DOCKET NO. 364 - The Connecticut Light and Power Company application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a new bulk-power 115-kV to 23-kV substation located at 325 Waterford Parkway North, Waterford, Connecticut.	}	Connecticut
	}	Siting
	}	Council
	}	November 20, 2008

Findings of Fact

Introduction

1. The Connecticut Light and Power Company (CL&P), in accordance with provisions of Connecticut General Statutes Sections 16-50g et seq., and Section 16-50j-1 et seq. of the Regulations of Connecticut State Agencies (RCSA), applied to the Connecticut Siting Council (Council) on June 6, 2008 for the construction, operation, and maintenance of a new substation to be located on CL&P's 5-acre property located at Waterford Parkway North, Waterford, Connecticut. (CL&P 1, Vol. I, pp. A-1 and Q-1)

2. The party in this proceeding is the applicant. The intervenor in this proceeding is Ahlam Shalhout and Constance Casey. (Transcript 1 dated September 23, 2008 – 3:05 p.m. [Tr. 1], pp. 1-2)

3. The purpose of the proposed facility is to add distribution capacity to serve the Town of Waterford, as well as portions of adjacent towns. (CL&P 1, Vo1. I, p. A-1)

4. Pursuant to General Statutes § 16-50m, the Council, after giving due notice thereof, held a public hearing on September 23, 2008, beginning at 3:05 p.m. and continuing at 7:00 p.m. at the Waterford Town Hall Auditorium, 15 Rope Ferry Road, Waterford, Connecticut. **(**Council's Hearing Notice dated August 11, 2008; Tr. 1, p. 3; Transcript 2 dated September 23, 2008 – 7:00 p.m. [Tr. 2], p. 3)

5. The Council and its staff made an inspection of the proposed substation site on September 23, 2008, beginning at 2:00 p.m. (Council's Hearing Notice dated August 11, 2008)

6. Pursuant to CGS § 16-50*l* (b), public notice of the application was published in The New London Day on May 22, and 29, 2008. (CL&P 1, Vol. I, p. Q-4)

7. CL&P placed two signs in front of the site: one on Waterford Parkway North and one on Oil Mill Road on September 9, 2008. The signs identified the name of the applicant, the nature of the project, public hearing date and location, the availability of the application and contact information for the Council. (Tr. 1, pp. 18-19)

8. On March 25, 2008, CL&P representatives conducted a door-to-door public outreach program by visiting 15 neighboring homes located on properties along Oil Mill Road (number 71 through 109). The purpose of the program was to inform residents of the upcoming project, its associated permitting process and a preliminary schedule of events. CL&P spoke directly with five neighbors. Information was left for those 10 neighbors not at home that day. (CL&P 1, Vol. I, p. R-1)

9. Pursuant to CGS § 16-50*l* (b), notice of the application was provided to all abutting property owners. Nearby property owners were also notified. Notification was sent by certified mail. (CL&P 1, Vol. I, p. Q-4; Vol. II, Exh. 10)

10. Pursuant to CGS § 16-50*l* (b), CL&P provided notice to all federal, state and local officials and agencies listed therein. (CL&P 1, Vol. I, pp. Q-3 and Q-4; Vol. II, Exh. 8)

11. Pursuant to CGS § 16-50*l* (a) (2), the project is exempt from the Connecticut Energy Advisory Board (CEAB) request for proposal process. As a courtesy, CL&P notified the CEAB of the project on September 5, 2007. (CL&P 1, Vol. I, p. iii; Vol. II, Exh. 8, p. 4)

State Agency Comment

12. Pursuant to CGS § 16-50j (h), on August 11, 2008 and September 24, 2008, the following State agencies were solicited by the Council to submit written comments regarding the proposed facility: Department of Environmental Protection (DEP), Department of Agriculture (DOAG), Department of Public Health (DPH), Council on Environmental Quality (CEQ), Department of Public Utility Control (DPUC), Office of Policy and Management (OPM), Department of Economic and Community Development (DECD), and the Department of Transportation (DOT). (Record)

13. The Council received a response from the DOT's Bureau of Engineering and Highway Operations on September 18, 2008. DOT had no comments. (DOT Comments dated September 18, 2008)

14. The Council received a response from the DPH dated August 26, 2008. DPH had no comments. (DPH Comments date August 26, 2008)

15. The following agencies did not respond with comment on the application: DEP, DOAG, CEQ, DPUC, OPM, and DECD. (Record)

Municipal Consultation

16. CL&P met with First Selectman Daniel M. Steward of Waterford on January 23, 2008 to discuss the project. (CL&P 1, Vol. I, p. O-1)

17. CL&P also contacted First Selectman Paul Formica of East Lyme by telephone to discuss the project on March 31, 2008 because the project is less than 2,500 feet from the East Lyme Town Line. (CL&P 1, Vol. I, p. O-1; Figure A-1)

18. CL&P also sent a technical report regarding the proposed project to First Selectman Steward and First Selectman Formica on April 4, 2008. (CL&P 1, Vol. I, p. O-1)

19. CL&P filed Location Review submissions with the Waterford Conservation Commission (WCC) on February 11, 2008 and the Waterford Planning and Zoning Commission (WPZC) on February 21, 2008. (CL&P 1, Vol. I, p. O-1)

20. CL&P presented project information to the WCC at its meeting on February 14, 2008. (CL&P 1, Vol. I, p. A-4)

21. At this meeting, the Waterford Planning Department issued its comments.

The review comments indicate the following:

a) The site of the substation is located in an area of mapped Agawam sandy loam soil type. This is a well-drained soil formed in glacial outwash. Soil test borings document sandy subsoil conditions with depth to seasonal water in excess of 6 ft. below grade.

b) The vegetation in the proposed substation area is second growth woodland, dominated by red cedar. Understory is relatively open.

c) Activity proposed within 100 ft. of the delineated perennial watercourse includes clearing of vegetation, grading, placement of crushed stone substrate and installation of a biofiltration swale and level spreader outlet.

The plan comments indicate the following:

a) Relocate perimeter hay bale / silt fence barrier closer to limit disturbance to reduce clearing and soil disturbance in vicinity of wetland flag #s 17 and 18.

b) Plan needs to identify limits of clearing and disturbance. These should be located as close as possible to crushed stone pad, providing required maintenance/access area.

c) Add sediment controls in the southwest portion of the site near the intersection of Oil Mill Road.

d) The proposed biofiltration swale is sized to accommodate an estimated 480 cubic ft. of run-off volume. This is less than 0.2 of the water quality volume (WQV) estimated from the substation pad, presuming no infiltration. With an estimated 50% infiltration from the crushed stone, the volume is 2,180 cubic feet. The swale does not provide for capture and treatment of the water quality volume in accordance with the 2004 CT Stormwater manual. Identify what criteria were applied in the design.

e) With the minimal capacity, the anticipated high infiltration rate of the existing subsoil, use of crushed stone for the substation pad, it is not clear the added disturbance for the swale and level spreader in the vicinity of the perennial stream provides greater benefit than the option of leaving the existing soils and vegetation in place.

f) If it is determined that providing some run-off control at the edge of the substation pad is preferable, then consider reducing the length of this swale to reduce the amount of encroachment into the area adjacent to wetland flags 17 and 18. Consider elimination or reduction of swale length. An existing depressional swale occurs along the north edge of Parkway North between the proposed station and the stream. This feature may serve to collect and direct run-off from the site.

g) Provide a construction detail for the level spreader if it remains part of the stormwater control plan.

h) The well-drained nature of the site soils will affect what vegetation can establish in the swale and surrounding areas. Use of drought-tolerant species and seed mixes is recommended. (CL&P 1, Vol. II, Exh. 7)

22. CL&P presented project information to the WPZC at its meeting of February 25, 2008. (CL&P 1, Vol. I, p. A-4)

23. The WPZC made the following findings and determinations relative to the proposed substation location:

a) The proposed location is at the intersection of Waterford Parkway North and Oil Mill Road. It is located adjacent to an existing 115-kV transmission line to which the station will be connected.

b) There were six sites considered as detailed in the technical report entitled "Waterford Planning and Zoning Commission Location Review, Proposed Waterford Substation, Prepared by VHB, Inc., dated February 2008." The Planning and Zoning Commission concurs that the subject site is the best location because of accessibility, location adjacent to I-95 and capacity to accommodate the use and future expansion.

c) The subject site is located in a Rural Residential Zoning District which allows by special permit "Buildings and structures and substations operated by utility companies…," and therefore the proposed use is consistent with the comprehensive plan for the community.

e) The site is also adjacent to the industrial districts which define the "Business Triangle" and are located within the area created by the intersection of I-95, I-395 and CT Route 85. The Commission accepts that there is a need for this substation if the future development of the town is to occur in accordance with the 1998 Plan of Preservation, Conservation and Development.

f) As part of the review and expected future submission of more detailed plans the Commission acknowledges that specific conformance to the Zoning Regulations is not required, but that certain proposed on-site improvements as well as off site impacts be considered:

1. Final plans conform to the State of Connecticut Stormwater manual as well as Erosion Control Guidelines. In addition the recommendations of the Waterford Conservation Commission are addressed as issued.

2. The plan was reviewed with respect to the future widening of I-95 and completion of Route 11. A determination was made that these infrastructure projects will not be impacted by the location of the substation.

3. The site line at the intersection of Oil Mill Road and Waterford Parkway North is proposed to be improved. The fence surrounding the substation is proposed to be installed adjacent to Oil Mill Road. It is requested that the maximum site line be achieved consistent with Federal Highway Administration (FHWA) standards, as measured at the stop sign. Additional clearing and grading proposed that will not assist with sight line improvement at the intersection and could provide some screening of the substation should be retained. (CL&P 1, Vol. II, Exh. 8)

24. By letter dated June 24, 2008, the WCC provided four recommendations for the Development and Management Plan:

a) The perimeter erosion control measures to be installed along the construction site perimeter should be identified.

b) The Erosion and Sedimentation Control narrative must include the permanent treatment and stabilization method for all exposed soils areas.

c) The landscaping plan should identify areas to receive loam, seeding and mulch stabilization.

d) Volume I of the application states that the control enclosure will be serviced by an on-site well and septic system. No information on the location, design, soil suitability and purpose/use of these facilities has been presented in the application. Protection of the water quality of adjacent wetlands and Oil Mill Brook are of concern in the location and design of these facilities. Clarification on this matter has been requested from Northeast Utilities and VHB. (Town of Waterford Comments dated July 8, 2008)

25. CL&P agreed to meet the four recommendations of the WCC listed in Finding of Fact #24. (Tr. 1, pp. 23-24)

26. By letter dated May 1, 2008, the Waterford Economic Development Commission (WEDC) expressed its support for the project. (CL&P 1, Vol. II, Exh. 7)

27. CL&P contacted the Capitol Regional Council of Governments (CRCG) to seek comment. The CRCG had no comments on the project at this time. (CL&P 1, Vol. 2, Exh. 8; Tr. 1, pp. 60-61)

28. By letter, First Selectman Formica indicated that he did not object to the project. However, his concern is that the project appears to be in the path of the Route 11 Interchange slated to be located in Waterford. Notwithstanding, CL&P appears to have considered this in their plans to avoid a conflict with future Route 11 plans. (CL&P 2, Exh. 7)

29. By letter dated June 4, 2008, First Selectman Steward indicated that the site appears to be the logical choice of all the sites considered in the site selection process. He also noted that as a result of meetings with local land use commissions on issues regarding wetlands protection, intersection site lines, and visual impact of the substation. First Selectman Steward noted that the substation would be difficult to screen, especially from Interstate 95. As such, he requests that as much screening as possible be provided so that the visual impact of the facility as viewed from adjacent residential properties and Oil Mill Road is minimized. (CL&P 2, Exh. 7)

30. First Selectman Steward made a limited appearance statement at the hearing indicating that he believes the project fits at the proposed site and the Town of Waterford is pleased to have the additional power source. (Tr. 1, p. 7)

31. State Representative Elizabeth Ritter made a limited appearance statement at the September 23, 2008 hearing indicating that she does not question the need for the facility, but would like assurances that due diligence was applied in the site selection process. She believes that there are environmental issues associated with Site 1, in particular regarding wetlands and estuarial lands. She would also like an equally thorough review of Site 2. She further noted that the area surrounding Site 1 is of rural character and Site 2 should be strongly considered. (Tr. 2, pp. 8-11)

32. State Senator Andrea Stillman made a limited appearance statement at the hearing indicating that she does not dispute the need for the facility, but is concerned about the location in terms of its soil suitability and possible threats to the quality of the adjacent wetlands and the Oil Mill Brook, as well as Latimer's Brooks. She believes Site 2 is a more suitable site, and that CL&P should complete due diligence to consider Site 2. (Tr. 2, pp. 40-42)

Need

33. Currently, the electric load in Waterford is served primarily from two bulk-power substations in other towns: Flanders Substation in East Lyme and Williams Street Substation in New London. These substations date back to 1940s and 1950s. This current configuration is not a viable long-term option for reliably meeting the Town of Waterford's growing electric demands. (CL&P 1, Vol. I, p. G-1; Tr. 1, pp. 34-35)

34. The load center is to the south and east of the proposed site in the Town of Waterford. Projected load growth is due to a mix of residential, commercial and industrial loads. (Tr. 1, pp. 25-27)

35. CL&P met with the Town of Waterford several times to review a list of new businesses coming into the area to help with their load projections. (Tr. 1, pp. 30-31)

36. Listed below is a summary of available capacity and forecasted summer peak loads associated with the area's electric distribution system:

Substation	Permissible Load Rating MVA	2006 Actual	2007* Actual	2008 Proj.	2009 Proj.	2010 Proj.	2011 Proj.	2012 Proj.	2013 Proj.	2014 Proj.	2015 Proj.
Flanders	75	76.3	67.7	78.6	80.9	83.4	85.9	88.5	91.1	93.8	96.7
Williams Street	69	67.4	55.8	69.4	71.5	73.6	75.9	78.1	80.5	82.9	85.4
Total	144	143.7	123.5	148.0	152.4	157.0	161.8	166.6	171.6	176.7	182.1

* 2007 summer peak loads exhibited a decrease from 2006 due to abnormally cool summer weather. As such, the data is considered an anomaly and is not used for future planning purposes. (CL&P 1, Vol. I, p. G-4)

37. The actual peak load for 2008 is not yet available, but CL&P notes that it is lower than expected due to cooler weather. (Tr. 1, p. 24)

38. Since Flanders Substation reached its permissible load rating in 2006, CL&P is developing a Forced Load Transfer (FLT) scheme to handle short-term load increases. This FLT uses one 23-kV feeder to transfer approximately 9 MVA of load off of Flanders Substation to Judd Brook Substation in Colchester and Bokum Substation in Old Saybrook. This increases the permissible load rating of Flanders Substation by 9 MVA and would provide the necessary time window to construct Waterford Substation for operation beginning in 2010. (CL&P 1, Vol. I, pp. G-4 to G-5)

39. Williams Street Substation is projected to exceed its permissible load rating in 2008. However, an FLT scheme cannot be devised to relieve this substation due to the limited capacity of the existing distribution lines. (CL&P 1, Vol. I, p. G-5)

40. Construction of the proposed Waterford Substation would add necessary capacity to the system through the installation of two 60-MVA 115-kV to 23-kV bulk-power transformers. (CL&P 1, Vol. I, p. G-5)

41. This new 23-kV distribution power source would allow 30 MVA of load on the Flanders Substation to be transferred to the new Waterford Substation and would add 87 MVA of new capacity to the distribution system. Also, a new 23-kV feeder would be created from Waterford Substation that would allow 10 MVA of load to be transferred from the Williams Street Substation to the Waterford Substation. (CL&P 1, Vol. I, p. G-5)

42. The proposed substation project received technical approval from ISO-New England on January 11, 2008. (CL&P 1, Vol. I, p. A-4)

System Alternatives

Flanders Substation Upgrades

43. CL&P considered expanding Flanders Substation. However, the addition of a third transformer is not possible due to limited space. There is no room within the existing fenced area to safely install another transformer, and there is no room to expand the fence. There are existing commercial businesses adjacent to the site. CL&P has not attempted to purchase additional land from those businesses. (CL&P 1, Vol. I, p. G-6; Tr. 1, pp. 65-66)

44. CL&P also considered replacing the two existing transformers at Flanders Substation with new, larger transformers. However, this approach would increase net capacity for the electric distribution system much less than building the proposed substation. (CL&P 1, Vol. I, p. G-6)

45. The Niantic River between Flanders Substation and the Town of Waterford creates a bottleneck where three feeders area crossing the river on a series of single poles. These feeders are at their capacity limits under peak load. This configuration is the maximum allowed by CL&P standards. Also, there are no practical alternative routes to cross the river with additional feeders. Underground feeders under the river are possible but would require extensive permitting. (CL&P 1, Vol. I, p. G-6; Tr. 1, pp. 65-67)

46. The First Selectman Formica indicated that he was pleased to hear that Flanders Substation would not be expanded. (Tr. 2, pp. 50-51)

Williams Street Substation Upgrades

47. CL&P considered and rejected the replacement of existing power transformers with larger transformers or a new third transformer at the Williams Street Substation. This substation is outside of the Waterford load pocket; its feeders are at their capacity limits under peak load; and there is no opportunity to install new feeders in the same duct bank system. (CL&P 1, Vol. I, p. G-7)

48. Improvements at Williams Street Substation would be insufficient to address existing and projected load needs in the Town of Waterford. (CL&P 1, Vol. I, p. G-7)

Uncasville Substation Upgrades

49. The option of using Uncasville Substation to relieve load in Waterford is not as reliable as building the proposed project. The 13.2-kV distribution voltage from Uncasville Substation is lower and less efficient than the 23-kV distribution voltage from Flanders Substation. (CL&P 1, Vol. I, p. G-7)

50. Bringing out new feeders from the Uncasville Substation to Waterford would be difficult because the substation is six miles away from the load area; new feeders would have to traverse residential areas; and long feeders could result in low-voltage issues. (CL&P 1, Vol. I, p. G-7)

51. Uncasville Substation is projected to overload in 2013, which makes it a poor candidate to provide near-term load relief to another area. (CL&P 1, Vol. I, p. G-7)

Energy Efficiency

52. In 2005, 2006, and 2007, CL&P estimates that through participation in the Connecticut Energy Efficiency Fund (CEEF) programs, customers in the Towns of East Lyme, New London, and Waterford achieved summer peak-demand savings of approximately 2.6 MW. (CL&P 1, Vol. I, pp.G-5 and I-10)

53. Energy efficiency improvements are not projected to be sufficient to eliminate the need for the proposed facility. (CL&P 1, Vol. I, pp. I-9 and I-10)

Distributed Generation

54. The Department of Public Utility Control (DPUC) has approved 180 applications for grants for distributed generation in CL&P's territory. In the Waterford area, three distributed generation projects (3,075 kW) have received approvals. To date, two distributed generation projects (575 kW) have been completed. (CL&P 1, Vol. I, p. I-11)

55. CL&P does not expect a significant level of future distributed generation projects in the Waterford area. (CL&P 8, p. 14; Tr. 1, p. 32)

56. Projected increases in distributed generation would not eliminate the need for the proposed facility. (CL&P 1, Vol. I, pp. I-9 and I-11)

Demand Response and Emergency Generation

57. The Demand Response Program provides incentives to high-volume power users, such as manufacturing plants and office complexes, to reduce their electrical load during periods of high demand. (CL&P 1, Vol. I, pp. I-11 to I-12)

58. The Demand Response Program also includes emergency generation of a specific type that operates only when called upon by ISO-New England during Operating Procedure 4: this procedure happens rarely, affecting a limited number of hours per year. (CL&P 1, Vol. I, p. I-11)

59. Three projects (2,125 kW) approved in the Waterford area are emergency generation. To date, two projects (875 kW) have been completed. CL&P does not expect a significant level of future emergency generation projects in the Waterford area. (CL&P 1, Vol. I, p. I-11; CL&P 8, p. 14; Tr. 1, p. 32)

60. Overall, CL&P's Demand Response Program totals 2,350 kW in 2007. (CL&P 1, Vol. I, p. I-12)

61. CL&P does not have any residential demand response programs in the Waterford area. (Tr. 1, p. 32-33)

Site Alternatives

62. CL&P reviewed and evaluated a total of six sites: the proposed substation site at 325 Waterford Parkway North (Site 1); the site at 994 Hartford Turnpike a/k/a Route 85 (Site 2); the site southeast of 969 Hartford Turnpike (Site 3); the site north of 813 Vauxhall Street (Site 4); the site northwest of 130 Old Colchester Road (Site 5); and the site north of Bloomingdale Road (Site 6). (CL&P 1, Vol. I, p. I-13)

63. CL&P used the following criteria to judge a particular location's viability: proximity to distribution load area and existing feeders; proximity to existing transmission circuits; ease of access; earthwork requirements; sufficient size and shape; zoning and adjacent land-use constraints; environmental considerations (e.g. wildlife and habitat, wetlands, watercourses, and floodplains); and proximity to public water-supply watershed and/or acquifer areas. (CL&P 1, Vol. I, pp. I-2)

64. CL&P determined that the proposed site would provide the most cost-effective connections to the existing 23-kV distribution feeders in the area. A substation at the proposed site could also be easily connected to an existing 115-kV transmission circuit. The property is of sufficient size to install the proposed facility without impacting the wetland system in the east-central portion of the property. The property is owned by CL&P. (CL&P 1, Vol. I, pp. A-1 and I-4)

65. CL&P determined that Site 2 would be unsuitable because extensive distribution line work would be required in the area due to limited connection possibilities to existing 23-kV feeders. Furthermore, connections to a nearby existing 115-kV circuit, would require a new right-of-way, and would most likely have wetland impacts. CL&P does not own this property. (CL&P 1, Vol. I, p. I-4 and I-5; Tr. 1, pp. 101-102)

66. CL&P determined that Site 3 would be unsuitable because extensive distribution line work would be required in the area due to limited connection possibilities to existing 23-kV feeders. The site is set back 400 feet from Route 85, which would necessitate long distribution feeder exits. Since the site is on a steep terrain, major excavation would likely be required to facilitate development. The steep terrain would make access to the site difficult. (CL&P 1, Vol. I, pp. I-5 and I-6)

67. CL&P determined that Site 4 would be unsuitable because the site is farther away from the existing load center and offers poor connection possibilities to existing 23-kV feeders, resulting in the need for extensive distribution line work. The site is located proximate to surrounding residences with minimal buffer areas. Major vegetation clearing would be required within close proximity to nearby residences. (CL&P 1, Vol. I, pp. I-6 and I-7)

68. CL&P determined that Site 5 would be unsuitable because the site is located in the northern portion of the load area and offers poor connection possibilities to existing 23-kV feeders. Extensive distribution line work would be required. Also, significant vegetation clearing would be required within close proximity to residences. (CL&P 1, Vol. I, p. I-7)

69. CL&P determined that Site 6 would be unsuitable because the site offers poor connection possibilities to existing 23-kV feeders and extensive distribution line work would be required. Also, significant vegetation clearing would be required within close proximity to residences. (CL&P 1, Vol. I, p. I-7)

Site 2: 994 Route 85

70. Site 2, located on the west side of Route 85, is the alternative of most interest to intervenors and public officials speaking on this matter. (Tr. 1, p. 38)

71. The site is zoned General Industrial. (Tr. 1, p. 40)

72. Site 2 is 10.5 acres and is large enough to accommodate a substation. (CL&P 1, Vol. I, p. I-5)

73. The ground elevation is 128 feet above sea level at this site. (Tr. 1, p. 42)

74. There are six homes within 1,000 feet of the site. (Tr. 1, pp. 36-37)

75. Site 2 has a grade of approximately 40 percent. (Tr. 1, p. 37)

76. The only viable access is existing dirt access that runs directly between two homes. It is the only viable access. (Tr. 1, p. 39).

77. Site 2 has a pond and associated wetlands both in the eastern and southern portion of the site taking up the majority of the level portion of the site. (Tr. 1, p. 38)

78. CL&P is restricted to central eastern portion of the site between wetlands and the pond, situating the substation closer to homes. (Tr. 1, p. 39)

79. Significant vegetation would have to be removed to accommodate a substation, some of which would be in wetlands. (Tr. 1, p. 40)

80. No state or federally endangered, threatened, or special concern species have been identified at this site based on a review of the DEP's Natural Diversity Database. (CL&P 1, Vol. I, p. I-5)

81. Site 2 is not located within a DEP-mapped Acquifer Protection Area. (CL&P 1, Vol. I, p. I-5)

82. The existing transmission corridor is nearly 500 feet to the south of Site 2. It crosses another property and an additional right-of-way would need to be purchased. (Tr. 1, pp. 39-40)

83. At least six new pole structures 85 feet tall would be required for a substation at this site. (Tr. 1, pp. 41-42)

84. The incremental cost of Site 2 versus Site 1 is approximately $9.5 million, due to additional transmission, distribution, right-of-way, land clearing, and land purchase costs. (Tr. 2, p. 48)

Description of Proposed Project

85. The proposed substation would be located in the western portion of a 5-acre CL&P-owned undeveloped property located immediately northeast of the intersection of Oil Mill Road and Waterford Parkway North. The parcel would accommodate the construction and operation of the substation without the need to purchase any additional real estate. (CL&P 1, Vol. I, pp. A-1 and F-1)

86. To the north of the proposed site is a residential property with a tree farm. South of the proposed site is Waterford Parkway North and an exit ramp off of Interstate 95 South. To the west is Oil Mill Road and a wooded property with Oil Mill Brook running through it. To the east is undeveloped wooded property. (CL&P 1, Vol. I, Figure A-2 and H-1)

87. The site is zoned Rural Residential District (RU-120). (CL&P 1, Vol. I, p. H-1)

88. The Town of Waterford Zoning Regulations allow substations within the RU-120 zone subject to a Special Permit. (CL&P 1b, Section 6.2.2)

89. The site is approximately 50 feet above mean sea level. (Tr. 1, p. 42)

90. The substation would be surrounded by a chain link fence seven feet high with one foot of barbed wire (three strands) on top. (CL&P 1, Vol. I, p. F-1)

91. Within its fence line, the proposed substation would have dimensions of approximately 200 feet by 245 feet and would be covered with traprock. (CL&P 1, Vol. I, p. F-1)

92. Access to the site would be via a new gravel driveway, directly from Waterford Parkway North. (CL&P 1, Vol. I, p. F-1)

93. The proposed substation would be supplied from one of the existing 115-kV-overhead transmission line circuits (#1605 line). Two additional 85-foot single-circuit steel poles will be installed in order to provide a means for the #1605 transmission circuit to be connected to the proposed substation. (CL&P 1, Vol. 1, pp. F-1 through F-3; CL&P 2, response 4)

94. Upon connection, the #1605 line to the west of the substation would be re-numbered #1617. The #1605 line to the east of the substation would retain the same circuit number. (CL&P 1, Vol. I, pp. F-1 to F-3)

95. Development of the proposed substation would include the installation of two new line-terminal structures within the substation compound, each of which would also support a line-disconnect switch. The substation would also be outfitted with one circuit breaker with associated disconnect switches, two transmission line circuit switchers, two 60-MVA power transformers to step down the voltage from 115-kV to 23-kV, four transformer disconnect switches and three transformer circuit switchers. (CL&P 1, Vol. 1, p. F-3)

96. The line-terminal structures would be the tallest structures inside the fenced substation. These are 53-foot 9-inches tall with a 10-foot lightning mast on top of each. (CL&P 1, Vol. 2, Exh. 1, Reference Drawing 25216-92001; CL&P 2, response 5)

97. A transformer disconnect switch and circuit switcher will be in the supply path to each of the two 60-MVA power transformers. The third transformer disconnect would provide for a future 60-MVA power transformer, if needed. However, CL&P has no plans to add a third transformer at this time. (CL&P 1, Vol. 1, p. F-3; Tr. 1, p. 43)

98. The additional transformer disconnect switch and circuit switcher could be used for a mobile transformer connection, when necessary to perform maintenance or to replace a failed transformer. (CL&P 1, Vol. 1, p. F-3)

99. Two metal-clad switchgear enclosures, approximately 27 feet long, 14 feet wide and 14 feet high, would be constructed to provide switching equipment for seven 23-kV distribution feeders. A 48-foot long by 14-foot wide by 14-foot high protective relay and control equipment enclosure and a 24-foot long by 14-foot wide by 14-foot high battery enclosure would be installed in the southwest corner of the substation. (CL&P 1, Vol. I, pp. F-4)

100. Cables for each distribution feeder would exit the substation via underground conduits, and rise above ground on wood poles. A total of four distribution feeders would exit the substation. (CL&P 1, Vol. I, p. F-4)

101. CL&P would have two risers come up on Waterford Parkway North directly outside the substation fence. The feeders would cross Waterford Parkway North and head eastward. Two substation ducts would follow Oil Mill Road underground and the risers would come up on the other side of Interstate 95. (Tr. 1, p. 20)

102. The underground work on Oil Mill Road would require two to three weeks in order to perform trenching. Given the narrow width of Oil Mill Road, CL&P will meet with local officials regarding the management of potential traffic problems during construction. (Tr. 1, pp. 89-90)

103. No emergency generator would be needed for backup power. (CL&P 2, response 6)

104. Development of the proposed substation requires protective relay system changes within the control enclosures at three other existing bulk substations: Montville, Williams Street, and Flanders. (CL&P 1, Vol. I, p. F-1; CL&P 2, response 1)

105. Specifically, CL&P would replace one of two existing transmission line lightning shield wires from Flanders Substation to Montville Substation with a new optical ground wire. CL&P would also upgrade the primary and back-up protective line relaying equipment for the #1500 and #1605 circuits located inside the control houses at Flanders Substation, Montville Substation, and Williams Substation. One existing line trap on the #1605 circuit at Flanders Substation would be removed, and one existing line trap at Montville Substation would be replaced. (CL&P 2, response 1)

106. These upgrades at existing substations would not substantially change the general physical characteristics of these substations. (CL&P 2, response 1)

107. The nominal service life of the substation equipment would be 40 years. (CL&P 1, Vol. I, p. F-6)

108. The construction phase of the project would be expected to occur over a period of 12 to 15 months. (CL&P 1, Vol. I, p. L-3)

109. The tentative in-service date would be June 2010. (CL&P 1, Vol. I, p. L-3)

110. The estimated costs for the siting, design, and construction of the proposed substation and supporting infrastructure totals $13,200,000 (not including distribution feeders). Distribution feeders would add approximately $4,000,000 to $4,500,000 to the project cost. (CL&P 1, Vol. I, p. F-3; Tr. 1, pp. 19-20; Tr. 2, p. 48)

Environmental Considerations

111. Based on a review of the DEP's Natural Diversity Database, no state or federally endangered, threatened, or state special concern species have been identified on the property. (CL&P 1, Vol. I, p. K-5; CL&P 1, Vol. II, Exh. 5)

112. Phase I and Phase IB cultural resources surveys were conducted at the proposed substation site. These surveys were filed with the State Historic Preservation Office. (CL&P 1, Vol. I, p. K-6)

113. Sub-surface testing did not result any evidence to suggest that the proposed site is a former burial ground. (Tr. 2, p. 46)

114. The proposed facility would have no effect upon historic, architectural, or archaeological resources listed on or eligible for the National Register of Historic Places or upon properties of traditional importance to Connecticut's Native American community. The State Historic Preservation Officer concluded that no further archaeological investigations appear warranted. (CL&P 1, Vol. II, Exh. 6)

115. Development of the site would require approximately 2,769 cubic yards of cut, and 552 cubic yards of fill. This results in a net cut of 2,217 cubic yards. (CL&P 2, response 12)

116. A riverine upper perennial wetland system transects the site from northeast to southwest. This system consists of a perennial stream that flows through the site within a well-defined, possibly excavated, channel. At its southern extent the channel becomes less defined and bordering wetlands exist. The stream exits the property beneath Waterford Parkway North via culvert. (CL&P 1, Vol. I, p. H-5)

117. Dominant vegetation within this system includes white ash, red maple, sweet pepperbush, spicebush, winterberry, and New York fern. (CL&P 1, Vol. I, p. H-5)

118. Construction of the proposed substation would not result in any effects on wetlands or watercourses. (CL&P 1, Vol. I, p. K-4)

119. Limited work is anticipated within the 100-foot upland review area of the perennial watercourse and its bordering wetlands located on the subject property. Approximately 1,241 square feet of the fenced substation's area would be in the upland review area. (CL&P 1, Vol. I, p. K-4)

120. Prior to the commencement of construction, CL&P would install erosion and sedimentation controls at the limits of work in accordance with the Development and Management Plan (D&M Plan) and the 2002 Connecticut Guidelines for Soil Erosion and Sedimentation Control. (CL&P 1, Vol. I, p. L-1)

121. During construction of the substation, the driveway would be stabilized with stone, and anti-tracking mats would be installed to prevent the tracking of soil onto local streets. During construction of the transmission interconnection, the existing access to the ROW off Oil Mill Road may also be used. (CL&P 1, Vol. I, p. K-4)

122. Upon completion of construction activities, all disturbed/exposed areas would be stabilized and revegetated. These areas would be dressed with topsoil and seeded with a New England conservation/wildlife mix, to establish a cover of native grasses, forbs, wildflowers and legumes that would provide both soil stability and wildlife habitat value. Erosion controls would remain in place until site stabilization is achieved. (CL&P 1, Vol. 1, p. L-2)

123. After construction is completed, approximately three to four vehicular trips per month to the substation would be anticipated for maintenance and inspection activities. (CL&P 1, Vol. I, p. K-4)

124. Approximately 225 trees with a diameter at breast height of six-inches or greater would be removed for the proposed substation and access drive. (CL&P 2, response 11)

125. The nearest hiking trails are approximately five miles from the proposed substation site. (CL&P 2, response 8)

126. There are no state or locally designated scenic roads in the Town of Waterford. (CL&P 1, Vol. I, p. H-7)

127. There are no recreational areas within 1 mile of the property. (CL&P 1, Vol. I, p. H-9)

128. The southeast corner of the substation would encroach approximately 5 feet into Flood Area Zone X, but no substation equipment would be located in this area. Zone X includes areas of the 500-year flood zone and certain areas of the 100-year flood zone. (CL&P 1, Vol. I, pp. K-8 and H-9; CL&P 2, response 7)

129. Runoff from the substation would be minimal. (Tr. 1, p. 44)

130. There are no public water supply wells within a 2-mile radius of the proposed site. The subject property is not located within an Acquifer Protection Area. (CL&P 1, Vol. I, p. H-7)

131. A well and septic system would be installed at the proposed site to serve the Control Enclosure and would be located outside of the 100-foot upland review area. (CL&P 1, Vol. I, p. F-4; CL&P 1, Vol. II, p. Exh. 1)

132. Outdoor lighting would be provided in the proposed substation for general illumination during periods of occupancy at night or during inclement weather. Lighting would be manually controlled and generally directed downward. Lighting would be off except for nighttime inspections and response to emergencies; temporary lighting could be used where necessary to illuminate specific task areas. (CL&P 1, Vol. 1, p. J-2; Tr. 2, pp. 52-53)

133. The power transformers within the proposed substation would contain insulating fluid. Each transformer would be surrounded by its own secondary containment, consisting of the Imbiber Beads Drain Protection System ® for the sump, designed to hold 110 percent of a transformer's fluid capacity. (CL&P 1, Vol. I, p. L-3; CL&P 1, Vol. 2, Exh. 1, Drawing C-6; Tr. 1, p. 19)

134. The noise levels generated by the proposed substation are projected to be below the limits specified in DEP regulations due to the elevated ambient background sound pressure levels. (CL&P 1, Vol. I, p. K-7)

135. The increase in sound pressure levels at the property line due to the substation would be negligible: on the order of 0 dBA to 0.2 dBA. (CL&P 1, Vol. I, p. K-7)

136. Impulse noise, though infrequent, would be generated from switching and circuit breaker opening and closing. The impulse noise levels are not expected to exceed the levels permitted at the property line by CTDEP's noise control regulations. (CL&P 1, Vol. I, p. K-7)

Visibility

137. There are two residences within 1,000 feet of the proposed substation. (CL&P 2, response 9)

138. The nearest residence is 619 feet northeast of the proposed substation and is located at 71 Oil Mill Road. (CL&P 2, response 9)

139. No residences are expected to have a year-round view of the substation. (CL&P 2, response 10)

140. Limited seasonal views are possible from portions of the property at 71 Oil Mill Road. (CL&P 2, response 10)

141. The property at 71 Oil Mill Road contains an evergreen tree farm that offers a visual buffer from the substation. However, construction activities could result in the removal of some of the deciduous trees along CL&P's northern property boundary. Upon completion of construction, CL&P would evaluate whether additional evergreen species would need to be planted along this boundary to enhance the buffer. (CL&P 2, response 10)

142. Homes farther to the north have substantial trees, such as at 74 Oil Mill Road, and/or intervening structures (e.g. homes, barns, outbuildings) that serve to block views in the direction of the substation. (CL&P 2, response 10)

143. Intervenors Ahlam Shalhout's and Constance Casey's homes are located approximately 1,800 feet and 1,200 feet, respectively, from the proposed substation property line. (Tr. 1, pp. 20-23)

144. No direct views of the substation are expected from Ahlam Shalhout's home. No views of the substation are expected from Constance Casey's home. (Tr. 1, pp. 22-23)

145. After construction, additional areas surrounding the substation would be landscaped with evergreen trees to assist in screening the facility along the roads. (CL&P 2, response 10)

146. No residences are located to the east or west of the site. Residences to the south are over 1,000 feet away, beyond Interstate 95, and substantial tree cover exists between the highway and these homes. (CL&P 2, response 10)

147. CL&P may be able to shift the substation 10 or 15 feet east and remove the southeast corner to permit additional landscaping for screening, but CL&P is concerned about encroachment onto the upland review area. CL&P is also concerned about having a sufficient turning radius in the event that a mobile transformer has to be brought to the substation. CL&P would address these issues could be addressed in the D&M Plan. (Tr. 1, pp. 78-81)

Magnetic Fields

148. At or beyond the boundaries of the subject property, the main source of magnetic fields (MF) is CL&P's existing 115-kV (double circuit: #1500 and #1605) transmission line. (CL&P 1, Vol. I, p. M-2)

149. Other nearby sources of MFs include: a three-phase 23-kV distribution line on the south side of Waterford Parkway North and a single-phase branch of this 23-kV distribution line criss-crossing Oil Mill Road to the west of the site. These existing distribution lines are nearest to the south and west property lines. (CL&P 1, Vol. I, p. M-2)

150. CL&P also took measurements of existing MFs along the north and west property lines on April 9, 2008. The highest MF levels recorded were 10.7 mG beneath the transmission line on the right-of-way, and 4.7 mG at the south edge of the right-of-way. These measurements were taken as an example and do not reflect peak load periods. (CL&P 8, p. 20)

151. The highest levels of MFs along the boundaries of the subject property would be found in the northwest corner where a property line passes under the existing transmission lines. (CL&P 1, Vol. I, p. M-1)

152. MFs produced by the substation equipment inside the fence would decrease rapidly with distance, reaching very low levels at relatively short distances beyond the fenced-in equipment. (CL&P 1, Vol. I, p. M-1)

153. Substation-caused magnetic fields off the property of a substation commonly range from less than 1 mG up to 4 mG, the same range as the background MF levels found in homes. (CL&P 1, Vol. I, pp. M-1 to M-2)

154. Calculations of pre-project and post-project, ground-level MFs produced by the existing transmission circuits were made along the north and west property lines in the vicinity of the proposed substation. (CL&P 1, Vol. I, pp. M-3 to M-7)

155. Assuming ISO-NE's 2015 90/10 forecast peak loads in its calculations, CL&P found the highest MFs along the western property line without the proposed new substation would be 4.49 mG for peak-day average load conditions and 6.9 mG under peak load conditions. (CL&P 8, R. Gagnon, p. 20)

156. The MFs along the western property line are expected to decrease with the proposed substation in service. Calculated MFs are projected to be 1.59 mG under peak-day average load conditions and 3.77 mG under peak load conditions. (CL&P 8, R. Gagnon, p. 20)

157. Assuming ISO-NE's 2015 90/10 forecast peak loads in its calculations, CL&P found the highest MFs along the northern property line without the proposed new substation would be 4.49 mG for peak-day average load conditions and 6.75 mG under peak load conditions. (CL&P 8, R. Gagnon, p. 20)

158. The MFs along the northern property line are expected to increase with the proposed substation in service. Calculated MFs are projected to be 10.27 mG under peak-day average load conditions and 15.77 mG under peak load conditions. (CL&P 8, R. Gagnon, p. 21)

159. CL&P will incorporate MF best management practices consistent with the Council's December 14, 2007 *Electric and Magnetic Field Best Management Practices for the Construction of Electric Transmission Lines*. (CL&P 8, R. Gagnon, p. 22)

160. The #1605 and #1500 transmission circuits currently have like phasing. The #1500 circuit would be reverse-phased as a MF reduction measure. (CL&P 8, R. Gagnon, p. 21)

161. The proposed substation would have no effect on existing MF at the residence nearest to the substation (71 Oil Mill Road), which is located 619 feet northeast of the center of the proposed substation footprint. (CL&P 2, response 13)

162. The residence at 71 Oil Mill Road is also the closest home to the transmission line, at 225 feet away. Reverse phasing of the transmission line would reduce existing MFs at this home. Upon activation of the substation with the revised transmission phasing, the calculated MFs at this home at peak load would decrease from 0.96 mG to 0.14 mG. (Tr. 1, pp. 48-49)

Safety and Reliability

163. The substation would be constructed in full compliance with the standards of the National Electrical Safety Code, the DPUC, and good utility practice. (CL&P 1, Vol. I, p. J-1)

164. In the event that an energized line or substation equipment fails, protective relaying equipment would immediately remove the equipment from service, thereby protecting the public and the remaining equipment at the substation. (CL&P 1, Vol. I, p. J-1)

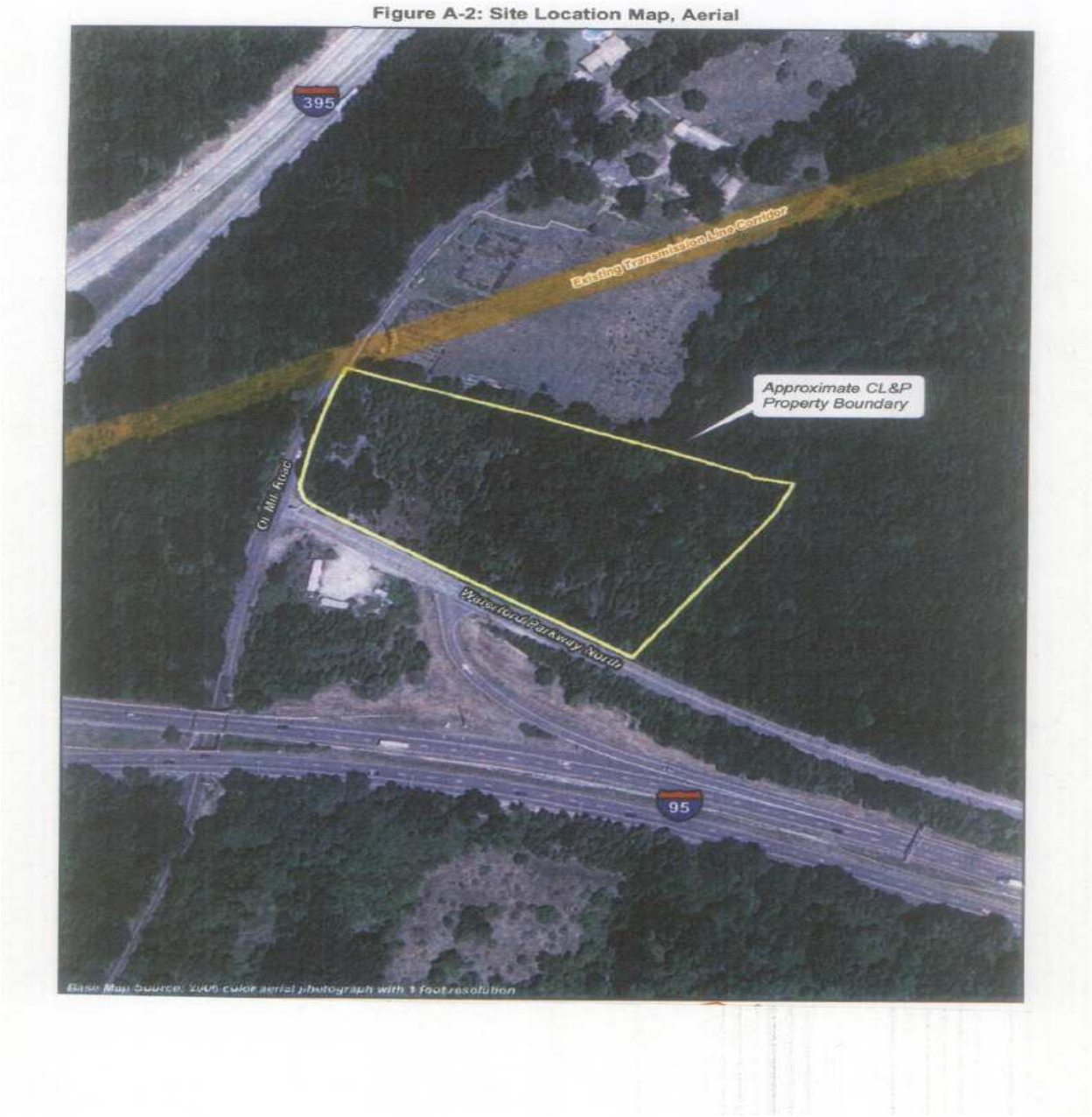
165. The proposed substation would be equipped with measures to ensure continued service in the event of outages or faults on transmission or substation equipment. Continued reliability would be achieved by incorporating a "loop through" design configuration for the existing 115-kV overhead transmission line, transformer protection, and redundant automatic protective relaying equipment. (CL&P 1, Vol. I, p. J-1)

166. The "loop through" design would allow the substation to operate on either the #1605 circuit or the #1617 circuit should one of those circuits be out of service. There would be no connection to the #1500 circuit because that would not be necessary for reliability. (CL&P 2, responses 2 and 3)

167. The substation would be remotely controlled and monitored by the Connecticut Valley Electric Exchange (CONVEX) System Operator via a Supervisory Control and Data Acquisition System. (CL&P 1, Vol. I, p. J-1)

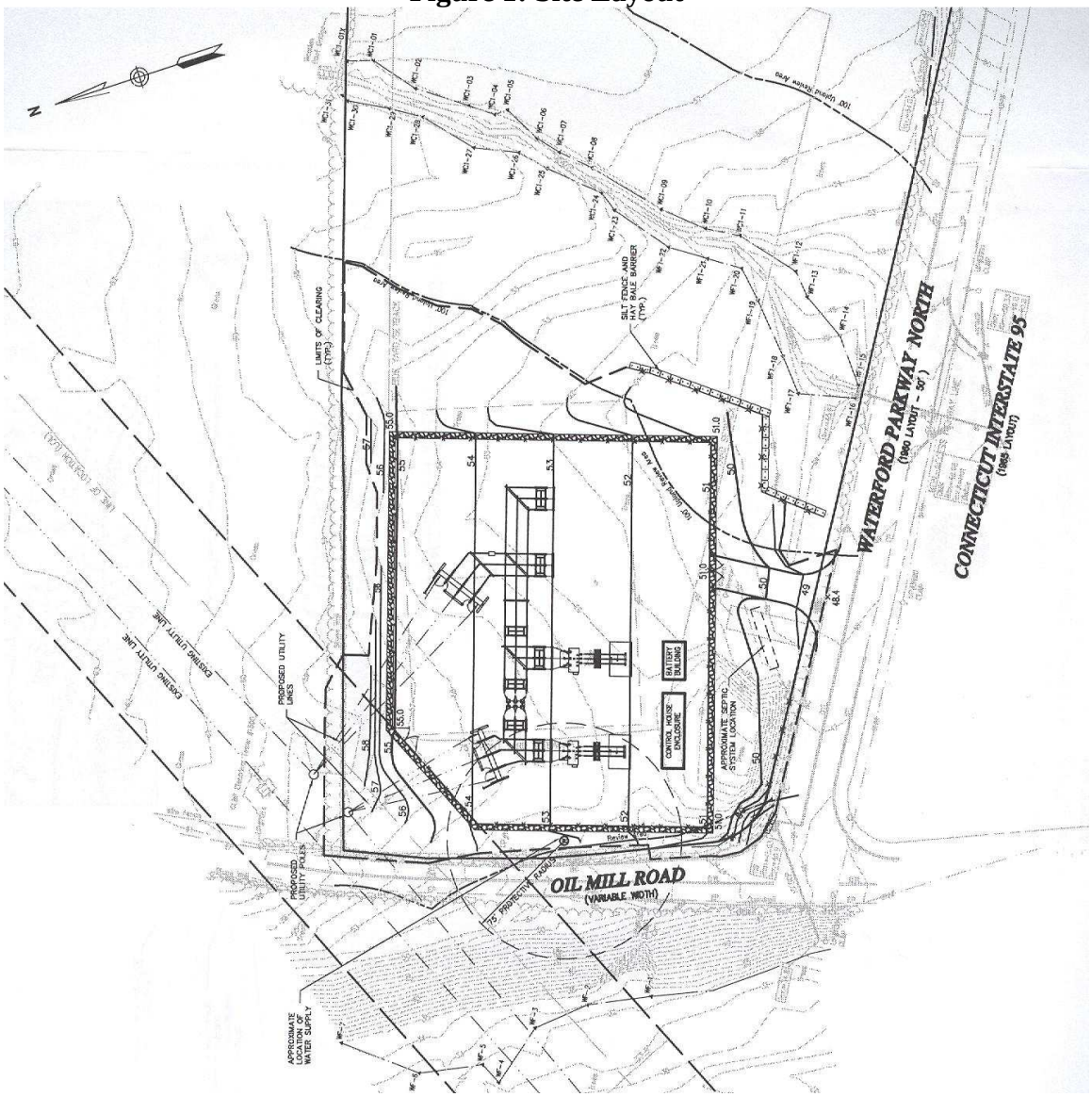
168. The control enclosure would be equipped with fire extinguishers and smoke detectors. Detection of smoke would automatically activate an alarm at CONVEX and the system operators would then take appropriate action. (CL&P 1, Vol. I, p. J-2)

Map 1
Location Map



(CL&P 1, Vol. 1, p. A-3)

Figure 1: Site Layout



(CL&P 1, Vol. 2, Exh. 1, Drawing C-3)