SOUTH JERSEY GAS – BL ENGLAND GAS ROUTE ANALYSIS REPORT

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EXECUTIVE SUMMARY

South Jersey Gas (SJG) retained Woodard & Curran (W&C) to evaluate three different potential routes for the installation of a new 24" diameter steel pipeline (the "Project") to supply natural gas to the existing Beesleys Point coal-fired electric generating plant located in Upper Township, Cape May County, commonly known as the B.L. England Generating Station (the "Facility"). The Project is necessary to convert the Facility from a coal to natural gas fueled generating plant. The new natural gas pipeline would originate either in Maurice River Township, Cumberland County or Hamilton Township, Atlantic County within SJG's existing system, and would be installed largely beneath existing State, County and local roads or an abandoned rail line. . Since the only feasible method to supply natural gas to the Facility is via a pipeline, the Project is a necessary and essential component of the Facility repowering project.

To determine the overall preferred alternative route for the pipeline, W&C applied a utility-standard value rating system adapted from the Electric Power Research Institute (EPRI) to evaluate the alternative routes using specific environmental, community, cultural, constructability and maintenance criteria. Three possible Supply Routes (SR) were evaluated, **Route A**, which approaches the Facility from the West and South, **Route B**, which approaches the Facility from the West and North, and **Route C**, which approaches the facility from the West and South, but along an abandoned rail corridor. In addition to limited field visits conducted by SJG and W&C staff, the evaluation incorporated "desk-top," publicly available information related to possible environmental impacts, community and neighborhood impacts, constructability issues, and operation and maintenance issues.

Based on W&C's overall analysis of these factors a variation of Route A, referred to as **"Route A3,"** was deemed to be the best route. This alternative would involve construction of the pipeline within the Right-of-Way ("ROW") beneath NJ Route 49 (East Main Street), starting at the intersection of NJ Route 49 and CR 671 (Union Road) in Maurice River Township, Cumberland County. The route would follow NJ Route 49 east about 12 miles to the intersection with Cedar Avenue. This NJ Route 49 segment would travel through Pinelands Forest Area within the public right-of-way for about 10 miles but would avoid the downtown area of the Village of Tuckahoe. The route would follow secondary roads skirting the Village to NJ Route 50 and CR 662 (Tuckahoe Road). The route would follow Tuckahoe Road for approximately 4 miles to Hudson Avenue and then to the Atlantic City Electric ("ACE") electric transmission ROW and Beesleys Point Secondary rail line into the Facility. Route A3 would be installed almost entirely beneath existing State and County road, power, or rail line and would have minimal environmental and community impacts. By avoiding coniferous scrub forest, the Great Egg Harbor estuary, and city streets and by staying within existing ROWs, Route A3 would yield less impact to the Pinelands ecosystem adjacent homeowners and the community as a whole, as there would be fewer disturbances to environmental resources, adjacent property (sidewalks, landscaping etc.) and facilities (pavement, utilities).

Route B, which would approach the Facility from the North, was rejected because of overall constructability issues arising from the need to complete a horizontal directional drill ("HDD") of nearly 7,000 feet beneath the Great Egg Harbor estuary. This extraordinarily long and difficult HDD would present environmental risks and community impacts and would pose a risk of "fluid Frac-out" beneath the Great Egg Harbor estuary, which could impact benthic invertebrates, aquatic plants and fish. Route B also would have significant community impacts because it would cause a major disturbance to homes along School House Road in Egg Harbor Township and would require temporary relocation of a dozen or more residents at Jefferson Landing on the Great Egg Harbor Bay.

Route C originates at the same starting point as Route A3 but would traverse the Forest Area along an abandoned railroad corridor that is now heavily forested. Because this route would require extensive clearing of Pinelands coniferous scrub forest that is habitat for the endangered northern pine snake, swamp pink, barred owl, Cope's gray tree frog, and frosted elfin, it was rejected.

Upon the acceptance of the A3 routing recommendation by SJG, W&C will begin detailed field environmental and cultural resource investigatory surveys, along with base mapping, and design drawings for the associated project

permitting submittals.

SECTION 1 – INTRODUCTION

1.1 Purpose and Need

BL England Power Plant is a coal-fired electric generating station that is owned and operated by RC Cape May Holdings, LLC, an affiliate of Rockland Capital Energy Investments, in Upper Township, at the northern boundary of Cape May County, New Jersey. BL England assumed responsibility for compliance with an existing Administrative Consent Order (ACO) with the State of New Jersey and is pursuing the development of a new gas-fired combined-cycle combustion turbine (CCCT) project at the existing power station in accordance with the ACO that will significantly reduce air quality impacts and will ensure BL England continues to serve the power needs of southern New Jersey. With the implementation of the gas-fired CCCT the generating station will convert from coal as its primary fuel source to natural gas. Since there are no gas mains of sufficient capacity adjacent to the generating station South Jersey Gas is proposing to extend a gas pipeline from the closest infrastructure with sufficient capacity to serve the proposed gas-fired CCCT. The route selection study is being prepared to identify the most suitable route to connect the existing delivery system with suitable capacity to the generating station.

1.2 Location of Existing and Proposed Facilities

The South Jersey Gas Transmission System that can supply the existing power plant located at Beesleys Point exists to the west and north of the plant. The gas volumes and pressures required for the plant will necessitate extending the existing 435 psig gas system to the plant. To meet the plant requirements, the proposed pipeline will be a 24" steel natural gas pipeline with a Maximum Allowable Operating Pressure (MAOP) of 700 psig. Potential routes for this pipeline would take it through the Pinelands and Coastal sections of New Jersey through residential, commercial, industrial, and utility properties. Three primary potential routes have been identified for the new pipeline as highlighted in MAP Figure #1.

1.3 Project Approach

The approach to the preliminary route assessments on this project involved a combination of desktop review, field investigations, use of evaluation criteria, weighting factors, and other considerations to assist with assessing various segments, routes and supply alternatives. Although the use of the weighting factors and the numerical values form the basis of an objective approach to the route selection process, W&C also included an allowance for a subjective input based upon the collective experience of the engineering and environmental personnel conducting the field review.

1.4 Segments, Routes and Alternatives

To better manage the analysis of the various routing combinations, each route was divided into segments. Each segment represents a subset of the route between the respective takeoff point from the existing gas system to the BL England Power Plant. The segments are then compiled in various combinations to develop the potential routes.

Based on preliminary discussions with SJG, three independent primary routes were identified and reviewed for the purpose of supplying natural gas to the BL England power plant. Later in the report, each route is described with its length, location, benefits and potential conflicts.

1.5 Evaluation Methodology

Analyzing a project of this nature requires a disciplined methodical approach to ascertain the best route option. For this project, we created a framework based on an adaptation of a model used by the Electric Power Research Institute (EPRI) that was used by the Georgia Transmission Corporation (GTC) to evaluate best routes for utility lines (EPRI/GTC 2006). Based on this approach, each segment along the routes was evaluated and numeric scores assigned based on a rating system. As described below, each route was evaluated based on a variety of criteria including construction obstacles, traffic impacts, neighborhood siting impacts, along with potential ecological, environmental and other impacts.

For this project, we chose to include the following evaluation criteria for the study:

1. No. of Bridges and Difficult Crossings
2. Trenchless Feasibility
3. Required Temporary Construction Easements
4. Traffic Conditions
5. Proximity to Buildings and Residences
6. Neighborhoods and Community Impact
7. Schools and Day Care Centers, Hospitals
8. Soil Conditions and Paving
9. Railroad and Major Highway Crossings
10. Threatened and Endangered (T&E) Impact
11. Cultural Impacts
12. Wetlands, Rivers, Creeks and Streams
13. Environmental Considerations
14. Overall Permitting
15. Supporting System Reinforcement Goals
16. Right of Way Issues
17. Topography

In addition, we reviewed pavement type and width for the various segments of each route. A description of the Weighting Criteria System is presented in Table No. 1 in Appendix A.

The total score for each route with the selected criteria was then averaged and the resulting score identified the best routing solution. All routes were first reviewed on a macro level and then at a micro level as we approached any towns or populated areas. In some situations we found local alternate routes that would avoid areas such as in the Village of Tuckahoe.

SECTION 2 - ROUTE "A"

2.1 Route Description

Route A is approximately 21.63 miles in length. Route A starts at the intersection of NJ Route 49 (East Main St.) and CR 671 (Union Road) in Maurice River Township, Cumberland County, at the location of an existing gas line, and continues on NJ Route 49 until it intersects NJ Route 50 in the town of Tuckahoe. The route then follows NJ Route

50 south to the intersection of Tuckahoe Road (CR 631). The route then follows Tuckahoe Road to US Route 9 (North Shore Road). US Route 9 is a major access road for the community. The final leg of Route A follows US Route 9 north to Clay Avenue and continues west on Clay Avenue into the Plant. The route is shown in Figure 1, Route Segments Map.

2.2 Results

Environmental

Route A is 21.63 miles long with approximately 3.60 miles of mapped wetlands adjacent to the route. Our review of known threatened and endangered species/habitat along Route A identified numerous potential species at various locations.

Route A has many historic resources within the study area. Specifically the area of downtown Tuckahoe includes resources very close to the road ROW.

Construction Considerations

Construction for the pipeline along Route A would mostly be open cut construction with numerous HDD's or Jack & Bores. Included in this would be a HDD under the railroad tracks on NJ Route 49 west of the Village of Tuckahoe and another significant HDD under Cedar Swamp Creek along Tuckahoe Road. In addition, construction along US Route 9 into the power plant would present numerous issues in terms of traffic flow and impact on the local community.

Summary

Impacts to wetland areas adjacent to and within these ROWs could affect multiple species foraging and breeding habitat; however, the proposed construction would be within previously filled and/or maintained ROWs. As a result, wetland impacts should be minimal. Route A includes environmental resources that would require avoidance, possible survey, special construction techniques and handling of contaminated soils encountered and permitting but none of these issues would appear to represent significant obstacles considering the South Jersey Gas proposed construction techniques.

SECTION 3 - ROUTE "A1"

3.1 Route Description

Route A1 is approximately 21.24 miles in length and is primarily a revision to Route A including the segments that avoid the US Route 9 corridor. Route A1 begins in Millville at E Main Street & Union County Road (CR 671), at the location of an existing gas line, and continues on to NJ Route 49 until it intersects NJ Route 50 in the town of Tuckahoe. The route then follows NJ Route 50 south to the intersection of Tuckahoe Road (CR 631). The route then follows Tuckahoe Road to the intersection with Church Road, then proceeds east on Tuckahoe Road to the intersection of Hudson Avenue. The route then turns north on Hudson Avenue to the intersection with the Atlantic City ROW, then east on the Atlantic City ROW to the intersection with the BL England property and continuing east to the power station. The route is shown in Figure 2, Alternative Routes A1,A2 &A3.

3.2 Results

Environmental

Route A1 is 21.24 miles long with approximately 6.56 miles of mapped wetlands adjacent to the route. The increased footage of wetlands adjacent to this route is primarily associated with wetlands adjacent to the route between Tuckahoe Road and the power station. It is the intent of the project to avoid these wetlands through design and trenchless construction techniques. Our review of known threatened and endangered species/habitat along Route A1 identified numerous species. The revised section that extends from Church Road on Hudson Avenue, the Atlantic City Electric ROW and onto BL England property includes unpaved ROW and approximately 1000 feet of forested area. Construction techniques such as jack & bore will be utilized to avoid environmentally sensitive areas.

Route A1 has many historic resources within the study area as did Route A. There are numerous areas of known contamination within the study area of Route A1. These areas of known contamination are similar to Route A.

Construction Considerations

Much like the original Route A, Route A1 would mostly be open cut construction with numerous HDD's or Jack & Bores along NJ Route 49. Included in this would be a HDD under the railroad tracks on NJ Route 49 west of the Village of Tuckahoe and another significant HDD under Cedar Swamp Creek along Tuckahoe road. However, construction along US Route 9 into the plant would be avoided by using the Atlantic City electric ROW and the BL England ROW into the plant. In that regard, construction along those ROW's would be challenging and would require avoidance of numerous wetlands, and removal and restoration of the railroad tracks in some areas, or the use of HDD to circumvent sensitive areas. Overall, this last leg of the route is deemed to be a better option than installation beneath US Route 9.

Summary

Impacts to wetland areas adjacent to and within these ROWs could affect multiple species foraging and breeding habitat; however, proposed construction would be within previously filled and/or maintained ROWs. As a result, wetland impacts should be minimal. Route A1 includes environmental resources that would require avoidance, possible survey, special construction techniques and handling of contaminated soils encountered and permitting but do not appear to represent significant obstacles considering the South Jersey Gas proposed construction techniques.

SECTION 4 - ROUTE "A2"

4.1 Route Description

Route A2 is approximately 22.14 miles in length. Route A2 is primarily a revision to Route A including segments that avoid the NJ Route 50 downtown area of Tuckahoe. Route A2 begins in Millville at E Main Street & Union County Road (CR 671), at the location of an existing gas line, and continues on to NJ Route 49 until it intersects Cedar Avenue. Then south on Cedar Avenue to the intersection of CR 557. Then east on CR 557 to NJ Route 50. Then South on NJ Route 50 for a very short distance to the intersection of Mt. Pleasant – Tuckahoe Road (CR 664). Then south on Mt. Pleasant – Tuckahoe Road to the intersection of New York Avenue. Then east on New York Avenue to NJ Route 50. Then south on NJ Route 50 to Tuckahoe Road. The route then follows Tuckahoe Road to US Route 9 (North Shore Road). US Route 9 is a major access road for the community. The final leg of Route A follows US

Route 9 north to Clay Avenue and continues west on Clay Avenue into the Plant. The route is shown in Figure 2, Alternative Routes A1,A2 &A3

4.2 Results

Environmental

Route A2 has approximately 3.70 miles of mapped wetlands adjacent to the route. Our review of known threatened and endangered species/habitat along Route A2 identified numerous species very similar to Route A.

Route A2 also has many historic resources within the study area as did Route A, but many identified historic resources on NJ Route 50 in downtown Tuckahoe would be avoided by Route A2. There are numerous areas of known contamination within the study area of Route A2. The areas of known contamination are similar to Route A. This includes thirteen (13) KCSL sites, three (3) ground water contamination areas, twenty six (26) regulated UST facilities and several NJEMS sites.

Construction Considerations

Construction for Route A2 would be similar to Route A1, avoiding the downtown area of the Village of Tuckahoe. It would still have the construction features of Route A and A1, with several HDD's or Jack & Bores along NJ Route 49 and the one or two Jack & Bores under the same railroad tracks and a stream on Segment 2B. CR 567, but Route A2 would stay on US Route 9 like the original Route A. Hence, the impact of construction on the US Route 9 businesses and community would still be significant.

Summary

This route is adjacent to wetland areas within these ROWs that could affect multiple species foraging and breeding habitat; however, proposed construction would be within previously filled and/or maintained ROWs. As a result, wetland impacts should be minimal. Route A2 includes environmental resources that would require avoidance, possible survey, special construction techniques and handling of contaminated soils encountered and permitting but do not appear to represent significant obstacles considering the South Jersey Gas proposed construction techniques.

SECTION 5 - ROUTE "A3"

5.1 Route Description

Route A3 is another variation of Route A and is approximately 21.75 miles in length. Route A3 is primarily a revision to Route A including segments that avoid the NJ Route 50 downtown area of Tuckahoe and a segment that avoids the US Route 9 corridor. Route A3 begins in Millville at E Main Street & Union County Road (CR 671), at the location of an existing gas line, and continues on NJ Route 49 until it intersects Cedar Avenue. The route then continues south on Cedar Avenue to the intersection of CR 557, then east on CR 557 to NJ Route 50; then south on NJ Route 50 for a very short distance to the intersection of Mt. Pleasant – Tuckahoe Road (CR 664); then south on Mt. Pleasant – Tuckahoe Road to the intersection of New York Avenue; then east on New York Avenue to NJ Route 50. Then south on NJ Route 50 to Tuckahoe Road; then east on Tuckahoe Road to the intersection with Church Road; then east on Tuckahoe Road to the intersection of Hudson Avenue. The route then proceeds north on Hudson Avenue to the intersection with the Atlantic City ROW, then goes east on the Atlantic City ROW to the intersection

with the BL England property and continuing east to the power station. The route is shown in Figure 2, Alternative Routes A1,A2 &A3

5.2 Results

Environmental

Route A3 is 21.75 miles long with approximately 6.56 miles of mapped wetlands adjacent to the route Our review of known threatened and endangered species/habitat along Route A3 identified numerous species. The revised section that extends from Church Road on Hudson Avenue, the Atlantic City Electric ROW and onto BL England property includes unpaved ROW and approximately 1000 feet of forested area. Construction techniques such as jack & bore will be utilized to avoid environmentally sensitive areas.

Route A3 has many historic resources within the study area as did Route A, but many identified historic resources on NJ Route 50 in downtown Tuckahoe would be avoided by Route A3. There are numerous areas of known contamination within the study area of Route A3.

Construction Considerations

Construction for Route A3 would be similar to Route A with several exceptions. First, instead of an HDD under the railroad ROW on NJ Route 49 just west of NJ Route 50, we would have one or two Jack & Bores under the same railroad tracks on Segment 2B, CR 557. Second, instead of using US Route 9 and the resulting impact on the local community, we would use the existing ACE and BL England ROW's to go from Tuckahoe Road into the plant. Construction along those ROW's would require avoiding wetlands, may require removing and restoring existing railroad tracks in some areas, or would require HDD to circumvent sensitive areas. Overall, this last leg of the route is viewed as a better alternative to the Route 9 corridor.

Summary

Impacts to wetland areas adjacent to and within these ROWs could affect multiple species foraging and breeding habitat; however, proposed construction would be within previously filled and/or maintained ROWs. As a result, wetland impacts should be minimal. Route A3 includes environmental resources that would require avoidance, possible survey, special construction techniques and handling of contaminated soils encountered and permitting but do not appear to represent significant obstacles considering the South Jersey Gas proposed construction techniques.

SECTION 6 – ROUTE "B"

6.1 Route Description

Route B would be approximately 10.5 miles in length. The route starts in Hamilton Township at CR 559 / Ocean Heights Ave & Egg Harbor Road and travels in a southeastern direction on CR 559 until CR 575 / English Creek Ave. At that point, the proposed main leaves CR 575 and follows School House Road to Somers Point / Mays Landing Road. The route then follows Mays Landing Road to Morris Avenue. The route stays on Morris Avenue into Jefferson Landings and finally a HDD of approximately 7,000 linear feet across Great Egg Harbor would be required to reach the BL England Plant. The route is shown in Figure 1, Route Segments Map.

6.2 Results

Environmental

Our review of known threatened and endangered species/habitat along Route B identified numerous species. This route includes work adjacent to tidal marsh and tidal waterways that may be impacted due to work area needed for the extraordinarily long and difficult HDD crossing of the Great Egg Harbor Bay.

Route B does not have known significant historic resources within the study.

The long HDD across Great Egg Harbor Bay presents potential increased risk of "fluid Frac-out" in the estuary during the drilling process. Fluid Frac-out—the inadvertent return of drilling mud to the surface—is a potential concern whenever the HDD technique is used under sensitive habitats and waterways. The HDD procedure uses bentonite slurry as a drilling mud. A fluid frac-out occurring in the Great Egg Harbor estuary would have the potential to suffocate benthic invertebrates, aquatic plants and other aquatic organisms. While drilling fluid frac-outs are always a potential with HDD's, this exposure risk is increased on longer more difficult crossings such as the one proposed here.

Construction Considerations

This route has several potential construction issues. There are numerous homes on School House Road that are less than fifteen (15') from the road, and the paving on the road leading from Jefferson Landings is only sixteen (16') wide which is the only access road to the homes located on the end of Jobs Point Rd. – Morris Ave. This route would require 2 major HDD's, one of which would be a technological challenge in the form of a long, difficult and complex water crossing posing difficult construction issues and risk. The 7,000 foot larger crossing of Great Egg Harbor requires 2 vertical and 1 horizontal curves in its design. During our preliminary route analysis, we considered drilling from the plant side and from the end of Jobs Point Rd - Morris Ave. Either way would present issues. In the case of drilling from the plant side, this would require using Jobs Point Rd. - Morris Ave for our laydown area. Jobs Point Rd - Morris Ave is a very narrow, 16 foot wide paved area with year round homes located at the dead end. The terrain drops off quickly into marsh areas so construction would be very difficult with extremely tight working conditions. It would require the relocation of the residents during most of the construction period and especially during the final welding and pipe pullback. Drilling from the Jobs Point - Morris Ave side would require either locating the drill rig up on Jobs Point - Morris Ave essentially shutting off traffic flow or if the rig could be staged at the very end of Jobs Point - Morris Ave., special permitting would be required due to the environmental considerations in that area.

In addition to the major HDD under Great Egg Harbor, an additional shorter HDD would be required on Jeffers Landing Road just north of Jobs Point Rd. - Morris Ave. It will circumvent a bridge and marsh area. This would require the drilling from the south and the laydown of the 24 inch steel pipe from the north. Again, the 24 foot wide pavement makes for a very limited work area and adds difficulty to the project due to the extremely close marsh areas along the perimeter of the pavement.

Summary

On the basis of all these considerations, Route B was rejected because of its overall constructability issues, and the Horizontal Directional drill ("HDD") of nearly 7,000 feet beneath the Great Egg Harbor estuary. This extraordinarily long HDD would present environmental risks. Route B also would have significant community impacts because it

would cause a major disturbance to homes along School House Road in Egg Harbor Township and would require temporary relocation of a dozen or so residents at Jefferson Landing on the Great Egg Harbor Bay.

SECTION 7 – ROUTE "C"

7.1 *Route Description*

Route C is approximately 29 miles long. This proposed route starts at the same location as Route A, but deviates off of NJ Route 49 to Port Elizabeth Road to the Conrail railroad ROW. From there, following the railroad ROW it travels through the Town of Woodbine and then traverses either up CR 610 or continue over to US Route 9 and up US Route 9 to the plant. This last option adds significant distance to the route. The route is shown in Figure 1, Route Segments Map.

7.2 Results

Environmental

Our review of known threatened and endangered species/habitat along Route C identified numerous species. Route C has many historic resources within the study area as did Route A. There are numerous areas of known contamination within the study area of Route C.

Field inspection of the route discovered that significant miles of the ROW have gone through natural succession to the point that this route could no longer be considered an improved ROW. The portion of the ROW that would require tree and brush clearing for the pipeline includes habitat for barred owl, frosted elfin, northern pine snake, swamp pink, Cope's gray tree frog and Pine Barrens tree frog. Construction techniques such as HDD or jack & bore could not be utilized to avoid the need to cut and clear numerous miles of this railroad ROW which would result in unavoidable threatened and endangered species impacts.

Construction Considerations

The plan for this route was to follow the railroad ROW to avoid potential community impacts and crossing large waterways/tidal wetlands. During the field inspection of this route, the railroad ROW was found to be revegitated by understory and overstory species. There were also protected species identified in the reforested portions of the railroad ROW. Single isolated sensitive areas could be circumvented by HDD, but field inspection of the route discovered that miles of the ROW have gone through natural succession to the point that this route would no longer be considered an improved ROW.

Summary

Based on a preliminary discussion with the Pinelands Commission Staff, and understanding the potential impacts to protected species, wetlands, and cultural resources, it would appear that this route will not be a feasible alternative. Hence, any considerations to employ trenchless construction techniques at isolated areas are not feasible at this point and no viable route adjustments were investigated.

SECTION 8 - SUMMARY & REVIEW / RECOMMENDATION

Constructability Review / Ranking

Based upon the evaluation provided in this report, the alternate Route A3 is the preferred route. This alternate was selected and is recommended for further study because it primarily uses existing public ROW, parallels the existing Atlantic City Electric and BL England Rights-Of-Way, minimizes the distance it travels upon local city streets and avoids the downtown area of the Village of Tuckahoe. The avoidance of city streets in Tuckahoe will yield less impact to the adjacent homeowners and businesses in the downtown historic district area. Construction within established Rights-Of-Way will also result in fewer disturbances to adjacent property (sidewalks, landscaping etc.) and will therefore minimize the impact upon the community. This route also provides a secondary benefit to existing SJG customers in Cape May County by providing an opportunity for a transmission system interconnect south of the Village of Tuckahoe. Work along this route A3 should be closely coordinated with the NJ DOT and its planned reconstruction efforts of the Tuckahoe River Bridge and Route 50 currently projected to start in 2013.

Route B is rejected because it would cause a major disturbance on School House Road in Mays Landing due the close proximity of houses to the road which are less than fifteen feet away. The extraordinarily long HDD under the Great Egg Harbor Bay, measuring approximately 7,000 feet in length, increases the risk exposure for a drilling fluid frac-out in an unusually sensitive environment, and causes a major disturbance for the adjacent residents of Jefferson Landing which would necessitate their relocation during the HDD operations.

Route C was also deemed not feasible early in the study as the selected path would require significant clearing and grubbing of many miles of a reforested railroad ROW that is mapped as threatened and endangered species habitat. The targeting of the pipeline on an abandon railroad ROW was a proposed alternative to avoid city streets and disturbance of the local community, but the anticipated environmental impacts associated with this alternative far outweigh the benefits resulting in the rejection of this route.

The ranking summary analysis shown below for the major routes is based on the project approach as defined in Section 1.5 - Evaluation Methodology. Based on a review of the routing options, field observations, and identified criteria, Route A3 is the route recommended for further study. A summary of the primary routes examined and their respective scoring is provided in the table below.

Route	Description	Segments	No. of Segments	Length (ft.)	Length (mi)	Avg. Points
A	Route A - original route on Routes 49, 50 & 9	1, 2, 2A,2H, 2F 3, 3A,4 & 5	9	114,191	21.63	131.22
B	Route B	15,16,17,18,19,20,22	7	55,425	10.50	119.29

A1	A1 - going thru the intersection of Rte 49 & Rte 50 and using Electric and BL England Railroad ROWs	1,2,2A,2H,2F, 3,3A-3F	12	112,140	21.24	139.08
A2	A2 - avoiding intersection of Rte 49 & Rte 50, and going on Route 9	1,2,2B-2G,3,3A,4&5	12	116,874	22.14	133.25
A3	A3 - avoiding intersection of Rte 49 & Rte 50 and avoiding Route 9 by using Electric and BL England Railroad ROWs	1,2, 2B-2G, 3, 3A-3F	15	114,823	21.75	139.13

APPENDIX A

Weighting Criteria

TABLE 1
Weighting Criteria

Criteria Significance	Value	Value Impact / Description
High Adverse	1	Impact is a major problem. These impacts are important considerations and are potential concerns to the overall project. Mitigation and detailed design work are unlikely to remove all the impacts.
Moderate Adverse	5	Impact is moderate. These impacts are not likely to be key decision making issues. They represent issues where impacts will be experienced but mitigation measures and detailed design work may ameliorate/enhance some of the consequences upon affected communities or interests. Some residual impacts will still arise. Nevertheless, the cumulative impacts of such issues may lead to an increase in the overall impacts upon a particular area or on a particular resource and hence may become key decision making issues.
Low Adverse	7	Impact recognizable but acceptable. These impacts are unlikely to be of importance in the decision making process. Nevertheless, they are of relevance in enhancing the subsequent design of the project and in the consideration of mitigation or compensation measures.
Negligible	10	Minimal change. No impacts and impacts which are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error
Beneficial	12	Impact beneficial. The beneficial impacts can be low, moderate or high.

Appendix B
Source Citations

- US Fish & Wildlife, New Jersey Field Office, Endangered Species Profiles and Life Histories
  http://www.fws.gov/northeast/njfieldoffice/
- New Jersey Department of Environmental Protection, GIS data, Wetlands, Protected Species Habitat, Environmental Sites, Streams, CAFRA boundaries, Historic and Archaeological Data
  http://www.nj.gov/dep/gis/
- U.S. Department of Agriculture, Natural Resources Conservation Services, Soil Mapping of Atlantic, Cape May, and Cumberland Counties, NJ
  http://soils.usda.gov/
- New Jersey Division of Fish and Wildlife, state protected species information
  http://www.state.nj.us/dep/fgw/
- The Pinelands Commission, Pinelands boundary data
  http://www.state.nj.us/pinelands/landuse/gis/datas/
- US Geological Service, USGS 7.5 Minute Quadrangle Maps
- United States Environmental Protection Agency (USEPA) databases
- Additional project data from SJG

Table 2

SEGMENT ANALYSIS

Bundle	Segment	Length (mi)	Site Street(s)	Starting at	Finishing at	Level of Engineering Difficulty / Cost Impact	Travel Patterns / Accessibility	Temporary Construction Easements	Traffic Convenience	Residential Proximity	Aesthetic Impacts & Community Impact	Schools and Daily Care Centers Footprint	Parcel Impacts	Residences & Major Highway Crossings	T&E Impact	Cultural Impacts	Wetlands, Rivers, Creeks, Streams	Ecological Considerations	Environmental Constraints	Overall Permitting	Supportive System Relocation Cost	Right of Way Issues (Land Acquisition)	Topography	Drainage	Pavement Type	Pavement Width	Noise Reduction or Landscaping Potential (Yes, No, Some)	Other Segment Comments
A	1	2.44 mi	Main St	Huron Valley Country Club	Port Elizabeth Cumberland Rd	5	3	3	7	10	10	10	5	3	7	10	8	10	5	7	10	10	10	10	Asphalt	10	None	Subsegment A-1 runs on north side of road; segment crosses Stonebridge Road and passes wind turbines.
A	2	10.7 mi	Port Elizabeth Cumberland Rd	Port Elizabeth Cumberland Rd	Site 40	7	7	7	10	10	7	10	5	7	8	6	8	10	10	7	10	10	10	7.4	Asphalt	Varies from 10+	Yes Marker	Segment crosses Stonebridge Road and passes wind turbines. Segment also crosses Huron Valley Country Club and Huron Valley Bridge. Construction for Site 40 will require the replacement of the Huron Valley Bridge. Significant amounts of wetlands, streams, and rivers will be impacted. Segment also crosses Stonebridge Road and passes wind turbines.
A	2A	2.04 mi	Site 40	Site 40	Huron View Ave	8	5	10	10	7	7	10	7	10	7	5	7	7	5	7	10	10	10	7.62	Asphalt	Varies from 10+	Yes Marker	
A	2H	1.93 mi	Site 40	Cedar Ave	Site 50	7	7	7	5	10	7	10	5	7	8	7	5	7	5	7	10	10	10	7.57	Asphalt	Varies from 10+		
A	2G	2.47 mi	Cedar Ave	Site 50	County Highway 107	7	10	7	5	10	7	10	7	7	7	10	7	7	5	10	7	10	10	7.46	Asphalt	Varies from 10+		
A	2F	750	County Highway 107	Cedar Ave	Reading Ave	5	7	7	7	10	7	10	7	7	7	5	7	7	5	7	7	10	10	7.50	Asphalt	Varies from 10+		
A	2E	1.70 mi	North Highway 51	Reading Ave	168 Pleasant Rose	5	10	7	7	7	7	10	7	7	7	5	5	7	5	7	10	10	10	7.56	Asphalt	Varies from 10+		
A	2D	2.90 mi	Pleasant Acres	County Highway 51	New York Ave	5	10	7	10	7	10	7	7	5	7	5	7	7	5	7	10	10	10	8.11	Asphalt	Varies from 10+		
A	2E	1.40 mi	New York Ave	168 Pleasant Rose	Site 60	8	10	7	10	10	7	10	7	7	7	5	7	7	5	10	8.2	10	10	7.28	Asphalt	Varies from 10+		
A	2F	2.40 mi	Site 60	New York Ave	Site 100	8	10	7	7	10	7	10	5	7	7	10	7	7	5	10	10	10	10	8.13	Asphalt	Varies from 10+		
A	3	11.60 mi	Site 50	County Highway 115	Site 50	8	10	10	7	10	7	7	7	8	5	10	5	10	7	7	10	10	7	7.93	Asphalt	Varies from 10+	Yes with Signal Control	Extensive wetlands in both halves of Track 3 especially at Cedar Swamp Creek. Large forms of Track 3 makes accessibility difficult. Good soil conditions.
A	3A	3.49 mi	Cedar Ave	County Highway 115	49 Church Rd Intersection	7	7	7	7	10	10	10	5	7	7	10	7	10	7	7	10	10	10	8.05	Asphalt	Varies from 10+		Wetlands/wetlands are under survey at this time.
A	3B	2.90 mi	Hudson Ave	Church Rd Intersection	Abbott - Dix Electric (ACES) ROW @ Eddy Rd Intersection	8	10	7	7	7	7	10	7	10	7	7	7	7	5	7	7	10	10	8.04	Asphalt - NC Road / Dirt Road			
A	3C	2.70 mi	Hull Rd CR	Hudson Avenue Corner Ave	St. England Power Plant Property Line	7	10	10	7	10	7	10	10	10	7	10	5	5	7	7	10	10	10	8.48	Dirt Road / Grass			
A	3D	2.20 mi	St. England Power Plant Property Line	St. England Power Plant Property Line	End of ACES ROW @ Dead Maple Grade Rd	8	10	10	10	10	10	10	10	10	7	10	5	7	5	10	8.2	10	7	8.64				
A	3E	9.7 mi	Landing Rd England Property to Railroad ROW	End of Dead E ROW	Crossover St. England Railroad	10	10	10	10	7	7	7	10	10	7	7	7	7	5	5	10	10	10	8.46				Approximately 400 feet of multiple line is planned approx 1500 feet, replaced and swap can two lines, wetland crossings on Electric ROW
A	3F	4.40 mi	St. England Property	Crossover	St. England Plant	7	10	10	10	10	10	10	10	10	7	10	7	7	5	10	7	10	10	8.56				Diamond Axe passed to Electric ROW
A	4	9.44 mi	Tonawanda Rd / County Hwy 402	Church Rd	Rt 6 View Rd	8	10	7	5	7	5	5	5	10	10	7	5	5	5	7	10	7	10	7.70	Asphalt	Varies from 10+	low elevation	zone of groundwater contamination (PCE) and petroleum below Rt 60
K			Mosquito Landing Road/Shadbrown Rd/Fresno Rd	Rt 50	Tuckahoe Rd																			0		10+ ?		Segments of length within public lands. State Tuckahoe Trail & Wildlife management area. Lakefield Preserve Great Acres Sherman and 1st Fall & Wildlife authorities. Not included in Archives
A	5	9.420 mi	Sharon Rd	County Hwy 62A Old Tuckahoe Rd	Heather Rd	9	10	7	5	7	7	7	5	7	10	5	10	5	5	7	7	7	10	7.76	Asphalt	Varies from 10+		zone of groundwater contamination (PCE) and petroleum below Rt 60
C	1	14.2 mi	Port Elizabeth Cumberland Rd	Rt 40	Allentown ROW	8	10	10	7	5	7	10	5	10							10	10	10	N/A	Asphalt	30'		
C	2	27.6 mi	Railroad ROW	St Edelfort Elizabeth Cumberland Rd	Freemont Mill Rd	5	7	5	10	10	10	10	7							7	10	7	10	N/A	Yes	N/A		Potential Railroad work on track. Abandoned to Railroad. Tracks have progressively grown heavier with weight restrictions. Not currently used. Segment has ROW marginal.
C	1A	15.75 mi	Railroad ROW	Fremont Mill Rd	Broad St																			N/A	N/A	N/A		Railroad ROW segment
C	1B	17.31 mi	Upper Champion Rd/ Delmonte Rd	Broad St	Washington Ave	Yes	5	5	10	10	10	10	10	10						5	10	10	5	N/A	N/A	N/A		Two route plans for Southern Route
C	2C	17.60 mi	Delmonte Ave/ Laurel Hwy 209	Washington Ave	Greenville- Petersburg Rd	8	10	10	10	10	7	10	5	10						10	10	10	10	N/A	Asphalt	Varies from 10+		Rt 209 Alternate route - Mountain Tunnel Turnpike Trail Route
C	3	18.5 mi	Meadow Close Hollow Rd/ County	Petersburg Rd	Compass Tavern Rd (Rt 283)																			N/A				
C	5	4.8 mi	Bowie Rd	Carmack Street Rd (Rt 283)	Bowie Rd (Rt 283)																			N/A				
C	11	10.10 mi	Compass Tavern Rd (Rt 283)	Woodhollow Cloverview Rd	Rt 5																			N/A				
C	11	11.20 mi	Bowie Rd ROW	Cumberland Rd	County Hwy 624																			N/A				
C	11A	5.8 mi	Bowie Rd ROW	County Hwy 624	Rt Katherine Ave																			N/A				
C	12	5.7 mi	Rutherford Ave	Bowie Rd (Rt 5)	Old Angle Lake Rd (Rte 66)																			N/A				
C	13	15.45 mi	Bowie Rd (Rt 5	Rt Katherine Ave	Rt Bowie Rd																			N/A				
C	14	24.50 mi	Bowie Lake Rd	Rt Katherine Ave	Old Rte 66 (Old Tuckahoe Rd																			N/A				
B	15	13.540 mi	Ocean Heights Ave	Bigg Harbor Ave	Rt 575	8	10	7	7	7	7	10	5	7	10	7	10	5	7	7	10	7	10	7.29	Asphalt	Varies from 10+		
B	16	10.756 mi	Ocean Heights Ave	Oceanic Heights Ave	Richard Hooper Rd	8	10	7	7	7	10	10	5	7	10	7	7	7	5	7	7	7	10	7.79	Asphalt	24' to all speedways		
B	17	4.9 mi	Richard Hooper Rd	Oceanic Point Miami Landing Rd	County Rd 575	10	10	7	7	7	7	10	10	10	7	7	7	7	5	7	7	7	10	8.00	Asphalt	24' marrow shoulders		Rt - 50, Speeds, Groundwater - Contamination Creative
B	18	3.3 mi	Sherman Point/ Miami Landing Rd	Lathers Landing Rd	Richard Hooper Rd	5	10	7	7	7	7	7	7	7	5	7	7	10	5	5	7	7	10	7.33	Asphalt	24' marrow shoulders		Rt - 50, Speeds
B	19	6.9 mi	Lathers Landing Rd	Lake Point Rd/ Miami Ave	Sherman Point/ Miami Landing Rd	7	7	7	7	7	10	7	10	10	10	10	5	10	5	7	10	7	10	7.91	Asphalt	24' marrow shoulders		Potential Chesapeake Pipeline Shoreline
B	20	5.9 mi	Lake Point Rd/ Miami Ave	Ocean Egg Harbor - HDD	Lathers Landing Rd	10	10	7	5	5	7	10	10	10	10	10	5	10	5	7	10	7	10	8.22	Asphalt	NC marrow dirt shoulders		Potential Chesapeake Pipeline Shoreline
C	21	23.0 mi	Oceanic Road 51 to Delmonte - Petersburg Rd	Oceanic Ave	County Road 51 (Tuckahoe Rd)														5					N/A				
B	22	2.80 mi	Ocean Egg - Harbor HDD	Miami Ave	Rt. England Power Plant	7	7	5	10	10	10	7	7	10	10	10	7	10	7	5	7	5	7	7.84	Grass	N/A		No archeological performed due to failure of Field Tests

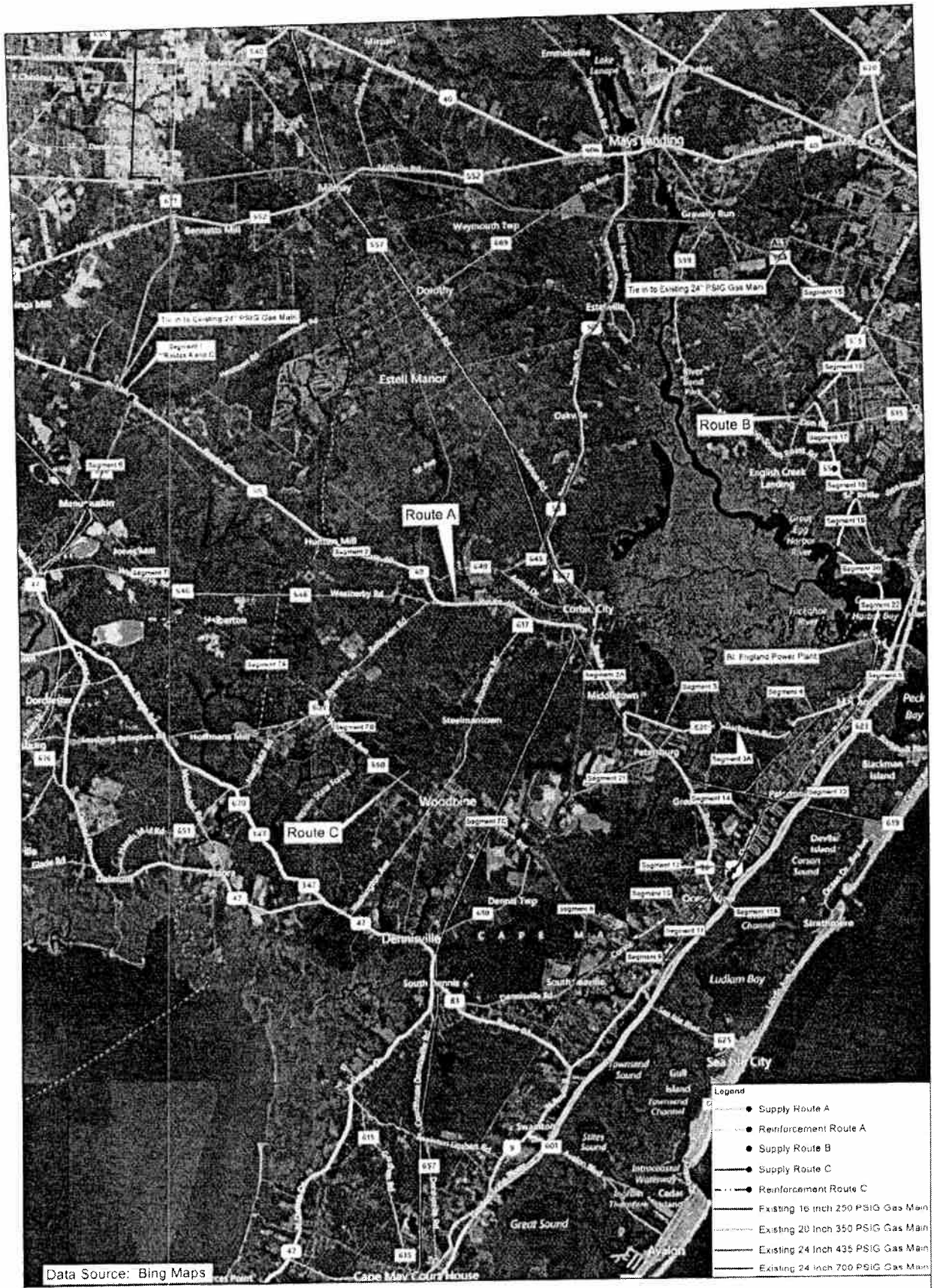

Figure 1: Route Segments Map
Proposed Gas Line to BL England Power Plant
Atlantic, Cape May, and
Cumberland Counties, New Jersey

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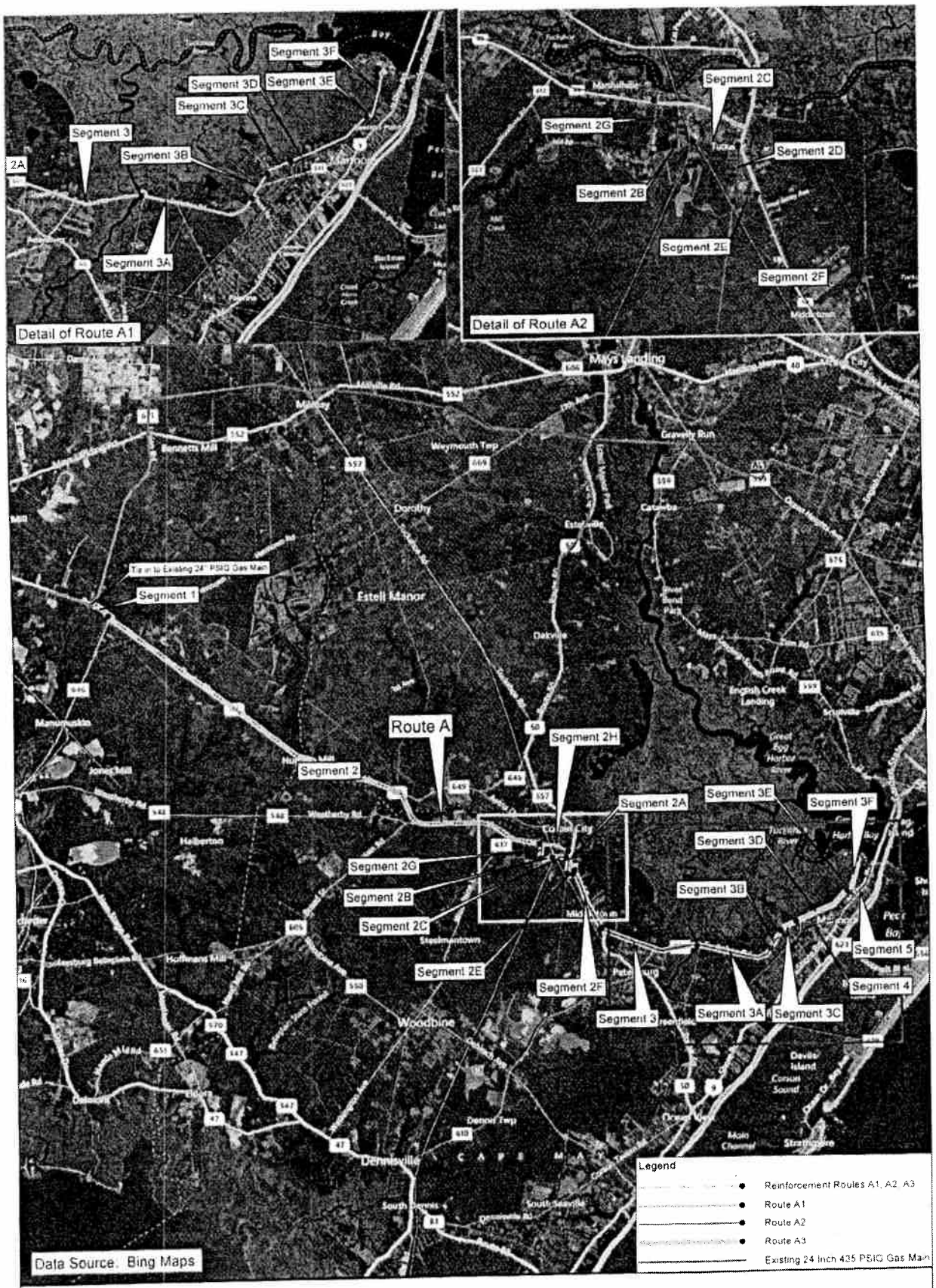

Figure 2: Alternative Routes A1, A2, A3
Proposed Gas Line to BL England Power Plant
Atlantic, Cape May, and
Cumberland Counties, New Jersey

South Jersey Gas

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