

**HAZARDOUS WASTE FACILITY
COMPARATIVE SITE STUDY**

**FOR
THE UNIVERSITY OF CONNECTICUT**

MARCH 2004

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EXECUTIVE SUMMARY

The University of Connecticut's Hazardous Waste Storage Facility has been located at its present site since 1989. The facility provides for centralized interim storage and is the location at which hazardous wastes collected from throughout the campus are prepared for off-site disposal. Several improvements have been incorporated into the facility since its inception to enhance security and provide improved working conditions for the Environmental Health & Safety (EH&S) personnel who manage the materials and waste stored at the facility.

Prior to investment of capital funds to substantially improve this facility at its present location, the University undertook a Comparative Site Study in late 2003/early 2004 to evaluate options for relocation of the facility to a different on-campus site. The University sought a site that could adequately meet the operating demands, public health and safety requirements, and environmental protection mission of the EH&S Department in a manner that met or exceeded standards established at the existing facility.

S E A Consultants Inc. was engaged by the University to conduct the Comparative Site Study, with the assistance of a project Advisory Committee composed of representatives from the local community, the campus population, environmental advocacy groups, and the University administration. The charge given to the Committee was to evaluate a minimum of three sites, including the existing site, and determine the most appropriate location for a new, or substantially renovated facility. Ultimately, S E A and the Committee evaluated six sites that were identified through a preliminary screening process.

S E A worked closely with the Committee to develop the criteria against which the sites would be evaluated in greater detail. Members of the Committee brought with them considerable knowledge and information about the University and the surrounding community - information that was essential to the identification of appropriate and measurable criteria for this analysis. S E A would like to acknowledge and express gratitude to the Committee members for their efforts and contributions to this study:

The Committee includes:

- Captain John Flaherty, University Fire Department
- Associate Professor Glenn Warner, Director, Institute of Water Resources
- Mr. Michael Callahan, P.E., Chairman, Windham Water Works Commission
- Ms. Meg Reich, Willimantic River Alliance
- Mr. Gregory Padick, Town Planner, Mansfield, CT
- Ms. Karla Fox, Associate Vice President, Chair, UConn Master Plan Advisory Committee
- Ms. Pamela Schipani, Associate Director, Residential Life
- Ms. Jennifer Kaufman, Resident, Mansfield, CT

The Committee was chaired by Richard Miller, Director of Environmental Policy. Frank Labato, Director, and Stefan Wawzyniecki, Chemical Health and Safety Manager/Chemical Hygiene Officer, of the University's Environmental Health and Safety Department, provided technical assistance to the Committee. Additional assistance was provided by a student Environmental Intern.

The Committee agreed that the evaluation should rely on objective data to the extent practicable. Among the data sources referenced for the evaluation were existing operating records for the current facility, the University's North Campus and Outlying Parcels Master Plans, engineering plans for utilities and sites, orthophotos and aerials of the campus, USGS topography maps and Geographic Information Systems (GIS) mapping for the University and surrounding area. The GIS mapping allowed the committee to see graphic representation of existing natural and built resources, and evaluate potential impacts to those resources based on proximity, topography and adjacencies to other existing or proposed land uses.

To compile and process the data obtained from these sources, the Committee used a Multi-Attribute Decision Matrix (the “matrix”) to determine how each site compared relative to each of the others. The matrix calculates scores for each site relative to specific criteria. While all of the criteria were chosen because they were deemed important to the process, each of the criteria was not deemed to be equally important. The Committee achieved a consensus around the criteria to be included in the matrix, as follows:

- **Environmental/Ecological Impact** – proximity to plant and animal habitats as well as wetlands and watercourses.
- **Public Health Impact** – proximity to existing or anticipated academic/classroom buildings, homes, or student housing.
- **Public Water Supplies** – proximity to groundwater or surface water public water supplies, and proximity to the recharge areas or watersheds associated with those supplies.
- **Public Safety/Security and Accessibility** – does the site minimize potential for accidental as well as malicious damage, or terrorist threats, and will it allow for timely emergency response and minimal disruption of campus activity in the event of a release?
- **Consistency with University of Connecticut Master Plans, Local and State Plans of Conservation and Development and Surrounding Land Use** – is the site location in conformance with plans for future use and/or preservation and conservation, and does it complement surrounding land uses?
- **Operational Efficiency and Cost** – does the site allow for appropriate upgrades in waste handling systems, site interior circulation, staff oversight from a proximate location, and cost efficiencies in labor and equipment?
- **Traffic Safety/Circulation** – does the site location minimize pedestrian/vehicle conflicts, accommodate efficient waste vendor access and egress from the campus, and minimize distance traveled on campus roads for internal waste pick-ups/deliveries (i.e. proximity to waste generators)?
- **Regulatory Requirements** – will the site location trigger additional permitting or reporting requirements?

The Committee reached consensus about the appropriate criteria to evaluate, however, members differed in their opinion as to the relative importance of each criterion. The matrix tool allowed S E A and each Committee member individually to assign his or her own value (referred to as the “weight factor”) to the respective criterion, and independently score the six sites selected for detailed evaluation. Therefore, each member arrived at an independent assessment of relative site suitability. Upon completion of the site scoring by S E A and Committee members individually, the range of scores for each site was recorded, and the average of the range was calculated. Through this analysis, a consensus was met regarding a preferred site.

The following six sites were evaluated:

- The existing facility location;
- A parcel within the fenced area of the Water Pollution Control Facility (WPCF);

- A parcel west of the WPCF in the vicinity of the existing Transfer Station and decommissioned sand filter beds;
- The northern portion of Parcel D (see North Campus Master Plan);
- The northeastern portion of Parcel E (see North Campus Master Plan); and,
- An area within the Core Campus/Science Quad.

Based on the data available, and the process established, the site that scored best relative to the others was the parcel west of the WPCF in the vicinity of the existing transfer station. On the basis of the evaluation results, S E A recommends that the Transfer Station site become the primary alternative site for a re-located hazardous waste storage facility.

1. INTRODUCTION

To achieve its teaching, research and public service mission, the University of Connecticut inevitably generates certain biological, chemical and low-level radioactive wastes that must be handled in compliance with local, state and federal regulations. Since 1989, the University has collected and prepared these wastes for off-campus disposal at the centralized hazardous waste storage facility off Horsebarn Hill Road. The facility is in close proximity to the Environmental Health & Safety (EH&S) administrative offices, but remote from most of the waste generators from whom EH&S collects regulated wastes. The site is located within the Fenton River Watershed, and the Willimantic Reservoir Drainage Basin. The Willimantic Reservoir is a public water supply. The facility is also a short distance from the mapped boundary for the Level A recharge area for the University-owned Fenton River Wellfield. Despite UConn's history of operating the hazardous waste facility safely, the University recognizes that such facilities are closely regulated and carefully managed because they pose an inherent risk to public health, safety and the environment.

In consideration of these concerns, prior to investing resources to upgrade the existing facility, the University decided to evaluate opportunities for its relocation. In order to allow participation of a broad group of university and community stakeholders, the University created a Comparative Site Study Advisory Committee comprised of representatives from the campus community, environmental advocacy groups, Town of Mansfield municipal officials, and public water suppliers (Windham Water Works). The Committee was chaired by the University of Connecticut's Director of Environmental Policy.

The Committee's charge was to advise the University's engineering consultant, S E A Consultants Inc., regarding alternative site locations, with the intent that S E A would evaluate in detail a maximum of three sites, and a minimum of two sites, including the existing location. Once the methodology and data resources were in place, however, S E A could reasonably respond to the Committee's request that three additional sites be evaluated in greater detail. Ultimately, six sites were included in the analysis.

1.1 *Why a Centralized Facility?*

One of the Committee's first actions was to request that the rationale for maintaining an on-campus central hazardous waste storage facility be presented to the Committee, and included as part of the record of the evaluation process.

The establishment of a centralized hazardous waste collection facility represents the "state of the art" practice at major research universities to enable optimal management of these hazardous materials. Building occupant safety concerns coupled with operational efficiencies have driven the national practice of removing biological, chemical, and low-level radioactive wastes from laboratories on a weekly, or more frequent, basis.

Life safety concerns arose from the past practice of storing wastes in laboratories until a vendor could be scheduled to conduct door-to-door pickups. Safety concerns focused on the accumulation of unused or unwanted chemicals within the occupied laboratories, which generally lack adequate space to safely store the volumes of compatible and incompatible wastes generated. The lack of suitable space and proper oversight of stored wastes resulted in the need to devise a method to handle these materials in a more responsible and efficient manner. The current practice of using a centralized hazardous waste collection system offered a vast improvement for safely handling these materials by instituting an on-demand removal service for researchers, when compared to the University's former method involving scheduled vendor pick-ups from multiple points of generation. Importantly, the current system accepts chemicals

with unknown identities; after these are tested and characterized at the centralized facility, they can be shipped off campus for disposal.

Contracting hazardous waste collections to a vendor, while eliminating the need for a centralized storage facility, would create space, and would still require contractor oversight by EH&S staff. Additionally, wastes cannot simply be stored; they must be managed during storage, i.e., proper labeling and segregation of incompatibles. Graduate students are more oriented towards conducting and completing their research, than on the regulatory aspects associated with proper waste storage. Consequently, waste labels are less likely to be maintained, and incompatible chemicals are apt to be stored next to each other.

Laboratories are considered to be “Satellite Accumulation Areas” and, as such, they are subject to less stringent waste storage requirements. Thus, instead of having just one centralized less-than-90-day facility for the campus, the University would have several, each requiring weekly inspections, additional labeling, and more stringent segregation. These laboratory staff would need to be EPA RCRA-trained on an annual basis with proper documentation.

A centralized collection system results in upgraded building occupant safety, since multiple pick-ups per week are provided by EH&S with the objective of minimizing laboratory volumes, and ensuring that waste management is handled by trained EH&S professionals. Additionally, consolidating compatible wastes into drums provides a very cost-effective means of disposal. In the absence of a consolidation program, partially filled solvent bottles are packed in drums, along with large quantities of vermiculite. “Lab Packs” result in large volumes of vermiculite and air space filling the drum instead of 100 percent liquid and, therefore, represent a very costly means of disposal. From years of cost data, EH&S has determined that the price of removing hazardous waste as a Lab Pack is approximately \$20/gallon, while the price for removing consolidated hazardous wastes is approximately \$3/gallon.

A centralized facility can offer the added benefits of enhanced security and protection against unauthorized access and possible vandalism. Past experience has shown that wastes are managed more safely and efficiently when they are managed centrally; that is one of the principal reasons universities across the country have established these programs. This is as true for chemical, biological, and low-level radioactive wastes, as it is for other wastes, including construction and metal debris and old/outdated computers. These items are brought to centralized collection areas where they can be evaluated and processed in the safest and most cost-effective manner.

1.2 Initial Site Screening Process

1.2.1 Baseline Assumptions

Although informal work groups within the University had previously discussed aspects of facility relocation, S E A with the assistance of the Committee undertook this Comparative Site Study as an independent evaluation, based on methods and resources identified by the Committee and the engineering consultants. Certain assumptions were agreed upon by the Committee in order to establish gross screening guidelines. These included the following:

- Despite UConn’s history of operating the hazardous waste facility safely, the University recognizes that such facilities are closely regulated and carefully managed because they pose an inherent risk to public health, safety and the environment.

- Design, construction and operation of the hazardous waste facility will be a neutral factor in the site selection process since UConn has committed to construct and operate the facility in conformance with regulatory requirements and best management practices.
- The site must be contiguous to the main Storrs campus since an off-campus location would elevate the facility to the status of “commercial” Treatment, Storage and Disposal Facility, open to hazardous waste generators other than those from the University alone, and subjecting the University to substantially greater liability and risk.
- The former landfill site is ineligible for consideration due to regulatory constraints that are part of the conditions of closure agreed upon with DEP.

2. PRELIMINARY SITE SELECTION

Employing the assumptions referenced in Section 1, and information available relative to University development plans, ongoing construction and existing land uses on and around the campus, the Committee began a process of identifying specific sites or areas of campus for detailed evaluation. Three specific sites were initially identified:

- The existing facility location off of Horsebarn Hill Road in the East Campus;
- A parcel immediately inside of the fenced in area of the Water Pollution Control Facility (WPCF) in the northwest corner of the campus; and
- A parcel west of the WPCF, in the vicinity of the existing transfer station and the former sand filter beds associated with the WPCF.

The Committee suggested that two other areas - the “North Campus” and the Science Quad within the main campus - deserved further consideration. Substantial work has already been done by the University’s Master Plan Committee relative to future development of the North Campus, and the Committee relied upon this information to identify an appropriate parcel for consideration. As a premise for compatible use consideration, waste storage was defined as an adjunct use associated with research and technology activities. Of those parcels designated for future research/technology uses in the otherwise undeveloped North Campus, and considering other selection criteria (see below), Parcel D was initially identified as a potentially viable site to which additional evaluation would be given. Proximity to human populations (the “human health impact” metric) was deemed to be one of the most influential weight factors, based on feedback from both the Committee and the public during the Public Availability session conducted in November 2003. Parcels C and D in the North Campus were determined to be the most remote from existing or proposed housing and/or classroom uses. Due to requirements of the facility, environmental conditions at the site, and proposed future uses on the parcel, the Committee eventually requested that the northern portion of parcel D be scored as a potential facility location.

Shortly before the Committee was finalizing efforts on the comparative study, the University determined that completion of the connector road to Route 44 would likely be deferred for several years due to other capital project priorities. Since access to the northern portions of either Parcel C or Parcel D is dependent upon completion of that connector road, the Committee selected a different North Campus site to score in the matrix. Parcel E is south of the other parcels, and can be accessed under current roadway conditions.

Since the Science Quad houses the greatest number of waste generators, the Committee felt it appropriate to explore potential sites within the area. Given the high density of development in the area, and the ongoing construction, a site was chosen behind the Chemistry and Torrey Life Sciences buildings for purposes of the evaluation. A more specific location was not possible to identify at this time. All six of the sites were evaluated in detail as described below.

2.1 Evaluation Methodology

The Committee recognized that the process of identifying an appropriate location for the hazardous waste storage facility could be contentious, and accordingly the process for rating and ranking each site had to be fair and reasonable. In addition, members agreed that the evaluation should rely on objective data to the extent practicable. Among the data sources referenced for the evaluation were existing operating records for the current facility, the University’s North Campus and Outlying Parcels Master Plans,

engineering plans for utilities and sites, orthophotos and aerials of the campus, USGS topography maps and Geographic Information Systems (GIS) mapping for the University and surrounding area. The GIS mapping allowed the committee to see graphic representation of existing natural and built resources, and evaluate potential impacts to those resources based on proximity, topography and adjacencies to other existing or proposed land uses.

The Committee agreed to a methodology that would allow each site to be compared relative to all of the others through a multi-attribute decision matrix (the “matrix”) process. The process was as follows:

- Establish the evaluation criterion;
- Establish the scoring scale for the criterion;
- Establish weight factors for the criterion; and
- Score the sites.

The Committee proceeded to define the criteria, the scoring scale, and the weight factors employed in the matrix.

2.1.1 Evaluation Criteria, Scoring and Weight Factors

After thorough discussion, the Committee agreed on the following criteria to be included in the matrix, as follows:

- **Environmental/Ecological Impact** – proximity to plant and animal habitats as well as wetlands and watercourses.
- **Public Health Impact** – proximity to existing or anticipated academic/classroom buildings, homes, or student housing.
- **Public Water Supplies** – proximity to groundwater or surface water public water supplies.
- **Public Safety/Security and Accessibility** – does the site minimize potential for accidental as well as malicious damage, or terrorist threats, and will it allow for timely emergency response and minimal disruption of campus activity in the event of a release?
- **Consistency with University of Connecticut Master Plans, Local and State Plans of Conservation and Development and Surrounding Land Use** – is the site location in conformance with plans for future use and/or preservation and conservation, and does it complement surrounding land uses?
- **Operational Efficiency and Cost** – does the site allow for appropriate upgrades in waste handling systems, site interior circulation, staff oversight from a proximate location, and cost efficiencies in labor and equipment?
- **Traffic Safety/Circulation** – does the site location minimize pedestrian/vehicle conflicts, accommodate efficient waste vendor access and egress from the campus, and minimize distance traveled on campus roads for internal waste pick-ups/deliveries (i.e. proximity to waste generators)?
- **Regulatory Requirements** – will the site location trigger additional permitting or reporting requirements?

As the purpose of the matrix is to provide a rational structure and objectivity to the process, criteria were selected for inclusion only where some quantifiable measures were possible, and the data to provide those measures available and accessible to the Committee and S E A. For instance, “public and community acceptance” was originally discussed as a possible criterion. The Committee agreed, however, that public acceptance would be a result of a fair and objective process rather than a criterion of itself. Consequently, the criterion was omitted from the final matrix.

The same numeric scale (1 – 4, where 1 is equivalent to greatest potential impact and 4 is equivalent to least potential impact) was applied to each criterion. For instance, several of the criteria relied upon proximity to certain sensitive receptors (e.g. human populations, water resources, ecological habitat) as the means by which relative impact would be measured. The numeric scale in those instances was explicitly associated with how close the site was to the identified resources or receptors. For other of the criteria, the numeric scale was associated with the extent to which the site could meet all (or some, or none) of the qualifying attributes of the criterion (e.g. a perimeter campus location minimizes potential vehicle/pedestrian conflicts by outside vendors collecting waste for off-site disposal, but requires additional UConn EH&S collection trips to the interior of the campus). Specific definitions were assigned to each numeric value, although some subjectivity was unavoidably introduced.

Finally, weight factors were assigned to each criterion. The weight factors are a means of recognizing that not all criteria are equal when evaluating impact of a specific land use. Although the Committee initially intended to seek consensus on specific weight factors for each criterion, individuals brought independent interpretation of relative impact based on their own perspectives. As the technical consultant on the project, it was S E A’s responsibility to present a methodology, provide appropriate data and interpret findings. The Committee’s advisory role was specifically to solicit and address views representative of the community stakeholders. Ultimately, members independently assigned weight factors and undertook the exercise individually. Results of the independent exercise, however, were illustrative in their own right. Members independently reflected concurrence that Public Health, Public Water Supplies, and Environmental/Ecological impacts were the highest priority. Several individuals weighted Public Safety and Consistency with Local and State Planning as equally important, however, in all other categories the weight factors were substantially lower for all participating members.

The range of scores resulting from the evaluation was analyzed. Results are discussed in Section 3. A copy of the matrix and the scoring sheet guidance document (numeric scale) are provided in **Appendix A**.

3. SITE SCORING

Several of the Committee members were familiar with the University's Master Plans, several were familiar with local municipal plans, and several were familiar with the public water supply management issues. Technical support regarding current operations was provided by University EH&S personnel, and utility information was provided by University Engineering & Architectural Services. The Committee drew on all of these resources to document the conditions associated with each site.

S E A prepared and presented to the Committee various images that mapped the specific environmental or human receptors represented in the selection criteria. The GIS data sources were primarily public databases (such as Connecticut Department of Environmental Protection). Other publicly available mapping and aerial photography resources, such as United States Geological Survey topography maps and Town of Mansfield orthophotos were also referenced.

3.1 Results of Scoring

The first three sites identified by the Committee were jointly reviewed, and as described in Section 2, independently scored by the Committee members. A discussion of site scoring for each site is provided below. All figures referenced in the report are provided in **Appendix B**.

3.1.1 The Existing Facility

The current facility location was scored as a baseline for evaluation, as the potential impacts associated with this site are the benchmark against which the other sites were to be measured. A campus map showing the location of the facility is provided as Figure B-1. An aerial photograph of the facility is provided as Figure B-2. GIS maps of the site vicinity, identifying receptors and resources relevant to defined criteria, are provided in Figures B-3 through B-5.

Members reported scores ranging from a low of 215 to a high of 267. The average score was approximately 240.

3.1.2 Parcel Within the Water Pollution Control Facility

See Figure B-1 for site location. An aerial photograph of the vicinity around the site location is provided in Figure B-6. GIS maps of the site vicinity, identifying receptors and resources relevant to defined criteria, are provided in Figures B-7 through B-9.

Members reported scores ranging from a low of 297.5 to a high of 345, with an average of 320.

3.1.3 Parcel West of the WPCF – At the Transfer Station

A campus map showing the location of the site is provided in Figure B-1. As the site is in close proximity to the site within the WPCF, an aerial view and GIS maps of the site vicinity, identifying receptors and resources relevant to defined criteria, are also provided in Figures B-6 through B-9.

Members reported scores ranging from a low of 300 to a high of 462, with an average of 358.

3.1.4 Parcel D, Parcel E and the Science Quad

After scoring the initial three sites, the Committee met to discuss the results of the evaluation. The trend that emerged from the scoring exercise was confirmed through the discussion. The standards upon which individuals were scoring the site were now generally familiar, and the Committee requested that S E A

complete the same scoring exercise for the three final sites, Parcels D and E in the North Campus and the site in the Science Quad, and present those findings to the Committee. S E A's weight factors were in general accordance with the trend demonstrated by individual Committee members, although as with all other participating members, the weight factors were independently assigned based on our professional perspective.

The Parcel D location is provided in Figure B-10. GIS maps of the site, identifying receptors and resources relevant to defined criteria, are provided in Figures B-11 through B-13.

S E A scored the Parcel D site at 225. The scoring was influenced by two primary factors. The first involved potential environmental and ecological impacts to sensitive habitats including vernal pool systems and wetlands in the immediate vicinity. The Traffic Safety and Circulation criteria also had bearing on the final score. As noted above, the Committee was informed late in the evaluation process that UConn was going to have to defer construction of the North Hillside Road extension to Route 44. Parcel D is not currently accessible under existing roadway conditions.

A significant portion of North Campus will continue to be inaccessible until such time as the extension is complete. Rather than omit a North Campus site altogether on this basis, the Committee agreed upon a location in Parcel E which could be accessed from the existing roadway with minimal additional site development. A similar gross screening process was employed to choose this alternative North Campus site. The process, however, had to recognize that site access now became the most significant factor relative to inclusion in our scoring matrix, rather than distance from human population.

The Parcel E location is provided in Figure B-10. GIS maps of the site, identifying receptors and resources relevant to defined criteria are provided in Figures B-14 through B-16. The site score was 240. Scoring was influenced by the closer proximity to new student campus housing (Charter Oaks), although the site posed potentially less impact on environmental receptors.

GIS maps identifying receptors and resources relative to the Science Quad site are provided in Figures B-17 through B-19. The Science Quad site scored 230. An aerial photograph and inset of the existing site conditions are provided in Figure B-20 to establish the context of this location, specifically in regard to density of development and traffic congestion issues. The greatest potential impacts were associated with Public Health (the density of the student and University population), Public Safety (difficulty of timely response in heavily congested area), and Traffic Safety (vendors would have to maneuver into the heart of the campus for bulk pick-ups).

4. Conclusions and Recommendations

S E A's planning approach brought together a diverse group of stakeholders who participated in evaluating alternatives for location of an on-campus hazardous waste storage facility. The study objective was to provide an initial screening tool for the University, with preliminary assessment of multiple sites identified early in the study, and evaluation of two (the existing site and the Water Pollution Control Facility) that the University requested be included in the analysis. S E A's methodology, data sources, and criteria were discussed and agreed upon by the Advisory Committee.

Upon conclusion of the evaluation, the sites ranked as follows:

Site	Site Score		Comments
	<i>Range</i>	<i>Average</i>	
1. Transfer Station/West of the WPCF	300 – 462	358	Preferred site, recommended for further consideration as new HWF location.
2. Parcel within WPCF	297.5 – 345	320	Comparable to preferred site relative to potential environmental or human impacts, but reduced site area and immediate adjacency to active industrial facility (WPCF), and the proximity of a 30" force main serving the entire campus and which transects the site, makes this a less attractive option.
3. (tied) Existing Site	215 – 267	240	Location in public water supply watershed and proximity to wellfield Level A recharge area were the primary negative factors in site scoring. Not recommended.
3. (tied) Parcel E*	N/A	240	Site is close to student campus housing but in an area where little or no other activity currently takes place. This reduces the score based on potential human health impact, and vulnerability to malicious damage. Site is also inconsistent with current master plan land use recommendation. Not recommended.
5. Science Quad*	N/A	230	Site is in highly congested, highly populated area, reducing emergency response effectiveness and increasing potential for human health impact and maximum campus disruption in the event of an accidental release. Location would also increase potential for vehicle/ pedestrian conflicts with waste contractors requiring access. Not recommended.
6. Parcel D*	N/A	225	Site scores poorly due to ecological receptors and wetlands in immediate vicinity, vulnerability to malicious damage, inconsistency with existing master plan land use recommendation and will be otherwise inaccessible until extension road complete. Not recommended.

*No scoring ranges are reported for these sites because they were scored only by S E A Consultants. The scores and scoring rationale were discussed with the Committee, and the results agreed upon by consensus of the Committee.

On the basis of this evaluation, S E A recommends further investigation of the highest ranked site, the Transfer Station site, to verify data provided through the sources referenced for this study, and to provide a more detailed assessment of actual site conditions.

Appendix A
Matrix and Scoring Sheet

UNIVERSITY OF CONNECTICUT RCRA STORAGE FACILITY PROJECT EVALUATION MODEL

MULTI-ATTRIBUTE DECISION MATRIX ALTERNATIVES ANALYSIS

WEIGHTING FACTOR (W)	CRITERION (X) (IMPACT INDICATORS)	ALTERNATIVE M1 Existing Site; Upgraded		ALTERNATIVE M2 WWTP Site A		ALTERNATIVE M3 Transfer St. "Site B"		ALTERNATIVE M4 Parcel D		ALTERNATIVE M5 Science Quad	
		VALUE (V) FUNCTIONS	WEIGHT VALUES	VALUE (V) FUNCTIONS	WEIGHT VALUES	VALUE (V) FUNCTIONS	WEIGHT VALUES	VALUE (V) FUNCTIONS	WEIGHT VALUES	VALUE (V) FUNCTIONS	WEIGHT VALUES
0.0 0.0%	X1 Enviro/Ecological NDD - site is within (1), abutting (2), <200' from (3), or >200' from (4) NDD area Wetlands and Watercourses - site contains wetland resource (1), within 150' buffer (2), <100' from buffer (3), >100' from buffer (4)	0	0	0	0	0	0	0	0	0	0
0.0 0.0%	X2 Public Health Proximity to acad. & resident structures	0	0	0	0	0	0	0	0	0	0
0.0 0.0%	X3 Public Water Supplies Groundwater - site w/i Level A of PWS (1), w/i 400' of Level A boundary (2), >400' from boundary (3), outside of Level B area (4) Surface Water/Reservoir - w/i 250' of reservoir (1), w/i 1/8 mi. of perennial strm in PWS watershed (2), w/i 1/4 mi. of perennial strm in PWS (3), >1/4 mil or not in PWS watershed (4)	0	0	0	0	0	0	0	0	0	0
0.0 0.0%	X4 Public Safety/Security and Accessibility Site to minimize: accidental damage, malicious damage, terrorist threats Site to allow: timely emergency response minimal disruption of campus activity	0	0	0	0	0	0	0	0	0	0
0.0 0.0%	X5 Consistency with UConn, Local, and State Plans and Surrounding Land Use Master Plans, C&D Plans	0	0	0	0	0	0	0	0	0	0
0.0 0.0%	X6 Operational Efficiency/Cost Improved waste handling systems Adequate interior circulation Staff oversight from proximate locale Cost efficiencies in labor and equipment	0	0	0	0	0	0	0	0	0	0
0.0 0.0%	X7 Traffic Safety/Circulation Minimize pedestrian/vehicle conflict Accommodate efficient access/egress Minimize distance traveled (proximity to generators)	0	0	0	0	0	0	0	0	0	0
0.0 0.0%	X8 Regulatory Requirements Permitting if wetlands disturbed Handling and storage regulations EIE - at discretion of OPM	0	0	0	0	0	0	0	0	0	0
W Total: 0 0.0%		M1 SUM: 0.0		M2 SUM: 0.0		M3 SUM: 0.0		M4 SUM: 0.0		M5 SUM: 0.0	

SCORING SHEET: DECISION MATRIX

Criteria X-1: Enviro/Ecological

See sub-scoring table. Calculate average of the two sub-category scores to determine raw score for insertion into Matrix.

Criteria X-2: Public Health

4 = Within ½-mile of existing or future acad/classroom buildings, homes or student housing
3 = Within ¼-mile of existing or future acad/classroom buildings, homes or student housing
2 = Within 1/8-mile of existing or future acad/classroom buildings, homes or student housing
1 = Site includes existing or potential acad/classroom buildings, homes, or student housing

Criteria X-3: Public Water Supplies

See sub-scoring Table.

Calculate average of two sub-categories to determine raw score for insertion into matrix.

Criteria X-4: Public Safety/Security and Accessibility

4 = Meets all measures for improved Public Safety
3 = Meets most measures for improved Public Safety
2 = Meets some measures for improved Public Safety
1 = Negative Impact on Public Safety

Criteria X-5: Consistency with UConn, Local and State Plans, and Surrounding Land Use

4 = Consistent with Local and State Plans
3 = Consistent with majority of planning
2 = Inconsistent with UConn MP; not otherwise inconsistent
1 = Inconsistent with specific Plans and general intent

Criteria X-6: Operational Efficiency/Cost

4 = Meets all measures for improved efficiency
3 = Meets most measures for improved efficiency
2 = Meets some measures for improved efficiency
1 = Does not meet any measures for improved efficiency

Criteria X-7: Traffic Safety/Circulation

4 = Meets all measures for improved traffic safety
3 = Meets most measures for improved traffic safety
2 = Meets some measures for traffic safety
1 = Negative impact on traffic safety

Criteria X-8: Regulatory Requirements

4 = Does not require any additional permitting
3 = Requires permits – qualifies without variance required
2 = Requires permits – must obtain variance
1 = Can not be permitted at that site

Appendix B
Figures

Appendix C
Meeting Schedule with Agendas

ADVISORY COMMITTEE MEETING SCHEDULE*
FOR
SITING EVALUATION OF RCRA STORAGE FACILITY
UNIVERSITY OF CONNECTICUT

Meeting No. 1 - Date:	9/30/03
Meeting Objective:	Member Introductions; Project Background; Evaluation Criteria Review
Meeting No. 2 – Date:	10/23/03
Meeting Objective:	Site Reconnaissance Visits; Finalize Evaluation Criterion; Determine Evaluation Methodology; including Weight Factors; Scoring Scales and Metrics
Meeting No. 3 – Date:	11/13/03
Meeting Objective:	Evaluate Alternative Site Candidates; Finalize Weight Factors, Scoring Scales, Metrics; Initiate Scoring for Existing Storage Facility
Meeting No. 4 – Date:	12/4/03
Meeting Objective:	Complete Scoring for Existing Storage Facility (Create Benchmark); Initiate and Complete Scoring for Identified Alternative Site 2 – Wastewater Treatment Plant
Meeting No. 5 – Date:	1/8/04
Meeting Objective:	Initiate and Complete Scoring for Identified Alternative Site 3 (if applicable); Review Comparative Results of Scoring
Meeting No. 6 – Date:	2/09/04
Meeting Objective:	Complete Review; Develop Consensus on Preferred Alternative; Prepare Recommendations for Presentation to Chancellor, B&G Committee

*Public Meeting scheduled for 11/20/03, in addition to Advisory Committee Meetings

Appendix D
Sources for GIS Data

FIGURE LEGEND NAME	COVERAGE FILE NAME	DESCRIPTION	SOURCE	Revision Date
Public Wells	apawell.shp	Public water supply wells.	CT DEP	Oct. 2002
Fenton River Level A Aquifer Protection Area	fenton_prelim_level.shp	Fenton River Level A Aquifer Protection Areas. Preliminary was approved final.	LBG	Feb. 2002
5. Preliminary Level B Aquifer Recharge Area	apa.shp	Aquifer Protection Areas as adopted for Connecticut by the Connecticut Department of Environmental Protection (DEP). Includes Preliminary (Level B) and Final (Level A) APAs	CT DEP	Oct. 2002
Buildings	bld_type.shp	Location and identification of building use (point file). Digitized from color aerial photography.	NRME J. Hurd	Received by S E A Sept. 2003
Charter Oaks Residential Facility	CharterOaks.shp	Approximate location of Charter Oaks residential facility. Digitized from color aerial photography.	S E A K. Ryan	February 2004
Existing Facility	existing_hwsf.shp	Existing location of the Hazardous Waste Storage Facility of Horse Barn Hill Road. Digitized from color aerial photography.	NRME J. Hurd	Received by S E A Sept. 2003
Sites	Sites.shp	Water Pollution Control Facility and Transfer Station sites. Digitized from color aerial photography.	S E A K. Ryan	February 2004
Parcel D Site	PointParcelD.shp	Reference location for Parcel D site, as defined in the Outlying Parcels Master Plan. Digitized from color aerial photography.	S E A K. Ryan	February 2004
Parcel D, Approximate Limits	ParcelD.shp	Approximate limits of Parcel D, as defined in the Outlying Parcels Master Plan. Digitized from color aerial photography.	S E A K. Ryan	February 2004
Parcel E Site	ParcelE_point.shp	Reference location for Parcel E site, as defined in the Outlying Parcels Master Plan. Digitized from color aerial photography.	S E A K. Ryan	February 2004
Parcel E, Approximate Limits	ParcelE.shp	Approximate limits of Parcel D, as defined in the Outlying Parcels Master Plan. Digitized from color aerial photography.	S E A K. Ryan	February 2004
Science Quad	ScienceQuad.shp	Digitized from color aerial photography.	S E A K. Ryan	February 2004
Covered Reservoirs	Ncampus_covered_reservoirs	Digitized from color aerial photography.	S E A K. Ryan	February 2004
Wetlands	Ctwet_soils.shp	Connecticut defined wetland soils.	CT DEP	Jan. 2002
Water Courses: Surface Water	Hydro_sea_edited.shp	Polygonal hydrographic features appearing on USGS quadrangles. CT DEP hydro.shp layer edited by S E A to remove former water pollution control lagoons.	S E A K. Ryan	Nov. 2003
Water Courses: Intermittent Streams, Perennial Streams	Hydroz.shp	Linear hydrographic features appearing on USGS quadrangles.	CT DEP	1995

FIGURE LEGEND NAME	COVERAGE FILE NAME	DESCRIPTION	SOURCE	Revision Date
Public Water Supply Reservoirs	reserv.shp	Public Water Supply Reservoirs.	CT DEP	Aug. 2001
Public Reservoir Watershed	res_wtrshd.shp	Public Water Supply Watersheds.	CT DEP	Aug. 2001
Natural Diversity Database	Nddb.shp	Natural Diversity Database- general areas of concern with regards to state and federally listed Endangered, Threatened, and Special Concern species and significant natural communities	CT DEP	Jan. 2004

Basemap Images

- Town of Mansfield color aerial photographs, circa 1998, MrSID image format.