) The applicant shall provide for each of the site/route alternatives, a description of the impact of the proposed facility on each land use identified in paragraph (B)(3) of this rule. As it relates to agricultural land, the evaluation shall include impacts to cultivated land, permanent pasture land, managed wood lots, orchards, nurseries, and agricultural-related structures.

(1) Construction: The applicant shall estimate the probable impact of the proposed facility on each land use (including: (a) buildings that will be destroyed, acquired, or removed as the result of the planned facility and criteria for owner compensation; and (b) field operations [such as plowing, planting, cultivating, spraying, and harvesting], irrigation, and field drainage systems).

(2) Operation and maintenance: The applicant shall estimate the probable impact of the operation and maintenance of the proposed facility on each land use.

(3) Mitigation procedures: The applicant shall describe the mitigation procedures to be used during the construction of the proposed facility and during the operation and maintenance of the proposed facility to minimize impact to land use, such as effects on subsurface field drainage systems.

(D) The applicant shall provide the following public interaction information for each of the site/route alternatives:

(1) A list of counties, townships, villages, and cities within one thousand feet on each side of the centerline or facility perimeter.

(2) A list of the public officials contacted regarding the application, their office addresses, and office telephone numbers.

(3) A description of the program or company/public interaction planned for the siting, construction, and operation of the proposed facility, i.e. public information programs.

(4) A description of any insurance or other corporate program, if any, for providing liability compensation for damages, if such should occur, to the public resulting from construction or operation of the proposed facility.

(5) A description of how the facility will serve the public interest, convenience, and necessity.

(6) An estimate of the increase in tax revenues as a result of facility placement.

(7) A description of the impact of the facility on regional development, referring to pertinent formally adopted regional development plans.

(E) The applicant shall provide the following health, safety, and aesthetic information for each site/route alternative:

(1) The applicant shall provide a description of how the facility will be constructed, operated, and maintained to comply with the requirements of applicable state and federal statutes and regulations, including the 2002 edition of the "National Electrical Safety Code", applicable occupational safety and health administration regulations, U.S. department of transportation gas pipeline safety standards, and Chapter 4901:1-16 of the Administrative Code.

(2) For electric power transmission facilities, the applicant shall discuss the production of electric and magnetic fields during operation of the preferred and alternate site/route. If more than one conductor configuration is to be used on the proposed facility, information shall be provided for each configuration that constitutes more than ten per cent of the total line length, or more than one mile of the total line length being certificated. Where an alternate structure design is submitted, information shall also be provided on the alternate structure. The discussion shall include:

(a) Calculated electric and magnetic field strength levels at one meter above ground, under the conductors and at the edge of the right-of-way for:

(i) Winter normal conductor rating.

(ii) Emergency line loading.

(iii) Normal maximum loading.

Provide corresponding current flows, conductor ground clearance for normal maximum loading and distance from the centerline to the edge of the right-of-way. Estimates shall be made for minimum conductor height. The applicant shall also provide typical cross-section profiles of the calculated electric and magnetic field strength levels at the normal maximum loading conditions.

(b) References to the current state of knowledge concerning possible health effects of exposure to electric and magnetic field strength levels.

(c) Description of the company's consideration of electric and magnetic field strength levels, both as a general company policy and specifically in the design and siting of the transmission line project including: alternate conductor configurations and phasing, tower height, corridor location and right-of-way width.

(d) Description of the company's current procedures for addressing public inquiries regarding electric and magnetic field strength levels, including copies of informational materials and company procedures for customer electric and magnetic field strength level readings.

(3) The applicant shall discuss the aesthetic impact of the proposed facility with reference to plans and sketches, including the following:

(a) The views of the proposed facility from such sensitive vantage points as residential areas, lookout points, scenic highways, and waterways.

(b) Structure design features, as appropriate.

(c) How the proposed facility will likely affect the aesthetic quality of the site and surrounding area.

(d) Measures that will be taken to minimize any visual impacts created by the proposed facility.

(4) For electric power transmission facilities, the applicant shall provide an estimate of the level of radio and television interference from operation of the proposed facility, identify the most severely impacted areas, if any, and discuss methods of mitigation.

(F) The applicant shall provide, for each of the site/route alternatives, a description of the impact of the proposed facility on cultural resources. This description shall include potential and identified recreational areas and those districts, sites, buildings, structures, and objects which are recognized by, registered with, or identified as eligible for registration by the Ohio historical society or the Ohio department of natural resources. It shall include but not be limited to the following:

(1) Location studies: The applicant shall describe studies used to determine the location of cultural resources within the study corridor. Correspondence with the Ohio historical preservation office shall be included.

(2) Construction: The applicant shall estimate the probable impact of the construction of the proposed facility on cultural resources.

(3) Operation and maintenance: The applicant shall estimate the probable impact of the operation and maintenance of the proposed facility on cultural resources.

(4) Mitigation procedures: The applicant shall describe the mitigation procedures to be used during the operation and maintenance of the proposed facility to minimize impact to cultural resources.



(G) The applicant shall submit data and related information on noise emissions generated by the proposed transmission line and associated facilities. Construction noise information shall be submitted for only those portions of transmission line routes requiring more than four months of actual construction time to complete in residential, commercial, and other noise-sensitive areas.

(1) Construction: To assure noise control during construction, the applicant shall estimate the nature of any intermittent, recurring, or particularly annoying sounds from the following sources:

- (a) Dynamiting or blasting activities.
- (b) Operation of earth moving and excavating equipment.
- (c) Driving of piles.
- (d) Erection of structures.
- (e) Truck traffic.
- (f) Installation of equipment.

(2) Operation and maintenance: The applicant shall estimate the effect of noise generation due to the operation or maintenance of the transmission line and associated facilities.

(3) Mitigation procedures: The applicant shall describe any equipment and procedures designed to mitigate noise emissions during both the site clearing and construction phase, and during the operation and maintenance of the facility to minimize noise impact.

(H) The applicant shall provide site-specific information that may be required in a particular case to adequately describe other significant issues of concern that were not addressed above. The applicant shall describe measures that were taken and/or will be taken to avoid or minimize adverse impact. The applicant shall describe public safety-related equipment and procedures that were and/or will be taken.

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## 4906-15-06 SOCIOECONOMIC AND LAND USE IMPACT ANALYSIS

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### (A) Socioeconomic Characteristics

A study of the general socioeconomic characteristics of the project area was conducted as part of this Application. The study is summarized below and was based on a literature review of materials available from local planning and governmental agencies.

The Preferred and Alternate Substation Sites are located within unincorporated Green Township in Brown County. The socioeconomic characteristics of the study areas are essentially the same for both the Preferred and Alternate Sites due to their close proximity, located to the north and south of Greenbush East Road, respectively. These characteristics are summarized in the following discussion. Table 06-1 contains summary information regarding population estimates and projections for the project area.

**TABLE 06-1  
STUDY AREA DEMOGRAPHICS OF PREFERRED AND  
ALTERNATE SITES**

Government Unit	1990 Census	2000 Census	2010 Projections
<b>Brown County</b>	34,966	42,285	48,045
Green Township (Unincorporated)	1,510	1,978	Not Available

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Source: Office of Strategic Research, Ohio Department of Development Ohio County Profiles. (2000).  
U.S. Census Bureau. [www.factfinder.census.gov](http://www.factfinder.census.gov).

Based on data from the U.S. Census Bureau and the Ohio Department of Development County Profile, the median income for 2000 in Brown County was \$38,303. Local government, manufacturing and retail trade employed the most workers within the county.

Green Township accounts for approximately seven percent of Brown County's total population and has experienced moderate population growth over the past 10 years. The

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unemployment rate for Green Township was 4.2 percent in 1999. Census figures indicate that the median household income of Green Township was \$44,485 in 1999.

It is not anticipated that construction, operation, or maintenance of the proposed substation at either candidate site will negatively affect the socioeconomic characteristics of the project area. Some positive economic effects are expected as some local workers may be employed to install the substation and annual taxes will be collected by Green Township on the facility.

**(B) Route Alignments and Land Use**

**(1) Proposed Routing**

The proposed alignments of the Hillcrest Eastwood 138 kV transmission line coming into the Preferred and Alternate Sites are shown on Figure 04-1. The proposed alignments and turning points of the Hillcrest-Eastwood 138 kV transmission line are discussed in the associated transmission line Application (the subject of PUCO case no. 05-361-EL-BTX).

**(2) Substations**

The Preferred Site of the Hillcrest Substation is located north of Greenbush East Road and east of Driver-Collins Road. The Alternate Site is located at the southwest corner of the intersection of Greenbush East Road and Hillcrest Road. No existing substations are within the vicinity of the candidate sites. The Preferred Site includes a 300-foot swath from Greenbush East Road to the substation yard (Appendix 04-1). This area is part of the transmission line route and is evaluated in the associated Application (PUCO case no. 05-361-EL-BTX). Selected photographs of the Preferred and Alternate Substation Sites are provided in Appendix 06-4.

### (3) General Land Use

A map at 1:6,000 scale, including the land use within 1,000 feet of the boundaries of the Preferred and Alternate Sites, is presented as Figure 06-1. The project vicinity is dominated by agricultural land, with a few scattered residences and isolated woodlots.

(a) **Residential:** Clusters and scattered occurrences of single-family residences are located throughout the project vicinity. Residential developments are most highly concentrated to the south of the candidate sites along Hillcrest Road towards Mount Orab. No significant permanent effects to nearby residences are expected as a result of this project. Plantings will be used outside the substation fence line for visual screening as appropriate. Temporary effects to nearby residences will be limited to construction noise, which will be restricted to daytime hours.

**Preferred Site:** No residences are located within the boundaries, or within 100 feet, of the Preferred Site. Two residences are located to the south of the proposed substation location and east of the proposed access road to Greenbush East Road. These residences are owned by Mr. Bill Fee, as is the Preferred Site that is currently under option. The construction and operation of the substation and transmission line to and from the substation is not expected to have a significant effect on these nearby residences, the owner of which has agreed to sell property to CG&E for the project.

**Alternate Site:** Two mobile home residences are located within the boundaries of the Alternate Site at the southwest corner of the intersection of Greenbush East Road and Hillcrest Road. These properties would be purchased and the homes removed. The owners of these homes have been contacted in person by CG&E land services and have agreed to sell to CG&E if the Alternate Site is certificated. Three residences are located within 100 feet of the Alternate Site to the north, south, and east. All landowners in the immediate vicinity of the Alternate Site have been contacted by letter regarding the project, and no complaints or negative comments about the project have been received regarding development of the Alternate Site.

(b) **Commercial:** No commercial land uses were identified in the project vicinity.

(c) **Industrial:** No industrial land uses were identified in the project vicinity.

(d) **Cultural:** No known cultural resource landmarks were identified within 1,000 feet of the candidate sites based upon data obtained from The National Register of Historic Places (NRHP) and The Ohio Historic Preservation Office (OHPO).

(e) **Agricultural:** Much of the land in the project vicinity is used for agricultural purposes and is the dominant land use within 1,000 feet of both candidate sites. The entire 22.7 acres of the Preferred Site (including the 300-foot wide swath to Greenbush East Road) is currently used for agriculture and in 2004 was planted in soybeans. If the Preferred Site is selected, ultimately none of the acreage comprising the site will remain in agriculture, although in the short term some of the land in the 300-foot wide swath between the substation footprint and Greenbush East Road may be leased back for agricultural purposes. Based on field surveys it appears that the Alternate Site has not been used for agriculture for at least two seasons and development at this site will not result in the loss of active agricultural lands.

(f) **Recreational:** No recreational land uses were identified in the project vicinity.

(g) **Institutional:** No institutional land uses were identified in the project vicinity.

**(4) Transportation Corridors**

Transportation corridors within the vicinity of the candidate sites include Hillcrest Road, Greenbush East Road, and Driver Collins Road, all of which are relatively narrow two-lane roads without shoulders which are maintained by the County.

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**(5) Existing Utility Corridors**

Both candidate sites are crossed by the CCD Stuart-Foster 345 kV transmission line as shown on Figure 04-1.

**(6) Noise Sensitive Areas**

All noise sensitive receptors located within 1,000 feet of the Preferred and Alternate Sites are residences. At the time of the field survey, four homes were identified within 1,000 feet of the Preferred Site with none of these homes being within 100 feet. Sixteen residences are within 1,000 feet of the Alternate Site with three residences located within 100 feet (not including the two located within the boundaries of this site.) Further discussion of noise impact during construction is provided in Section 4906-15-06(G).

**(7) Agricultural Land**

The Preferred and Alternate Site are not agricultural district land parcels. No agricultural district land parcels are identified within 1,000 feet of either candidate site.

**(C) Land Use Impacts of the Proposed Project**

**(1) Impact of Construction**

*Preferred:* The entire 22.7 acre site will be converted from active agriculture to substation use if the Preferred Site is selected. Selected photographs of the Preferred Substation Site are provided in Appendix 06-4.

*Alternate:* Two residential parcels of approximately 1.8 and 1.5 acres each and about 8 acres of old-field will be converted to substation use if the Alternate Site is selected. Selected photographs of the Alternate Substation Site are provided in Appendix 06-4.

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**(2) Impact of Operation and Maintenance**

Operation and maintenance of the substation is anticipated to have little to no impact on the surrounding land use. CG&E personnel will periodically visit the site for regular operation and maintenance purposes. Additional site visits may occur after significant storm events or during unplanned outages. In the rare event that major repairs are necessary, the work will be limited to the substation property.

**(3) Mitigation Procedures**

The potential for project related erosion and off-site sedimentation will be mitigated through the development of a Stormwater Pollution Prevention Plan for the project which will include the use of silt fences, straw bales, or other appropriate erosion and sedimentation control techniques as required. After construction and final grading are complete, disturbed surface areas will be re-vegetated and landscaped as appropriate.

**(D) Public Interaction Information**

**(1) Townships, Towns and Villages within 1,000 feet of the Site Alternatives**

The Preferred and Alternate Sites are located in Green Township, Brown County. No other townships, towns, villages or otherwise incorporated areas are within 1,000 feet of the candidate sites.

**(2) Public Officials Contacted**

During the preliminary substation site and transmission line route selection process, Environmental Technologies and Communications, Incorporated (ETC) sent questionnaires to 35 local officials and residents regarding the proposed project (including the associated transmission line). Of the 17 responses received, ten individuals expressed support for the project, five expressed a neutral position, and two were of mixed opinion. Most respondents understood the need for additional electric supply in

their area that is experiencing residential, commercial, and industrial growth. A copy of the questionnaire, including comments received, and a list of the contacted individuals are included in Appendix 06-1.

CG&E and URS provided federal and state agencies with letters and a map summarizing the proposed. The letters provided them with the opportunity to submit preliminary comments and suggest preferences regarding possible routes. Copies of responses received are included in Appendix 06-2.

The United States Fish and Wildlife Service (USFWS) responded by letter, dated August 11, 2004, regarding the occurrence or possible occurrence of Federally listed threatened or endangered species within the vicinity of the proposed project. The USFWS reported that there are no federal wildlife refuges, wilderness areas, or critical habitats within the project area. The USFWS identified four federally-listed endangered or candidate species in the project range, including the Indiana bat (*Myotis sodalis*), running buffalo clover (*Trifolium stoloniferum*), rayed bean mussel (*Villosa fabalis*), and the sheepsnose mussel (*Plethobasus cyphus*).

The Ohio Department of Natural Resources, Division of Wildlife (DOW) responded by mail on July 8, 2004 regarding the proposed project. ODNR-Division of Wildlife was not aware of any natural areas, preserves, or ecologic resources in the project vicinity.

The ODNR, Division of Real Estate and Land Management (REALM) responded by electronic mail (e-mail) on September 22, 2004. Comments about the project were generated by an inter-disciplinary review in consultation with the DOW and other divisions within the ODNR. These comments were prepared under the authority of the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.), the National Environmental Policy Act and other applicable laws and regulations. The ODNR-REALM had the following comments about the project:



- A Natural Heritage Database search indicated no records of rare species or unique natural features within the proposed project area. ODNR reported no state nature preserves or scenic rivers in the vicinity of the proposed substation site.
- The ODNR, Division of Geological Survey is unaware of any geologic constraints that would require special consideration at the site proposed for the development of the Hillcrest Substation.
- The ODNR stated the hillsides in the project area are underlain by Kope Formation bedrock and soils derived from the Kope Formation. Soils that are developed on, or derived from this formation, are prone to landsliding, especially under disturbed-slope conditions. ODNR recommended that prior to commencing construction activities, a thorough geotechnical assessment of the site conditions should be performed. It should be noted that the candidate sites are relatively flat and although a geotechnical assessment will be performed, landsliding will not be of concern on either candidate site.
- The ODNR stated that the proposed project area might be located in a Special Flood Hazard Area. Thus, ODNR recommended that local floodplain administrators be contacted and Flood Insurance Rate Maps be consulted. There are no flood hazards at either candidate site.

The Ohio Historic Preservation Office (SHPO) responded by mail on August 16, 2004 regarding the proposed project. A review of state records showed no previously recorded sites or surveys in the project study area. SHPO indicated that prehistoric sites have been identified south of the project study area and may potentially be present in the project area.

### **(3) Public Information Programs**

A public information open house was held on December 7, 2004 at the Western Brown High School Community Room at 476 West Main Street, Mount Orab, Ohio. Public notification for the open house included advertisements in the News Democrat and Clermont County Sun on Thursday December 2, 2004, and The Brown County Press on

Sunday December 5, 2004. Copies of these advertisements are included in Appendix 06-2. CG&E sent letters to the local officials informing them of the open house, and ETC followed up by telephone to confirm they received the letters.

CG&E coordinated with ETC to produce a poster notice and information brochure for the open house. Copies of these are provided in Appendix 06-2. The poster included a map showing the proposed substation sites and transmission line routing alternatives, and information on the location and time of the open house. Posters were placed in five commercial businesses local to the project area. The information brochure provided a project description, a summary of project routing and siting, purpose and need, schedule, construction sequence, power line safety, easement acquisition, and property restoration.

Six members of the public attended the December 7, 2004 public open house including two Green Township Trustees, a representative from the Brown County Department of Economic Development, a reporter from the News Democrat, and one local resident. All attendees recognized the need for additional electric service in the area and none expressed opposition to the project. Additional brochures and one of the poster-sized transmission line routing maps was given to the Green Township Trustees so that project information would be available if local residents asked about the project at the Green Township office. A copy of an article in the News Democrat following the public open house is included in Appendix 06-2.

#### **(4) Liability Compensation**

CG&E is self-insured and also purchases excess public liability and property damage insurance. CG&E will provide liability compensation for damages, if such should occur, as a result of construction or operation of the proposed facility.

#### **(5) Serving the Public Interest**

The project will serve the public interest by helping to ensure that increased demands for electricity are met in the future and that existing and future electrical service reliability is

enhanced throughout the extended project area. A more detailed discussion of the need for this project and how it will serve the public interest is included in Chapter 2 of this Application.

**(6) Tax Revenues**

CG&E will pay property taxes on utility facilities in each jurisdiction crossed by the completed transmission line. The approximate average annual property taxes for the first ten years associated with the Preferred and Alternate Sites are \$224,000 and \$226,000, respectively.

**(7) Impact on Regional Development**

Regional development within Brown County is not expected to be directly impacted as a result of this project. However, the project will have an indirect positive impact for Brown County through the increased reliability and availability of electricity throughout the region as discussed in Chapter 2 of this Application.

**(E) Health and Safety**

**(1) Compliance with Safety Regulations**

The construction and operation of the Hillcrest Substation and the associated Hillcrest-Eastwood 138 kV transmission line (the subject of PUCO case no. 05-361-EL-BTX) will comply with the requirements of the National Electric Safety Code (NESC) and the Public Utilities Commission of Ohio. The project will also meet all applicable safety standards as established by the Occupational Health and Safety Administration.

**(2) Electric and Magnetic Fields**

**(a) *Calculated Electric and Magnetic Field Levels:*** The sources of magnetic and electric fields at electric substations include power distribution equipment such as

transformers, switchgear, buses, feeders, service panels, and general wiring. Based upon past measurements taken at existing CG&E substations, magnetic field levels at the fence-line of the proposed Hillcrest Substation would not be expected to exceed 5 mG. This is largely due to field canceling effects of the various pieces of electrical equipment that comprise the substation. Electric field strength levels at the fence-line of the proposed Hillcrest Substation would not be expected to exceed 1 V/m. This can be attributed to the shielding provided by the metallic casings on components and cables, and any enclosure walls. The exceptions to these predicted low-level electric and magnetic fields would be where the transmission and distribution lines enter or leave the proposed Hillcrest Substation. A further discussion of the estimated electric and magnetic field levels from the proposed Hillcrest-Eastwood transmission line is included in the Hillcrest-Eastwood 138 kV transmission line Application (PUCO case no. 05-361-EL-BTX).

There are no standards for levels not to be exceeded in the U.S. or Ohio, but the maximum predicted electric and magnetic field levels for the project are well below the International Commission on Non-Ionizing Radiation Protection (ICNIRP) 24-hour reference levels for public exposure of 1000 mG and 5 kV/m, as given in the National Radiological Protection Boards (NRPB) *Advice on limiting exposure to electromagnetic fields in the 0 to 300 GHz range* (Document NRPB, 15, No. 2, (2004)).

**(b) Current State of EMF Knowledge:** Scientists have been doing intense research on EMF and health since 1979. A wide variety of studies have been conducted and the results of some have been reported in the news media. In response to public interest, two major U.S. government-sponsored programs examined the different studies by looking at the data and reaching general conclusions.

In 1997, the National Academy of Sciences (NAS) issued the results of their six-year study. In the words of the NAS,

"...the conclusion of the committee is that the current body of evidence does not show that exposure to these fields presents a human-health hazard. Specifically, no conclusive and consistent evidence shows that exposures to residential electric and magnetic fields produce cancer, adverse neurobehavioral effects, or reproductive and developmental effects." (Executive Summary, p. 2)

The other project was a five-year cooperative research program between industry, the government, and citizen groups. This was authorized by the U.S. Congress in 1992 and had three tasks:

- i) to conduct a health effects research program;
- ii) to compile information for public outreach; and
- iii) to evaluate any other potential health hazards from low frequency electromagnetic fields (EMF).

The conclusions of this research are:

- The scientific evidence suggesting that exposure to EMF is a health hazard is weak.
- Other factors may account for the weak evidence that EMF may be a hazard, but no one knows what those factors might be.
- Most of the laboratory research shows no cause and effect relationship between EMF and diseases or changes in biological functions.
- There is a small amount of evidence that exposures may present a leukemia hazard, but this evidence is not strong enough to warrant concern from regulatory agencies.
- General public education programs aimed at ways to reduce exposures should be continued.
- Further research should focus on leukemia, degenerative diseases of the nervous system, and heart rate variability.

The report, completed in 1998, is titled "National Institute of Environmental Health Sciences Report on Health Effects from Exposure to Power-Line Frequency Electric and Magnetic Fields". It is available from the National Institutes of Health as publication number 99-4493, or at <http://www.niehs.nih.gov/emfrapid/booklet/home.htm>.

In addition to the U.S. studies, foreign research organizations have also looked at the evidence. In late 1999 researchers from the United Kingdom (UK) published the results of another project. The UK Childhood Cancer Study found no link between magnetic fields and childhood cancer. The principal investigator for this study is quoted as saying,

"The magnetic component of EMFs has been under suspicion for sometime, but this major study provides firm evidence that exposure to the levels of magnetic fields found in the UK does not augment risk for childhood cancer." (Sir Richard Doll, UK coordinating Committee on Cancer Research)

This study is reported in the December 1999 issue of "The Lancet" which is a British medical journal.

Although these references are several years old, virtually nothing has changed with regard to the conclusions based on more current research.

(c) **Line Design Considerations:** CG&E designs its facilities according to the NESC. The pole heights and configuration are chosen based on NESC specifications, engineering parameters, and cost. Further discussion of line design considerations related to electric and magnetic fields is included in the Hillcrest-Eastwood 138 kV transmission line Application (PUCO case no. 05-361-EL-BTX).

(d) **EMF Public Policy:** CG&E provides information on electric and magnetic fields to the public free of charge upon request. This information is also available on the Cinergy web page at [http://www.cinergy.com/Environment/default\\_1164.asp](http://www.cinergy.com/Environment/default_1164.asp). A copy of this information was provided at the public information meeting and is included in

Appendix 06-3. CG&E occasionally receives requests from customers asking for EMF measurements in and around their homes and businesses. This service is provided by CG&E to customers at no charge.

**(3) Aesthetic Impact**

**(a) Views of the Substation:**

***Preferred Site:*** Development of the Preferred Site will place the substation fence-line approximately 1,000 feet north of Greenbush East Road. The two residences that are currently part of the parcel that includes the Preferred Site will have the clearest view of the substation at this location, being located between the substation and Greenbush East Road. Otherwise, the site will be relatively obscured from public view.

***Alternate Site:*** Development of the Alternate Site will require the purchase and removal of two mobile homes. The remaining nearby residences and local traffic on both Greenbush East Road and Hillcrest Road will have a very clear view of the substation site at this location.

**(b) Structure Design Features:** Substation design features are based upon equipment needs, engineering design, and safety considerations, not upon consideration of potential aesthetic impacts.

**(c) Facility Effect on Site and Surrounding Area:** Views of the Preferred or Alternate Site are discussed above in Section 4906-15-06(H)(3)(a). The aesthetic quality of the site and immediately surrounding area will be significantly altered from existing conditions, those being a view of an agricultural field on Preferred Site and old-field and residential on the Alternate Site. The impacts of aesthetic alteration on surrounding land use can be minimized somewhat by landscaping to provide visual screening of the Preferred Site. If the Alternate Site should be certificated there will be little room left, after installation of substation equipment, for such landscaping. As such, aesthetic

impacts at the Alternate Site are expected to be greater than at the Preferred Site. Selected photographs of the Preferred and Alternate Substation Sites are provided in Appendix 06-4.

**(d) Visual Impact Minimization:**

**Preferred Site:** The view from Driver-Collins Road will be somewhat minimized by distance, about 1,000 feet, and an existing wooded fencerow along the western edge of the Preferred Site. In a similar manner wooded fencerows to the north and east also provide visual screening of this site. The size of the Preferred Site is well above that needed for the project; as a result there is adequate room for landscaping and visual screening plantings to be used as needed.

**Alternate Site:** Due to equipment needs and acreage limitations, the fence-line at the Alternate Site will be near to the property lines and the adjacent roads. If this site is selected landscaping and visual screenings will be utilized to the maximum extent possible but opportunities to minimize aesthetic effects at this site are limited due to the proximity of nearby residences and roadways.

**(4) Estimate of Radio and Television Interference**

No additional radio or television interference should result from the operation of the proposed substation at either the Preferred or Alternate Sites. During the operation of the substation, gas type discharges (corona) would result in both radio frequency interference (RFI) and television interference (TVI). These are localized effects (from ball and socket hardware in insulators, hardware to hardware, line to hardware, etc.) primarily from defective hardware and may be easily and quickly detected. Once detected, the hardware may either be repaired or replaced, thus eliminating the interference source. CG&E has a past record of quickly responding and correcting any such problems reported to it.



However, large corona levels are typically not encountered at 138 kV, so these types of interference do not generally occur, and should therefore not occur with the operation of the 138 kV and lower side of the substation. High corona levels can be encountered at 345 kV and above, but this is only applicable to the existing CCD transmission line that will be tapped by the proposed substation.

The radio frequency noise level of the conductors and substation equipment during heavy rain is greater than the fair weather noise level. However, the quality of radio reception under typical heavy rain is affected more by atmospheric conditions than by operation of electric facilities.

**(F) Cultural Impacts of the Proposed Project**

**(1) Archaeological Resources and Correspondence with Agency**

Natural and Ethical Environmental Solutions (NEES) performed a review of maps, files and electronic databases from The National Register of Historic Places (NRHP) and The State Historic Preservation Office (SHPO).

No previously recorded archeological sites were identified on either candidate site or within 1,000 feet of each site, as shown on Figure 04-1. A Phase I Cultural Resources Survey will be completed for the Preferred Site will be forwarded to the OPSB when completed. If the Alternate Site is selected, a Phase I Cultural Resources Survey will be completed for this site.

**(2) Construction Impacts on Cultural Resources**

If necessary, CG&E will consult with SHPO on the need and scope of any additional archaeological investigations once the Phase I Investigation is completed. That study will determine whether any additional studies are warranted prior to construction and, if so, the appropriate mitigation measures to avoid adverse impacts.

**(3) Operation and Maintenance Impacts on Cultural Resources**

The initial Phase I Investigation will include the entire project site and identify all areas of potentially significant cultural resources. Note that substation operation and maintenance operations do not typically involve subsurface disturbances. Therefore no impacts on cultural resources are anticipated during operation and maintenance of the Hillcrest Substation at either candidate site.

**(4) Mitigation Procedures**

Any cultural resources identified by the Phase I Archaeological Survey will be avoided to the greatest extent possible. In the unlikely event that impacts are unavoidable, CG&E will coordinate with the SHPO before proceeding and will work with the SHPO to determine appropriate mitigation.

**(G) Noise**

A temporary increase in noise during construction will occur at the site of the Hillcrest Substation from the use of earthmoving and construction equipment. All noise sensitive receptors located within the 1,000 feet of the Preferred and Alternate Sites are residences. At the time of the field survey, four homes were identified within 1,000 feet of the Preferred Site with none of these homes being within 100 feet. Sixteen residences are within 1,000 feet of the Alternate Site with three residences located within 100 feet. An additional two residences are located within the boundaries of the Alternate Site. A discussion of noise impact during construction is provided in Section 4906-15-06(G).

(1) **Construction**

(a) **Dynamiting or Blasting Activities:** None anticipated.

(b) **Operation of Earth Moving or Excavating Equipment:** Earthmoving and excavating equipment is expected to include bulldozers, excavators, and backhoes. Operation of this equipment will be limited to daylight hours, but such use will in itself be limited due to the generally flat nature of both sites. Table 06-2 shows typical noise levels for a variety of construction equipment expected to be used at the project site. Construction noise levels are not expected to exceed 88 decibels (db) at a distance of 50 feet from the construction equipment.

**TABLE 06-2  
CONSTRUCTION EQUIPMENT  
APPROXIMATE SOUND LEVELS**

<b>Equipment</b>	<b>Sound Level at 50 Feet (dB)</b>
Concrete pump truck	76
Forklift	75
Backhoe	84
Truck crane	86
Cherry picker	80
Frontend loader	86
Tractor truck	88
Concrete truck	83
Pickup truck	81
Air compressor	82
Welding machines	81
Bulldozer	86
Excavator	78
Tri-axle dumps	84
Vibratory roller	81
Hydraulic crane, 15 Ton	77
Hydraulic crane 120 Ton	84

Based on numbers from Kessler, 1978

(c) **Driving of Piles:** None anticipated.

(d) **Erection of Structures:** Structures will be erected by cranes and assembled by hand.

(e) **Truck Traffic:** Traffic will initially include construction and equipment delivery trucks. Once construction is complete, regular traffic will be limited to light-duty operation and maintenance trucks. Except under emergency conditions, truck traffic at the Hillcrest Substation generally will be limited to daylight hours.

(f) **Installation of Equipment:** Equipment will be installed using vehicle-mounted cranes.

(2) **Operation and Maintenance**

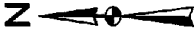
Minimal noise impacts are anticipated from the operation of the proposed substation. Periodic maintenance noise will include vehicles to and from the site related to infrequent maintenance of the substation equipment.

(3) **Mitigation Procedures**

Mitigation procedures will include properly maintained construction equipment with mufflers, construction during daylight hours, and noise related procedures done according to industry standards. No additional noise mitigation is expected as noise impacts will be limited to construction equipment and will be temporary in nature.

(H) **Other Significant Issues**

There are no other significant socioeconomic or land use impact issues beyond those addressed elsewhere in this Application or in the Application for the associated Hillcrest-Eastwood 138 kV transmission line (the subject of PUCO case no. 05-361-EL-BTX).



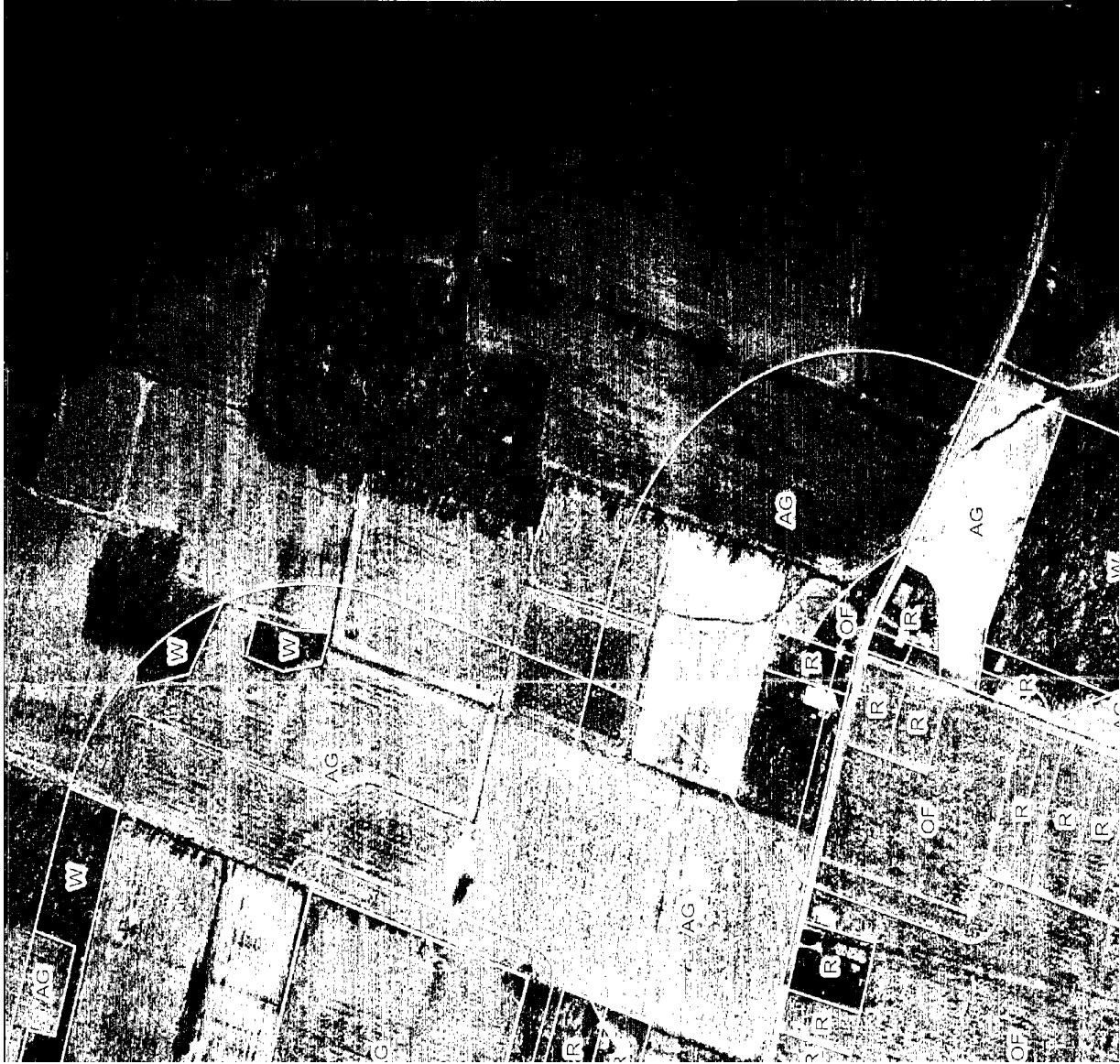
LEGEND:

- Preferred Substation Location
- Alternate Substation Location
- 100-foot Substation Buffer
- R Residential
- AG Agricultural
- W Wooded
- OF Old Field



Scale in Feet

Base Map Source: USGS Digital  
Ortho Quarter Quadrangles 1994



**APPENDIX 06-1**

**PUBLIC OFFICIALS CONTACTED AND QUESTIONNAIRE**

**Cinergy Stakeholder List**  
**Hillcrest - Eastwood**  
**138 kV Transmission Line**

Contact	Community/ Organization	Title	Phone Number	Address	City	ST	Zip
<b>Brown County</b>							
James Beasley	Brown County	Engineer	937-378-8456	325 W. State St.	Georgetown	OH	45121
Dale Reynolds	Brown County	Commissioner	937-378-3956	800 Mt. Orab Pike	Georgetown	OH	45121
Kirby Cornett	Brown County	Commissioner	937-378-3956	800 Mt. Orab Pike	Georgetown	OH	45121
Perry Ogden	Brown County	Commissioner	937-378-3956	800 Mt. Orab Pike	Georgetown	OH	45121
Kelly Cole	Brown County	Economic Development	937-378-3536	P.O. Box 329	Georgetown	OH	45121
<b>Green Township (Hillcrest/Greenbush area)</b>							
Gary Frye	Green Township	Trustee	937-444-3400	6303 Harrison Ave. (Township office)	Cincinnati	OH	45247
Emery Holden	Green Township	Trustee	937-444-2849	17380 Dietrick Rd (Home)	Mt. Orab	OH	45154
Doug Williams	Green Township	Trustee	937-444-3215	4073 Bard Well Buford Rd (Home)	Mt. Orab	OH	45154
<b>Pike Township (Mt. Orab area)</b>							
Jay Anderson	Pike Township	Trustee	937-444-7195	14102 New Harmony Salem Rd (Home)	Mt. Orab	OH	45154
Roger Griffith	Pike Township	Trustee	937-444-6228	13015 Lake Grant Rd (Home)	Bethel	OH	45106
David Henderson	Pike Township	Trustee	937-444-2775	Oakland Locust Ridge (Home)	Mt. Orab	OH	45154
<b>Mt. Orab</b>							
Brian Mount	City of Mt. Orab	Police Chief	937-444-2281	100 N. High St.	Mt. Orab	OH	45154
Lisa Reeves	City of Mt. Orab	Fire Chief	937-444-3945		Mt. Orab	OH	45154
Bruce Lunsford	City of Mt. Orab	Mayor	937-444-2692	100 N. High St.	Mt. Orab	OH	45154
Mike Spitznagel	City of Mt. Orab	Utilities	937-444-4141	100 N. High St.	Mt. Orab	OH	45154
Mike Boyd	Mt. Orab City Council	Clerk	937-444-4031 (Home) 937-444-2692 (City)	100 N. High St. (City)	Mt. Orab	OH	45154
Joe Howser	Mt. Orab City Council	President	937-444-2476 (Home) 937-444-2692 (City)	477 W. Main St (Home)	Mt. Orab	OH	45154

**Cinergy Stakeholder List  
Hillcrest - Eastwood  
138 kV Transmission Line**

Contact	Community/ Organization	Title	Phone Number	Address	City	ST	Zip
Kenny Sheffield	Mt. Orab City Council	Council Member	937-444-2692 (City)	100 N. High St. (City)	Mt. Orab	OH	45154
Joyce Wilson	Mt. Orab City Council	Council Member	937-444-2613 (Home) 937-444-2692 (City)	107 Red Bud Ln (Home)	Mt. Orab	OH	45154
Hermie Scott	Mt. Orab City Council	Council Member	937-444-3571 (Home) 937-444-2692 (Cell)	107 W. Point Pl (Home)	Mt. Orab	OH	45154
Dave Brenner	Mt. Orab City Council	Council Member	937-444-3334 (Home) 937-444-2692 (Cell)	408 Castle Ave (Home)	Mt. Orab	OH	45154
Fred Hanson	Mt. Orab City Council	Council Member	937-444-3969 (Home) 937-444-2692 (Cell)	126 Windfield Ter (Home)	Mt. Orab	OH	45154
<b>Williamsburg Township (Clermont County)</b>							
James W. Taylor	Williamsburg Township	Trustee President	513-724-3368	PO Box 499	Williamsburg	OH	45176
James F. Danbury	Williamsburg Township	Trustee VP	513-724-7852	PO Box 499	Williamsburg	OH	45176
Barb Henning	Williamsburg Township	Trustee	513-724-2994	PO Box 499	Williamsburg	OH	45176
Gregory W. Carson	Williamsburg Township	Clerk	513-724-8333	PO Box 499	Williamsburg	OH	45176
Richard Mallott	Williamsburg Township	Fire Chief	513-724-7744	915 West Main St.	Williamsburg	OH	45176
<b>Large Landowners/Organizations</b>							
Alma Monk	Sterling Township	owns Daydram Manor & Senco Products	513-724-2246	1567 Tri-County Highway	Williamsburg	OH	45176
Mrs. Ward McDonald	Williamsburg Township	NW of Eastwood Station 800 parsoners, new church camp SE of Eastwood Station	513-724-2816	4042 Hagemans Crossing Rd.	Williamsburg	OH	45176
Bible Baptist Church Pastor Charles Smith	Sterling Township		937-444-2493	PO Box 336	Mt. Orab	OH	45154
Richard (Dick) Howser	Green Township	3,500 acres W of Hillcrest Station		xxxx Driver Collins Rd.	Mt. Orab	OH	45154
Floyd Newberry Survey completed.	Mt. Orab Lion's Club	President	937-446-3349	24 Wagon Wheel Cir (Home)	Sardinia	OH	45171



Cinergy  
Hillcrest-Eastwood 138 kV Transmission Line  
Results of 17 Stakeholder Interviews

1 How familiar are you with Cinergy?

Answer categories # of responses	Very Familiar 6	Familiar 7	Somewhat Familiar 2	Somewhat Unfamiliar	Not familiar at all

2 On a scale of 1 to 5, how would you rate Cinergy's reputation as a provider of electricity, where 5 is very good and 1 is very poor?

Answer categories # of responses	5 (Very good) 7	4 4	3 4	2 2	1 (Very poor)

3 How would you rate Cinergy on the delivery of electricity, where 5 is very safe/ environmentally friendly and 1 is very unsafe/ environmentally unfriendly?

Answer categories # of responses	5 (Very safe/friendly) 6	4 9	3 3	2 2	1 (Very poor)

\*Two people were unsure.

Cinergy  
Hillcrest-Eastwood 138 kV Transmission Line  
Results of 17 Stakeholder Interviews

Comments:

Are there any areas for improvement?

Cinergy's cooperation with Pike Township has been absolutely horrible when we ask them to move a line back so we can widen a road. We have to go through hoops to get approval to widen a road and sometimes we get state grants to do so and Cinergy is so difficult to work with. This has happened numerous times. On Meeker Road, we tried for 6 years to get them to move their poles. South Central moves its poles immediately when we make a request. On Maple Grove Road, half the poles were Cinergy's and half were South Central's. South Central was cooperative and Cinergy took forever to move its poles. When they finally did, they left the old poles just laying in a ditch. Eventually people took them and used them for firewood. Cinergy said they were the telephone company's poles, they always have an excuse!

Cinergy's utility poles located in the center of ROWs cause trouble and Cinergy is not very cooperative when we've requested that the poles be moved to the back side of the ROW.

Cinergy is not always real responsive when it comes to moving lines for roadway expansion. South Central is much more cooperative.

I ranked them low as a provider of electricity because lately we've been losing power during storms. We need the new substation to keep the power running. Anytime we lose power, Cinergy gets it back on quickly but it's still devastating when you're trying to operate a water plant.

Cost. I sold farmland for a subdivision at 5 Mile Creek Estates and had to get PUCO approval for Cinergy to bury the line. It was very expensive to have the line buried. I thought I was helping Cinergy by requesting that the line be buried.

Keep the rates reasonable./ The rates are too high. (3 responses)

Cinergy can improve service and upkeep of lines. We have lines from several utility companies around here. When we call Cinergy to come out and trim trees near power lines, they only trim the slightest bit instead of cutting them back more so they don't grow against the power line again the next year.

Improve response time in relation to power outages. (2 responses)

Cinergy needs to trim trees more often on overhead lines.

Decrease the number of outages. Georgetown's recent power surges caused problems and some people lost small appliances.

Cinergy has always been careful about keeping animals away from power lines, but I know squirrels get fried from time to time.

Cinergy  
Hillcrest-Eastwood 138 kV Transmission Line  
Results of 17 Stakeholder Interviews

4 How aware are you of current electric line capacity and the impact of future load growth on those lines?

Very Aware	Somewhat Aware	Somewhat Unaware	Not At All Aware
3	7	1	6

5 How safe do you think power lines are?

Very Safe	Somewhat Safe	Somewhat Unsafe	Not At All Safe	Don't Know
9	7			1

Comments:

Why or why not?  
They are safer in the air than in the ground.  
Not sure about EMF risks.  
Sometimes the lines fall.  
Very safe if you're living around them, not at all safe if you're touching them.  
Don't really hear of accidents when poles are set back from the road where they ought to be.  
I have high-tension lines going across my property and everything has been fine.  
19,500 volt lines are unsafe on McEwen Pike. This new pole was set in the middle of a ditch, 3 feet away from the road when it should have been 16 feet.

6 Will the people in your community be for, against, or indifferent about a new substation and added power lines in your area?

For	Against	Indifferent	Mixed Opinion
10		5	2

Comments:

A new line would take care of the system instability and reduce the number of outages. (4 responses)  
My only concern would be if this line were to run too close to homes. (3 responses)  
Mt. Orab sees the growth coming. Growth requires added infrastructure and power. (3 responses)  
Some people will be concerned that if you bring in the new lines and more power, you will invite more sprawl. That goes hand in hand, but it is inevitable that growth will happen. There is nothing we can do about it.  
Even the farmers need a lot of electricity during grain drying season.  
You'll probably have 50% of the population for and 50% against the line. People don't like change. If Cinergy plans to put up a whole new set of poles, then it would be a big deal.  
It probably won't affect our township too much.

Cinergy  
Hillcrest-Eastwood 138 kV Transmission Line  
Results of 17 Stakeholder Interviews

7

Concerns:

What concerns would you have, if any, if this new electric transmission line were to run along the road, through farmland, along the railroad, or near houses in your area?  
A hospital (w/medical buildings) is looking to locate in Mt. Orab behind the new Kroger's. It would be visible from Route 32. A new road may be built from behind Kroger's to Brooks Malott Rd. The Mt. Orab Port Authority has the option to buy the road frontage on the west side of Brooks Malott, near the intersection of Route 32, all the way south to the railroad and maybe as far west as half way to Bodman Road. Mayor Lunsford should be able to give you more information about this, especially the business and public's point of view regarding whether a new line would enhance or slow the growth.

If they are placed on roads, they need to be set 16 feet off the road. Cinergy keeps building them too close and people can run into them.

People will be against it if it goes through their yard. Obtaining ROW could be difficult.

Only problems with power lines is being directly underneath them, but I expect that. That is the price of getting the power.

EMF/health related concerns. (2 responses)

There will be citizens in Pike Township concerned about EMF. Some houses have been built there near high-voltage lines and residents have raised concerns in the past.

People won't want lines running through farmland.

We have to have the electricity. As long as it's added safely, then do whatever we need to do to bring the power in.

Make sure lines are safe (for people and children) and locate them where they will not create a hazard. (2 responses)

Cinergy  
Hillcrest-Eastwood 138 kV Transmission Line  
Results of 17 Stakeholder Interviews

Have you ever heard about Electric and Magnetic Fields (EMF) in relation to power lines?

Yes	No	Don't Know
11	5	1

If yes: In years past, there have been concerns about possible health effects linked to power lines and EMF exposure. Do you feel your constituents would have any concerns today about EMF exposure?

Concerns:

Only the people living directly under it. One of the Mt. Orab officers bought a house under a high-tension power line. He had a young child and did a lot of research on EMF but couldn't find any real dangers. No, but I have heard talk about EMF being linked to leukemia.

I have heard power lines are unsafe and cause cancer. I have talked to Cinergy about this before and they told me that living near them is not dangerous. I knew a property owner who sold his land because it had a power line on it and he was afraid of getting cancer.

Yes. I've heard living near power lines can cause cancer.

Yes. Give them basic information about it though and that will help. It's a lack of information that is dangerous.

Holiday Homes builds right under power lines. I think there is a state law that requires poles to be placed a certain distance from homes.

When high-tension power lines were first put in the area, my neighbor said he felt and heard them when he was out working in the field.

People will have concerns if BIG towers/transmission lines are built.

Cinergy  
Hillcrest-Eastwood 138 kV Transmission Line  
Results of 17 Stakeholder Interviews

9

What type of information would you or the people in your area like to get from Cinergy about the new power line and a substation?

Comments:

*open ended responses*

Exact location. (9 responses)  
Results of EMF research/health issues. (5 responses)  
Capacity of new line. (3 responses)  
Safety of high-voltage power lines. (3 responses)  
The number of new lines. (2 responses)  
Justification of need. (2 responses)  
Basic information about the line. (3 responses)  
How lines would be constructed and run.  
Service area of new lines. Effect on surrounding area.  
Who pays for the new line.  
Timing.  
Community benefits of a new line.

10

How would people in your area prefer to get information and updates about the power line and substation? Check all that are preferred

Newsletters/brochure	12
Ads or columns in newspaper	6
Community meetings	6
Council/Township meetings	
Door hangers	
Information hotline	
Email	
Internet site	
Personal visits, personal letters	
Bill Stuffers	1
Letters to Homes	1

\*Local radio station, WAXE 97.7 FM

Cinergy  
Hillcrest-Eastwood 138 kV Transmission Line  
Results of 17 Stakeholder Interviews

11 Who in your area might have concerns about a new substation and electric transmission line?

Sterling Township Trustees  
Mt. Orab Mayor  
Kelly Cole, Brown County Econ. Development Manager  
Williamsburg Township Fire Chief Mallott  
Farmland Preservation Group (although they haven't been active in some time)  
Mt. Orab Fire Chief Lisa Reeves

12 Would you be interested in attending a community workshop to learn more about electricity and the need for new power lines in the area?

Yes	No	Maybe
10	3	4

13 Do you know of anyone else who might be interested in participating in a community workshop on the topic?

Yes	No
10	6

Who?  
Other trustees/council members. (6 responses)  
Mt. Orab mayor. (5 responses)  
Village of Williamsburg Schools  
WJAA ball fields director b/c of the close proximity to Eastwood Substation  
County engineer and commissioners

Cinergy  
Hillcrest-Eastwood 138 kV Transmission Line  
Results of 17 Stakeholder Interviews

- 14 Do you have any other comments or concerns you want Cinergy to know about?
- Does this project mean that I should go buy the property in the project area?  
There is a big need for this line in the Mt. Orab area. (2 responses)  
There is a power plant/power line coming from Ripley using the same poles. There may have been some public meetings about this recently.  
I appreciate Cinergy informing us about this project. (2 responses)  
We need to support the expansion of infrastructure to meet our growing need of power.  
Mt. Orab has annexed 374 more acres south of town to add condos and more retail development.  
Cinergy's economic development staff has been very cooperative.





## Ohio Department of Natural Resources

BOB TAFT, GOVERNOR

SAMUEL W. SPECK, DIRECTOR

Division of Wildlife  
Steven A. Gray, Chief  
1840 Belcher Drive  
Columbus, OH 43224-1300  
Phone: (614) 265-6300

July 8, 2004

Allan M. Hale, Ph.D.  
Senior Ecologist  
URS Corporation  
36 East 7<sup>th</sup> Street, Suite 2300  
Cincinnati, OH 45202-4434

RE: CG&E Substation  
Hillcrest Road and Greenbush East Road  
Brown County, OH

Dear Dr. Hale:

Your letter to Mike Budzik has been forwarded to me for response. In that letter you request information regarding potential impacts to natural areas, preserves, and other ecological resources in the area of the project referenced above. Please note that Mr. Budzik has retired, and Mr. Steve Gray is now Chief of the Division of Wildlife.

The Ohio Department of Natural Resources, Division of Wildlife, is not aware of any natural areas, preserves, or ecologic resources in the vicinity of this project. However, the Ohio Department of Natural Resources, Division of Natural Areas and Preserves maintains the Natural Heritage Database, the state's most comprehensive record of Ohio threatened and endangered species. If you have not already done so, it is recommended you contact the Division of Natural Areas and Preserves at (614) 265-6453. To process future projects more efficiently, I recommend you contact the Division of Natural Areas and Preserves prior to contacting the Division of Wildlife. To help expedite the process, please include the results of the Division of Natural Areas and Preserves' Natural Heritage Database request when contacting us regarding future projects.

The ODNR, Division of Wildlife is available to provide guidance on avoiding or minimizing impacts to any listed fauna and/or their habitat. If you should need further assistance, feel free to contact Becky Jenkins at (614) 265-6631.

Sincerely,

A handwritten signature in dark ink, appearing to read "Joe Mion".

Joe Mion  
Program Administrator

**Ohio Historic Preservation Office**

567 East Hudson Street  
Columbus, Ohio 43211-1030  
614/ 298-2000 Fax: 614/ 298-2037

Visit us at [www.ohiohistory.org](http://www.ohiohistory.org)



**OHIO  
HISTORICAL  
SOCIETY**  
SINCE 1885

August 16, 2004

Aaron Geckle  
URS Corporation  
36 E. Seventh Street, Suite 2300  
Cincinnati, Ohio 45202

Dear Mr. Geckle:

Re: Proposed Cincinnati Gas and Electric Substation  
Hillcrest Road and Greenbush East Road, Brown County, Ohio

This is in response to your letter of June 29, 2004 concerning the proposed project. Our comments are submitted in accordance with the provisions of Section 106 of the National Historic Preservation Act of 1966 (36 CFR 800).

A check of our records shows no previously recorded sites or surveys in your study area. A number of prehistoric sites have been identified south of the project area suggesting that sites may be present in the project area. You indicate that a preliminary survey will be conducted. Please include photographs and information about buildings in the area of potential effects. We look forward to the report of the investigation.

If you have any questions please contact me at (614) 298-2043 or [jquinlan@ohiohistory.org](mailto:jquinlan@ohiohistory.org).

Sincerely,

Julie Quinlan, Program Reviews Manager  
Resource Protection and Review



"Sanders, Randy"  
<Randy.Sanders@dnr.  
state.oh.us>

08/06/2004 02:03 PM

To: "aaron\_geckle@urscorp.com" <aaron\_geckle@URSCorp.com>  
cc: "jim.odell@puc.state.oh.us" <jim.odell@puc.state.oh.us>  
Subject: 04-0167; URS Corporation; Cincinnati Gas and Electric Co. Substation

Aaron, As requested, here are some preliminary comments for this project.  
Randy

ODNR COMMENTS TO URS Corporation; New Substation and Transmission Line for Cincinnati Gas and Electric Company  
Location: The intersection of Hillcrest Road and Greenbush East Road in Brown County, Ohio and a new electric transmission line from Cinergy's W.C. Beckjord Station in southwestern Clermont County to Silver Grove Substation in Campbell County, Kentucky. The Brown Co. site is located in Green and Sterling Twp., Brown Co., Mount Orab Quadrangle. The Clermont Co. site is located 0.9 mi. W. of the junction of Beckjord Rd. and Neil Rd., Pierce Twp., Clermont Co., New Richmond and Withamsville Quadrangles.  
Project: Construction of a new Substation and a 138kV electric transmission line from Cinergy's W.C. Beckjord Station in southwestern Clermont County to Silver Grove Substation in Campbell County, Kentucky.

The Ohio Department of Natural Resources (ODNR) has completed a review of the above referenced project. These comments were generated by an inter-disciplinary review within the Department. These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the National Environmental Policy Act, the Coastal Zone Management Act, Ohio Revised Code and other applicable laws and regulations. These comments are also based on ODNR's experience as the state natural resource management agency and do not supersede or replace the regulatory authority of any local, state or federal agency nor relieve the applicant of the obligation to comply with any local, state or federal laws or regulations.

Rare and Endangered Species: The Brown Co. site is located in Green and Sterling Twp., Brown Co., Mount Orab Quadrangle. Our Natural Heritage Database contains no records of rare species or unique natural features within the proposed project, and there are no state nature preserves or scenic rivers in the vicinity of the site.

The Clermont Co. site is located 0.9 mi. W. of the junction of Beckjord Rd. and Neil Rd., Pierce Twp., Clermont Co., New Richmond and Withamsville Quadrangles. Our Natural Heritage Database contains no records of rare species or unique natural features within the proposed project, and there are no state nature preserves or scenic rivers in the vicinity of the site.

#### Geological Survey:

##### Proposed Substation

The Division of Geological Survey is not aware of any geologic constraints which would warrant special consideration at the site proposed for construction of a new substation. Survey maps suggest the site is directly underlain by Illinoian-age silty-loam till that in turn is underlain by a variety of unconsolidated materials deposited in a buried, pre-glacial/interglacial valley. The uppermost bedrock unit (Grant Lake Limestone formation) is anticipated to underlie the site at a depth of 50 to 70 feet (see attached portion of a map showing bedrock surface elevations for the Mount Orab quadrangle). Maps depicting glacial geology, bedrock geology, and bedrock topography can be obtained from the ODNR, Division of

Geological Survey at 614-265-6576.

<<Cincinnati Gas and Electric Substation.doc>>

New 138 kV Transmission Line

The hillsides in the project area are underlain by Kope Formation bedrock and colluvial soils derived from the Kope Formation. Soils developed on, or derived from, the Kope Formation are highly prone to landsliding, especially under disturbed-slope conditions. Any construction activity on slopes in the project area should be preceded by a thorough geotechnical assessment of site conditions. The attached portion of the ODNR, Division of Geological Survey's bedrock geology map of the New Richmond quadrangle shows the outcrop area of the Kope Formation at the project site. A copy of this map can be obtained from the Division of Geological Survey at 614-265-6576.

<<Cincinnati Gas and Electric Transmission Line.doc>>

Special Flood Hazard Area: The proposed project may or may not be located in a Special Flood Hazard Area. To assist you in this determination, please contact the community's floodplain administrator. A list of community floodplain administrators can be found on the ODNR - Division of Water website at <http://www.dnr.state.oh.us/water/floodpln/>. To view a copy of a Flood Insurance Rate Map for your project area, you can either contact the community floodplain administrator, or obtain a copy online from the FEMA Flood Map Store at <http://store.msc.fema.gov/>.

ODNR appreciates the opportunity to provide these comments. Please contact Randy Sanders at 614.265.6344 if you have questions about these comments or need additional information.

Randall E. Sanders  
Environmental Administrator  
Division of Real Estate & Land Management  
Ohio Department of Natural Resources  
1952 Belcher Drive C-4  
Columbus Ohio 43224  
614.265.6344  
fax 614.267.4764  
[randy.sanders@dnr.state.oh.us](mailto:randy.sanders@dnr.state.oh.us)



Cincinnati Gas and Electric Substation.c Cincinnati Gas and Electric Transmission Line.



## United States Department of the Interior

### FISH AND WILDLIFE SERVICE

Ecological Services  
6950 Americana Parkway, Suite H  
Reynoldsburg, Ohio 43068-4127  
(614) 469-6923/Fax: (614) 469-6919

August 11, 2004

Mr. Allan M. Hale  
URS Corporation  
36 East 7<sup>th</sup> Street, Suite 2300  
Cincinnati, OH 45202-4434

Dear Mr. Hale:

This is in response to your June 29, 2004 letter requesting information we may have regarding the occurrence or possible occurrence of Federally-listed threatened or endangered species within the vicinity of the proposed construction of a substation located at the corner of Hillcrest Road and Greenbush East Road in Brown County, Ohio. The new substation will require approximately seven miles of transmission line to the Eastwood substation in Clermont County. Per our conversation August 11, 2004, the transmission line will be above ground. This preliminary request for information will be used to develop a preferred and alternative route within the study area. There are no Federal wildlife refuges, wilderness areas, or Critical Habitat within the vicinity of this project.

The Service recommends that once the preferred and alternative route have been developed, requests for threatened and endangered species information submitted to the Service's Ohio Field Office include the following information: 1) location data including latitude and longitude of project area, site address, and county; 2) a detailed project description, including layout of any new construction; 3) a detailed description of onsite habitat, including the size, location, and quality (when available) of streams, wetlands, forested areas and other natural areas, and proposed impacts; 4) a description of the forested habitat onsite, including type of forest, and presence of dead trees, split branches or trunks, and exfoliating bark, and proposed impacts; 5) photographs representative of all cover types on the site and encompassing views of the entire site (photocopies are acceptable); and 6) a topographic map with the project area identified. This information may enable our staff to fully evaluate potential impacts to any threatened or endangered species which may occur within the vicinity of the project.

**ENDANGERED SPECIES COMMENTS:** The proposed project lies within the range of the **Indiana bat** (*Myotis sodalis*), a Federally-listed endangered species. Since first listed as endangered in 1967, their population has declined by nearly 60%. Several factors have contributed to the decline of the Indiana bat including the loss and degradation of suitable hibernacula, human disturbance during hibernation, pesticides, and the loss and degradation of forested habitat, particularly stands of large, mature trees. Fragmentation of forest habitat may also contribute to declines. Summer habitat requirements for the species are not well defined but the following are considered important:

1. Dead or live trees and snags with peeling or exfoliating bark, split tree trunk and/or branches, or cavities, which may be used as maternity roost areas.
2. Live trees (such as shagbark hickory and oaks) which have exfoliating bark.
3. Stream corridors, riparian areas, and upland woodlots which provide forage sites.

Should the proposed site contain trees or associated habitats exhibiting any of the characteristics listed above, we recommend that the habitat and surrounding trees be saved wherever possible. If the trees must be cut, further coordination with this office is recommended. Additionally, suitable bat roost trees should not be cut between April 15 and September 15.

If desirable trees are present and must be cut, mist net or other surveys may be warranted to determine if bats are present. Any survey should be designed and conducted in coordination with the Endangered Species Coordinator for this office. The survey should be conducted in June or July, since the bats would only be expected in the project area from approximately April 15 to September 15.

A portion of the study area includes Clermont County which lies within the range of the **running buffalo clover** (*Trifolium stoloniferum*), a Federally-listed endangered species. This species can be found in partially shaded woodlots, mowed areas (lawns, parks, cemeteries), and along streams and trails. Running buffalo clover requires periodic disturbance and a somewhat open habitat to successfully flourish, but cannot tolerate full-sun, full-shade, or severe disturbance. Should the proposed project impact any of the habitat types described above, further coordination with this office may be required.

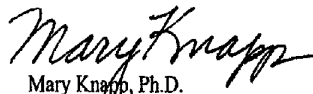
The proposed site is also within the range of the **rayed bean mussel** (*Villosa fabalis*), a Federal Candidate species. The Service is providing the following information regarding this species in the event there are potential stream impacts associated with the construction of this project. The rayed bean is generally known from smaller, headwater creeks, but records exist in larger rivers. They are usually found in or near shoal or riffle areas, and in the shallow, wave-washed areas of lakes. Substrates typically include gravel and sand, and they are often associated with, and buried under the roots of, vegetation, including water willow (*Justicia americana*) and water milfoil (*Myriophyllum* sp.). The rayed bean has been recorded in the East Fork of the Little Miami River, and is potentially present in its tributaries. Should the proposed project directly or indirectly impact any of the habitat types described above, further coordination with this office may be required.

The proposed project lies within the range of the **sheepnose mussel** (*Plethobasus cyphus*), a Federal Candidate species. The sheepnose mussel is primarily a larger-stream species. Due to the project location, no impacts to this species are anticipated. Relative to this species, this precludes the need for further action on this project as required by the 1973 Endangered Species Act, as amended.

This technical assistance letter is submitted in accordance with provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C.661 et seq.), the Endangered Species Act of 1973, as amended, and is consistent with the intent of the National Environmental Policy Act of 1969, and the U.S. Fish and Wildlife Service's Mitigation Policy.

If you have any questions regarding our response or if you need additional information, please contact Karyn Tremper at extension 13.

Sincerely,

  
Mary Knapp, Ph.D.  
Supervisor

cc: ODNR, DOW, SCEA Unit, Columbus, OH

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**APPENDIX 06-2**

**PUBLIC MEETING INFORMATION**

## Hillcrest/Eastwood Transmission Line - Substation and Power Line Construction Project



### OPEN HOUSE

5:00 p.m. - 8:00 p.m.

Tuesday, December 7, 2004

Western Brown High School

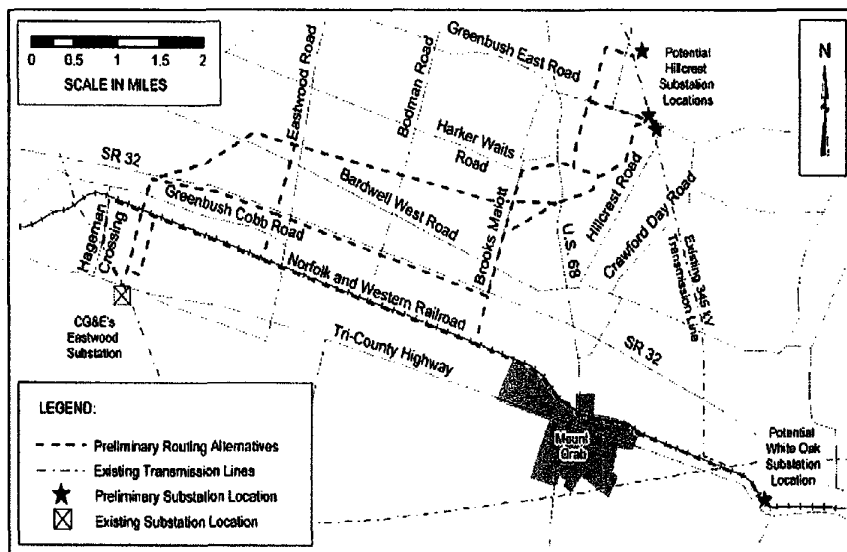
476 West Main Street in Mt. Orab

Cincinnati Gas & Electric would like to invite you to an open house to discuss the proposed new substation and electric transmission line in western Brown County and eastern Clermont County. The exact route will not be determined until after this open house because CG&E wants to listen to citizen concerns and questions. Only one of these routes, or some variation of one, may be approved by the Ohio Power Siting Board.

Company representatives will be present throughout the evening to answer questions about transmission line route options, the environmental assessment process, construction schedule, engineering considerations, property easements, and other topics. You can arrive at any time during the open house; there will be no formal presentation.

### Proposed Routes

#### Hillcrest - Eastwood Electric Transmission Line



### History

The proposed substation and transmission line are necessary to maintain reliable service to customers within the eastern part of the CG&E system. Rapid growth of residential developments and businesses is expected to continue, and the demand for electricity will result in reduced reliability if steps are not taken to provide a new source of power. CG&E has made improvements to substations, distribution lines, and other system components over the years, but such efforts can no longer meet the expected demand for electric service in this area.

Computer modeling of the CG&E system shows that the proposed substation and transmission line are the best options for meeting the projected demand.

CG&E and its consultants have assembled information that documents the environmental conditions, cost, engineering feasibility, and other features for the substation and power line routes. This information will be compiled into an application for a construction certificate that will be submitted to the Ohio Power Siting Board in 2005. Construction could begin in late 2006.



## Acquiring Easements

Easements are legal agreements that grant CG&E access to property to construct and maintain power lines within the area called a right-of-way. CG&E will contact property owners where easements are needed and will negotiate with each property owner to reach agreement on the compensation to be paid for granting each easement. Easement fees are negotiated at fair market rates, depending on the acreage and location of the easement.

Property owners maintain ownership of the property, subject to the rights granted to CG&E. CG&E will remove trees and tall shrubs from various widths of the right-of-way, which is a part of the easement signed with the property owner and filed in the appropriate county courthouse.

## Property Restoration

Where construction crews need to cross property, it is likely that a certain amount of grass, agricultural field, and/or landscaping will be damaged to some extent. CG&E will repair such damage at the company's expense before the project is complete. Any property disturbed by construction of the power line will be restored to its original condition or better. A videotape of the power line route will be taken before construction begins and will be used to guide restoration.

After the power line has been constructed, owners can use their property as before, with a few exceptions. Large permanent structures such as homes, garages and swimming pools are not allowed in the easement area because CG&E needs to maintain clear access to this area for vegetation maintenance and any future power line work. Specifics of property restoration will be discussed during easement negotiations.

## Project Schedule

- ▲ *Summer 2004* Substation land purchased
- ▲ *Winter 2004-05* Public Information Open House (Advertised in newspapers)
- ▲ *Spring 2005* Certificate application filed with the Ohio Power Siting Board
- ▲ *Summer 2005* Local Public Hearing and Adjudicatory Hearing as part of the Ohio Power Siting Board process (Advertised in newspapers)
- ▲ *Fall 2005* Certificate received, detailed surveys and engineering, easements obtained
- ▲ *Winter 2006-07* Construction begins, with land restoration following
- ▲ *Summer 2008* Line in service, final land restoration

## Summary

CG&E is committed to providing its customers with a reliable supply of electricity for home, business, and industrial uses. The Hillcrest-Eastwood Line will preserve the existing system's reliability and meet the needs of additional customers far into the future. This power line is just one of many steps CG&E is taking to make sure the electric transmission system remains safe and dependable. For more information about the Hillcrest-Eastwood electric transmission line project, please contact:

**For easement and land rights questions:**  
**Mark Kline at 513-287-4004 or**  
**[mkline@cinergy.com](mailto:mkline@cinergy.com)**

**For engineering or construction questions:**  
**Michael Clodfelder at 513-287-1721 or**  
**[mclodfelder@cinergy.com](mailto:mclodfelder@cinergy.com)**

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CG&E

## Hillcrest - Eastwood Transmission Line

### Substation and Power Line Construction Project



CG&E's Eastwood Substation.

## Project Summary

Population growth and commercial development in CG&E's eastern service territory have led to increased use of electricity. Detailed studies show the company must construct a new electric transmission line and associated substation in Brown County to maintain reliable service in this part of its system. The new transmission line will be named the Hillcrest-Eastwood Line.

The Hillcrest-Eastwood Line will begin at a substation to be built near either the intersection of Greenbush East and Hillcrest Roads, near where the existing transmission line crosses the roads, or near White Oak Station Road, as shown on the map. The new transmission line will end at CG&E's existing Eastwood Substation on Tri-County Highway in Clermont County.

CG&E and its consultants are assembling information that documents the environmental conditions, cost, engineering feasibility, and other features for the substation and power line routes. This information will be compiled into an application for a construction certificate that will be submitted to the Ohio Power Siting Board (OPSB). Assuming timely approval, construction will begin at the end of 2006. The target date for the line to begin service is summer 2008.

### Transmission Line Facts

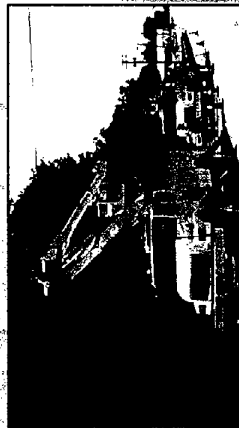
Line Voltage:	138,000 volts
Substation:	7-10 acres
Line Length:	Approx. 7 miles
Support Structures:	Steel and wood poles
Height of Structures:	50-100 feet
Distance between Structures:	100-500 feet

## Power Line Safety

Over the past few decades there has been discussion that exposure to power lines can cause adverse health effects. Power lines create electric and magnetic fields (EMF), which are invisible lines of force that surround electrical devices. Every electrical device, whether household appliance or wiring, industrial motor, or electric line, produces EMF.

Scientists from government agencies and universities in almost every industrialized country have conducted extensive research on this topic and found there is no cause and effect relationship between EMF and diseases. There is a small amount of evidence that exposures may present a leukemia hazard, but this evidence is not strong enough to warrant concern from regulatory agencies. Scientists generally agree that if there is any health risk, it is apparently a very small risk and affects a very small portion of the population. There are no government standards for exposures to EMF because there is so little evidence of any harm.

For more information about EMF, you can visit Cinergy's website at: [www.cinergy.com/environment](http://www.cinergy.com/environment).



Typical CG&E power line construction.

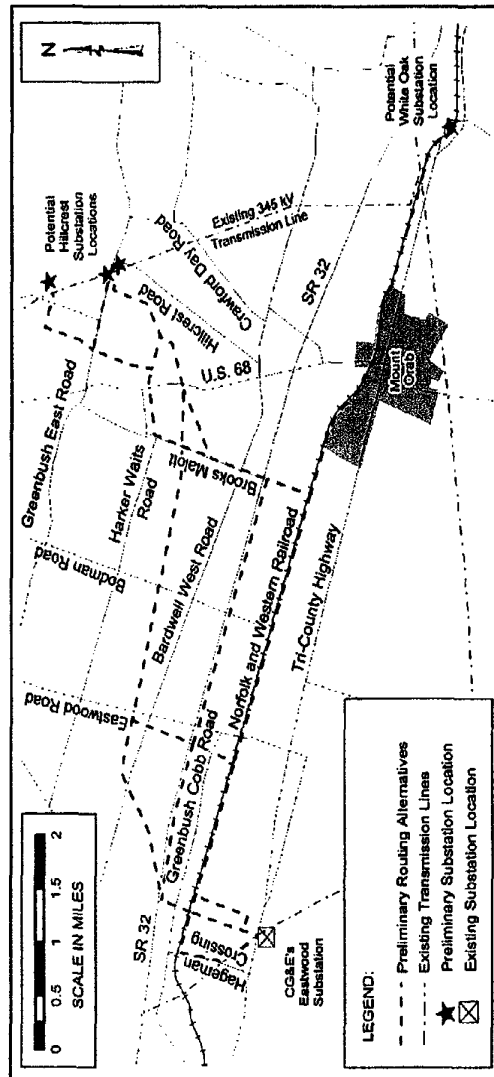
## Construction Sequence

Before any work begins, the new portion of the line must be surveyed. In addition to a land survey, a survey from a helicopter or plane may be performed. Vegetation will be cleared in the easement as necessary to facilitate the land survey.

When construction begins, area residents can expect to see typical power line service trucks in addition to some heavy equipment. Existing access roads and private roads will be used whenever possible. Property owners will be contacted prior to using private roads. Construction will generally follow this sequence:

- **Clear for Construction:** Once the line route has been marked, the easement will be cleared where needed to facilitate construction and maintain required clearances.
  - **Construction:** Pole structures and equipment will be delivered to the job site. Holes will be augured into the earth where poles will be set. Then, the hole will be backfilled and compacted. If steel poles/structures are used, foundations may need to be installed. Insulators (wires) will be pulled onto and clamped to the insulators.
  - **Energizing Conductors:** CG&E will conduct testing on the line prior to it being placed in service.
  - **Property Restoration:** CG&E will restore all property disturbed by the construction.
- Once the line is in service, CG&E will regularly inspect the line and provide maintenance as needed. A tree trimming schedule will be established to keep trees from growing up under the line.

## Proposed Routes & Approval Process Hillcrest - Eastwood Electric Transmission Line



CG&E hired independent consultants to study alternative routes, by taking environmental, land use, historic and archeologic, and engineering factors into consideration. More than 60 route combinations and sections were evaluated and scored. The lines on the map indicate the proposed routes under final consideration. Only one of these routes, or some variation of one, may be approved by the Ohio Power Siting Board (OSB), which is primarily staffed by the Public Utilities Commission of Ohio, and will eventually be built.

The procedure to obtain construction approval requires CG&E to prepare a detailed environmental

analysis, publish newspaper notices about the project, hold a public information meeting, and take various other steps to inform the agency and the public about CG&E's plans. CG&E voluntarily expands upon this process by interviewing public officials, preparing this brochure, and meeting with potential stakeholders well in advance of the requirements. When the time comes, CG&E will also prepare an erosion and sedimentation control plan. CG&E will also obtain approvals from the Ohio Department of Transportation, Brown and Clermont Counties and affected property owners.

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Published at 111 West Cherry St., Georgetown, Ohio

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20 pages 50 cents  
Vo. 7, Issue 49  
Dec. 12, 2004

## High wires for Mt. Orab



Rick Hicks, CG&E project manager, discusses the construction of a new substation and transmission line in Brown County during CG&E's open house Dec. 7 at Western Brown High School.

### CG&E to construct substation in area

By WADE LINVILLE  
Staff writer

MT. ORAB — Cincinnati Gas and Electric held an open house at the Western Brown High School in Mt. Orab Tuesday, Dec. 7 to gather public opinion on the construction of a new substation and 138,000 volt transmission line in Brown County.

Due to an increased use of electricity because of commercial and population growth in the Mt. Orab service area, CG&E must construct a new transmission line in Brown County that will connect to an associated substation in order to maintain dependable service to Mt. Orab's section of the electric system.

CG&E evaluated more than 60 different route combinations while planning for the new line. According to Robert McElfresh, CG&E principal environmental scientist, plans for the project started dur-

ing the summer. They have narrowed it down to just a few alternatives. The transmission line is expected to begin at a substation that will be built in a location where it is able to connect to an existing 345,000 volt transmission line.

CG&E plans to choose between one location near White Oak Station Road, or one of three possible locations near the intersection of Hillcrest and Greenbush East roads to construct the new substation.

The new line is expected to end at an existing substation on Tri-County Highway in Clermont County known as the Eastwood Substation. McElfresh seemed to favor the White Oak Station location for the new substation because the new transmission line could then be constructed along the path of the Norfolk and Western Railroad, which passes directly through Mt. Orab.

"We try to find the route that has the

least impact overall," said Alan Hall of URS, who was chosen by CG&E to help evaluate the proposed project. "We're looking at it from a lot of different aspects."

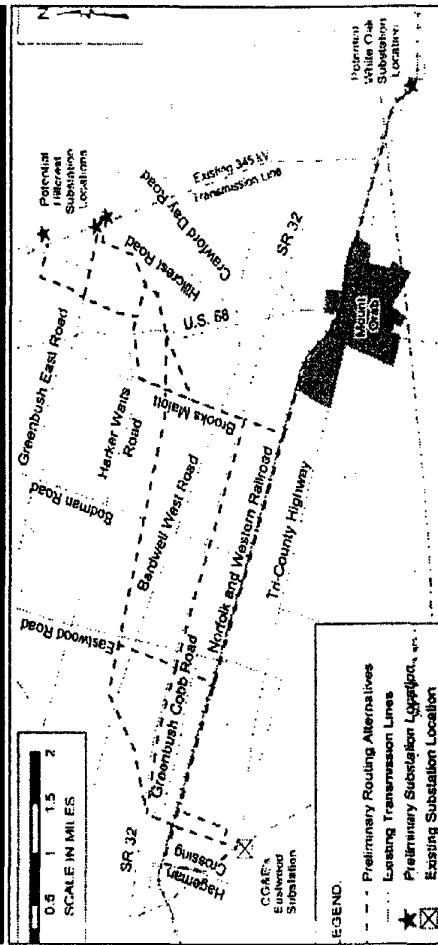
The new line will be approximately seven miles in total length. Support structures for the line will consist of steel and wood poles, and will be placed between 100 to 500 feet apart. The new substation will require approximately seven to 10 acres of land.

Rick Hicks, CG&E project manager, said the cost of the new substation will be around \$5 million and the cost of the line construction will be around \$3.6 million. CG&E must obtain a "right of way" for property that the new line will cross and that could affect its cost for the project, according to Hicks.

One of the routes must be approved by the Ohio Power Siting Board, which is primarily staffed by the Public Utilities Commission of Ohio.

Please see CG&E/ page 3

## Proposed Routes & Approval Process Hillcrest - Eastwood Electric Transmission Line



## CG&E: Construction may start 2006

continued from page 1

Construction approval cannot be obtained unless CG&E publishes newspaper notices about the project, holds a public information meeting, prepares a detailed environmental analysis, and takes other

additional steps to inform the public about their plans.

"It's not really that intrusive," said Mt. Orab Mayor Bruce Lunsford when he was asked how he felt about the plans to construct the new line and substation. "Anything that upgrades

reliability and helps feed the area."

If the project is approved in a timely manner, CG&E plans to start the construction at the end of 2006 and hopes to have the new line in service by the summer of 2008.



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*The Power of Human Connections*

July 23, 2004

John McNabb  
Staff Engineer – T&D Planning  
Cinergy  
P.O. Box 960  
EM661  
Cincinnati, Ohio 45202

Dear Mr. McNabb,

Thank you for contacting South Central Power (SCP) about your new route proposal for building a 138kV-transmission line to your future Hillcrest substation. SCP has been evaluating the need for a new 69 or 138kV tap for our existing 34.5kV Eastwood substation. This would provide SCP with more reliability to tie its existing distribution to our Duckwall substation. We have reviewed this information and have determined that due to the load center of the distribution facilities that our existing Eastwood substation location is adequate. SCP would prefer that the proposed route be between points B and K (along the Norfolk and Western Railroad) on your proposed maps with the alternative being between points C and I (St. Rt. 32). This would allow the 138kV tap to be at a close proximity to the existing SCP Eastwood substation. If there are any other questions or concerns that I may help you with please feel free to contact me at (740) 689-6123.

Regards,

*Kevin Seesholtz*  
Kevin Seesholtz  
Staff Engineer  
South Central Power Company

Cc: A. Kadakia  
file

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**APPENDIX 06-3**

**EMF INFORMATION**

## Environment

### Environmental Electric and Magnetic Fields

- ▶ [View Figure 1 - The difference in frequencies in the electromagnetic spectrum](#)
- ▶ [View figure 2 -- Magnetic Field Strengths](#)

#### What we know and don't know about EMF

1. [What is EMF?](#)
2. [Where are magnetic fields found?](#)
3. [Can you feel EMF?](#)
4. [What do we know about the health effects of EMF?](#)
5. [What is Cinergy's opinion about EMF?](#)
6. [Should I be concerned about EMF?](#)
7. [What additional research is being conducted?](#)
8. [What is Cinergy doing to minimize EMF exposures to the general public?](#)
9. [Are there any standards for safe exposures to electric lines?](#)
10. [Where can I get additional information?](#)

For several years news coverage has reported a possible association between electric and magnetic fields (EMF) and human health. The following questions and answers have been compiled to help Cinergy customers gain a better understanding of this complex subject and to alleviate some of the concerns. For simplicity, we have limited this to the EMF that we all encounter in our daily lives from typical electric transmission and distribution wires.

#### 1. What Is EMF?

EMF refers to electric and magnetic fields. Electric fields are produced by voltage in a wire or device. Magnetic fields are produced by the electric current as measured by amperes. In the U.S., electricity is transmitted at a frequency of 60-cycles per second, which simply means that the alternating current changes direction 60 times per second. Electric motors, clocks, and other devices operate properly because the electric companies carefully control the frequency and voltage.

The amperage, in power lines, however, changes on a daily or even hourly basis as customers use more or less electricity at different times of the day. As the amperage increases the strength of the magnetic field also increases. The strength of the EMF decreases rapidly as you move away from the electrical source, just as the heat from a campfire decreases with distance.

EMF are a part of a broad spectrum that includes radio, TV, radar, microwaves, radiant heating, visible light, and even X-rays. The frequencies are vastly different. Figure 1 demonstrates the huge difference in frequencies in the electromagnetic spectrum. Sixty-cycle electricity has a very low energy component, regardless of voltage or amperage.

Since most of the EMF health research, and therefore the news coverage, is about magnetic fields, that is the main topic of this discussion. Magnetic fields are commonly measured in units called "milligauss" with the abbreviation mG.

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## 2. Where Are Magnetic Fields Found?

The earth has a natural direct current magnetic field of about 500 mG. This force is what makes a compass needle point north. Power frequency EMF is 60 cycle alternating current, however, which means that the electron flow changes direction 60 times each second. The flow of electrons is what causes the magnetic field according to the laws of physics.

Magnetic fields are found around any type of electrical wire or device that is turned on. This includes household appliances, light bulbs, motors, and of course, electric wires whether on a tower, a pole, or the wiring in your home. The magnetic field stops when the device is turned off. Figure 2 shows the magnetic field caused by several common appliances at distances where people would normally use the appliance.

Magnetic fields at the edges of rights-of-way for Cinergy transmission lines are typically between 4 and 20 mG. This is lower than the fields associated with many appliances, and far below the earth's normal field strength. As you move farther from the wires, the field strength declines. At only 200 to 300 feet away from a right-of-way we cannot measure any magnetic field from the wires.

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## 3. Can You Feel EMF?

People cannot detect magnetic fields at the levels from power lines or in homes. We can sometimes detect electric fields because this is the force that, under the right conditions, makes our hair stand on end. You can create a similar electric field by brushing your hair or walking across a carpet on a day with low humidity.

Most people do not realize that every living organism is an electrochemical "machine." Our muscles contract when stimulated by electric currents transmitted by nerves. We mentioned earlier that the strength of the EMF is highly dependent on distance. Because our nerves, muscles, and all other cells are so close together, the field strengths at the cell walls are much stronger than the fields that can be caused by exposure to power lines or appliances.

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## 4. What Do We Know About the Health Effects Of EMF?

Scientists have been doing intense research on EMF and health since 1979. A wide variety of studies have been conducted and the results of some have found their way into the news media. In response to public interest, two major U.S. government-sponsored programs examined the different studies by looking at the data and reaching general conclusions.

In 1997, the National Academy of Sciences (NAS) issued the results of their six-year study. In the words of the NAS,

The conclusion of the committee is that the current body of evidence does not show that exposure to the fields or lines is harmful to health. It is specifically the committee's conclusion that exposure to power line fields does not produce cancer, miscarriages, or other adverse health effects, or other adverse and developmental effects in the developing fetus.

The other project was a five-year cooperative research program between industry, the government, and citizen groups. This was authorized by the U.S. Congress in 1992 and had three tasks:

1. to conduct a health effects research program;
2. to compile information for public outreach; and
3. to evaluate any other potential health hazards from low frequency EMF.

The conclusions of this research are:

- The scientific evidence suggesting that exposure to EMF is a health hazard is weak.
- Other factors may account for the weak evidence that EMF may be a hazard, but no one knows what those factors might be.
- Most of the laboratory research shows no cause and effect relationship between EMF and diseases or changes in biological functions.
- There is a small amount of evidence that exposures may present a leukemia hazard, but this evidence is not strong enough to warrant concern from regulatory agencies.
- General public education programs aimed at ways to reduce exposures should be continued.
- Further research should focus on leukemia, degenerative diseases of the nervous system, and heart rate variability.

The report, completed in 1998, is titled *National Institute of Environmental Health Sciences Report on Health Effects from Exposure to Power-Line Frequency Electric and Magnetic Fields*. It is available from the National Institutes of Health as publication number 99-4493, or at <http://www.niehs.nih.gov/emfrapid/booklet/home.htm>.

In addition to the U.S. studies, foreign research organizations have looked at the evidence. In late 1999 researchers from the United Kingdom published the results of another project. The United Kingdom Childhood Cancer Study found no link between magnetic fields and childhood cancer. The principal investigator for this study is quoted as saying,

"The moderate component of EMF has been under suspicion for some time. In this latest study, we have provided firm evidence that exposure to the levels of magnetic fields found in the UK does not augment risk for childhood cancer." (Sir Richard Doll, United Kingdom Childhood Cancer Study Committee on Cancer Research)

This study is reported in the December 1999 issue of *The Lancet* which is a British medical journal.

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#### **5. What Is Cinergy's Opinion About EMF?**

At Cinergy, we believe that it would be irresponsible to state that there is absolutely no risk from exposure to EMF. We can never "prove" a negative conclusion with absolute certainty, although the great majority of research to date does not support any significant link to adverse health effects. We do know that IF there is any danger from electric lines or use of electricity, it is apparently a very small risk that affects a very limited segment of the population. There are research studies from many industrialized countries to support this position, and Cinergy will continue to monitor on-going research results.

We willingly accept many known risks in our everyday lives; from our driving habits, to choices of diet and lifestyle, to choices of household cleaning products and lawn chemicals. To the best of our knowledge, EMF is among the least of any such risks.

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#### **6. Should I Be Concerned About EMF?**

While an absolute answer is impossible, evidence strongly points toward "no". Very few studies have shown a relationship between EMF and disease, and so many studies show no relationship.

Various international health agencies have issued statements on the probability of harm resulting from exposure to EMF. One of the more recent such statements is:

"There is no consistent evidence that exposure to fields experienced in our living environment causes direct damage to biological molecules, including DNA. Results from animal studies conducted so far suggest that ELF (extremely low frequency) fields do not initiate or promote cancer." (World Health Organization Summary, October 2001)

The U.S. National Institute of Environmental Health Sciences reported to Congress in 1999 that:

- The evidence for a risk of cancer and other human disease from the electric and magnetic fields around power lines is "marginal" and "weak".
- EMF exposure "cannot be recognized at this time as entirely safe, because of weak scientific evidence that exposure may pose a leukemia hazard."
- "The NIEHS believes that the probability that EMF exposure is truly a health hazard is currently small."

The ultimate decision comes down to each person's comfort level with the results of the research. There is simply no documented evidence that day-to-day exposure to electricity, outside of the obvious electric shock effects, has resulted in harm to people or the environment.

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#### **7. What Additional Research Is Being Conducted?**

Research into this issue has declined since the late 1990s. The reason is that scientists, and the organizations that provide their funding, want to spend their time and money on more likely threats to public health. There have been hundreds of EMF studies, costing many tens of millions of dollars, which have shown no harmful effects from electric wires and electric usage. There are, however, projects that are looking more deeply into whether EMF might be a factor in breast cancer, leukemia, and certain neurological diseases. It is impossible to predict the outcome of this research, but it seems likely that the results will be similar to past studies.

Cinergy has been a participant in various research projects to determine whether there is any risk to our customers. Our results have been included in the national studies of public exposures and there is no evidence of harmful health effects in our service area.

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#### **8. What Is Cinergy Doing To Minimize EMF Exposures To The General Public?**

All of Cinergy's electric lines, regardless of voltage or amperage, are built in accordance with the National Electric Safety Code (NESC). The NESC is a standard set of criteria that establishes safe distances and construction methods to protect people from electric shock hazards. While the NESC does not specifically address EMF exposures, the distances of the wires above ground and the installations of underground electric lines result in relatively low EMF exposures for people.

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#### **9. Are There Any Standards For Safe Exposures To Electric Lines?**

Only two states (Florida and New York) have set guidelines for the strength of magnetic fields at the edge of the rights-of-way. All of Cinergy's lines are far below those guidelines. Various states, including Ohio, and certain European governments, have looked into whether there should be legally binding standards for exposures. All such governments have concluded that there is too little evidence of harm to warrant regulations.

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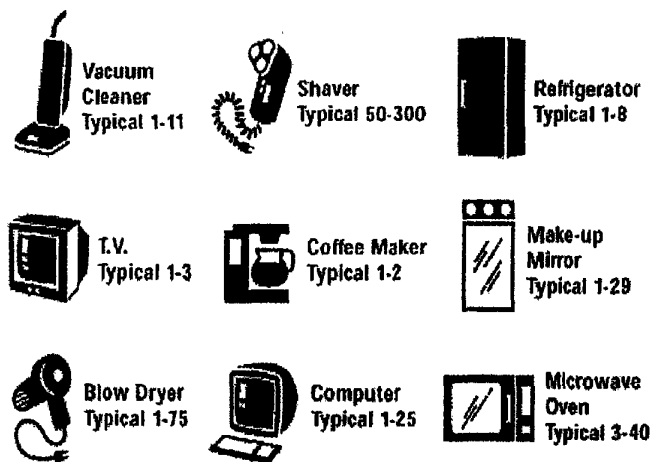
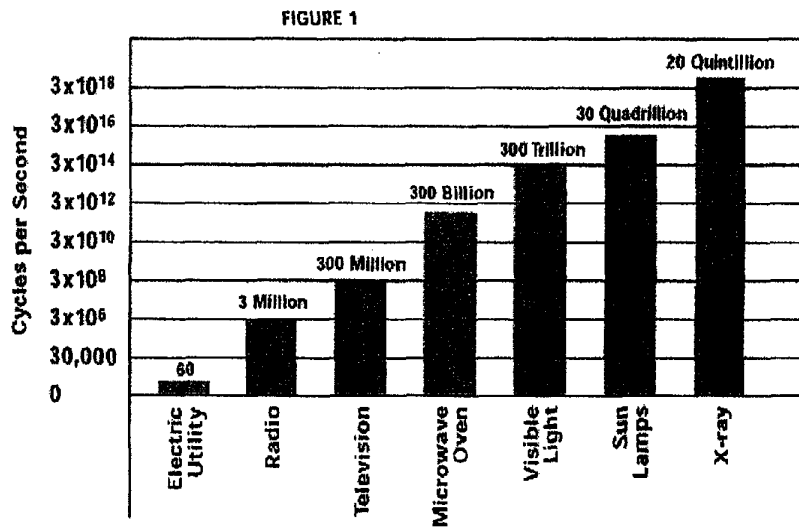
#### **10. Where Can I Get Additional Information?**

You may call Cinergy to talk to an EMF specialist.

**In Indiana:** Please call your local district office. **In Ohio or Kentucky:** Please call (513) 287-3885. This is a toll-free call in the Greater Cincinnati area. If outside this area, you may call 1-800-262-3000 and follow the voice prompts to extension 3885.

There are various publications and Internet web sites with useful information about EMF. One of the better and more objective sources is the web site of the National Institute of Environmental Health and Safety: <http://www.niehs.nih.gov/emfrapid/booklet/emf2002.pdf>. This booklet, released in June 2002, provides answers to frequently asked EMF questions. An extensive and frequently updated web site is maintained by the Medical College of Wisconsin at <http://www.mcw.edu/qcr/cop/powerlines-cancer-faq/toc.html>. Most public libraries have computers with internet access.

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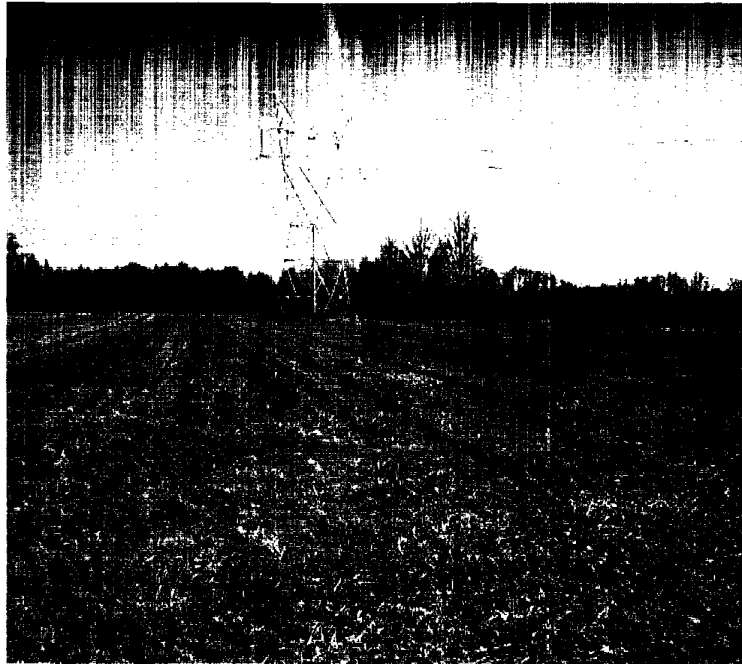


**Magnetic Field Strengths**  
**FIGURE 2** Measurements in milligauss, taken at normal user distances

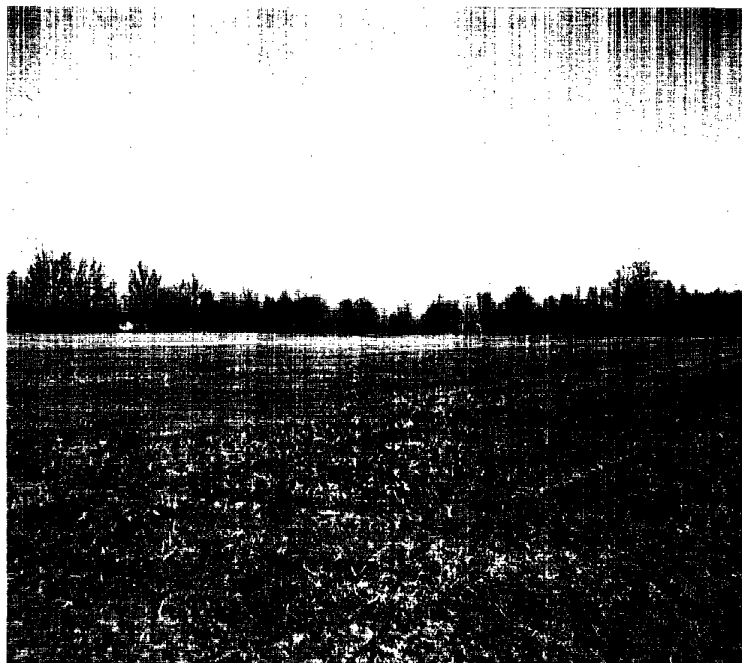
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**APPENDIX 06-4**

**SELECTED PHOTOGRAPHS OF THE PREFERRED  
AND ALTERNATE SUBSTATION SITES**



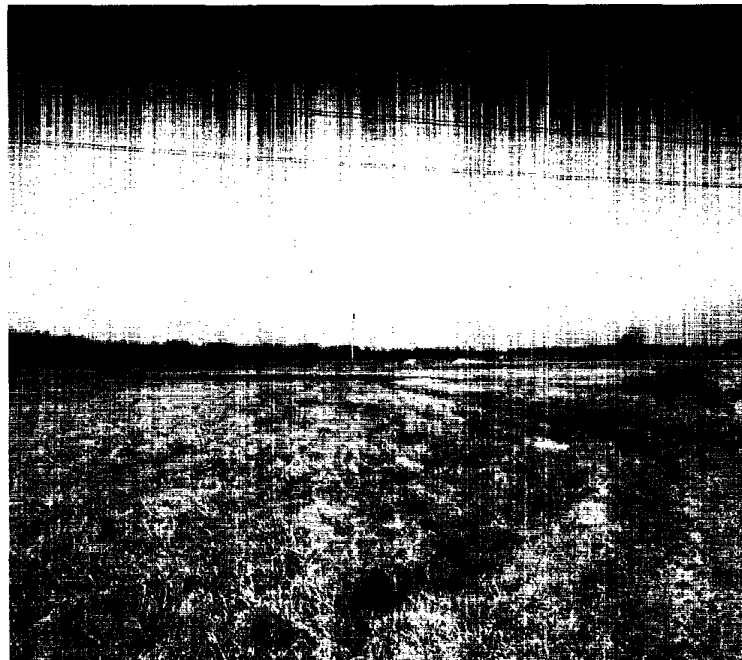
**Photograph 1:** North view of the Preferred Site from the southeast corner of the site.



**Photograph 2:** Northwest view of the Preferred Site from the southeast corner of the site.



**Photograph 3:** West-northwest view of the Alternate Site from the southeast corner of the site.



**Photograph 4:** West view of the Alternate Site from the southeast corner of the site.



**4906-15-07 Ecological impact analysis.**

(A) The applicant shall provide a summary of any studies that have been made by or for the applicant on the natural environment in which the proposed facility will be located. The applicant shall conduct and report the results of a literature search, including map review, for the area within one thousand feet on each side of a transmission line alignment and the area within the immediate vicinity of a substation or compressor station site. On-site investigations shall be conducted within one hundred feet on each side of a transmission line centerline or within one hundred feet of a substation or compressor station site to characterize the potential effects of construction, operation, or maintenance of the proposed facility.

(B) The applicant shall provide for each of the site/route alternatives a map(s) of not less than 1:24,000 scale, including the area one thousand feet on each side of the transmission line alignment and the area within the immediate vicinity of a substation site or compressor station site. The map(s) shall include the following:

- (1) Proposed transmission line alignments.
- (2) Proposed substation or compressor station locations.
- (3) All areas currently not developed for agricultural, residential, commercial, industrial, institutional, or cultural purposes including:
  - (a) Streams and drainage channels.
  - (b) Lakes, ponds, and reservoirs.
  - (c) Marshes, swamps, and other wetlands.
  - (d) Woody and herbaceous vegetation land.
  - (e) Locations of threatened or endangered species.
- (4) Soil associations in the corridor.

(C) The applicant shall provide for each of the site/route alternatives a description of each stream or body of water (and associated characteristics including floodplain) that is present and may be affected by the proposed facility, including but not limited to the following:

- (1) Construction: The applicant shall estimate the probable impact of the construction of the proposed facility on streams and bodies of water. This shall include the impacts from route clearing.
- (2) Operation and maintenance: The applicant shall estimate the probable impact of the operation and maintenance of the proposed facility after construction on streams and bodies of water. This shall include the permanent impacts from route clearing.

(3) Mitigation procedures: The applicant shall describe the mitigation procedures to be used during construction of the proposed facility and during the operation and maintenance of the proposed facility to minimize the impact on streams and bodies of water.

(D) The applicant shall provide for each of the site/route alternatives a description of each wetland that is present and may be affected by the proposed facility. The applicant shall describe the probable impact on these wetlands, including but not limited to the following:

(1) Construction: The applicant shall estimate the probable impact of the construction of the proposed facility on wetlands and wildlife habitat.

(2) Operation and maintenance: The applicant shall estimate the probable impact of the operation and maintenance of the proposed facility after construction on wetlands and wildlife habitat. This would include the permanent impacts from route clearing and any impact to natural nesting areas.

(3) Mitigation procedures: The applicant shall describe the mitigation procedures to be used during construction of the proposed facility and during the operation and maintenance of the proposed facility to minimize the impact on wetlands and wildlife habitat.

(E) The applicant shall provide for each of the site/route alternatives a description of the naturally occurring vegetation that is present and may be affected by the proposed facility. The applicant shall describe the probable impact to the environment from the clearing and disposal of this vegetation, including but not limited to the following:

(1) Construction: The applicant shall estimate the probable impact of the construction of the proposed facility on the vegetation. This would include the impacts from route clearing, types of vegetation waste generated, and the method of disposal or dispersal.

(2) Operation and maintenance: The applicant shall estimate the probable impact of the operation and maintenance of the proposed facility after construction on species described above. This would include the permanent impact from route clearing and any impact to natural nesting areas.

(3) Mitigation procedures: The applicant shall describe the mitigation procedures to be used during construction of the proposed facility and during the operation and maintenance of the proposed facility to minimize the impact on species described above.

(F) The applicant shall provide for each of the site/route alternatives a description of each major species of commercial or recreational value and species designated as endangered or threatened, in accordance with U.S. and Ohio species lists, that is present and may be affected. The applicant shall describe the probable impact to the habitat of the species described above, including but not limited to the following:

(1) Construction: The applicant shall estimate the probable impact of the construction of the proposed facility on commercial, recreational, threatened, or endangered species. This would include the impacts from route clearing and any impact to natural nesting areas.

(2) Operation and maintenance: The applicant shall estimate the probable impact of the operation and maintenance of the proposed facility after construction on species described above. This would include the permanent impact from route clearing and any impact to natural nesting areas.

(3) Mitigation procedures: The applicant shall describe the mitigation procedures to be used during construction of the proposed facility and during the operation and maintenance of the proposed facility to minimize the impact on species described above.

(G) The applicant shall provide for each of the site/route alternatives a description of the areas with slopes and/or highly erodible soils (according to the natural resource conservation service and county soil surveys) that are present and may be affected by the proposed facility. The applicant shall describe the probable impact to these areas, including but not limited to the following:

(1) Construction: The applicant shall provide a description of the measures that will be taken to avoid or minimize erosion and sedimentation during the site clearing, access road construction, facility construction process, and any other temporary grading. If a storm water pollution prevention plan is required for the proposed facility, the applicant shall include the schedule for the preparation of this plan.

(2) Operation and maintenance: The applicant shall describe and estimate the probable impact of the operation and maintenance of the proposed facility after construction on the environment. This would include permanent impacts from sites where grading has taken place.

(3) Mitigation procedures: The applicant shall describe the mitigation procedures to be used during construction of the proposed facility and during operation and maintenance of the proposed facility to minimize the impact on the environment due to erosion from storm water run-off.

(H) The applicant shall provide site-specific information that may be required in this particular case to adequately describe other significant issues of concern that were not addressed above. The applicant shall describe measures that were taken and/or will be taken to avoid or minimize adverse impacts. The applicant shall describe public safety-related equipment and procedures that were and/or will be taken.

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Effective: 12/15/2003

R.C. 119.032 review dates: 09/30/2003 and 09/30/2008

Promulgated Under: 111.15

Statutory Authority: 4906.03

Rule Amplifies: 4906.06, 4906.03  
Prior Effective Dates: 10/10/78, 3/20/87, 8/28/98

## **4906-15-07 ECOLOGICAL DATA**

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### **(A) Summary of Ecological Impact Studies**

As part of the preparation of this Application, an ecological survey was conducted for the Preferred and Alternate Sites, including a field reconnaissance to document the occurrence of endemic vegetation and wildlife at the sites. URS and CG&E biologists conducted the pedestrian field reconnaissance on February 9, March 25, and April 20, 2005.

Current ecological information within 1,000 feet of the boundaries of the candidate sites was supplemented through the review of available aerial photography (USGS DOQQ's), USGS maps, U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) maps, and soil survey maps for Brown County. Additional information regarding endemic vegetation and wildlife was obtained from the Ohio Department of Natural Resources - Division of Natural Areas and Preserves (ODNR-DNAP), ODNR Division of Real Estate and Land Management (ODNR-DRELM), ODNR Division of Wildlife (ODNR-DOW), and the United States Fish and Wildlife Service (USFW). The results of this survey are presented in Tables 07-1 and 07-2. The ecological findings are also discussed under the appropriate headings throughout the remainder of this Section.

### **(B) Ecological Features**

Maps at 1:6,000 scale, including the surrounding 1,000 feet from the Preferred and Alternate Sites, is presented as Figures 04-1, 06-1, and 07-1. Features within 1,000 feet were derived from published data supplemented where possible with the field survey.

**(1) Route Alignments**

The proposed alignments of the Hillcrest Eastwood 138 kV transmission line coming into the Preferred and Alternate Sites are shown on Figure 04-1. The proposed alignments and turning points of the Hillcrest-Eastwood 138 kV transmission line are discussed in the transmission line Application (the subject of PUCO case no. 05-361-EL-BTX).

**(2) Substations and Compressor Stations**

*a) Preferred Site:* The Preferred Substation Site is located east of Driver Collins Road and north of Greenbush East Road, approximately 1,600 feet northwest of the intersection of Greenbush East and Hillcrest Roads. The site is undeveloped and used for agricultural row cropping. The site is currently part of a parcel that is developed with two residences located on the southeast portion of the property. Access to the site will be available from Greenbush East Road to the south.

*b) Alternate Site:* The Alternate Substation Site is located at the southwest corner of Hillcrest Road and Greenbush East Road. The site is partially developed with two residences on the northeastern portion of the property. The remainder of the site is comprised of old-field. Access to the site is available from Greenbush East Road to the north and Hillcrest Road to the east.

**(3) All Areas Currently Not Developed For Agricultural, Residential, Commercial, Industrial, Institutional, Or Cultural Purposes, Including:**

*(a) Streams and Drainage Channels:* No surface water features are located on either candidate site.

Ephemeral and intermittent agricultural drainage ditches/streams are located to the north and west of the Preferred Site and north and east of the Alternate Site as shown on Figure 07-1.

(b) **Lakes, Ponds, and Reservoirs:** No major lakes, ponds, or reservoirs are located on, or within 1,000 feet of, either candidate site.

(c) **Marshes, Swamps, and Other Wetlands:** No areas on the Preferred or Alternate Sites met the classification of a wetland according to criteria established by the U.S. Army Corps of Engineers (COE) *Manual for Identifying and Delineation of Jurisdictional Wetlands* (1987). Wetlands within 1,000 feet of the candidate sites were identified using NWI maps, the U.S. Department of Agriculture Natural Resource Conservation Service (USDA-NRCS) (formerly the Soil Conservation Services [SCS]) Brown County Soil Survey, hydric soil lists for Brown County, Ohio, and a field determination from candidate site boundaries and public roadways. Wetlands delineated within 1,000 feet of the Alternate Site along the Hillcrest-Eastwood 138 kV line route are shown on Figure 07-1. The data sheets for these wetlands are included in Appendices 07-1 and 07-2.

(d) **Woody and Herbaceous Vegetation Land:** The Preferred and Alternate Sites are comprised of agricultural land and old-field respectively. These sites are also bordered by these dominant community types plus, in the case of the Alternate Site, residential lawn. A variety of woody and herbaceous lands, as described below, are present within the 1,000-foot study area extending from the Preferred and Alternate Sites. Table 07-1 provides a summary of the herbaceous vegetation on the Preferred and Alternate Sites. Habitat descriptions, applicable to the Preferred and Alternate Sites, and the extended 1,000-foot study area are provided below.

(i) **Agricultural Cropland:** The entire 22.7 acre parcel comprising the Preferred Site is agricultural cropland last used for soybean cultivation. Agricultural cropland is also the dominant land-use within 1,000 feet of both candidate sites.

(ii) **Upland Woodland:** These communities are characteristically comprised of woody species over 20 feet in height. No upland woodlands are found on the Preferred or Alternate Site. This community is found adjacent to the northern, eastern, and western

edges of the Preferred Site as field border and is scattered in woodlots within 1,000 feet of both candidate sites. The largest woodlot within 1,000 feet of the candidate sites is located to the east of the Alternate Site, northeast of the 345 kV CCD transmission line ROW.

(iii) **Riparian Woodland:** Riparian woodlands are limited to narrow bands along the edges of intermittent and perennial streams draining the extended study area. This cover type was not observed on, or within 1,000 feet of, either candidate site.

(iv) **Scrub/Shrub:** Scrub/shrub habitats represent the successional stage between old-field and second growth forest. This cover type was not observed on either candidate site but is found within the transmission line ROW to the southeast of the Alternate Site.

(v) **Old-Field:** These communities are the earliest stages of recolonization by plants following disturbance. Disturbance may be light (plowing, clearing, and grubbing) or profound (grading, filling). This community type is typically short-lived, giving way progressively to shrub and forest communities. This cover type was not observed on the Preferred Site but is dominant on the Alternate Site. In addition, herbaceous cover exists alongside roads, field borders, and unused agricultural fields within the 1,000-feet of the Preferred and Alternate Sites. Dominants on the Alternate Site included fleabane daisy (*Erigeron annuus*), teasel (*Dipsacus sylvestris*), Queen Anne's lace (*Daucus carota*), foxtail (*Setaria spp.*), broom-sedge (*Andropogon virginicus*), and species of goldenrod (*Solidago spp.*) and fescue (*Festuca spp.*).

(e) **Locations of Threatened and Endangered Species:** Correspondence with the USFWS, ODNR-DRELM and ODNR-DOW indicated that the project sites are within the range of species that are on federal and/or state listed threatened or endangered species, or are of high interest.

No state or federal-listed plants were observed during the field survey or are recorded by the ODNR-DRELM or ODNR-DOW as being on or within 1,000 feet of the proposed



candidate sites. No potentially suitable habitat for ODNR identified Brown County threatened or endangered plant species including: Missouri gooseberry (*Ribes missouriense*), Carolina willow (*Salix caroliniana*), one-sided rush (*Juncus secundus*), maypop (*Passiflora incarnata*), spring nettle (*Urtica chamaedryoides*), and Missouri violet (*Viola missouriensis*), was observed on or adjacent to either candidate site during the field survey.

No individuals or habitat suitable for federal or state threatened or endangered terrestrial, avian, or aquatic species was identified during the field survey. A list of animal species observed or expected to occur within the general vicinity of the study area is provided in Table 07-2. This species list was developed based upon the field surveys and available literature sources.

#### (4) Soil Associations:

The soil association that is mapped at the candidate sites is the Clermont-Avonburg association (U.S. Department of Agriculture [USDA], 1976).

**Clermont-Avonburg Association:** This soil association, covering approximately 38 percent of Brown County, is the dominant soil association in the central and northern portion of the county. Characteristically, these soils are nearly level to gently sloping soils that formed in loess and glacial till on the Illinoian till plain. Fifty five percent of the soils in this association are Clermont soils, while the remaining 45 percent consists of Avonburg soils (25%) and other less extensive soil types (20%). Three management concerns that are associated with these soils include ponding, seasonal wetness, and restricted permeability.

The soils at the Preferred and Alternate Sites do not exceed 2 percent slopes.

**(C) Impacts of Alternative Sites on Water Bodies**

**(1) Construction Impact**

No water bodies are found on either the Preferred or Alternate Sites. A Stormwater and Pollution Prevention Plan (SWP3) will be developed and implemented for the project as per Ohio EPA requirements. No construction impact to nearby water bodies is anticipated.

**(2) Operation and Maintenance Impact**

Once the substation is in operation, no significant impact to nearby streams or drainage channels at either proposed candidate site is anticipated. At the Preferred Site runoff will be managed and directed south into a shallow drainage ditch to be constructed along the eastern edge of the gravel access drive. This runoff will flow into the roadway ditch that runs along Greenbush East Road. If the Alternate Site is selected runoff will likely be directed towards Hillcrest Road.

**(3) Mitigation Procedures**

As required by the Ohio EPA and dictated in the SWP3, once construction is complete the site will be seeded and mulched to limit erosion potential.

**(D) Wetlands Impact**

**(1) Construction Impact**

No wetlands are found on either the Preferred or Alternate Sites, and as such no construction impact is anticipated.

**(2) Operation and Maintenance Impact**

As no wetlands are found on the Preferred or Alternate Sites, no operation and maintenance impact is anticipated.

**(3) Mitigation Procedures**

No wetland impacts are expected, therefore no mitigation procedures are proposed.

**(E) Vegetation Impact**

**(1) Construction Impact**

The entire 22.7 acres of agricultural land comprising the Preferred Site will be converted to substation use if this site is selected. Of this acreage, approximately 17.6 acres will comprise the substation site proper with an additional 4.9 acres forming a 300 foot wide corridor to Greenbush East Road that will include: the substation access drive, the 138 kV transmission line into Hillcrest Substation, and future planned distribution circuits from Hillcrest Substation.

Approximately 8 acres of old-field habitat at the Alternate Site will be converted to substation use if this site is selected.

**(2) Operation and Maintenance Impact**

No impacts are expected on vegetated lands during operation and maintenance of the facility on either candidate site.

(3) **Mitigation Procedures**

Seeding and other appropriate landscaping measures will be completed at the selected site once substation construction is complete.

(F) **Commercial and Threatened/Endangered Species Impact**

(i) **Commercial Species:** The commercially important species at the proposed sites consist of those hunted or trapped for fur or other byproducts, including the following that may be found on the Preferred and/or Alternate Site:

**Raccoon (*Procyon lotor*):** This largely nocturnal species is abundant and widespread in Ohio. Raccoons are found principally around aquatic and woodland habitats, with occasional forages into croplands. Tracks of this species were observed near the northern limits of the Preferred Site.

**Striped skunk (*Mephitis mephitis*):** The striped skunk prefers a semi-open habitat of mixed woods, brush, farmland, open grassland, and small caves in proximity to water. These mammals are common statewide. This species is expected to forage on the proposed candidate sites, but was not observed during the field survey, as they are largely nocturnal.

**Opossum (*Didelphis virginiana*):** The opossum's preferred habitat is farmland, especially wooded pastures adjacent to woodland streams and ponds. A dead individual of this nocturnal species was observed on Hillcrest Road and this species is expected to forage on the Preferred Site.

(ii) **Recreational Species:** Recreational species include those hunted or fished as game, including the following that may be found on the Preferred and/or Alternate Site:

**Cottontail rabbit (*Sylvilagus floridanus*):** The cottontail rabbit is Ohio's number one game species. It is abundant in both rural and urban areas and prefers field borders, brushy areas, and thickets. This species was observed on the Alternate Site and is expected to forage on the Preferred Site.

**White-tailed deer (*Odocoileus virginianus*):** White-tailed deer are found throughout Ohio. White-tailed deer are expected to periodically forage on the proposed sites. White-tailed deer hoof prints were observed at the northern limits of the Preferred Site.

**(iii) Protected Species:** Correspondence with the USFWS, ODNR-DRELM and ODNR-DOW indicated that the project sites are within the range of a number of species that are on federal and/or state listed threatened or endangered species, or are of high interest. No federally or state endangered, threatened, or potentially threatened species and no habitat suitable to these species are recorded or were observed on or within the immediate vicinity of the proposed candidate sites.

**(1) Construction Impact**

No construction impacts to terrestrial or avian species that may be found on the candidate sites is expected. The habitat provided by the Preferred and Alternate Sites is mainly forage habitat and equal or better quality habitat is common throughout the project area. It is expected that any terrestrial or avian species found on the selected site will relocate once construction begins.

**(2) Operation and Maintenance Impact**

No operation or maintenance impact on terrestrial or avian species is expected as a result of this project.

**(3) Mitigation Procedures**

No mitigation procedures related to terrestrial or avian species is planned.

**(G) Slopes and Erodible Soils**

**(1) Construction Impact**

Slopes on both candidate sites do not exceed 2 percent. Slope mechanics are not anticipated to present a significant concern to the Preferred or Alternate Sites. The soil association that underlies the Preferred and Alternate Sites is discussed further in Section 4906-15-07(B)(4) of this Application.

**(2) Operation and Maintenance Impact**

Once the substation is in place and disturbed soil stabilized no impacts or erosion hazards are expected. Maintenance activities that will involve excavation at the substation are anticipated to be extremely rare, but in these cases, standard measures will be implemented to prevent soil erosion and run off into any nearby streams and wetlands.

**(3) Mitigation Procedures**

No special mitigation procedures are anticipated beyond standard best management erosion prevention measures, which will be identified in the project specific SWP3.

**(H) Other Issues**

No other issues are anticipated.

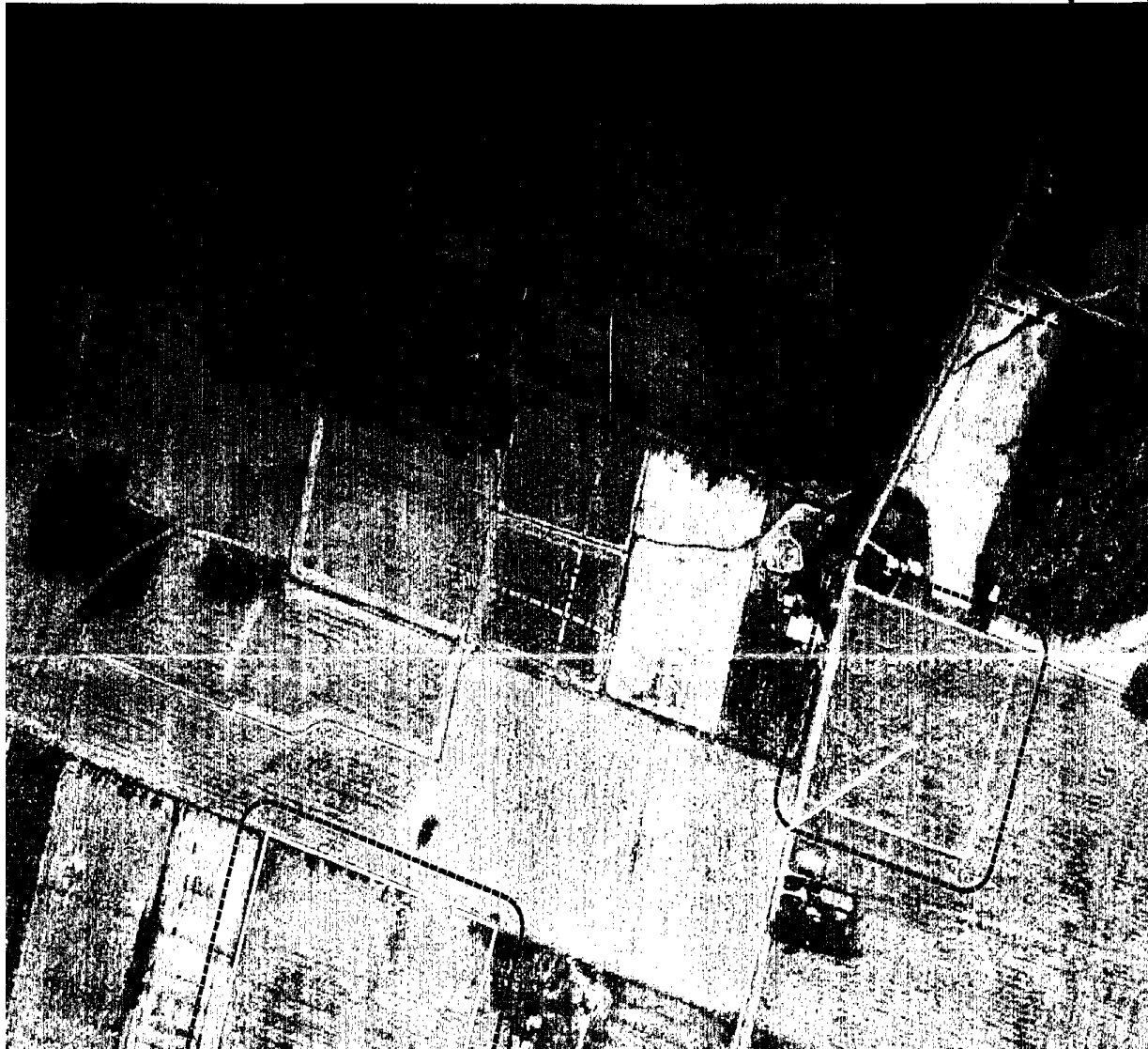
**TABLE 07-1**  
**MAJOR PLANT SPECIES OBSERVED OR EXPECTED TO OCCUR**  
**IN THE STUDY AREA**

<i>Acer negundo</i>	<i>Lonicera japonica</i>
<i>Acer rubrum</i>	<i>Lonicera maacki</i>
<i>Acer saccharinum</i>	<i>Lysimachia nummularia</i>
<i>Agrostis alba (gigantea)</i>	<i>Mentha spicata</i>
<i>Allium canadense</i>	<i>Phalaris arundinacea</i>
<i>Ambrosia artemisiifolia</i>	<i>Phleum pratense</i>
<i>Ambrosia trifida</i>	<i>Phytolacca spp.</i>
<i>Andropogon virginicus</i>	<i>Plantago lanceolata</i>
<i>Asclepias syriaca</i>	<i>Plantago major</i>
<i>Aster spp.</i>	<i>Plantanus occidentalis</i>
<i>Bidens frondosa</i>	<i>Poa pratensis</i>
<i>Brassica rapa</i>	<i>Polygonum amphibium</i>
<i>Campsis radicans</i>	<i>Polygonum pennsylvanicum</i>
<i>Carex spp.</i>	<i>Populus deltoides</i>
<i>Carya ovata</i>	<i>Prunus serotina</i>
<i>Celtis occidentalis</i>	<i>Quercus alba</i>
<i>Cerastium arvense</i>	<i>Quercus palustris</i>
<i>Cercis canadensis</i>	<i>Quercus rubra</i>
<i>Chrysanthemum leucanthemum</i>	<i>Robinia pseudoacacia</i>
<i>Cichorium intybus</i>	<i>Rosa multiflora</i>
<i>Cirsium spp.</i>	<i>Rubus allegheniensis</i>
<i>Cornus stolonifera</i>	<i>Rumex crispus</i>
<i>Daucus carota</i>	<i>Salix nigra</i>
<i>Dicranthelium clandestinum</i>	<i>Sambucus canadensis</i>
<i>Dipsacus fullonum</i>	<i>Scirpus cyperinus</i>
<i>Dipsacus sylvestris</i>	<i>Setaria spp.</i>
<i>Elaeagnus spp.</i>	<i>Solidago canadensis</i>
<i>Eleocharis obtuse</i>	<i>Toxicodendron radicans</i>
<i>Erigeron annuus</i>	<i>Typha angustifolia</i>
<i>Eupatorium maculatum</i>	<i>Typha latifolia</i>
<i>Eupatorium perfoliatum</i>	<i>Ulmus rubra</i>
<i>Fraxinus pennsylvanica</i>	<i>Verbena hastate</i>
<i>Glycine max</i>	<i>Verbesina alternifolia</i>
<i>Impatiens capensis</i>	<i>Vernonia gigantea</i>
<i>Juncus effuses</i>	<i>Viola papilionacea</i>
<i>Juncus tenuis</i>	<i>Vitis aestivalis</i>
<i>Leersia virginica</i>	<i>Vitis riparia</i>
<i>Lindera benzoin</i>	<i>Xanthium strumarium</i>



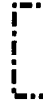

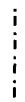




**TABLE 07-2**  
**ANIMAL SPECIES IDENTIFIED OR LIKELY TO OCCUR IN**  
**THE STUDY AREA**

<b>Birds</b>	<b>Reptiles &amp; Amphibians</b>	<b>Mammals</b>
Brown thrasher	Eastern garter snake	Striped skunk
American kestrel	Eastern box turtle	Opossum
Yellow warbler	American toad	Chipmunk
Warbling vireo	Green frog	Eastern cottontail rabbit
Eastern kingbird		Eastern gray squirrel
Coopers hawk		Raccoon
Tennessee warbler		White-tailed deer
Baltimore oriole		Woodchuck
Wood thrush		Deer mouse
Blue jay		House mouse
Yellow-rumped warbler		Eastern mole
Black-capped chickadee		Short-tailed shrew
American robin		Meadow vole
Red-tailed hawk		
House finch		
American crow		
Killdeer		
Wild turkey		
Rock Dove		
Common grackle		
European starling		
Brown-headed cowbird		
Eastern meadowlark		
European Starling		
English house sparrow		
Eastern bluebird		
Northern cardinal		
Canadian geese		
Song sparrow		
Red-winged blackbird		
Mourning dove		
Common flicker		





**LEGEND:**

-  Preferred Substation Location
-  Alternate Substation Location
-  1,000-Foot Preferred Site Buffer
-  1,000-Foot Alternate Site Buffer
-  Existing Transmission Lines
-  NWI Wetland
-  Delineated Wetland
-  QHEI Location
-  Endangered/Threatened Species Location

Soils in the site vicinities are mapped as Clermont-Avonburg Associations



Base Map Source: USGS Digital  
Ortho Quarter Quadrangles 1994

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**APPENDIX 07-1**

**U.S. ARMY CORPS OF ENGINEERS  
WETLAND DELINEATION FORMS**

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**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
 (1987 COE Wetlands Delineation Manual)

Project/Site: <u>Hillcrest-Eastwood</u> Applicant/Owner: <u>Cinergy</u> Investigator: <u>Steve Lane (VRS)</u>	Date: <u>9/19/04</u> County: <u>Brown</u> State: <u>OH</u>
Do Normal Circumstances exist on the site? <input checked="" type="radio"/> Yes <input type="radio"/> No Is the site significantly disturbed (Atypical Situation)? <input checked="" type="radio"/> Yes <input type="radio"/> No Is the area a potential Problem Area? <input checked="" type="radio"/> Yes <input type="radio"/> No (If needed, explain on reverse.)	Community ID: <u>DEM</u> Transect ID: _____ Plot ID: <u>VIAAB3</u>

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>JUNCUS TENNIS</u>	<u>H</u>	<u>FAC-</u>	9. _____	_____	_____
2. <u>JUNCUS EFFUSUS</u>	<u>H</u>	<u>FACW+</u>	10. _____	_____	_____
3. <u>CAREX SPP.</u>	<u>H</u>	<u>FAC-OBL</u>	11. _____	_____	_____
4. <u>PHALARIS</u>	_____	_____	12. _____	_____	_____
5. <u>ARUNDINACEA</u>	<u>H</u>	<u>FACW+</u>	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 90%

Remarks: WETLAND VEGETATION

**HYDROLOGY**

<p>___ Recorded Data (Describe in Remarks):          ___ Stream, Lake, or Tide Gauges          ___ Aerial Photographs          ___ Other          ___ No Recorded Data Available</p> <hr/> <p>Field Observations:</p> <p>Depth of Surface Water: <u>      </u> (in.)</p> <p>Depth to Free Water in Pit: <u>&gt;18</u> (in.)</p> <p>Depth to Saturated Soil: <u>&gt;18</u> (in.)</p>	<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators:</p> <p>___ Inundated          ___ Saturated in Upper 12 Inches          ___ Water Marks          ___ Drift Lines          ___ Sediment Deposits  <input checked="" type="checkbox"/> Drainage Patterns in Wetlands</p> <p>Secondary Indicators (2 or more required):</p> <p><input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches          ___ Water-Stained Leaves  <input checked="" type="checkbox"/> Local Soil Survey Data  <input checked="" type="checkbox"/> FAC-Neutral Test          ___ Other (Explain in Remarks)</p>
<p>Remarks: <u>WETLAND HYDROLOGY</u></p>	

W 12 A 7 B

## WETLAND DETERMINATION

WETLAND DETERMINATION	
Hydrophytic Vegetation Present? <input checked="" type="radio"/> Yes <input type="radio"/> No (Circle)	(Circle)
Wetland Hydrology Present? <input checked="" type="radio"/> Yes <input type="radio"/> No	
Hydric Soils Present? <input checked="" type="radio"/> Yes <input type="radio"/> No	Is this Sampling Point Within a Wetland? <input checked="" type="radio"/> Yes <input type="radio"/> No
Remarks: WETLAND IN DRAINAGE BY ROAD	

Approved by HQUSACE 3/92

**DATA FORM**  
**ROUTINE WETLAND DETERMINATION**  
 (1987 COE Wetlands Delineation Manual)

Project/Site: <u>Hillcrest-Eastwood</u> Applicant/Owner: <u>Cinergy</u> Investigator: <u>Steve Lane (URS)</u>	Date: <u>9/29/04</u> County: <u>Brown</u> State: <u>OH</u>
Do Normal Circumstances exist on the site? <span style="float: right;"><input checked="" type="radio"/> Yes <input type="radio"/> No</span> Is the site significantly disturbed (Atypical Situation)? <span style="float: right;"><input type="radio"/> Yes <input checked="" type="radio"/> No</span> Is the area a potential Problem Area? <span style="float: right;"><input type="radio"/> Yes <input checked="" type="radio"/> No</span> (If needed, explain on reverse.)	Community ID: <u>FCM</u> Transect ID: _____ Plot ID: <u>W13A-B</u>

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>PHALARIS ARUNDINACEA</u>	<u>H</u>	<u>FACW+</u>	9. _____	_____	_____
2. <u>CAREX SP.</u>	<u>H</u>	<u>FACW+</u>	10. _____	_____	_____
3. _____	_____	<u>FAC-OBL</u>	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 90%

Remarks: WETLAND VEGETATION

**HYDROLOGY**

<p>Recorded Data (Describe in Remarks):</p> <p>___ Stream, Lake, or Tide Gauge</p> <p>___ Aerial Photographs</p> <p>___ Other</p> <p>___ No Recorded Data Available</p> <p>Field Observations:</p> <p>Depth of Surface Water: <u>      </u> (in.)</p> <p>Depth to Free Water in Pit: <u>718</u> (in.)</p> <p>Depth to Saturated Soil: <u>6</u> (in.)</p>	<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators:</p> <p><input type="checkbox"/> Inundated</p> <p><input checked="" type="checkbox"/> Saturated in Upper 12 Inches</p> <p><input type="checkbox"/> Water Marks</p> <p><input type="checkbox"/> Drift Lines</p> <p><input type="checkbox"/> Sediment Deposits</p> <p><input checked="" type="checkbox"/> Drainage Patterns in Wetlands</p> <p>Secondary Indicators (2 or more required):</p> <p><input checked="" type="checkbox"/> Oxidized Root Channels in Upper 12 Inches</p> <p><input type="checkbox"/> Water-Stained Leaves</p> <p><input checked="" type="checkbox"/> Local Soil Survey Data</p> <p><input checked="" type="checkbox"/> FAC-Neutral Test</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p>
Remarks: <u>WETLAND HYDROLOGY</u>	

## SOILS

W13A &amp; B

Map Unit Name		BC-Blanchester Silt Loam		BC - Poor	
(Series and Phase):		Ct-Clermont Silt Loam		Ct - Poor	
Taxonomy (Subgroup):		BC - Typic Ochraqualfs		Field Observations	
		Ct - Typic Glossaqualfs		Confirm Mapped Type? (Yes) No	

Profile Description:		Matrix Color	Mottle Colors	Mottle	Texture, Concretions,
Depth	Horizon	(Munsell Moist)	(Munsell Moist)	Abundance/Contrast	Structure, etc.
0-8	A	2.5Y4/2	10YR4/5	CM/DISTINCT	SILTY CLAY LOAM
8-18	B	2.5Y5/2	10YR4/6	FEW/DISTINCT	SILT LOAM

Hydric Soil Indicators:

<input type="checkbox"/> Histosol	<input type="checkbox"/> Concretions
<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils
<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Organic Streaking in Sandy Soils
<input type="checkbox"/> Aquic Moisture Regime	<input checked="" type="checkbox"/> Listed on Local Hydric Soils List BC & Ct
<input type="checkbox"/> Reducing Conditions	<input checked="" type="checkbox"/> Listed on National Hydric Soils List BC & Ct
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Other (Explain in Remarks)

Remarks: HYDRIC SOIL AS MAPPED

## WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<input checked="" type="radio"/> Yes <input type="radio"/> No (Circle)	(Circle)
Wetland Hydrology Present?	<input checked="" type="radio"/> Yes <input type="radio"/> No	
Hydric Soils Present?	<input checked="" type="radio"/> Yes <input type="radio"/> No	
Is this Sampling Point Within a Wetland?		<input checked="" type="radio"/> Yes <input type="radio"/> No

Remarks:

WETLAND IN DRAINAGE CROSSING ROAD

Approved by HQUSACE 3/92

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**APPENDIX 07-2**

**OHIO EPA  
OHIO RAPID ASSESSMENT METHOD (ORAM) FOR  
WETLANDS V5.0 FORMS**

Site: <u>W2 A B</u>	Rater(s): <u>SR/LUCS</u>	Date: <u>9/29/04</u>
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0	0
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### Metric 1. Wetland Area (size).

max 5 pts. subtotal

Select one size class and assign score.

- ☐ >50 acres (>20.2ha) (6 pts)
- ☐ 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- ☐ 10 to <25 acres (4 to <10.1ha) (4 pts)
- ☐ 3 to <10 acres (1.2 to <4ha) (3 pts)
- ☐ 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- ☐ 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- ☒ <0.1 acres (0.04ha) (0 pts)

1	1
---	---

### Metric 2. Upland buffers and surrounding land use.

max 14 pts. subtotal

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- ☐ WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- ☐ MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- ☐ NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- ☒ VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- ☐ VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- ☐ LOW. Old field (>10 years), shrubland, young second growth forest. (5)
- ☒ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- ☒ HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

4	5
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### Metric 3. Hydrology.

max 30 pts. subtotal

3a. Sources of Water. Score all that apply.

- ☐ High pH groundwater (5)
- ☐ Other groundwater (3)
- ☒ Precipitation (1)
- ☐ Seasonal/intermittent surface water (3)
- ☐ Perennial surface water (lake or stream) (5)

3c. Maximum water depth. Select only one and assign score.

- ☐ >0.7 (27.6in) (3)
- ☐ 0.4 to 0.7m (15.7 to 27.6in) (2)
- ☒ <0.4m (<15.7in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- ☐ None or none apparent (12)
- ☐ Recovered (7)
- ☐ Recovering (3)
- ☒ Recent or no recovery (1)

3b. Connectivity. Score all that apply.

- ☐ 100 year/floodplain (1)
- ☐ Between stream/lake and other human use (1)
- ☐ Part of wetland/upland (e.g. forest), complex (1)
- ☐ Part of riparian or upland corridor (1)

3d. Duration inundation/saturation. Score one or dbl check.

- ☐ Semi- to permanently inundated/saturated (4)
- ☐ Regularly inundated/saturated (3)
- ☐ Seasonally inundated (2)
- ☒ Seasonally saturated in upper 30cm (12in) (1)

Check all disturbances observed	
<input type="checkbox"/> ditch	<input type="checkbox"/> point source (nonstormwater)
<input type="checkbox"/> tile	<input type="checkbox"/> filling/grading
<input type="checkbox"/> dike	<input checked="" type="checkbox"/> road bed/RR track
<input type="checkbox"/> weir	<input type="checkbox"/> dredging
<input type="checkbox"/> stormwater input	<input type="checkbox"/> other

3	8
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### Metric 4. Habitat Alteration and Development.

max 20 pts. subtotal

4a. Substrate disturbance. Score one or double check and average.

- ☐ None or none apparent (4)
- ☐ Recovered (3)
- ☐ Recovering (2)
- ☒ Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- ☐ Excellent (7)
- ☐ Very good (6)
- ☐ Good (5)
- ☐ Moderately good (4)
- ☐ Fair (3)
- ☐ Poor to fair (2)
- ☒ Poor (1)

4c. Habitat alteration. Score one or double check and average.

- ☐ None or none apparent (8)
- ☐ Recovered (6)
- ☐ Recovering (3)
- ☒ Recent or no recovery (1)

Check all disturbances observed	
<input checked="" type="checkbox"/> mowing	<input checked="" type="checkbox"/> shrub/sapling removal
<input type="checkbox"/> grazing	<input type="checkbox"/> herbaceous/aquatic bed removal
<input type="checkbox"/> clearcutting	<input type="checkbox"/> sedimentation
<input type="checkbox"/> selective cutting	<input type="checkbox"/> dredging
<input checked="" type="checkbox"/> woody debris removal	<input type="checkbox"/> farming
<input type="checkbox"/> toxic pollutants	<input type="checkbox"/> nutrient enrichment

8
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subtotal this page



Site: W12A2B Rater(s): SRL (URS) Date: 9/29/04

8

subtotal first page

0 8

max 10 pts.

subtotal

### Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- ☐ Bog (10)
- ☐ Fen (10)
- ☐ Old growth forest (10)
- ☐ Mature forested wetland (5)
- ☒ Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- ☐ Lake Erie coastal/tributary wetland-restricted hydrology (5)
- ☐ Lake Plain Sand Prairies (Oak Openings) (10)
- ☐ Relict Wet Prairies (10)
- ☐ Known occurrence state/federal threatened or endangered species (10)
- ☐ Significant migratory songbird/water fowl habitat or usage (10)
- ☐ Category 1 Wetland. See Question 1 Qualitative Rating (-10)

2 10

max 20 pts.

subtotal

### Metric 6. Plant communities, interspersions, microtopography.

#### 6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- ☐ Aquatic bed
- ☒ Emergent
- ☐ Shrub
- ☐ Forest
- ☐ Mudflats
- ☐ Open water
- ☐ Other

#### 6b. horizontal (plan view) Interspersion.

Select only one.

- ☐ High (5)
- ☐ Moderately high (4)
- ☐ Moderate (3)
- ☐ Moderately low (2)
- ☐ Low (1)
- ☒ None (0)

#### 6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- ☐ Extensive >75% cover (-5)
- ☐ Moderate 25-75% cover (-3)
- ☐ Sparse 5-25% cover (-1)
- ☐ Nearly absent <5% cover (0)
- ☒ Absent (1)

#### 6d. Microtopography.

Score all present using 0 to 3 scale.

- ☐ Vegetated hummocks/mounds
- ☐ Coarse woody debris >15cm (6in)
- ☐ Standing dead >25cm (10in) dbh
- ☐ Amphibian breeding pools

#### Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

#### Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

#### Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47)
2	Moderate 1 to <4ha (2.47 to 9.88)
3	High 4ha (9.88 acres) or more

#### Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

10 **GRAND TOTAL (max 100 pts)**

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories at the following address: <http://www.epa.state.nh.us/daw/401401.html>  
last revised 1 February 2001 jfm

CATEGORY 1

Site: <u>W3A AB</u>	Rater(s): <u>SRL/URS</u>	Date: <u>09/29/04</u>
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**1 1 Metric 1. Wetland Area (size).**

max 6 pts. subtotal

Select one size class and assign score.

1

- ☐ >50 acres (>20.2ha) (6 pts)
- ☐ 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- ☐ 10 to <25 acres (4 to <10.1ha) (4 pts)
- ☐ 3 to <10 acres (1.2 to <4ha) (3 pts)
- ☐ 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- ☒ 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- ☐ <0.1 acres (0.04ha) (0 pts)

**2 2 Metric 2. Upland buffers and surrounding land use.**

max 14 pts. subtotal

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

Ø

- ☐ WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- ☐ MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- ☐ NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- ☒ VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

1

- ☐ VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- ☐ LOW. Old field (>10 years), shrubland, young second growth forest (5)
- ☒ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- ☒ HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

**9 11 Metric 3. Hydrology.**

max 30 pts. subtotal

3a. Sources of Water. Score all that apply.

4

- ☐ High pH groundwater (5)
- ☒ Other groundwater (3)
- ☒ Precipitation (1)
- ☒ Seasonal/intermittent surface water (3)
- ☐ Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

Ø

- ☐ 100 year floodplain (1)
- ☐ Between stream/lake and other human use (1)
- ☐ Part of wetland/upland (e.g. forest), complex (1)
- ☐ Part of riparian or upland corridor (1)

3c. Maximum water depth. Select only one and assign score.

1

- ☐ >0.7 (27.6in) (3)
- ☐ 0.4 to 0.7m (15.7 to 27.6in) (2)
- ☒ <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or double check.

2

- ☐ Semi- to permanently inundated/saturated (4)
- ☒ Regularly inundated/saturated (3)
- ☐ Seasonally inundated (2)
- ☐ Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

2

- ☐ None or none apparent (12)
- ☐ Recovered (7)
- ☒ Recovering (3)
- ☒ Recent or no recovery (1)

Check all disturbances observed

<input type="checkbox"/> ditch	<input type="checkbox"/> point source (nonstormwater)
<input type="checkbox"/> tile	<input type="checkbox"/> filling/grading
<input type="checkbox"/> dike	<input checked="" type="checkbox"/> road bed/RR track AT ROAD
<input type="checkbox"/> well	<input type="checkbox"/> dredging
<input type="checkbox"/> stormwater input	<input type="checkbox"/> other

**2 13 Metric 4. Habitat Alteration and Development.**

max 20 pts. subtotal

4a. Substrate disturbance. Score one or double check and average.

1

- ☐ None or none apparent (4)
- ☐ Recovered (3)
- ☐ Recovering (2)
- ☒ Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

1

- ☐ Excellent (7)
- ☐ Very good (5)
- ☐ Good (5)
- ☐ Moderately good (4)
- ☐ Fair (3)
- ☐ Poor to fair (2)
- ☒ Poor (1)

4c. Habitat alteration. Score one or double check and average.

3

- ☐ None or none apparent (9)
- ☐ Recovered (6)
- ☒ Recovering (3)
- ☐ Recent or no recovery (1)

Check all disturbances observed

<input checked="" type="checkbox"/> mowing AT EDGES	<input checked="" type="checkbox"/> shrub/sapling removal
<input type="checkbox"/> grazing	<input checked="" type="checkbox"/> herbaceous/aquatic bed removal
<input type="checkbox"/> clearcutting	<input checked="" type="checkbox"/> sedimentation SOME
<input checked="" type="checkbox"/> selective cutting	<input type="checkbox"/> dredging
<input checked="" type="checkbox"/> woody debris removal	<input checked="" type="checkbox"/> farming EDGES
<input type="checkbox"/> toxic pollutants	<input type="checkbox"/> nutrient enrichment

13 subtotal this page

Site: V13 A2 B Rater(s): SRL (URS) Date: 9/29/04

13

subtotal first page

0 13

max 10 pts.

subtotal

### Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- ☐ Bog (10)
- ☐ Fen (10)
- ☐ Old growth forest (10)
- ☐ Mature forested wetland (5)
- ☒ Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- ☐ Lake Erie coastal/tributary wetland-restricted hydrology (5)
- ☐ Lake Plain Sand Prairies (Oak Openings) (10)
- ☐ Relict Wet Prairies (10)
- ☐ Known occurrence state/federal threatened or endangered species (10)
- ☐ Significant migratory songbird/water fowl habitat or usage (10)
- ☐ Category 1 Wetland. See Question 1 Qualitative Rating (-10)

1 14

max 20 pts.

subtotal

### Metric 6. Plant communities, interspersions, microtopography.

#### 6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- ☒ Aquatic bed
- ☐ Emergent
- ☐ Shrub
- ☐ Forest
- ☐ Mudflats
- ☐ Open water
- ☐ Other

#### 6b. horizontal (plan view) Interspersion.

Select only one.

- ☐ High (5)
- ☐ Moderately high (4)
- ☐ Moderate (3)
- ☐ Moderately low (2)
- ☒ Low (1)
- ☐ None (0)

#### 6c. Coverage of Invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- ☐ Extensive >75% cover (-5)
- ☐ Moderate 25-75% cover (-3)
- ☒ Sparse 5-25% cover (-1)
- ☐ Nearly absent <5% cover (0)
- ☐ Absent (1)

reed canary grass

-1

#### 6d. Microtopography.

Score all present using 0 to 3 scale.

- ☐ Vegetated hummocks/mounds
- ☐ Coarse woody debris >15cm (6in)
- ☒ Standing dead >25cm (10in) dbh
- ☐ Amphibian breeding pools

#### Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

#### Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

#### Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47
2	Moderate 1 to <4ha (2.47 to
3	High 4ha (9.88 acres) or more

#### Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

14 GRAND TOTAL (max 100 pts)

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories at the following address: <http://www.epa.state.oh.us/dew/401/401.html>  
last revised 1 February 2001 jlm

CATEGORY 1

**APPENDIX 07-3**

**SELECTED PHOTOGRAPHS**



Photograph 1: View of Wetland 12A from a generally east direction.



Photograph 2: View of Wetland 12B facing north.

**CINERGY.**

Cinergy Corp.  
139 East Fourth Street  
P.O. Box 960  
Cincinnati, OH 45201-0960

August 8, 2005

Ms. Reneé Jenkins, Secretary  
Public Utilities Commission of Ohio  
Docketing Division, 13th Floor  
180 East Broad Street  
Columbus, Ohio 43215-3793

*ALREADY  
REPLACED*

Re: Case No. 05-361-EL-BTX  
Hillcrest Eastwood 138kV Transmission Line Project

Dear Ms. Jenkins:

Enclosed for filing are thirty copies and one original of Tables 1, 2, and 3 of Appendix 03-1, Chapter 4906-15-03, of the Hillcrest Eastwood 138kV Transmission Line Project Application to the Ohio Power Siting Board for a Certificate of Environmental Compatibility and Public Need (PUCO Case No. 05-361-EL-BTX). These tables supersede those found within the applications filed on June 13, 2005.

If you have any questions or concerns regarding this submittal, please contact me at (513) 287-2379.

Sincerely,  
The Cincinnati Gas & Electric Company



Stephen R. Lane  
Environmental Scientist

Cc Mr. Stuart Siegfried (OPSB)

**CINERGY.**

Cinergy Corp.  
139 East Fourth Street  
P.O. Box 960  
Cincinnati, OH 45201-0960

RECEIVED-DOCKETING DIV

2005 JUN 13 AM 11:46

PUCO

June 10, 2005

Mr. Alan R. Schriber, Chair  
Ohio Power Siting Board  
180 East Broad Street  
Columbus, Ohio 43215

Attention: Ms. Reneé Jenkins, Secretary  
Public Utilities Commission of Ohio

RE: Application for a Certificate of Environmental Compatibility and Public  
Need for the Hillcrest Eastwood 138 kV Transmission Line.  
Case No. 05-361-EL-BTX

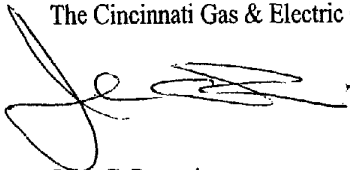
Dear Mr. Schriber and Ms. Jenkins:

Pursuant to the Rules and Regulations of the Ohio Power Siting Board, The Cincinnati Gas & Electric Company, an operating company of Cinergy Corp., hereby submits an Application for a Certificate of Environmental Compatibility and Public Need for the Hillcrest Eastwood 138 kV Transmission Line.

The following information is included per the requirements of OAC 4906-5-03(A)(3):

- (a) Applicant: The Cincinnati Gas & Electric Company  
139 East Fourth Street  
Cincinnati, Ohio 45202
- (b) Name and Location: Hillcrest Eastwood 138 kV Transmission Line  
Clermont and Brown Counties, Ohio
- (c) Authorized Representative: Mr. Stephen Lane  
Environmental Scientist  
139 East Fourth Street, Room 409-A  
Cincinnati, Ohio 45202  
(513) 287-2379

Very truly yours,  
The Cincinnati Gas & Electric Company



John C. Procario  
Vice President and Chief Operating Officer  
Regulated Business Unit

**CINERGY.**

RECEIVED-DOCKETING DIV

2005 JUN 13 AM 11:47

PUCO

Cinergy Corp.  
139 East Fourth Street  
P.O. Box 960  
Cincinnati, OH 45201-0960

June 10, 2005

Mr. Alan R. Schriber, Chair  
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180 East Broad Street  
Columbus, Ohio 43215

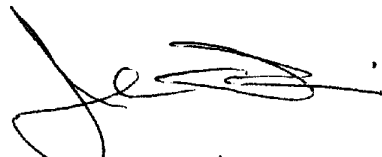
Attention: Ms. Reneé Jenkins, Secretary  
Public Utilities Commission of Ohio

RE: Application for a Certificate of Environmental Compatibility and Public  
Need for the Hillcrest Eastwood 138 kV Transmission Line.  
Case No. 05-361-EL-BTX

Dear Mr. Schriber and Ms. Jenkins:

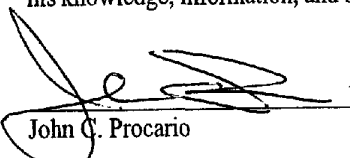
Attached herewith is the Application for a Certificate of Environmental Compatibility  
and Public Need for the Hillcrest Eastwood 138 kV Transmission Line.

Very truly yours,  
The Cincinnati Gas & Electric Company



John C. Procario  
Vice President and Chief Operating Officer  
Regulated Business Unit

Now comes John C. Procario who says that the information and material contained in the  
attached Application for a Certificate of Environmental Compatibility and Public Need  
for the Hillcrest Eastwood 138 kV Transmission Line is true and accurate to the best of  
his knowledge, information, and belief.



John C. Procario

Sworn to and subscribed before me this 6th day of June, 2005.



Norma L. Bales

NORMA L. BALES  
NOTARY PUBLIC, STATE OF OHIO  
MY COMMISSION EXPIRES 03-17-06



**APPLICATION TO THE OHIO POWER SITING BOARD  
FOR A CERTIFICATE OF ENVIRONMENTAL  
COMPATIBILITY AND PUBLIC NEED**

**OPSB CASE NO.  
05-361-EL-BTX**

**Hillcrest-Eastwood 138 kV  
Transmission Line Project  
June 2005**

**Prepared by:  
URS Corporation**

**URS**

**Prepared for:  
Cincinnati Gas & Electric**

**CINERGY.**  
CG&E

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**4906-15-01 Project summary and facility overview.**

(A) An applicant for a certificate to site a major electric power, gas, or natural gas transmission facility shall provide a project summary and overview of the proposed project. In general, the summary should be suitable as a reference for state and local governments and for the public. The summary and overview shall include the following:

- (1) A statement explaining the general purpose of the facility.
- (2) A description of the proposed facility.
- (3) A description of the site or route selection process, including descriptions of the major alternatives considered.
- (4) A discussion of the principal environmental and socioeconomic considerations of the preferred and alternate routes or sites.
- (5) An explanation of the project schedule (a bar chart is acceptable).

(B) Information filed by the applicant in response to the requirements of this section shall not be deemed responses to any other section of the application requirements.

---

Effective: 12/15/2003

R.C. 119.032 review dates: 09/30/2003 and 09/30/2008

Promulgated Under: 111.15

Statutory Authority: 4906.03

Rule Amplifies: 4906.06, 4906.03

Prior Effective Dates: 12/27/76, 10/10/78, 7/7/80, 7/7/88, 8/28/98

## **4906-15-01 PROJECT SUMMARY AND FACILITY OVERVIEW**

---

### **(A) Project Summary and Facility Overview**

This Application seeks a Certificate of Environmental Compatibility and Public Need from the Ohio Power Siting Board ("OPSB") for the Cincinnati Gas & Electric Company's (CG&E) proposed Hillcrest-Eastwood 138 kilovolt (kV) transmission line Project. The scope of the proposed project involves the construction of a new single-circuit 138 kV overhead electric transmission line between CG&E's existing Eastwood Substation and the proposed Hillcrest Substation, (the subject of PUCO case no. 05-360-EL-BSB). The proposed project will provide needed electric transmission and distribution support to the eastern limits of the CG&E service area. This project is within Mount Orab, and Sterling and Green Townships in Brown County, and Williamsburg Township in Clermont County. CG&E will construct, maintain, operate, and own the proposed transmission line.

#### **(1) General Purpose of the Facility**

The purpose of the proposed facility (and the associated substation) is to relieve the CCD-owned and Dayton Power and Light Company-operated 345/138 kV transformer bank (TB) 7 at the Stuart Generating Station (which feeds the 138kV circuit to Brown Substation and onto Eastwood Substation) and to support the Stuart-Foster 138 kV corridor. In addition, Hillcrest Substation will provide increased distribution reliability and a source of distribution capacity for load growth throughout the extended project vicinity.

#### **(2) Summary Description of Proposed Facility**

The Hillcrest-Eastwood 138 kV electric transmission line is approximately 9.3 miles in length along the Preferred Route and 8.7 miles in length along the Alternate Route. This



- Nodes A – B (7,000 feet)
  - ♦ The Preferred Route parallels the southwest side of the existing Eastwood-Ford 138 kV transmission line circuit no. F5884 that leaves Eastwood Substation on a northwest heading towards Batavia Transmissions, LLC. This route candidate then crosses the existing 138 kV line and runs north along the east side of Hagemans Crossing Road. The route follows the south side of the Norfolk and Western Railroad on an east-southeast heading, with the project centerline 35 feet from the edge of the railroad ROW.
- Nodes B – N – K – L (21,800 feet)
  - ♦ From Node B to K the Preferred Route continues to parallel the south side of the Norfolk and Western Railroad corridor, through predominantly agricultural land and some second growth woodlots.
  - ♦ From Nodes K to L, the route crosses Eastwood Road, tributaries of Indian Camp Run, Lindsey Road, Bodman Road, and Brooks-Malott Road.
- Nodes L – J (2,700 feet)
  - ♦ After crossing the Norfolk and Western Railroad, the Preferred Route parallels the east side of Brooks-Malott Road. This route segment also passes through the Brown County Foreign Trade Zone (FTZ).
- Nodes J – O – P – A1 – B1 (7,500 feet)
  - ♦ For these route segments, the Preferred Route parallels the east side of Brooks-Malott Road through predominantly agricultural land.
  - ♦ From Nodes J to O, the route crosses State Route 32 (SR 32) and Bardwell West Road.
  - ♦ Between Nodes O and P the Preferred Route crosses a tributary of Sterling Run.
- Nodes B1 – D1 (3,200 feet)
  - ♦ The Preferred Route runs east-northeast paralleling the south side of Waits Road and crossing two tributaries of Sterling Run before reaching U.S Route 68.
  - ♦ This route then runs generally north, crossing Waits Road and paralleling the west side of US 68.

- Nodes C – I – J (21,700 feet)
  - ♦ The Alternate Route parallels the south side of the SR 32 ROW to the east edge of Brooks-Malott Road (Node J).
  - ♦ From Nodes C to I, the route crosses a tributary of Crane Run and agricultural fields.
  - ♦ From Nodes I to J, the Alternate Route crosses Eastwood Road, two tributaries of Indian Camp Run, Bodman Road, and Brooks-Malott Road.
- Nodes J – O – P – A1 – B1 (7,500 feet)
  - ♦ The Alternate Route follows the same alignment as the Preferred Route from Node J to Node B1.
- Nodes B1 – C1 – D1 (3,600 feet)
  - ♦ The Alternate Route crosses Waits Road to the north, turns generally west for about 50 feet, and then continues north paralleling the east side of Brooks-Malott Road.
  - ♦ From Node C1, the route turns east-southeast crossing agricultural fields and a tributary of Sterling Run before reaching Node D1, located at the east edge of US 68.
- Nodes D1 – G1 – Preferred Hillcrest Substation Site (7,200 feet)
  - ♦ The Alternate Route follows the same alignment as the Preferred Route from Node D1 to the Preferred Hillcrest Substation Site.
- Nodes D1 – H – Alternate Hillcrest Substation Site (7,890 feet)
  - ♦ If the Alternate Hillcrest Substation Site is selected for construction, the route will follow the northern edge of Greenbush East Road before turning southeast to the Alternate Hillcrest Substation Site.

The total length of the Alternate Route is approximately 8.7 miles. For this candidate the transmission line is planned to be supported using only single wood poles with appropriate guying and anchoring.

wetlands, and streams located along the project route. The results of this study are discussed in detail in Section 4906-15-07 of this Application.

No exceptional quality streams or wetland areas were identified during the ecological field surveys. Construction impacts to streams and wetlands along the Preferred Route and Alternate Route are expected to be minimal, as the transmission line will span these sensitive areas. Structures and temporary access routes will be installed outside of wetlands and riparian areas. Furthermore the utilization of non-mechanized land clearing techniques to clear wetlands crossed by the ROW, will minimize impacts in these areas.

No Federal or State species of concern were identified during the field surveys. Potential Indiana bat roosting habitat was observed in select wooded areas along the Preferred and Alternate Routes. CG&E will conduct all tree cutting outside of the April 15 to September 15 roosting window of the Indiana bat or will conduct bat surveys if cutting is necessary within this time window to avoid any possible impacts to this species.

*(d) Cultural Impacts:* Six previously recorded archeological sites were identified within 1,000 feet of each proposed candidate route. No sites are located within 100 feet of the Preferred or Alternate Routes. A Phase I Cultural Resources Survey will be completed as dictated by the State Historic Preservation Office. The results of cultural resources survey will be forwarded to the OPSB once completed. It is expected that all construction impacts to any identified significant cultural resources can be avoided to the extent possible by variations in structure placement and access routes.

#### **(5) Project Schedule Summary**

Construction of the Hillcrest-Eastwood 138 kV transmission line Project is proposed to begin on approximately July 1, 2006, and completed and placed in service by June 30, 2008. A project schedule in a bar chart format is provided as Figure 02-10.

**4906-15-02 Review of need for proposed project.**

(A) The applicant shall provide a statement explaining the need for the proposed facility, including a listing of the factors upon which it relied to reach that conclusion and references to the most recent long-term forecast report (if applicable). The statement shall also include but not be limited to, the following:

- (1) A statement of the purpose of the proposed facility.
- (2) Specific projections of system conditions or local requirements that impacted the applicant's opinion on the need for the proposed facility.
- (3) Relevant load flow studies and contingency analyses, if appropriate, identifying the need for system improvement.
- (4) For electric power transmission facilities, one copy of the relevant power flow base case model data, including "East Central Area Reliability Coordination Agreement" equivalents, in "General Electric (Positive Sequence Load Flow), Power Technology Incorporated", or common raw data format on diskette, with appropriate directions to recover data if compressed.
- (5) For gas or natural gas transmission projects, one copy in electronic format of the relevant base case system data on diskette, with a description of the analysis program and the data format.

(B) Expansion plans.

- (1) For the electric power transmission lines and associated facilities, the applicant shall provide a brief statement of how the proposed facility and site/route alternatives fit into the applicant's most recent long-term electric forecast report and the regional plans for expansion, including, but not limited to, the following:
  - (a) Reference to any description of the proposed facility and site/route alternatives in the most recent long-term electric forecast report of the applicant.
  - (b) If no description was contained in the most recent long-term electric forecast report, an explanation as to why none was filed in the most recent long-term electric forecast report.
  - (c) Reference to regional expansion plans, including East Central Area Reliability Coordination Agreement bulk power plans, when applicable (if the transmission project will not affect regional plans, the applicant shall so state).

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(2) For gas transmission lines and associated facilities, the applicant shall provide a brief statement of how the proposed facility and site/route alternatives fit into the applicant's most recent long-term gas forecast report, including the following:

(a) Reference to any description of the proposed facility and site/route alternatives in the most recent long-term gas forecast report of the applicant.

(b) If no description was contained in the most recent long-term gas forecast report, an explanation as to why none was filed in the most recent long-term gas forecast report.

(C) For electric power transmission facilities, the applicant shall provide an analysis of the impact of the proposed facility on the electric power system economy and reliability. The impact of the proposed facility on all interconnected utility systems shall be evaluated, and all conclusions shall be supported by relevant load flow studies.

(D) For electric power transmission lines, the applicant shall provide an analysis and evaluation of the options considered which would eliminate the need for construction of an electric power transmission line, including electric power generation options and options involving changes to existing and planned electric power transmission substations.

(E) The applicant shall describe why the proposed facility was selected to meet the projected need.

(F) Facility schedule.

(1) Schedule. The applicant shall provide a proposed schedule in bar chart format covering all applicable major activities and milestones, including:

(a) Preparation of the application.

(b) Submittal of the application for certificate.

(c) Issuance of the certificate.

(d) Acquisition of rights-of-way and land rights for the certified facility.

(e) Preparation of the final design.

(f) Construction of the facility.

(g) Placement of the facility in service.

(2) Delays. The applicant shall describe the impact of critical delays on the eventual in-service date.

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## **4906-15-01 PROJECT SUMMARY AND FACILITY OVERVIEW**

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### **(A) Project Summary and Facility Overview**

This Application seeks a Certificate of Environmental Compatibility and Public Need from the Ohio Power Siting Board ("OPSB") for the Cincinnati Gas & Electric Company's (CG&E) proposed Hillcrest-Eastwood 138 kilovolt (kV) transmission line Project. The scope of the proposed project involves the construction of a new single-circuit 138 kV overhead electric transmission line between CG&E's existing Eastwood Substation and the proposed Hillcrest Substation, (the subject of PUCO case no. 05-360-EL-BSB). The proposed project will provide needed electric transmission and distribution support to the eastern limits of the CG&E service area. This project is within Mount Orab, and Sterling and Green Townships in Brown County, and Williamsburg Township in Clermont County. CG&E will construct, maintain, operate, and own the proposed transmission line.

#### **(1) General Purpose of the Facility**

The purpose of the proposed facility (and the associated substation) is to relieve the CCD-owned and Dayton Power and Light Company-operated 345/138 kV transformer bank (TB) 7 at the Stuart Generating Station (which feeds the 138kV circuit to Brown Substation and onto Eastwood Substation) and to support the Stuart-Foster 138 kV corridor. In addition, Hillcrest Substation will provide increased distribution reliability and a source of distribution capacity for load growth throughout the extended project vicinity.

#### **(2) Summary Description of Proposed Facility**

The Hillcrest-Eastwood 138 kV electric transmission line is approximately 9.3 miles in length along the Preferred Route and 8.7 miles in length along the Alternate Route. This

Application is part of a combined transmission line and substation project. The proposed transmission line will originate at the existing CG&E Eastwood Substation and end at the proposed Hillcrest Substation (PUCO case no. 05-360-EL-BSB). The Hillcrest Substation will tap the existing Stuart-Foster 345 kV transmission line; as a consequence the selection of a suitable site for the Hillcrest Substation near to the Stuart-Foster 345 kV transmission line was a precursor to transmission line route selection as it defined the eastern termination point for the project.

### **(3) Route Selection Process**

A route selection study was conducted to identify and evaluate potential routes for the project (Appendix 03-1). Preferred and Alternate Routes were selected based upon the results of this study (Figures 04-1A and 04-1B).

Seventy-five potential routes were identified, scored, and ranked prior to the selection of a Preferred and an Alternate Route. The objective of the study was to minimize the overall impacts to ecological and land use features, while taking into consideration engineering and construction needs. The Route Selection Study identified Preferred and Alternate Routes that are predominantly located along existing utility corridors, roadways, or railways.

Rule 4906-5-04(A) of the Ohio Administrative Code provides that, "two right-of-ways are not considered alternatives if more than twenty percent of the rights-of-way are common". CG&E has identified Preferred and Alternate Routes for the project with approximately thirty percent of the right-of-way (ROW) in common and has submitted a request to waive the twenty-percent commonality rule.

***Preferred Route:*** The Preferred Route originates at CG&E's Eastwood Substation located on Tri-County Highway, approximately 1,000 feet west of Chad Lane in Clermont County. Figures 04-1A and 04-1B provide a reference for node locations.

- Nodes A – B (7,000 feet)
  - ♦ The Preferred Route parallels the southwest side of the existing Eastwood-Ford 138 kV transmission line circuit no. F5884 that leaves Eastwood Substation on a northwest heading towards Batavia Transmissions, LLC. This route candidate then crosses the existing 138 kV line and runs north along the east side of Hagemans Crossing Road. The route follows the south side of the Norfolk and Western Railroad on an east-southeast heading, with the project centerline 35 feet from the edge of the railroad ROW.
- Nodes B – N – K – L (21,800 feet)
  - ♦ From Node B to K the Preferred Route continues to parallel the south side of the Norfolk and Western Railroad corridor, through predominantly agricultural land and some second growth woodlots.
  - ♦ From Nodes K to L, the route crosses Eastwood Road, tributaries of Indian Camp Run, Lindsey Road, Bodman Road, and Brooks-Malott Road.
- Nodes L – J (2,700 feet)
  - ♦ After crossing the Norfolk and Western Railroad, the Preferred Route parallels the east side of Brooks-Malott Road. This route segment also passes through the Brown County Foreign Trade Zone (FTZ).
- Nodes J – O – P – A1 – B1 (7,500 feet)
  - ♦ For these route segments, the Preferred Route parallels the east side of Brooks-Malott Road through predominantly agricultural land.
  - ♦ From Nodes J to O, the route crosses State Route 32 (SR 32) and Bardwell West Road.
  - ♦ Between Nodes O and P the Preferred Route crosses a tributary of Sterling Run.
- Nodes B1 – D1 (3,200 feet)
  - ♦ The Preferred Route runs east-northeast paralleling the south side of Waits Road and crossing two tributaries of Sterling Run before reaching U.S Route 68.
  - ♦ This route then runs generally north, crossing Waits Road and paralleling the west side of US 68.



- Nodes D1 – G1 – Preferred Hillcrest Substation Site (7,200 feet)
  - ♦ The Preferred Route crosses US 68 to the east before paralleling the north edge of a property line.
  - ♦ The route then proceeds north, crossing agricultural fields prior to reaching the north side of Greenbush East Road.
  - ♦ The Preferred Route parallels the north side of Greenbush East Road before turning north-northeast to the Preferred Hillcrest Substation Site.
- Nodes D1 – H – Alternate Hillcrest Substation Site (7,890 feet)
  - ♦ If the Alternate Hillcrest Substation Site is selected for construction, the route will follow the northern edge of Greenbush East Road for 2,100 feet before turning southeast to the Alternate Hillcrest Substation Site.

The total length of the Preferred Route is approximately 9.3 miles. Along the Preferred Route the transmission structures will be a combination of typical H-frame structures about 65 feet in height (along the southern edge of the Norfolk and Western railway) and single wooden poles ranging between 65 and 90 feet in height, as required, along the remainder of the route

*Alternate Route:* The 8.7 mile Alternate Route also originates at CG&E's Eastwood Substation. The Preferred and Alternate Routes share a common route alignment of approximately 30 percent.

- Node A – M – B – C (5,900 feet)
  - ♦ The Alternate Route leaves the existing Eastwood Substation in a north-northeast direction crossing agricultural fields.
  - ♦ From Nodes B to C, the route crosses the Norfolk and Western Railroad. This segment then continues north-northeast across Greenbush Cobb Road to Node C at the southern edge of the SR 32 ROW.

- Nodes C – I – J (21,700 feet)
  - ♦ The Alternate Route parallels the south side of the SR 32 ROW to the east edge of Brooks-Malott Road (Node J).
  - ♦ From Nodes C to I, the route crosses a tributary of Crane Run and agricultural fields.
  - ♦ From Nodes I to J, the Alternate Route crosses Eastwood Road, two tributaries of Indian Camp Run, Bodman Road, and Brooks-Malott Road.
- Nodes J – O – P – A1 – B1 (7,500 feet)
  - ♦ The Alternate Route follows the same alignment as the Preferred Route from Node J to Node B1.
- Nodes B1 – C1 – D1 (3,600 feet)
  - ♦ The Alternate Route crosses Waits Road to the north, turns generally west for about 50 feet, and then continues north paralleling the east side of Brooks-Malott Road.
  - ♦ From Node C1, the route turns east-southeast crossing agricultural fields and a tributary of Sterling Run before reaching Node D1, located at the east edge of US 68.
- Nodes D1 – G1 – Preferred Hillcrest Substation Site (7,200 feet)
  - ♦ The Alternate Route follows the same alignment as the Preferred Route from Node D1 to the Preferred Hillcrest Substation Site.
- Nodes D1 – H – Alternate Hillcrest Substation Site (7,890 feet)
  - ♦ If the Alternate Hillcrest Substation Site is selected for construction, the route will follow the northern edge of Greenbush East Road before turning southeast to the Alternate Hillcrest Substation Site.

The total length of the Alternate Route is approximately 8.7 miles. For this candidate the transmission line is planned to be supported using only single wood poles with appropriate guying and anchoring.

#### **(4) Principal Environmental and Socioeconomic Considerations**

A general socioeconomic survey of the study area was performed as part of this Application. This included a field survey, preparation of a land use map, determination of current population estimates and projections for the area, and an assessment of project compatibility with local and regional development plans. This information allowed an assessment of the potential social and economic impacts of the proposed transmission line project on the surrounding communities.

**(a) Land Use Impacts:** Land use in the immediate area of both the Preferred and Alternate Routes is predominantly residential and agricultural with some commercial, institutional, and recreational uses. No sensitive land uses were identified along the Preferred or Alternate Routes. Based on a review of available land use plans and contacts with local agencies, the project appears to be consistent and compatible with local and regional development projects. Existing land use is not expected to be significantly altered by the project as proposed.

Access will be predominantly within and adjacent to existing road and railway ROW. Temporary access routes will be required along portions of the right-of-way to install and maintain the proposed electric transmission line.

**(b) Economic Impacts:** Regional development within Brown and Clermont County is not expected to be directly impacted as a result of this project. However, the project will have an indirect positive impact for Brown and Clermont Counties through the increased reliability and availability of electricity throughout the region. In addition, CG&E will pay property taxes on utility facilities in each jurisdiction crossed by the completed transmission line.

**(c) Ecological Impacts:** An ecological study of the Preferred and Alternate Routes was performed as part of this Application. The study included analysis of published literature and maps and a field survey to assess the presence of plant and animal species,

wetlands, and streams located along the project route. The results of this study are discussed in detail in Section 4906-15-07 of this Application.

No exceptional quality streams or wetland areas were identified during the ecological field surveys. Construction impacts to streams and wetlands along the Preferred Route and Alternate Route are expected to be minimal, as the transmission line will span these sensitive areas. Structures and temporary access routes will be installed outside of wetlands and riparian areas. Furthermore the utilization of non-mechanized land clearing techniques to clear wetlands crossed by the ROW, will minimize impacts in these areas.

No Federal or State species of concern were identified during the field surveys. Potential Indiana bat roosting habitat was observed in select wooded areas along the Preferred and Alternate Routes. CG&E will conduct all tree cutting outside of the April 15 to September 15 roosting window of the Indiana bat or will conduct bat surveys if cutting is necessary within this time window to avoid any possible impacts to this species.

*(d) Cultural Impacts:* Six previously recorded archeological sites were identified within 1,000 feet of each proposed candidate route. No sites are located within 100 feet of the Preferred or Alternate Routes. A Phase I Cultural Resources Survey will be completed as dictated by the State Historic Preservation Office. The results of cultural resources survey will be forwarded to the OPSB once completed. It is expected that all construction impacts to any identified significant cultural resources can be avoided to the extent possible by variations in structure placement and access routes.

#### **(5) Project Schedule Summary**

Construction of the Hillcrest-Eastwood 138 kV transmission line Project is proposed to begin on approximately July 1, 2006, and completed and placed in service by June 30, 2008. A project schedule in a bar chart format is provided as Figure 02-10.

**4906-15-02 Review of need for proposed project.**

(A) The applicant shall provide a statement explaining the need for the proposed facility, including a listing of the factors upon which it relied to reach that conclusion and references to the most recent long-term forecast report (if applicable). The statement shall also include but not be limited to, the following:

- (1) A statement of the purpose of the proposed facility.
- (2) Specific projections of system conditions or local requirements that impacted the applicant's opinion on the need for the proposed facility.
- (3) Relevant load flow studies and contingency analyses, if appropriate, identifying the need for system improvement.
- (4) For electric power transmission facilities, one copy of the relevant power flow base case model data, including "East Central Area Reliability Coordination Agreement" equivalents, in "General Electric (Positive Sequence Load Flow), Power Technology Incorporated", or common raw data format on diskette, with appropriate directions to recover data if compressed.
- (5) For gas or natural gas transmission projects, one copy in electronic format of the relevant base case system data on diskette, with a description of the analysis program and the data format.

(B) Expansion plans.

- (1) For the electric power transmission lines and associated facilities, the applicant shall provide a brief statement of how the proposed facility and site/route alternatives fit into the applicant's most recent long-term electric forecast report and the regional plans for expansion, including, but not limited to, the following:
  - (a) Reference to any description of the proposed facility and site/route alternatives in the most recent long-term electric forecast report of the applicant.
  - (b) If no description was contained in the most recent long-term electric forecast report, an explanation as to why none was filed in the most recent long-term electric forecast report.
  - (c) Reference to regional expansion plans, including East Central Area Reliability Coordination Agreement bulk power plans, when applicable (if the transmission project will not affect regional plans, the applicant shall so state).

(2) For gas transmission lines and associated facilities, the applicant shall provide a brief statement of how the proposed facility and site/route alternatives fit into the applicant's most recent long-term gas forecast report, including the following:

(a) Reference to any description of the proposed facility and site/route alternatives in the most recent long-term gas forecast report of the applicant.

(b) If no description was contained in the most recent long-term gas forecast report, an explanation as to why none was filed in the most recent long-term gas forecast report.

(C) For electric power transmission facilities, the applicant shall provide an analysis of the impact of the proposed facility on the electric power system economy and reliability. The impact of the proposed facility on all interconnected utility systems shall be evaluated, and all conclusions shall be supported by relevant load flow studies.

(D) For electric power transmission lines, the applicant shall provide an analysis and evaluation of the options considered which would eliminate the need for construction of an electric power transmission line, including electric power generation options and options involving changes to existing and planned electric power transmission substations.

(E) The applicant shall describe why the proposed facility was selected to meet the projected need.

(F) Facility schedule.

(1) Schedule. The applicant shall provide a proposed schedule in bar chart format covering all applicable major activities and milestones, including:

(a) Preparation of the application.

(b) Submittal of the application for certificate.

(c) Issuance of the certificate.

(d) Acquisition of rights-of-way and land rights for the certified facility.

(e) Preparation of the final design.

(f) Construction of the facility.

(g) Placement of the facility in service.

(2) Delays. The applicant shall describe the impact of critical delays on the eventual in-service date.

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## **4906-15-02 JUSTIFICATION OF NEED**

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### **(A) Justification of Need**

#### **(1) Purpose of the Proposed Facility**

This Application is for the certification of a single-circuit 138 kV overhead electric transmission line between CG&E's existing Eastwood Substation and the proposed Hillcrest Substation (the subject of PUCO case no. 05-360-EL-BSB), which in turn will be connected to the CG&E, Columbus Southern Power Company, and Dayton Power and Light Company (collectively CCD) Stuart-Foster 345 kV transmission line. The project will be constructed, owned, and operated by CG&E. The proposed transmission line will be approximately 9.3 miles in length (2.1 miles on 34.5 kV distribution overbuild along the Preferred Route) and will be constructed using a combination of 65 to 90 foot single-wood poles and 65 foot H-frame structures (along the southern edge of the Norfolk and Western railway) with 954kCM 45/7 138 kV conductor. The 138 kV circuit from CG&E's Eastwood Substation will be rated to deliver approximately 300 MVA.

The purpose of the proposed facility (and the associated substation) is to relieve the CCD-owned and Dayton Power and Light Company-operated 345/138 kV TB7 at the Stuart Generating Station (which feeds the 138kV circuit to Brown Substation and onto Eastwood Substation) and to support the Stuart-Foster 138 kV corridor. In addition, Hillcrest Substation will provide increased distribution reliability and a source of distribution capacity for load growth near the eastern limits of the CG&E service area.

#### **(2) System Conditions and Local Requirements**

A major source of power for the eastern CG&E service area is currently the 138 kV Brown-Ford transmission line (circuit number 5884), which is supplied at the southern end from a 345/138 kV transformer (TB7) at the Stuart Generating Station and from the

north by CG&E's Foster Substation. Planning studies indicate that the 345/138 kV Stuart transformer will approach its normal hotspot rating in 2005 and its emergency hotspot rating in 2007. Note that the hotspot rating is well above the nameplate rating. With the planned installation of the Clinton County Substation in 2006 a critical need for the Hillcrest-Eastwood Project will be deferred although the transformer will still exceed its normal and emergency ratings in 2008, indicating a need for the proposed project at that time.

The Hillcrest-Eastwood 138 kV transmission line and Hillcrest Substation are required to address projected load growth and associated contingency overloads. The project will also allow for the installation of local distribution capacity as discussed in the Application for the proposed Hillcrest Substation (PUCO case no. 05-360-EL-BSB).

### **(3) Load Flow Studies**

CG&E conducted studies of the CG&E and CCD 345 kV transmission system for the forecasted 2008 Summer Peak Load Condition with and without the Hillcrest-Eastwood 138 kV transmission line and associated Hillcrest Substation in-service.

*(a) Planning Criteria:* The planning criteria used are based upon those of the East Central Area Reliability (ECAR) Agreement and the North American Electric Reliability Council (NERC). These evaluations were based upon the requirements necessary to provide adequate supply to the area based on CG&E's planning criteria, which are described below. These planning criteria are not intended to be absolute or applied without exception. Other factors, such as severity of consequences, availability of emergency switching procedures, probability of occurrence and the cost of remedial action are also considered in the evaluation of the transmission system. In general, the planning criteria of CG&E and the ECAR and NERC Planning Standards are considered deterministic criteria (i.e. no randomness is involved in the development of future states of the system) as compared to criteria based upon probability. The criteria and standards are meant to be proxies for a reasonable level of reliability based on the degree of



uncertainty of various factors including but not limited to; generation dispatch, facility outages, generation outages, transfers across the system and load patterns that occur in real time operations.

(i) **69 kV and 138 kV System:** A “facility” as defined herein shall include 69 kV and 138 kV transmission circuits or any transformer with a secondary voltage of 69 or 138 kV. Under normal system peak load conditions, the loading (typically measured in megavolt-amperes) on all facilities should be no higher than 100% of their normal rating. Voltages should be 95% of nominal or higher. The voltage on the 69 and 138 kV system should not exceed 105% for any load level. All circuit breakers should be capable of interrupting the maximum fault current duty imposed on the circuit breaker.

The 69 kV and 138 kV system should be able to withstand any single facility outage during peak load periods without exceeding the emergency limits of any remaining 69 kV or 138 kV facilities. Loss of load shall be minimized although it cannot be eliminated in all situations. The voltages on the 69 kV and 138 kV systems should not be less than 90% of nominal under these conditions.

Double contingency line outages (i.e., two lines or transformers, or one of each, out of service) are considered primarily in cases involving the CG&E 138 kV underground cable feeders, which supply the West End and Charles substations near downtown Cincinnati. For an outage of any other line with one such underground circuit out of service, the loading on all lines should be no higher than 100% of the emergency conductor rating and voltage should be 90% or higher at all points on the CG&E 138 kV system.

A line outage following an outage of a 138-69 kV autotransformer assumes that CG&E's 75 MVA mobile autotransformer is installed, a mobile transformer for tertiary load is installed if necessary, and any desirable mitigating switching or other actions are performed. Under such conditions, the loading on all transmission lines should be no higher than 100% of the emergency conductor rating. The loading on the 138-69 kV autotransformers should be no higher than 100% of the emergency rating. The mobile

autotransformer must be limited to 100% of the normal rating under all circumstances. Voltages should be 90% or higher at all points on the 138 kV and 69 kV systems.

Under normal system peak load conditions with full generation output, all generating units must remain stable with occurrence of a three-phase fault accompanied by a single pole circuit breaker failure with operation of back-up circuit breakers. With one 138 kV component out-of-service, stable operation of all generating units is to be maintained with a subsequent single phase-to-ground fault accompanied by normal clearing of the fault.

(ii) *230 kV and 345 kV System:* A "facility" as defined herein shall include 230 and 345 kV transmission circuits, any transformer with a secondary voltage of 230 kV or above or a generating unit connected to the 230 or 345 kV system. Under normal system peak load conditions, the loading on all facilities should be no higher than 100% of the normal rating of the facility. Voltages should be 95% or higher. The voltage on the 230 and 345 kV system should not exceed 105% for any load level. All circuit breakers should be capable of interrupting the maximum fault current duty imposed on the circuit breaker.

For a single contingency outage during system peak load conditions, the loading on all transmission facilities should be no higher than 100% of the emergency facility rating. The loading on the autotransformers connected to the 230 and 345 kV systems should be no higher than 100% of their emergency rating. Voltages should be 90% or higher at all points on the 230 kV and 345 kV system and 90% or higher on the 138 kV system.

Double contingencies will be evaluated as necessary to determine the impact on the CG&E transmission system and on the surrounding interconnected transmission system. The severity of the consequences, availability of emergency switching procedures, probability of occurrence and the cost of remedial action will be considered in the evaluation of these double contingencies.

Under normal system peak load conditions with full generation output, all generating units must remain stable with occurrence of a three-phase fault accompanied by a single pole circuit breaker failure with operation of back-up circuit breakers. With one 230 kV or 345 kV component out-of-service, stable operation of all generating units is to be maintained with a subsequent single phase-to-ground fault accompanied by normal clearing of the fault.

*(b) Load Flow Studies:* The system studies reviewed the performance of Ohio and Kentucky 345 kV transmission systems for operation with and without the Hillcrest-Eastwood 138 kV transmission line and associated Hillcrest Substation. The 345 kV load flow analyses were initially developed to address contingencies and concerns identified by the Ohio CCD Companies. An exhaustive single and double contingency analysis was performed for this project and only the contingencies which exhibited the highest loading are listed in the following tables.

An ECAR dynamics base case representing the 2008 summer peak load conditions was used for this study. The analysis utilized Shaw Power Technologies, Inc. Power System Simulator for Engineering (PSS/E™).

*(i) Normal Conditions:* This represents system conditions with no outages and “normal” economic dispatch and system conditions. A power flow diagram for normal conditions is shown as Figure 02-1. Summer peak case loadings under normal conditions are given below in Table 02-1 with and without the proposed substation in operation.

TABLE 02-1

**2008 SUMMER PEAK CASE EVALUATION**  
**Normal Operating Conditions, No Outages**

345 kV Transmission Line	Hillcrest Out MVA	% of Rating	Hillcrest In MVA	% of Rating
Stuart - Hillcrest	NA	NA	667	54
Stuart - Atlanta	663	51	632	51
Stuart - Clinton	852	69	850	69
Stuart - Killen	151	12	153	12
Stuart - Spurlock	139	11	133	11
Stuart - Foster	617	50	NA	NA
Foster - Hillcrest	NA	NA	530	45
Foster - Sugar Creek	765	64	763	64
Foster - Bath	667	53	665	53
Foster - Pierce	776	65	782	66
Foster - Port Union	143	12	159	13
Foster - Todhunter	284	24	299	25
Zimmer - Spurlock	234	19	230	19
Zimmer - Port Union	616	50	615	50
Zimmer - Silver Grove	951	72	947	72
Atlanta - Adkins	513	43	512	43
Adkins Beatty	821	79	820	79
Clinton - Greene	629	53	629	53
Killen - Marquis	437	35	435	35
Marquis - Bixby	679	56	679	56
Beatty - Bixby	196	19	197	19

The addition of the Hillcrest Substation and associated Hillcrest-Eastwood 138 kV transmission line is found to have small effects on the net normal flows as compared to line ratings in the Ohio and Kentucky systems. As summarized above in Table 02-1 and shown on Figure 02-1, under normal conditions on the transmission system all loadings are within acceptable levels with the proposed project. Based upon these results the interconnection will not introduce new problems under normal conditions. Based upon the information given on Figure 02-2, the project reduces the projected 2008 loadings on the Stuart 345/138 kV TB7 transformer from 105% to 87% of the normal rating in 2008 based upon a 2% load growth rate.

(ii) **Single Contingency:** The single contingency represents an outage of a single element or branch in the transmission system. The addition of the Hillcrest Substation and associated Hillcrest-Eastwood 138 kV transmission line is found to have small effects on single contingency flows as compared to line ratings in the Ohio and Kentucky systems.

**Stuart-Hillcrest Outage:** The single contingency outage of the Stuart-Hillcrest portion of the Stuart-Foster 345 kV transmission line is summarized below in Table 02-2. For this contingency all loadings are below acceptable levels.

**TABLE 02-2**  
**2008 SUMMER PEAK CASE EVALUATION**  
**Stuart - Hillcrest Out**

345 kV Transmission Line	Hillcrest In MVA	% of Rating
Stuart - Hillcrest	NA	NA
Stuart - Atlanta	713	58
Stuart - Clinton	974	79
Stuart - Killen	18	1
Stuart - Spurlock	404	33
Stuart - Foster	NA	NA
Foster - Hillcrest	48	4
Foster - Sugar Creek	669	56
Foster - Bath	577	46
Foster - Pierce	930	78
Foster - Port Union	327	28
Foster - Todhunter	362	31
Zimmer - Spurlock	413	33
Zimmer - Port Union	707	57
Zimmer - Silver Grove	1038	79
Atlanta - Adkins	586	49
Adkins Beatty	893	86
Clinton - Greene	739	63
Killen - Marquis	571	46
Marquis - Bixby	685	56
Beatty - Bixby	191	18

**Foster-Hillcrest Out:** The single contingency outage of the Foster-Hillcrest portion of the Stuart-Foster 345 kV transmission line is summarized below in Table 02-3. For this contingency all loadings are below acceptable levels.

**TABLE 02-3**

**2008 SUMMER PEAK CASE EVALUATION**

**Foster - Hillcrest Out**

<b>345 kV Transmission Line</b>	<b>Hillcrest In MVA</b>	<b>% of Rating</b>
Stuart - Hillcrest	202	16
Stuart - Atlanta	694	56
Stuart - Clinton	945	76
Stuart - Killen	50	4
Stuart - Spurlock	337	27
Stuart - Foster	NA	NA
Foster - Hillcrest	NA	NA
Foster - Sugar Creek	678	58
Foster - Bath	594	48
Foster - Pierce	904	76
Foster - Port Union	306	26
Foster - Todhunter	367	31
Zimmer - Spurlock	367	30
Zimmer - Port Union	686	55
Zimmer - Silver Grove	1013	77
Atlanta - Adkins	568	47
Adkins Beatty	876	84
Clinton - Greene	714	20
Killen - Marquis	538	43
Marquis - Bixby	684	56
Beatty - Bixby	193	19

**Foster-Pierce Out:** The single contingency outage of the Foster-Pierce 345 kV transmission line is summarized below in Table 02-4. A power flow diagram for this contingency is shown as Figure 02-3A and B. For this contingency all loadings are within acceptable levels.

TABLE 02-4

**2008 SUMMER PEAK CASE EVALUATION  
Foster - Pierce Out**

345 kV Transmission Line	Hillcrest Out MVA	% of Rating	Hillcrest In MVA	% of Rating
Stuart - Hillcrest	NA	NA	780	63
Stuart - Atlanta	616	50	614	49
Stuart - Clinton	881	71	880	71
Stuart - Killen	253	20	257	21
Stuart - Spurlock	115	9	107	9
Stuart - Foster	734	59	NA	NA
Foster - Hillcrest	NA	NA	641	54
Foster - Sugar Creek	655	55	652	55
Foster - Bath	562	45	560	45
Foster - Pierce	NA	NA	NA	NA
Foster - Port Union	424	36	440	37
Foster - Todhunter	408	34	423	36
Zimmer - Spurlock	274	22	268	22
Zimmer - Port Union	675	54	674	54
Zimmer - Silver Grove	936	71	931	71
Atlanta - Adkins	493	41	492	41
Adkins Beatty	802	77	800	77
Clinton - Greene	660	56	659	56
Killen - Marquis	336	27	332	27
Marquis - Bixby	718	59	718	59
Beatty - Bixby	249	24	249	24

**Stuart-Clinton County Out:** The single contingency outage of the Stuart-Clinton 345 kV transmission line is summarized below in Table 02-5. A power flow diagram for this contingency is shown as Figure 02-4A and B. For this contingency all loadings are within acceptable levels.

TABLE 02-5

**2008 SUMMER PEAK CASE EVALUATION**  
**Stuart - Clinton County Out**

345 kV Transmission Line	Hillcrest Out MVA	% of Rating	Hillcrest In MVA	% of Rating
Stuart - Hillcrest	NA	NA	877	71
Stuart - Atlanta	775	62	772	62
Stuart - Clinton	NA	NA	NA	NA
Stuart - Killen	22	2	19	2
Stuart - Spurlock	423	34	414	33
Stuart - Foster	828	67	NA	NA
Foster - Hillcrest	NA	NA	724	61
Foster - Sugar Creek	969	82	969	81
Foster - Bath	847	68	845	68
Foster - Pierce	842	71	848	72
Foster - Port Union	237	20	252	21
Foster - Todhunter	307	26	321	27
Zimmer - Spurlock	408	33	403	32
Zimmer - Port Union	697	56	697	56
Zimmer - Silver Grove	1045	80	1039	79
Atlanta - Adkins	627	53	625	52
Adkins Beatty	935	90	933	89
Clinton - Greene	128	11	127	11
Killen - Marquis	609	49	604	49
Marquis - Bixby	718	59	718	59
Beatty - Bixby	237	23	238	23

**Zimmer-Silver Grove-Red Bank Out:** The single contingency outage of the Zimmer-Silver Grove-Red Bank 345 kV transmission line is summarized below in Table 02-6. A power flow diagram for this contingency is shown as Figure 02-5A and B. For this contingency all loadings are within acceptable levels.



TABLE 02-6

**2008 SUMMER PEAK CASE EVALUATION**  
**Zimmer - Silver Grove - Red Bank Out**

345 kV Transmission Line	Hillcrest Out MVA	% of Rating	Hillcrest In MVA	% of Rating
Stuart - Hillcrest	NA	NA	769	62
Stuart - Atlanta	682	55	680	55
Stuart - Clinton	916	74	912	74
Stuart - Killen	64	5	68	5
Stuart - Spurlock	164	13	169	14
Stuart - Foster	718	58	NA	NA
Foster - Hillcrest	NA	NA	619	52
Foster - Sugar Creek	741	63	740	62
Foster - Bath	647	52	645	52
Foster - Pierce	737	62	744	63
Foster - Port Union	164	14	177	15
Foster - Todhunter	248	21	262	22
Zimmer - Spurlock	194	16	197	16
Zimmer - Port Union	1109	89	1106	89
Zimmer - Silver Grove	NA	NA	NA	NA
Atlanta - Adkins	557	46	555	46
Adkins Beatty	865	83	863	83
Clinton - Greene	685	58	684	58
Killen - Marquis	524	42	521	42
Marquis - Bixby	679	56	679	56
Beatty - Bixby	187	18	187	18

**Foster-Cedarville Outage:** The system studies also reviewed performance with an outage of the 138 kV Foster-Cedarville 5884 transmission line with and without the Hillcrest Substation and associated Hillcrest-Eastwood 138 kV transmission line. Power flow diagrams for these contingencies are shown as Figures 02-6A and 02-6B. The addition of the Hillcrest Substation and associated Hillcrest-Eastwood 138 kV transmission line is found to have small effects on single contingency flows as compared to line ratings in the Ohio and Kentucky systems. This contingency places higher loading on the Stuart 345/138 kV TB7 transformer than any other single contingency examined, with levels reaching 94.5% of the emergency rating. This loading is reduced to 66.2% with the Hillcrest-Eastwood project in place.

(c) **Double Contingency Stability Performance Analysis:** A system fault stability performance analysis was conducted for the Hillcrest Substation and associated Hillcrest-Eastwood 138 kV transmission line. Fault analyses were performed at the Stuart, Zimmer, and Spurlock Generating Stations' 345 kV buses. An ECAR dynamics base case representing the 2008 summer peak load conditions was used for this study. The dynamics case was assembled using data from the 2003 NERC Dynamics Database. Although the CCD stability criteria specifies phase to ground faults with a prior transmission element out of service, three phase faults were actually applied in the stability simulations. The satisfactory outcome of these more severe disturbances provide an additional measure of confidence that the transient stability of the proposed project will be acceptable.

This analysis concentrated on events at Stuart, Zimmer, and Spurlock Generating Stations and considered a total of six cases with results summarized below:

- **Stuart Generating Station**

Case ST1 – Permanent three phase fault at Stuart 345 kV on line to Clinton. Fault clearing at 3.75 cycles with one pole circuit breaker failure at Stuart. Backup fault clearing operation at 9.75 cycles following fault initiation also removing Stuart 345/138 kV.

Case ST2 – Prior outage of Spurlock-Zimmer 345 kV. Permanent phase-to-ground fault at Killen 345 kV on-line to Marquis. Fault clearing in 3.75 cycles with no high speed re-closing.

- **Zimmer Generating Station**

Case Z1 – Permanent three phase fault at Zimmer 345 kV on line to Silver Grove. Fault clearing at 3.75 cycles with one pole circuit breaker failure at Zimmer (CB 1315). Backup fault clearing operation at 9.75 cycles following fault initiation also removing line to Spurlock.

Case Z2 – Permanent three phase fault at Zimmer 345 kV on line to Spurlock. Fault clearing at 3.75 cycles with one pole circuit breaker failure at Zimmer (CB 1315). Backup fault clearing operation at 9.75 cycles following fault initiation also removing line to Silver Grove.

- **Spurlock Generating Station**

Case SP1 – Permanent three phase fault at Spurlock 345 kV on line to Zimmer. Fault clearing at 3.75 cycles with one pole circuit breaker failure at Spurlock. Backup fault clearing operation at 9.75 cycles following fault initiation also removing Spurlock 345/138 kV transformer T9.

Case SP2 – Permanent three phase fault at Spurlock 345 kV on line to Stuart. Fault clearing at 3.75 cycles with one pole circuit breaker failure at Spurlock. Backup fault clearing operation at 9.75 cycles following fault initiation also removing Spurlock 345/138 kV transformer T10.

The stability performance study results are presented as Figures 02-7A through 02-9B and for each case the transient stability was stable and the oscillatory stability satisfactory. On the figure plots, the curves shown in green represent the system prior to the installation of the Hillcrest-Eastwood transmission line and Hillcrest Substation. The curves shown in blue represent the system with the project in-service. The transient and oscillatory stability of the proposed project was found to be acceptable. No adverse stability impacts were observed on the surrounding transmission system or on nearby generating plants.

**(4) East Central Area Reliability (ECAR) Base Case Model Data**

An electronic copy of the 2008 load flow case is provided under separate cover to the OPSB Staff in PSS/E™ format.

**(5) Base Case Data for Natural Gas Transmission Line**

As the proposed project is an electric transmission line, this section does not apply.

**(B) Expansion Plans**

**(1) Long-Term Forecast**

The proposed project is included in the 2004 *CG&E Electric Long-Term Forecast Report*. The cover page of this report and Form FE3-T9 (page 3-64), submitted to the PUCO under Ohio Administrative Code Rule (OAC) 4901:5-3-01, are included in Appendix 02-1. The project need is based upon projected residential, commercial, and industrial growth in the vicinity of Mount Orab and requires an in-service date for the project by June 2008 (as stated in the long-term forecast report).

The Hillcrest-Eastwood 138 kV transmission line (and Hillcrest Substation, the subject of PUCO case no. 05-360-EL-BSB) will be internal to the CG&E transmission system and will not affect regional ECAR bulk power plans.

**(2) Gas Transmission Lines and Associated Facilities**

This Application is for an electric transmission line. Therefore this section is not applicable.

**(C) System Economy and Reliability**

The proposed Hillcrest-Eastwood 138 kV transmission line (and Hillcrest Substation) will maintain system reliability and allow CG&E to cope with projected load growth demands, thereby eliminating projected system overloads throughout the Brown County area. The cost of the proposed project is significantly more than that of installing an additional or upgraded transformer at Stuart Generating Station. This additional cost to CG&E is outweighed by the improved system economy and reliability benefits of the proposed project which include additional needed distribution capacity at the eastern edge of CG&E's service area and increased reliability to existing and future distribution circuits.

In addition, the proposed Preferred and Alternate Routes for the new transmission line are planned to provide 138 kV service to the South Central Power Eastwood Substation located within 500 feet south of the intersection of the Norfolk and Western rail line and Eastwood Road. This will increase the ability of the South Central Power Company to provide improved electricity economy and reliability to new and existing customers from its Eastwood Substation (on Eastwood Road and not to be confused with CG&E's Eastwood Substation located on Tri-County Highway). A letter from South Central Power stating that company's support for this project is included in Appendix 02-2.

As noted above in Section (A)(3)(b) the proposed project will have negligible impact on the facility loadings on the surrounding 345 kV system located in Ohio and Kentucky. For all contingencies system voltages and loadings remain within acceptable levels with the Hillcrest-Eastwood 138 kV transmission line and Hillcrest Substation operational as planned.

**(D) Options to Eliminate the Need for the Proposed Project**

Alternatives to the proposed project are limited in that projected load growth throughout the Brown and Clermont County areas will require the construction of a 345/138-34.5 kV substation near the existing CCD Stuart-Foster 345 kV transmission line. There are no other feasible candidates that involve alternative generation or transmission options or changes to existing substations which meet the project needs of TB7 relief at the Stuart Generating Station, increased distribution reliability, and a new source of distribution capacity for load growth near the eastern limits of the CG&E service area.

Measures to delay the need for the project have been or are in the process of being implemented. Capacitor banks were placed in service at the Cedarville and Brown Substations in May 2004 to support voltage on line 5884 and reduce reactive loading on Stuart TB7. Factors determining the location and size of capacitor banks are voltage profiles, allowable voltage rise and overall cost. The primary reason the capacitor banks

were chosen to be installed at Cedarville and Brown Substations because this is where the lowest voltages occurred during contingency analysis. Even with these additions however, this line will approach low voltage limits during outages in 2009 without Clinton County Substation. The Clinton County Substation will be completed in 2006, and without this new substation the Stuart 345/138 kV transformer would approach the normal rating in 2005 and the emergency rating in 2007. Clinton County Substation will relieve 15-20 MVA from Cedarville Substation. Implementation of these other measures have delayed the need for this project which is now required to relieve the 345/138 kV TB7 at the Stuart Generating Station and to support the Stuart-Foster 138 kV corridor.

Installing an additional transformer or replacing the existing transformer at Stuart Generating Station was considered as alternatives to the project. These options provided a short-term solution that would not provide a transmission or distribution benefit to CG&E's system as does the proposed project. In addition, the additional transformer capacity and the accompanying increased power flow from Stuart on line 5884 would accelerate the need for a rebuild of line 5884 or construction of additional transmission from Stuart. Another alternative was the construction of a new substation and a 138 kV transmission line from the 345 kV Zimmer-Port Union transmission line 4544 to Cedarville Substation. This option provided benefits to TB7 at the Stuart Generating Station similar to that provided by the proposed project but it did not provide increased distribution reliability and capacity for load growth near the eastern limits of the CG&E service area.

If South Central Power is able to convert their delivery point from 34.5 to 138 kV, this will free up an additional 10 MVA of capacity at Eastwood Substation. Although this further defers the need for capacity at the proposed Hillcrest Substation, the need for additional reliable distribution circuits in the vicinity of Hillcrest and relief of Stuart TB7 will still be required based upon projected distribution demand and the load flow analyses, respectively.

**(E) Facility Rationale**

The proposed transmission line, which is the subject of this Application and the proposed Hillcrest Substation are inextricably linked. The locations of both facilities were selected to meet the needs of maintaining system reliability and projected load growth in Brown County. The proposed Preferred and Alternate Routes were selected to the north of Mount Orab to minimize transmission line length from CG&E's Eastwood Substation while avoiding concentrations of residential, institutional, and commercial land uses to the south. A route selection study for the new transmission line is included in Section 4906-15-03 of this Application.

The proposed project will include a 345/138 kV 240/320/400 MVA autotransformer at Hillcrest Substation that will allow CG&E to tap the CCD Stuart-Foster 345 kV transmission line and relieve the 345/138 kV TB7 at the Stuart Generating Station. In addition, the project will provide distribution capacity from Hillcrest Substation and the flexibility to accommodate potential future distribution substations at 138 kV high side voltage as Brown County continues to develop. Hillcrest Substation will also increase system reliability by shortening existing distribution lines.

The selected Preferred Route for the new transmission line will provide 138 kV service to the South Central Power Company's Eastwood Substation, which is currently served by a 34.5 kV distribution line from the CG&E Eastwood Substation. A conversion to a new 138 kV feed leading from the proposed transmission line would free up capacity on the existing distribution line and allow Eastwood 84 to see a 10 MVA reduction in peak loading. Benefits to the South Central Power Company include transmission delivery rates resulting in reduced electricity costs, higher reliability because outages at Eastwood 84 will not create outages for South Central Power Company customers, and provision of additional electricity to the South Central Power Eastwood Substation as local customer demand warrants. The Preferred Route also passes through the Brown County Foreign Trade Zone located to the west and east of Brooks-Malott Road, north of Tri-County Highway, and south of State Route 32. The Brown County Foreign Trade Zone is

currently being marketed as a commercial or industrial zone and has been considered by major chain store retailers and manufacturers. Heavy industrial development in this area would require a 138 kV transmission line and construction at this time may provide additional incentive for development in this area.

**(F) Facility Schedule**

**(1) Schedule**

The overall project schedule for major activities and milestones is presented in bar chart form as Figure 02-10 with a projected in-service date of June 2008. This schedule applies to the new 138 kV transmission line along both the Preferred and Alternate Routes and the associated substation at either the Preferred or Alternate Sites.

**(2) Impact of Delays**

Any critical delays that affect the major activities as outlined in the schedule, for either the new transmission line or substation, would delay the in-service date of the project. Delays past the projected in-service date will result in decreased system reliability and a potential inability to meet growing customer demand throughout the project area.



**1270**  
**CAFOSTER**

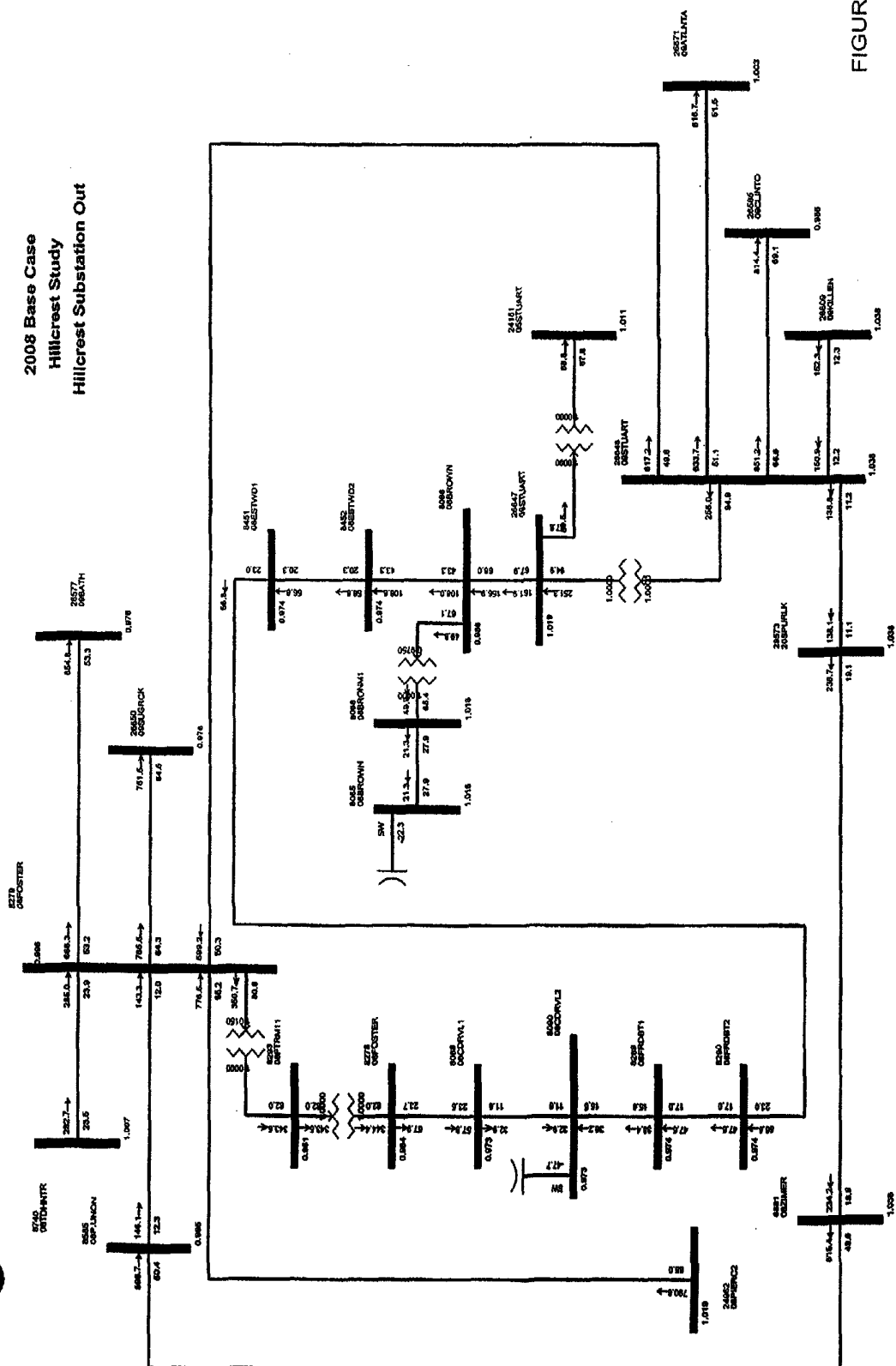
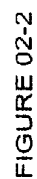
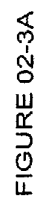


FIGURE 02-1

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8740



**MÖSTER**

2008 Base Case  
Hillcrest Study  
Hillcrest Substation In-Service  
Pierce - Foster Outage

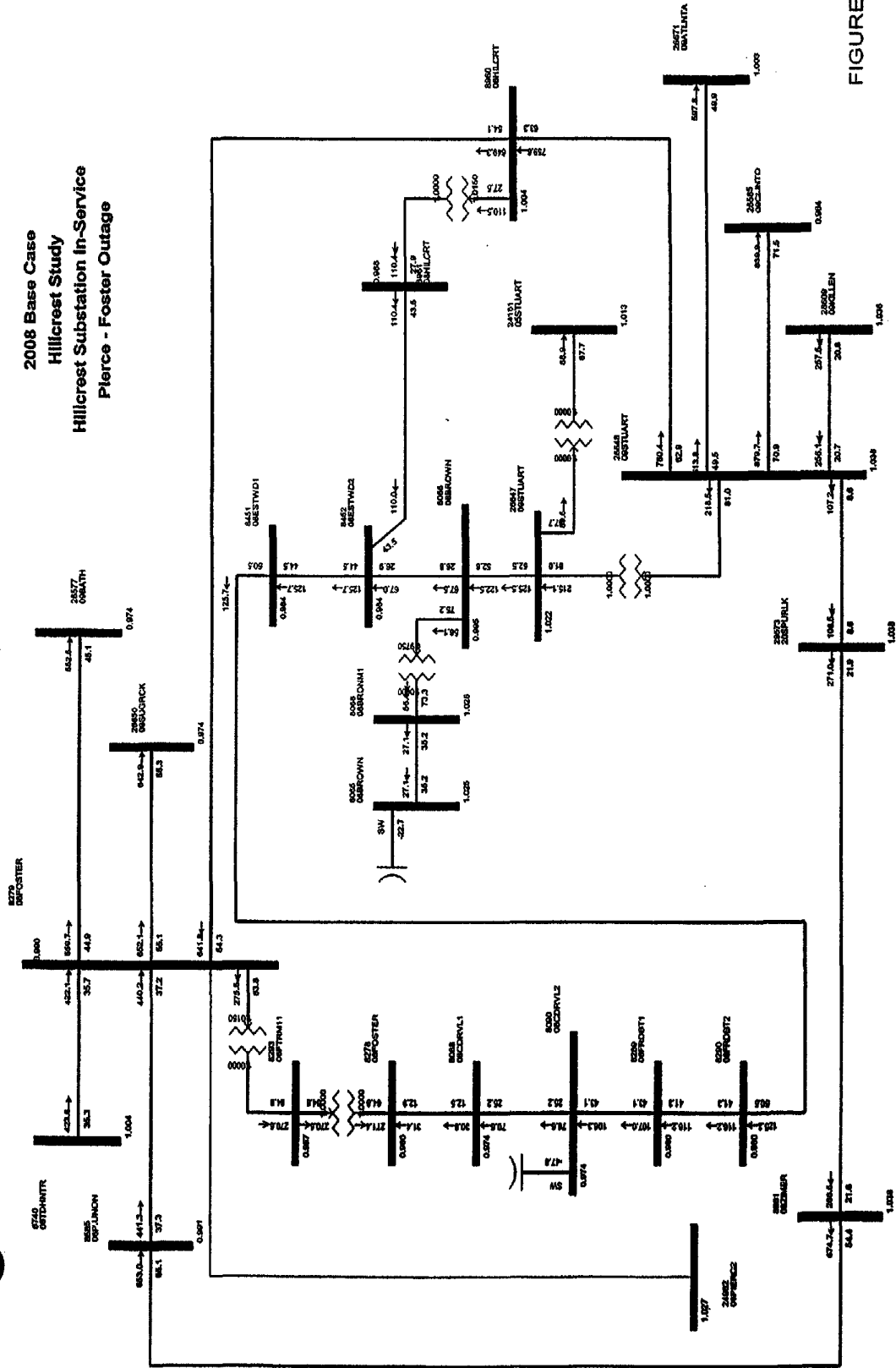


FIGURE 02-3B

2008 Base Case  
Hillcrest Study  
Hillcrest Substation Out  
Stuart - Clinton Outage

FIGURE 02-4A

2008 Base Case  
Hillcrest Study  
Hillcrest Substation In-Service  
Stuart - Clinton Outage

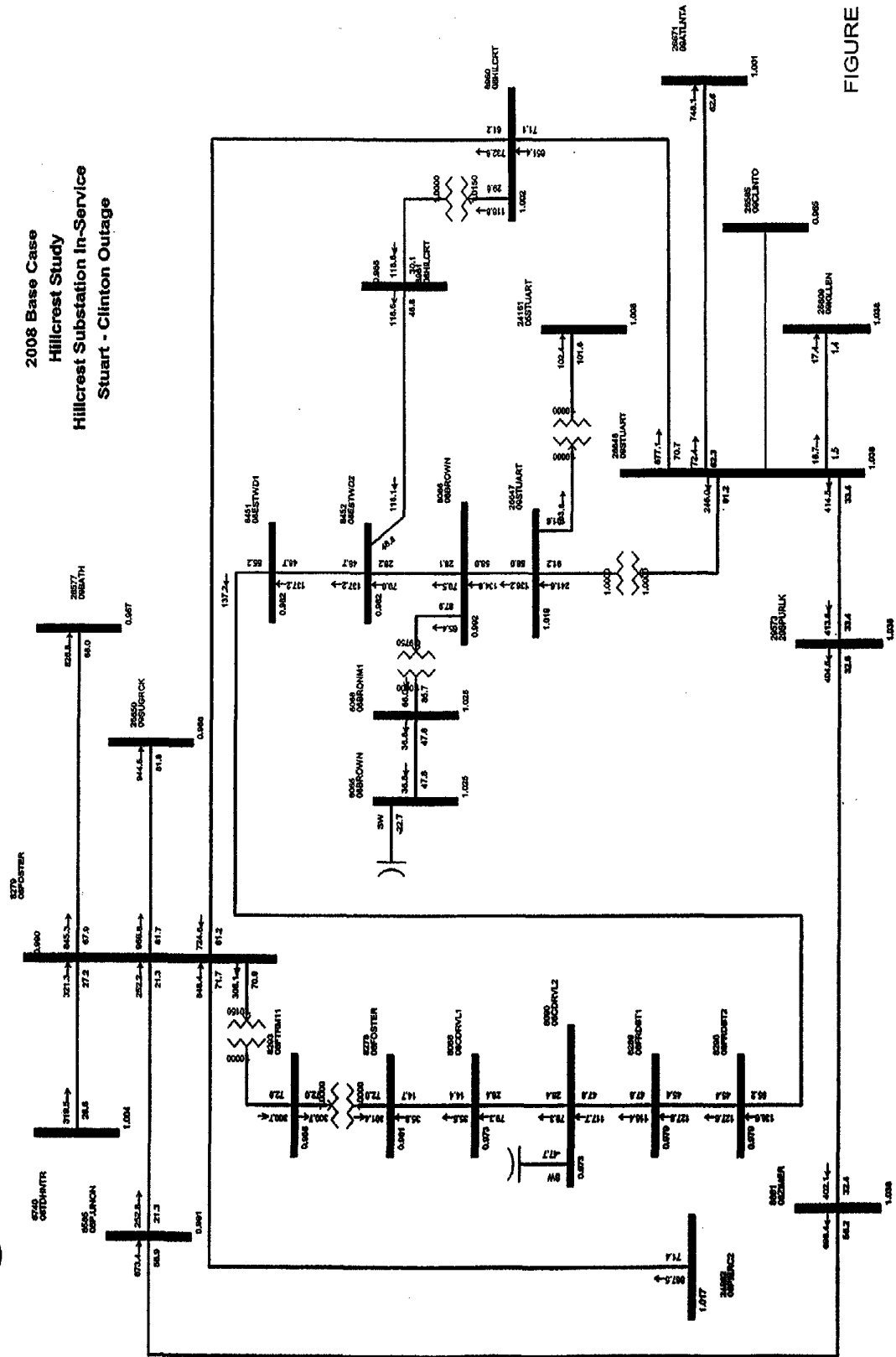
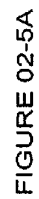


FIGURE 02-4B

## WÄFÖSTER







2008 Base Case  
Hillcrest Study  
Hillcrest Substation Out  
Foster Cedarville Outage

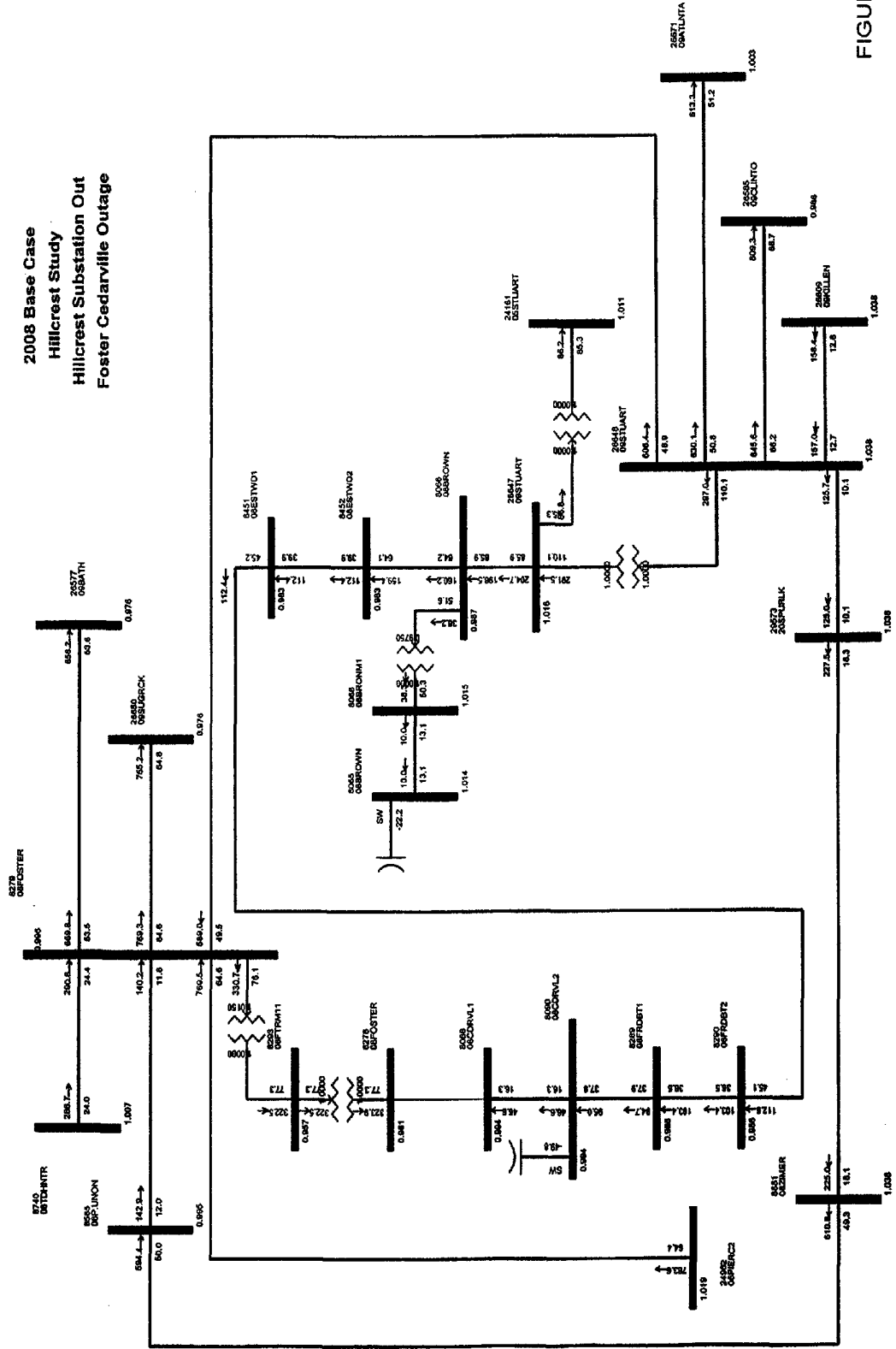
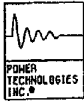


FIGURE 02-6A

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10.8



09 SUMMER ECAR CASE  
HILCREST STABILITY STUDY

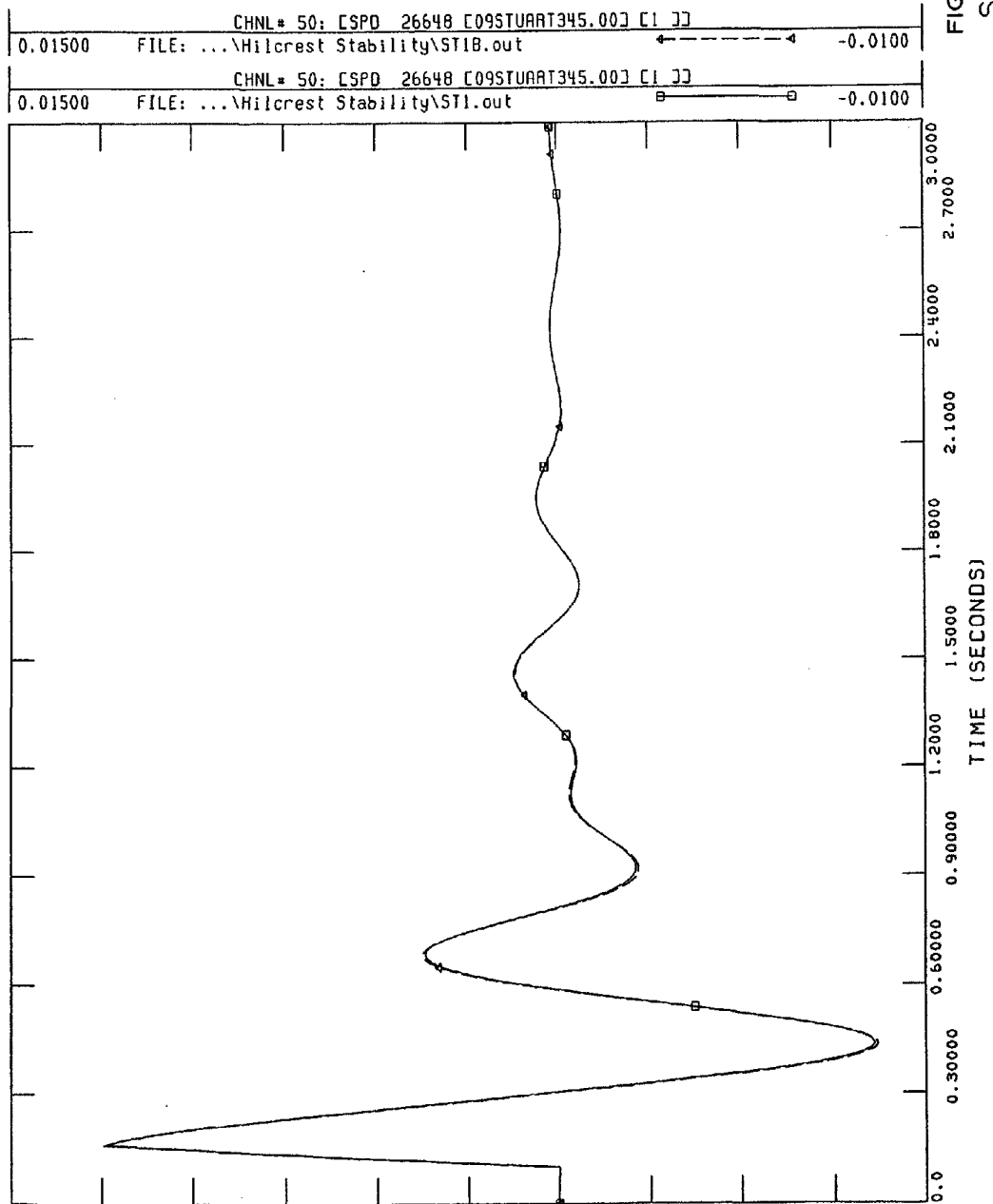


FIGURE 02-7A  
STUART CASE ST1