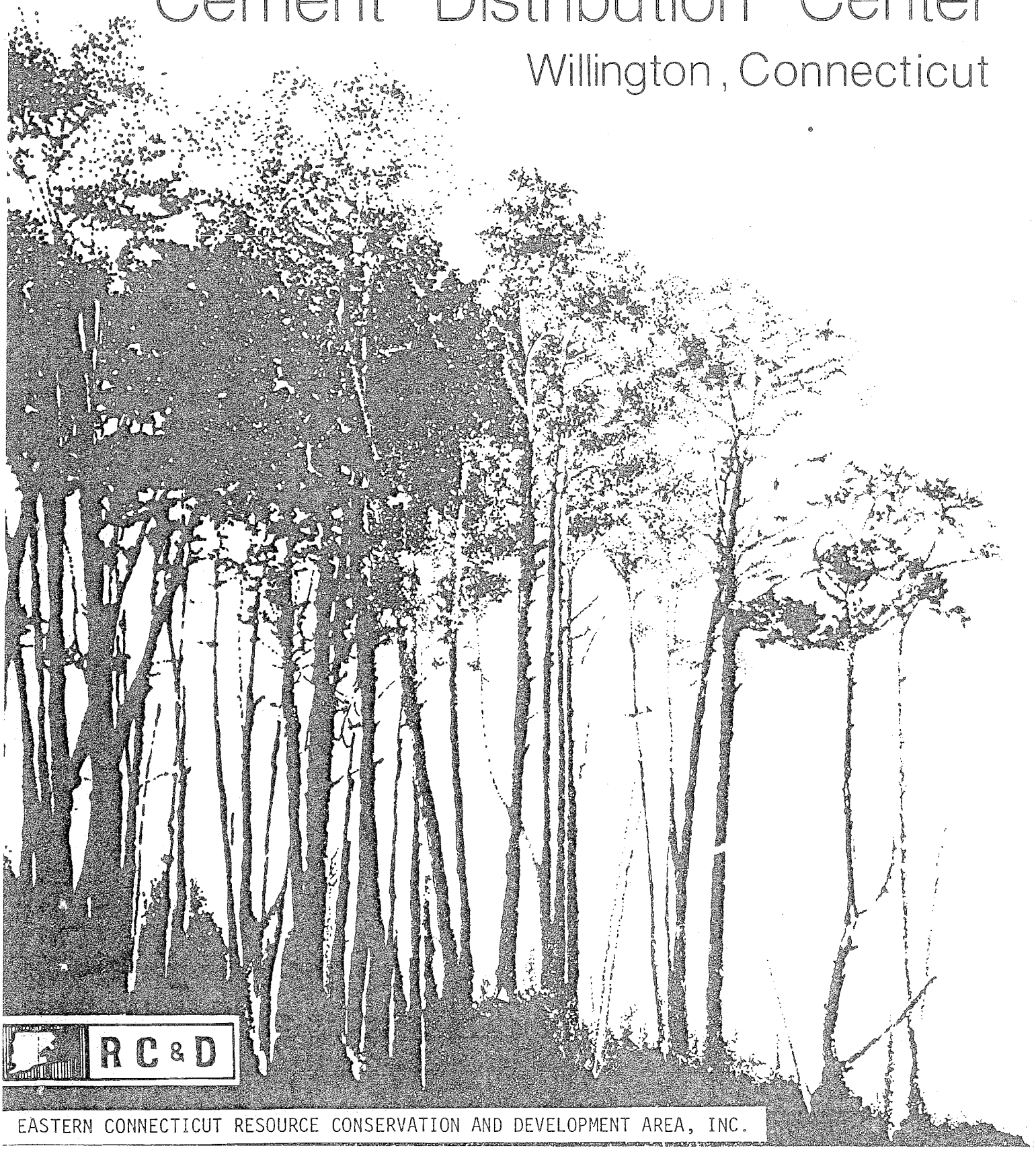
Environmental Review Team Report

Cement Distribution Center

Willington, Connecticut



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EASTERN CONNECTICUT RESOURCE CONSERVATION AND DEVELOPMENT AREA, INC.

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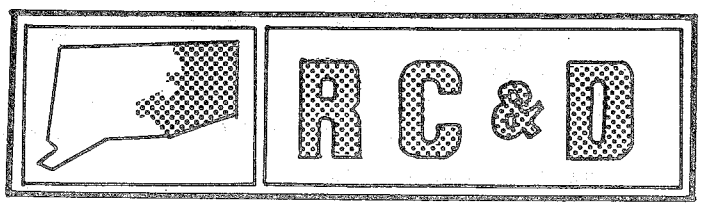
Cement Distribution Center

Willington, Connecticut

February 1981

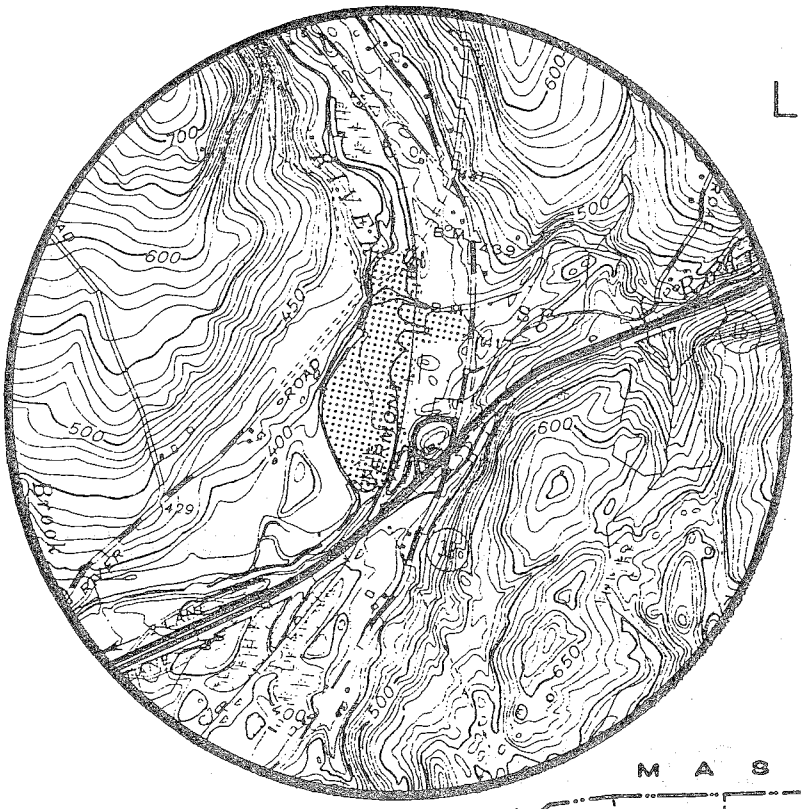


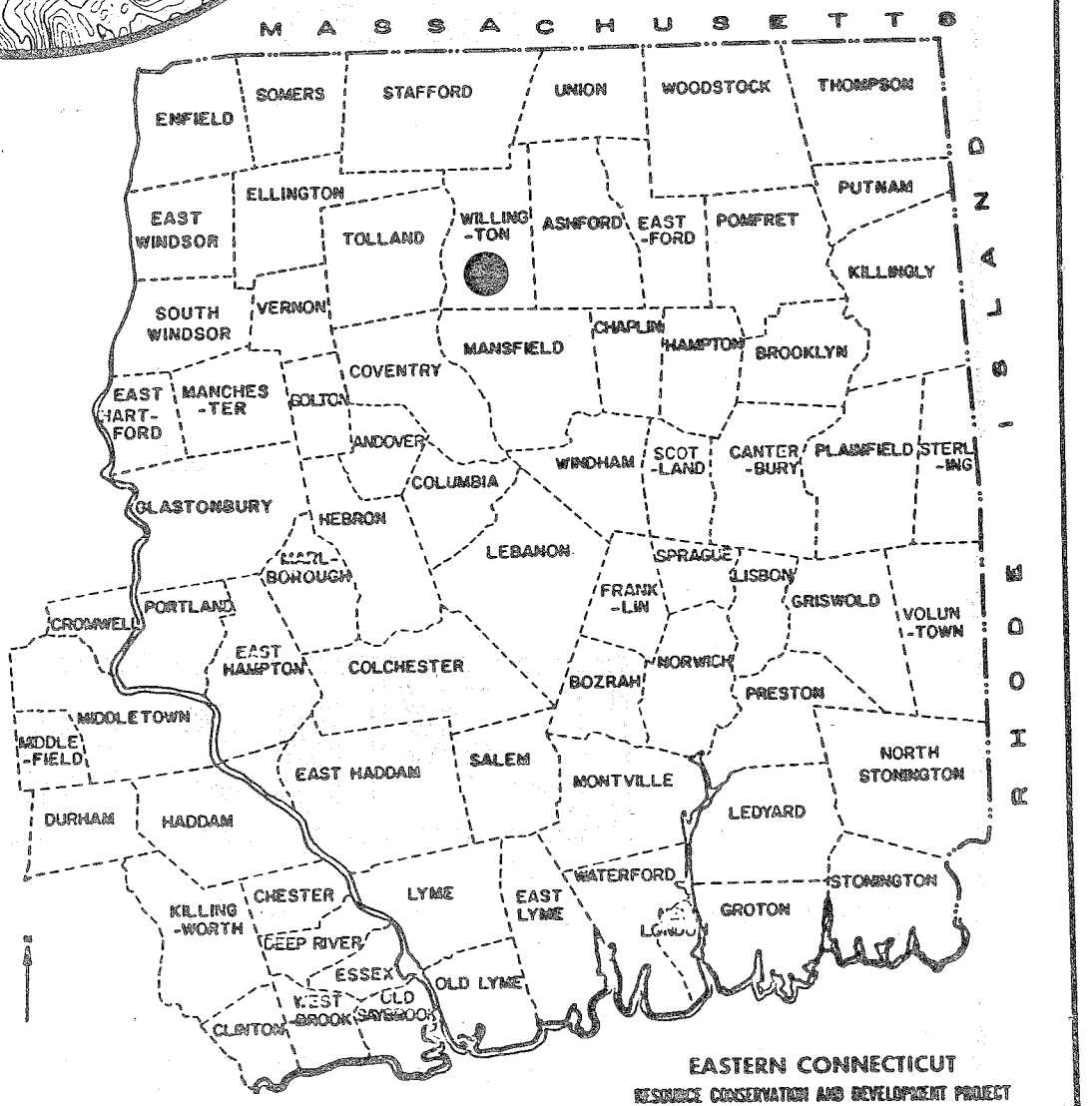
eastern connecticut resource conservation & development area

environmental review team
139 boswell avenue
norwich, connecticut 06360

Location of Study Site

CEMENT DISTRIBUTION CENTER
WILLINGTON, CONNECTICUT





ENVIRONMENTAL REVIEW TEAM REPORT
ON
CEMENT DISTRIBUTION CENTER
WILLINGTON, CONNECTICUT

This report is an outgrowth of a request from the Willington Planning and Zoning Commission to the Tolland County Soil and Water Conservation District (S&WCD). The S&WCD referred this request to the Eastern Connecticut Resource Conservation and Development (RC&D) Area Executive Committee for their consideration and approval. The request was approved, and the measure was reviewed by the Eastern Connecticut Environmental Review Team (ERT).

The soils of the site were mapped by a soil scientist from the United States Department of Agriculture, Soil Conservation Service (SCS). Reproductions of the soil survey map, a table of soils limitations for certain land uses and a topographic map showing property boundaries were distributed to all Team members prior to their review of the site.

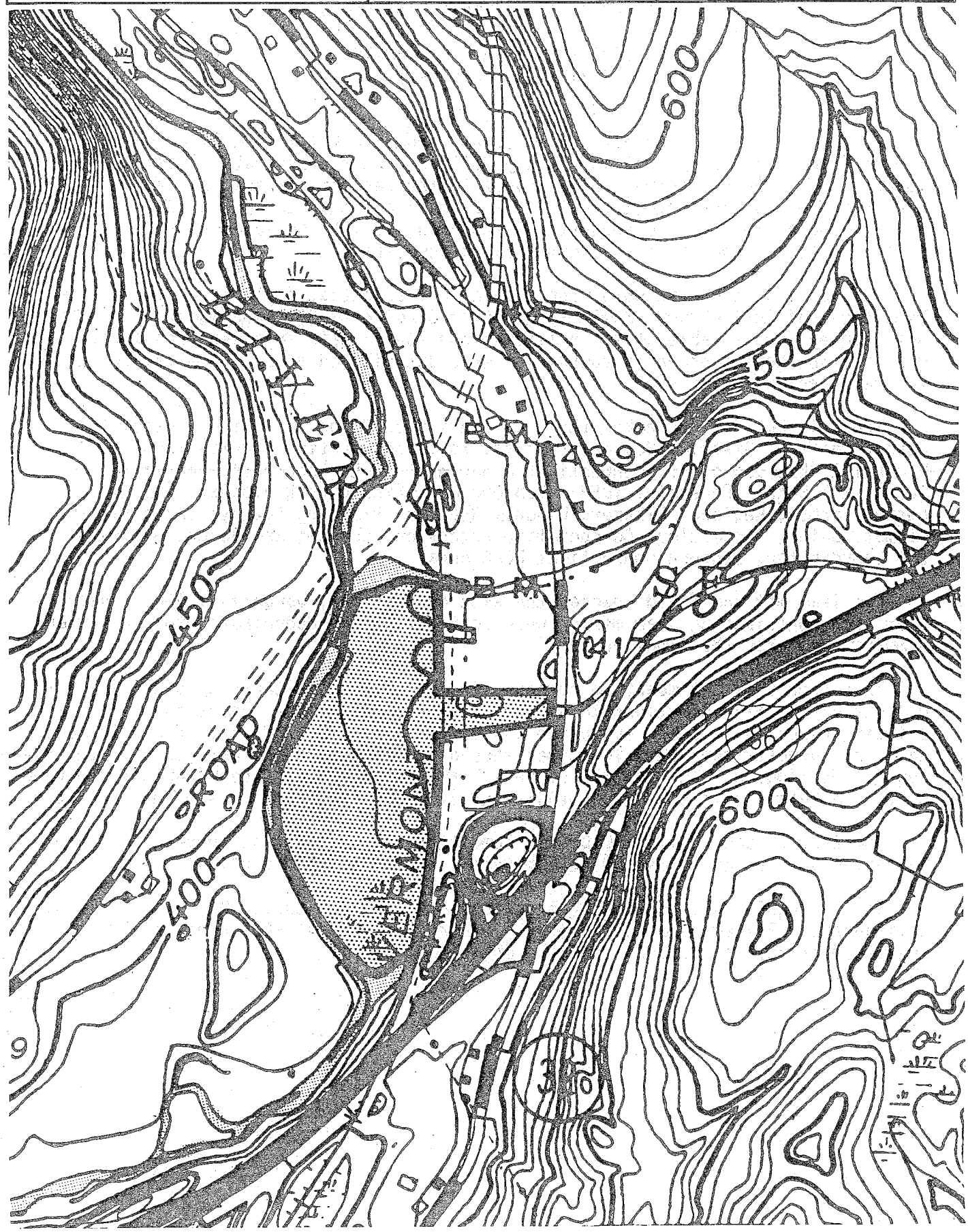
The ERT that field-checked the site consisted of the following personnel: Joseph Neafsey, District Conservationist, Soil Conservation Service (SCS); Michael Zizka, Geologist, Connecticut Department of Environmental Protection (DEP); Rob Rocks, Forester, (DEP); Bob Orciari, Fisheries Biologist, (DEP); Lester Barber, Regional Planner, Windham Regional Planning Agency; David Miller, Climatologist, Connecticut Co-operative Extension Service; and Jeanne Shelburn, ERT Coordinator, Eastern Connecticut RC&D Area.

The Team met and field checked the site on Thursday, January 8, 1981. Reports from each contributing Team member were sent to the ERT Coordinator for review and summarization for the final report.

This report is not meant to compete with private consultants by supplying site designs or detailed solutions to development problems. This report identifies the existing resource base and evaluates its significance to the proposed development and also suggests considerations that should be of concern to the developer and the Town of Willington. The results of this Team action are oriented toward the development of a better environmental quality and the long-term economics of the land use.

The Eastern Connecticut RC&D Area Committee hopes that this report will be of value and assistance in making any decisions regarding this particular site.

If you require any additional information, please contact: Ms. Jeanne Shelburn, Environmental Review Team Coordinator, Eastern Connecticut RC&D Area, 139 Boswell Avenue, Norwich, Connecticut 06360, 889-2324.


Topography
Site Boundary
0
660'
scale
N
600
500
450
400
BM 439
BM
ROAD
600
350

INTRODUCTION

The Town of Willington is currently in the process of evaluating a proposal for a series of zoning variances and potential zone change which would allow the Independent Cement Corporation to establish a cement distribution center within the town. The project site is located north of Interstate Route 86, west of Connecticut Route 32, to the east of the Willimantic River and south of Roaring Brook. Access to the parcel would be provided by securing a permanent easement through State owned land. The property is approximately 25 acres in size and is presently in the private ownership of William J. Baxter, Jr. and Patricia Baxter, who are Greenwich residents. The Eastern Connecticut Environmental Review Team was asked to provide an analysis of the impact of the proposed industrial use on the natural resource base of this site.

If needed zoning variances are granted, the Independent Cement Corporation will proceed with an application for a zone change from RU-80 (2 acre residential lots) to Design Industrial. It is the Team's understanding that in a Design Industrial zone, the town ultimately sets the standard for the type of development allowed or any stipulations attached to the permit, at the time of permit application. In other words, there are no set regulations regarding a Design Industrial zone, each permit is "designed" to fit each individual applicant's request.

The Independent Cement Corporation submitted a detailed description of their proposal to the Team prior to the field review. This description is included in the Appendix to this report. Briefly, the company intends to establish a cement distribution center which will consist of two 1,500 ton silos, two 5,000 ton silos, a service building, access roads, a rail siding and bagged cement storage warehouse. The warehouse building will be designed to allow the future addition of a cement bagging capability. The facility will be in use for approximately 16 hours per day, loading an average of 1,200 tons of cement per day or dispatch of 50 trucks per day. The maximum number of trucks being loaded and dispatched would be 65 per day or 340 per week. The type of truck to be used will be enclosed bulk carriers which are loaded and unloaded via air pressure with a capacity of 25 tons. Trucks will be provided by individual private contractors purchasing cement, not by the Independent Cement Corporation. The facility is projected to be in operation during a 40 week season. Permits from the Air Compliance Unit of the Connecticut Department of Environmental Protection will be required for this proposed use of the site.

The proposed site is a unique and somewhat fragile area being located east of the Willimantic River and south of Roaring Brook. The stretch of the Willimantic River which forms a boundary for this site is noted for its high quality trout fishery. A portion of the site lies within the proposed flood hazard zone as delineated by the U.S. Department of Housing and Urban Development, Federal Insurance Administration. Regulated wetland soils are also present on the site. Vegetation consists primarily of grasses (Andropogon scoparius) and scrub tree cover.

The Team is concerned with the effects of the proposed zone change to allow industrial development on the natural resource base of this site. Many sites with severe natural limitations to development can be used if proper engineering methods are employed. However, these measures can become costly, ultimately making a project financially unfeasible for a developer. Natural limitations to establishing a cement distribution facility on this site include potential flooding of the facility due to its proximity to the flood hazard zone, and the potential contamination of groundwater

supplies due to the location of the septic system for the facility in rapidly permeable soils. Building in the 100 year floodplain is discouraged. The primary reasons for this are to avoid financial losses to the developer and to prevent rises in normal flood elevations. Generally, the Team found no great conflicts with this industrial use proposal and the flood damage prevention programs, however the developer may wish to consider raising the final grade elevation of the western section of the access road and rail siding to avoid innundation during a major storm event. As mentioned earlier, there is the potential for poorly renovated septic effluent to contaminate groundwater supplies on this site. A more detailed discussion can be found in the Hydrology and Water Supply/Waste Disposal sections of this report. In a condition such as that present on site, this limitation may be overcome with proper engineering design of the system. Actual numbers of persons using the system should be determined prior to design.

During review of the proposed plans it was noted that no sediment and erosion control plan has been prepared for the site. This should be submitted with final plans to the local commission for review prior to permit issuance. Also a stormwater treatment and disposal plan, which includes construction details and maintenance responsibilities should be prepared. All efforts should be made to avoid discharge into the Willimantic River. Accidental spills washing directly into Roaring Brook or the Willimantic River could cause problems to fish inhabiting these streams, permanent catch basins to guard against such spills should be incorporated into the plan.

If Air Compliance requirements can be met, this industrial use should not produce significant amounts of particulate emmissions. Any major increases in air pollution will be caused by increased truck and rail traffic. This increase in traffic will produce an increase in onsite noise levels. Due to the topographic characteristics of the site, most noise increases should be confined to the valley in which the property issituated. Air flow patterns will cause the noise levels to seem higher during night time operations, in the local valley to the north.

Most team members have commented on the visual impact of the 150 foot silos which are planned for the site. It is the general opinion of the Team that shorter (60 feet or less) silos would be preferable in this proposal, even if more silos were needed. These shorter silos would be more easily masked by vegetation from both the road and the river; this would also increase the quality of natural experience for those fishing or using the State owned lands.

The Independent Cement Corporation may wish to consider donation of all lands from the 100 year flood level to the river in exchange for their access to their parcel through State property. These lands are not presently proposed for any construction activity and would provide a wider buffer to the river and its valuable trout fishery should any accidental spills occur.

The Team suggests that Town Commissioners visit an operating cement distribution center owned by the Independent Cement Corporation before making any final decisions. In this way, the Commissions would be able to better assess the level of performance of the pollution abatement equipment and any associated noise from loading equipment or truck traffic.

ENVIRONMENTAL ASSESSMENT

GEOLOGY

The proposed cement distribution site is located in a section of Willington that is encompassed by the Stafford Springs topographic quadrangle. A surficial geologic map of the quadrangle, prepared by M.H. Pease, Jr., has been published by the U.S. Geological Survey (Map GQ-1216). The map indicates that three types of surficial geologic material are present on the site: alluvium, stratified drift, and earthflow sediments.

Stratified drift and alluvium are closely linked in texture and origin. The former consists of rock materials that were washed from stagnant masses of glacier ice and deposited by or in meltwater streams or ponds. Sand and gravel are the most common constituents, although silt, clay, and boulders may be found locally. Stratified drift is typically layered (hence its name) due to the upward-building depositional processes that occur in meltwater. In addition, the sediments are sorted by grain size to some extent; that is, gravelly lenses and layers are more or less distinct from sandy or silty layers. The alluvium (recent stream deposits) in the Willimantic River valley consists largely of redistributed stratified drift. Sand and gravel again predominate, and the sediments are generally layered and sorted. Fine-grained particles may be more highly concentrated in the upper few feet of alluvium than they are in the upper portion of the stratified drift.

On the property itself, alluvium is the most widespread type of surficial geologic material. Stratified drift is confined to a narrow area west of the railroad, but it also underlies the proposed access through the state forest parcel. The cement distribution facilities would be built almost entirely on the stratified drift deposits, although some filling in of low-lying areas will be needed. Test holes were dug at four closely-spaced locations in the stratified drift to evaluate the soil for a septic system and leaching field. The holes showed that the stratified drift was coarse-grained and gravelly except in a narrow swale, where finer materials were more conspicuous.

The third type of overburden shown on the U.S.G.S. map is earthflow sediment. Because of a snow cover and frozen ground conditions the Team could not inspect these materials. Pease describes the deposit as an "incoherent mass" of till (the predominant surficial geologic material on the hillsides), rock debris, and soil that flowed from the rocky section of Roaring Brook's valley, east of the cement-distribution site. The earthflow sediment has undoubtedly been reworked at least partially by Roaring Brook.

HYDROLOGY

The proposed cement-distribution site is bounded to the west by Willimantic River and to the north by Roaring Brook, a tributary of the river. An accessory channel of Roaring Brook is located approximately 100 feet south of the active channel. The accessory channel may carry significant flows during periods of heavy rainfall when the main channel's flow capacity is exceeded.

At least two important flood studies have been made for Willimantic River in the Willington area. The first study was authorized by the former State of Connecticut

Surficial Geology

(adapted from U.S.G.S. Map GQ-1216)

0 660'
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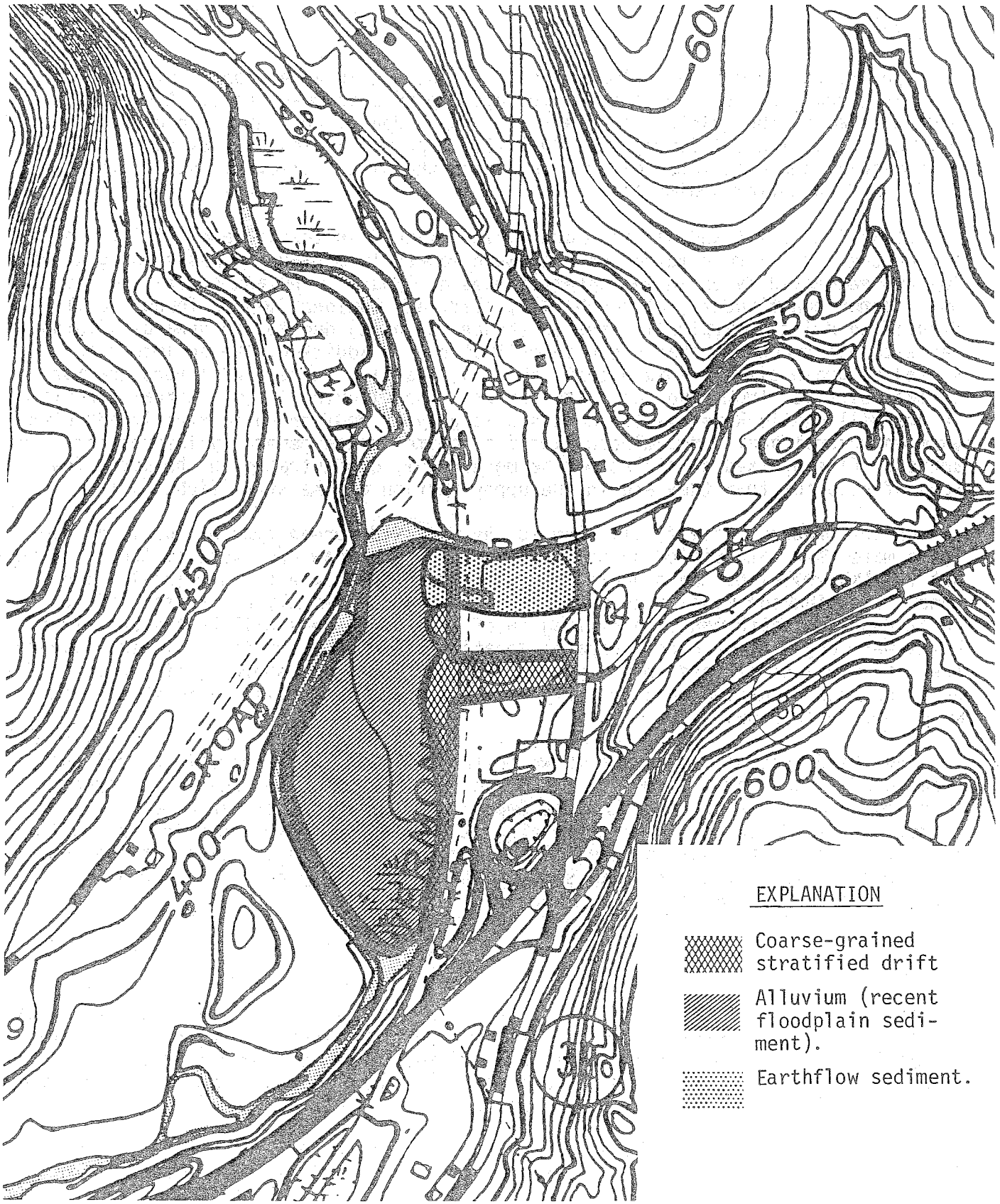


EXPLANATION

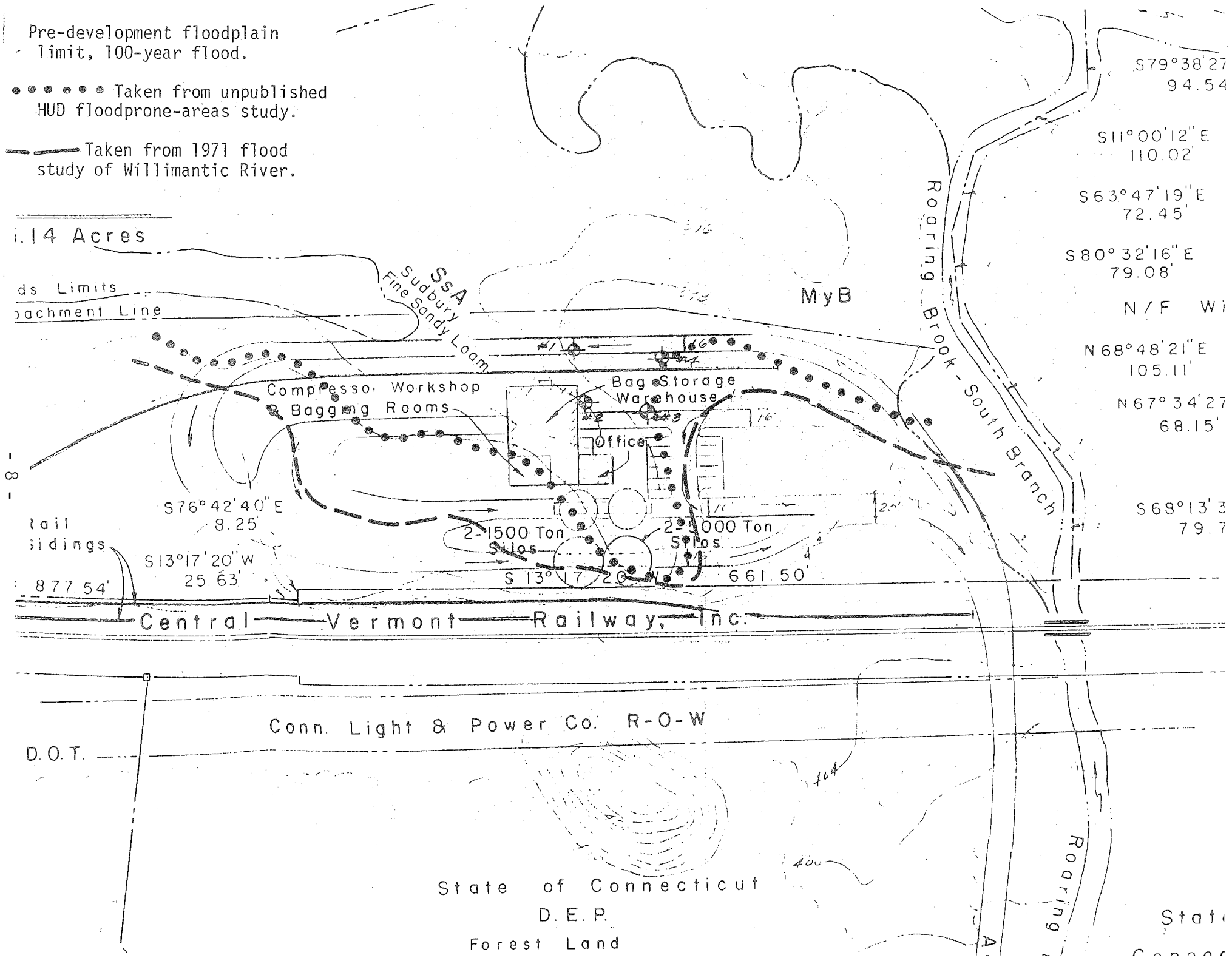
- Coarse-grained stratified drift
- Alluvium (recent floodplain sediment).
- Earthflow sediment.

Water Resources Commission, and was released in 1971 as a "Report on Establishment of Channel Encroachment Lines and Flood Plain Delineation, Willimantic River, Towns of Tolland-Willington-Ellington". The second study was authorized by the U.S. Department of Housing and Urban Development, Federal Insurance Administration, under an on-going flood insurance program. The second study has not yet been released in its final form but the Team was able to obtain flood-level estimates for two points within the vicinity of the site. In general, the results of the second study indicate flood levels at the site that are approximately one foot lower than the levels indicated by the first study.

The estimated 100-year flood levels on the site are shown in accompanying illustrations for the area to be actively developed. Both pre-development and post-development (filled and graded) conditions are shown. The pre-development illustration shows that flooding would encompass a swale that is central to the development area. However, the present site plans call for partial filling of the swale. If such filling occurs according to the plans, 100-year floods would affect only a portion of the western half of the access road and the western site track, as shown in the post-development illustration. The silos and the storage building would not be flooded. If a 500-year flood occurred, both of the Willimantic River studies suggest that almost all of the active development area would be inundated given the present topography. Under the proposed final grading plan, flooding would again be confined largely to the western site track and access road section, with a potential further extension to include the broad southern portion of the road. The buildings and silos would still be at least one foot above the calculated flood level.

In general, construction activities within a floodprone area, as designated by the boundaries of the statistical 100-year flood, are to be discouraged. Two principal reasons exist: to avoid financial losses from flood damage, and to prevent rises in the normal flood elevations. Three ways to avoid flood damages are (1) floodproofing all structures in the floodprone area, (2) filling floodprone areas to a level that is higher than that of a major flood, and (3) avoiding all construction in the floodprone area. Choice (3) is clearly the most suitable from a strictly environmental standpoint, but the loss of potentially developed land may have adverse economic consequences for both the landowner and the town. On the other hand, the effects of building or filling in a floodprone area are not limited to that area. In removing part of the available natural storage space for floodwaters, the development causes the displaced water to be reallocated in the remaining floodplain area. The result is a rise in flood levels. If the storage volume removed through development is small, the rise may be imperceptible. Yet if a series of developments, each requiring a small volume of floodplain filling or construction, occurs in the same flood zone, the cumulative impact may be a significantly higher flood level. To help resolve the environmental-economic tradeoff, the HUD flood-insurance surveys have been incorporating the idea of a "floodway" in their maps. The "floodway" is that portion of the 100-year flood zone that is needed to be kept free from encroachment in order to assure that overall flood levels in the river valleys will not become more than one foot higher than they are at present. The general idea is that development of the floodway should be prohibited or at least only allowed in very limited circumstances, whereas development of the floodprone area outside of the floodway can be allowed more readily as long as one of the flood-damage-control measures mentioned previously is used.

Although the final HUD floodprone-areas maps for Willington are not yet available, it is highly unlikely that the portions of the site that would be filled would be


Pre-development floodplain limit, 100-year flood.
Taken from unpublished HUD floodprone-areas study.
Taken from 1971 flood study of Willimantic River.
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SsA
Sudbury
Fine Sandy Loam
MyB
Roaring Brook - South Branch
S79°38'27
94.54
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N/F Wi
N68°48'21"E
105.11'
N67°34'27
68.15'
S68°13'3
79.7
Compressor Workshop & Bagging Rooms
Bag Storage Warehouse
Office
S76°42'40"E
8.25'
S13°17'20"W
25.63'
2-1500 Ton Silos
2-1000 Ton Silos
S 13° 17' 20" W 661.50'
Rail Sidings
877.54'
Central Vermont Railway, Inc.
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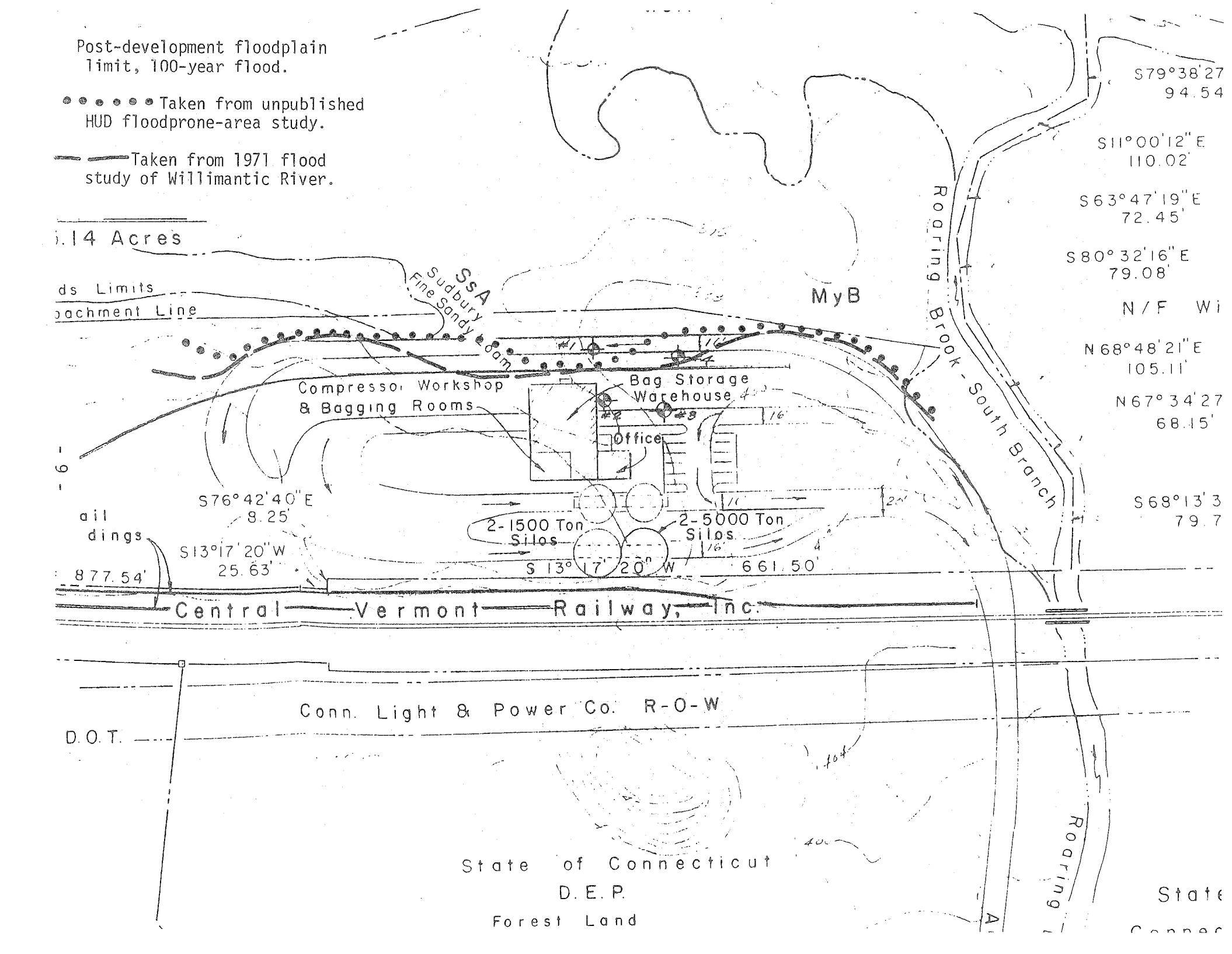
Post-development floodplain limit, 100-year flood.
Taken from unpublished HUD floodprone-area study.
Taken from 1971 flood study of Willimantic River.
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Central Vermont Railway, Inc.
Conn. Light & Power Co. R-O-W
D.O.T.
State of Connecticut
D.E.P.
Forest Land
Roaring

designated as part of the floodway. The central swale serves an intermittent hydrologic function of transmitting surface runoff from the vicinity of the railroad to the lower, more frequently inundated floodplain area (alluvial land and Ondawa soil areas, as shown on the Soils map in the Appendix). The swale does not become part of the active flow zone of Willimantic River during floods; floodwaters stored in the swale probably would be relatively stagnant until the overall flood elevation began to decline. The same is true of the small corner of wetlands that would be filled to allow the construction of the railroad spur. In contrast, the "floodway" approach concentrates on keeping open the flatter areas closest to the streams since those areas permit floodwaters to move more rapidly downstream. In summary, then, considering the small area to be filled and the position of the fill at the margin of the 100-year floodprone area, there appears to be no great conflict between the proposed project and the intent of the national and state flood-damage prevention programs. It may be worthwhile, however, to consider increasing the final graded elevations of the western section of the access road and site track to avoid inundation of those sites during a major flooding event.

The principal potential source of groundwater contamination from the cement operation will be the septic system, barring any major accidents. The sandy and gravelly soils on the site will not renovate the septic effluent as readily as would soils with a higher silt and clay content. On the other hand, the soils on the property will permit the system to function well physically. Considering the location of the site, the impact on any groundwater deterioration from septic effluent would be largely self-contained. Concern should be directed to the question of whether groundwater contamination might affect the well-water supply to the buildings; there is little danger that a well outside the site would be adversely affected. Nevertheless, the sand and gravel deposits on the property constitute the northern section of a zone of thick stratified drift that appears to have a high potential for groundwater development. In the future, the property might be profitably considered for location of a well-field. This is not meant to imply that a septic system on the site would be totally incompatible with a well-field; however, the risk would increase with the volume of wastewater discharged through the system and the proximity of the system to the wells. Since the facility initially will require only five to eight full-time employees, the wastewater discharge should be low. There is a potential, however, for significantly greater discharges if the lavatories are frequently used by truck drivers passing through (potentially 250 to 340 per week) and if the cement-bagging operation is begun.

In view of the many intangibles, it is difficult to assess the risk of groundwater contamination adequately. It should be noted, though, that the industry proposed does not require oil or gas storage tanks or industrial-process water discharges. In this sense, it is safer than many other types of industry. Accidents involving spillage of fuel from delivery trucks, derailment of railroad tankers carrying chemicals, etc., are no more probably with this industry than they would be with others. The only type of accident peculiar to this operation-spillage and loss of cement powder - would be unlikely to cause major damage to ground or surface waters. A change in pH, hardness, alkalinity, or acidity could occur but these problems are not as intractable as the introduction of toxic-chemicals into the water system. Still, the question of the need for a future public water-supply source is present. Although the proposed cement-distribution site is only a portion of the prospective high-yielding groundwater aquifer, the Town should either assure itself that it will have access to another similar site or take great precautions with regard to the present property.

SOILS

A detailed soils map of this site is included in the Appendix to this report, accompanied by a chart which indicates soil limitations for various urban uses. As the soil map is an enlargement from the original 1320 feet/inch scale to 600 feet/inch, the soil boundary lines should not be viewed as absolute boundaries, but as guidelines to the distribution of soil types on the site. The soil limitation chart indicates the probable limitations for each of the soils for on-site sewerage, buildings with basements, buildings without basements, streets and parking and landscaping. However, limitations, even though severe, do not preclude the use of the land for development. If economics permit large expenditures for land development and the intended objective is consistent with the objectives of local and regional development, many soils and sites with difficult problems can be used. The soils map, with the publication Soil Survey, Tolland County, Connecticut, can aid in the identification and interpretation of soils and their uses on this site. Know Your Land: Natural Soil Groups for Connecticut can also give insight to the development potentials of the soils and their relationship to the surficial geology of the site.

Soils series typical of the site include Alluvial land, Enfield silt loam, Ondawa sandy loam, Terrace escarpment and, Tisbury silt loam. Alluvial land and Ondawa series soils are regulated wetland soils under Public Act 155.

The Saco series (alluvial land) consists of deep, very poorly drained soils on floodplains. They formed in recently deposited alluvial material. Typically these soils have a very dark gray silt loam surface layer 12 inches thick. The substratum from 12 to 24 inches is mottled gray silt loam, from 32 to 48 inches is gray silt loam and from 48 to 60 inches is gray stratified sand. Slopes range from 0 to 2 percent.

The Enfield series consists of deep, well-drained soils on terraces. They formed in silt-mantled outwash material. Typically, these soils have a dark brown silt loam surface layer, 8 inches thick. The subsoil layers, from 8 to 24 inches, are yellowish-brown and brown silt loam. The substratum, from 24 to 60 inches, is reddish-brown stratified sand and gravel. Slopes range from 0 to 15 percent.

The Ondawa series consists of deep, well drained soils on floodplains. They formed in recent alluvial sediments. Typically, these soils have a very dark grayish-brown fine sandy loam surface layer, 9 inches thick. The subsoil from 9 to 30 inches is brown to dark brown fine sandy loam. The substratum from 30 to 60 inches is yellowish-brown loamy fine sand. Slopes range from 0 to 3 percent.

The Hinckley series (terrace excarpments) consists of deep, excessively drained soils on terraces, outwash plains, deltas, kames and eskers. They formed in water-sorted material. Typically these soils have a very dark grayish brown loamy sand surface layer 7 inches thick. The subsoil layers from 7 to 15 inches are strong brown and yellowish brown gravelly loamy sand. From 15 to 18 inches the subsoil is yellowish brown gravelly sand. The substratum from 18 to 40 inches is light olive brown stratified sand, gravel, and cobblestones. Slopes range from 0 to 60 percent.

The Tisbury series consists of deep, moderately well-drained soils on terraces. They formed in silt-mantled glacial outwash material. Typically, these soils have a very dark grayish-brown silt loam surface layer, 8 inches thick. The subsoil layers, from 8 to 26 inches, are yellowish-brown and brownish-yellow silt loam, with mottles below 16 inches. The mottled substratum, from 26 to 60 inches,is grayish-brown, very gravelly sand. Slopes range from 0 to 8 percent.

A detailed soil map and report was developed for the site by Mr. Kenneth Stevens of Soil Science Services, Cheshire, Connecticut. The wetland boundaries as flagged in the field appears substantially correct.

Frozen ground and snow cover prevented verification of the soil mapping. The Tolland County Soil Survey shows that the proposed plant site was mapped as Enfield silt loam. Mr. Stevens indicates that the soil type is Merrimac sandy loam. Both soils were formed on an outwash plain, are well drained and overly stratified sand and gravel deposit. The basic difference is that Enfield soils have a higher silt content in the upper 24 inches. Physical properties and limitations are similar. Both Enfield and Merrimac soils have severe limitations for septic tank absorption fields because the sandy and gravelly material is a poor filter for septic tank effluent. In certain cases this limitation may be overcome by proper engineering design of the system. This would involve replacement of those natural soils found on the site with soils more suitable to renovation of septic effluent in the area designated for installation of the septic field. Erosion potential is low because of the sandy nature of the soil and flat slopes. However, placement of fill and land leveling may create erosion hazards. Both Enfield and Merrimac soils are considered prime agricultural land by USDA.

A sediment and erosion control plan was not available for review. Because of the potential for siltation of the Willimantic River and Roaring Brook, a detailed plan should be developed and reviewed by the Tolland County Soil and Water Conservation District. The plan should be implemented during construction with inspections made by the appropriate Town official.

A plan for disposal and treatment of stormwater was not available for review. Runoff will be generated from the access road, paved areas on the site and from buildings and structures. The low point on the site is approximately 600' from the Willimantic River. The lack of grassy vegetation in the natural drainage swale will prevent effective filtration if stormwater is discharged directly. It is suggested that a plan to treat stormwater be developed for the site. If possible, discharge to the Willimantic River should be avoided. The plan should include construction details, design criteria and maintenance responsibilities. The plan should be reviewed by the Tolland County Soil and Water Conservation District for adequacy.

VEGETATION

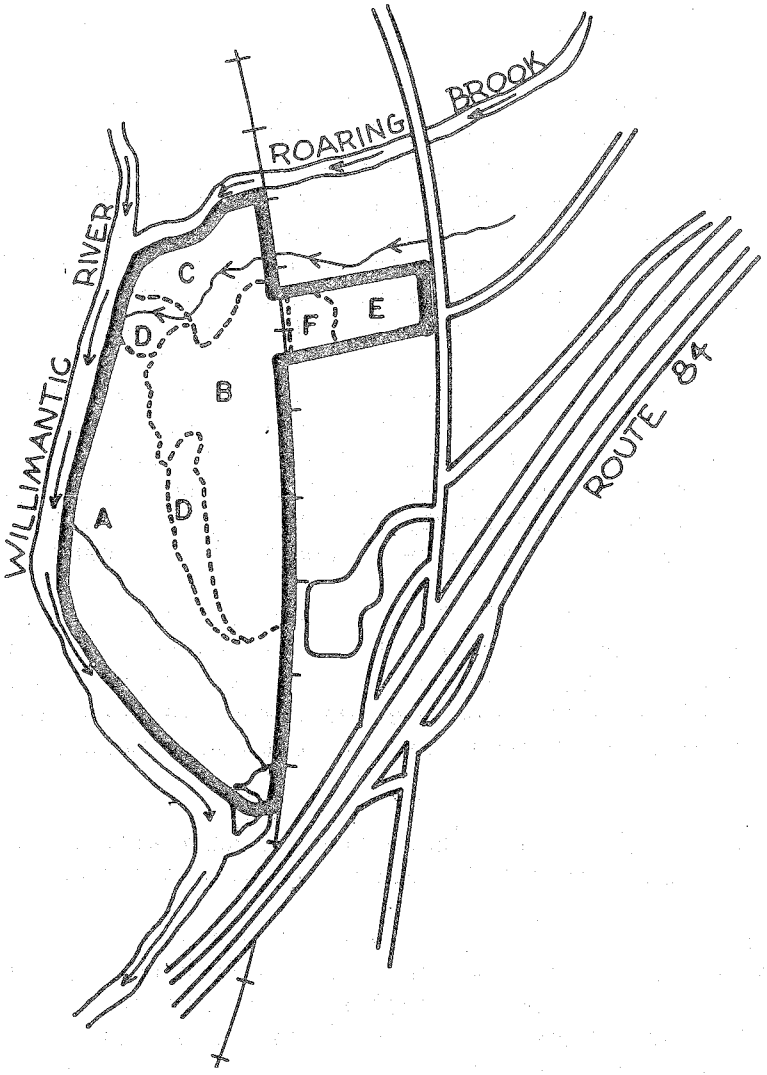
The parcel proposed for the development of the Cement Distribution Center may be divided into three vegetation types. These include two mixed hardwood stands totalling 15±acres; two old field areas totaling 10±acres; and two pine stands totaling 3±acres. (See vegetation type map and vegetation type descriptions).

The impact on vegetation caused by this development will be the actual clearing of vegetation from the old field area and the effect of "fugitive cement dust" on plant health. The latter is dependent upon the amount of dust which escapes into the atmosphere. A narrow, dense belt of conifer trees planted around the center will provide a partial visual barrier and help with noise abatement. Shrubs could also be planted to provide food and cover for wildlife.

Vegetation

0 660' scale

N



LEGEND

- Road
- Property Boundary
- Vegetation Type Boundary
- Water Ways

VEGETATION TYPE DESCRIPTIONS*

TYPE A. Mixed hardwoods, 12±acres, Fully to overstocked, pole to sawtimber-size.

TYPE B. Old field, 8±acres, old field brush species.

TYPE C. Mixed hardwoods, 3±acres, fully stocked.

TYPE D. Old field, 2±acres, alder swale.

TYPE E. Pine, 2±acres, fully stocked, pole to sawtimber-size.

TYPE F. Pine, 1±acre, understocked, sapling-size.

* Seedling-size = Trees less than 1 inch in diameter at 4 1/2 feet above the ground (d.b.h.)
Sapling-size = Trees 1 to 5 inches in d.b.h.
Pole-size = Trees 5 to 11 inches in d.b.h.
Sawtimber-size = Trees 11 inches and greater in d.b.h.

VEGETATION TYPE DESCRIPTIONS

Type A (Mixed Hardwoods). This 12±acre fully to over-stocked stand is made up of predominantly poor quality pole to sawtimber-size red maple, sugar maple, black cherry, white ash and scattered eastern white pine. The understory in this stand is dominated by sugar maple seedlings, blue beech, shadbush, red osier dogwood, tartarian honeysuckle, gray birch, scattered apple trees, maleberry, highbush blueberry, maple-leaf viburnum and arrowwood. Ground cover is made up of grasses, goldenrod, steeplebush, sensitive fern, cinnamon fern, skunk cabbage and poison ivy. Summer grape and fox grape are present in the canopy along the Willimantic River.

Type B (Old Field). Eight±acres of old field type vegetation are present within this tract. This area is understocked with seedling and occasional sapling-size black oak, white oak, gray birch, blue beech, black cherry, red maple and scattered eastern white pine. Shrub species include gray stemmed dogwood, arrow-wood, maleberry, and highbush blueberry. Ground cover consists of grasses, golden-rod, sweet fern, bayberry, meadow sweet and wild strawberry.

Type C (Mixed Hardwoods). Pole and sawtimber-size sugar maple, yellow birch, red oak, sycamore, shagbark hickory, big-tooth aspen and scattered eastern white pine are present within this 3±acre fully-stocked stand. Gray birch, blue beech, hop-hornbeam and witch hazel form the understory in this stand. Grasses, poison ivy, Canada mayflower, Christmas fern and club moss make up the groundcover in this area.

Type D (Old Field). This 2±acre area is dominated by speckled alder and high-bush blueberry. Green brier and grasses are also present.

Type E (Pine). This 2±acre fully-stocked stand is made up of medium quality pole to sawtimber-size eastern white pine, eastern hemlock, white oak, shagbark hickory and black cherry. The understory is dominated by hardwood tree seedlings, eastern white pine seedlings, blue beech and maple-leaf viburnum. The ground cover in this area is made up of grasses, goldenrod, Canada Mayflower, huckleberry, spirea and striped pipsissewa.

Type F (Pine). Sapling-size eastern white pine, gray birch, big-tooth aspen and occasional eastern hemlock are present in this 1±acre understocked area. Grasses, goldenrod, huckleberry and sweet fern are also present.

The impact on vegetation resulting from the proposed Cement Distribution Center will be of two major types. The first impact will be the actual clearing of vegeta-tion, the second impact will result from "fugitive cement dust".

Construction of this facility will necessitate the removal of vegetation from a major portion of the old field area (vegetation type B) and a strip approximately 500 feet long and at least 30 feet wide for the road right-of-way through DEP lands. At this time the loss of vegetation from the old field area is not substantial, from a timber and fuelwood aspect. Vegetation removal from this area will, however, de-grade valuable wildlife habitat. The loss of wildlife habitat can be compensated for planting shrubs that have high value for wildlife.

The area to be cleared for the road right-of-way through DEP lands will total less than 1/2 acre. Removal of the vegetation from this small area will not cause significant impact.

The impact of "fugitive cement dust" on the vegetation depends largely on the amount of dust which escapes into the surrounding area. Estimates of the amount of "fugitive dust" entering the environment as a result of this plant varies greatly. The particulate matter present in cement dust is made up of oxides of calcium, silica, aluminum and iron. Depending on conditions, these may escape into the atmosphere as a fine dust in varying amounts. After a rain or heavy dew, these particles may stick to leaves, creating a film which has the potential to block photosynthesis, respiration and transpiration. Long term or heavy concentrations of this film may cause retarding of growth and even mortality. The calcium which is present in this dust has the potential to leach away the waxy cuticle, which helps protect leaves from moisture loss. Repeated exposure to this condition may cause leaves to dry up and fall off eventually causing vegetation mortality.*

Over time, the "fugitive dust" has the potential to raise the pH of the soils in the surrounding area. This change in soil pH should be beneficial to most vegetation. Plants which like acid soil conditions will be replaced by plants which thrive in soils of a higher pH. Once again, the impacts, both negative and positive, that the cement dust will have on vegetation depends largely on the amount of dust which escapes from the distribution center.

The visual impact and noise generated by this center may be softened by the proper placement of narrow, but dense, belts of conifer trees. A dense belt of conifer trees, including eastern white pine, eastern hemlock and perhaps spruce, approximately 30 to 100 feet wide will partially screen the center from view. It will also help to abate the noise generated by the trains and trucks approaching and leaving the area. These trees should be planted at a spacing of 8 to 10 feet apart in several stagered rows. Ideally, larger trees, at least 10 feet tall and 2 to 3 inches in diameter at 4 1/2 feet above the ground should be planted directly adjacent to the distribution center. Trees of this size should have a good head start and will grow quickly in direct sunlight.

Shrub species, which are beneficial to wildlife, such as autumn olive, silky dogwood, highbush cranberry and flowering crab apple could be planted along the side of the conifer belt, where they will receive full sunlight. These plantings will help to reduce visual and noise impacts. They will also provide some cover and food for area wildlife. Plase note, however, that these plantings will only be successful if the trees and shrubs can survive. Their survival depends, to a certain extent, upon the amount of dust which escapes from the planned development.

FISH

The St. Lawrence Cement Facility is proposed for construction on a parcel of land bounded by the Willimantic River on the west and Roaring Brook on the north. Within this area, both streams are located in natural surroundings, have good water quality, and are accessible to the general public for fishing. The Connecticut Department of Environmental Protection stocks brown, brook and rainbow trout within these bordering stream sections. Other resident fish species would include blacknose dace, tessellatet darter, fall fish, white sucker, common shiner, American eel, redfin pickerel and several sunfish species.

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* Personal communication - Dr. Davis - Plant Pathology - Penn. State University.

The Willimantic River and Roaring Brook are very important fisheries resources. As is the case with most stocked streams, Roaring Brook receives heavy fishing pressure during the spring, from anglers, using a variety of methods (artifical flys, lures, bait, etc.) to catch and keep trout. On the other hand, the Willimantic River from Roaring Brook to Route 44 is a fly fishing area only, in which all trout caught must be released unharmed. This section of the Willimantic River is the only regulated "catch and release" fishing area in eastern Connecticut. These special regulations are responsible for creating a high quality fishery for trout, that are capable of holding-over and becoming wild. Anglers, who participate in this fishery, would generally be seeking the high aesthetic and sport values provided by the catch and release, fly fishing only, regulations.

Results of a two year angler survey (1978-79), carried out by the Department of Environmental Protection, on the catch and release area of the Willimantic River, demonstrated its great popularity among fly fishing enthusiasts. Anglers were found to travel from as far as Fairfield and New Haven counties and from the Springfield, Massachusetts area. Since all trout must be released unharmed, they remain fairly abundant year-around. This is reflected in the survey data, which indicates that fishing pressure is generally spread throughout the year. Within the catch and release area, approximately 26% of the angler trips were made during the summer and fall, when on most other trout streams, fishing pressure is negligible. The catch rate was found to be quite good, with an average of over one trout caught per hour.

For the high value of the catch and release area to be maintained, it is necessary that water quality and the natural surroundings not be significantly affected. The proposed facility and its attendant service roads are to be located fairly far from the Willimantic River and Roaring Brook. Also, the local terrain is gradually sloped. Water quality should not be significantly affected during construction of the facility, as long as silt from disturbed land and run-off from recently paved roads are prevented from entering the streams. Hay bales and catch basins should be employed in this regard. Under normal operating procedures, transferral and storage of cement will be within closed systems and thus water quality should not be impacted. However, accidental spills of large amounts of cement, which are allowed to wash directly into the streams, could pose serious problems to the aquatic habitat. Permanent catch basins, to guard against such problems, should be incorporated into the facility plan.

The two proposed 150 ft. tall silos will rise well above the level of existing trees on the parcel. Although large trees along both stream banks should obscure nearly all view of the silos from the adjacent streams, some sightings of the upper portions of the silos will occasionally be made by fishermen. Such sightings could reduce the high quality fishing experience, which anglers now enjoy. Overall, the reduced aesthetic value of the area should not be serious. Yet, because of the tall silos, a few anglers may choose to fish elsewhere.

Tank trucks passing through the facility will likely generate noise, which will be heard by fishermen in the two adjacent stream sections. However, noise from traffic on I-86 and from the nearby railroad can already be detected at the streams. Thus, the additional noise should not be a significant annoyance to fishermen.

From a fisheries standpoint, negative impacts from the facility would be negated if all silos were 60 ft. tall. These shorter silos would be preferred, even if more of them were required. Rows of evergreen trees planted around the facility should

reduce noise levels and may help shield portions of the facility from view. Fishing access along both streams should be retained when ownership of the parcel is transferred. Finally, some consideration should be given to providing angler parking places in areas where they would not interfere with the operation of the facility.

WATER SUPPLY/WASTE DISPOSAL

The engineers for the project anticipate that the water needs of the operation could be met by a well yielding no more than 10 gallons per minute. The stratified drift deposit can probably easily accommodate such a yield, assuming that the deposit is still fairly coarse-grained below the water table. A well tapping the underlying bedrock may also be able to deliver 10 gpm, but the probability is far smaller.

In terms of water quality, the groundwater should be relatively good. However, Connecticut Water Resources Bulletin No. 11 notes that the site lies within an area in which wells tapping bedrock have frequently produced water with objectionable concentrations of iron and/or manganese. Although the data is less conclusive for wells tapping stratified drift, in general the upper portions of the drift seem less likely to be affected than the lower portions. Ordinarily, given these considerations, it would be suggested that if an adequate yield can be obtained in the upper levels of the drift, the water supply should be derived from those levels. As discussed in the Hydrology section of this report, however, there may be a potential for contamination of the groundwater by septic system effluent. If such contamination did occur, a well tapping either the deeper levels of the drift or the bedrock would be better protected. For this reason, it is recommended that the developers first attempt to tap the stratified drift at depth. If the saturated section of the drift is only 10 feet thick or less, bedrock should be tried. If the yield is suitable in either case, the well should be used as is. Filtration devices are available to remove iron and manganese if these elements prove to be problematic. If the yield at depth is too low, then the well should be located as far as possible and practical from the septic sysem. A position to the north of the septic system would be preferable.

CLIMATE

The climate of the area is summarized in the following table:

Mean Annual Temperature	48°F
Average Date of Last Freeze in Spring	5/10
Average Date of First Freeze in Fall	10/3
Mean Annual Heating Degree Days	6,600
Mean Annual Rainfall	46 inches
Mean Annual Snowfall	50 inches

The site is located in the bottom of a bowl shaped valley constricted on the South by the I-86 right of way and on the North, East and West by ridge lines. Therefore the site is protected from extreme synoptic winds but is also subject to frequent temperature inversions. Wind directions will generally be down-valley North to South in the winter and up-valley South to North in the summer. Although nighttime cold air drainage will be from North to South during all seasons. Flows

generating above the site will flow across the highway and probably be dispersed ("broken up") by the mechanical and thermal turbulance generated by traffic on I-86 thus effectively limiting drift from the site to the south.

The proposed facility will have little impact on the overall climate and the overall climate will impose few restrictions on the operation of the facility. Some changes will probably be caused in the local air pollution levels, noise levels and visibility.

AIR QUALITY

The Independent Cement Corporation will be subject to meeting the pollution abatement requirements of the Air Compliance Unit of the Connecticut Department of Environmental Protection. Section 19-508-3 (vii) requires a permit application for construction and operation of "all stationary industrial pneumatic solid material handling or conveying systems which are directly vented to the ambient air." Section 19-508-18(b) dealing with fugitive dust, which is reproduced in the Appendix to this report, states that "No person shall cause or permit the discharge of visible emissions beyond the lot line of the property on which the emissions originate when (ii) the emissions remain visible and impinge on a building or structure so the health, safety, or enjoyment of life of the public may be diminished".

The proposed plan calls for pneumatic fabric filters to prevent any fugitive dust from escaping during the loading and unloading process. Assuming the pheumatic handling systems can meet Air Compliance requirements, it appears that the cement loading and unloading operations will not produce significant amounts of particulate emmissions, except in the case of an accident. Since the plans call for complete paving of the roads and truck areas there will be little generation of "fugitive dust".

Probably the major addition to the air pollution concentrations (which are already high at the site due to the proximity of I- 86) will be from the increased truck and railroad traffic. These will probably generate significant additional concentrations. The location and meteorological characteristics of the site will restrict the dispersion of these pollutants and therefore their concentrations could build up significantly in the immediate vicinity of the site, especially during the after-dark operations. Since the valley North of I- 86 is small, the real extent of the increased air pollution load will be small i.e. less than 1,000 acres. South of I-86 any increases will be indistingishable from that generated by I-86.

NOISE

The truck and rail activity will significantly increase the noise levels on the site. North of the site the noise levels will be higher in the local valley especially at night when the inversions direct the sound pressure waves near the ground. The surrounding ridges will absorb the sound pressure and shield further areas from exposure. South of I-86 the noise from this operation will be masked by the noise from I-86. The overall noise effect will be similar to moving one lane of I-86 North approximately 1,000 yards.

AESTHETIC CONSIDERATIONS

Since the site is low, most of the operation can be easily shielded by vegetation (either natural or planted). The towers will be highly visable from long distances. If this is a problem, four or five short silos might be considered in place of two tall ones.

PLANNING CONCERNS

The site in question is clearly suggested in the WRPA's Regional Growth and Preservation Guide Plan and the State Plan of Conservation and Development to remain rural and conservation land. Neither plan suggests an intensive urban development at this or nearby locations despite the presence of the railroad and the Interstate. Special attention is given to recommendations for preservation of the Willimantic River corridor.

Both plans actively discourage higher density land uses in this rural designated area which would, in turn, encourage the location of additional urban activities that would at some point require the installation of expensive public utilities, i.e., water and sewer facilities and other infrastructure.

The site does provide some clear advantages for a bulk transfer facility which depends heavily on rail and truck transportation to distribute its product. The regional plan in particular does recognize that for some industrial or commercial activities special locational requirements may justify the location of a facility in a rural plan district when, otherwise, it would be strongly discouraged. The unique requirements of this cement plant facility suggest that, from the point of view of regional and state land use plans, a review of the specific impacts of the facility are appropriate before it is arbitrarily dismissed as not in conformance with the recommendations of those plans.

Nevertheless the burden should rest with those who proposed the facility that its installation will (1) not encourage further development of urban land uses, and (2) that its operation will be compatible with the recommended and existing prevailing rural land uses within this portion of Willington and Tolland.

Four major areas of concern are evident: (1) the impact of site development and operation of the facility on the natural resources of the site including adjacent parkland; (2) the visual impact of the facility; (3) the potential impact on adjacent properties of any unfilered dust that might be produced; and (4) the noise impact on adjacent properties due to operations at the site and on properties along the routes trucks will be taking to and from the facility.

The site is now bordered by public parkland, and there are indications that a land swap with the DEP may result in additional parkland along the Willimantic River. If substantial dust is allowed to escape and if noise of operation is significant the quality of the natural environment of the parkland could be substantially altered, and the enjoyment of it by the general public significantly reduced.

Vehicles traveling from the site must, in any direction they travel, encounter significant grades or pass through rather tight valleys which have the potential of exacerbating the noise impact of trucks on what is essentially rural or residential

environments for a wide radius around the facility.

The high volume of traffic on I-86 now (exceeding 25,000 ADT in 1975) with its large percentage of truck traffic, has already introduced into the area a large noise impact. Nevertheless the cement plant, as reported, will involve a truck movement in or out of the facility as often as once every five or ten minutes for up to three-quarters of a day. In addition, the specialized noises associated with the cement transfer system from rail yards introduces an additional component to consider.

It is not possible to assess the impact of this truck volume, and operational noise, without very specific noise generation data. Noise is a highly analyzed environmental impact as it is generated by highway uses and imposed on adjacent land uses. Guidelines have to be developed for what is appropriate and acceptable, and what is needed are detailed determinations (and estimates) of the current noise level along the routes to be taken by the vehicles to use the facility and an estimate of the change when the transfer station is in full operation. An assessment can then be made as to the acceptability to the Willington community.

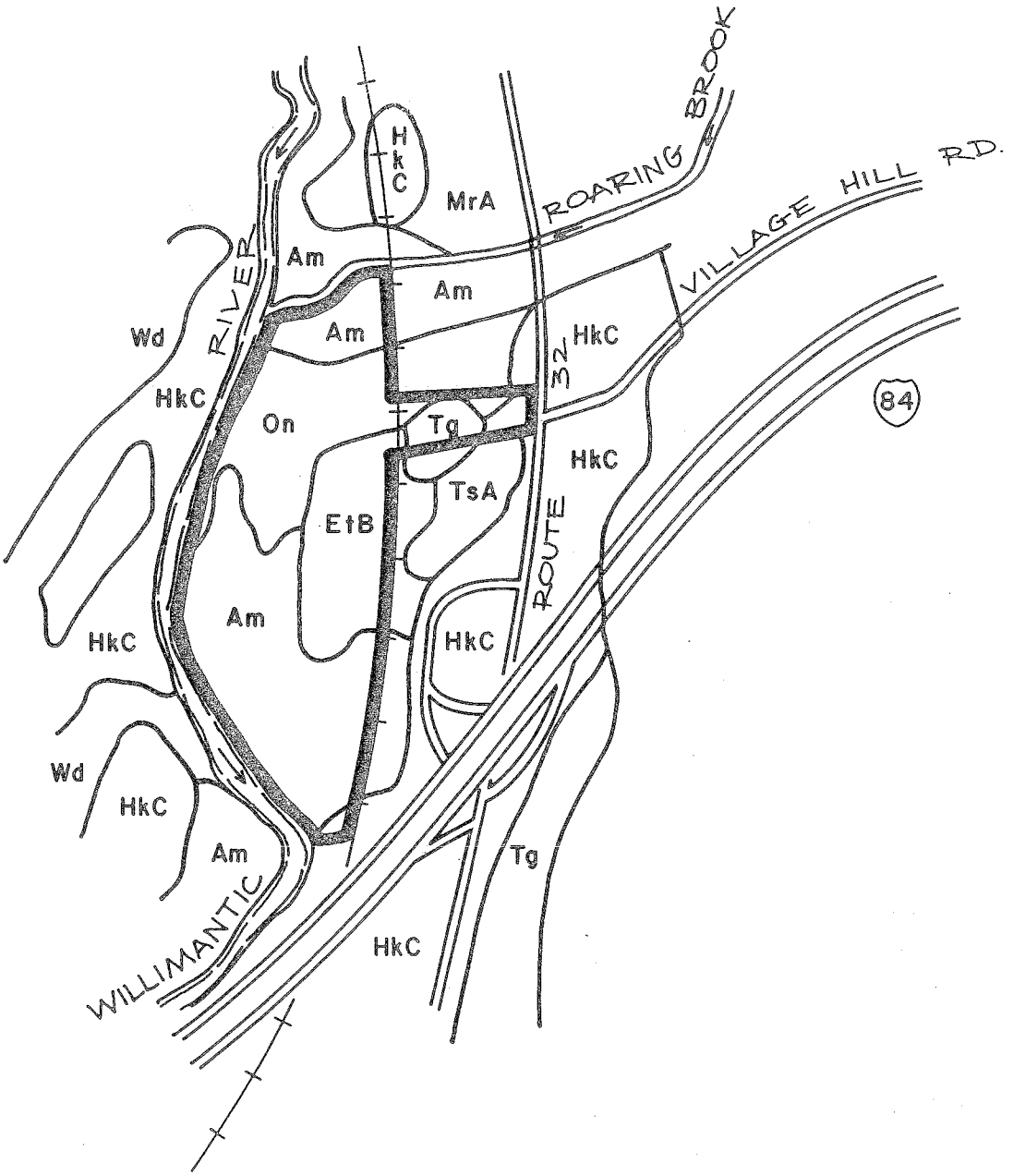
Related to the noise impact, of course, is the possible change in character of traffic along Route 32 and Route 44 should they be extensively used by the trucks. The implications for Stafford Springs should also be seriously considered.

The assessment of the impact of cement dust must also await detailed information of the amount that can reasonably be expected to be emitted from the facility, the distance it will travel, and its effect on the natural systems present in the wetlands and the important fishing resources of the Willimantic River and Roaring Brook. Any significant dust problem would certainly render the recreational value of adjacent parkland problematical. Details of quantity of dust/day, its chemical characteristics, and its traveling patterns must be presented and analyzed by experts knowledgeable in the potential impacts on the natural environment and adjacent urban land uses.

Visually the plant's towers will be prominent and, although set back from Route 32 and buffered by state forest property, will certainly be visible from I-86 and at other locations along Route 32 and from the uplands along the Willimantic River north of the site both in Willington and Tolland. The visual change is not likely to be compatible with the prevailing rural environment, although the existing advertising signs at the two service station sites already compromise the location.

Appendix

Soils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CEMENT DISTRIBUTION CENTER

Willington, Connecticut

PROPORTIONAL EXTENT OF SOILS AND THEIR LIMITATIONS FOR CERTAIN LAND USES

	Soil Series	Natural Soil Group	Soil Symbol	Approx. Acres	Percent of Acres	Principal Limiting Factor	Urban Use Limitations*			
							On-Site Sewage	Buildings with Basements	Streets & Parking	Land-Scaping
**	Alluvial Land		AM	16	50%	Flooding, Wetness	3	3	3	3
	Enfield		EtB	5	16%	Slope	2	2	2	2
**	Ondawa		ON	8	25%	Floods	3	3	3	3
	Terrace Escarpment		Tg	2	6%	Poor filter, Large stones	3	2	2	2
	Tisbury		TsA	1	3%	Wetness, Frost Action	3	3	3	1
				32	100%					

* Limitations: 1=slight, 2=moderate, 3=severe

** Regulated wetland soil under Public Act 155.

SOIL INTERPRETATIONS FOR URBAN USES

The ratings of the soils for elements of community and recreational development uses consist of three degrees of "limitations:" slight or no limitations; moderate limitations; and severe limitations. In the interpretive scheme various physical properties are weighed before judging their relative severity of limitations.

The user is cautioned that the suitability ratings, degree of limitations and other interpretations are based on the typical soil in each mapping unit. At any given point the actual conditions may differ from the information presented here because of the inclusion of other soils which were impractical to map separately at the scale of mapping used. On-site investigations are suggested where the proposed soil use involves heavy loads, deep excavations, or high cost. Limitations, even though severe, do not always preclude the use of land for development. If economics permit greater expenditures for land development and the intended land use is consistent with the objectives of local or regional development, many soils and sites with difficult problems can be used.

Slight Limitations

Areas rated as slight have relatively few limitations in terms of soil suitability for a particular use. The degree of suitability is such that a minimum of time or cost would be needed to overcome relatively minor soil limitations.

Moderate Limitations

In areas rated moderate, it is relatively more difficult and more costly to correct the natural limitations of the soil for certain uses than for soils rated as having slight limitations.

Severe Limitations

Areas designated as having severe limitations would require more extensive and more costly measures than soils rated with moderate limitations in order to overcome natural soil limitations. The soil may have more than one limiting characteristic causing it to be rated severe.

November 12, 1980

ST. LAWRENCE CEMENT, INC.
PROPOSED WEST WILLINGTON, CONNECTICUT
DISTRIBUTION CENTER

DESCRIPTION

The distribution center will consist of two 1,500 ton silos, two 5,000 ton silos, a service building, access roads, and a rail siding, and a bagged cement storage warehouse. The facility will be designed to allow the future addition of a cement bagging capability in the cement warehouse.

1. Rail Siding & Cars

The rail siding will be of sufficient length to accommodate 30 loaded and 30 unloaded rail cars. Each rail car has a capacity of 100 tons and measures 53 feet long, resulting in the need for 3,300 to 3,500 feet of siding. The hopper cars to be utilized have been designed specifically for the loading, transport and off-loading by pneumatics of fine material such as cement.

2. Cement Silos

The facility will have two 1,500 ton cement silos, each with a diameter of 30 feet, an overall height of 85 feet, and a bottom of the cone elevation at 23 feet above ground. Below the cone bottom there will be platforms for servicing the equipment and attending the truck which is being loaded. The 1,500 ton silos will be fabricated of steel plates and structural shapes. In addition, two 5,000 ton concrete silos will be constructed. These will be forty-five foot diameter slip formed concrete approximately 150 feet high. Tank truck loading from the larger silos will be totally enclosed. Access to all platforms and work areas will be by stairs, with the top of the silos being accessible by caged ladders and platforms. This is considered acceptable as there will be no equipment on top of the silos, thus, the need for operating personnel to climb to silo tops is very limited.

3. Service and Bagged Cement Storage Building

The center will include a service building and a storage building for bagged cement. Room will be provided in the storage building for the addition in the future of a system for bagging cement from the bulk cement silos.

The service building and warehouse will enclose about 7,000 square feet. It will contain a combined compressor and storage room, offices, washrooms, a control room and electrical room. The compressor room will contain three 1,400 CFM, 35 PSI compressors and one 25 CFM, 100 PSI compressor with a receiving tank. A liquid recirculating system will cool the compressors. Silencers are proposed for the large compressors, and the wall separating the compressor room from the office area will have soundproofing.

The control room will contain the instruments necessary for the control of loading and weighing trucks. The electrical room will house all electrical equipment such as the motor control center and distribution panels.

The bagged cement storage area will be designed to allow trucks to pass through the building so as to permit the loading of the trucks inside the building. Bagged cement arriving in box cars will be unloaded into the warehouse through a door at railroad car level, the building will have a concrete floor and will be used for the unloading, storage and loading of palletized bagged cement. The handling of the pallets will be done by lift truck.

4. Dust Collector

The dust collection system will be located adjacent to the silos and include two units, each having a capacity of 6,500 CFM, with an air to cloth ratio of 3:1.

5. Plant Operation

It is intended that railroad enclosed hopper cars, designed especially for materials such as cement, will be used. These cars utilize a pneumatic system for off-loading and the cars will be connected to the silo and to the compressor. Cement will be conveyed from the cars into the silos via pneumatic piping. Air from the silos will be exhausted to the atmosphere through the bag filter which will remove virtually all cement dust from the air. The cement dust collected in the bag filter will be introduced into the silos through an independent, small pneumatic system.

Two electronic truck scales, positioned directly under each pair of silos, will be used to weigh trucks before and after loading. A truck will drive into loading position, and its hatches will be opened. The operator will lower a telescopic loading chute into the truck, and open the gates under the silo, which will allow cement to fall through the chute into the truck. The telescopic loading chute is connected to the dust collector and the truck will be under a partial vacuum while loading. This will assure that all air exhausted from the truck is circulated through the bag filter prior to being released to the atmosphere.

Since the truck will be positioned on the weigh scales during the loading process, the operator will receive a continuous readout of the quantity in the truck. This aspect will prevent overloading and cement spills. After loading, the telescopic loading chute will be raised, the truck hatches closed and the weight recorded.

Bagged cement will be handled at the facility in a conventional manner. By design, all transfer operations will be carried out inside of the warehouse building or in the box car.

6. Cement Throughput

The distribution center is anticipated to receive and a dispatch in the vicinity of 250,000 tons of cement per annum. Although the distribution center will function year-round, calculations are based on a 40-week season.

6.1 Receiving

Cement will be received in pressure rail cars having a capacity of 100 tons.

Rate of Receiving:	250,000 tons in 40 weeks
Average:	6,200 tons/wk., i.e. 62 rail cars/wk.
Maximum:	8,500 tons/wk., i.e. 85 rail cars/wk.

6.2 Dispatch

Cement will be dispatched in enclosed bulk carriers which are unloaded via air pressure and have a capacity of 25 tons.

Rate of Dispatch:	250,000 tons in 40 weeks
Average:	6,200 tons/wk., i.e. 250 trucks/wk.
	1,200 tons/day, i.e. 50 trucks/day
Maximum:	8,500 tons/wk., i.e. 340 trucks/wk.
	1,600 tons/day, i.e. 65 trucks/day

7. Potential Customers

Potential customers are users of bulk cement, such as ready mix concrete suppliers and manufacturers of concrete products.

8. Personnel

It is anticipated that the proposed cement distribution center will initially add five to eight jobs to the local labor market. Additional personnel will be required when on-site bagging operations are initiated. Also possible on-site are customer or transport system jobs.

9. Transporters

The cement will be distributed to customers by private trucking firms or by customer's carrier. The distribution of cement is estimated to require approximately 30 bulk carriers on a full-time basis and additional carriers during peak weeks.

SITE CONSIDERATIONS

The site is a 20-plus acre site bounded on the east by the Central Vermont Railway, the west by the Willimantic River, the south by the intersection of the railway and river, and on the north by Roaring Brook (south branch).

An access road will be constructed to Route 32 through the state property, outletting at the Village Hill Road Intersection. Discussions are presently taking place with the state with regard to this right of way. An agreement in principle has been reached with the Department of Environmental Protection.

This road will be a paved private road and will cross the railway and then turn south to the silos. A loop will be located at the south end for ease of turning the trucks so that they may return under the silos to be loaded. Access to Route 32 will be very close to I-86, the route that the vast majority of the trucks will be using. This enables the trucks to have access to I-86 without passing any other homes or buildings.

There will be no run off process water from the center. It will be necessary to install a septic tank system to handle the discharge from the employees washroom. The necessary water for the operation will be obtained from a well (on-site).

In the erection of the center, a minimum of vegetation will be removed so that the characteristic appearance of the wooded area and open field will be changed only to the extent required to locate the silos, buildings and road. It is the desire of St. Lawrence Cement, Inc. to retain the existing appearance of this area to the greatest extent possible.

CONSTRUCTION

Upon approval of all required environmental agencies and securing building permits, St. Lawrence anticipates that construction would commence within 30 days. Operation would be expected during the summer of 1981.

OPERATION

Traffic generation to and from the site is expected to consist of a combination of rail and truck movements. As mentioned above, an average of sixty-two rail cars are expected each week with an average of fifty trucks per day leaving the site. The five to eight employees of the facility will generate minor and incidental personal vehicle trips to and from the site.

The access from the site will be to Route 32 (opposite Village Hill Road) and from there the majority of the trucks will proceed east or west on I-86. The distance of travel on Route 32 is very short.

The facility has been designed to facilitate loading and unloading operations. The internal road will provide adequate turning radii for truck traffic and to provide for a smooth, straight through-truck movement on the site.

The loading of bagged cement will take place inside the storage building.

The internal movement and unloading of the rail cars will take place on the separate sidings and will be performed by St. Lawrence Cement using a trackmobile. Removal of empty cars from the siding and the placing of loaded cars on the siding will be performed by Central Vermont Railway.

ENVIRONMENTAL

Our discharge control devices have been previously described. Enclosed transfer operations will utilize bag filters for collecting potential dust releases.

It is not expected that there will be discharges which would impact on ground or surface waters on or near the site. Spill prevention services have been integrated into the design of the cement distribution center.

Existing vegetation will assist in shielding proposed facilities.

The project will incorporate state-of-the-art transfer equipment and the site has been carefully reviewed for impacts. Site and facility design mitigates potential adverse impacts.

FINANCIAL CAPABILITY

Submitted with this narrative is the 1979 St. Lawrence Cement Annual Report which indicates the scope of corporate physical and financial holdings. St. Lawrence Cement, Inc. has the financial capability to complete the development as planned.

ST. LAWRENCE CEMENT, INC.

Jean-Louis Carmichael
Senior Vice-President, Manufacturing

(e) **Conditions on open burning certificates.** Certificates approved under subsection (c) shall be subject to such reasonable conditions as are necessary to avoid a nuisance or to protect the health, safety, or comfort of the public, including but not limited to, the following:

(i) Only materials and quantities specified on the certificate may be burned;

(ii) The commissioner may specify on any permit the hours and days during which open burning is allowed;

(iii) Except for fire training exercises, burning shall only be permitted on sunny or partly sunny days when wind speed is 5 to 15 miles per hour;

(iv) A copy of the certificate shall be kept in the possession of the applicant at the burning site at all times during the burning;

(v) The commissioner or his designee or the open burning official may revoke in writing any certificate or add any reasonable, specifically identified conditions if circumstances indicate that air pollution standards will be violated.

(f) **Effect on local ordinances.** These regulations do not preclude a municipality from prohibiting or attaching any more stringent conditions to any open burning.

(g) **Certified open burning officials.** The commissioner may establish and maintain a program for the training of local open burning officials. A local open burning official shall be nominated only by the chief executive officer of the municipality in which the official will serve. Nomination of the local open burning official entitles him to participate in the training program. The commissioner may certify as local open burning official any person properly nominated who successfully completes the training program. Between training programs and upon approval by the commissioner, a nominated official may serve in a temporary capacity. The nomination may be revoked by the chief executive of the municipality in which the local open burning official serves according to local practice, procedure, custom or ordinance.

★ **Sec. 19-508-18. Control of particulate emissions**

(a) **Visible emissions.** (a)(1) Visible emission restrictions for stationary sources.

(i) No person shall cause or permit the emission of visible air pollutants of a shade or density equal to or darker than that designated as No. 1 on the Ringelmann chart or 20 percent opacity.

(ii) A person may discharge air pollutants into the atmosphere from any source of emission for a period or periods aggregating not more than 5 minutes in any 60 minutes, provided that said air pollutants are of a shade or density not darker than No. 2 on the Ringelmann chart or 40 percent opacity.

(iii) Open burning conducted under provisions of section 19-508-17 shall not be subject to this subsection.

(a)(2) Visible emission restrictions for mobile sources.

(i) No person shall cause or permit the emission of visible air pollutants from gasoline powered mobile sources for longer than five (5) consecutive seconds.

(ii) No person shall cause or permit the emission of clearly visible air pollutants (comparable to a shade or density equal to or darker than No. 1 on the Ringelmann chart or 20 percent opacity) from diesel powered motor vehicles for more than ten (10) consecutive seconds, during which time the maximum shade or density of emissions shall be no darker than No. 2 on the Ringelmann chart or 40 percent opacity.

(a)(3) Exceptions for uncombined water. Where the presence of uncombined water, such as water vapor, is the only reason for the failure of an emission to meet the requirements of this regulation then the provisions of this regulation shall not apply.

(a)(4) The following shall be exempt from the requirements of subsection (a)(2):

(i) Antique automobiles over 30 years old;

(ii) Vehicles used exclusively for racing; and

(iii) Mobile sources in the process of being repaired.

(a)(5) Emissions from stationary or idling mobile sources. No mobile source engine shall be allowed to operate for more than three (3) consecutive minutes when the mobile source is not in motion except as follows:

(i) When a mobile source is forced to remain motionless because of traffic conditions or mechanical difficulties over which the operator has no control;

(ii) When it is necessary to operate heating, cooling or auxiliary equipment installed on the mobile source when such equipment is necessary to accomplish the intended use of the mobile source;

(iii) To bring the mobile source to the manufacturer's recommended operating temperature;

(iv) When the outdoor temperature is below twenty (20) degrees Fahrenheit;

(v) When the mobile source is being repaired.

(a)(6) Subsections (a)(2) and (a)(5) shall not apply to aircraft, locomotives operating on rails, vessels for transportation on water, lawnmowers, snowblowers, and other small home appliances.

★ (b) **Fugitive dust.** (b)(1) No person shall cause or permit any materials to be handled, transported, or stored; or a building, its appurtenances, or a road to be used, constructed, altered, repaired or demolished without taking reasonable precautions to prevent particulate matter from becoming airborne. Such reasonable precautions shall be in accordance with good industrial practice as determined by the Commissioner and shall include, but not be limited to, the following:

(i) Use, where possible, of water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads or the clearing of land;

(ii) Application of asphalt, oil, water, suitable chemicals or coverage on materials stockpiles and other surfaces which can give rise to airborne dusts;

(iii) Installation and use of hoods, fans, and fabric filters to enclose and vent the handling of dusty materials. Adequate containment methods shall be employed during sandblasting or other similar operations;

(iv) Covering, at all times when in motion, open-bodied trucks and trains transporting materials likely to give rise to airborne dusts;

(v) The prompt removal of earth or other material from paved streets onto which earth or other material has been desposited by trucking or earth-moving equipment, erosion by water, or other means.

(b)(2) Agricultural activiteis are exempt from the provisions of subsection (b)(1). However, agricultural practices such as tilling of land and application of fertilizers shall be conducted in such manner as to minimize dust from becoming airborne.

★ (b)(3) No person shall cause or permit the discharge of visible emissions beyond the lot line of the property on which the emissions originate when:

(i) The emissions remain visible and exist near ground level outside the property boundaries; or

(ii) The emissions remain visible and impinge on a building or structure so the the health, safety, or enjoyment of life of the public may be diminished.

(b)(4) No particulate matter shall be emitted into the open air in such a manner as to cause a nuisance.

(c) **Incineration.** (c)(1) Definitions. The following terms as used in subsections (c)(1) to (c)(6) inclusive shall have the following meanings:

(i) "Incinerator" means any device,

apparatus, equipment or structure used for destroying, reducing or salvaging by fire any material or substance, including but not limited to, refuse, rubbish, garbage, trade waste, debris or scrap, or facilities for cremating human or animal remains. "Small incinerator" means an incinerator designed and used to burn waste materials of types 0, 1, 2, and 3 only, in all capacities not exceeding two thousand pounds per hour of waste material input. "Special incinerator" means an incinerator designed and used to burn pathological waste type 4 or trade waste types 5 and 6 of any burning capacity. Crematories are included in this category. "Large incinerator" means an incinerator owned or operated by any government or any person, firm or corporation, designed and used to burn waste materials generated by the public of any and all types, 0 to 6 inclusive, with a burning capacity in excess of two thousand pounds per hour of waste material input.

(ii) "New incinerator" means an incinerator which is a new source, as defined in section 19-508-1(r).

(iii) "Existing incinerator" means any incinerator which is not a new source, as defined in section 19-508-1(r).

(iv) "Flue-fed incinerator" means an incinerator provided with a single flue which serves as both the charging chute and the flue to transport products of combustion to the atmosphere.

(v) "Liquid particulates" means particles which have volume but are not of rigid shape and which upon collection tend to coalesce and create uniform homogeneous films upon the surface of the collecting media.

(vi) "Solid particulates" means particles of rigid shape and definite volume.

(vii) "Smoke" means and includes small gas-borne particles, excluding water vapor, arising from a process of combustion in sufficient number to be observable.

(viii) "Air pollution control equipment" means any device which prevents or controls the emission of any air contaminant.

(ix) "Type 0 waste" means trash, a mixture of highly combustible waste such as paper, cardboard, cartons, wood boxes and combustible floor sweepings, from commercial and industrial activities. The mixture may contain up to ten percent by weight of plastic bags, coated paper, laminated paper, treated corrugated cardboard, oily rags and plastic or rubber scraps. This type of waste contains approximately ten percent moisture and five percent incombustible solids and has a heating value of approximately eighty-five hundred BTUs per pound as fired.

(x) "Type 1 waste" means rubbish, a mixture of combustible waste such as paper, cardboad cartons, wood scrap, foliage and combustible floor sweepings from domestic, commercial and industrial activities. The mixture may contain up to twenty percent by weight of restaurant or cafeteria waste, but contains little or no treated paper, plastic or rubber wastes. This type of waste contains approximately twenty-five percent moisture and ten percent incombustible solids and has a heating value of approximately sixty-five hundred BTU per pound as fired.

(xi) "Type 2 waste" means refuse, consisting of an approximately even mixture of rubbish and garbage by weight. This type of waste is common to apartment and residential occupancy, consisting of up to fifty percent moisture and approximately seven percent incombustible solids, and has a heating value of approximately forty-three hundred BTU per pound as fired.

(xii) "Type 3 waste" means garbage consisting of animal and vegetable wastes from restaurants, cafeterias, hotels, hospitals, markets and like installations. This type of waste contains up to seventy percent moisture and up to five percent incombustible solids and has a heating value of approximately twenty-five hundred BTU per pound as fired.

(xiii) "Type 4 waste" means human and animal remains, consisting of carcasses, organs and solid organic wastes from hospitals, laboratories, abattoirs, animal pounds and similar sources, consisting of up to eighty-five percent moisture and approximately five percent incombustible solids and having a heating value of approximately one thousand BTU per pound as fired.

(xiv) "Type 5 waste" means by-product waste, gaseous, liquid or semi-liquid, such as tar, paints, solvents, sludge, and fumes from industrial operations.

(xv) "Type 6 waste" means solid by-product waste, such as rubber, plastics, wood waste from industrial operations and all salvage operations.

(c)(2) Flue-fed incinerators. No person shall construct, install, use or cause to be used any new incinerator of the flue-fed type.

(c)(3)(i) **Emission standards. Particulates.** No person shall construct, install, use or cause to be used any new incinerator which will result in particulate matter in the effluent in excess of 0.08 gr/S.C.F. (0.18 gm/NM^3) corrected to 12 percent CO_2 maximum 2 hour average. No person shall use or cause to be used any existing incinerator which will emit more than four-tenths pound of particulates per one thousand pounds of flue gases adjusted to fifty percent excess air.

(c)(3)(ii) All incinerators must comply with subsection (a)(1).

(c)(3)(iii) Unburned waste and ash. No person shall cause, suffer, allow or permit the emission of particulates of unburned waste or ash from any incinerator which are individually large enough to be discernible by the human eye.

(c)(3)(iv) Odors. No person shall construct, install, use or cause to be used any incinerator which will result in violations of section 19-508-23.

(c)(4) Operations. (i) Approved operating procedures and rated burning capacity of the incinerator shall be posted at a convenient place as near as practical to the point of operation.

(ii) No person shall use or cause to be used any incinerator unless all components connected, or attached to, or serving the incinerator which affect air pollution are functioning properly and are in use, in accordance with the permit to construct and the certificate or permit to operate.

(c)(5)(i) Emission tests shall be conducted at the maximum-rate burning capacity of the incinerator.

(c)(5)(ii) The burning capacity of an incinerator shall be the manufacturer's or designer's guaranteed maximum rate or such other rate as may be determined by the Commissioner in accordance with good engineering practices. In cases of conflict, the determination made by the Commissioner shall govern.

(c)(5)(iii) For the purposes of this regulation, the total of the capacities of all furnaces within one system shall be considered as the incinerator capacity.

(c)(6) Exceptions. The provisions of subsections (c)(1) to (c)(5) inclusive shall not apply to incinerators installed or used in dwellings containing six or fewer family units.

(c)(7) None of these regulations shall be construed to permit the emission of hazardous materials defined and limited by the Commissioner.

(d) **Fuel-burning equipment.** (d)(1) No person shall cause or permit the emission from fuel-burning equipment of particulate matter in excess of 0.20 pounds per million BTU (0.36 gm/10^3 gm-cal) of heat input for existing sources and 0.10 pounds per million BTU (0.18 gm/10^6 gm-cal) of heat input for new sources.

(d)(2) For purposes of this section, the heat input value used shall be the equipment manufacturer's or designer's guaranteed maximum input, whichever is greater.

(d)(3) Fuel-burning sources which, as of the effective date of these regulations, have particulate control equipment in place must maintain such control equipment in proper operation.

(e) **Process industries—general.** (e)(1) No person shall cause or permit the emission of particulate matter in any one hour from any source in excess of the amount shown in Table 3-1 below for the process weight rate allocated to such source, with the exception of sources specified in subsection (f).

TABLE 3-1

Process Weight Rate	Emission Rate	Process Weight Rate	Emission Rate
lbs./hr.	lbs./hr.	lbs./hr.	lbs./hr.
50	0.36	60.000	29.60
100	0.55	80.000	31.19
500	1.53	120.000	33.28
1,000	2.25	160.000	34.85
5,000	6.34	200.000	36.11
10,000	9.73	400.000	40.35
20,000	14.99	1,000.000	46.72

(e)(2) Interpolation of the data in Table 3-1 for the process weight rates up to 60,000 lbs./hr. shall be accomplished by the use of the equation:

$E = 3.59\ P^{0.62}$ P equal to or less than 30 tons/hr. and interpolation and extrapolation of the data for process weight rates in excess of 60,000 lbs/hr. shall be accomplished by the use of the equation:

$E = 17.31\ P^{0.16}$ P greater than 30 tons/hr.

Where: E = Emission in pounds per hour.

P = Process weight rate in tons per hour.

(e)(3) For the purpose of this regulation, process weight per hour is the total weight of all materials introduced into any specific process that may cause any emission of particulate matter. Solid fuels charged will be considered as part of the process weight, but liquid and gaseous fuels and combustion air will not. For a cyclical or batch operation, the process weight per hour will be derived by dividing the total process weight by the number of hours in one complete operation from the beginning of any given process to the completion thereof, excluding any time during which the equipment is idle. For a continuous operation, the process weight per hour will be derived by dividing the process weight for a typical period of time by the length of that period of time.

(e)(4) Where the nature of any process or operation or the design of any equipment is such as to permit more than one interpretation of this regulation, the interpretation that results in the minimum value for allowable emission shall apply.

(e)(5) For purposes of the regulation, the total process weight from all similar process units at a plant or premises shall be used for determining the maximum allowable emission or particulate matter that passes through a stack or stacks.

(e)(6) For the purposes of this regulation, when any material undergoes a series of operations which are capable of emitting particulate matter and which employ any combination of machines, equipment, or other devices used for processing the material either continuously or in batches, the total process weight for the series of operations shall be the weight of materials introduced to the series as a whole. Any material which is the product of any operation in the series shall not be counted as part of the process weight for any other operation in the series.

(f) **Process industries—Specific.** (f)(1) Emission standards (iron cupolas). No person shall cause or allow the operation of any iron foundry cupola unless such cupola is equipped with gas-cleaning devices and so operated as to remove eighty-five percent by weight of all particulate matter in the cupola discharge gases, or to release not more than eight-tenths of a pound of particulate matter per thousand pounds of discharge gas, whichever is more stringent. Gases, vapors and gas-entrained effluents from such cupolas shall be incinerated at a minimum temperature of 1300 degrees Fahrenheit for a period of not less than three-tenths of a second.

(f)(2) Emission standards (hot mix asphalt plants.) No persons shall cause or allow the emission of particulate matter from hot mix asphalt plants in excess of three-tenths of a pound per one thousand pounds of discharge gas. In addition, the process must conform to subsection (b) of this regulation.

(f)(3) Emission standards (foundry sand). No person shall cause or allow the operation of a foundry sand process unless such process conforms to subsection (b) of this regulation and is equipped with fugitive dust control facilities with collection efficiency of at least 90 percent.

(f)(4) Emission standards (concrete batching). No person shall cause or allow the operation of a concrete batching process unless such process conforms to subsection (b) of this regulation and is equipped with fugitive dust control facilities with a collection efficiency of 90 percent or 0.02 pounds per cubic yard of concrete, whichever results in less emission.

Sec. 19-508-19. Control of sulfur compound emissions

(a) **Fuel combustion.** (a)(1) Definitions. As used in subsections (a) through (f) inclusive: (i) "Fuel" means a substance containing combustibles used for producing heat, light, power, or energy; (ii) "combustible" means the heat-producing constituents of a fuel; (iii) "combustion" means the rapid chemical combination of oxygen with the combustible element of a fuel resulting in the production of heat; (iv) "sulfur dioxide (SO_2)" means a colorless gas at standard conditions which has the molecular formula SO_2; (v) "sulfur oxides (SO_x)" means any compound made up only of sulfur and oxygen. For the purpose of this regulation, concentrations of sulfur oxides (SO_x) will be calculated as sulfur dioxide (SO_2); (vi) "stack" or "chimney" means a flue, conduit or opening permitting particulate or gaseous emission into the open air, or constructed or arranged for such purpose; (vii) "fuel merchant" means any person who offers for sale or sells, transfers, or provides in retail or wholesale trade, fuel, including agents, brokers, wholesalers, distributors, or producers who sell commercial or noncommercial fuel; (viii) "fuel user" means any person who stores or utilizes commercial or noncommercial fuel for the purpose of creating by combustion heat, light, power, or energy.

(a)(2)(i) No fuel merchant, except as provided in subsections (a)(3) and (a)(4), shall store, offer for sale, sell, make available, deliver for use or exchange in trade for use in Connecticut, and no person shall use or burn fuel which contains sulfur in excess of one percent (1.0 percent) by weight (Dry Basis). After September 1, 1972, no fuel merchant shall store, offer for sale, sell, make available, deliver for use or exchange in trade for use in Connecticut fuel which contains sulfur in excess of one-half of one percent (0.5 percent) by weight (Dry Basis), and after April 1, 1973, no person shall use or burn fuel which contains sulfur in excess of one-half of one percent (0.5 percent) by weight (Dry Basis).

(ii) Under conditions of fuel shortage emergency, as determined by the Commissioner, higher percentages of sulfur may be permitted by express approval of the Commissioner for temporary periods.

(a)(3) Notwithstanding the provisions of subsection (a)(2), the Commissioner may approve: (i) combustion of a mixture of fuels, or (ii) combustion of a single fuel, which contain(s) a higher sulfur content than that specified by subsection (a)(2), if the combustion of such fuel is combined with a stack-gas cleaning process or its equivalent as approved in writing by the Commissioner. No such stack-gas cleaning process, or its equivalent, shall

About the Team

The Eastern Connecticut Environmental Review Team (ERT) is a group of professionals in environmental fields drawn together from a variety of federal, state, and regional agencies. Specialists on the Team include geologists, biologists, foresters, climatologists, soil scientists, landscape architects, archeologists, recreation specialists, engineers and planners. The ERT operates with state funding under the supervision of the Eastern Connecticut Resource Conservation and Development (RC&D) Area.

The Team is available as a public service at no cost to Connecticut towns.

PURPOSE OF THE TEAM

The Environmental Review Team is available to help towns and developers in the review of sites proposed for major land use activities. To date, the ERT has been involved in reviewing a wide range of projects including subdivisions, sanitary landfills, commercial and industrial developments, sand and gravel operations, elderly housing, recreation/open space projects, watershed studies and resource inventories.

Reviews are conducted in the interest of providing information and analysis that will assist towns and developers in environmentally sound decision-making. This is done through identifying the natural resource base of the project site and highlighting opportunities and limitations for the proposed land use.

REQUESTING A REVIEW

Environmental reviews may be requested by the chief elected officials of a municipality or the chairman of town commissions such as planning and zoning, conservation, inland wetlands, parks and recreation or economic development. Requests should be directed to the Chairman of your local Soil and Water Conservation District. This request letter should include a summary of the proposed project, a location map of the project site, written permission from the landowner allowing the Team to enter the property for purposes of review, and a statement identifying the specific areas of concern the Team should address. When this request is approved by the local Soil and Water Conservation District and the Eastern Connecticut RC&D Executive Council, the Team will undertake the review on a priority basis.

For additional information regarding the Environmental Review Team, please contact Jeanne Shelburn (889-2324), Environmental Review Team Coordinator, Eastern Connecticut RC&D Area, 139 Boswell Avenue, Norwich, Connecticut 06360.