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Docket # 07 AFC 6  
Terramar Exhibit

Tuesday, February 16, 2010

Paul Kramer  
Hearing Officer  
California Energy Commission  
1516 Ninth Street  
Sacramento CA 95814

<b>DOCKET</b>	
<b>07-AFC-6</b>	
DATE	<u>FEB 16 2010</u>
RECD.	<u>FEB 18 2010</u>

Dear Mr. Kramer:

Terramar would like to docket the enclosed articles regarding the Kleen Energy Power Plant explosion that took place on Sunday, February 7, 2010 in Middletown, Conn. and the "Findings of Fact" from the Connecticut Siting Council regarding the Middletown, Conn. Kleen Energy Power Plant. We feel that these articles and "Findings of Fact" are very relevant to worker safety and fire protection testimony and cross examination provided at the hearings in Carlsbad, Ca. on February 4, 2010. As the Middletown explosion occurred after the hearings were completed, it would have been impossible to have made these submissions before or during the hearings.

The articles support concerns offered in testimony (and cross examination) by Terramar, and the Carlsbad Fire Department officers. Major concerns were voiced at the hearings regarding the CECP site being too constrained for fire fighters to work safely during an incident. Also the site is very difficult for fire fighters to access. The site is too close in proximity to residents, to the I-5 Interstate (especially after proposed widening) and the LOSSAN Railway. Would a similar accident occur at the proposed CECP site, the I-5 Interstate (especially after widening) and the LOSSAN Railway (both major transportation corridors) would have been shut down and possibly severely damaged. Based on the magnitude of the blast, those traveling along the I-5 (especially after widening) and the LOSSAN corridor could have suffered injury, death, and property damage.

The "Findings of Fact" from the Connecticut Siting Council states:

1. The proposed site's fire protection system would be designed according to National Fire Protection Association recommendations. Each combustion turbine would be equipped with an independent gas-based automatic fire extinguishing system. Automatic and manual fire protection systems with detection and extinguishing

equipment would be provided at all locations with potential fire hazards due to combustible materials. Yard hydrants, interior fire base stations and portable extinguishers would provide additional fire extinguishing capability. The fire protection water supply would be from the raw water storage tank using a centrifugal electric driven fire pump. (KE 1, pp. 5-125 to 5-126)

2. A second fire pump would be diesel driven and also draw water from the fire/service watertank. (KE 1, p. 5-125)

The proposed site is located approximately two miles from the Randolph Road Fire Station and two and one half miles from the Main Street Fire Station, both in Middletown. (KE 1, p. 5-126)

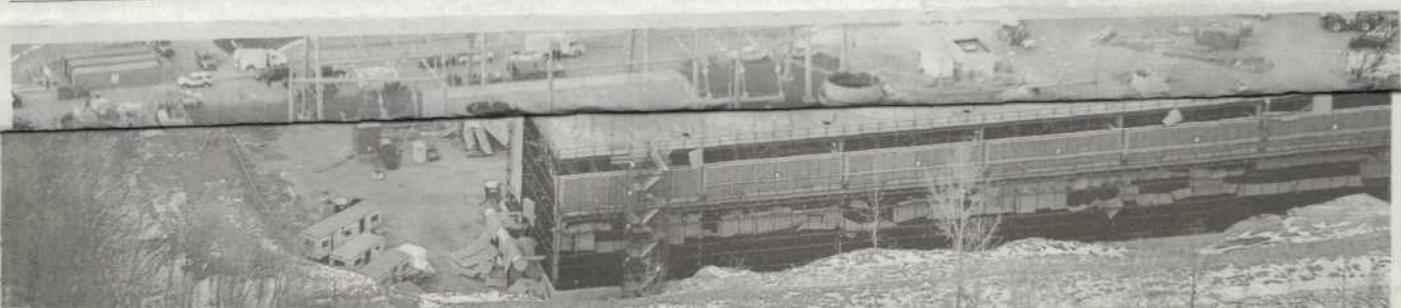
In their "Findings of Fact" the Connecticut Siting Council tried to ensure that the Kleen Energy plant was to be built according to the best standards but the accident happened anyway. The Middletown explosion occurred in a remote industrial area though many residences were reported to have sustained property damage. If an accident of this nature occurred at the proposed CECP site, the loss of life and property in Terramar and other closer surrounding neighborhoods could have been enormous. The West Restaurants and Hotel would have been in a very dangerous position as they are located right next to the land specified for the new SDG&E switchyard. The I-5 and the LOSSAN Railway could have been shut down for extended periods of time, and major injury could have occurred on the I-5 due to the explosion and accidents caused from the aftermath.

Please docket these articles and "Findings of Fact" for Terramar as Exhibit 377 regarding Feb. 7, 2010 Middletown, Conn. Power Plant Explosion.

Respectfully Submitted by,

Kerry Siekmann

## U.S. NEWS



The site of Sunday's blast, which federal officials were investigating for similarities to previous accidents involving purging gas from pipelines.

# Connecticut Blast Kills 5

## Propane Heater May Have Sparked Explosion at Natural-Gas Plant Under Construction

By TIM AEPPEL

MIDDLETOWN, Conn.—An explosion rocked a natural-gas power plant Sunday in Middletown, Conn., sending earthquake-like shock waves miles away. At least five people were killed, 12 were injured and an undetermined number of people were missing, authorities said.

A state official who said he was briefed by emergency personnel said the toll was unlikely to rise significantly. The official said the gas explosion was caused by a "flame device" that a victim's son had been told was a propane heater.

The Federal Bureau of Investigation isn't investigating the explosion as a terrorist act, said William Reiner, a supervisory special agent in the FBI's New Haven, Conn., office, who said he felt the force of the blast while driving about 20 miles away from the plant site.

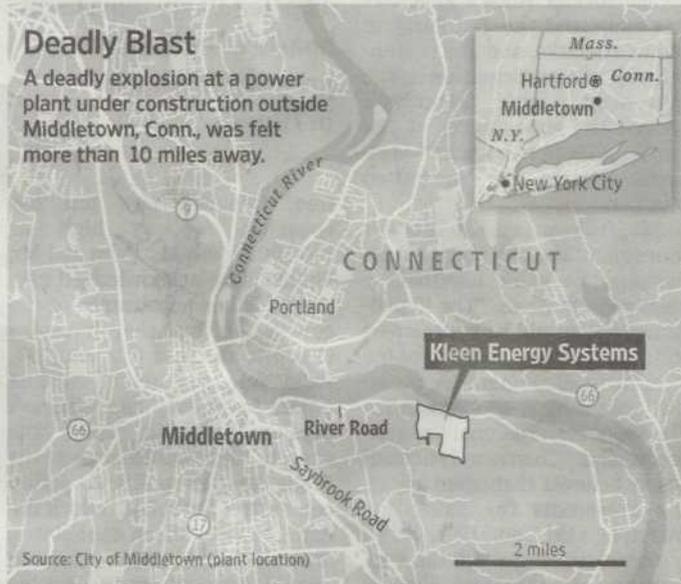
At 11:25 a.m., the explosion ripped through the Kleen Energy Systems LLC natural-gas power plant being built here in a sparse industrial area along the bank of the Connecticut River. Four pipefitters who were inside the main generator building were killed immediately, according to the state official.

Emergency rescue teams, some with rescue dogs, descended on the scene and were airlifting injured workers by helicopter to nearby hospitals.

Al Santostefano, Middletown's deputy fire marshal, declined to comment on the cause of the explosion, but in a statement he said the mayor "assures the public that there is no public health threat." The explosion was confined to one building in an area

### Deadly Blast

A deadly explosion at a power plant under construction outside Middletown, Conn., was felt more than 10 miles away.



Source: City of Middletown (plant location)

known as the "power block," he said. The closest residences are a mile away.

"We're taking the building apart piece by piece," Mr. Santostefano said, adding that he lived about five miles from the site and felt the explosion's impact. "We're waiting to see if there are more fatalities." He said potential survivors would be "buried in rubble."

Sunday's blast has the potential to be one of the most deadly industrial accidents in America in recent decades. In 2005, 15 people were killed in a blast at a BP PLC refinery in Texas City, Texas. In 2008, 13 workers died at an Imperial Sugar refinery near Savannah when sugar dust particles ignited.

Federal safety officials said Sunday they were trying to determine if the Middletown explosion was related to previous ac-

idents around the country in which plant operators attempted to remove existing gas from the pipelines, a process called purging. On Feb. 4, the U.S. Chemical Safety Board, an independent federal agency that investigates industrial chemical accidents, issued what it called "urgent" safety recommendations on natural fuel gas codes on purging. The recommendations stemmed from an investigation into an explosion at a ConAgra Slim Jim plant in Garner, N.C., which killed four people and injured 67. The board said it was dispatching a team to the Middletown site.

Mr. Santostefano said workers were indeed "blowing down gas in the pipes," by which he meant that they were purging.

One of the victims was Raymond Dobratz, 58, a union plumber and pipefitter who had been working in the industry for

more than three decades, according to his son, Matt Dobratz. Mr. Dobratz was told the cause of the blast was a propane heater that was accidentally left on. He said work on the plant has been going on seven days a week.

Ronald Klattenberg, deputy majority leader of the Middletown City Council, said he was inside a boat shed four miles away in Haddam when "I thought something fell on the shed or it was an earthquake."

"It honestly felt like my whole house had exploded," said Daniela Esposito, who lives just more than a mile from the plant with her husband and young child. "It was very loud, and things were falling off the shelves."

The 620-megawatt plant was due to come online in the fall; construction began in June 2008. The project, situated on the site of an old feldspar mine in the Maromas section of the city, was supposed to supply energy to 500,000 residents in a state that has among highest electricity prices in the nation. A former city councilman, William Corvo, the primary developer of the plan, had spent years lobbying for its approval.

The plant's majority owner, Energy Investors Funds, said it "wishes to express our enormous sympathy and concern for the workers at the Kleen Energy plant and their families."

Marie Kalita-Leary, director of the Middletown Downtown Business District, said she ran outside of her house after hearing a giant bang. "Our house shook."

—Judith Burns, Jacol Gershman, Anush Shrivastava, Joel Stonington and Mark Peters contributed to this article



The Kleen Energy plant is seen in this aerial photo after an explosion yesterday in Middletown, Conn., near Hartford. The thundering blast shook houses for miles. *Jessica Hill / Associated Press*

## NATION

# Blast kills 5, injures a dozen at unfinished power plant

### Contractors were purging gas line

ASSOCIATED PRESS

MIDDLETOWN, Conn. — An explosion that sounded like a sonic boom blew out walls of an unfinished power plant and set off a fire during a test of natural gas lines yesterday, killing at least five workers and injuring a dozen or more.

The explosion at the Kleen Energy Systems plant in Middletown, about 20 miles south of Hartford, could be heard and felt for miles.

Deputy Fire Marshal Al Santostefano said last night that no one was known to be missing amid the rubble from the damaged plant. Still, crews planned to spend all night going through debris in case there were any more victims. The cause of the gas explosion was unknown, and the investigation was to begin today, he said.

The explosion left huge pieces of metal that once encased the

plant peeling off its sides. A large swath of the structure was blackened and surrounded by debris, but the building, its roof and its two smokestacks were still standing. Rescue crews had set up several tents alongside the site, which is a few miles from Wesleyan University on a wooded and hilly 137-acre parcel of land overlooking the Connecticut River.

The explosion happened around 11:15 a.m. local time, Santostefano said. He said 50 to 60 people were in the area at the time of the explosion, and multiple contractors were working on the project, making it difficult to quickly account for everyone.

"It felt almost like a sonic boom," Mayor Sebastian Giuliano said at an evening news conference.

One of those killed was Raymond Dobratz, a 58-year-old plumber from Old Saybrook, said his son, Erik Dobratz, who called the elder man "a great dad."

The 620-megawatt plant, which was almost complete, is being

built to produce energy primarily using natural gas. Santostefano said workers for the construction company O&G Industries were purging the gas line when the explosion occurred.

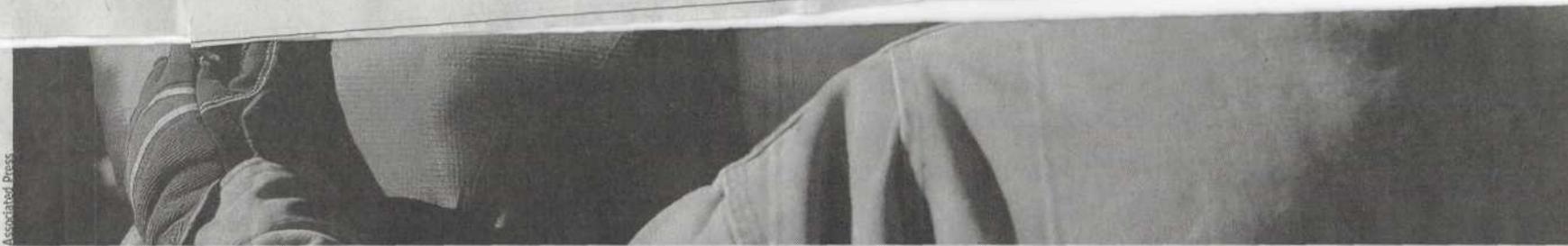
Officials had not released the conditions of the other injured people by yesterday evening, although they said at least a dozen people had injuries ranging from minor to very serious.

The thundering blast shook houses for miles. "I felt the house shake. I thought a tree fell on the house," Middletown resident Steve Clark said.

Work on the plant was 95 percent complete, the mayor said.

Kleen Energy Systems began construction on it in February 2008. It had signed a capacity deal with Connecticut Light and Power for the electricity produced by the plant, which was scheduled to be completed by mid-2010.

Energy Investors Funds, a private equity fund that indirectly owns a majority share in the power plant, said it is fully cooperating with authorities.



Michael Rosario, center, business representative for the Plumbers, Pipefitters & HVAC Local 777, said Monday that he lost three friends in the power-plant explosion.

# Blast Probe Looks at Gas-Line Clearing

*Procedure to Remove Debris From Lines May Have Triggered Explosion; Safety Board Had Issued Warning*

BY MARK PETERS  
AND KRIS MAHER

MIDDLETOWN, Conn.—Investigators are looking at a range of possibilities, including a procedure that uses natural gas to purge pipes, as the cause of an explosion at a power plant here Sunday.

Middletown Mayor Sebastian Giuliano on Monday confirmed that five workers were killed and 12 were injured in the blast, and that all the others at the site had been accounted for.

The mayor said terrorism or intentional crime had been ruled out as causes of the explosion at the Kleen Energy Systems LLC plant being built in a sparse industrial area next to the Connecticut River. However, police haven't ruled out criminal negligence as a potential cause.

Asked whether still he wanted the plant, one of the largest construction projects in the North-

east, completed, Mr. Giuliano said: "I still don't know what happened. If it was a design flaw in the plant, it is one thing. If it is human error, that is another."

The dead, according to Middletown police, are Peter Chetulis of Thomaston, Conn.; Ronald J. Crabb of Colchester, Conn.; Raymond Dobratz of Old Saybrook, Conn.; Roy Rushton of Hamilton, Ontario; and Chris Walters of Florissant, Mo.

Mr. Walters's widow, Fran, said her husband, 48 years old, was a safety supervisor with 25 years experience in that field.

"He loved his family more than his own life, he loved doing his job," Ms. Walters said. They have three children between 10 and 15 years old.

Erik Dobratz, son of another victim, 58-year-old pipefitter Raymond Dobratz, said he didn't know any specifics related to the accident, but his father had told him about the dangers

of purging gas lines at the plant.

"He told me numerous times that it was very dangerous when they did the procedure that ended his life," Mr. Dobratz said.

Rep. Rosa DeLauro (D., Conn.) said the incident had "similarities" to an explosion in June at a ConAgra Slim Jim plant in Garner, N.C., that left four dead. The natural-gas purging procedure was being carried out there.

It wasn't until 24 hours after the Connecticut explosion that authorities said they were confident there were no more workers buried in the rubble because there was no master list of who was working on the site. Rescuers dug through the ruins until about 2:30 a.m. Monday, when the site was declared too unstable to continue work.

The son of one of the workers killed said Sunday night that he had been told that a propane heater caused the explosion.

John Olsen, president of the

Connecticut AFL-CIO, said he didn't think a worker leaving on a torch or a heater was the cause the cause.

"Ignition could be static, a torch, a light switch," he said. "I think that if you have a powerhouse full of gas it isn't the issue about the torch, it's the issue about the powerhouse being full of gas, because at that point if you hit a wrench you could make a spark that could blow the whole thing up."

Middletown officials said gas purging was taking place Sunday at the plant. Gas purging typically involves clearing gas lines or pipes of air, rust or debris before the lines become operational to create a pure stream of gas. In some cases, an inert gas is first pumped into lines before they are filled with natural gas. If a pocket of air remains in a line after purging, it can create a fire that propagates back into a pipe, causing an explosion. Gas

can also be purged from lines before welding or other maintenance takes place.

The Chemical Safety Board issued a safety bulletin on gas purging in October, with four key recommendations for completing the procedure safely. The recommendations included venting gases outdoors, where they will dissipate, controlling ignition sources, using gas detectors and evacuating nonessential personnel.

Mr. Giuliano, the mayor, said most of the workers at the Connecticut plant were moved away from where the purging procedure was taking place Sunday.

The 620-megawatt gas-fired plant, majority owned by Energy Investors Funds, a private-equity group, was due to come online in the fall; construction began in June 2008.

—Andrew Grossman and  
Ian Talley contributed  
to this article.

**CARLSBAD**

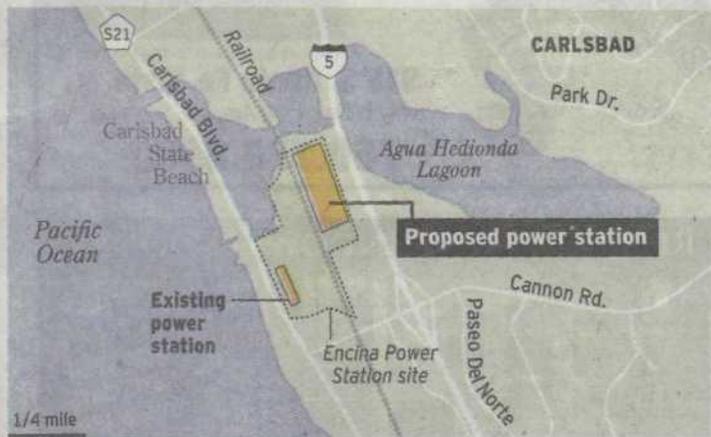
# Conn. blast fuels plant plan's critics

**By Michael Burge**  
STAFF WRITER

Carlsbad Fire Chief Kevin Crawford said that this week's fatal explosion at a Connecticut power plant has validated his city's stand that such projects are dangerous and shouldn't be underestimated.

The blast occurred Sunday, three days after public hearings wrapped up on a proposal by NRG Energy to build a 540-megawatt plant next to Interstate 5 in Carlsbad.

Construction of the 620-megawatt plant in Middletown, Conn., was near-



1/4 mile

SOURCE: NRG Energy Inc.

UNION-TRIBUNE

SEE **Power plant, Page 2**

## POWER PLANT

CONTINUED FROM PAGE 1

### NRG official calls talk about danger 'wild speculation'

ing completion when crews were testing a natural-gas line. The blast ripped a giant hole in the works, killing five workers and injuring 27. The explosion was heard 20 miles away.

"It gives me a sense that maybe in the eyes of other people, my opinion is getting validated a little," Crawford said. "Here's exactly what we were trying to say."

However, Steve Hoffmann, president of NRG Energy's Western division, which has proposed the Carlsbad plant, said it's wrong to link the two.

"I don't believe you can draw a parallel," Hoffmann said. "The Kleen Energy (in Connecticut) plant and the Carlsbad plant are very different."

"The Kleen Energy plant was in a building. Natural gas was released in a building ... and went off, and that's what caused the explosion."

He said the Carlsbad plant will be in the open, so gas can't concentrate in an enclosure and cause the same kind of blast.

Matthew Layton, manager of the California Energy Commission's engineering office, said the Connecticut blast hasn't changed the way the commission is evaluating the Carlsbad proposal, or others, because the agency already places a high importance on safety.

The commission has the authority to license power plants in the state. Two of the commission's five members held a hearing in Carlsbad from Feb. 1-4, gathering information on all aspects of the plant.

NRG has proposed the plant on its 95 acres west of Interstate 5 and north of Cannon Road, and east of the coastal railroad tracks. It owns and operates the Encina Power Station on the same property, closer to the ocean.

City officials oppose the project. They say the location is no longer suitable for heavy industry. Carlsbad fire officials told the commission last week that the proposed access road encircling the plant would be too narrow, limiting firefighters' access in an emergency.

However, NRG's safety experts testified that the plant's concrete-and-steel construction would render the structure practically noncombustible. Valves installed along the plant's natural-gas lines would enable workers to cut the supply should a fire erupt, and thus prevent its spread, they said.

Frank Collins, an NRG safety expert, told commissioners that the control measures would be so sophisticated that "the Fire Department is a backup to fire-suppression systems on large fires."

"Their testimony would indicate to me that maybe they don't have the same degree of concern or appreciation for the impact of any

incident," Crawford said.

"We're in the worst-day-of-your-life business and need to get the upper hand. It really says to me, OK, we're really on the right track on this," Crawford said, in reference to the explosion.

NRG's Hoffmann said the company is well aware that disasters happen, and that's why the plant would have built-in detection, suppression and monitoring systems. He called the Fire Department's statements about potential danger "wild speculation" and said Encina's safety record is exemplary.

When questioned last week, Carlsbad fire operations Chief Chris Heiser testified that there have been few recent incidents at Encina. The worst accident was in 1976, when six people died in a crane accident, he said.

Recent reports from Middletown indicate that gas may have vented outside the building into an enclosed area, where welding equipment ignited it.

The Connecticut disaster is prompting calls by residents elsewhere in the country to challenge power plants. Opponents of a proposed gas-fired plant in Brockton, Mass., jammed a state legislative hearing Tuesday, urging lawmakers to block its construction.

California Energy Commission officials hesitated this week to draw conclusions about Sunday's explosion, saying they want to see the results of an investigation first. However, they said initial reports from Connecticut raised some concerns, such as the procedures used in venting the gas.

"The commission doesn't allow venting gas into a confined space," said Layton, the commission's engineering office manager. "You would vent on a day that would make sure there isn't a confined area (that would) lead to such an event."

He also said it wasn't clear how closely Connecticut officials monitored the venting. He said California requires a chief building officer and a safety monitor to be present for gas venting, and that it didn't appear a monitor was there.

Layton said commissioners are familiar with the safety debate at the Carlsbad plant. The commission is expected to make a final decision on the proposed plant by the end of the year.

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<p><b>DOCKET NO. 225</b> - Kleen Energy Systems, LLC application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of an Electric Generating Facility and Switchyard on River Road, Middletown, Connecticut. }</p>	<p>Connecticut</p>
<p><b>PETITION NO. 549</b> - Kleen Energy Systems, LLC petition for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need is required for the proposed transmission line interconnection from the proposed Electric Generating Facility and Switchyard on River Road to existing 345 kV Connecticut Light and Power transmission line number 353. }</p>	<p>Siting Council November 21, 2002</p>

**FINDINGS OF FACT**

**Introduction**

1. On March 15, 2002, Kleen Energy Systems, LLC (Kleen Energy) applied to the Connecticut Siting Council (Council) for a Certificate of Environmental Compatibility and Public Need (Certificate) for the construction, maintenance, and operation of a 520 MW (nominal) natural-gas fired combined-cycle electric generating facility and switchyard in the City of Middletown, Connecticut. Kleen Energy also filed a petition (No. 549) for a declaratory ruling that a transmission line interconnection from the proposed generating facility and switchyard to a 345 kV transmission line would not have a substantial adverse environmental effect and not require a Certificate from the Council. (KE 1, p. 4-1; KE 3)
2. The party in this proceeding is the applicant. Intervenors are NRG Middletown Power LLC; the Connecticut Light and Power Company (CL&P), the City of Middletown Inland Wetlands Commission and the Connecticut River Watershed Council, Inc. Earle Roberts had been designated as an intervenor, but withdrew from intervenor status at the hearing on July 17, 2002. (Tr. 1, pp. 6-10; Tr. 2, pp. 13-14)
3. Public notice of the application was published in the Middletown Press, the New Britain Herald Press and The Hartford Courant on March 13 and 14, 2002. (KE 5)
4. On January 11, 2002, Kleen Energy notified the Mayor of Middletown and the First Selectman of Portland of the applicant's intention to file an application with the Council for the proposed project. The Middletown Planning and Zoning Commission voted unanimously to grant location approval to the proposed project. The Middletown Inland Wetlands and Watercourse Commission voted 7 to 3 in favor. The Middletown Common Council held a public hearing and voted 11 to 1 to endorse the proposed project. The Portland Board of Selectman held a public meeting and voted unanimously to endorse the proposed project. (KE 11, p. 5; KE 6, Bulk filing No. 2)
5. Pursuant to General Statutes §§ 16-50m, the Council, after giving due notice thereof, held a public hearing on July 17, 2002, beginning at 3:00 p.m. and continuing at 7:00 p.m. in the auditorium of the Middletown High School, 311 Hunting Hill Road, Middletown, Connecticut. The hearing was continued on July 18, 2002, in the offices of the Connecticut Siting Council, Ten Franklin Square, New Britain, Connecticut, beginning at 10:00 a.m. ( Tr. 1, p.4; Tr. 2, p. 4)
6. The Council and its staff made an inspection of the proposed site on July 17, 2002. During the field review, four balloons were flown, two at each approximate location of the two proposed exhaust stacks. The balloons were tethered so that their lengths when fully vertical would be representative of

the exhaust stacks at 550 feet above mean sea level (AMSL). Wind gusts during the field review caused the positions of the balloons to vary, but also included periods when the tethers were close to vertical and representative of the proposed stack heights. (Tr. 3, pp. 112-113; Council Hearing Notice of April 30, 2002)

7. State Agency comments were solicited from the following State agencies on May 1, 2002: (1) Department of Environmental Protection, (2) Department of Public Health, (3) Council on Environmental Quality, (4) Department of Public Utility Control, (5) Office of Policy and Management, (6) Department of Economic and Community Development, and (7) Department of Transportation. Additional comments were solicited from these State agencies on July 18, 2002. (Record)
8. State Agency Comments were received from the Department of Environmental Protection (DEP) on July 9, 2002, and on August 1, 2002. Comments were received from the Town of Portland, dated August 16, 2002; from the City of Middletown Conservation Commission, dated July 17, 2002; and from the Connecticut River Watershed Council, dated August 19, 2002. (Record)

#### **Public Need and Benefit of the Proposed Project**

9. Peak demand for electricity in both Connecticut and New England has exceeded recent projections. In the summer of 2001 peak demand in Connecticut was 6799 megawatts (MW), 13.6 percent above the 2000 peak of 5900 MW. The Council's 2001 Forecast of Loads and Resources projected a 2001 peak of 6255 MW. The 2001 peak exceeded that expected for the year 2010 of 6715 MW. The New England 2001 peak was 25,158 MW, which exceeded the 2001 "NEPOOL Forecast of Capacity, Energy, Loads and Transmission 2001-2010" of 23,650 MW. Summer weather conditions have increasingly influenced electric customer load. (KE 21, p. 4; KE 1, p. 3-2)
10. The economy of Connecticut has become more dependent on high technology with increasing demand for reliable electricity to supply the needs of air conditioning and computers in particular. (KE 21, pp. 3- 4)
11. If approved, the proposed project may displace electric generation from older fossil fuel units and could supply additional electricity to southwestern Connecticut, and relieve transmission constraints in the Middletown area. Northeast Utilities (NU) is considering the addition of a 345 kV/115 kV auto transformer in the Middletown area which, if installed, could assure the electrical generation from the Kleen Energy project would be directed to serving customer load in the Middletown area. If the autotransformer is not constructed, Kleen Energy may propose a second interconnection at 115kV to serve the Middletown area. (KE 21, pp. 3-4)
12. The proposed project would tie into existing 345 kV Connecticut Light and Power (CL&P) line #353. Kleen Energy would also allow sufficient space in the design of the proposed switchyard to connect into nearby 115 kV lines. An extra bay could be built into the switchyard, providing sufficient space for an auto-transformer if needed. (KE 1, p. 3-2)
13. The New England Independent Systems Operator (ISO-NE) is in the first phase of a study of this project which will determine if the proposed facility would meet all interconnection criteria for transmission systems. The results of the ISO transmission study will then be reviewed by NEPOOL task forces. (KE 21, p. 6)

14. If constructed, the proposed plant would be assigned operating time by ISO based primarily on its daily bid price. It is expected that most of the project output would be used to satisfy demand in Connecticut. (KE 21, p.6, KEI, p. 3-1)
15. Kleen Energy has not executed any final commitments for plant output, but will seek bilateral commitments by emphasizing Connecticut providers of power first, followed by other ISO-NE participants. The Connecticut Municipal Electrical Energy Cooperative (CMEEC) has entered into a confidential agreement with Kleen Energy, providing CMEEC with certain rights to participate in the project either as an equity owner or as a contract purchaser of power, or both. CMEEC has not decided whether to participate in this project, but is evaluating the possibility. (KE 7, Q. 8; KE 21, p. 2)

### **The Proposed Site**

16. The proposed Kleen Energy site is a 137-acre property north of Bow Lane in Middletown, Connecticut. (See Appendix A) The property is located within an existing special Industrial Zone (I-3). (KE 1, p. E-1, p. 4-5)
17. Portions of the proposed site were extensively mined for approximately 100 years. Prior to 1959, the proposed site was mined for pegmatite; in 1959, the proposed site was purchased by the Feldspar Corporation and mined from approximately 1959 to the early 1990's for feldspar. In 1999, Armetta Associates entered into an option agreement with the Feldspar Corporation to buy the property. (KE 11, p.3; KE 1, pp. 4-12 to 13)
18. Waste products from previous feldspar mining and processing operations previously flowed into the Connecticut River at an estimated rate of 40,000 to 50,000 cubic feet annually, and motorcycle and off-road vehicle use has also damaged the site. Erosion from the site has been reduced due to stormwater management maintenance work performed by the applicant at the request of the City of Middletown. (KE 7, Q. 3; Tr.3, p. 151)
19. Topography on the proposed site ranges from moderately steep (10-30 percent slope gradient) to steep (20-60 percent slope gradient). Approximately 27 percent of the proposed site (40 acres) shows evidence of mining disturbance, with quarry spoils of feldspar tailings and micaceous deposits. (KE 1, p. 5-99)
20. The proposed site is bounded to the north by the straits of the Connecticut River (the narrows), a narrow and deep portion of the river with a sharp bend, confined within bedrock areas on both sides of the river. Portions of the Connecticut River basin have been designated by the Nature Conservancy as "one of the Last Great Places" and also contain the Silvio Conte Wildlife Refuge. (Tr. 3, pp. 81-82; KE 1, Figure 1, Site Location Plan Map)
21. The proposed site is bounded on three sides by property owned by Armetta and Associates. River Road is immediately north of the proposed site, and three residences are located on River Road north of the site. North of River Road is additional property owned by Armetta and Associates, with the Connecticut River beyond. The corporate boundary between Middletown and Portland is approximately 600 feet north of the site, on the Connecticut River. The western boundary of the proposed site abuts residentially zoned land (R45), which is mainly vacant. Land to the east of the proposed site is owned by CL&P, and includes a 345 kV transmission line. The south portion of the proposed site is bordered by Bow Lane. The nearest residence to the proposed site is at 977 Bow

Lane, approximately 650 feet southwest of the proposed location of the cooling tower. (KE 7, Q. 13; KE 20, p. 5; KE 1, Vol. 2, C-1)

22. The NRG Middletown Generating Station is approximately 3,000 feet east of the proposed site. A block of the Cockaponset State Forest is located approximately one mile south of the proposed site. The Riverview Hospital for Children and Youth is approximately .75 mile west of the boundary of the proposed site, and the WMRD radio station and tower approximately 4,000 feet west of the proposed site boundary. (KE 1, p. 52; KE 1, App. F, map; KE 1, Fig. 4.3-1, map)
23. Nearby hiking trails are in the Cockaponset State Forest, approximately one mile south of the proposed site, and a portion of the Mattabessett Trail is approximately 500 to 1,000 feet from the proposed site to the east. Hurd State Park is 3.2 miles southeast of the site, and Dart Island State Park is approximately 1.5 miles to the east. (DEP Comments, 7/9/02, p. 6; Tr. 3, pp. 124-125; KE 7, Q. 29, KE 1, Fig. 4.3-1)
24. Kleen Energy had considered another site for the proposed project, a 150-acre site off of Newfield Street in Middletown. This site is zoned Newfield Street Planned Retail Business Commercial Zone (NPC), a zone which does not allow for electric generating facilities. A variance or zoning change would be required from the City of Middletown Planning and Zoning Department. The site is surrounded by residential uses to the west and to the south by a multiple family zone. The existing topography surrounding the site would not shield it from residential neighborhoods in any direction. (KE 1, p. 4-2)

### **The Proposed Project**

25. Approximately 38 acres of the 137-acre site would be used for the construction of the power plant and switchyard; approximately 10 additional acres of the site would be used as a construction equipment laydown area and for construction offices and worker parking. Approximately 50 acres would not be impacted by development and would remain as open space. (KE 1, App. G, p. 2)
26. The project would use a combined-cycle configuration with two GE F7A combustion-gas turbines and one steam turbine. The combustion turbines would emit the lowest emissions levels currently technically feasible. Electricity from the project would be interconnected into an existing 345 kV line located approximately 700 feet to the east on CL&P property. The design of the proposed switchyard would also allow for interconnection to nearby 115 kV lines, if it is determined such an additional interconnection would be beneficial. (Tr. 2, p. 10; KE 15, p.2)
27. In developing the proposed site, Kleen Energy would develop four plateaus on the existing hillside of the proposed site, which would be established by excavating into the material uphill of the centerline of each plateau and then using the excavated material as fill on the downhill side of the centerline. By this method all of the excavated material would remain on site. An estimated 1,000,000 cubic yards of material would be moved to create the plateaus. The switchyard would sit at 240 feet AMSL and the power block at 340 feet AMSL. To the south and east, a hill on the proposed site rises to over 500 feet AMSL. (KE 1, p. 5-11; KE 10, pp. 2-3)
28. The proposed facility would be comprised of five main areas: the main power generation area; water treatment systems; wastewater collection systems; an electrical switchyard; and staff facilities. (KE 1, p. 4-15)

29. The four major buildings on the site would consist of the following: (1) the power house, a 380-foot by 120-foot by 95-foot high building to house the combustion gas turbines, steam turbine, condenser, and plant support equipment; (2) the control building, a 160-foot by 22-foot by 44-foot high building attached to the power house to house the electrical switchgear room, motor control center and cable spreading rooms, control room, and administrative offices, which would be located in front of the powerhouse near the access road; (3) the maintenance/warehouse building, measuring 85 feet by 45 feet by 20 feet high, containing maintenance shops, warehouse storage, and staff facilities; and (4) the gas compressor building, an 85-foot by 50-foot by 16-foot high building to house gas compressors and support equipment. (KE 16, p. 4)
30. Smaller buildings on the proposed site would include (1) the Continuous Emissions Monitoring (CEM) building, a 20-foot by 12-foot by 10-foot high building to house CEMS equipment adjacent to the heat recovery steam generators; (2) the pumphouse, a 70-foot by 20-foot by 16-foot high structure to enclose the electric firepump, diesel fuel pump, raw water transfer pump, and demineralized water transfer pumps; and (3) the guard shack, a 12-foot by 12-foot by 10-foot high structure to house security personnel and equipment. (KE 16, pp. 4-5)
31. The heat recovery steam generators (HRSG) would be located to the rear of the powerhouse. The HRSG's recover heat from the gas turbine exhaust and provide steam to power the steam turbine generator. The HRSG's would contain selective catalytic reduction (SCR) and carbon monoxide catalyst equipment for emissions control. (KE 16, p. 5)
32. The cooling tower structure would measure 300 feet by 110 feet by 60 feet high. The cooling tower would provide cooling by evaporating water by blowing air across the water. These structures would be located in the southern-most portion of the facility. (KE 16, p. 5; KE 1, Vol. 2, drawing 5)
33. Two plant exhaust stacks, each 215 feet in height, would be located at the end of each HRSG to discharge gas turbine exhaust. (KE 16, p. 5)
34. The proposed electrical switchyard would comprise an area of approximately five acres at an elevation approximately 100 feet lower than the power plant, at a location north of the power plant. Kleen Energy chose this location to simplify the transmission line interconnection to the utility grid and to minimize switchyard visibility. The 345-kV switchyard would be an outdoor, open bus, breaker and one half configuration. The connections to the proposed plant transformers would be via overhead conductors spanning the deadend structures in the switchyard to deadend structures in the transformer. The deadend structures would be approximately 65 feet in height. (KE 16, p. 5; KE 22, p.5)
35. Sulfur hexafluoride (SF<sub>6</sub>) gas insulated breakers are widely used throughout the world. Use of SF<sub>6</sub> breakers would reduce the size of the proposed switchyard by approximately 50 percent. (Tr. 3, pp. 120-123)
36. A raw water storage tank would store 1,600,000 gallons of water, sufficient for an eight-hour supply of makeup water under peak use during natural gas firing. The tank would include a reserve of 425,000 gallons for fire protection. (KE 16, p. 5; Tr.1, p. 43)
37. A demineralized water storage tank would store 150,000 gallons of demineralized water for use in the steam cycle. (KE 16, p. 5)

38. A fuel oil storage tank would store 950,000 gallons of No. 2 low sulfur fuel oil, sufficient for a 34-hour supply of oil at full load. This tank would be located within a secondary containment structure. (KE 16, p. 5)
39. The proposed site would be stabilized to prevent a continuation of the erosion of mine tailings into the Connecticut River by installing a network of surface drainage channels and swales designed to carry stormwater runoff. Detailed erosion and sediment controls would be in compliance with City of Middletown and state standards, and would be reviewed by City of Middletown staff prior to installation. Temporary stormwater management systems such as drainage channels and sedimentation areas would be installed and inspected prior to the beginning of other construction activities. As portions of the site are brought to final grade, the graded area would be stabilized with erosion control matting and seeded. When proposed vegetation has been established and the final stormwater management plan is in place, the volume of sediment entering the Connecticut River from the proposed site would be reduced to an estimated five percent or less than that previously eroding from the site. (KE 7, Q. 2)
40. A comprehensive stormwater management plan, as approved by the City of Middletown Inland Wetlands and Watercourses Commission, would be put in place prior to the start of construction. (KE 1, App. G, p. 5)
41. All stormwater structures would be designed to handle a 100-year storm event. Drainage structures would also be designed to remain stable during a 100-year storm event. (KE 10, p. 5)
42. A new 3800-foot access road would be constructed south of River Road into the proposed site. The new road is designed to meet City of Middletown specifications with two 15-foot wide travel lanes, and will comply with City of Middletown Standards for fire and emergency access. A cul-de-sac would allow emergency vehicles to turn around. (KE 10, p. 5; KE 13, p. 3; KE 7, Q. 35)
43. A utility corridor would be constructed along the east side of the proposed site from River Road. This corridor would contain water, gas, and fuel oil supply pipelines and a sanitary sewer discharge pipe. Utilities would be run below grade in the access road alignment for electric and telephone service for construction and permanent plant operations. (KE 10, p. 5)
44. An 8-foot security fence would be constructed around the perimeter of the proposed site. A staffed security gate would include video surveillance monitoring. (KE 16, p. 6; KE 1, p. 5-126)

#### **Permits and Approvals**

45. The Federal Aviation Administration has given a determination of "no hazard to air navigation" for the proposed exhaust stacks. The stacks would be lighted with red flashing lights. (Tr. 3, p. 131)
46. Kleen Energy has consented to all of the conditions imposed by the Middletown Planning and Zoning Commission on February 27, 2002. (KE 11, WJC-2, pp. 4-7; Tr. 1, p. 51)

### Water Use

47. The project would need water for steam cycle makeup, cooling tower makeup, inlet air cooling for combustion turbines, NO<sub>x</sub> water injection, water treatment and potable water. (KE 16, p. 7; KE 15, p. 5)
48. The proposed project is expected to use approximately 2,800,000 gallons of water daily (evaporative use) during average usage, and 4,500,000 gallons of water daily (evaporative use) during peak usage, depending on ambient air temperature, relative humidity, and type of operating fuel. (KE 17, p. 3; KE 15, p. 4; KE 1, p. 4-7)
49. Kleen Energy proposes to use mechanical draft (wet) cooling towers. In this system, heat is removed from a condenser by circulating water through a condenser and then to the cooling tower, where water is cooled by flowing ambient air over the water. Heat in the water is transferred to the cooler ambient air. (KE 1, p. 4-7)
50. The use of air-cooled condensers was considered by Kleen Energy, but rejected, because this system would occupy three to four times the area of the proposed wet cooling towers and would be nearly twice as tall, with a cost three to four times that of the wet tower system. (KE 1, p. 4-8 to 4-9)
51. The use of once-through cooling was considered, but rejected by Kleen Energy. This system would circulate 140 to 220 million gallons of water per day, which would have to be pumped uphill to the proposed site. Possible environmental impacts include the release of heated water at the point of discharge and the entrainment or impingement of aquatic organisms. (KE 1, p. 4-9)
52. Cooling water for the proposed project would be supplied from a joint venture entity to be created between the City of Middletown and Armetta and Associates, LLC. The water would be drawn through a system of wells proposed to be installed on the west side of the Connecticut River on property owned by Armetta and Associates. The water would then be pumped up a utility corridor to a filtering and treatment facility proposed to be located above the Kleen Energy facility and stored in tanks for eventual use by the power project. (Tr. 2, pp. 11-12; Tr. 3, pp. 76-77)
53. A series of soil borings was conducted at intervals of 50 to 70 feet to assess subsurface soil conditions adjacent to the Connecticut River. One group of nine borings was made from a land-mounted track grid and another group of nine borings was made from an offshore barge. While subsurface materials at the first location were found unsuitable for collector wells, the second site was found to be favorable. (Tr. 3, pp. 49-50; KE 17, pp. 3-4)
54. The system of ranney-type collector wells would consist of 16-foot diameter concrete caissons to be installed inland from the edge of the Connecticut River. The bottom of the caisson would be 50 feet below ground. Directional drilling would be used to install a series of horizontal laterals. The wells would collect water in the sand and gravel deposits beneath the riverbed at depths of 50 to 70 feet. The grade where the wells would be located ranges from eight to twelve feet AMSL. The top of the caisson would be approximately 15 feet above ground level to elevation 22 feet, so the pumps would be located above the flood plain. (Tr. 3, pp. 49-52; KE 17, p. 4)
55. The two collector wells would be located between the Connecticut River and nearby railroad tracks in a flood plain area. One well would be located 75 feet from the bank of the river and the other would be 60 feet from the bank of the river. (Tr. 3, p. 54; KE 7, Q. 17)

56. Lateral collector arms would be drilled horizontally from the caisson and would extend approximately 200 to 300 feet in length. (KE 17, p. 4)
57. Sodium hypochlorite would be added to the water using an in-line injection system located outside of the flood plain. (KE 17, p. 4)
58. A 15-foot wide paved access road would be constructed from River Road to the collector wells. The access road would cross one state and federally regulated wetland area of approximately 0.1 acre, which would be regulated by the Army Corps of Engineers and the City of Middletown. (KE 17, p. 5; Tr. 3, pp.66-68)
59. The water supply pumps would be located above the elevation of the 500-year return frequency flood event, allowing them to continue to operate during flooding. A backup emergency generator would be installed outside of the flood plain in case the electric supply is interrupted. (KE 17, p. 5)
60. The Connecticut River is tidally influenced in the area of the proposed project, and is classified as a Class B waterbody in the DEP classification system, in that its waters are suitable for industrial supply. However, water from the Connecticut River cannot be used for potable supply. (KE 17, p. 7)
61. The maximum daily water demand of 4,500,000 gallons per day is approximately seven cubic feet per second (cfs), representing 0.6 percent of the lowest freshwater flow ever recorded on the Connecticut River. This level of water withdrawal would not adversely affect instream water flows or fish habitat in the area. (KE 17, p. 6; DEP Comments, 7/9/02, p. 5)
62. The proposed well sites would be within a riparian buffer zone, consisting of silver maple and cottonwood trees. The only clearing required would be in the immediate vicinity of the well. The well and pump structures would be visible from the river during the winter months. (Tr. 3, pp. 55-56)
63. Construction of the wells would occur within the habitat of the shortnose sturgeon (State and federally endangered) and the Atlantic sturgeon (State threatened). However, the DEP does not believe the fisheries resources in the river in general or the shortnose and Atlantic sturgeon would be adversely impacted by this project. (DEP Comments, 7/9/02, p. 5)
64. The proposed facility would have two sources of water supply at its start-up. The collector wells would supply all process and cooling water to the plant. A water main would be extended from the City of Middletown Water and Sewer Department distribution system to the proposed site to meet other water demands of the facility. Ultimately, Kleen Energy would prefer to obtain all of its water from the Connecticut River collector wells; however, this would require additional testing and permitting through the Connecticut Department of Public Health (DPH). The project would therefore begin operations with a dual supply of water until DPH testing has been completed. (KE 17, p. 3)
65. Kleen Energy had considered the use of gray water for the proposed project. The nearest source of gray water with sufficient capacity is the Mattabassett District Commission treatment plant in Cromwell. This would require installation of a pipeline of approximately six to seven miles. Kleen Energy rejected this option due to the additional infrastructure required for the filtering and treating gray water, and an additional project cost of an estimated \$5,000,000 to \$10,000,000. (Tr. 3, p. 134; KE 1, pp. 4-17 to 4-18; KE 15, p. 4)

### **Water Discharge**

66. The major water discharges from the proposed project would be from cooling tower blowdown, water treatment, steam generator blowdown, and sanitary sewer. These effluents would be collected and discharged to the City of Middletown municipal sewer system. The volume of discharge would average 600,000 to 800,000 gallons per day. (KE 16, p. 7; KE 19, p. 2)
67. The City of Middletown (City) is engaged in a sewer interceptor project, the Connecticut River Interceptor Sewer Project (CRISP). The City has set aside an allowance for the Kleen Energy project of 600,000 gallons per day of total flow. The entire proposed site has been assigned an average flow of 800,000 gallons per day by agreement with the DEP due to other future activities which may occupy the area. A peak of 1,200,000 gallons per day is assumed in current planning. The City is proceeding with final engineering on the CRISP project, with a construction date of approximately January 1, 2003. If the CRISP does not go forward, Kleen Energy could construct an onsite treatment system and seek to obtain a point source discharge permit for the Connecticut River. Alternatively, a sewer could be constructed from the border of the proposed site back to a 30-inch interceptor sewer at the intersection of Eastern Drive and River Road. (KE 19, pp. 2-3)
68. The City of Middletown wastewater treatment plant has sufficient capacity to treat the proposed plant's water discharges. The treatment facility is permitted for a design flow of 6,750,000 gallons per day. (KE 19, p. 3)

### **Project Fuel**

69. The proposed project would be supplied with natural gas from a lateral pipeline (W lateral) running from the Duke/Algonquin pipeline in Glastonbury, a distance of approximately 8.4 miles. A gas transmission lateral pipeline has been installed underneath the Connecticut River to connect the NRG Middletown station to the Duke/Algonquin main line. Duke has informed Kleen Energy the 20-inch diameter lateral has sufficient capacity to provide gas to the proposed project and existing customers without improvements to the W lateral. A tap and approximate 1.1-mile extension from a current terminus point at Middletown Station to the proposed site would be required. The mainline pipeline is supplied from the north by the Sable Island gas fields and from the south by the Gulf Coast gas fields. (KE 21, p. 10; KE 1, p. 4-2 and 4-5)
70. There would be sufficient additional natural gas supply for an approximately 750 MW facility at the NRG Middletown Station or to convert Unit 4 at this site from oil to gas. (Tr. 2, p. 91, p. 93; KE 11, p. 7)
71. Kleen Energy natural gas requirements are not expected to exceed 110,000 Mscf per day. Kleen Energy is in negotiation with two natural gas suppliers for a 1.1-mile extension along River Road from its current terminus in Middletown Station to the proposed site. A firm commitment for gas transportation has been received from one supplier. (KE 7, Q. 22; KE 18, p.8; Tr.1, p.101; KE 1, p.4-21)
72. Kleen Energy would construct a new natural gas pipeline in the area of the existing Yankee Gas metering station on River Road. This 10-inch pipeline would travel northwest on the eastern side of River Road and interconnect with the proposed site utility corridor upward to the power generation facility. Approval for the pipeline would be sought through the Council petition process. (KE 7, Q. 1)

73. The proposed project would also be able to burn low sulfur distillate No. 2 fuel oil as an alternative fuel, rather than an emergency fuel. The source of the oil would come directly from the Buckeye pipeline which runs through Middletown. The take station for the Buckeye pipeline is north of the Arrigoni Bridge adjacent to Route 9 south. This pipeline includes an oil pipeline from New Haven harbor, which crosses under the Connecticut River to tank farms on Brownstone Avenue in Portland. A vacant return pipeline crosses from Portland back to Middletown. (KE 11, p. 8; Tr. 2, p. 11; Tr. 3, p. 193)
74. Kleen Energy would acquire the rights to the Buckeye pipeline lateral to Portland and construct a new pipeline to take the No. 2 fuel oil from Portland to the proposed site. The fuel oil line would be located in River Road. The fuel line would connect to the utility corridor and be pumped to the 950,000 gallon Kleen Energy day tank. Buckeye pipeline would be capable of resupplying the storage facility in Portland on a weekly basis to allow the proposed project sufficient No. 2 fuel oil at all times. This system of oil delivery would eliminate the need for fuel oil truck traffic to and from the proposed site. (KE 11, p. 8; KE 1, p. 4-21, Fig. 4.4-2)
75. Kleen Energy's air permit would limit oil use to the fuel equivalent of 720 hours per year. Kleen Energy seeks maximum flexibility regarding the decision as to when to use fuel oil, and not be limited only to those times when natural gas is unavailable or curtailed, including periods when it is more economical to use oil rather than natural gas. (KE 11, p. 8)
76. Kleen Energy would obtain oil storage facilities through acquisition or lease agreements, then acquire the oil in bulk, store it in New Haven, and move it through the Buckeye pipeline on an as-needed basis. (Tr. 1, pp. 73-75)
77. The proposed project is expected to consume 15,900 gallons of oil per unit per hour when firing on oil, with a gross consumption of two turbines being 31,800 gallons per hour. (Tr. 1, p. 79; Tr. 3, pp. 190-191)
78. The 950,000-gallon distillate oil tank on the proposed site would be protected by secondary containment capable of containing 110 percent of the tank's capacity and would include an impermeable floor. (KE 1, p. 5-120)

### **Fire Protection**

79. The proposed site's fire protection system would be designed according to National Fire Protection Association recommendations. Each combustion turbine would be equipped with an independent gas-based automatic fire extinguishing system. Automatic and manual fire protection systems with detection and extinguishing equipment would be provided at all locations with potential fire hazards due to combustible materials. Yard hydrants, interior fire base stations and portable extinguishers would provide additional fire extinguishing capability. The fire protection water supply would be from the raw water storage tank using a centrifugal electric driven fire pump. (KE 1, pp. 5-125 to 5-126)
80. A second fire pump would be diesel driven and also draw water from the fire/service watertank. (KE 1, p. 5-125)
81. The proposed site is located approximately two miles from the Randolph Road Fire Station and two and one half miles from the Main Street Fire Station, both in Middletown. (KE 1, p. 5-126)

### **Project Construction**

82. Site preparation would include the installation of erosion and sedimentation controls, clearing, grubbing, grading of the site and access road, excavation of stormwater detention and infiltration basins and formation of drainage swales. (KE 1, p. 4-23)
83. Kleen Energy estimates there would be approximately 1,390,000 cubic yards of cut and 550,000 cubic yards of fill used in constructing the proposed project. Kleen Energy proposes to use 500,000 cubic yards of material to fill in dry bottom quarries on adjacent CL&P-owned property. The area has acceptable roads for trucking material to the CL&P property. (Tr. 3, pp. 147-149; KE 7, Q. 30)
84. Kleen Energy would employ approximately 400 people during construction. (KE 11, p. 9)
85. The majority of construction activity would take place during daytime hours, although construction could occur from 7:00 a.m. to 12:30 a.m. Construction is expected to be completed within a 24-month timeframe with peak construction expected in the year 2004. (KE 1, pp. 5-74 to 5-75)
86. Truck arrival time at the proposed site would be between the hours of 6:00 a.m. and 6:00 p.m. An estimated 12 to 16 trucks per day would be required for deliveries to the site during the peak truck delivery period over a three-month timeframe. (KE 1, p. 5-75)
87. An estimated 640 trees with a diameter at breast height (dbh) of greater than six inches would be removed during construction. (KE 7, Q. 31)

### **Facility Operation**

88. The proposed project would be designed to operate continuously, 24 hours per day, seven days per week to provide baseload power. The plant would have 25 to 30 full-time employees and others under contract. (KE 1, p. 4-24; KE 7, Q. 5)
89. The proposed project's systems would be closely monitored and controlled by a Digital Control System which, in the event of a malfunction, would isolate and shut down independent systems as feasible. (KE 1, p. 5-126)
90. The proposed facility is expected to have a service life of 25 to 30 years. (KE 1, p. 4-16)
91. Kleen Energy proposes to lower its operating costs by using water pre-treated at competitive rates to reduce chemical costs, obtaining fuel by using long-term fixed-cost arrangements, and having maintenance supplied by the out-sourcing of contracts. Kleen Energy proposes to finance the project by the use of bonds with a guaranteed payment for water by the Kleen Energy Project once operational. The proposed project costs are estimated at approximately \$200,000,000. (KE 7, Q. 5; KE 11, p. 7; KE 1, p. 5-132)

### Visibility

92. The most prominent features of the proposed project which are expected to be visible would be the two 20-foot diameter exhaust stacks, each 215 feet in height. Lowering the stack heights would jeopardize compliance with Prevention of Significant Deterioration air emission requirements. The 95-foot high generation building would be the next tallest structure on the site. Kleen Energy would use a neutral color scheme to lessen visual prominence. (KE 1, p. 5-11, Tr. 3, pp. 38-42; KE9, p. 9)
93. To mitigate visual impacts, Kleen Energy proposes to construct the proposed facility approximately 60 feet below the existing grade of the proposed site. (Tr. 3, p. 116)
94. The proposed facility is expected to be visible from the north on the Portland side of the Connecticut River. Approximately 12 homes on the south side of Wellwyn Drive in Portland would have views of the facility from approximately eye level across the river at a distance of approximately 3000 feet, with only a minor amount of screening from deciduous trees. However, there should not be significant views of the plant from residential areas on the Middletown side of the river. (DEP Comments, 7/9/02, p. 2, p. 7; KE 1, p. 5-17, p. 5-24)
95. In Portland, residences along the southern portion of Riverview Street would have limited views of the exhaust stacks. Residences along Grandview Terrace, may have limited views of the stacks at a distance of over one mile. (KE 1, p. 5-17, Fig. 5.3-08, Fig. 5.3-10)
96. The proposed project would be largely obscured from views from the Connecticut River, due to the steep narrow gorge (the straits of the Connecticut River) in this vicinity. (KE 1, p. 5-24, Fig. 4.4-2)
97. South of the proposed site, there are a limited number of residences along Bow Lane, (including Standpipe Road, Holmes Drive, and Fairchild Road) Cedar Lane, Bartholomew Road, Reservoir Road and Training Hill Road, all within a one mile radius of the proposed site. The proposed project would not be visible from this direction due to the trees in the area. However, the exhaust stacks may be visible from this area, including the campus of Middlesex Community College. (KE 1, p. 5-24, Fig. 5.3-3, Fig. 5.3-12, Fig. 5.3-14, Fig. 5.3-14b, Fig. 5.3-16, Fig. 5.3-18, Fig. 5.3-20)
98. Property to the east of the proposed site is zoned I-3 (Special Industrial) and is the site of the NRG Middletown Generating Station, a CL&P transmission line, and vacant land owned by the State of Connecticut. Access to the area is restricted. Due to vegetation and topography, the project would not be generally visible from this area. (KE 1, Fig. 4.4-2, Fig. 5.3-3, p. 5-36)
99. West of the property site lies additional land owned by Armetta and Associates and two residences on River Road. A portion of the exhaust stacks may be visible from this area. (KE 1, p. 5-36, Fig. 5.3-24, Fig. 5.3-3, Fig. 5.3-22)
100. Route 154 (Exit 10 off of Route 9) is designated as part of a scenic driving tour, and is approximately 2.5 miles south of the proposed site. (KE 7, Q. 28)
101. The proposed project would be within 500 to 1000 feet of the Mattabesett Blue Trail. The proposed facility would be screened by trees, and the uneven topography of the area. (Tr. 3, pp. 124-128)

### **Plume Visibility**

102. Visibility of the plume from the cooling towers on the proposed site was evaluated by Kleen Energy using the SACTI model, and it was determined that a maximum of 700 hours a year of visible plumes would be dense enough to cause a plume shadow immediately east of the proposed site. The plumes would be elevated within several hundred feet of the ground. Most plumes would extend a few hundred feet from the cooling tower, and the majority of the elevated visible plumes would occur during the colder months. The computer model used to predict these plumes does not incorporate the plume mitigation planned for the cooling towers. (KE 1, p. 5-46, p. 5-50, Fig. 5.3-27; KE 7, Q. 36)
103. Use of a plume abatement system at the cooling towers is expected to significantly reduce the hours of visibility of plumes. Kleen Energy would use a plume reheat system which should eliminate visible plumes. (Tr. 3, pp. 183-184)
104. The plume abatement system is expected to significantly reduce visible plumes; however, plumes are expected to be visible in conditions when humidity is high and temperatures fall below 20°F. (KE 1, p. 4-10)

### **Fog and Ice Formation**

105. Fogging from cooling towers may occur when a condensed water plume comes in contact with the ground near the tower. Such fogging events are usually of a few hours duration. The SACTI model calculated a maximum of 16 hours of ground fog 500 feet south of the cooling tower during a one-year period. A maximum of three hours of ground fog was calculated for an area to the north, and two hours to the southeast. Areas of predicted fogging do not include any public roads or public areas. (KE 1, p. 5-43, p. 5-46, Fig. 5.3-25)
106. Super-cooled cloud water droplets freezing on contact with sub-freezing surfaces cause rime ice. The high efficiency drift eliminator to be installed would reduce the amount of drift to 0.005 percent of the circulating water. The drift eliminator would typically reduce glaze ice formation to on-site, including slippery walkways, stairs or ladders about the facility. The SACTI model predicts a maximum of one hour of rime ice formation to occur to the southeast per year. This would occur on the proposed site, and would not affect public roads or public areas. (KE 1, p. 5-43, p. 5-46, Fig. 5.3-26, Fig. 5.3-25; Tr. 3, pp. 182-183)
107. Kleen Energy would be the first large power project in Connecticut to propose a cooling tower plume abatement system. (KE 20, p. 12)

### **Noise**

108. Kleen Energy performed a noise assessment study for the proposed project, including ambient noise monitoring and noise modeling. The noise monitoring took place on October 31, 2001, and represents current noise levels in the area. Monitoring was conducted during the very early morning and daytime at five locations: Wellwyn Drive (Portland), Riverview Hospital, Cedar Lane, River Road and Bow Lane.

Measurements at these locations are shown in the chart below:

<b>Measured Ambient Noise Levels</b>						
<b>Location</b>	<b>Measured Noise Levels (dBA)</b>					
	<b>Daytime</b>			<b>Nighttime</b>		
	<b>L<sub>90</sub></b>	<b>L<sub>10</sub></b>	<b>L<sub>eq</sub></b>	<b>L<sub>90</sub></b>	<b>L<sub>10</sub></b>	<b>L<sub>eq</sub></b>
Wellwyn Drive	38	47	51	27	33	31
Riverview Hospital	39	48	46	35	39	37
Cedar Lane	36	44	46	33	36	35
River Road	35	46	49	27	34	38
Bow Lane	35	43	42	26	32	33

(KE 1, p. 5-50, p. 5-54, p. 5-55; KE 8, p. 4)

109. The proposed site is in an industrially zone area, Class C, and the nearest noise sensitive area are the Class A properties of residences on Bow Lane. State of Connecticut Noise Standards for a Class C source omitting to a Class A receiver are 61 dBA daytime and 51 dBA nighttime. Noise emitted cannot exceed 70 dBA at an industrial noise zone. (KE 1, p. 5-51 to 5-52; KE 8, p.3)

110. Kleen Energy used the NOISECALC model to predict noise levels expected from the proposed project. Noise sources would include two GE 7FA combustion turbines and heat recovery steam generator, a steam turbine, and associated equipment such as pumps, ammonia blowers, coolers, air compressors and transformers. (KE 1, p. 5-55)

111. Calculated facility noise and projected future ambient noise levels for the same five locations monitored above (see Appendix B) are estimated in the chart below:

<b>Calculated Facility Noise and Projected Future Ambient Noise Levels (dBA)</b>					
<b>Location</b>	<b>Average Existing Late Night L<sub>90</sub></b>	<b>Calculated Facility Level</b>	<b>Applicable Standard</b>	<b>Cumulative Future Late Night Ambient</b>	<b>USEPA Recommended Level</b>
Wellwyn Drive (1)	26	48	51	48	48
Riverview Hospital (2)	35	28	51	36	48
Cedar Lane (3)	33	30	51	35	48
River Road (4)	27	35	51	36	48
Bow Lane (5)	26	48	51	48	48

The figures in the chart incorporate extensive noise control measures which will be required to bring the proposed facility into compliance with Connecticut standards. (KE 1, p. 5-56)

112. Noise control measures required would include an acoustically treated turbine building; a mitigated cooling tower; mitigated HRSG casings; high performance exhaust stack silencers and enclosures for the boiler feedwater pumps, cooling tower circulation pumps, and the gas compressor. (KE 1, p. 5-56)

113. Using conservative, worst-case assumptions, additional receptor locations were modeled to determine compliance with industrial property line standards. Twelve locations surrounding the

proposed site were modeled. (See Appendix C map) The calculated property line noise levels are shown in the chart on the following page:

<b>Calculated Property Line Noise Levels (dBA)</b>		
<b>Property Line Receptor</b>	<b>Standard</b>	<b>Project dBA</b>
Property line receptor 1*	51	35
Property line receptor 2	70	54
Property line receptor 3	70	54
Property line receptor 4*	51	50
Property line receptor 5*	51	50
Property line receptor 6	70	48
Property line receptor 7	70	57
Property line receptor 8	70	66
Property line receptor 9	70	66
Property line receptor 10	70	49
Property line receptor 11	70	49
Property line receptor 12	70	51

\*These property line locations border residentially zoned property.  
 (KE 1, p. 5-57)

114. The closest residential receptor, on Bow Lane, is approximately 1400 feet from the center of the proposed turbine building. The calculated noise level at this location is 48 dBA. (KE 8, p. 5)
115. The proposed facility would be in compliance with State of Connecticut and City of Middletown standards, provided that the proposed noise control measures are employed. (KE 8, p. 6; Tr. 3, p. 181)

**Traffic**

116. An estimated 15 to 19 employees would operate the proposed project during the day shift with two to three employees present during other shifts. The maximum peak number of construction workers on the proposed site is estimated at 416, over a period of several months. During the peak AM and PM roadway hours during construction, delays would be experienced at the Silver Street and Eastern Drive northbound movement and at the Silver Street and Route 9 southbound off-ramp during the peak AM hour. Any delays would be temporary and Kleen Energy recommends no improvements at these locations. (KE 13, pp. 4-6)

**Historic and Archaeological Effects**

117. The State Historic Preservation Office (SHPO) reviewed an archaeological reconnaissance survey prepared by the applicant for the proposed project, and determined the methodologies employed were consistent with SHPO requirements. The proposed project would have no effect on the State's archaeological heritage. (KE 7, Q. 41)

**Geology of the Proposed Site**

118. Elevation of the proposed site ranges from approximately 100 feet to 400 feet AMSL, with some areas with grades of over 35 percent slope. (KE 1, p. 5-83)

119. Much of the soil on the proposed site was removed as overburden and sold during quarrying. Soils surrounding the proposed site are classified as Hollis-Chatfield Rock outcrop complex and Charlton-Chatfield complex. Bedrock on the site is part of the Collins Hill formation, consisting of schists. Bedrock varies from 10 to 20 inches, and bedrock is extensively exposed in the quarry pits. (KE 1, p. 5-84; Tr. 3, pp. 104-105)
120. The proposed site has areas containing pooled water, especially in the major quarry. Pooling of water is a result of surface water run-off, rather than groundwater. No groundwater was found on the proposed site following six borings and 17 test pits. (KE 1, p. 5-84; Tr. 3, p. 188)
121. The proposed site is in the vicinity of the Eastern Border fault, formed during the Mesozoic Era. No major earthquakes have occurred along this fault in recent history. Structures proposed to support the proposed facility would be designed in accordance with State of Connecticut seismic building codes. A preliminary geotechnical exploration of the proposed site has been performed. (KE 1, pp. 5-84 to 5.85; Tr. 3, pp. 99-100)
122. Extensive rock removal would be necessary to develop the proposed site, especially in the lower areas of the site, which would require blasting. Kleen Energy would submit a blasting plan prior to blasting operations. An estimated 740,000 cubic yards of rock may need to be removed by blasting. (KE 1, p.5-85; KE 7, Q. 36)
123. The mining material on the proposed site may be adequate to support vegetation; however, this is uncertain, and the material may need to be supplemented. (Tr. 3, pp. 104-105)
124. Geotechnical evaluations of boring information revealed no evidence of any iron concentrations in any of the rock excavations on the proposed site, in response to concerns about rust contaminating water flowing off of the site. (Tr. 3, p. 189)

### **Wetlands**

125. Based on field surveys, wetland plant communities found on the proposed site developed after the end of mining activities. Wet areas on the site have developed hydrophytic vegetation due to saturation within pits, swales and depressions.

A summary of the wetland areas on the proposed site is shown in the chart on the following page:

<b>Summary of Regulated Areas, Impacts, and Mitigation</b>					
<b>Regulated Area</b>	<b>Type of Resource</b>	<b>Size of Resource</b>	<b>Primary Function/Value (low, med., high)</b>	<b>Project Impact Area</b>	<b>Proposed Mitigation</b>
Areas 1 and 1A-Watercourse	Deep quarry - man-made	1.25 acres and 0.38 acres (54,695 sq. ft. and 16,703 sq. ft)	Water, nutrient retention; wildlife/medium	0	None necessary.
Area 2 - Watercourse	Intermittent stream - altered	700 linear feet	Drainage; wildlife/med.; low	400 linear feet	Restore and enhance to accommodate more flow; improve water quality with improved stream substrate.
Area 3 - Wetland/Watercourse	Emergent wetland & intermittent watercourse formed in excavated depression.	0.36 acres (15,535 sq. ft.)	Water detention; Sediment trap; Wildlife/med.; low	Excavation 0.36 acres (15,535 sq. ft.)	Restore and enhance to accommodate more flow; improve water quality through detention and improve wildlife use by constructing "wet pond" and bordering wetland habitat. 0.25 acres of wetland; 0.25 wet pond
Area 4 - Watercourse	Perennial stream	650 linear feet	Drainage attenuation and conveyance; sediment trap; wildlife use/med.; low	Re-channel 80 linear feet	Restore channel with existing stone and vegetation
Area 5 - Wetland	Emergent isolated wetland formed in constructed wetland	0.18 acre (7,839 sq. ft.)	Sediment trap/high	Fill 0.18 acre (7,839 sq. ft.)	Recreate at ratio of at least 1:1.2; improve water quality and wildlife use.
Area 6 - Watercourse/Wetland	Emergent wetland with stream inlet and outlet formed in deep quarry.	0.44 acres (18,838 sq. ft.)	Drainage attenuation and conveyance; sediment trap; wildlife use/med.; med.; low	Fill 0.15 acres (6,545 sq. ft.)	Recreate adjacent to existing quarry 1:1.5; improve water quality and wildlife use.
Area 7 - Watercourse/Wetland	Forested wetland formed in excavated depression	0.12 acre (5,279 sq. ft.) 625 linear feet stream	Drainage attenuation and conveyance; sediment trap; wildlife use.	Re-channel (currently pipe) 300 linear feet of stream and 0.06 acre bordering wetland	Recreate 350 feet of stream channel with stone and restore 0.06 acre (3,000 sq. ft.) wetland vegetation for water quality enhancement.
Area 8 - Wetland	Emergent isolated wetland formed in quarry	0.27 acres (11,785 sq. ft.)	Drainage detention and sediment trap; wildlife/med.; medium.	Fill 0.12 acres (5,227 sq. ft.)	Recreate adjacent to existing quarry 1:1.5; improve secondary water quality function with using primary detention basin and constructing as "wet pond."
Area 9 - Watercourse/Wetland	Scrub-shrub wetland formed from excavation or erosion situated between access roads.	0.02 acres (871 sq. ft.)	Drainage attenuation and conveyance; sediment trap/low	0	None necessary
	Total Wetland Acres (emergent) Total Watercourse (stream length)	3.02 acres 1,975 ln.ft.	Total Wetland (emergent) Total Watercourse (stream length)	0.85 780 ln.ft.	Total Wetland/Watercourse Replacement/Restoration 1.37 acres Total Stream Watercourse Restoration 780 ln.ft.

(KE 1, p. 5-86-89)

126. Many of the wetland areas on the proposed site are linked by watercourse channels except for areas 5 and 8, which are isolated. Wetland areas 1-4, 6, 7, and 9 function to provide nutrient retention and sediment trapping. To a lesser degree, wildlife habitat has developed after the end of mining activities. (KE 1, pp. 5-94 to 5-96)

127. Wetland areas 1-4, 6, 7 and 9 drain into the Connecticut River via surface and groundwater discharge. Any fill-related activities to onsite wetlands and watercourses could change the capacity for nutrient retention and sediment trapping. (KE 1, p. 5-96)

128. Wetland areas 6-9 have negligible value because they would be totally surrounded by the proposed facilities. Wetland restoration options are limited, as the wetlands on the proposed site have only developed after cessation of mining. Wetland area land 1A may be enhanced by enlargement, creation of abutting marsh, vegetation supplementation, and removal of debris and waste. Wetland areas 3, 5, 6, and 8 primarily function to retain nutrients and trap sediments, to a lesser degree provide habitat for amphibians, and cover for birds. (KE 1, p. 5-97; DEP Comments of 7/9/02, pp. 3-4)
129. Wetlands and watercourses outside of the layout of the project would be protected from erosion and siltation through the implementation of Best Management Practices as part of the applicant's Erosion/Sediment Control Plan. Practices to be included are use of detention ponds, grassed swales with temporary sediment traps, haybale and/or silt fencing, and stabilized construction roadways. (KE 1, p. 5-97)
130. A proposed Wetland Restoration and Compensation Plan was submitted to the City of Middletown Inland Wetland and Watercourse Commission (MIWWC) and approved by the MIWWC. (KE 1, p. 5-98, KE 7, Q. 38; KE 11, Ex. WJC-3; KE 12, p. 6)
131. Kleen Energy proposes to restore and create 1.37 acres of wetlands and 780 feet of stream on the proposed site, a net increase of 0.52 acres and 50 linear feet of stream habitat. The 1.37 acres of created wetlands would not include sedimentation areas. Areas 3 and 4 and the lower section of Area 7, which is now a culvert, would be reverted back to an open stream channel. (See Appendix D). (Tr. 3, pp. 94-95, p. 101; KE 1, p. 5-98)
132. Kleen Energy found no functioning vernal pools on the proposed site, including wetland areas 1 through 9. The wet ponds, which would be constructed, would be intended to provide habitat for some vernal pool species. (Tr. 3, pp. 95-96)
133. The wet ponds would serve as a backup sedimentation area along the steeper areas of the site. After the site has been stabilized, they would be cleaned out and then allowed to revert to a natural state. (Tr. 3, pp. 100-101)
134. Kleen Energy does not intend to rip-rap slopes other than in areas at the bottom of slopes near River Road, and would prefer the use of rock walls using natural rock and creating terraced walls. Grass-lined swales would be used in areas with less than 10 percent grade and rip-rap swales in steeper areas. (Tr. 3, pp. 103-104)

#### **Site Ecology**

135. Vegetative communities on the proposed site are those adapted to early to mid-successional plant communities. Two dominant plant communities were observed, (1) mesic oak-birch forested stands and (2) early-phase old field. Two sub-dominant communities are a speckled alder stand, and a plant community adapted to rock-face and fissure environments. (KE 12, p. 8; KE 1, pp. 5-98 to 5-99)
136. Most of the wildlife species on the proposed site are habitat generalists using transition habitats such as wetlands and early successional fields, with additional bird species moving through during migration. Amphibian species observed on the proposed site include *Rana clamitans* (green frogs) in the wetland areas. (KE 1, p. 5-101; KE 12, p. 9)
137. Smooth mountain sandwort (*Arenaria glabra*) a State-threatened species, is found in scattered locations throughout this area of Middletown in areas of exposed bedrock. Sandplain flax (*Limum*

*intercursum*), a State special concern species, was historically reported in the area of the proposed access road. Swamp cottonwood (*Populus heterophylla*) was reported along the Connecticut River in the period of 1890's - early 1900's in this area. No federally listed or proposed, threatened, or endangered species are known to occur in the project area. (DEP Comments 7/9/02, p. 4; KE 12, Ex. SPD-2; KE 23)

138. The Eastern box turtle (*Terrapene c. carolina*), a species of special concern, is known to occur in the immediate area based on sightings as recently as 2000. This turtle favors old field and deciduous habitat, including a nearby power line right-of-way. The DEP recommended a site survey to determine the presence of this species and an impact assessment made if the species is found on the proposed site. (DEP Comments, 7/9/02, p. 5)
139. The applicant conducted on-site biological surveys for the eastern box turtle, smooth mountain sandwort, sandplain flax and swamp cottonwood on the proposed site in July 2002. No Eastern box turtles, smooth mountain sandworts, sandplain flax, or swamp cottonwoods were found during the survey. The DEP has accepted the applicant's conclusions that the three listed plant species are not likely to be on the proposed site. Eastern box turtles are known to inhabit the immediate area, and the loss of even one adult female would have a significant impact. A final sweep of the site for Eastern box turtles should be performed immediately prior to any land clearing on the site. Any individuals found could then be moved to suitable adjacent offsite habitat. (KE 23; DEP Comments, 08/01/02)
140. Approximately 50 to 60 acres to the west of the proposed development area on the proposed site would be set aside as a reserve area, which would be allowed to revert to its natural state. Kleen Energy has not specifically delineated the boundary line for the reserve area pending a final determination by the Council and other agencies. Kleen Energy anticipates discussions with the City of Middletown and local environmental groups to determine the reserve area. Kleen Energy has provided a site plan to the DEP Bureau of Water Management which indicates certain portions along the southern and western boundaries of the area proposed to be developed have been designated as "Reserved Area", although no definition of that designation was provided. (KE 7, Q. 9; KE 11, p. 4; DEP Comments, August 1, 2002, p. 2)

#### Air Quality Issues

141. Air quality in the Middletown area meets state and federal standards except for ozone, which is created in the atmosphere by reactions involving NO<sub>x</sub> and volatile organic carbons (VOC's) in the presence of sunlight. Most of Connecticut is considered to be in an area of "serious non-attainment" for ozone. (KE 9, p. 3; Tr. 3, pp. 29-30)
142. The proposed project must meet requirements for New Source Performance Standards (NSPS), and Prevention of Significant Deterioration (PSD). The PSD regulations require compliance with Best Available Control Technology (BACT) emission rate limits and Connecticut and National Ambient Air Quality Standards (CAAQS/NAAQS). Major new stationary sources of non-attainment pollutants in non-attainment areas must demonstrate compliance with Lowest Achievable Emission Rate (LAER) limits and obtain emission offsets. The proposed project would meet all of these requirements. (KE 9, p. 3)
143. The project is subject to PSD review because the project's potential maximum emissions exceed the major stationary source threshold for particulate matter (PM), including particulate matter with a nominal aerodynamic diameter less than or equal to 10 micrometers (PM<sub>10</sub>), sulfur dioxides (SO<sub>x</sub>), nitrogen oxides (NO<sub>x</sub>), and carbon monoxide (CO). The project would be subject to BACT for PM<sub>10</sub>,

NO<sub>x</sub>, CO, VOC and sulfuric acid (H<sub>2</sub> SO<sub>4</sub>). Under BACT, the applicant first identifies the most stringent control available for a similar source or source category. The applicant must justify that the proposed emission levels represent BACT when energy, environmental, and economic aspects are considered. (KE 9, p. 4; DEP Comments, 7/9/02, p. 6)

144. The project would be subject to LAER for NO<sub>x</sub>. In the Middletown area, if a source has potential NO<sub>x</sub> emissions of 50 tons per year or greater, the source is considered a major stationary source and a LAER analysis is required instead of a BACT analysis. Under LAER, the most stringent emission limitation contained in any State Implementation Plan or achieved by another similar source is selected, unless it can be shown to be unachievable by the proposed source, without consideration of energy or cost issues. (KE 9, p. 4)

145. Kleen Energy must purchase NO<sub>x</sub> emission offsets in an amount equal to 1.2 times its maximum potential emissions. In its application to the DEP, submitted in April 2002, the applicant is proposing to have a maximum allowable emission rate of 195 tons of NO<sub>x</sub>. Therefore, Kleen Energy must contract to remove 235 tons of emissions of NO<sub>x</sub> from an area which is contributing to the ozone problem. Since the application to the Council was submitted, the applicant revised its estimates of NO<sub>x</sub> emissions from 224 tons per year to 195 tons per year, as shown in the chart below. Actual emissions rates are expected to be significantly less than the maximum values used to calculate annual emissions rates, and are also shown in this chart.

Comparison of Maximum Annual Emission Rates for the Kleen Energy Systems Facility

Pollutant	Maximum Potential Emission (tons/year)		
	Certificate of Environmental Compatibility and Public Need for an Electric Generating Facility and Switchyard in Middletown	Application for a Permit to Construct and Operate a Combine-Cycle Power Plant in Middletown, CT	Estimated Actual Emissions (tons/year)
PM <sub>10</sub>	288	288	144
SO <sub>2</sub>	117	117	58.5
NO <sub>x</sub>	224	195.4	97.7
CO	70	268.0	134
VOC <sub>s</sub>	22	49.7	24.9

(KE 7, Q. 39; Tr. 3, pp. 27-29; KE 9, p. 4, p. 10)

146. BACT for emissions of sulfur oxides and sulfuric acid would be achieved through the use of clean-burning natural gas and low-sulfur distillate oil. (KE 9, p. 5)

147. BACT for nitrogen oxides would be achieved by the use of dry low NO<sub>x</sub> technology when firing on natural gas and water injection when firing on distillate oil. The project would also install selective catalytic reduction (SCR), the most stringent NO<sub>x</sub> control technology currently available for large combustion turbines. BACT for CO emissions would be achieved by use of an oxidation catalyst. BACT for particulate matter would consist of use of clean-burning fuels. Proper combustion techniques would limit particulate matter and VOC emissions. (KE 9, p. 6)

148. Kleen Energy has completed Industrial Source Complex short-term version 3 modeling for elevations at or below the stack top elevation and PTMTPA-CONN modeling for receptors above stack top elevation. Modeling results for both of these air quality models have been submitted to the DEP, and both models must be approved before air permits are granted. (Tr. 3, pp. 31-32; KE 9, p. 7)

149. The project would be subject to the federal Acid Rain Program, under which the owner/operator of a project must hold enough SO<sub>2</sub> allowances to cover the total expected emissions of SO<sub>2</sub>. This program would require compliance verification using fuel monitoring, continuous emissions monitoring, record keeping and reporting. (KE 9, p. 5)

**Safety Considerations**

150. Kleen Energy has developed a draft Emergency Management Evacuation Plan. This plan covers procedures to be followed in the event of a major accident, explosion, large fire, bomb threat, toxic gas release, force of nature or other life-threatening occurrence, when it may be necessary to evacuate some or all personnel from the proposed project site. The Plan includes staff responsibilities, emergency response procedures, instructions for evacuation, training, drills, and testing, and emergency response contacts. (KE 7, Q. 25)

151. A Health and Safety Plan would be developed prior to the beginning of any site work, and would include required Occupational Health and Safety Administration regulations and other safety measures to be followed during construction. (KE 1, App. G, p. 10)

152. All chemical storage areas on the proposed site would be located indoors with appropriate containment, such as curbs and drains. Transfer of ammonia from delivery vehicles would occur within a concrete containment area. Spillage in the unloading area would run into a local sump and then into the ammonia tank containment area inside the ammonia storage building.

A chart of the expected on-site chemical storage facilities is shown below:

<b>Chemical Storage</b>					
<b>Area</b>	<b>Chemical</b>		<b>Purpose</b>	<b>Storage State</b>	<b>Amount (gallons)</b>
HRSG	Trisodium Phosphate(TSP)	Na <sub>3</sub> PO <sub>4</sub>	Antiscalent	Dry powder or liquid solution	100-400 <sub>(1)</sub>
HRSG	Hydrazine	H <sub>2</sub> NNH <sub>2</sub>	Oxygen scavenger	Liquid Solution	100-400 <sub>(1)</sub>
HRSG	Amine	Proprietary Blend	Elevate pH	35-99% solution	100-400 <sub>(1)</sub>
Water Treatment	Sulfuric Acid	H <sub>2</sub> SO <sub>4</sub>	Ion exchange resin regeneration	93% solution	12,000
Water Treatment	Sodium Hydroxide	NaOH	Ion exchange resin regeneration	50% solution	6,000
SCR	Aqueous Ammonia	NH <sub>4</sub> OH	NO <sub>x</sub> reduction	19% solution	20-30,000
CTG	Detergent	Proprietary Blend	Compressor Wash	Liquid concrete	
Cooling Tower	Sodium Hypochlorite	NaOC1	Oxidizing biocide	12-15% solution	10,000
Cooling Tower	Sulfuric Acid	H <sub>2</sub> SO <sub>4</sub>	Reduce pH	93% solution	Incl. Above
Cooling Tower	Corrosion Inhibitor	Proprietary Blend	Corrosion reduction	Liquid	100-400 <sub>(1)</sub>
Cooling Tower	Dispersant	Proprietary Blend	Dispersion	Liquid	100-400 <sub>(1)</sub>

(KE 1, p. 5-121 to 5-122; KE 15, p. 7)

(1) Storage in a tote container

### **Solid and Hazardous Waste**

153. Facility waste would be recycled as much as feasible. A private contractor would dispose of non-recyclable materials. Depleted SCR and oxidation catalysts would be sent for reprocessing to the original manufacturer or to a licensed facility. About 5 to 10 cubic yards of waste would be generated weekly during operation, and 56 to 100 cubic yards generated weekly during construction. All hazardous waste would be removed from the site by licensed contractors. (KE 1, p. 4-22)

### **Electrical Interconnection**

154. The 345 kV transmission line interconnection would connect the proposed Kleen Energy switchyard with CL&P's existing transmission line number 353, which runs from Scovill Rock substation to the Manchester substation. Precise details of the interconnection would be finalized following review by CL&P. If the Council approved the project, Kleen Energy would include details of the interconnection in a Development and Management Plan submitted for Council approval. (Pet. 549, pp. 1-2; Tr. 3, p. 142)

155. The tap would be made southeast of CL&P structure 12100, a river crossing structure located east of the proposed switchyard. This tap would loop (sectionalize) the line and bring two new lines into the switchyard. A third connection would be constructed in the future. The distances for the two lines that would exit the proposed site are approximately 600 feet and 1500 feet respectively. The shorter transmission line would require 3 to 4 structures; the longer line would require 4 to 6 structures depending on the final alignment. (Tr. 3, pp. 140-142)

156. The transmission tap would be constructed with monolithic galvanized steel poles installed on concrete foundations. (Pet. 549, p. 3)

157. CL&P line 353 is expected to have sufficient capacity for the proposed project, and discussions between the applicant and CL&P indicate the interconnection into the existing 345 kV system would not present load flow, fault duty or stability problems. Kleen Energy applied to ISO-New England for a transmission line interconnection study on November 21, 2001. (Pet. 549, p. 3)

158. A looped interconnection would enhance reliability; if either line is out of service, the other should remain operational, allowing the applicant to continue generating and supplying load. The switchyard has been designed to also connect to the 115 kV system if it is determined an additional interconnection is beneficial. (Pet. 549, p. 3)

159. Kleen Energy made an assessment of the electric and magnetic fields expected from the proposed transmission line. Assuming that line 353 is impacted by the full output of the proposed plant (520 MVA) and that no division of generation output takes place at the interconnection, the magnetic field intensity at the 520 MVA load level would range from 26.3 mG at the edge of the right-of-way to a maximum of 56.4 mG within the right-of-way. At midspan, the magnetic field intensity would range from 32.2 mG at the edge of the right-of-way to a maximum of 87.9 mG within the right-of-way. Electric fields would range from 0.7 kV/m to 2.1 kV/m across the right-of-way with the maximum electric field strengths found directly underneath the outer phase conductors. (KE 1, App. H, p. 3)

**APPENDIX A**



(KE 1, Appendix C)

**Location of Proposed Site**

**APPENDIX B**



(KE 1, fig. 5.4-1)

**Noise Receptor Locations**

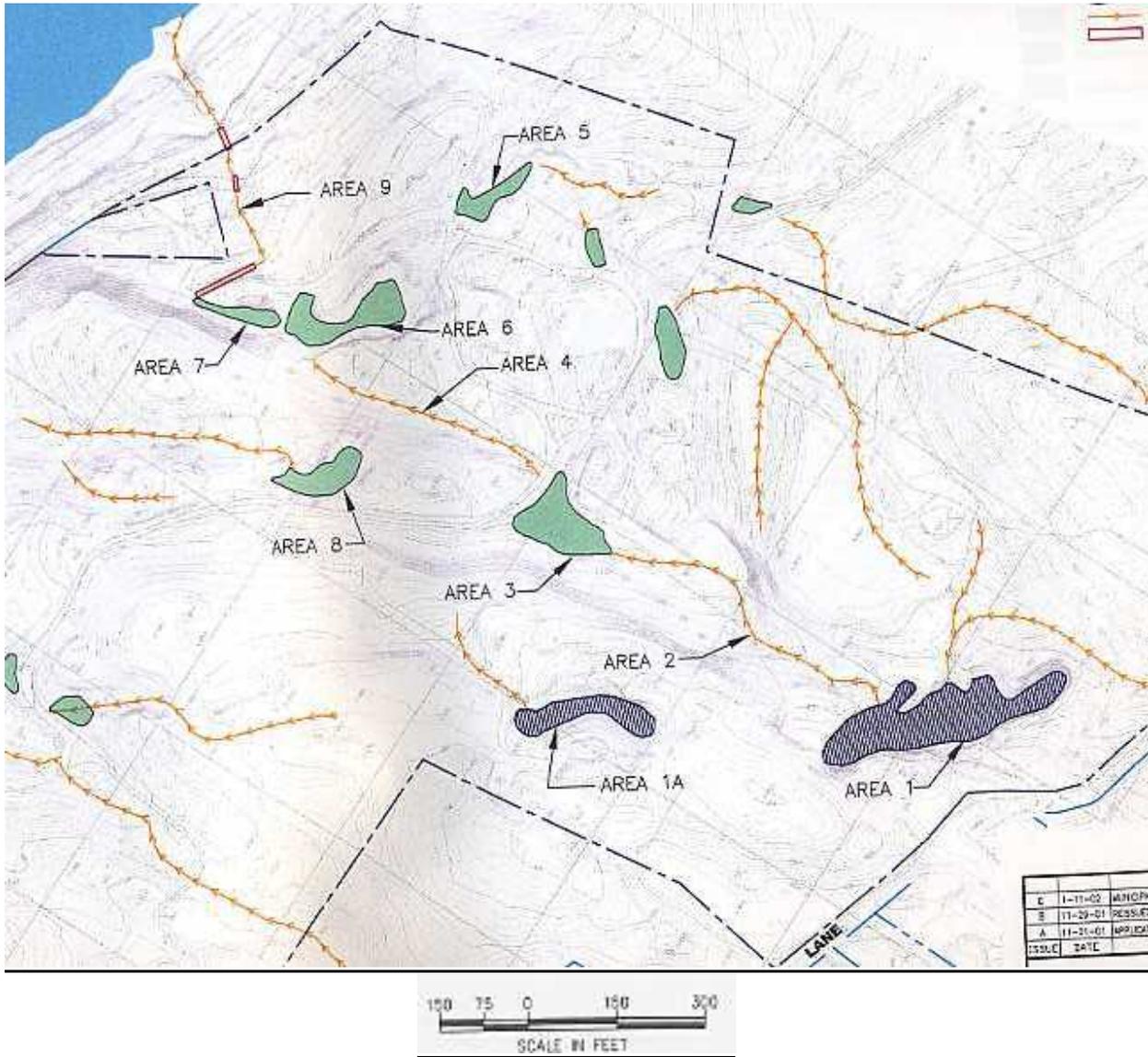
**APPENDIX C**



(KE 1, fig. 5.4-2)

**Property Line Noise Receptors**

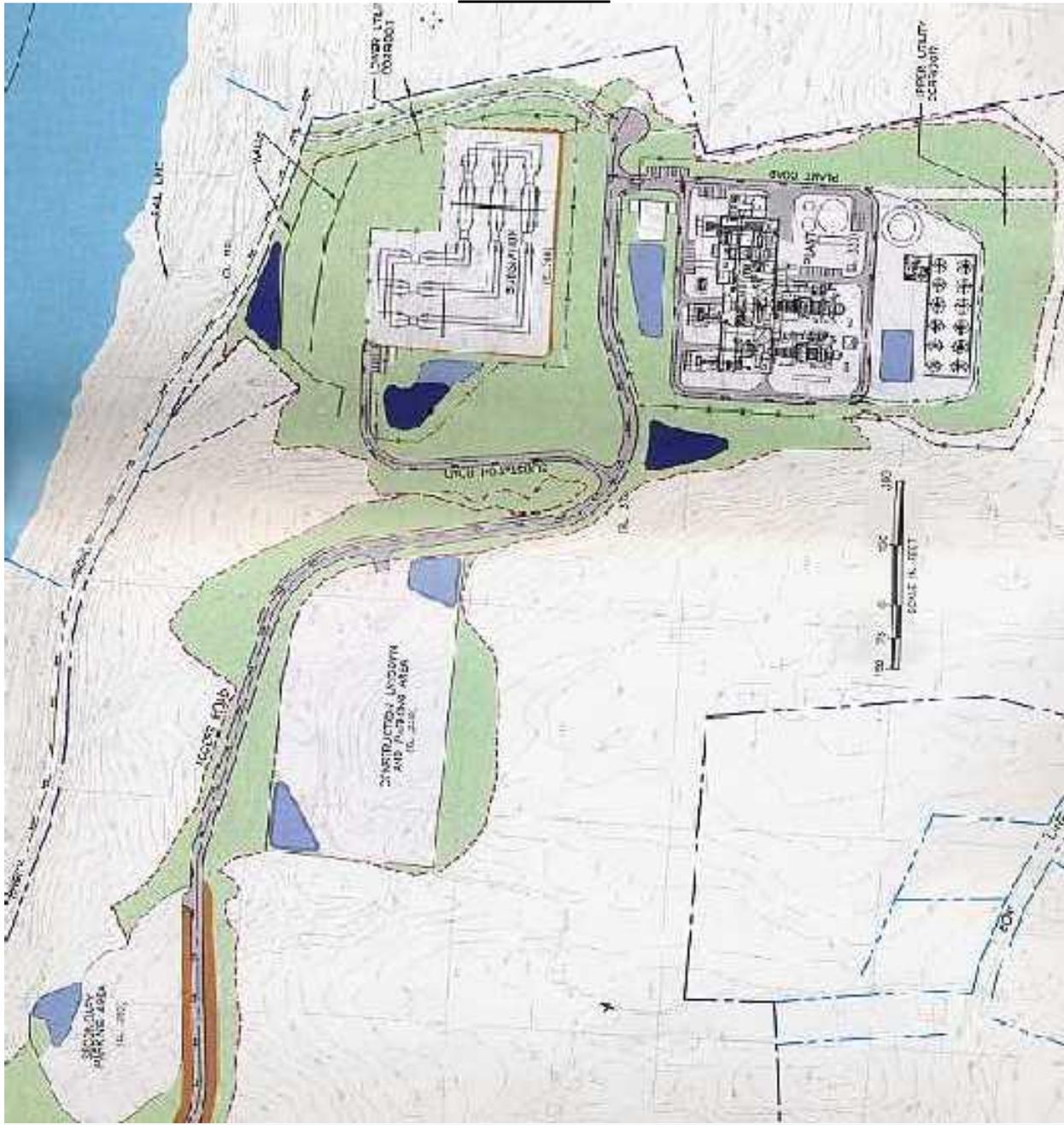
**APPENDIX D**



(KE 1, Volume 2, Drawing C13)

**Wetland Areas on the Proposed Site**

**APPENDIX E**



(KE 1, Vol. I, map C5)

**General Plan of Development of Proposed Site**

DECLARATION OF SERVICE

I, Kenny Sukmann, declare that on Feb. 16, 2010, I served and filed copies of the attached, Letter, Articles Regarding Middleburn Comm. Explosions & Chron. Tendency of Facts. The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at:

[http://www.energy.ca.gov/sitingcases/carlsbad/index.html]. The document has been sent to both the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit, in the following manner:

**(Check all that Apply)**

**For service to all other parties:**

sent electronically to all email addresses on the Proof of Service list;

by personal delivery or by depositing in the United States mail at Sacramento, California with first-class postage thereon fully prepaid and addressed as provided on the Proof of Service list above to those addresses **NOT** marked "email preferred."

**AND**

**For filing with the Energy Commission:**

sending an original paper copy and one electronic copy, mailed and emailed respectively, to the address below (preferred method);

**OR**

depositing in the mail an original and 12 paper copies, as follows:

**CALIFORNIA ENERGY COMMISSION**  
Attn: Docket No. 07-AFC-6  
1516 Ninth Street, MS-4  
Sacramento, CA 95814-5512  
[docket@energy.state.ca.us](mailto:docket@energy.state.ca.us)

I declare under penalty of perjury that the foregoing is true and correct.

Kenny Sukmann



BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT  
COMMISSION OF THE STATE OF CALIFORNIA  
1516 NINTH STREET, SACRAMENTO, CA 95814  
1-800-822-6228 – [WWW.ENERGY.CA.GOV](http://WWW.ENERGY.CA.GOV)

APPLICATION FOR CERTIFICATION  
FOR THE CARLSBAD ENERGY  
CENTER PROJECT

Docket No. 07-AFC-6  
PROOF OF SERVICE  
(Revised 1/27/2010)

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