Town of Orangetown

Orangeburg, New York

Rockland Psychiatric Center

Phase II Investigations and Recommended Site Remediation REPORT

August 2002

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One Blue Hill Plaza • Pearl River, New York 10965
ENVIRONMENTAL SCIENCE & ENGINEERING CONSULTANTS

TOWN OF ORANGETOWN

RPC PHASE II INVESTIGATIONS

AND

RECOMMENDED SITE REMEDIATION

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CHAPTER 1

SUMMARY

The purpose of this summary is to provide an overview of the findings of the Phase 2 investigation of environmental conditions at the portion of the Rockland Psychiatric Center (RPC) that the Town of Orangetown (Town) intends to purchase from New York State (NYS). At this time, Lawler, Matusky and Skelly Engineers LLP (LMS) has completed its basic Scope of Services; this Report includes the results of the entire investigation, including the previously submitted Draft Report on the outdoor environmental conditions and new material on the investigation into the costs of asbestos remediation and building demolition in the Core Area. These two portions of the study are summarized sequentially.

As outlined in its proposal of May 2002, previous investigations of the site had indicated that the outdoor environment of the RPC site did not have known significant environmental problems, but there were several aspects of this environment that warranted further investigation before the Town could be assured that the property did not present major impediments to its development. Although firm plans for the development of this portion of the property have not yet been formulated, uses are expected to include youth recreation playing fields, and this use has been taken as the future against which the current environmental conditions should be evaluated.

Specifically, the outdoor environment part of the study included the following:

- Review of all available documents regarding the environmental conditions at the property, to help guide the field study;

- Soil sampling in the open fields for chemicals that may have been used in past farming operations, i.e., organic pesticides and metals;

- Similar sampling in the area where sewage sludge was known to have been disposed of , with analysis for metals and volatile organic compounds (VOC);

- Sampling of the soil immediately adjacent to typical buildings, to determine whether peeling paint may have contaminated the soil with metals, particularly lead, to a greater extent than background conditions;

- Field verification of the known landfills on the site. Although investigations by the NYS Department of Environmental Conservation (NYSDEC) and the Department of Mental Health (OMH) had concluded these did not require further remediation in and of themselves, they were examined as they may present an impediment to development by the Town;

- Testing of the landfill areas for gases that would indicate that the landfills were actively decomposing organic matter, whereas the State had concluded these landfills were essentially benign;

- Groundwater sampling downgradient of the landfills to determine whether these are contaminating the groundwater, particularly with regard to VOCs and metals. The specific concern with VOCs was to assess whether users of the recreation areas could be exposed to chemicals by inhalation;

- Sampling of the groundwater downgradient of the cook/chill facility on Old Orangeburg Road, with added analysis for Freons, to assess inhalation conditions that may have arisen from releases (none known) at the facility.

- Review of chemical and fuel handling practices at the Broadacres golf course, to determine whether these are in keeping with current regulations and do not represent a hazard to site groundwater.

The body of this report reviews, in Chapters 2 and 3, the general history of the site and the investigations of site environment that have preceded the current study. The thrust of both these chapters is to place the current situation at the site in a historical context, providing the rationale for the elements of the Phase 2 investigation. In chapters 4,5 and 6, the field investigations are described, the results presented, and these results interpreted with reference to regulations and the proposed use of the site. In Chapter 8, remedial actions to alleviate the conditions presented by the landfills and the sludge disposal areas are discussed.

The overall conclusion of this portion of the study is that we have found no serious or previously undetected environmental conditions that would warn against purchase or development of the property.

- The sampling of the surficial soils of the open fields detected organic pesticides, as expected, but there was not a single finding of any of these compounds above the NYSDEC cleanup objectives. Note that these cleanup objectives are those established as targets in the remediation of listed hazardous waste sites. Findings above the cleanup objectives on the RPC property would not signify a legal or technical requirement that remediation be performed. These values are used as a point of comparison, since they are the only guidance ones published by NYSDEC.

- Five of 20 samples found mercury above the NYSDEC cleanup objectives, but barely above levels considered eastern US background. These soils would not represent a hazard; for example, the US Environmental Protection Agency allows sewage sludge with 70 times higher concentrations to be used as fertilizer for gardens and lawns. Additionally, the vertical and horizontal mixing of the soils that will be necessary to grade any playing field, plus the covering of the native soils with topsoil, will prevent these soils from being a hazard to youth recreation.

- The previous disposal sites for debris of various natures on the property do not in and of themselves present an environmental hazard, but should be dealt with if and when their locations are to be put to active use by the Town. The simplest method of handling these materials is to dispose of them offsite, rather than establishing a licensed landfill on the property. The latter approach would entail the time and cost of permitting, and the management of a long term monitoring program that is normally associated with such facilities. It is not expected that any of the landfill materials, including the remnants of the sewage sludges, would test as hazardous for disposal. Most of the landfills consist of compostable materials or construction and demolition (C&D) debris, which can be handled at Town or outside facilities reasonably economically; as discussed in Chapter 8, the total cost of removing all but the largest of the existing disposal sites is approximately $1,037,000. It appears that planning the use of the site could either leave these smaller disposal sites in place or remove them, without a great benefit or impact either way. The largest of the sites, estimated to be significantly greater in volume than the others combined, may cost as much as $4,800,000 to remove; we therefore recommend that planning for the site use attempt, as far as possible, to leave this material in place. Alternatively, further, invasive investigation would be needed to better estimate removal and disposal costs.

- The sampling of the soils immediately adjacent to the buildings concentrated its efforts on samples of the top six inches in areas that had visible evidence of peeling paint, to represent a worst case scenario. As expected, lead and a variety of other metals were found at elevated concentrations; some, in areas “covered with paint chips” had total lead concentrations high enough to suggest that they might test as hazardous with the type of test that is necessary to be done before they can be disposed of. Results in the staff housing area were higher than in the areas around the main site buildings. If these staff housing area buildings are to be put to use by the Town, these soils should be remediated. (If any building is to be demolished, the immediately surrounding soils should be removed to a depth of 6-12 inches and pushed into the basement of the building; in this instance, it is highly unlikely that the mixed materials would test as hazardous.) If the soils only are removed at a building that will be reused, there is some likelihood that they will test as hazardous, for which disposal costs will be greater. However, once soils are mixed, the chance that hazardous concentrations will be found is greatly diminished.

- The groundwater sampling found no chemicals of the type that would present an inhalation problem for users of the property, due either to the old landfills or to the cook/chill facility. Neither did this sampling reveal any environmental condition that would require remediation for any other reason.

- The review of pesticide handling procedures at the golf course found that all chemical storage and application is done by licensed personnel in conformance with NYSDEC regulations. There are no underground fuel storage tanks there, and, in summary, we have found no cause for environmental concern with respect to the golf course; practices there are standard, and the Phase 1 study found no files of past problems.

With reference to the asbestos, lead-based paint, and building demolition study, we completed an extensive sampling and analysis program and a complete review of the individual buildings' construction. The cost estimates for remediating the asbestos and demolishing the buildings assumed that all buildings would require asbestos remediation, but only the Parcel 2, or Core Area buildings, would be demolished: the remainder of the buildings appear much more suitable for adaptive reuse than the Core Area buildings.

The asbestos sampling and analysis was done according to EPA protocols, and we are confident in the findings, both positive and negative, of the sampling program. Given the vast number of buildings on the site, the sampling was done for most suspected Asbestos Containing Material (ACM) by sampling a model building of each type, and extrapolating the results of the sampling to the other buildings. As detailed in Chapter 7, EPA regulations allow such extrapolation, but require that any suspected ACM not actually sampled be assumed to be positive. Thus, three categories of ACM to be remediated devolve:

- those materials that were sampled in this study in the model buildings and tested positive for asbestos;
- those materials that are visually the same as these in the model buildings, and can therefore confidently be assumed to be positive for asbestos, and require remediation;

- those materials that were not sampled, and are either not similar to model building materials that tested positive, or are similar to model building materials that tested negative.

In interpreting the cost estimates that result from this legally required approach, it can be concluded that the cost estimate is conservatively high, since the third category includes at least some materials that, if tested, would be found negative and therefore not requiring remediation.

A further factor rendering the estimates on the conservative side is that the unit prices we used are representative of single building quantities. In fact, it is most likely that the remediation would be done under multi-building contracts, reducing the unit prices below the estimates herein.

A third factor is that the costs assume that the remediation and demolition are done sequentially, under separate contracts, whereas a combined contract would allow certain items to be done more efficiently than the sequential approach. Finally, we assume that no variances for ACM will be granted, although at the design stage it may be possible to obtain variances for, say, some of the roofing materials to be removed and disposed of as demolition debris.

The demolition costs were derived by an analysis of the recently completed total demolition of Building 37. Under contract to RPC, the demolition method was to remove and transport off-site most of the materials, and to pulverize some of the building's masonry and use it to partially fill the basement, finishing the backfill with a layer of select (borrow) fill. All utilities to the building are sealed off, and the area surrounding the building is regraded to blend the site into the local topography.

The details of our estimated cost of asbestos remediation and demolition are contained in Chapter 7. These costs may be summarized as follows:

TOTAL COST PARCEL 2 (Core Area) (Asbestos Remediation plus demolition)	$14,570,677
TOTAL ASBESTOS COSTS PARCELS 5 AND 6	$1,244,981
TOTAL SITE BUILDING REMEDIATION COSTS	$15,815,658
Say	$16,000,000

These costs, when put on the same basis as the costs developed previously by others for the site, are comparable to those previously published, even though these utilities run under and on the property to be acquired by the Town.

A feature of the purchase not specifically definable in our study is the necessity to maintain utility services to the buildings to be retained by the State. An extensive set of easements will be required, and any costs that may be associated with these easements cannot be identified without further information and study.

This report is being submitted as a draft, to provide Town officials the opportunity to review and comment, so that the final product places all conclusions and recommendations in a context that is most meaningful and useful to the Town as the acquisition of the property moves forward. LMS would welcome all critiques, so the final product fulfills all Town expectations.

CHAPTER 2

SITE BACKGROUND

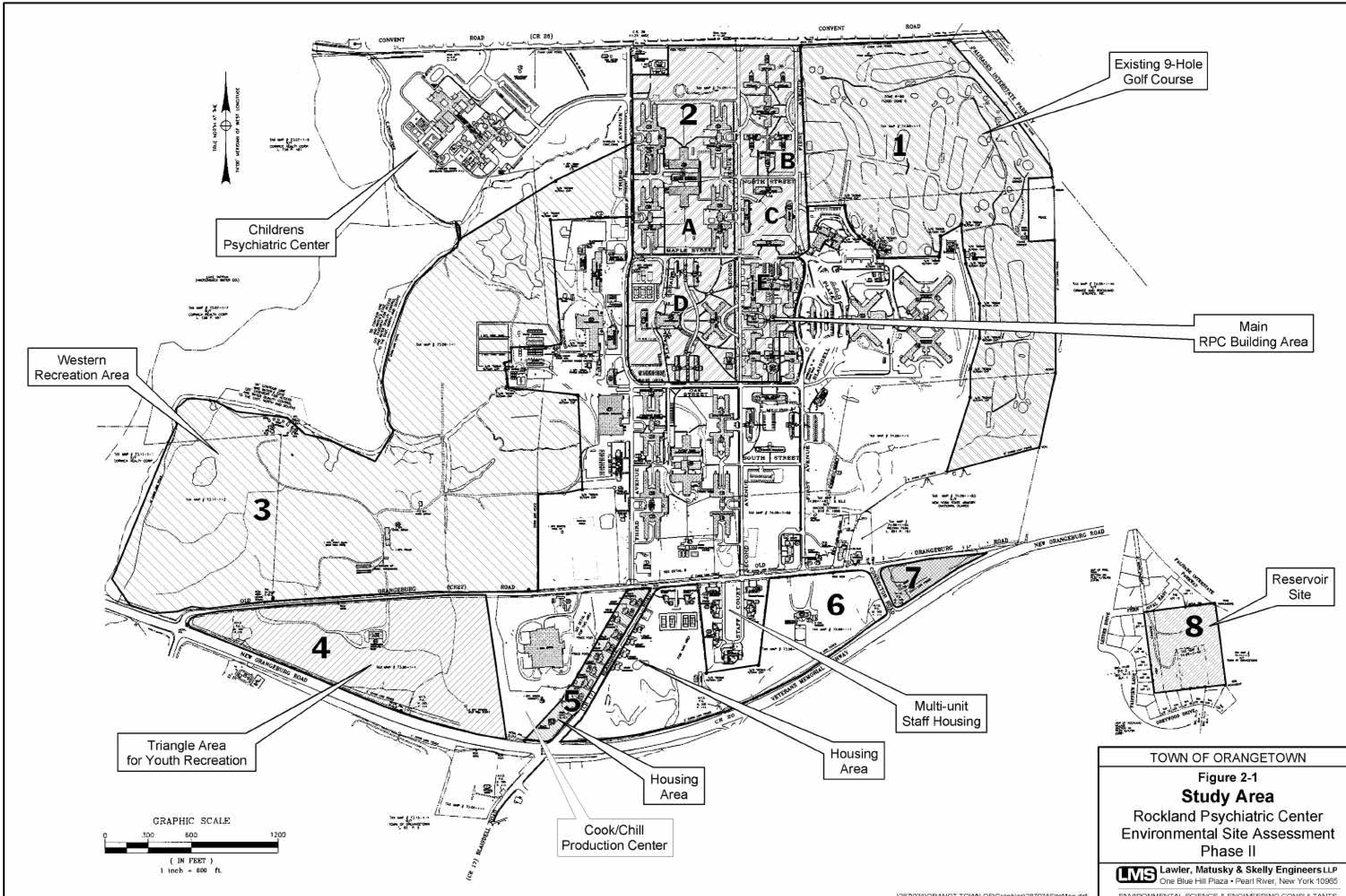
2.1 SITE HISTORY

According to OMH report (Ref 11), construction of RPC started in 1927 with the excavation of the basements for the first of 54 buildings. The work was completed in four years. The 54 buildings included all of the lower campus from the Administration (Building No. 1) in the front to the Power Plant (Bldg. No. 50) in the back (Figure 2-1). It did not include the Old Children's Group or the high rise residences, which were constructed in the mid to late 1930's.

Building No. 1 officially opened on March 1, 1931, even though the first patients had been admitted six weeks earlier. Since its opening, RPC has served over 93,000 patients; at its peak in 1956, RPC patient population numbered 9650. Until the late 1960's, RPC functioned as a somewhat independent operation in many respects. Patients and staff grew, manufactured and built many items necessary to its existence. For example, in the facility's industry department, patients manufactured thousands of pieces of wooden furniture. The hospital farm also grew its own vegetables in fields worked by patients with staff supervision. The farm opened in 1931 and remained in operation until 1960. There were 40-125 acres under cultivation at various times. Note that farming on some of these fields continued well into the 1990's by private entities leasing the land from RPC.

During World War II, Camp Shanks was located adjacent to RPC from the east and extending all the way to at least what is now the Palisades Interstate Parkway and beyond to the west-shore railroad tracks. From aerial photos (Figure 2-2), it appears that a portion of Camp Shanks was on RPC lands, in particular the area occupied by the Broadacres Golf Course.

In 1969, the Rockland Children's Psychiatric Center was constructed on RPC lands, although it has operated as a separate facility. The Nathan S. Kline Institute for Psychiatric Research has been on the RPC campus since 1952, originally in Building No. 37, but recently (1990's) expanded to occupy newly renovated Buildings Nos. 35 & 39. Finally, in the late 1990's the Cook/Chill Facility was constructed on RPC property on Old Orangeburg Road.



TOWN OF ORANGETOWN

Figure 2-1

Study Area

Rockland Psychiatric Center
Environmental Site Assessment
Phase II

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Map source:
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RPC in 1940's Showing Camp Shanks
Rockland Psychiatric Center Phase II

Figure 2-2

2.2 SALE OF LAND

2.2.1 Land Acreage

It is not known what the original acreage of RPC was in 1927, when construction of the site's buildings was initiated. By 1985, the property size was listed by DASNY as 660 acres, but by that time some of the land may have already been sold off or underwater (Lake Tappan was constructed in 1960's). Included in the 660 acres in 1985 were the fields and buildings south of Veterans Memorial Highway, which were later sold to the Town of Orangetown. A recent DASNY map showing parcels indicate the site to now (2002) be 546 acres.

2.2.2 Pending Sale

New York State is proposing to sell a portion of RPC to the Town of Orangetown, maintain other portions of the site for the RPC facility, Nathan S. Kline Institute (NKI) and Children Psychiatric Center, and sell small parcels to others. The exact boundaries of the parcels to be sold have not been determined, as there still are some minor questions on some areas. For the convenience of this report, LMS has divided the property to be sold to the Town of Orangetown into eight parcels (see Figure 2-1). A brief description of each parcel is as follows:

Parcel 1 – Golf Course – This is listed as DASNY Parcel 15 and is 64.9 acres. It includes the entire Broadacres golf course, named after a dairy that had operated on this site before Camp Shanks was built. Not included in the sale is DASNY Parcel 10, which is listed as Old Cemetery (1.8 acres).

Parcel 2 – Main Building Site – This is listed as DASNY Parcel-01 and is given as 62.5 acres. It includes the majority of the facility buildings that are being sold: Buildings 18, 32, 34, 36, 38, 95, 96, 97, 98, 99, 100, 101, 12, 14, 26, 28, 10, 13, 15, 16, 40, 41, 42, 102, 115, 2, 3, 4, 6, 7, 8 and 9. Included in the 62.5 acres and the DASNY Parcel is Building 5, which LMS now understands is to be retained by the State. DASNY Parcel 11, the swimming pool area is not included in this parcel nor is it listed as part of the sale (it is 1.1 acres).

Parcel 3 – Farm Fields – This is listed as DASNY Parcel-03 and is given as 154.8 acres. It includes all of the fields that have recently been used for farming, wetland areas, buildings 88, 127 and remains of buildings 126, 128, 105 and 94. This parcel also includes all of the areas that were used to dump debris, C&D waste, etc; these topics are discussed in detail below.

Parcel 4 – Orangeburg Road Fields (also known as the Triangle) – This is listed as DASNY Parcel-05 and is given as 41 acres. It includes the open field between Old Orangeburg Road and New Orangeburg Road, Building 84 (Barn). However, DASNY Parcel-05 also included the Cook/Chill facility, which is not included in the sale (approximately 11 acres). Therefore, the acreage for sale in Parcel 4 is approximately 30 acres.

Parcel 5 – Staff Housing West – This is listed as DASNY Parcel-13, and is given as 3.9 acres. It includes the single family staff houses on the west side of Blaisdell Road; Buildings 77, 108, 109, 110, 136, 137, 138, 139, 140 and 141.

Parcel 6 – Staff Housing East – This is listed as DASNY Parcel-06, at 27.6 acres and DASNY Parcel-08 (Staff Court) at 6.0 acres. At this time, it is believed that DASNY Parcel-08, Staff Court will be included in the sale but it has been in/out a number of times. All of this area was staff housing, Staff Court (multi-unit housing) contains Buildings 20, 21, 22, 23, 54, 55, and the remaining area contains Buildings 25, 27 (Director's house and garage), 132, 133, 134 and 135 (Orangetown clinic) and 62, 63.

Parcel 7 – This is DASNY Parcel-07 and is given as 2.6 acres. It is the small lot between Old and New Orangeburg Roads and Connector Road, and contains no buildings.

Parcel 8 – Reservoir Site – This is DASNY Parcel-14 and is given as 6.5 acres. It is separated from the main facility, located off Lester Drive/Fern Oval East and is the site of the old water supply reservoir.

As of this date, it is LMS' understanding that the State is planning to sell DASNY Parcel-09 separately to the Gaelic Athletic Association (GAA). This parcel contains the existing ballfields off Third Avenue, and its size is given as 8.5 acres. Also, the GAA is reportedly buying Building 43, which is adjacent to these fields, although the exact acreage is not known. Finally, it is also reported that Building 116 (171) (Catholic Chapel) and 117 (Protestant Chapel and Synagogue) are to be sold separately.

2.3 HISTORICAL SITE ACTIVITIES

2.3.1 Solid Waste

As noted above and in a December 3, 1981 internal report (Ref. 4), RPC was a somewhat self-contained facility from the early 1930's to early 1960's; as one aspect of this self-sufficiency all or virtually all site-generated solid waste was deposited on site, usually in Parcel 3 (Farm Fields). A 1981 report indicated that wet garbage was refrigerated and picked up daily by local pig farmers until 1962. The other wastes were deposited at the dump site, separated, and when weather conditions warranted all debris was burned, allowed to cool, and then buried by a bulldozer and covered with suitable fill. This solid waste landfill was listed in 1981 as Area A. This practice was discontinued in 1962, and it was reported that the dump was properly covered, graded and seeded to the satisfaction of the Rockland County Health Department.

The 1981 report goes on to list three other dump areas (B, B-1, C) that were used for leaf compost and compost/brush; however, later reports have reported these areas as Construction and Demolition (C/D) debris dumps or debris piles. It would appear that, from 1981 to the present, some of these sites were used to dump C/D waste (concrete, metal, etc.), in addition to brush, tree stumps, and grass clippings. Also, there appears to have been some of dumping of wastes originating outside the facilities. Also reported in the 1981 report was Area E, E-1, which was reported as a refuse/scrap metal holding area. In fact, it evolved into a major dump area for all types of material, and which has just been cleaned up and closed by the State, and will be retained by the State.

2.3.2 Sewage

The 1981 report also documents the disposal of sewage sludge and screenings. From the 1930's to mid 1970's, the RPC facility had its own sewage treatment facility. The raw sewage flowed to a central area, where trash screens removed the large debris, and the sewage was directed into Imhoff tanks. The solids were settled and digested (stabilized) in the Imhoff tanks, the digested solids (sludge) were pumped to greenhouses. The free liquid was pumped and discharged to "aeration beds" and allowed to percolate into the ground. In the greenhouses, the sludge was dried by a combination of draining free liquid and evaporation. The greenhouse - dried sludge and the screening were transported to the fields and buried. Sometime in the 1970's, the facility built a pump station in the same area; since that time the raw sewage has been pumped to the Orangetown Treatment Plant with no on-site solids removal.

2.3.3 **Water Supply**

From its opening until some time in the 1960's-1970's time frame, RPC had its own water supply system, including a series of at least 14 bedrock water wells. These wells were from 250 to 325 ft deep, with sizeable diameter casings and pumps. It was our understanding that the wells were pumped to a reservoir at a high point southeast of the main campus, (Parcel 8); the water was supplied to the facility from this reservoir. Most of the wells/pumps were enclosed in concrete "pill boxes", many of which remain to this day. Some time in the 1960/1970's the facility switched over to public water, and the wells were abandoned.

As part of LMS' Groundwater Investigation conducted under contract to DASNY (1997-2000), some of these water wells were investigated/opened. Wells 3 and 12 are now owned by the Town of Orangetown and were refurbished and may be used to irrigate the ballfields in the Town Park. The well housings (pillboxes) exist for Wells 9, 10, 6 and 13, along with the well casing. Well 7 had a pillbox but not pipe, and was recently demolished. Well 4 is just a standpipe in the ground. It is LMS' understanding, that the State capped all the well heads recently, although the casings do remain in the ground and open (i.e., the wells have not been filled in). The status of the other off-site wells is not known.

2.3.4 **Other Utilities**

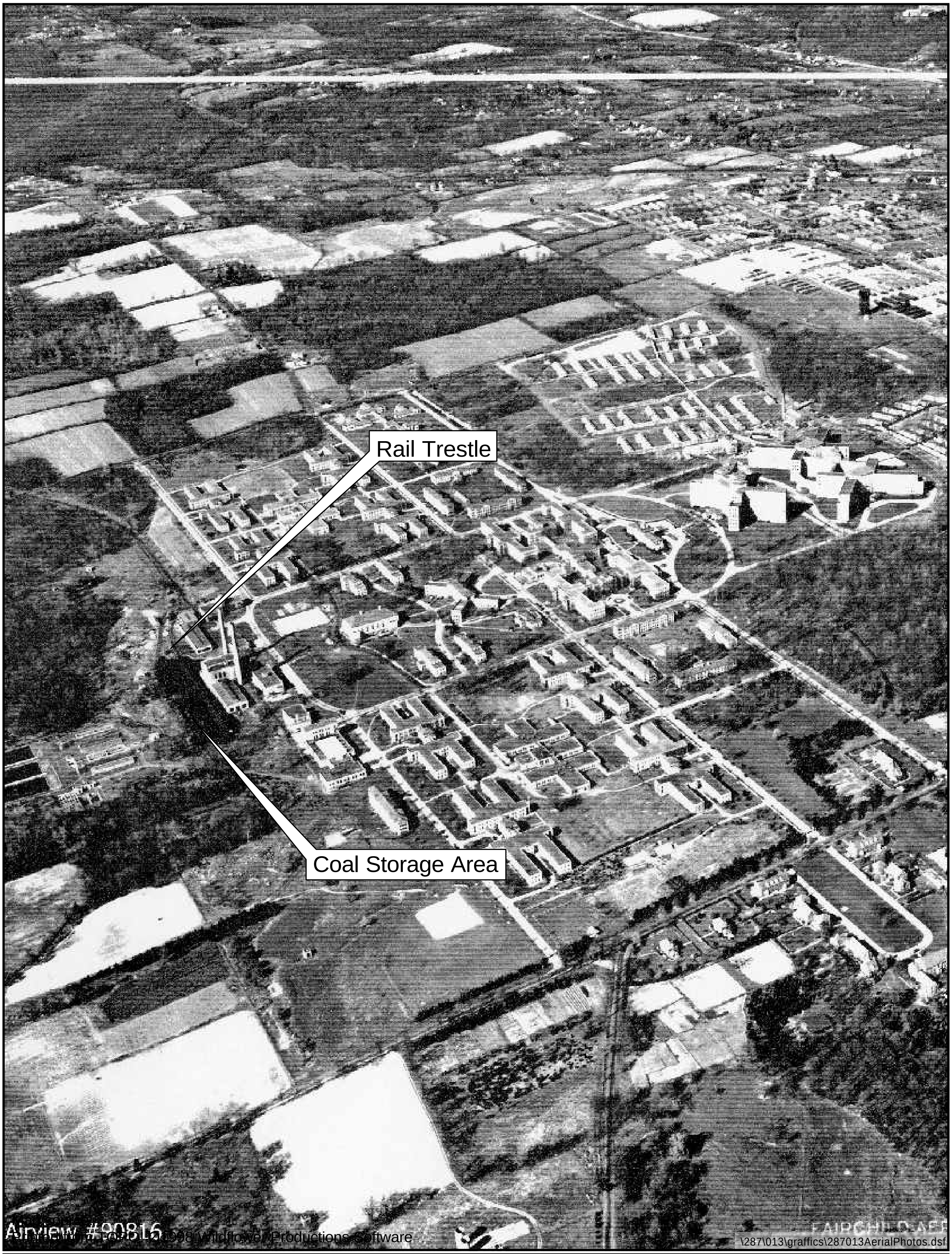
Most of the major buildings on the facility are heated via steam generated at the Power Plant (Building 50), and transmitted via a system of tunnels that extends throughout the facility's main campus. Generally, the steam system includes high and low pressure supply piping and a condensate return system for each supply. The tunnels may also contain electric and water lines. Throughout the facility there are separate sewage and storm drain lines, the sewage lines leading to the pumping station and the storm drains discharging to the wetlands/creeks on the western side of the main campus.

2.3.5 **Power Plant Fuel**

The original power plant (Building 50) was coal-fired. The coal was brought in by rail from the north (Figure 2-3) and there was a rail-trestle system to the immediate west of the plant where the coal was dumped/stored. It has been reported that the majority of the coal ash was disposed of off site, and there was not a coal ash dump on the facility. However, it is likely that some of the coal ash was used in parts of the facility as general fill. By the late 1950's-early 1960's, the power plant was converted to oil, and the coal pile/rail line removed.

2.3.6 **Laundry**

Building 47 was designed as the Laundry Building. At least initially, and probably through the late 1980's, all the facility laundry was done in that building. As part of the Groundwater Investigation Study, (Ref. 7) it was determined that this building also had a dry cleaning component, initially on the first floor; then later on an upper floor. When it operated on the first floor, the liquids may have discharged to a floor drain, but on the upper levels, the discharge was to a sanitary line.



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RPC in 1940's Showing
Power Plant Coal Pile and Rail Trestle
Rockland Psychiatric Center Phase II

Figure 2-3

CHAPTER 3

PREVIOUS ENVIRONMENTAL STUDIES AND REPORTS

The RPC site has been the subject of numerous environmental studies and reports, as a result of evolving regulations, identified environmental conditions, and the intention of NYS to divest itself of a portion of the property and the concomitant need to assess its environmental liabilities. LMS, through its contract with DASNY, had itself performed some of the past site studies and had reviewed some past studies by others in performing its services for DASNY. This knowledge, coupled with a complete review of the past information in the current study, was applied to two main objectives:

- Determining what environmental conditions may still exist on the property, and which past environmental conditions may have already been adequately dealt with.

- Developing an environmental sampling and analysis program to define those conditions that may still exist.

This chapter reviews all past environmental studies and reports known to have been conducted at the site, and places these studies in the context of how these have been used to guide the current study.

3.1 **PHASE I (1996) – Ref 1**

As part of the process to sell a portion of the RPC property, the Empire State Development Corporation contracted PSI to conduct a Phase I Environment Site Assessment (Phase I). This Phase I examined the entire RPC property, with a concentration on the portion now intended to be sold. Completed in October 1996, the Phase I listed the following environmental concerns:

- PCB Transformers
- Pesticide Drums

- USTs
- Waste Oil Disposal
- Floor Drain Staining
- Landfill Activities
- Sanitary Sewer System
- Asbestos
- Lead Based Paint
- Radon
- Wetlands
- Off-site Petroleum Spills

Although valid concerns at the time of the Phase I, many of the stated concerns have either been remediated, are not of a concern to the Town since the concern is in a building or area to be retained by the State or, investigated and determined to have minor impacts. All of the above Phase I concerns will be addressed either in this chapter, from previous State reports or investigations, or by further investigations undertaken in this Phase II, described in later Chapters.

The most significant concern noted in the Phase I is the potential asbestos remediation required for virtually all the buildings to be sold. A lesser concern, but still important, is associated with lead based paint, both in the buildings and as contaminant in soils. Finally, although significant remediation and cleanup of the landfills have occurred since 1996, the landfills/solid waste disposal still represents a significant environmental condition requiring action.

3.2 **OPTIONS for REUSE – Ref. 2**

This study was performed for the Town to provide an initial assessment of what environmental liabilities may be associated with the purchase of RPC property, placed in the context of various options for development of the property. With regard to contamination of the site, this study relied for its base information on the Phase I report, discussed above, and did not include environmental sampling. For costs for asbestos remediation, it again used the information published in the Phase I report.

The options for Reuse study did include a delineation of wetlands on the site, performed under subcontract by the firm Ecologic. It should be noted that, in Parcel 3 where LMS had previously performed a wetlands delineation in its BioScience Park Feasibility Study, Ecologic mapped a larger wetland area than LMS. Although wetlands delineation is not a topic of the current study, the Town should be aware that there are significant-sized wetlands on the property; their exact size and buffer zones will have to be finalized in the development planning process.

3.3 GROUNDWATER INVESTIGATION – Ref. 7,9, & 10

An on-site groundwater contamination plume consisting of tetrachloroethylene or, perchloroethylene (PCE) and lesser amounts of its breakdown products has been identified in the vicinity of the laundry building and wastewater treatment plant at RPC. This contamination has been extensively investigated since it was first detected in 1998, subsequent to a fish kill observed in a tributary stream on RPC property that feeds the adjacent Lake Tappan reservoir. Initial investigations focused on delineating the extent of the contamination and determining a source area, and the impact to the local overburden and interface aquifers. Later investigations were concerned with remediation of the impacted aquifers and enlarging the scope of delineation to include the use of the deeper and more distant former bedrock water supply wells as monitoring wells.

The initial phase of the groundwater contamination investigation involved sampling of the tributary to identify the contaminant of concern. Once the chemical was identified as PCE, the first of five stages of a comprehensive groundwater investigation was initiated. Stage I involved the collection of supplemental surface water samples that traced the contamination back through the tributary to an outfall near the wastewater treatment plant. Once found, the source of the contaminant in the tributary was remediated by moving the sump discharge, which had gone to the stream, to the sewage pumping tanks, for which approval was obtained from the Town Department of Environmental Management and Engineering (DEME). Incidentally, the fish kills were determined to be naturally caused by unseasonably high water temperatures.

After determining the general area of the origin of the surface water contamination, i.e., groundwater, the focus was shifted to pinpointing a specific source area for the groundwater contamination. A groundwater sample from a dewatering sump in the vicinity of the treatment plant holding tanks was collected and found to contain relatively high concentrations of PCE. Preliminary inspection of this system suggested that the sump was concentrating the contamination due to at least partial capture of the contaminant plume originating from the unknown source. The laundry building was immediately identified as a likely source, given the correlation between PCE and laundry (dry cleaning) operations. A program of groundwater probe sampling was initiated in the vicinity of the laundry building and the treatment plant in an attempt to identify the source. Completion of the Stage I investigation confirmed low level contamination in the stream originating at the treatment plant outfall, as well as relatively high concentrations in groundwater collected from the on-site sump. Low concentrations were also detected in the groundwater probe samples from the laundry and treatment plant areas.

Based on the results of the Stage I investigation, Stage II was initiated in June 1998. The Stage II program involved four subtasks, including: soil gas sampling, additional soil and groundwater probe samples near the laundry building (both upgradient and downgradient of the building); soil and groundwater probe samples near an old landfill behind the power plant; and, additional, deeper, groundwater probe samples in the vicinity of the treatment plant. In general, the findings of the Stage II investigation confirmed the presence of PCE and its degradation products in on-site soil and groundwater. The contaminant plume in groundwater was found to be widespread, occurring in nearly all groundwater samples collected during Stage II. Highest concentrations were again detected in samples from the groundwater sump. Vertical delineation of the plume by collecting groundwater samples from several intervals did not indicate significant stratification of the contamination. As was the case after Stage I, the results did not point to a specific source area for the contamination.

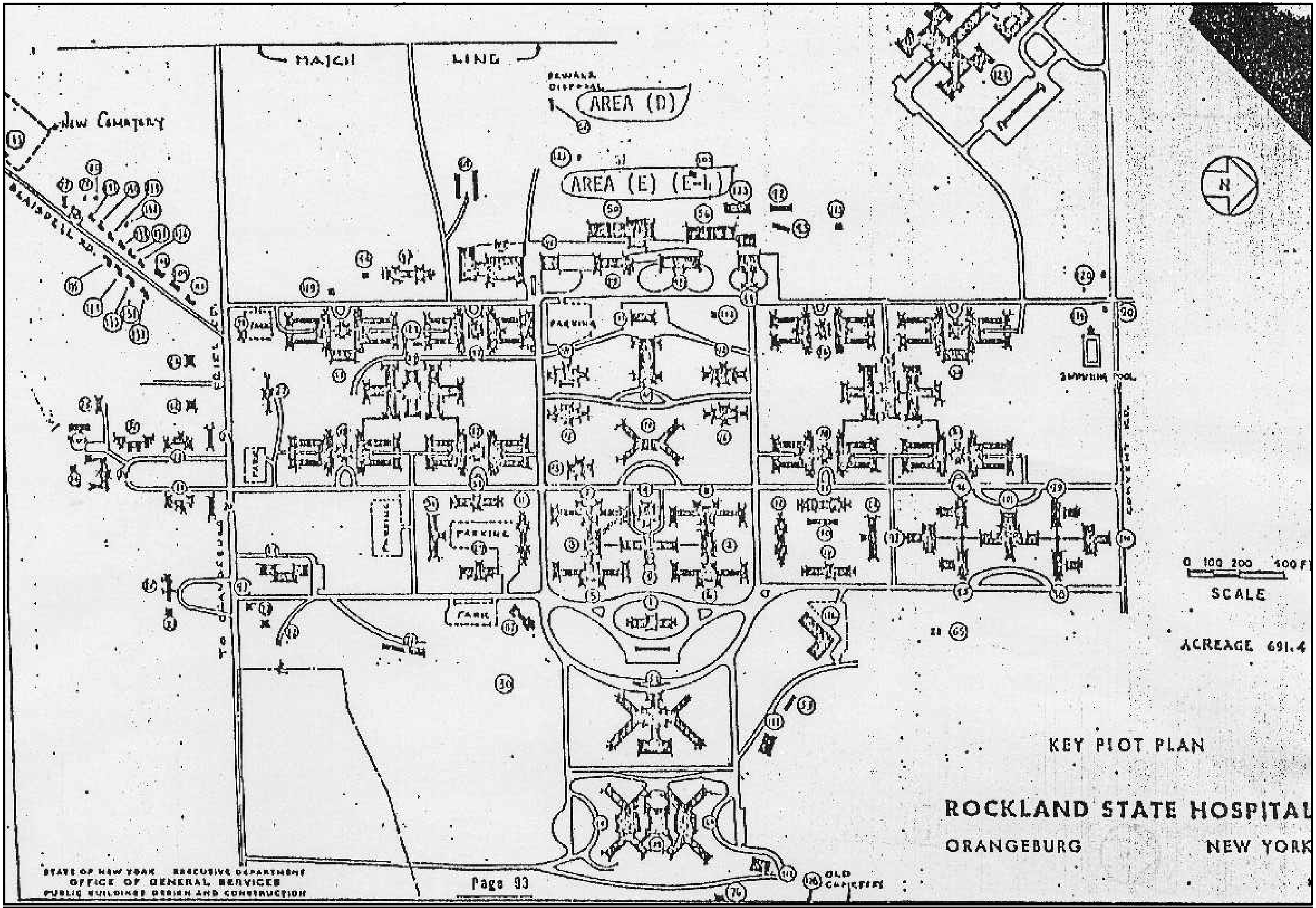
Stage III of the groundwater investigation was initiated in November 1998. The purpose of this phase of the investigation was to focus sampling efforts on the laundry building area, specifically, a later addition to the building and a wooded area between the building and the treatment plant area where discarded fluids from the laundry were reported to have accumulated. Another possible source area, the aeration fields adjacent to the treatment plant, was investigated through the collection of probe samples. Vertical delineation of the plume was also extended by installing monitoring wells upgradient and downgradient of the laundry building. A monitoring well pair, consisting of a shallow overburden well and a deeper overburden/bedrock interface well, was installed at each location. Finally, a review of historical air photos of the site was conducted in an effort to identify additional source area possibilities as well as locate surface fracture traces that may act as potential contaminant flow zones. Results of this stage again failed to definitively identify a source for the contamination detected in the groundwater. PCE was consistently detected in soil at the laundry building and at the aeration beds near the treatment plant; however, the concentrations were not high enough to support a conclusive identification of a source area. Data from sampling of the monitoring wells installed on-site further indicate the presence of contamination having penetrated to the interface zone between the overburden and bedrock. Groundwater samples from the sump continued to indicate this immediate area as having the highest concentrations of PCE and its breakdown products.

Given the findings from sampling conducted in Stage III, specifically, that contamination was detected in interface monitoring wells, the focus of Stage IV turned to determining whether the deeper bedrock aquifer had been impacted by the contamination. In addition, since no source area could be positively identified after three investigations, attention was turned to the effectiveness of pumping at the sump in containing the migration of the contaminant plume. Bi-weekly sampling of the sump was initiated to determine if concentrations fluctuated either seasonally or in response to precipitation. An aquifer test was also conducted at the sump to characterize the hydrogeology in the vicinity of the sump and to determine the capture zone for the pump. Several out of service deep bedrock wells were also accessed on and near the site to collect groundwater samples from the deep bedrock aquifer. In addition, two shallow wells, near the dump and power plant, were sampled as outlying wells to confirm the areal extent of the contaminant plume. Finally, a comprehensive fracture trace analysis was conducted by a firm subcontracted to LMS to locate fracture zone intersection in the vicinity of the treatment plant. This subtask was conducted to identify potential locations for the installation of bedrock monitoring wells located closer to the treatment plant area than the bedrock wells sampled as part of Stage IV. Results of the hydrogeologic testing at the sump indicate that capture of the contaminant plume in the interface aquifer is attained for the area encompassing the treatment plant, power plant, and laundry building when pumping at a rate of approximately 20 gpm. LMS recommended updating the design of the sump and the capability of the pump to maximize its efficiency as a remedial system. Outlying wells near the inactive dump and power plant did not exhibit contamination, suggesting that the plume is localized in an area near the treatment plant and laundry building. Monitoring of the concentration of contaminants at the sump continued on a bi-weekly basis. No obvious seasonal or yearly trends were evident in the data; however, concentrations did generally appear to increase after periods of wet weather and decrease during dry weather.

The final phase of the groundwater investigation to date was the upgrade of the recovery sump at the treatment plant and the installation and sampling of three bedrock wells. This phase of the investigation was conducted by EA Engineering, P.C. of Newburgh, New York in response to the recommendations included in LMS' Stage IV report. EA Engineering installed three bedrock wells downgradient of the sump. Groundwater elevations calculated from measurements taken at these wells confirm groundwater flow in the shallow fractured bedrock aquifer in a northwestern direction. Samples collected from these wells indicate the presence of contamination only in the bedrock well installed at the treatment plant. Contamination was not detected in the two wells located further downgradient. Quarterly sampling was scheduled to continue at monitoring wells on-site to confirm the effectiveness of the upgraded recovery sump in containing the contaminant plume as well as to verify that downgradient migration in the fractured bedrock has not occurred.

3.4 LANDFILL CLOSURES – Ref. 4, 5, & 8

As stated in Chapter 2, there was an internal 1981 RPC report discussing the solid waste practices of RPC. There was another 1981 report prepared by Waste Management Group, Inc. for Rockland County Department of Health, the purpose of which was to identify possible hazardous waste disposal sites throughout Rockland County; it lists some within the RPC area. In late 1990's, there was a series of inspections and letters by NYSDEC and responses by the State on these



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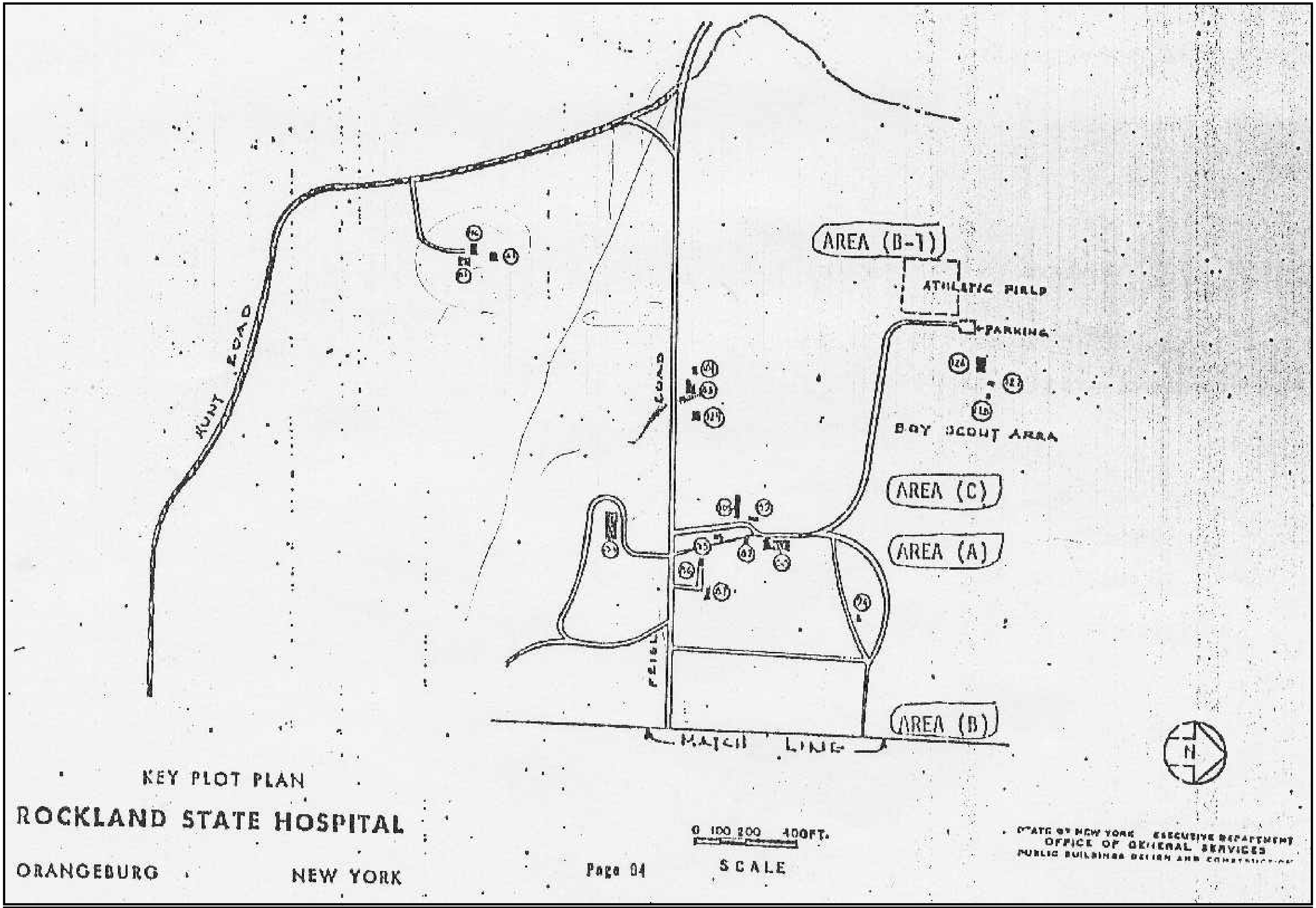
Map of Landfill from 1981

Figure 3-1A



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Map of Landfill from 1981

Figure 3-1B

landfills/waste piles at RPC. The major outcome of these activities is the ongoing closure of a major landfill on RPC and significant completed cleanup of the site grounds.

3.4.1 **Report of Solid Waste Disposal Practices, RPC, December 1981 (Ref.4)**

This report listed the following disposal areas on RPC, as shown on Figures 3-1A and 3-1B:

- Area A – This is the old solid waste landfill, i.e., the sanitary landfill that received the facility waste from 1930 to 1962, where it was burned and landfilled. It was reported to be covered, graded and seeded to the satisfaction of RCHD in 1962. The exact location/boundaries are not defined in the report.

- Area B – In 1981, Area B was listed as a leaf compost pile area where all leaves raked from the vast acreage of trees on the grounds were being composted. It was also reported that, adjacent to the Area B leaf compost pile, 308 barrels of surplus asphalt petroleum had been stored. This asphalt petroleum was used to spray on the site's back service roads, which are topped with cinders and dirt, to control dust. In 1981 it was reported that the surplus petroleum asphalt was no longer needed and OMH was planning to remove these barrels.

- Area B-1 – This was listed as an alternate leaf compost pile and was located behind the Athletic Field near the Boy Scout Area. However, it was reported in 1981 that the facility was having a problem with unauthorized dumping, by both area residents and facility staff, of house refuse such as appliances, furniture, leaves and grass clippings in plastic bags. A similar problem was reported in Area B. In 1981, it was reported the facility was handpicking this debris out of the leaf compost and delivering it by truck to the Clarkstown landfill.

- Area C – This area was reported to contain clean brush and compost. As best as can be located, it appears to be on top of or adjacent to Area A.

- Area D – This area is adjacent to the old sewage disposal plant and was where the trash removed from the screens was disposed of. It was reported that the disposal volume amounted to about three wheelbarrows of screenings per day, which were allowed to dry before burying them west of the treatment plant. When the sewage plant was in operation, the dried sewage sludge from the greenhouses was also buried in the same area. By 1981, RPC was pumping its sewage to the local treatment plant, and although the trash screens were still in operation, the trash was now collected and bagged and trucked to the Clarkstown landfill.

- Area E & E-1 – These areas were reported as Refuse Holding Area and Scrap Metal Holding Area, respectively, and were located behind Buildings 123 and 50. It is not clear that there was any clear differentiation between Area E and E-1. Area E was reported as a holding area for condemned furniture, maintenance debris, etc., which it appeared that the facility occasionally contracted to have removed and disposed of at Clarkstown landfill. Area E-1 was a holding area for scrap metal, which was reported to be picked up by salvage vendors.

3.4.2 **Waste Management Group, Inc., September 1981 Report to RCDH (ref. 5)**

This report appears to have predated the previous report by 3 months and may have been the impetus for the December 1981 facility documentation of their disposal policies. This report was conducted primarily by observation of past aerial photos, and some field observations. One particular landfill that was mentioned in this report, but not discussed in any other report was a dump/burial site sitting about 500 ft northwest of the bend in Blaisdell Road, in an open field, south of Orangeburg Road. The report interpreted the aerial photographs as showing several open trenches, interlaced with lines of fill in a patchwork of cultivated fields. In 1964, this area was completely covered with a mound cluster, and by 1974 it had been buried beneath the embankment of the newly built Veterans Memorial Drive.

Based on the map and description, it appears that four of the five noted disposal areas had been included in the RPC December 1981 report: Areas E, E-1, Area D, and likely Areas B and C. The only new area was the one dump against the security fences for Lake Tappan that contained putrescible waste, pharmaceuticals and general debris.

The report also included the observation of over 100-55 gallon drums at one site, which corresponds to the asphalt petroleum barrels discussed above adjacent to Area B.

3.4.3 **Correspondence Between NYSDEC & RPC/OMH (Ref. 8)**

Starting in May 1998 and ending in November 1999, there was a series of correspondence between NYSDEC and RPC/OMH discussing the landfills/debris piles at RPC. Starting with seven sites, the final list included some 15 sites (see Figure 3-2 for locations of sites, Table 3-1 for correlation between old sites). This report established a numeric identification of the sites, 1-15; note that, because many of these were minor and remediated, LMS retained the 1981 alphabetical identifiers for the landfill in its field work.

- Site No. 1 – This was the site of a demolished steel shed building and other miscellaneous material. It was scheduled by OMH to be removed and cleaned up.

- Site No. 2 – This was the site of a C&D Landfill, which was reported to be 99% concrete with a small amount of metal debris that was to be removed. This appears to be in the location of the Area B site, although the exact location of Area B is not known. Other than the removal of the surface metal debris, it does not appear that NYSDEC is requiring any further closure of this landfill. Note: the drums of asphalt petroleum reported in 1981 appear to have been removed.

- Site No. 3 – This site consisted of leaves, brush, stumps and other rubbish. It was stated that the non-acceptable rubbish has been removed. Note: the exact location of this site is hard to locate, but it appears to LMS to be part of the overall dump area labeled Area A/C.

- Site No. 4 – This site is the combined C&D Landfill (from the NKI Project) and wood chip pile. Other than the removal of some non-acceptable debris (which may have already been done), and ultimately the removal of the wood chip pile, NYSDEC has not requested any other closure of this site. Based on our observation during this Phase II, the wood chip pile still remains.

Landfill Compliance

Bump_Site_ID	Description	Status
1	Demolished Metal Shed Fil	Compliant
2	C&D Landfill	Compliant
3	Leaf Pile	Compliant
4	C&D Landfill	Compliant
5	Mulch Pile	Compliant
6	Wood Chips	Compliant
7	White Garbage	Compliant
8	Landfill	In Progress
9	Sewage Rakings	Compliant
10	China Plates	Compliant
11	Debris Pile	Compliant
12	Debris Along Road	Compliant
13	Ash	In Progress
14	Ash	In Progress
15	Asphalt and Logs	Compliant

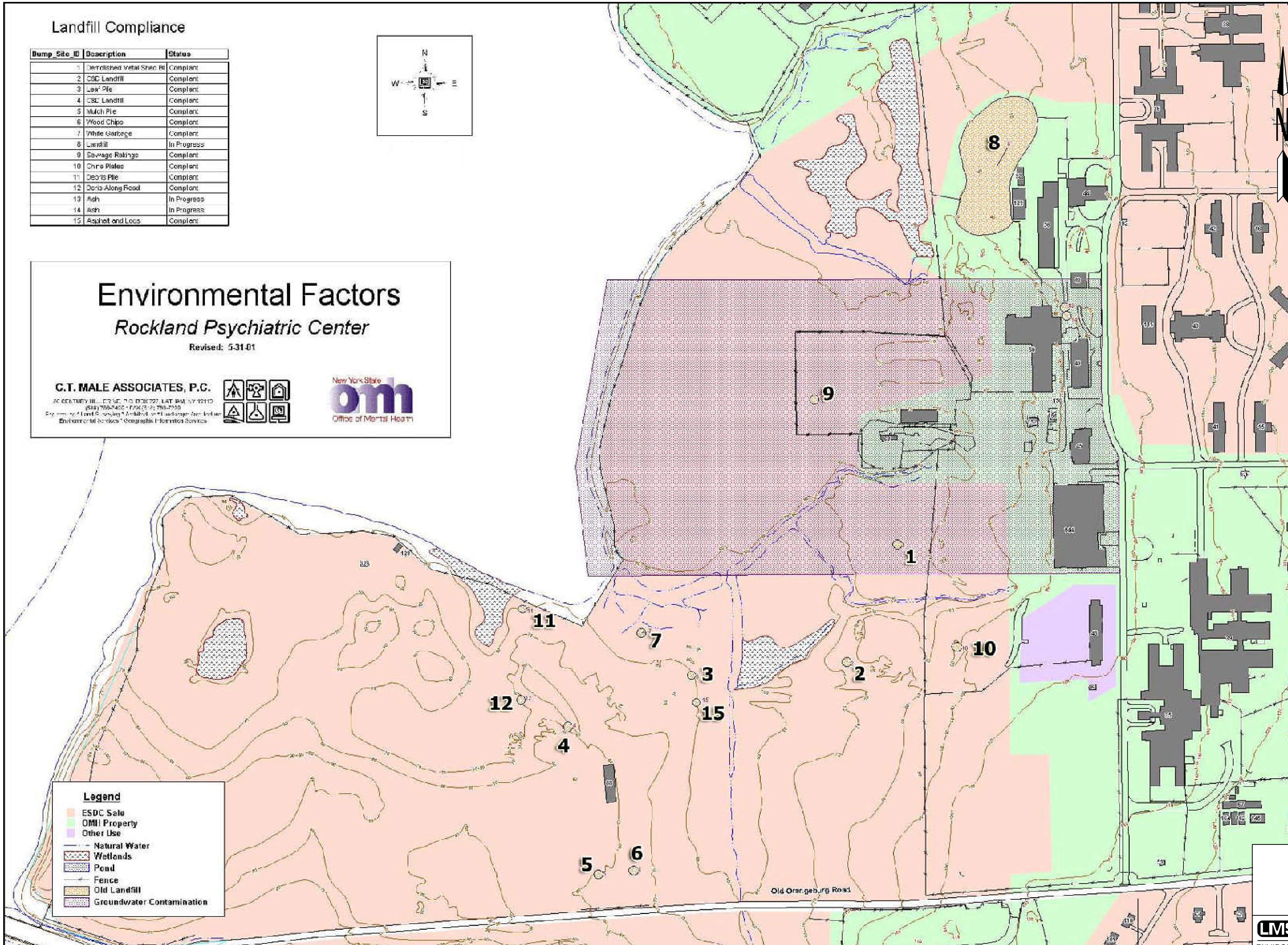
Environmental Factors

Rockland Psychiatric Center

Revised: 5-31-01

C.T. MALE ASSOCIATES, P.C.

New York State
Office of Mental Health



NOTE:
This figure is for the purpose of depicting the locations of the 15 landfill sites identified in 1998 correspondence between NYSDEC and OMH. The only changes made by LMS to the C.T. Male original are the addition of our title block and the enlargement of the numbers identifying each landfill.

287\031\graphics\287031EnvAreas.dsf

Figure 3-2

Location of Landfills (1998-1999)

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Table 3-1
ROCKLAND PSYCHIATRIC CENTER
LANDFILL INDENTIFICATION

NYSDEC Designation (1998 Correspondence)	Phase II Report (1981 RPC Report)	Comment
1	-	Scheduled for cleanup by OMH
2	B	Surface metal and asphalt drums removed
3	A/C	Unacceptable rubbish removed
4	Compost Pile 1	Material still remains
5	-	No action required by NYSDEC; bulk of material now removed.
6	-	Material removed
7	A/C	Material either removed or exists as part of Landfill A/C
8	E, E1	Remediation Stage I completed
9	D	LMS sampled as sewage sludge and screenings
10	-	Reported to be cleaned; not observed by LMS
11	-	Scheduled for removal
11a	B1	Not depicted on OMH map
12	-	Scheduled for removal (cleaned per NYSDEC, 11/2/99)
13	-	Included in site 8 remediation
14	-	Included in site 8 remediation
15	A/C	Apparently part of Landfill A/C

- Site No. 5 – This site is a mulch pile, which NYSDEC stated did not require any action. It appears that the bulk of the mulch has been removed/used.

- Site No. 6 – This is a wood chip pile (across the lawn from Site No. 5), which NYSDEC stated did not require any action. Again, it appears to have been removed.

- Site No. 7 – This site consisted of general rubbish, metals, etc. The exact location of this site is not clear; it appears to be in the general vicinity of the Area A/C site, although it is listed as a separate site by NYSDEC. It is reported as being cleaned up by NYSDEC & OMH; however, during our Phase II site visit, general rubbish is still in that area.

- Site No. 8 – This is the Area E, E-1 site, which had grown considerably from 1981. It was a major landfill that NYSDEC required to be closed under Part 360. This landfill has been partially closed in 2002 (see below), and the remainder of the closure is expected by late this year.

- Site No. 9 – This is the Area D site where the sewage trash and sludge were dumped. NYSDEC indicated that no further action was required.

- Site No. 10 – This appears to be a small site behind Building 43 where china plates were found in a wooded area with mature trees. NYSDEC required that this site be cleaned up, and it is not clear if it has been, since we did not observe it during the site walk over. However, it should be noted that there is a possibility that more such small dump areas exist throughout the farm field areas, but are so overgrown that they are impossible to find.

- Site No. 11 – There appears to be some confusion about the exact location of this site. As initially defined in this correspondence, it appears to be the debris pile adjacent to the old farm field (near Lake Tappan), which has been scheduled for removal and which may have already been removed. As such, it corresponds to one site found in the September 1981 report. However, there is another site No.

11, referred to in one of the later NYSDEC letters as 11a, which is located in the northwest corner of the farm fields, near the old Boy Scout Camp. This site corresponds to Area B-1 and was observed in the field by LMS during the Phase II site walkover. It appeared to be an area where rubbish was dumped, including materials in plastic bags, and was heavily overgrown.

- Site No. 12 – This site was listed as debris along road covered with vegetation and was scheduled for removal. Again, this appears to be one of many sites that had debris dumped and is now covered with vegetation.

- Site No. 13 and 14 – These two sites are small ash piles either remaining from the operation of the incinerator, or ash from the stacks. They are fully within the property the State will retain, and were included as part of the closure of Site No. 8 (i.e., the ash was removed and included as part of the landfill).

- Site No. 15 – This site is listed as a small pile of logs, rocks and asphalt, very near Area A/C. It was listed as scheduled to be removed, but, again, it is difficult to determine where sites begin and end around Area A/C.

The above review is summarized on Table 3-1, showing the correlation between the two identification systems and comments on status.

3.4.4 **Closure of Site 8/Area E-E1**

In the Spring of 2002, DASNY let a Phase I contract to clean up and cover the landfill listed as Site 8/Area E, E-1. The work required that the contractor remove all surface debris, rubbish, metal, tires, etc., then regrade to the designed slope, cover with topsoil and seed. Ash from Sites 13 and 14 were also removed and incorporated into the landfill. Truckloads of excavated material were removed from the site and the landfill was determined to have extended further south than originally planned. The Phase I work was completed in May 2002. The next Phase will include the cover liner and final topsoil, and is expected to be completed by the end of 2002.

This landfill and closure cap is expected to be wholly within the property that the State will retain. However, the western edge of the landfill/debris is very poorly defined because of the heavy overgrowth and trees, and the boundary of the proposed Town and State property is right on that edge.

3.5 **SPCC (SPILLS/USTs) – Ref. 11**

In 1999 LMS conducted a SPCC study for RPC, under our DASNY contract. This report indicates that there were 17 existing tanks at the RPC facility, all of which were within the areas to be retained by the State. The Phase I report had documented 24 tanks. According to notes on various reports and as reported by the facility, the "other" seven tanks have been properly closed or removed by the facility.

The SPCC report listed 14 reported spills at RPC. Four have been officially closed by NYSDEC or indicated as "no further action needed", and seven have no official closure statement, but were described as minor spills and/or were spills noted during a tank excavation and were cleaned up by the contractor. Of the remaining three reported spills, one was an unknown spill into the sanitary sewer; the other two occurred during a tank excavation and, although remediation has not been documented, it can be assumed remediation was completed during the excavation.

3.6 **TRANSFORMER OIL – Ref. 11**

The Phase I report documented one existing transformer with a PCB label. The 1999 SPCC investigation conducted by LMS for DASNY reported that there were 116 on-site transformers that contained oil. The majority of the transformer oil has been tested for PCBs, and only three had significant levels (>50 ppm); all were in buildings that are being retained by the State. Based on LMS' review of the sampling sheets from this State program, there appears to be about seven transformers in areas to be sold that were not sampled during this program in 1983. It appears they were not sampled because of a lack of a sampling port or the transformer was completed sealed. All of them had notes that indicated that the oil should be replaced. We do not have any documentation if these transformers had their oil changed or tested.

3.7 LEAD-BASED PAINT – Ref. 6

In 1995 LMS conducted a study for DASNY on Lead-Based Paint (LBP) Risk Assessment at Day Care Centers located on various psychiatric centers throughout NYS, including RPC. The investigation of Kid's Corner in Building 101 at RPC included collecting samples of paint clips from walls & window sills, and soil in the day care center and playground. Lead was present in both the paint and soil; however, with recommended housekeeping procedures and some precautions, we concluded that LBP did not present a health risk to the children or workers. This study shows, however, that LBP was used at RPC.

3.8 RADON – Ref. 12

In 1995 & 1996 LMS conducted radon sampling in RPC Buildings 57, 58, 59, and 60 for DASNY. Two areas, one in a tunnel between Building 59 & 60, and the other in a storage room in Building 58 had initial screening samples above the standard of 4 pCi/l. Follow-up sampling as recommended by EPA, determined that the average concentration in the tunnel was 0.7 pCi/l but, it was still 6.7 pCi/l in the storage room. It was concluded that the reason for the high concentrations in the storage room was because it was unventilated and open to an adjoining unexcavated space. Ventilation would resolve the potential problem. However, this sampling does point to the potential for radon in enclosed, unexcavated part of basements/crawl spaces in this area.

CHAPTER 4

PHASE II FIELD INVESTIGATION

Previous studies done on the RPC property had identified asbestos in the buildings to be a major detriment to the economical development of the property being sold: whether the buildings were to be demolished or adaptively reused, the asbestos would require remediation at a cost of about $6 million, according to the Phase I report. In order to refine this estimate, a large asbestos sampling effort was undertaken in the current study, as discussed in detail in this Chapter (4.4).

Of lesser concern in estimating the costs of demolition or reuse of the buildings is the question of lead based paint (LBP). Unlike asbestos, which must be separately remediated even if a building is to be demolished, LBP remediation generally entails a significant cost only if a building is to be reused: LBP rarely is extensive enough to cause a building's demolition debris to test as a hazardous waste. Dust from LBP is a concern with regard to demolition worker personal protection, but this protection is routinely provided at demolition sites at a modest cost. Therefore, the level of LBP must be known before demolition specifications can be prepared; and the current study included LBP sampling in the site buildings.

It is also possible that exterior LBP was used, and that chipping/scraping of this old lead based paint may have contaminated the soil directly around the buildings. To address the latter issue, LMS collected representative soil samples around exterior painted buildings to determine the potential impact.

Large areas of the open fields in the Phase II study area were used for many years by the hospital and a local farmer for crop farming (corn, tomatoes, peppers, etc). Although the potential for soil contamination appeared to be low at the outset of the study, much of these areas are being considered for redevelopment as recreation – ball field, playground, swimming pool, etc. The soil standards for such recreational usage are stringent, so it was possible that residual chemicals used during the past farming activities could pose a potential risk or concern. LMS conducted soil sampling to determine the potential risk.

The field investigation also included several smaller endeavors to complete the field documentation of known or potential environmental conditions of concern:

- Groundwater sampling, downgradient of the cook/chill facility and in the vicinity of the landfilling operations, to determine whether any volatile organic chemicals (VOCs) are present that may affect the use of the property for recreation via the inhalation pathway.

- Landfill delineation by visual observation, and off-gas testing to determine whether noxious conditions exist.

- Sampling of the old sludge disposal site and testing for VOCs, given the possibility that VOCs, known to have been used at RPC, may have been disposed of in the sanitary sewer system and remain in the sewage sludge.

Finally, because chemicals are known to be used on all golf courses, the field investigation documented such use at the Broadacres nine hole course in the northeastern part of the study area. The purpose of this review, which consisted of an interview with the golf course grounds superintendent, was to judge whether the golf course posed any risks to surface or groundwater because of chemical use or underground storage tanks (USTs).

This chapter discusses in turn the sampling program conducted on the grounds of the study area and inside the buildings, and finally documents the interview at the golf course.

4.1 SOIL SAMPLING

4.1.1 Sampling Locations

All soil sampling locations (i.e., SS-, LP-, and SL- samples) are shown on Figure 4-1.

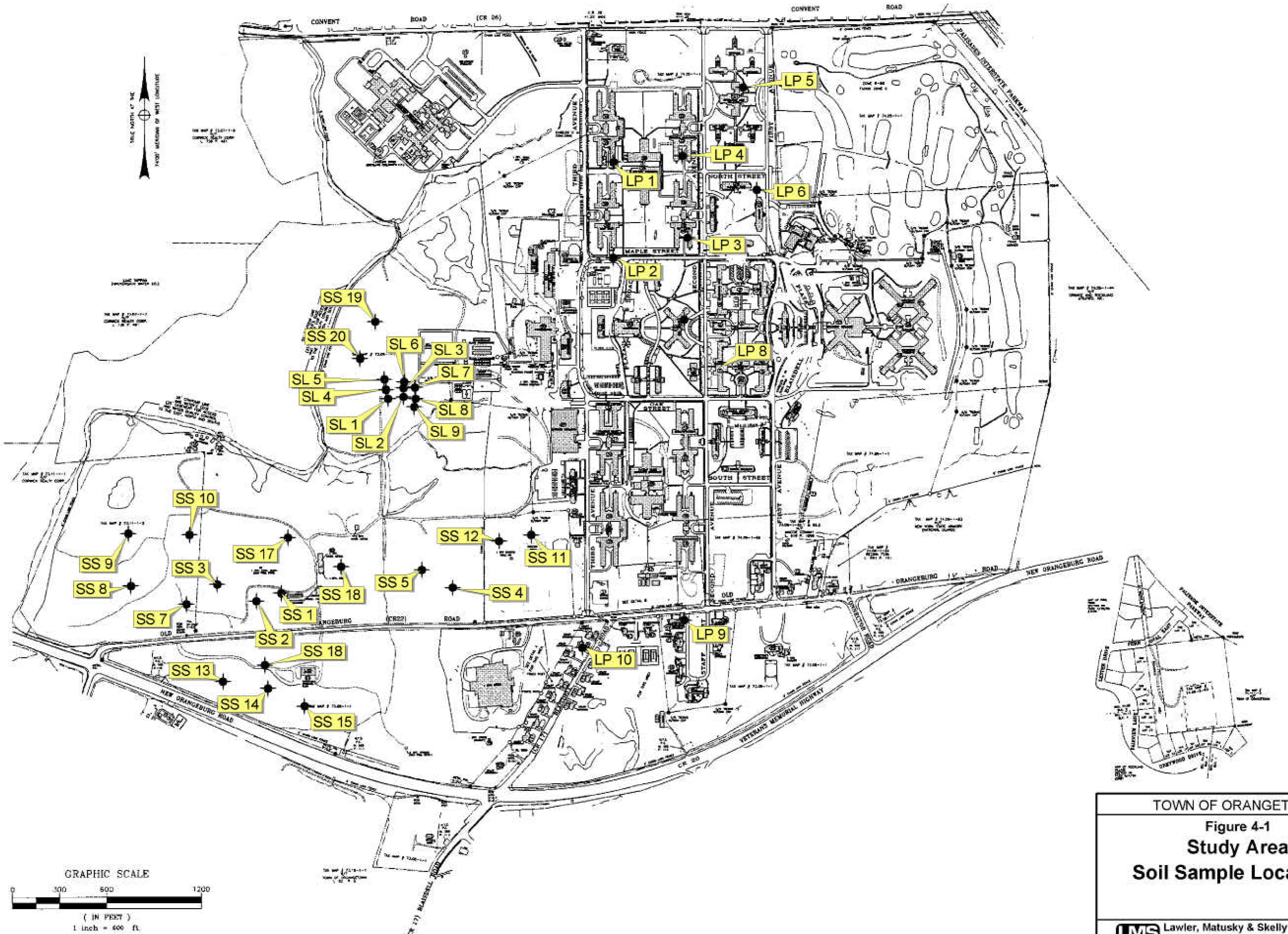
LBP soil samples were collected in areas 2, 5 and 6. At the north end of the property (Area 2), soil samples were collected from locations immediately adjacent to the array of buildings bordered by Convent Road to the north, Oak Street to the south, Third Avenue to the west, and First Avenue to the east. Samples at these locations were collected for TAL Metals analysis from areas exhibiting a concentration of chipped paint at the ground surface from a combination of window frames / ledges, doors, and painted metal stairways. TAL Metals samples were also collected from around a former staff house located on the west side of Blaisdell Road (near its intersection with Old Orangeburg Road) (Area 5) and at a house on Staff Court at the western intersection of Staff Court with Old Orangeburg Road (Area 6). As in Area 2, the locations within both Areas 5 and 6 were chosen based on the amount of paint observed chipping off the exteriors of the structures present in the two areas.

The bulk of the soil sampling involved shallow samples collected from former farm fields, landfill areas and wooded areas west of the building complex. For reference purposes these areas have been subdivided into the entire collection of farm fields and wooded areas north of Old Orangeburg Road (Area 3) and the mostly open area located between Old Orangeburg Road and Orangeburg Road (also known as "The Triangle" – Area 4).

Each soil sample location is described in detail below.

Lead Paint Soil Samples

In Area 2, soil samples were collected from soil along exterior walls of eight different buildings. Since the primary chemical of concern in these samples was lead (lead – based paint), the naming convention **L**ead **P**aint – (consecutively numbered sample: i.e. **LP-1**) was used in identifying the samples. Sample sites were generally located



TOWN OF ORANGETOWN

Figure 4-1

Study Area
Soil Sample Locations

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where peeling paint was observed on the building or paint chips observed on the ground, and thus represent a “worst case” in terms of potential contamination of the soil by paint. The samples were submitted under chain of custody protocol to STL-Newburgh for TAL metals analysis.

The first sample, **LP-1**, was collected from the south side of the northwest wing of ‘H’ shaped building # 34, between the exterior metal stairway and the south facing window at the end of the wing.

Sample **LP-2** was collected beneath the metal exterior stairway at the south end of the southeast wing of ‘H’ shaped building # 36. The paint on the stairways was observed to be chipping and accumulating in the soil below.

Sample **LP-3** was taken in the alley separating the south wings of ‘H’ shaped building # 18. The sample was collected at the base of the west - facing wall approximately midway along the southeast wing. First and second story window frames in this location exhibited chipping paint.

Sample **LP-4** was collected from the southern alley separating the south wings of ‘H’ shaped building # 32. The soil was taken from approximately midway along the southwest wing at the base of the east - facing wall. Chipping paint was observed on the first and second story window frames directly above this location.

Sample **LP-5** was collected at building # 101, along the east – facing wall and just north of the center portion of the structure. Windows arranged in sets of 4 each are located along this wall and the sample was collected from below the third set of windows from the central door.

Sample, **LP-6**, was obtained from soil at the northeast corner of the long, rectangular building # 14. A substantial amount of paint chips were observed along the base of the wall on the surficial soil at this location.

Sample **LP-7** was collected from ‘x’ shaped building # 10 along the northeast wing of the building. Along the base of the southeast - facing wall of this wing, under the 4th

window from where the wing meets the center of the building, soil containing paint chips was exposed at the ground surface.

A sample of soil from along the base of the west - facing wall at building # 7 was collected for **LP-8**. Chipping paint derived from window frames above was observed in soil located in the corner north of the main entrance, near the outside water spigot attached to the wall.

Soil sample **LP-9** was collected from a house labeled # 23-E at the intersection of Staff Court and Old Orangeburg Road (Area 6 – see map). The soil retained as a sample was collected at the northeastern corner of the structure. The paint on the exterior of the house is peeling extensively and the soil and grass at the base of the wall in this location was covered with paint chips.

Sample **LP-10,** from building # 164 (also shown as building # 109 on some plans) near the corner of Blaisdell Road and Old Orangeburg Road (Area 5 – see map), was the second soil sample retrieved from the complex of former staff houses. The soil that was submitted for analysis was obtained from the base of the front wall to the south of the front door. Paint on the entire structure was observed to be peeling extensively and the soil at the sample location contained a significant quantity of paint chips.

Area 3 soil sampling occurred within, and in the vicinity of, open areas west of the developed portion of the facility. These open fields were formerly utilized by the facility as farmlands but have been mostly abandoned in recent years. A total of 16 surficial soil samples were collected from the various fields and, in some cases, nearby land on the fringe of the former farm fields. Each sample was collected using a dedicated stainless steel spoon and transferred to a laboratory cleaned 8-ounce glass jar. The samples were submitted following chain of custody protocol to STL-Newburgh for analysis of pesticides (Method 8081-A) and TAL metals.

Areas 3 and 4 Soil Samples

The first soil sample collected in Area 3 was from within the remains of what appeared to be a greenhouse obscured in a wooded area south and west of the long, rectangular, metal building # 88. Initially an attempt was made to collect all necessary material for this sample from within the boundary formed by the foundation of one of the structures. However, the soil layer in this area proved to be very thin and additional material was collected between what appeared to be two separate foundations. The soil from the two locations was composited and submitted as sample **SS-1**.

Soil sample **SS-2** was collected in the open field immediately to the west of the apparent greenhouse location where the SS-1 sample was taken. The SS-2 location is also nearly directly south of wellhouse # 6, located along a thin wooded area trending east – west from the nearby large mulch pile.

Sample **SS-3** was obtained in a field adjacent to the one in which SS-2 is located. These two fields are separated by an east – west trending dirt road that turns to the north around the end of the wooded area described above. The SS-3 sample point is located closer to the thin strip of woods, west of wellhouse # 6, and north and west of SS-2.

Surface soil samples **SS-4** and **SS-5** were both collected in a small abandoned farm field on the north side of Old Orangeburg Road, north and west of the chill plant.

Sample **SS-6** was collected west and slightly south from SS-2, relatively close to Old Orangeburg Road and near the remains of an old asphalt road or pathway. **SS-7** was collected still further to the west, near the southwest corner of this particular field. The **SS-8** sampling point is in an open field separated from the portion of the field where SS-6 and SS-7 were collected by a thin wooded area trending north – south.

Moving further north into the interior of the former farmlands, **SS-9** was collected in an open field that essentially borders the reservoir to the west. This field is bordered on the east by the dirt road that curves around from the locations of the samples described above and ultimately heads north toward the former Boy Scout Camp. Soil sample **SS-10** was obtained east of this dirt road, in the field adjacent to the large mulch pile at building # 88.

Samples **SS-11** and **SS-12** were collected from the athletic (Gaelic Athletic Association) field bordered to the south by Old Orangeburg Road and to the east by Third Avenue. SS-11 was collected from the surface of the playing field, near the northernmost goal post. A stockpile of dredged material along the western edge of the playing field was the source for sample SS-12. (Note that the dredged material has since been graded and covered with soil to extend the western portion of the playing fields.)

SS-17 was collected from soil between the large mulch pile at building #88 and the dirt road that runs north of the pile. **SS-18** was collected from the opposite side of building # 88, south of the landfill A/C complex in another area where wood chips and mulch has been stockpiled.

The final two surface soil samples collected from the former farm fields in Area 3, **SS-19 and SS-20**, were from the large field located west of the former on-site treatment plant and aeration beds.

Area 4 soil samples were collected from locations within an area referred to as 'The Triangle'. A total of four samples were collected from this area, three from surface soils and a fourth from a soil stockpile. The three surface soil samples were collected approximately equidistant along the long axis of 'The Triangle' area while the stockpile sample was taken from near the northern edge of the area.

Sample **SS-13** was collected toward the western apex of the triangle and was the westernmost sample of the three taken along the long axis. **SS-14** was taken from approximately the mid-point of the long axis, south and west of the former vegetable storage building (# 84). **SS-15** was obtained near the eastern edge of the triangular area. All three of these samples were taken from relatively exposed weed-covered areas with evidence of substantial past disturbances (tire tracks, rutting etc.). Sample

SS-16 was taken from a soil stockpile on the northern edge of the area, north and west of the building # 84. The origin of the stockpile is unknown, however the material collected appeared similar to that in the surface soil samples from this area.

Nine additional soil samples were collected from mounds within Area 3 that were suspected of containing residual sludge derived from the on-site wastewater treatment plant. The mounds are concentrated in a wooded area west of the treatment plant location, just off the dirt road leading back to the farm field where surface soil samples SS-19 and SS-20 were collected. The naming convention **SL**udge – (consecutively numbered sample: i.e. SL-1) was used to identify each sample after collection. Each sample, **SL-1** through **SL-9**, was submitted to STL-Newburgh under chain of custody protocol for TAL Metals (method 6010B) and VOCs (method 8260B) analysis. After sampling was complete flagging was used to reference the locations. Due to thick overhead vegetation GPS could not be used to locate these points.

4.1.2 Procedures

Each surface soil sample was collected using a dedicated stainless steel spoon. Material was retrieved from the top six inches of soil at each sampling location. If present, plant material was removed prior to collecting the sample. Each sample was transferred to laboratory pre-cleaned containers and submitted to STL-Newburgh under chain of custody protocol for TAL Metals (lead based paint samples), TAL Metals and VOCs (residual sludge disposal pile samples), or organochlorine pesticides and TAL Metals (former farm fields sampling) analysis. After each sample was collected the location was marked in the field with flagging for future reference. GPS location of each sample point was also attempted, however, for points located near large structures, such as the lead paint samples, or in thick vegetation, such as the sludge samples, the effectiveness of this method was limited. For such samples, the locations were determined by reference to landmarks.

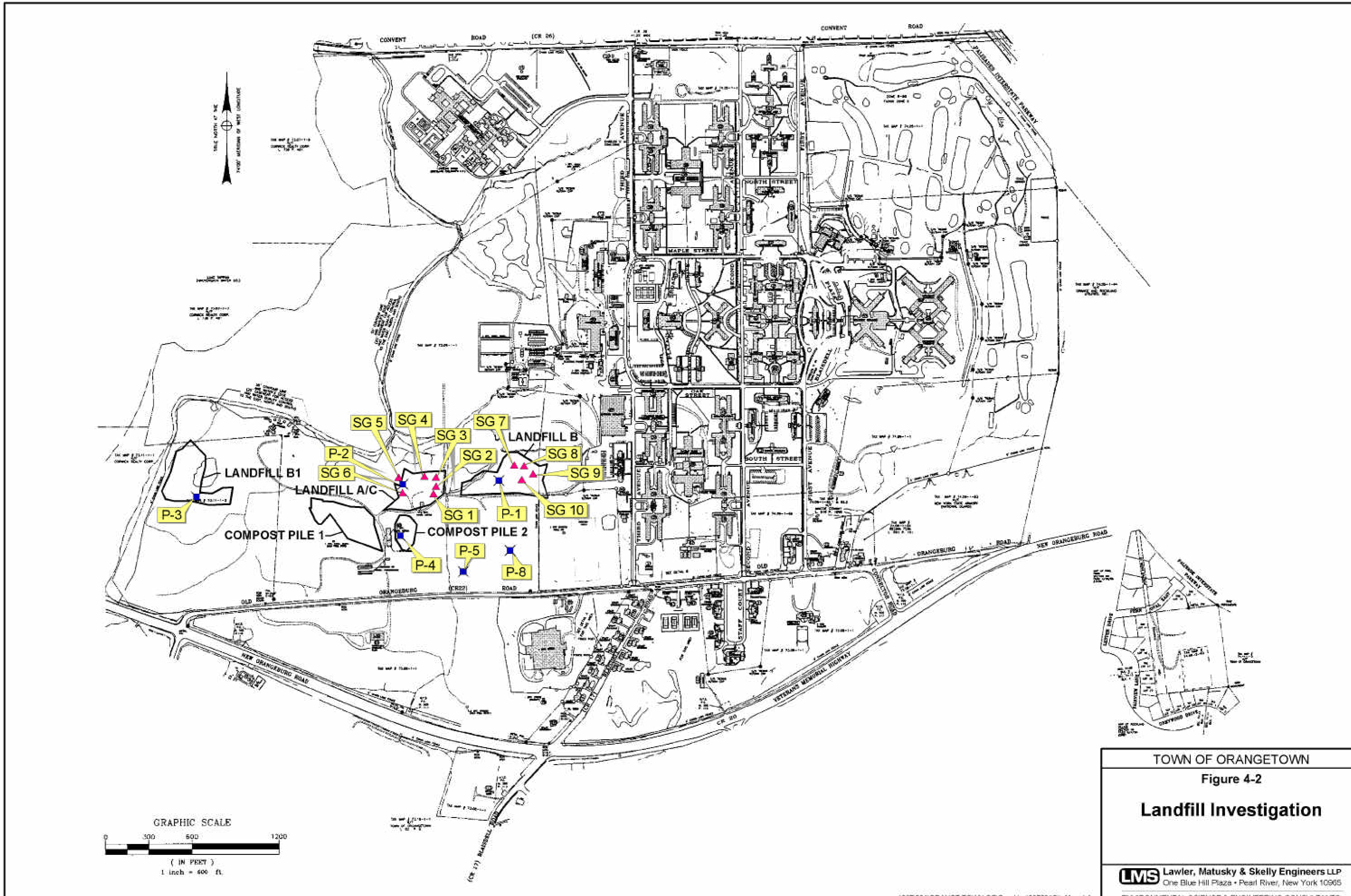
4.2 GROUNDWATER / LEACHATE SAMPLING

4.2.1 Sampling Locations

A total of six temporary piezometers were installed in locations adjacent to reported landfill areas on the western portion of the site (Figure 4-2). Each borehole was advanced by direct-push probing and collecting soil cores in 4 ft long runs until it had progressed a sufficient distance into the saturated zone of the overburden to yield a sampleable quantity of groundwater. Once the probing was completed the sampling tools and rods from probing were quickly removed and replaced with one - inch diameter schedule 40 PVC 10-slot screen and solid PVC riser pipe. The piezometers were installed to collect groundwater samples so the groundwater quality in the vicinity of the landfills could be assessed. Ideally the sample locations were chosen downgradient of the landfills or cook/chill facility, however for several of the points this was not feasible given access limitations. No leachate was observed at any of the landfills, thus no samples of leachate were submitted for analysis.

The first piezometer, **P-1**, was installed west of the parking lot for building # 43 (abandoned Nathan Kline Institute (NKI) building) in a wooded area that had been recently cleared for installation of a bedrock monitoring well (by others). This location was chosen since it was the only point at which there was access for installing a piezometer close to a position downgradient of Landfill B. The piezometer was set at a depth of 12.5 ft below ground surface (bgs) with a 5 ft screen. Once the screen and riser were set at the desired depth the probe hole was allowed to collapse around them. Soil samples collected during advancement of the probe indicated the overburden in the area was saturated below approximately 4 ft bgs. One sample, **RPC P-1**, was collected from this piezometer and submitted to STL-Newburgh under chain of custody protocol for VOCs and laboratory-filtered metals analyses.

Piezometer **P-2** was installed west of P-1 in the middle of the Landfill A / C complex in a position that is downgradient of what appears to most likely be the sanitary portion of the landfill. The piezometer was set at approximately 18 ft bgs with a 5 ft



TOWN OF ORANGETOWN

Figure 4-2

Landfill Investigation

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ENVIRONMENTAL SCIENCE & ENGINEERING CONSULTANTS

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section of screen. One groundwater sample, **RPC P-2**, was collected from this point and submitted to STL-Newburgh as described above.

The third piezometer, **P-3**, was installed near the western edge of the property, within the boundaries of Landfill B-1. Due to the heavily forested nature of this area the probe rig could not gain access to a location downgradient of the landfill. The best alternative location was chosen just inside the southern boundary of the disposal area. Groundwater was encountered at this location at a depth of approximately 5 ft bgs and the piezometer was set at 10 ft bgs with a 5 ft section of screen. One groundwater sample, **RPC P-3**, was collected from this point and submitted for analysis as described above.

Piezometer **P-4** was completed south of the Landfill A / C complex in an area of wood chips and other mulch deposited on the eastern side of the metal storage shed. Although not officially listed as a landfill, this location was chosen due to its proximity to Landfill A / C, the storage shed and the potential that materials other than mulch had been deposited (given the fact that it is adjacent to Landfill A / C and the storage building). In addition it provides a point further downgradient from the chill plant on Old Orangeburg Road. Probing was completed at P-4 to a total depth of 22 ft bgs; however, the initial attempt at installation at this location yielded a dry piezometer due to collapse of the borehole below 15 ft bgs. The piezometer was installed and allowed to set overnight to see if any groundwater would infiltrate. The following day no groundwater was observed to have entered the piezometer. The procedure was repeated at a nearby location and was a success. The piezometer was set to a total depth of 22 ft bgs with a 10 ft section of screen. One sample, **RPC P-4**, was collected from this piezometer and submitted to STL-Newburgh for analysis as described above.

The final two piezometers, **P-5** and **P-6**, were installed in the farm field north and west from the chill plant across Old Orangeburg Road. These locations were chosen as points downgradient from the chill plant to assess whether VOCs, Freons in particular, had been released into the groundwater at the plant. The initial plan was to install one piezometer in this field and a second on the opposite side of the road, in a pull-off area along Old Orangeburg Road west of the chill plant. Due to buried utilities and restricted access to the desired location this point was abandoned. One piezometer, P-5, was installed near the southwestern corner of the farm field while P-6 was completed toward the east - end and approximately midway back into the field from Old Orangeburg Road. Groundwater was encountered in the first sample collected during installation of P-5 and ultimately the piezometer was set at a depth of approximately 14 ft bgs with a 5 ft section of screen. P-6 was completed to a depth of 21 ft bgs with a 10 ft section of screen. Groundwater samples were collected from both P-5 and P-6 for VOCs and Freons only and were submitted to STL-Newburgh as **RPC P-5** and **RPC P-6**, respectively.

4.2.2 **Procedures**

Installation of the piezometers was accomplished by first opening a borehole using LMS' direct-push hydraulic probe rig fitted with a 2 inch diameter macro-core sampling tool. A dedicated acetate liner inside the macro-core barrel recovered soil in 4 ft long runs for logging and to clean out the borehole to make installation of the piezometer screen and riser easier. Once the recovered sample material indicated that probing had advanced into the saturated zone, probing continued for several more feet to insure that the point would yield enough water for sampling purposes. After reaching the required depth, the probe rods and tools were removed from the borehole and the piezometer was rapidly installed. Piezometer construction consisted of a 5 ft length of one inch diameter schedule 40 PVC 10 slot screen coupled to enough 5 ft lengths of solid schedule 40 PVC to bring the piezometer to several feet above grade. At depth (in the saturated zone) the borehole collapsed around the screen and any remaining annulus above was backfilled with material removed during sampling. Tools and probe rods that were exposed to in-situ soil and groundwater were field decontaminated prior to use at another location to prevent cross-contamination.

Each piezometer was allowed to equilibrate overnight before sampling to allow groundwater to infiltrate into the casing of the piezometer. Prior to sampling, each piezometer was purged of one to three casing volumes (depending on yield) to insure that the groundwater collected as a sample was representative of the formation water. Purging was completed using an electric peristaltic pump fitted with dedicated polyethylene tubing. Groundwater was pumped from the piezometer at a slow rate until the required volume had been removed or until the piezometer had been purged dry. During the purge groundwater chemistries (pH, specific conductivity, temperature, and turbidity) were monitored to determine when stabilization, indicative of groundwater derived from the aquifer formation, occurred. This stabilization indicated that the point could then be sampled. Sampling was conducted using dedicated polyethylene bailers when collecting VOC / Freon samples and the peristaltic pump for the collection of the metals samples.

4.3 LANDFILL DELINEATION / SOIL GAS SAMPLING

4.3.1 Sampling Locations

The Landfill A / C complex and Landfill B were also evaluated for landfill derived gas emission using portable atmosphere monitoring equipment.

For Landfill A / C a total of six points were tested with a combustible gas indicator (CGI) to determine the levels of methane, hydrogen sulfide, and oxygen. In addition a photoionization detector was used to screen the points for the presence of organic vapors.

Debris in Landfill A / C essentially form an almost complete circle enclosing a central, mostly open area. In-situ gas measurements were taken at points roughly equidistant around the margin and at a couple of other stand - alone mounds of debris inside the large circle of debris.

Sample locations were designated **S**oil **G**as – (consecutively numbered sample: i.e. SG-1) for reference purposes, although no samples were actually retained for off-site analysis (Figure 4-2).

SG-1 was collected on the east side of the ring of debris, near the small storage shed in the area. A relatively large mound in this area had been plowed cleanly through and layers of mulch material overlying a darker layer containing glass and other debris were observed. The first gas sample was taken from this darker layer of material.

SG-2 was collected north of SG-1, along the outer portion of the ring of debris. The point selected consisted of a deep void with a section of fence post that continued into the interior of the pile of wood and other mulch. Tubing was run down into the fence post so that it penetrated deeper into the pile than could have managed using the tubing alone.

Gas sample **SG-3** was collected further north along the large pile of wood debris forming the margin of the landfill. This point was similar to SG-2 in that it consisted of a void reaching down into the interior of the pile.

SG-4 was collected from a stand - alone pile of wood debris, old appliances, and rugs in the northern interior of the landfill.

Soil gas point **SG-5** was located south of SG-4, on the west side of the landfill, in another large stand - alone pile of wood. The point selected was adjacent to the location of piezometer P-2. A void reaching deep into the interior of the pile was chosen as the location from which the sample was extracted.

The final soil gas point at this landfill complex was **SG-6**, also collected from a large woodpile (with a large blue tarp mixed in). This portion of the landfill area was near the southwestern corner of the complex in the area near where the access road and main dirt road intersect.

Four additional gas sampling points were selected on the flanks of Landfill B, which was found to contain predominantly C/D waste such as old fence posts and large chunks of concrete. Due to the abundance of concrete it was virtually impossible to drive sampling pipes into the landfill from the top therefore all gas measurements were collected from voids in the concrete along the northern, steep edge of the landfill. Samples were screened in the same manner and for the same parameters as indicated for Landfill A / C.

SG-7 was collected approximately midway along the north side of the landfill in an area where large pieces of broken up concrete were exposed. The sample was collected from a deep void extending horizontally into the interior of the landfill.

SG-8 was collected from a configuration of broken concrete similar to that in SG-7. The point selected was further east along the northern edge of the landfill.

Gas sample **SG-9** was collected further up on top of the landfill in an area of broken up concrete commonly seen along the margin but much less closer to the top surface. The concrete formed a void through which the sample tubing could be run deep into the landfill.

SG-10 was collected as the final gas sample point and was located downslope from the SG-9 location. This point provided another horizontal void into which tubing could be run allowing a sample to be extracted from the interior of the landfill.

4.3.2 **Procedures**

Four landfill areas were delineated using GPS and direct observation on the western side of the RPC property. Each discrete area was delineated by walking the apparent, visible margin of each landfill and recording GPS locations at points spaced 50 – 100 ft apart. In some areas the underbrush was so thick it was impossible to physically walk the margin and the extent of the landfill was inferred until the margin was accessible again for field verification.

Landfill gas sampling was conducted using an HNu photoionization detector with a 10.6 eV lamp to screen for organic compounds and a GasTech Land Surveyor combustible gas indicator. Prior to screening, the HNu was calibrated to a 101 ppm isobutylene standard at a 58 % response factor. The GasTech CGI was calibrated to a 50% LEL methane standard, 25 ppm hydrogen sulfide standard, and a 12.0% oxygen standard.

For each gas sample an attempt was made to get as deep into the interior of the landfill or individual mounds as possible. This was typically accomplished by concentrating the sampling effort on areas where voids in the debris were present. In many cases a one inch diameter piece of PVC pipe was inserted into the void as an outer casing and piece of thin polyethylene tubing was run through the PVC to allow deeper penetration into the material. In some cases use of the tubing alone allowed for sufficient penetration into the debris and the sample was evaluated without use of the outer PVC casing. The tubing was then connected to the PID and CGI and the atmosphere contained within the debris was evaluated. Both the PID and CGI have pumps that draw gas through the tubing. A reading was taken once the tubing was purged for approximately 2 – 3 minutes to insure that the readings recorded were from the atmosphere within the landfill and not ambient air trapped in the tubing. After sampling was completed each location was marked in the field with flagging tape and located on a map for future reference.

4.4 ASBESTOS INSPECTION

4.4.1 Sampling Objective

LMS subcontracted with Gateway Environmental Services to conduct limited Asbestos surveys at the Rockland Psychiatric Center. Specifically, the survey was performed on the areas known as parcels 2, 5 and 6. The purpose of the survey was to confirm data presented in previous reports in order to determine potential cost liability. To help determine potential costs, limited asbestos bulk sampling was performed in selected buildings. The survey was limited to exposed suspect materials and did not include the utility tunnels.

4.4.2 Sampling Approach

Because of the number of buildings in the study, the budget limitations on the number of samples and scheduling constraints, it was not practical to collect samples from every building in their entirety at this time. Consequently, buildings were broken out into specific groups based on building materials, configuration and proximity to one another. A representative building was then "selected" for testing. The results of the testing were then used to make predictions about similar building materials identified in other buildings of that group. This approach was selected because a reasonable "potential" cost estimate could be developed without performing comprehensive bulk sampling for each building at this time. Buildings that were not similar in size and configuration to others were treated as independent buildings and were not made part of a group.

Materials testing positive in “selected” buildings are listed in the cost analysis tables as “Cost Sampled Positive”. This represents the category of building material known through testing to contain asbestos.

Materials found in other buildings in a group that are similar to those materials that tested positive in the “selected” buildings were assumed to contain asbestos. This is reasonable since these building materials appear similar throughout the building group and if tested it is likely they would show a positive results (i.e., floor tile, pipe insulation, etc.) These are listed in the cost analysis as “Cost Assumed Expect Positive (not sampled)”.

Some of the miscellaneous materials sampled showed varying results for different building groups. For example, in some cases window caulks\glazing and roof materials showed asbestos present in some and did not in others. This indicates that over time many different caulks, roofing felts, roof shingles etc. were used at the complex. In the case of a negative result in selected buildings, similar building materials were assumed positive in the other buildings of that group. This is consistent with recognized sampling protocol in that building materials must be assumed positive until proven negative via bulk sample analysis. These are listed in the cost analysis as “Cost Assumed Sampling Negative or not Sampled”.

Other suspect miscellaneous materials not sampled as part of this survey (i.e., fire doors, Transite Panels, wire insulation, misc. mastic, etc.) have been included in the cost analysis as contingency items. This provides the worse case scenario for potential asbestos liability. When additional bulk sampling was authorized, confirmation analysis can be performed and the cost estimate adjusted accordingly.

4.4.3 **Inspection Summary**

In selected buildings, representative samples of homogenous materials were collected. Typically, pipe insulation (other TSI when encountered), plaster, roofing materials, finished flooring, window caulks and glazing were sampled. These particular homogenous materials were selected because they often do contain asbestos. However, since these building materials have the greatest potential impact on removal cost, they were sampled rather than assumed to contain asbestos. Other miscellaneous materials should be assumed to contain asbestos until sampled.

Some confirmatory sampling of highly suspect materials such as pipe insulation and 9-in. x 9-in. floor tile was performed and results showed asbestos present as predicted. These building materials were similar in color and texture from building to building and are likely to contain asbestos. Therefore, these materials were not always sampled when encountered in the selected buildings.

In some instances materials were not accessible and could not be sample. (i.e., windows boarded, no access to roofs, etc.). In these instance materials were assumed to contain asbestos for the selected buildings.

In non-selected buildings (i.e., building not selected from sampling in a group), verification of materials and quantities was done by performing a building walk-through. However, because of the significant potential impact of removing asbestos containing plaster from these buildings, in many instances plaster sampling was performed in these buildings. The intent was to prove that typical plasters found throughout the subject property do not contain asbestos. The results showed that for sampled buildings typical plasters do not contain asbestos. In some buildings, asbestos is present in the plaster, namely building 40 and 9, however, they are different in color and texture from the typical plasters. Due to the limited number of samples, not all buildings were sampled for plaster. Additional sampling will need to be performed. However, over 75 % of the accessible buildings in parcel 2 were sampled, which is the area of greatest potential liability. Therefore, buildings not sampled for plaster have been considered in the contingency part of the cost estimate.

Inspection work in some of the buildings was limited due to Owner client occupancy. These buildings were being used for client residences and programs. Therefore, samplings were not performed and walk-through limited. In these instance suspect building material have been assumed to contain asbestos.

Each of the sampled buildings was broken down into separate functional spaces. Each functional space was assigned a functional space identification number. Typically, a functional space has been designated for each room in the building (i.e., 1, 2, …N number of rooms). Functional space numbers are given on the attached drawing provided by the Owner. These designations were used to identify bulk sample locations within a given building. See Appendix A for a Summary of Laboratory results, Laboratory Reports and Drawings for each of the sampled buildings.

The sample was then placed into a leak tight plastic sample container, carefully labeled noting location of material sampled, and stored for transportation to the laboratory. A chain-of-custody was instituted for all samples.

The bulk samples were analyzed for asbestos fibers at an approved laboratory in New York, New York, by polarized light microscopy (PLM) according to the "Interim Method for the Determination of Asbestos in Bulk Insulation Samples" issued by the USEPA/EMSL, Research Triangle Park, North Carolina.

Analyses were made for asbestos fibers, fibrous glass, and cellulose fibers, if present. A preliminary examination of approximately fifty (50) milligrams of sample material was performed under 10X - 40X magnification with a Stereo Microscope. Using two finely pointed probes, fibers were teased from the sample matrix and mounted in high dispersion Cargille Refractive Index Oils.

The mounted fibers were then analyzed with a Polarizing Light Microscope (PLM). At 100X magnification, the sign of elongation was viewed under a McCrone Dispersion Staining Objective using cross polarized light and a 530 nm wave length test plate. After removing the 530-nm wave plate the angle of extinction and central stop dispersion staining colors were examined for positive identification.

In the event of Non-Friable Organically Bound (NOB PLM) materials, the organic material was reduced by gravimetric reduction and absence/presence of asbestos fibers was confirmed by Transmission Electron Microscopy (TEM) with magnification levels of 19,000X.

4.5 LEAD PAINT INSPECTION

An EPA Lead Inspector performed a limited inspection of representative painted and varnished surfaces for the presence of lead. Gateway utilized a RMD Model LPA-1 X-ray Fluorescence (XRF) Analyzer. At the start and at the end of testing for a given day, the RMD was calibrated against referenced standards using a NIST standard of known lead concentration to ensure the instrument was within specifications. Painted surfaces that demonstrate lead levels at or above the threshold concentration of 1.0 mg/cm^2 were considered to be lead-based paint.

Similar to the asbestos survey approach “selected” buildings were chosen for testing. Typically, the following representative components were tested:

- Ceilings
- Walls
- Doors
- Door Jambs
- Shelves
- Door Casing
- Window Casing
- Window Sash
- Window Sill
- Stair risers
- Stair baseboard

The following buildings were selected for testing: 97, 99, 100, 34, 38, 40, 10, 14, 28, 2, 4, 6, 9, 63, 21, 25, 77, 108-110, and132-141.

4.6 GOLF COURSE INTERVIEW

Area 1 of the RPC property, as depicted on Figure 2-1, is a nine hole golf course named Broadacres after a dairy of that name that occupied the site of the course before it was taken for the construction of Camp Shanks. The site later became part of the

RPC property. The Phase I study conducted in 1996 included the golf course in its study area, and reported no recognized environmental conditions associated with the golf course.

LMS conducted a brief review of the procedures and facilities at the golf course in the context of potential impact on the environment. The general thrust of the review included: whether chemical handling at the course was in compliance with NYSDEC guidelines; whether any course activities may have the potential to impact groundwater; and, whether the course was in compliance with regulations for fuel or other chemical storage. The review consisted of an interview with Mr. Michael Caravella, the course superintendent, on June 13, 2002, and a tour of the course facilities.

With regard to the application of chemicals for course maintenance, Mr. Caravella is licensed by NYSDEC (No. C3671352) as a pesticide applicator, Category 3A, Turf. His license expires November 21, 2003, and he is required to take continuing education classes to maintain his license. His part time assistant, Mr. Walter Waltsaic, is also fully licensed, No. CO849948. Thus, from a qualifications and legal point of view, the course is in compliance with applicable regulations.

The course is required to submit an annual report of pesticide use to NYSDEC. Mr. Caravella showed LMS his file of past reports, which appeared to be complete. LMS reviewed the report for 2001, and it is complete: every required entry has been filled in.

LMS' conclusion from this brief review is that the course is in compliance with NYSDEC regulations and acceptable practices for pesticide use. LMS would expect that the use of chemicals at Broadacres is very similar to that at the Town's Blue Hill golf course. The types of chemicals and their application rates are approved by NYSDEC, and LMS believes that this is sufficient protection for the Town in acquiring this property.

With regard to possible impacts on the site groundwater, LMS' experience has shown that the two major potentials for impact at a golf course are from the chemicals that may be used in golf cart maintenance and the possible spillage of fuel, especially from underground storage tanks (UST). The interview with Mr. Caravella and the LMS reconnaissance of the property shows that neither of these is a concern at Broadacres: golf cart maintenance is completed off-site by the leasing contractor, and there are no, nor have there ever been, USTs on the site. Heating fuel is stored in an above ground tank, and the vehicle fuel is currently stored in cans. This year, new diesel fuel and gasoline tanks will be installed, both above grade.

LMS' overall conclusion is that the golf course is in compliance with all NYSDEC applicable environmental regulations, and there is no indication that its purchase will present an environmental liability to the Town.

CHAPTER 5

PHASE II RESULTS

This Chapter presents the analytical results of the various sampling programs carried out in the Phase II study. The results are detailed in tabular format, and discussed in the text. These discussions are directed toward comparing the analytical results to legal standards, cleanup objectives, background concentrations, and the like. The implications with regard to recommended actions are discussed in Chapters 6 and 8.

5.1 SOIL SAMPLES

5.1.1 Former Farm Fields Soil Samples

A total of 20 shallow soil samples (SS-01 to SS-20) were collected a various locations within the area of the site that was formerly used for farm fields (please refer back to Figure 4-1 for sampling locations). Each of these samples was analyzed for pesticides and metals and the results are summarized on Table 5-1.

None of the samples exceeded the Recommended Soil Cleanup Objectives for pesticides. Low level residual concentrations of pesticides were detected in all of the samples with the exception of SS-17. The pesticides that were detected included several Edosulfans, Diedrin, 4,4'-DDE, 4,4'-DDD, and 4,4'-DDT. In general the highest residual pesticide concentrations were noted in samples SS-01 to SS-10. The highest residual pesticide concentrations were detected in SS-01 which contained Dieldrin (0.023 mg/kg), 4,4'-DDE (0.64 mg/kg), 4,4'-DDD (0.025 mg/kg), Endosulfan sulfate (0.0079 mg/kg), and 4,4'-DDT (0.89 mg/kg).

The analytical results for the metals indicate that 13 of the samples exceed the Recommended Soil Cleanup Objective for chromium. The reported concentrations for the 13 samples ranged from 10.4 mg/kg (SS-12) to 16.2 mg/kg (SS-09) versus the cleanup guideline of 10 mg/kg. Although each of these samples exceeds the cleanup objective by a small amount the concentrations are within Eastern Regional Background levels and may represent site background for this soil type. In this case it is more appropriate to use site background levels to determine cleanup objectives.

Table 5-1 (Page 1 of 4)
ROCKLAND PSYCHIATRIC CENTER
SOIL DATA SUMMARY
29-30 May 2002

LMS Sample ID **Lab Sample ID** **Date Sampled**	**SS-1** **212210-1** **5/29/2002**	**SS-2** **212210-2** **5/29/2002**	**SS-3** **212210-3** **5/29/2002**	**SS-4** **212210-4** **5/29/2002**	**SS-5** **212210-5** **5/29/2002**	**EASTERN USA BACKGROUND (ppm)**	**RECOMMENDED SOIL CLEANUP OBJECTIVES (a)**
Pesticides (mg/kg)							
Endosulfan I	0.004 j	ND	0.0017 j	ND	ND	N/A	0.9
Dieldrin	0.023 p	ND	0.0055 p	ND	0.0014 j p	N/A	0.044
4,4'-DDE	0.64 d	0.16 d	0.42 d	0.1 d	0.098 d	N/A	2.1
Endosulfan II	0.0044 j	0.003 j p	0.006	0.0032 j	0.0018 j	N/A	0.9
4,4'-DDD	0.025	0.004 p	0.017	0.0044	0.0042 p	N/A	2.9
Endosulfan sulfate	0.0079	0.0091	0.04	0.0022 j	0.0093	N/A	1
4,4'-DDT	0.89 d	0.12 d	0.6 d	0.13 d	0.15 d	N/A	2.1
Metals (mg/kg)							
Aluminum	7760	9750	11300	7820	6140	33000	SB
Antimony	ND	ND	ND	ND	ND	0.6 - 10 (n)	SB
Arsenic	6.8	4	6.6	3.5	2.8	3 - 12**	7.5 or SB
Barium	77.8	ND	76.5	ND	ND	15 - 600	300 or SB
Beryllium	ND	ND	ND	ND	ND	0 - 1.75	0.16 or SB
Cadmium	ND	ND	ND	ND	ND	0.1 - 1	1 or SB
Calcium	4530	ND	435	ND	ND	130 - 35000**	SB
Chromium	9.8	**12.3**	**13.7**	9.8	7.6	1.5 - 40**	10 or SB
Cobalt	ND	ND	ND	ND	ND	2.5 - 60**	30 or SB
Copper	17.2	12.9	12.2	10	7.6	1 - 50	25 or SB
Iron	**9310**	**10700**	**11500**	**11500**	**7880**	2000 - 550000	2000 or SB
Lead	497	13.1	26.5	14.4	11.5	****	SB****
Magnesium	2030	2980	1980	2100	1220	100 - 5000	SB
Manganese	302	357	426	208	140	50 - 5000	SB
Nickel	ND	10.2	10.2	ND	ND	0.5 - 25	13 or SB
Potassium	653	699	669	530	415	8500 - 43000**	SB
Selenium	ND	ND	ND	ND	ND	0.1 - 3.9	2 or SB
Sodium	290	191	136	174	184	6000-8000	SB
Silver	ND	ND	ND	ND	ND	0.1-5 (n)	SB
Thallium	**3.3**	ND	ND	ND	ND	0.1 - 0.8 (q)	SB
Vanadium	ND	16.6	17.9	13.7	ND	1 - 300	150 or SB
Zinc	**86.5**	**30.8**	**44.4**	**30.6**	**26.4**	9 - 50	20 or SB
Mercury	**0.16**	ND	**0.17**	ND	ND	0.001 - 0.2	0.1

** - New York State Background.
**** - Background levels for lead vary widely. Levels in undeveloped, rural areas range from 4 - 61 ppm, while suburban areas range from 200 - 500 ppm.
(a) - NYSDEC Technical Administrative Guidance Memorandum, January 1994.
(n) - Dragun, J., The Soil Chemistry of Hazardous Materials.
(q) - Bowan, H.J., Environmental Chemistry of the Elements.
d - Indicates an analysis at a secondary dilution.
j - Indicates an estimated concentration; below reporting limit.
p - Indicates a > 25% difference for detected concentrations between the two GC columns. The lower of the two values is reported.
N/A - Not applicable.
ND - Not detected at analytical reporting limit.
Note - Numbers in bold exceed soil cleanup objectives.
SB - Site background.

Table 5-1 (Page 2 of 4)

ROCKLAND PSYCHIATRIC CENTER
SOIL DATA SUMMARY
29-30 May 2002

LMS Sample ID **Lab Sample ID** **Date Sampled**	**SS-6** **212210-6** **5/29/2002**	**SS-7** **212267-5** **5/30/2002**	**SS-8** **212267-6** **5/30/2002**	**SS-9** **212267-7** **5/30/2002**	**SS-10** **212267-8** **5/30/2002**	**EASTERN USA** **BACKGROUND** **(ppm)**	**RECOMMENDED** **SOIL CLEANUP** **OBJECTIVES (a)**
Pesticides (mg/kg)							
Endosulfan I	0.0076	0.007	ND	ND	ND	N/A	0.9
Dieldrin	ND	0.0042 p	0.018 p	0.0025 j p	0.0034 j p	N/A	0.044
4,4'-DDE	0.28 d	0.21 d	0.41 d	0.28 d	0.27 d	N/A	2.1
Endosulfan II	0.016	0.033	0.0025 j	0.0018 j	0.0034 j	N/A	0.9
4,4'-DDD	0.025	0.057	0.03 p	0.018 p	0.019 p	N/A	2.9
Endosulfan sulfate	0.27 d	0.32 d	0.0013 j	0.0023 j	0.0024 j	N/A	1
4,4'-DDT	0.29 d	0.42 d	0.7 d	0.3 d	0.4 d	N/A	2.1
Metals (mg/kg)							
Aluminum	8670	10000	11700	11200	10600	33000	SB
Antimony	ND	ND	ND	ND	ND	0.6 - 10 (n)	SB
Arsenic	4.5	5.8	5.7	5.6	6.6	3 - 12**	7.5 or SB
Barium	47.8	47.9	83.8	55.7	60.7	15 - 600	300 or SB
Beryllium	ND	ND	ND	ND	ND	0 - 1.75	0.16 or SB
Cadmium	ND	ND	ND	ND	ND	0.1 - 1	1 or SB
Calcium	162	499	833	623	438	130 - 35000**	SB
Chromium	**11.7**	**10.9**	**12.6**	**16.2**	**14.7**	1.5 - 40**	10 or SB
Cobalt	ND	ND	ND	ND	ND	2.5 - 60**	30 or SB
Copper	13.7	11.9	12.1	16.8	16.5	1 - 50	25 or SB
Iron	**10300**	**11900**	**12500**	**12500**	**12900**	2000 - 550000	2000 or SB
Lead	64	16.9	19	20.9	23.2	****	SB****
Magnesium	2600	1720	2740	2220	1920	100 - 5000	SB
Manganese	296	281	512	302	485	50 - 5000	SB
Nickel	10	11.3	12	12.8	12.4	0.5 - 25	13 or SB
Potassium	774	657	956	752	681	8500 - 43000**	SB
Selenium	ND	ND	ND	ND	ND	0.1 - 3.9	2 or SB
Sodium	192	273	288	301	306	6000-8000	SB
Silver	ND	ND	ND	ND	ND	0.1-5 (n)	SB
Thallium	ND	ND	ND	ND	ND	0.1 - 0.8 (q)	SB
Vanadium	15.5	15.1	18.1	23.3	18.8	1 - 300	150 or SB
Zinc	**48.8**	**36.8**	**46.5**	**40.7**	**43.2**	9 - 50	20 or SB
Mercury	ND	ND	ND	ND	**0.15**	0.001 - 0.2	0.1

** - New York State Background.

**** - Background levels for lead vary widely. Levels in undeveloped, rural areas range from 4 - 61 ppm, while suburban areas range from 200 - 500 ppm.

(a) - NYSDEC Technical Administrative Guidance Memorandum, January 1994.

(n) - Dragun, J., The Soil Chemistry of Hazardous Materials.

(q) - Bowan, H.J., Environmental Chemistry of the Elements.

d - Indicates an analysis at a secondary dilution.

j - Indicates an estimated concentration; below reporting limit.

p - Indicates a > 25% difference for detected concentrations between the two GC columns. The lower of the two values is reported.

N/A - Not applicable.

ND - Not detected at analytical reporting limit.

Note - Numbers in bold exceed soil cleanup objectives.

SB - Site background.

Table 5-1 (Page 3 of 4)
ROCKLAND PSYCHIATRIC CENTER
SOIL DATA SUMMARY
29-30 May 2002

LMS Sample ID	**SS-11**	**SS-12**	**SS-13**	**SS-14**	**SS-15**	**EASTERN USA**	**RECOMMENDED**
Lab Sample ID	**212267-9**	**212267-10**	**212267-11**	**212267-12**	**212267-25**	**BACKGROUND**	**SOIL CLEANUP**
Date Sampled	**5/30/2002**	**5/30/2002**	**5/30/2002**	**5/30/2002**	**5/30/2002**	**(ppm)**	**OBJECTIVES (a)**
Pesticides (mg/kg)							
Endosulfan I	ND	ND	ND	ND	ND	N/A	0.9
Dieldrin	ND	ND	ND	ND	ND	N/A	0.044
4,4'-DDE	0.0023 j	0.0074	0.095 d	0.00092 j	0.0014 j p	N/A	2.1
Endosulfan II	0.0013 j	ND	ND	ND	ND	N/A	0.9
4,4'-DDD	0.0014 j	0.0065	0.032 d	ND	0.0022 j p	N/A	2.9
Endosulfan sulfate	ND	ND	ND	ND	ND	N/A	1
4,4'-DDT	0.0053	0.0035 j	0.039	0.0011 j	0.0014 j p	N/A	2.1
Metals (mg/kg)							
Aluminum	7110	4850	7960	5740	6600	33000	SB
Antimony	ND	ND	ND	ND	ND	0.6 - 10 (n)	SB
Arsenic	4.4	ND	3.3	3.1	2.7	3 - 12**	7.5 or SB
Barium	68.5	61.5	56.4	46.8	62.4	15 - 600	300 or SB
Beryllium	ND	ND	ND	ND	ND	0 - 1.75	0.16 or SB
Cadmium	ND	ND	ND	ND	ND	0.1 - 1	1 or SB
Calcium	1640	2580	2510	7520	2380	130 - 35000**	SB
Chromium	**11.8**	**10.4**	**10.9**	8.1	**11.5**	1.5 - 40**	10 or SB
Cobalt	ND	ND	ND	ND	ND	2.5 - 60**	30 or SB
Copper	14	13	15.5	12.7	17.4	1 - 50	25 or SB
Iron	**10500**	**6100**	**12400**	**8570**	**11600**	2000 - 550000	2000 or SB
Lead	24.4	7.8	16.9	6.6	11.6	****	SB****
Magnesium	2090	1650	2960	2590	2310	100 - 5000	SB
Manganese	342	83.1	345	340	360	50 - 5000	SB
Nickel	12	ND	10.4	9.2	11.6	0.5 - 25	13 or SB
Potassium	752	493	746	687	867	8500 - 43000**	SB
Selenium	ND	ND	ND	ND	ND	0.1 - 3.9	2 or SB
Sodium	307	451	335	378	366	6000-8000	SB
Silver	ND	ND	ND	ND	ND	0.1-5 (n)	SB
Thallium	ND	ND	ND	ND	ND	0.1 - 0.8 (q)	SB
Vanadium	18.4	ND	25.7	11.3	20	1 - 300	150 or SB
Zinc	**38.2**	**31.5**	**33**	**22.2**	**28.7**	9 - 50	20 or SB
Mercury	ND	ND	ND	ND	ND	0.001 - 0.2	0.1

** - New York State Background.
**** - Background levels for lead vary widely. Levels in undeveloped, rural areas range from 4 - 61 ppm, while suburban areas range from 200 - 500 ppm.
(a) - NYSDEC Technical Administrative Guidance Memorandum, January 1994.
(n) - Dragun, J., The Soil Chemistry of Hazardous Materials.
(q) - Bowan, H.J., Environmental Chemistry of the Elements.
d - Indicates an analysis at a secondary dilution.
j - Indicates an estimated concentration; below reporting limit.
p - Indicates a > 25% difference for detected concentrations between the two GC columns. The lower of the two values is reported.
N/A - Not applicable.
ND - Not detected at analytical reporting limit.
Note - Numbers in bold exceed soil cleanup objectives.
SB - Site background.

ROCKLAND PSYCHIATRIC CENTER
SOIL DATA SUMMARY
29-30 May 2002

LMS Sample ID	**SS-16**	**SS-17**	**SS-18**	**SS-19**	**SS-20**	**EASTERN USA**	**RECOMMENDED**
Lab Sample ID	**212267-26**	**212267-27**	**212267-28**	**212301-3**	**212301-4**	**BACKGROUND**	**SOIL CLEANUP**
Date Sampled	**5/30/2002**	**5/30/2002**	**5/30/2002**	**5/30/2002**	**5/30/2002**	**(ppm)**	**OBJECTIVES (a)**
Pesticides (mg/kg)							
Endosulfan I	ND	ND	ND	ND	ND	N/A	0.9
Dieldrin	0.0029 j p	ND	ND	ND	ND	N/A	0.044
4,4'-DDE	0.0083 p	ND	0.068 d	0.1 d	0.096 d	N/A	2.1
Endosulfan II	ND	ND	0.0038	ND	ND	N/A	0.9
4,4'-DDD	0.0082	ND	0.027	0.0067	0.005	N/A	2.9
Endosulfan sulfate	ND	ND	0.031	0.0017 j	0.001 j	N/A	1
4,4'-DDT	0.0075	ND	0.043 p	0.14 d	0.12 d	N/A	2.1
Metals (mg/kg)							
Aluminum	9270	8220	5270	5750	5300	33000	SB
Antimony	ND	ND	ND	ND	ND	0.6 - 10 (n)	SB
Arsenic	4.8	6.3	3.5	3.6	3.4	3 - 12**	7.5 or SB
Barium	65.3	69.9	ND	ND	ND	15 - 600	300 or SB
Beryllium	ND	ND	ND	ND	ND	0 - 1.75	0.16 or SB
Cadmium	ND	ND	ND	ND	ND	0.1 - 1	1 or SB
Calcium	3180	18300	422	570	851	130 - 35000**	SB
Chromium	**13.5**	**14**	6.4	7.3	7.1	1.5 - 40**	10 or SB
Cobalt	ND	ND	ND	ND	ND	2.5 - 60**	30 or SB
Copper	**27.5**	24.2	7.6	12.7	11.5	1 - 50	25 or SB
Iron	**15600**	**18400**	**6950**	**8810**	**8220**	2000 - 550000	2000 or SB
Lead	57.1	14.3	19.5	23.6	21.2	****	SB****
Magnesium	2580	**10600**	1280	1220	1300	100 - 5000	SB
Manganese	351	572	144	182	201	50 - 5000	SB
Nickel	13	**16.6**	ND	ND	ND	0.5 - 25	13 or SB
Potassium	895	1650	447	472	406	8500 - 43000**	SB
Selenium	ND	ND	ND	ND	ND	0.1 - 3.9	2 or SB
Sodium	405	418	279	315	317	6000-8000	SB
Silver	ND	ND	ND	ND	ND	0.1-5 (n)	SB
Thallium	ND	ND	ND	ND	ND	0.1 - 0.8 (q)	SB
Vanadium	27.4	20.1	ND	ND	ND	1 - 300	150 or SB
Zinc	**76.7**	**44.7**	**22.3**	**40.8**	**35.4**	9 - 50	20 or SB
Mercury	ND	ND	ND	**0.23**	**0.23**	0.001 - 0.2	0.1

** - New York State Background.
**** - Background levels for lead vary widely. Levels in undeveloped, rural areas range from 4 - 61 ppm, while suburban areas range from 200 - 500 ppm.
(a) - NYSDEC Technical Administrative Guidance Memorandum, January 1994.
(n) - Dragun, J., The Soil Chemistry of Hazardous Materials.
(q) - Bowan, H.J., Environmental Chemistry of the Elements.
d - Indicates an analysis at a secondary dilution.
j - Indicates an estimated concentration; below reporting limit.
p - Indicates a > 25% difference for detected concentrations between the two GC columns. The lower of the two values is reported.
N/A - Not applicable.
ND - Not detected at analytical reporting limit.
Note - Numbers in bold exceed soil cleanup objectives.
SB - Site background.

The iron and zinc results indicate a similar situation in that the site background is generally elevated above the Recommended Soil Cleanup Objectives (Table 5-1). In the case of iron the results ranged from 6,100 mg/kg (SS-12) to 18,400 mg/kg (SS-17); above the cleanup objective of 2,000 mg/kg but well within Eastern Regional Background levels. The zinc results ranged from 22.2 mg/kg (SS-14) to 86.5 mg/kg (SS-01); all within Eastern Regional Background levels with the exception SS-01 and SS-16.

Five of the 20 samples exceeded the Recommended Soil Cleanup Objective for mercury. The noted concentrations ranged from 0.15 to 0.23 mg/kg for the five samples with the highest value of 0.23 detected in SS-19 and SS-20. These results exceed the cleanup objective but are within the upper range for mercury in eastern regional soils. Since mercury was not detected in the other 15 samples collected in this soil type the results appear to be elevated above what might be considered site background.

5.1.2 **Soils Samples Collected From Wastewater Treatment Plant Residual Sludge**

Nine samples of the residual sludge materials that were disposed of in the vicinity of the wastewater treatment plant were collected and analyzed for VOCs and metals (Table 5-2). VOCs were not detected in any of the samples with the exception of a low level of p-isopropyltoluene in SL-04 (0.0026 mg/kg).

An elevated concentration of arsenic was found in one of the sludge samples (SL-06) in excess of the Recommended Soil Cleanup Objective for this metal. SL-06 exhibited a concentration of arsenic of 17.8 mg/kg while the results for the other samples fell within a range of 2.2 to 4.4 mg/kg.

Three of the sludge samples exhibited chromium concentrations that were slightly above the cleanup objective for chromium. The chromium concentrations were 10.2 mg/kg, 11.1 mg/kg, and 10.4 mg/kg for SL-02, -03, and -05 respectively.

Relatively consistent concentrations of iron were found in all nine samples. The results ranged from 7,270 mg/kg at SL-09 to 12,100 mg/kg at SL-05; although each of the results exceeded the cleanup objective of 2,000 mg/kg, site background levels are typically more important in establishing the required cleanup objective. Since site background for soils in this area is typically greater than 2,000 mg/kg (see above), the sludge samples are similar to the soils with respect to iron.

Table 5-2 (Page 1 of 2)
ROCKLAND PSYCHIATRIC CENTER
SLUDGE DATA SUMMARY
30 May 2002

LMS Sample ID **Lab Sample ID** **Date Sampled**	**SL-1** **212267-14** **5/30/2002**	**SL-2** **212267-15** **5/30/2002**	**SL-3** **212267-16** **5/30/2002**	**SL-4** **212267-17** **5/30/2002**	**SL-5** **212267-18** **5/30/2002**	**EASTERN USA BACKGROUND (ppm)**	**RECOMMENDED SOIL CLEANUP OBJECTIVES (a)**
Volatile Organic Compounds (mg/kg)							
p-isopropyltoluene	ND	ND	ND	0.0029	ND	N/A	10
Metals (mg/kg)							
Aluminum	5710	8120	9520	4410	9000	33000	SB
Antimony	ND	ND	ND	ND	ND	0.6 - 10 (n)	SB
Arsenic	4.2	4.4	4.3	2.2	4.1	3 - 12**	7.5 or SB
Barium	ND	66.7	78.8	ND	77.2	15 - 600	300 or SB
Beryllium	ND	ND	ND	ND	ND	0 - 1.75	0.16 or SB
Cadmium	ND	ND	ND	ND	ND	0.1 - 1	1 or SB
Calcium	1300	399	386	510	602	130 - 35000**	SB
Chromium	8.7	**10.2**	**11.1**	5.7	**10.4**	1.5 - 40**	10 or SB
Cobalt	ND	ND	ND	ND	ND	2.5 - 60**	30 or SB
Copper	11.3	18.9	19.4	7.8	17.5	1 - 50	25 or SB
Iron	**11700**	**10600**	**11600**	**8680**	**12100**	2000 - 550000	2000 or SB
Lead	10.9	41.4	39.5	4.5	28.6	****	SB****
Magnesium	1760	1450	1450	1300	1250	100 - 5000	SB
Manganese	305	328	402	215	433	50 - 5000	SB
Nickel	ND	ND	ND	ND	ND	0.5 - 25	13 or SB
Potassium	640	356	474	428	355	8500 - 43000**	SB
Selenium	ND	ND	ND	ND	ND	0.1 - 3.9	2 or SB
Sodium	279	300	292	289	310	6000 - 8000	SB
Silver	ND	ND	ND	ND	ND	0.1 - 5 (n)	SB
Thallium	ND	ND	ND	ND	ND	0.1 - 0.8 (q)	SB
Vanadium	15.9	15.2	16.3	ND	16.9	1 - 300	150 or SB
Zinc	**28.1**	**47.8**	**48.7**	**25.1**	**55.2**	9 - 50	20 or SB
Mercury	ND	**0.77**	**0.94**	ND	**0.57**	0.001 - 0.2	0.1

** - New York State Background.

**** - Background levels for lead vary widely. Levels in undeveloped, rural areas range from 4 - 61 ppm, while suburban areas range from 200 - 500 ppm.

(a) - NYSDEC Technical Administrative Guidance Memorandum, January 1994.

(n) - Dragun, J., The Soil Chemistry of Hazardous Materials.

(q) - Bowan, H.J., Environmental Chemistry of the Elements.

N/A - Not applicable.

ND - Not detected at analytical reporting limit.

Note - Numbers in bold exceed soil cleanup objectives.

SB - Site background.

Table 5-2 (Page 2 of 2)

ROCKLAND PSYCHIATRIC CENTER

SLUDGE DATA SUMMARY

30 May 2002

LMS Sample ID **Lab Sample ID** **Date Sampled**	**SL-6** **212267-19** **5/30/2002**	**SL-7** **212301-5** **5/30/2002**	**SL-8** **212301-6** **5/30/2002**	**SL-9** **212301-7** **5/30/2002**	**EASTERN USA** **BACKGROUND** **(ppm)**	**RECOMMENDED** **SOIL CLEANUP** **OBJECTIVES (a)**
Volatile Organic Compounds (mg/kg)						
p-isopropyltoluene	ND	ND	ND	ND	N/A	10
Metals (mg/kg)						
Aluminum	2010	5800	4870	5140	33000	SB
Antimony	ND	ND	ND	ND	0.6 - 10 (n)	SB
Arsenic	**17.8**	3.8	2.3	2.4	3 - 12**	7.5 or SB
Barium	ND	ND	ND	ND	15 - 600	300 or SB
Beryllium	ND	ND	ND	ND	0 - 1.75	0.16 or SB
Cadmium	ND	ND	ND	ND	0.1 - 1	1 or SB
Calcium	596	326	336	358	130 - 35000**	SB
Chromium	7.6	7.5	6.4	5.5	1.5 - 40**	10 or SB
Cobalt	ND	ND	ND	ND	2.5 - 60**	30 or SB
Copper	18.4	13.6	9	7.4	1 - 50	25 or SB
Iron	**10300**	**9860**	**7870**	**7270**	2000 - 550000	2000 or SB
Lead	38.1	25.2	9.8	4.4	****	SB****
Magnesium	187	1270	1660	1450	100 - 5000	SB
Manganese	83.8	235	228	205	50 - 5000	SB
Nickel	10.1	ND	ND	ND	0.5 - 25	13 or SB
Potassium	293	347	420	375	8500 - 43000**	SB
Selenium	ND	ND	ND	ND	0.1 - 3.9	2 or SB
Sodium	269	290	279	275	6000 - 8000	SB
Silver	ND	ND	ND	ND	0.1 - 5 (n)	SB
Thallium	ND	ND	ND	ND	0.1 - 0.8 (q)	SB
Vanadium	ND	11.7	ND	ND	1 - 300	150 or SB
Zinc	**35.6**	**30.5**	**25.2**	**28.7**	9 - 50	20 or SB
Mercury	**0.39**	**0.61**	ND	ND	0.001 - 0.2	0.1

** - New York State Background.

**** - Background levels for lead vary widely. Levels in undeveloped, rural areas range from 4 - 61 ppm, while suburban areas range from 200 - 500 ppm.

(a) - NYSDEC Technical Administrative Guidance Memorandum, January 1994.

(n) - Dragun, J., The Soil Chemistry of Hazardous Materials.

(q) - Bowan, H.J., Environmental Chemistry of the Elements.

N/A - Not applicable.

ND - Not detected at analytical reporting limit.

Note - Numbers in bold exceed soil cleanup objectives.

SB - Site background.

Mercury was found in excess of the Recommended Soil Cleanup Objective at SL-02 (0.77 mg/kg), SL-03 (0.94 mg/kg), SL-05 (0.57 mg/kg), SL-06 (0.39 mg/kg) and SL-07 (.61 mg/kg). Each of these samples appear to be exhibit mercury concentrations that are above those typically found in wastewater sludge residuals, above Eastern Regional Background levels, and measurably higher than the five of 20 soil samples that had detectable mercury.

5.1.3 **Soils Samples Near Existing Structures**

A total of ten shallow soil samples were collected from various locations adjacent to the existing structures at the site. Each sampling location was selected to provide data for a particular set or type of building at the site. The analytical results for these samples are presented in Table 5-3. As discussed in Chapter 4, the sampling sites were selected based on visual evidence of paint chip contamination, to provide conservative or "worst case" results.

Elevated concentrations of arsenic were found in three of the ten samples including 14.2 mg/kg at LP-06, 8.6 mg/kg at LP-07, and 9.0 mg/kg at LP-10. The recommended soil cleanup objective for arsenic is 7.5 mg/kg or site background and the Phase II soil sampling suggests 7.5 mg/kg is the appropriate cleanup objective since the site background does not appear to exceed this value.

Barium was found in two of the ten samples in excess of the cleanup objective including 502 mg/kg at LP-07 and 3,220 mg/kg at LP-08. Three of the samples slightly exceeded the cleanup objective for cadmium of 1 mg/kg or site background. The three samples included LP-01, LP-08, and LP-10, which exhibited cadmium concentrations of 1.3, 1.5, and 1.7 mg/kg respectively.

All ten of these samples exceeded the cleanup objective for chromium of 10 mg/kg or site background. However nine of the ten samples were within New York State background levels for chromium (1.5 mg/kg to 40 mg/kg). The chromium concentrations ranged from 15.2 mg/kg at LP-09 to 49.7 mg/kg at LP-07.

Nine of the ten samples exceeded the recommended soil cleanup objective for copper. Of the nine samples, five (LP-03, -04, -05, -07, and -08) were only slightly elevated over the

Table 5-3 (Page 1 of 2)

ROCKLAND PSYCHIATRIC CENTER

LEAD PAINT DATA SUMMARY

30 May 2002

LMS Sample ID **Lab Sample ID** **Date Sampled**	**LP-1** **212267-20** **5/30/2002**	**LP-2** **212267-21** **5/30/2002**	**LP-3** **212267-22** **5/30/2002**	**LP-4** **212267-23** **5/30/2002**	**LP-5** **212267-24** **5/30/2002**	**EASTERN USA** **BACKGROUND** **(ppm)**	**RECOMMENDED** **SOIL CLEANUP** **OBJECTIVES (a)**
Metals (mg/kg)							
Aluminum	9130	6080	7840	5200	5520	33000	SB
Antimony	ND	ND	ND	ND	ND	0.6 - 10 (n)	SB
Arsenic	5.6	5.2	6.9	3.5	5	3 - 12**	7.5 or SB
Barium	164	137	168	232	68.9	15 - 600	300 or SB
Beryllium	ND	ND	ND	ND	ND	0 - 1.75	0.16 or SB
Cadmium	**1.7**	ND	ND	ND	ND	0.1 - 1	1 or SB
Calcium	4330	2370	4000	2450	2210	130 - 35000**	SB
Chromium	**21.7**	**32.4**	**20.3**	**19.2**	**31.5**	1.5 - 40**	10 or SB
Cobalt	ND	ND	ND	ND	ND	2.5 - 60**	30 or SB
Copper	**151**	23.3	**70.3**	**61.4**	**52.4**	1 - 50	25 or SB
Iron	**12800**	**15800**	**13900**	**9170**	**10400**	2000 - 550000	2000 or SB
Lead	363	46.9	413	395	**677**	****	SB****
Magnesium	2660	1970	1980	1770	1760	100 - 5000	SB
Manganese	359	363	656	327	324	50 - 5000	SB
Nickel	**16.6**	**13.9**	**15.8**	10.1	**13.7**	0.5 - 25	13 or SB
Potassium	1280	974	950	884	428	8500 - 43000**	SB
Selenium	ND	ND	ND	ND	ND	0.1 - 3.9	2 or SB
Sodium	668	700	530	479	616	6000 - 8000	SB
Silver	ND	ND	ND	ND	ND	0.1 - 5 (n)	SB
Thallium	ND	ND	ND	ND	ND	0.1 - 0.8 (q)	SB
Vanadium	32	24.9	26.6	18.6	29.1	1 - 300	150 or SB
Zinc	**249**	**133**	**175**	**114**	**182**	9 - 50	20 or SB
Mercury	ND	ND	ND	ND	**0.17**	0.001 - 0.2	0.1

** - New York State Background.

**** - Background levels for lead vary widely. Levels in undeveloped, rural areas range from 4 - 61 ppm, while suburban areas range from 200 - 500 ppm.

(a) - NYSDEC Technical Administrative Guidance Memorandum, January 1994.

(n) - Dragun, J., The Soil Chemistry of Hazardous Materials.

(q) - Bowan, H.J., Environmental Chemistry of the Elements.

ND - Not detected at analytical reporting limit.

Note - Numbers in bold exceed soil cleanup objectives.

SB - Site background.

Table 5-3 (Page 2 of 2)

ROCKLAND PSYCHIATRIC CENTER
LEAD PAINT DATA SUMMARY
30 May 2002

LMS Sample ID Lab Sample ID Date Sampled	LP-6 212267-1 5/30/2002	LP-7 212267-2 5/30/2002	LP-8 212267-3 5/30/2002	LP-9 212267-4 5/30/2002	LP-10 212301-1 5/30/2002	EASTERN USA BACKGROUND (ppm)	RECOMMENDED SOIL CLEANUP OBJECTIVES (a)
Metals (mg/kg)							
Aluminum	6140	6790	5380	7390	7480	33000	SB
Antimony	ND	ND	ND	ND	ND	0.6 - 10 (n)	SB
Arsenic	**14.2**	**8.6**	3.7	7.2	**9**	3 - 12**	7.5 or SB
Barium	ND	**502**	**3220**	122	87.7	15 - 600	300 or SB
Beryllium	ND	ND	ND	ND	ND	0 - 1.75	0.16 or SB
Cadmium	ND	ND	**1.3**	ND	**1.5**	0.1 - 1	1 or SB
Calcium	1530	3980	2930	1730	1350	130 - 35000**	SB
Chromium	**40**	**49.7**	**15.5**	**15.2**	**24.6**	1.5 - 40**	10 or SB
Cobalt	ND	ND	ND	ND	ND	2.5 - 60**	30 or SB
Copper	**2130**	**86.2**	**84.7**	**323**	**201**	1 - 50	25 or SB
Iron	**10400**	**10400**	**9180**	**10800**	**11100**	2000 - 550000	2000 or SB
Lead	**1790**	**949**	309	**4200**	**2460**	****	SB****
Magnesium	1800	1770	2030	1810	2400	100 - 5000	SB
Manganese	128	491	288	371	290	50 - 5000	SB
Nickel	10.4	11.9	**13.8**	**13.3**	**16.8**	0.5 - 25	13 or SB
Potassium	543	1090	608	601	468	8500 - 43000**	SB
Selenium	ND	ND	ND	ND	ND	0.1 - 3.9	2 or SB
Sodium	398	470	1260	792	759	6000 - 8000	SB
Silver	ND	ND	ND	ND	ND	0.1 - 5 (n)	SB
Thallium	**4.7**	ND	ND	ND	ND	0.1 - 0.8 (q)	SB
Vanadium	31.7	18	15.5	25.2	38.9	1 - 300	150 or SB
Zinc	**37.5**	**178**	**758**	**375**	**356**	9 - 50	20 or SB
Mercury	ND	**0.2**	ND	**0.23**	**0.65**	0.001 - 0.2	0.1

** - New York State Background.

**** - Background levels for lead vary widely. Levels in undeveloped, rural areas range from 4 - 61 ppm, while suburban areas range from 200 - 500 ppm.

(a) - NYSDEC Technical Administrative Guidance Memorandum, January 1994.

(n) - Dragun, J., The Soil Chemistry of Hazardous Materials.

(q) - Bowan, H.J., Environmental Chemistry of the Elements.

ND - Not detected at analytical reporting limit.

Note - Numbers in bold exceed soil cleanup objectives.

SB - Site background.

Eastern Regional Background levels with the highest concentration of copper at LP-07 (86.2 mg/kg). The remaining four samples (LP-01, -06, -09, and -10) exhibited copper concentrations well above the cleanup objective. The copper concentrations at these locations ranged from 201 mg/kg at LP-10 to 2,130 mg/kg at LP-06.

Relatively consistent concentrations of iron were found in all ten samples. The results ranged from 9,170 mg/kg at LP-04 to 15,800 mg/kg at LP-02; although each of the results exceeded the cleanup objective, all were within Eastern United States Regional Background levels and had similar concentrations as the open field (ss series) samples.

Five of the ten samples exhibited elevated levels of lead, in that the measured concentrations in these samples exceed typical background lead levels for a suburban area. The lead concentrations in these five samples were 677 mg/kg, 1,790 mg/kg, 949 mg/kg, 4,200 mg/kg and 2,460 mg/kg, which correspond to sampling locations LP-05, -06, -07, -09, and 10 respectively. The highest concentration of lead (4,200 mg/kg) was noted at LP-09 which was collected from an area “covered with paint chips”, as described above.

The nickel concentrations in seven of the 10 samples exceeded the recommended soil cleanup objective for nickel. In these samples the nickel concentrations ranged from 13.3 mg/kg to 16.8 mg/kg which is well within typical Eastern Regional Background values for nickel. The Recommended Soil Cleanup Objective for nickel is 13.0 mg/kg or site background and owing to the consistent range of nickel concentrations found in these samples it maybe more appropriate to establish a site background level for use as the cleanup objective.

A single sample (LP-06) exceeded the cleanup objective for thallium. The thallium concentration in LP-06 was 4.7 mg/kg while each of the other samples were found to be free of thallium at the analytical detection limit. Typically thallium is only found at very low concentrations in soil (0.1 to 0.8 mg/kg) and the source of thallium found in this sample is not known.

All ten of these samples exceeded the Recommend Soils Cleanup Objectives for zinc. With the exception of one of the samples (LP-06) the results are also elevated above the typical Eastern Regional Background levels. The concentrations ranged from 37.5 mg/kg at LP-06 to 758 mg/kg at LP-08.

Mercury was found in excess of the Recommended Soil Cleanup Objective at LP-05 (0.17 mg/kg), LP-07 (0.2 mg/kg), LP-09 (0.23 mg/kg), and LP-10 (.65 mg/kg). Only LP-09 and LP-10 appear to be elevated above Eastern Regional Background.

5.2 GROUNDWATER/LEACHATE SAMPLES

Groundwater probes were completed at six locations during the Phase II investigation. Four of the sample points were chosen to collect groundwater samples directly downgradient from several on-site landfills and the remaining two samples were collected downgradient of the existing cook/chill facility. The samples collected near the landfills were analyzed for metals and VOCs while the samples collected near the chill plant were analyzed for VOCs only. Analytical results are summarized in Table 5-4.

The samples collected from near the landfills (RPC P-01 to RPC P-04) indicated that several metals were detected in excess of the NYSDEC Class GA Standards including iron, manganese, selenium, and lead. Iron was found in excess of the NYSDEC Class GA Standard at RPC P-02 (16,900 µg/l) and RPC P-03 (8,120 µg/l). Manganese was found in excess of the standards in each of the four samples (RPC P-01 to RPC P-04) at concentration that ranged from 547 µg/l to 4,560 µg/l. Selenium was also found in excess of the standards in RPC-01, RPC P-02, and RPC P-04 at concentrations of 13.9 µg/l, 15.8 µg/l and 11.7 µg/l respectively. Lead was found in RPC P-02 at 30.5 µg/l slightly in excess of the NYSDEC Class GA Standard for lead. All of the other metal results were below applicable standards.

The only sample that appeared to be potentially impacted by site activities was RPC P-02. In addition to the elevated iron, lead, manganese, and selenium found in this sample elevated concentrations of arsenic (24.1 µg/l), barium (523 µg/l), chromium (21.6 µg/l), and zinc (73 µg/l) were also found.

Chloroform was the only VOC detected downgradient of the landfills; it was detected at low levels in three of the four samples. In each case the noted concentrations did not exceed the NYSDEC Class GA Standard of 7 µg/l. The reported concentrations at RPC P-3 and RPC P-2 were estimated at .65 µg/l and .77 µg/l respectively, at RPC P-4 chloroform was detected at 1.9 µg/l.

Table 5-4 (Page 1 of 1)

ROCKLAND PSYCHIATRIC CENTER
GROUNDWATER DATA SUMMARY
MAY 29-30, 2002

LMS Sample ID **Lab Sample ID** **Date Sampled**	**RPC P-1** **212210-7** **5/29/2002**	**RPC P-2** **212210-8** **5/29/2002**	**RPC P-3** **212301-2** **5/30/2002**	**RPC P-4** **212267-13** **5/30/2002**	**RPC P-5** **212210-9** **5/29/2002**	**RPC P-6** **212210-10** **5/29/2002**	**NYSDEC** **Class GA** **Standards (a)**
Volatile Organic Compounds (mg/L)							
Chloroform	ND	0.77 j	0.65 j	1.9	ND	ND	7
Metals (mg/L)							
Aluminum	ND	8360	6720	ND	*	*	N/A
Antimony	ND	ND	ND	ND	*	*	3
Arsenic	ND	24.1	ND	ND	*	*	25
Barium	ND	523	ND	ND	*	*	1000
Beryllium	ND	ND	ND	ND	*	*	3 GV
Cadmium	ND	ND	ND	ND	*	*	5
Calcium	46200	94400	12000	33600	*	*	N/A
Chromium	ND	21.6	ND	ND	*	*	50
Cobalt	ND	ND	ND	ND	*	*	N/A
Copper	ND	ND	ND	ND	*	*	200
Iron	137	**16900**	**8120**	188	*	*	300
Lead	ND	**30.5**	8.1	ND	*	*	25
Magnesium	7280	24400	4000	6790	*	*	35000 GV
Manganese	**395**	**4560**	**1010**	**547**	*	*	300
Nickel	ND	ND	ND	ND	*	*	100
Potassium	1660	22900	2290	1370	*	*	N/A
Selenium	**13.9**	**15.8**	ND	**11.7**	*	*	10
Silver	ND	ND	ND	ND	*	*	50
Sodium	5940	17600	4440	12500	*	*	20000
Thallium	ND	ND	ND	ND	*	*	0.5 GV
Vanadium	ND	ND	ND	ND	*	*	N/A
Zinc	ND	73	29.8	38.6	*	*	5000 GV
Mercury	ND	ND	ND	ND	*	*	0.7

* - Not analyzed.

(a) - NYSDEC Division of Water Technical and Operationsl Guidance Series (1.1.1), June 1998.

j - Indicates an estimated concentration.

GV - Guidance value.

N/A - Not available.

ND - Not detected at analytical reporting limit.

Note - Numbers in bold exceed the NYSDEC Class GA standard or guidance value.

The two groundwater samples that were collected from the area downgradient of the chill facility and analyzed for VOCs did not indicate the presence of VOCs including Freon at the analytical detect limit.

5.3 LANDFILLS

Landfill A/C

The inventory of material found in the Landfill A / C area included an old refrigerator, piles of tree limbs and other brush, cut up logs, an empty gallon jug of Roundup pesticide, old rugs, empty quart containers of motor oil, and piles of wooden pallets. The majority of material at this location consisted of wood chips and remnants of trees.

Only slight deviations from ambient background conditions were noted in the six gas points surveyed for this landfill. Most responses were noted with the PID but were very small in magnitude.

At SG-1 no responses above background readings were noted for the PID or CGI parameters. The SG-2 sample point yielded a 2 ppm response on the PID but no CGI response. The CGI response at SG-3 indicated a slightly depleted oxygen concentration (20.7 %) versus background levels (21%) but no other CGI or PID response was noted. Sample point SG-4 had a PID response of approximately 1 ppm with no CGI response. SG-5 had a PID response of 0.2 ppm with no other parameters indicated at levels above background. In the final sample collected at this landfill, no CGI or PID response was noted for SG-6.

Landfill B

Inspection of Landfill B verified its designation as a C&D landfill. Virtually all identifiable material encountered during inspection of this landfill was medium to large slabs of broken up concrete. Remnants of a metal fence were also present, including several metal fence posts along with semi-buried sections of the fencing. The only other object of note encountered at this landfill was the remains of a drum on the top portion of the main mound. The drum had no identifiable markings and was very rusted and filled with dirt.

Responses from the gas monitoring equipment for sample points at Landfill B exhibited somewhat elevated readings for some parameters relative to that which was detected at Landfill A / C. Only one point, however, exhibited readings that would be considered significant.

Sample point SG-7 yielded a peak, instantaneous PID response of 6.8 ppm, which then declined and held stable at 0.4 ppm. No CGI response was noted for this location. At sample location SG-8 a peak response of 0.8 ppm was noted on the PID and no response was indicated with the CGI. SG-9 produced the most significant results for the gas sampling program. The CGI indicated a momentary decline in oxygen concentration to 18.8 %, which then returned quickly to 20.9 %. There was also an indication of 1% LEL for methane and the PID response was 3.4 ppm. The final sample at Landfill B, SG-10, returned an 11 ppm reading on the PID and no response with the CGI.

Mulch Pile

Inspection of the area surrounding the large mulch pile near wellhouse #6 indicated similar material as that observed in Landfill B. The mulch pile is apparently located in the center of an area that has been filled substantially. Visual inspection of the material around the fringe of the filled area, especially to the west of the mulch pile, suggest that the fill consists mostly of C/D material such as broken up concrete, large boulders and tree remains. Only minor amounts of other material were encountered in this area during collection of the GPS data.

Landfill B-1

Landfill B-1, at the western edge of the property near the old Boy Scout campsite, appeared to consist mostly of household type waste. Concentrations of bottles and cans were the most visible and most numerous objects at this location. Some old tires and what appeared to be old corrugated siding and fencing were also scattered about. Prominent mounds of material were visible in the area but the amount of debris exposed at the surface was quite limited.

5.4 ASBESTOS

The building tables found in the asbestos cost estimate (Chapter 7) are a summary of know or assumed asbestos containing materials. The results and particulars for each of the samples collected can be found in Appendix A. It should be noted that suspect materials not listed in the tables were either sampled and found not to contain asbestos or are considered miscellaneous and have been addressed in the contingency cost.

5.5 LEAD-BASED PAINT

Typically greater than 50% of the components tested positive for lead with the exception of the staff housing on Blaisdell Road, namely, buildings 108-110 and 132-141. With few exceptions the interior of these buildings are lead free. However, the exterior painted surfaces do show moderate levels of lead. The results of the representative sampling show that lead is present in painted surface throughout the subject area. Therefore, painted surface should be treated as lead-based paints until they can be sampled. The results and particulars for each building tested can be found in Appendix B.

Appendix B provides the following; (1) a brief summary of the results of the selected buildings, (2) a Structure Distribution table that shows results as a percentage of tests taken, (3) a Summary of Positive results and (4) a detailed report of all test taken for a given building. Table 5-5 summarizes the lead-based sampling by listing the percent of the samples that had positive results by building sampled.

ROCKLAND PSYCHIATRIC CENTER

PERCENTAGE OF POSITIVE LEAD READINGS

Parcel No. 2

Bldg. No.	Percent Tested Positive for Lead
Block A	
18	76
32	NS
34	50
36	NS
38	50
Block B	
95	NS
96	NS
97	NS
98	NS
99	79
100	72
101	NS
Block C	
12	NS
26	NS
14	NS
28	60
Block D	
10	50
13	NS
15	NS
16	NS
42	NS
40	83
41	NS
102	NS
115	NS
Block E	
2	67
3	NS
4	77
6	86
7	NS
8	NS
9	47

Parcel No. 3

Bldg. No.	Percent Tested Positive for Lead
88	NS
127	NS

ROCKLAND PSYCHIATRIC CENTER

PERCENTAGE OF POSITIVE LEAD READINGS

Parcel No. 4

Bldg. No.	Percent Tested Positive for Lead
84	NS

Parcel No. 5

Bldg. No.	Percent Tested Positive for Lead
77	most
108	*
109	*
110	*
136	*
137	*
138	*
139	*
140	*
141	*

Parcel No. 6

Bldg. No.	Percent Tested Positive for Lead
25	54
27	NS
62	NS
63	63
132	*
133	*
134	*
135	*
20	NS
23	NS
21	71
22	NS
54	NS
55	NS

NS - Not Sampled.

* - With few exceptions, the interior of these buildings are lead free, the exterior paint has low low to moderate concentrations of lead.

CHAPTER 6

PHASE II CONCLUSIONS

6.1 SOIL

6.1.1 Farm Fields

A number of pesticides and metals were detected in the shallow soil samples collected in the former farm field areas. Of primary interest is the presence of mercury in five of the 20 samples. The Recommended Soil Cleanup Objective for mercury is 0.1 mg/kg and the five samples that contained mercury ranged from 0.15 to 0.23 mg/kg, which is slightly above eastern region background levels (0.001- 0.20 mg/kg). Since mercury was not detected in the other 15 samples it is possible that these concentrations represent a contaminant release of some sort in these limited areas; the most probable sources of the mercury are historical use of mercury based pesticides, paint chips or mercury thermometers.

In the case of the two samples at 0.23 mg/kg, which were taken in the field just north of the old sewage sludge disposal area, there is also the possibility that some sludge remnants are in this field. Since even the highest concentration found is just slightly above published Eastern Region Background levels, mercury was only found in 25% of the samples and the concentrations are expected to diminish with depth, it is LMS' conclusion that mercury does not present an impediment to the development of this land, the grading of which would mix the soils both horizontally and vertically, and place topsoil over these soils. As a point of comparison, the USEPA's regulations allow the use of sewage sludge as a fertilizer for lawns and gardens with mercury concentrations up to 17 mg/kg, or 70 times the highest concentration found in the open field soil sampling.

The presence of residual pesticides in the soils is apparently related to the previous farming activities at the site. The pesticide residuals do not exceed the Recommended Soil Cleanup Objectives for these compounds. Several of the detected pesticides are relatively persistent in the environment and are no longer used for farming purposes. It is likely that these pesticides are strongly sorbed to the soil particles and do not represent a threat to the groundwater resources. Neither do they represent an impediment to the development of the farm field areas for a variety of uses from playing fields recreation to lower contact uses.

Additional historical research should be conducted to determine where these pesticides were stored and mixed; if such a location exists further sampling is warranted.

6.1.2 **Soccer Field**

The soil sample collected from the Gaelic Athletic Association field (SS-11) exhibits levels of chromium, iron, and zinc above Recommended Soil Cleanup Objectives for these compounds. However, the concentrations of iron and zinc are within the typical Eastern Regional Background range and the concentration of chromium is within the New York State Background range. No remedial activity is required, given the fact that concentrations of the constituents fall within background ranges.

6.1.3 **Wastewater Treatment Plant Sludge**

The residual sludge materials from the wastewater treatment plant exhibit elevated concentrations of mercury and in one sample elevated arsenic (SL-06 17.8 mg/kg). As noted above, the USEPA allows use of sludge as a fertilizer for lawns and gardens at mercury concentrations up to 17 mg/kg; the allowable arsenic concentration is 41 mg/kg. Thus, although the concentrations in the sewage sludge disposal are elevated above those in the open field soil samples, this would not preclude the reuse of this material, in an approved sludge reuse program.

6.1.4 **Shallow Soils Near Existing Building**

The ten samples collected near the existing buildings indicate that these soils will require some type of remediation. The analytical data shows elevated concentrations of arsenic, barium, cadmium, chromium, lead, thallium, zinc and mercury that exceed the Recommended Soil Cleanup Objectives and are elevated above typical Eastern Regional Background levels. The extent of this contamination is not known at this time but is believed the contamination is limited to the surface soils (0 to 6 inches) in the immediate vicinity of the buildings, most likely the result of paint chipping off the buildings.

The concentrations of many of these metals are measurably higher than in the open field soils or sewage sludge disposal area samples. In fact, it is quite possible that at least some of the samples taken near the buildings would be classified as hazardous, by toxicity characteristic leaching procedure (TCLP) lead. Although TCLP testing was not performed in this study, LMS' experience has shown that any sample with a total concentration of greater than 100 mg/kg has the potential to test hazardous for TCLP lead. Thus, these soils will require further testing and analysis to determine what legally can be done with them. In any event, reuse on the site would not be recommended.

6.2 GROUNDWATER

6.2.1 Cook/Chill Facility

Based on the two groundwater samples that were collected downgradient of the cook/chill facility it does not appear that off-site impacts from this facility exist. VOCs were not detected in either of the two samples that were collected and analyzed during the Phase II investigation. Further investigations and groundwater sampling is not warranted at this time, and the VOC results indicate that there is no impediment to use of this land for youth recreation.

6.2.2 Landfills

The existing on-site landfills within the acquired parcel have apparently resulted in a limited impact to the shallow groundwater at the site. Although elevated levels of iron, manganese and selenium were found at a majority of the groundwater sampling points these metals were well within levels typically noted in this area. However at RPC P-02 arsenic, barium, chromium, and lead were also noted, suggesting an impact to the groundwater. Only lead was detected above the NYSDEC Class GA Groundwater Standards while each of the other metals were below standards. Since the shallow groundwater at the site is not used as a source of drinking water it is not believed the limited impact is a reason for concern. Since landfilling in these areas has ceased it is likely the noted impact to the groundwater will gradually decrease over time and further investigations are not warranted unless specific landfill closure activities are required by the NYSDEC. The lack of VOC's indicate that groundwater in these areas present no impediment to any desired use of the land near the landfills.

6.2.3 Laundry Facility Plume

Groundwater sampling specific to this known groundwater VOC plume was not conducted during this Phase II investigation since the nature and extent of this plume has been well documented as part of several previous investigations conducted at the site. The existing data indicates that the plume does extend "off-site" onto the acquisition parcel. Since the specific source for this contamination has not been identified it is not known if natural processes will attenuate the currently noted levels of contamination. However, an interim remedial measure (IRM) is being conducted for this plume to potentially control the source and remove the contaminants from the groundwater. Overall the impacts to the groundwater are limited and the source is believed to be on the property being retained by the State; since active remedial measures are in place, further investigations by the Town are not warranted at this time. As with the areas in which groundwater samples were analyzed for VOC's in this study, there is no impediment to any use of the land downgradient of this plume.

6.3 LANDFILLS

The approximate limits of the on-site landfills were documented during the Phase II investigation. Based on the historical information on the landfills most began as open dumping areas and their extent and limits are obvious in the field. Most of the on-site landfills were used to dispose of C&D waste and are largely composed of concrete, brick, metal and other waste from building construction and rehabilitation. One of the on-site landfills appears to be primarily for composing yard and food wastes. Debris visible at the surface of the landfill at the western edge of the property (near the former Boy Scout campsite) indicates that this area was used mostly for dumping household trash, given the amount of bottles and cans present. It is quite possible that the on-site landfills also received minor amounts of other types of waste such as waste oils, old drums, and asbestos containing materials. Since an impact to groundwater has not been documented further investigations are not warranted at this time unless the planned use of the area includes large-scale excavation or the NYSDEC requires closures of these areas.

6.4 **ASBESTOS**

All of the asbestos containing materials will need to be addressed prior to building demolition and or renovation. All abatement work will need to be performed in accordance with New York State Industrial Code Rule 65 (ICR –56) by a licensed contractor using certified workers.

Some of the materials should be abated prior to demolition and/or renovation work. These include exposed thermal system insulation (i.e., pipe a duct insulation), exposed floor tile. This abatement work can be performed as an initial asbestos abatement program. These materials can be removed safely and cost effectively and this will eliminate friable and potentially friable materials from within the building. In crawl spaces and other basements areas, a “site specific variance” can be applied for to the State which will provide relief from certain provision of ICR-56. This can reduce cost for the project while still maintaining sufficient protection to human health and the environment. Specifically, the variance can propose the reduction of plastic sheeting required and awaiting periods. This will save in labor as well as material cost.

The remaining miscellaneous materials (i.e., roofing, window caulk, etc.) can be abated as part of the demolition project. The design should also consider the use of a “site specific variance.” The variance can propose combining demolition and abatement work. The particulars of this variance will be dependent upon the use of the site. For example, will material be demolished and left on site or remove from the site.

Should the Owner wish renovate and re-use buildings, material that will be impacted by renovation will need to be removed. Remaining asbestos that will not be impacted should be placed under an Operations and Maintenance Program.

The scope of this survey was limited to developing a reasonable cost estimate for asbestos removal. Consequently, the thrust of the investigation focused on those items that would potentially have the greatest impact on cost. Complete asbestos surveys were not performed. The inspection was limited to exposed suspect materials. In some instances, buildings and areas were not accessible. Sampling was limited and therefore, all suspect materials not sampled will need to be assumed to contain asbestos whether listed or addressed in this report. A complete list of suspect building materials can be obtained from the EPA. Finally, it should be noted that prior to demolition or renovation New York State Department of Labor requires that a “pre-demolition” survey be performed on every building or all building materials can be assumed to contain asbestos and addressed accordingly.

6.5 LEAD-BASED PAINT

Surfaces with Lead-based paint that will be impacted during demolition and/or renovation work should be noted and incorporated into the General Construction Contract (GC). The GC is responsible under the OSHA Construction Standards to insure proper and safe handling of construction materials/debris, which contain lead-based paint. Construction debris which contains lead-based paint should be tested for disposal purposes, however, because of the variation in the “waste stream” (i.e., plaster, wood, plastic, etc) typically debris can be treated as construction debris. A lead-based paint dust control and quality control inspection and sampling plan should be made part of the contract documents.

Should the building be scheduled for re-use, intact lead-based paint, which will remain in the building, should be properly encapsulated using an approved encapsulating system. Encapsulating systems have been used successfully in similar applications. Most systems offer a 20-year warranty on both the product and workmanship. An Operations and Maintenance program should be developed for the lead-base paint that remains in the buildings. In addition to lead based paint it is possible that lead was used in piping and in solder.

6.6 GOLF COURSE

As discussed in Chapter 4, neither the Phase I study nor the review of golf course procedures conducted in the current study, have uncovered any environmental conditions that would represent an impediment to purchase of this property. It should be noted that there is always the possibility that past practices at the site, which was once a dairy and then part of Camp Shanks before being converted to a golf course, may have resulted in contamination of the site not historically documented. The most likely type of such would be soil or groundwater contamination, and could be identified only by an extensive soil and groundwater sampling program. However, since groundwater wells installed and sampled as part of other investigations on RPC, and generally downgradient of the golf course have not detected any significant contamination, it is unlikely that there is a significant, undetected groundwater contamination from the golf course.

We do not believe that there is any reason to conduct such a survey, and recommend that no further investigation of this portion of the property is necessary.

6.7 SPILLS & USTs

LMS review of the Phase I report and our 1999 SPCC report indicated that there are no outstanding spills or UST's on the property that the Town will be purchasing. The limited inspections of the buildings during the asbestos and LBP sampling did not uncover any significant chemical spills or any unreported tanks. However, because of access and environmental limitations, we were not able to inspect much of the basement areas.

6.8 TRANSFORMER OILS

The SPCC report documented that some 116 transformers were present on the RPC property and had been tested for PCB's. A few had significant levels of PCB's, but were all located on property to be retained by the State. LMS checked the sampling sheets for some of the transformers that did not appear to have test results, and determined that a few had not be sampled because of either the lack of a sampling port or because the transformer was completely sealed. LMS did not conduct a field inspection to determine if these transformers still exist at the facility. If these transformers are present, then prior to demolition, they will require special handling to avoid spilling any oil, since the nature of the oil has not been determined. These included one in Building 14 (B/14/2), four in Building 34 (B/34/1, B/34/2, B/34/3, B/34/?), one in Building 62 (B/62/1), and one in Building 131 (B/131/1).

Based on the asbestos and LBP inspections, no leaking or damaged transformers were reported.

CHAPTER 7

EXISTING STRUCTURE AND SITE REMEDIATIONS

7.1 INTRODUCTION

The purpose of this chapter is to present the estimated costs for the remediation of hazardous materials from, and the demolition, of the existing structures on the parcels of land under consideration for purchase by the Town of Orangetown at the Rockland Psychiatric Center (RPC).

A brief review of the breakdown of the property into parcels is repeated, with respect to the buildings as an aid to the reader:

> **Parcel No. 1** is the Broad Acres Golf Course. There are four existing structures on this parcel, a clubhouse (No. 111), equipment shed (No. 76) and two tool sheds (Nos. 53 and 118).
>
> **Parcel No. 2** consists of 32 buildings as follows:
>
> Block A – Nos. 18, 32, 34, 36, and 38
> Block B – Nos. 95, 96, 97, 98, 99, 100, and 101
> Block C – Nos. 12, 14, 26, and 28
> Block D – Nos. 10, 13, 15, 16, 40, 41, 42, 102, and 115
> Block E – Nos. 2, 3, 4, 6, 7, 8, and 9
>
> **Parcel No. 3** which is mostly open fields, includes four buildings (Nos. 88, 126, 127, and 128) and various small unnumbered buildings as well as greenhouses and tanks that were part of the old wastewater treatment facility.
>
> **Parcel No. 4** (The "Triangle") containing one building (No. 84) and various small unnumbered structures.
>
> **Parcel No. 5** the single family staff residential area, consists of ten buildings (Nos. 77, 108, 109, 110, 136, 137, 138, 139, 140, and 141).
>
> **Parcel No. 6** a single and multiple unit staff housing area, consists of 9 single family buildings (Nos. 25, 27, 62, 63, 107, 132, 133, 134, and 135) and a 5.97-acre parcel with 6 multi unit buildings (Nos. 20, 21, 22, 23, 54, and 55) known as "Staff Court". The state has not yet decided whether to offer the latter to the town as part of the sale.

Parcel No. 7 has no structures on it.

Parcel No. 8 is located approximately 1/2 mile east of the main RPC campus on Fern Oval East off Veterans Memorial Highway and Lester Drive. The site contains a reservoir that was used for water distribution to the RPC facility.

7.2 BUILDING DESCRIPTIONS

Parcel No. 2

Block A **–** Buildings Nos. 18, 32, 34 and 36 were constructed in 1927-1932. The buildings are two stories with partial basements (crawl spaces and unexcavated areas) and attics. All of the buildings are of the same type of construction. The roofs are generally flat with some hipped areas. A dining and serving area was added to the east side of Building No. 34 between 1956 and 1963. Connecting corridors between Buildings Nos. 32, 18, and 38 were constructed in 1934-1936. The buildings were used as wards with dormitory style areas and small sleeping rooms. Toilet and shower facilities are centralized. Each building has a passenger elevator and Building No. 34 has a freight elevator as well.

Building No. 38 was constructed in 1930-1931. The building is one story with a partial basement (unexcavated areas). The building includes a walking tunnel to Building No. 34. The roofs are generally flat with a hipped area. The building housed food preparation, kitchen, serving, and dining facilities as well as occupational therapy areas and two gymnasiums. The building is equipped with one freight elevator.

Block B **–** Buildings No. 95, 96, 97, 98, 99, and 100 were constructed in 1933-1936. The buildings are one story with partial basements (unexcavated areas) and attics. All of the buildings are of the same type of construction. The roofs are gabled and hipped. Building Nos. 95, 96, and 97 are connected to each other and also to Building No. 101 by tunnels and corridors. Building Nos. 98, 99, and 100 are connected to each other and Building No. 101 by tunnels and corridors. The buildings were used as cottages with a dormitory style wing, small sleeping rooms, a day room and porch. Building Nos. 95 and 96 are currently being used as a day care center.

***Block B* –** Building No. 101 was constructed in 1933-1936. The building is one story with a partial basement (unexcavated areas) and attic. The roof is hipped. The building was used for administration and included a kitchen, dining areas, offices, classrooms, and an auditorium.

***Block C* –** Buildings Nos. 12 and 26 were constructed in 1927-1931. The buildings are three story with partial basements (unexcavated areas) and attics. All of the buildings are of the same type of construction. The roofs are hipped. The buildings were used as employee buildings with small sleeping rooms. toilet rooms, and lounges.

Building No. 14 was constructed in 1927-1931. The building is two story with a partial basement (unexcavated areas) and attic. The roof is hipped. The building was used as an office building, containing offices and toilet rooms.

Building No. 28 was constructed in 1934-1936. The building is two story with a full basement and attic. The roof is flat with a hipped area. The building was used as a student nurses home with small sleeping rooms, toilet rooms, classrooms, and lounges.

***Block D* –** Building No. 10 was constructed in the 1930's. The building is three stories with a partial basement and attic. The central portion is hip roofed and the wings have flat roofs. The building housed medical services with small sleeping rooms, operating, and x-ray facilities. The building is equipped with one passenger elevator.

Building No. 13 was constructed in 1927-1931. The building is one story with a partial basement. The central portion has a clerestory with a hipped roof. The other roofs are flat. There is a walking tunnel to Building No. 4. The building is equipped with one freight elevator. The building originally was used as a dining hall but currently houses the New Look Clothing Store.

Buildings Nos. 15, 16, and 42 were constructed in 1927-1932. The buildings are three story with partial basements (unexcavated areas) and attics. All of the buildings are of the same type of construction. The central roofs are hipped and the ends are flat. The buildings were used as nurses housing with small sleeping rooms, toilet rooms, and lounges. Building Nos. 16 and 42 are now used for community housing.

Building No. 40 was constructed in the 1930's. The building is a two-story auditorium with a mid-level balcony. The building has a full basement that housed bowling lanes and cafeteria with a receiving area and loading platform. The central roof is hipped. A portion of the basement is currently used as the "Big Rock Cafe".

Building No. 41 was constructed in 1933-1936. The building is three story with a partial basement (unexcavated areas) and attic. The roof is flat with a hipped area. The building was used as employee housing with small sleeping rooms.

Building No. 102 was constructed in 1930's. The building is a single story structure that was used for storage and as a toilet facility.

Building No. 115 was constructed in 1958-1959. The building is a one story bus station with a flat roof. The building has a waiting room at the north end and toilets at the south end.

Block E **–** Buildings Nos. 2 and 3 were constructed in 1927-1931. The buildings are four story with partial basements. The central roofs are hipped and the side roofs are flat. The buildings housed dining facilities. Building No. 2 has three level connecting corridors to Buildings Nos. 6, 8, and 9. Building No. 3 has three level connecting corridors to Buildings Nos. 5, 7, and 9. Both buildings have two passenger elevators each. One elevator travels from the basement to the fourth floor, the other between the first and third floor.

Building No. 4 was constructed in 1927-1931. The building is a single story kitchen building with partial basement, refrigerated storage rooms and a loading platform. The roof is flat. The building is equipped with one freight elevator.

Buildings Nos. 6, 7, and 8 were constructed in 1927-1931. The buildings are three story with Building No. 6 having a partial basement (unexcavated areas) and Buildings Nos. 7 and 8 having full basements. The roofs are flat. Buildings Nos. 6 and 8 are connected to Building No. 2 with a three-story corridor. Building No. 7 is connected to Building No. 3 with a three-story corridor. The buildings were used as ward buildings with small sleeping rooms, toilet rooms, dorm areas, and day rooms.

Building No. 9 was constructed in 1927-1931. The building is a three-story admissions and diagnostic clinic building with a partial basement. The central roof is hipped and the side roofs are flat. The building has connecting corridors to Buildings Nos. 2, 3, and 4. For square footage of the buildings on Parcel No. 2 see Table 7-1.

Parcel No. 3

Building No. 88 is a single story gable roof structure that was used as a repair barn and grounds storage.

Building No. 127 is a single story gable roof structure that appears to have been used as a toilet/shower building as part of the Old Boy Scout Camp.

Buildings Nos. 126 and 128 have been demolished with only concrete slabs on grade remaining.

There is a single story shed (unnumbered) building with a gable roof and open front on this parcel.

Parcel No. 4

Building No. 84 is a two level high gable roof structure that was used as a vegetable storage building.

For square footage of the buildings on Parcel Nos. 3 and 4 see Table 7-2.

Parcel No. 5

Building No. 77 is a two-story gambrel and gable roof residential structure with dormers on the north and south sides that was built circa 1765. The building has a full basement and was used as staff housing.

Buildings Nos. 108, 109, and 110 are two story hip roof residential structures of similar construction with full basements and attached one car garages. The buildings were used for staff housing.

TABLE 7-1
ROCKLAND PSYCHIATRIC CENTER
PARCEL NO. 2
BUILDING AREAS IN SQUARE FEET*

Bldg. No.	Basement	First Fl.	Second Fl.	Third Fl.	Fourth Fl.	Misc. Fl.	TOTAL
Block A							
18	32,379	31,856	31,856	1,012	**	**	97,103
32	32,379	31,856	31,856	1,012	**	**	97,103
34	41,042	40,174	35,691	1,028	**	**	117,935
36	31,187	30,549	30,549	1,012	**	**	93,297
38	44,847	44,847	**	**	**	**	89,694
						Subtotal Block A	**495,132**
Block B							
95	5,941	5,491	**	**	**	**	11,882
96	5,941	5,491	**	**	**	**	11,882
97	5,941	5,491	**	**	**	**	11,882
98	5,941	5,491	**	**	**	**	11,882
99	5,941	5,491	**	**	**	**	11,882
100	5,941	5,491	**	**	**	**	11,882
101	20,003	20,003	**	**	**	**	40,006
						Subtotal Block B	**111,298**
Block C							
12	8,291	8,266	8,266	8,266	**	**	32,969
26	8,291	8,266	8,266	8,266	**	**	32,969
14	8,495	8,403	8,403	**	**	**	25,301
28	6,422	6,273	6,273	**	**	**	18,968
						Subtotal Block C	**110,207**
Block D							
10	12,028	16,692	16,692	6,116	**	**	51,528
13	6,034	5,910	**	**	**	**	11,944
15	6,422	6,273	6,273	3,711	**	**	22,679
16	6,422	6,273	6,273	3,711	**	**	22,679
42	6,422	6,273	6,273	3,711	**	**	22,679
40	13,546	12,968	**	**	**	3,417	29,931
41	6,477	5,787	5,246	3,201	**	**	20,711
102	**	345	**	**	**	**	345
115	**	2,434	**	**	**	**	2,434
						Subtotal Block D	**184,930**
Block E							
2	5,856	5,746	5,746	5,746	1,617	**	24,711
3	5,856	5,746	5,746	5,746	1,617	**	24,711
4	6,806	6,669	**	**	**	**	13,475
6	16,258	15,942	15,942	15,942	**	**	64,084
7	16,258	15,942	15,942	15,942	**	**	64,084
8	16,258	15,942	15,942	15,942	**	**	64,084
9	7,068	133,330	7,050	4,784	**	**	32,232
						Subtotal Block E	**287,381**

Subtotal Parcel 2 1,188,948

* Gross area square footage measured from the outside walls of the structure.
** Building does not have this floor level.

Table 7-2
ROCKLAND PSYCHIATRIC CENTER
PARCEL NO. 3 AND 4
BUILDING AREAS IN SQUARE FEET*

Parcel No. 3

Bldg. No.	Basement	First Fl.	Second Fl.	Third Fl.	Fourth Fl.	Misc Fl.	TOTAL
88	**	3,660	**	**	**	**	3,660
127	**	600	**	**	**	**	600

Subtotal Parcel No. 3 4,260

Parcel No. 4

Bldg. No.	Basement	First Fl.	Second Fl.	Third Fl.	Fourth Fl.	Misc Fl.	TOTAL
84	**	4,700	4,700	**	**	**	9,400

Subtotal Parcel No. 4 9,400

* Gross area square footage measured from the outside walls of the structure.
** Building does not have this floor level.

Buildings Nos. 136, 137, 138, 139, 140, and 141 are one-story gable roof residential structures of similar construction with full basements and attached one car garages. The buildings were used for staff housing. Building 141 is currently being used by the Rockland Paramedics.

For square footage of the buildings on Parcel No. 5 see Table 7-3.

Parcel No. 6

Building No. 25 was constructed in 1927-1931. The building is a two-story gable roof residential structure with a partial basement and attic. The building was used as the Senior Director's Residence.

Building No. 27 is a one-story gable roof structure with an attic. The building is a two-car garage located next to the Director's Residence (No. 25).

Buildings Nos. 62 and 63 are two story hipped roof residential structures of similar construction with full basements. The buildings were used for staff housing.

Buildings Nos. 132, 133, 134, and 135 are two story gambrel roof residential structures of similar construction with full basements. The buildings were used for staff housing.

Parcel No. 6 (Staff Court)

Buildings Nos. 20 and 23 are two story gable roof structures of similar construction with full basements and attics. The buildings were used for staff housing.

Buildings Nos. 21 and 22 are two story hipped and gable roof structures of similar construction with full basements and attics. The buildings were used for staff housing.

Building No. 54 was constructed in 1933-1936. The building is a two-story gable roof structure with a partial basement and attic. The building was used as non-medical officers housing and is currently used for staff housing.

Building No. 55 is a two-story gable roof structure with a full basement and attic. The building was used as staff housing and still serves the same purpose.

TABLE 7-3
ROCKLAND PSYCHIATRIC CENTER
PARCEL NO. 5
BUILDINGS AREAS IN SQUARE FEET*

Bldg. No.	Basement	First Fl.	Second Fl.	Third Fl.	Fourth Fl.	Misc Fl.	Total
77	1,382	1,382	1,382	**	**	**	4,146
108	737	1,064	737	**	**	**	2,538
109	737	1,064	737	**	**	**	2,538
110	737	1,064	737	**	**	**	2,538
136	1,208	1,234	**	**	**	**	2,442
137	1,208	1,234	**	**	**	**	2,442
138	1,208	1,234	**	**	**	**	2,442
139	1,208	1,234	**	**	**	**	2,442
140	1,208	1,234	**	**	**	**	2,442
141	1,208	1,234	**	**	**	**	2,442

Subtotal Parcel 5 26,412

*Gross area square footage measured from the outside walls of the structure.
** Building does not have this floor level.

For square footage of the buildings on Parcel No. 6 see Table 7-4.

Parcel No. 7

There are no structures on Parcel No. 7.

Parcel No. 8

There are two concrete underground tanks located on this parcel. The tanks are approximately 117 ft x 119 ft and 110 ft x 59 ft and of unknown depth and covered with soil. In 1999 as part of an overall utilities improvement program, the reservoir was closed. The tanks were drained and all inlet/outlet piping was plugged. The chain link fencing, posts, and gates surrounding the tanks were removed. The manhole openings (six) into the tanks were covered with 5 ft square x 6 in. thick concrete slabs after the chimney sections, manhole frames, and covers were removed. The area over the six slabs was backfilled, topsoiled and seeded.

Total

A summary of building areas is presented in Table 7-5

7.3 BUILDING CONSTRUCTION

Parcel No. 1

The clubhouse (No. 111) is a single story frame structure with a gable roof covered with shingles. The exterior is half stucco with a board and batten upper section. The remaining structures (Nos. 53, 77, and 118) are single story wooden sheds with shingle roofs.

Parcel No. 2

The buildings on this parcel were all constructed between 1927 and 1936 (the exception is No. 115,which was constructed in 1959). In general the type of construction and the materials used are the same for all of the buildings. Over the years various additions,

TABLE 7-4
ROCKLAND PSYCHIATRIC CENTER
PARCEL NO. 6
BUILDING AREAS IN SQUARE FEET*

Bldg. No.	Basemen	First Fl.	Second Fl.	Third Fl.	Fourth Fl.	Misc Fl.	TOTAL
25	3,221	3,193	2,665	**	**	**	9,025
27	**	638	**	**	**	**	638
62	1,176	1,176	981	**	**	**	3,333
63	1,176	1,176	981	**	**	**	3,333
132	1,058	1,437	967	**	**	**	3,462
133	1,058	1,437	967	**	**	**	3,462
134	1,058	1,437	967	**	**	**	3,462
135	1,058	1,437	967	**	**	**	3,462
20	2,478	2,478	2,478	**	**	**	7,434
23	2,478	2,478	2,478	**	**	**	7,434
21	2,340	2,696	2,696	**	**	**	7,732
22	2,340	2,696	2,696	**	**	**	7,732
54	6,052	5,976	3,992	**	**	**	16,020
55	3,392	3,392	3,392	**	**	**	10,176

Subtotal Parcel No. 6 86,705

* Gross area square footage measured from the outside walls of the structure
** Building does not have this floor level.

TABLE 7-5
ROCKLAND PSYCHIATRIC CENTER
SUMMARY OF BUILDING AREAS

Parcel (No.)	Building Area (sq ft)
2	1,188,948
3	4,260
4	9,400
5	26,412
6	86,705

Grand Total 1,315,725

renovations, and modifications have been made to these structures. The following descriptions are general in nature and do no necessarily reflect current conditions in all respects. There are two basic types of buildings: Nos. 95 – 101, and the remainder.

Generally, the buildings on Parcel No. 2 have reinforced concrete foundations with steel pan concrete slabs. The floors are concrete slab on steel bar joists. Load bearing walls are reinforced concrete. Partitions are poured concrete or hollow tile. The exterior walls are reinforced concrete with a stucco finish. The roofs are built-up roofing on the flat areas and mission tile on the hipped areas. Many of the original mission tile roofs have been replaced with asphalt shingles on wood sheathing. The windows are wood double hung with single pane glazing and interior aluminum protection screens, exterior aluminum safety screens or steel detention type sashes. The floors are finished with a variety of materials including asphalt tile, ceramic tile, quarry tile, linoleum, and terrazzo. The walls are finished with white plaster and in some locations there is a 6.5 ft high cement plaster wainscot. The wainscots have been painted with a high gloss paint and the remaining walls have a flat finish. The ceilings are white plaster with a flat paint finish and acoustic tile in some areas.

A dining and serving area was added to the east side of Building No. 34 between 1956 and 1963. The addition has concrete foundations with load bearing block walls, fireproofed steel girders, and columns with open web steel joists and concrete slabs.

Building Nos. 95-101 are reinforced concrete foundations with steel pan concrete slabs. The roof framing is steel purlins and steel trusses. The floors and roofs are concrete slabs on steel bar joists. The load bearing walls are hollow tile. The exterior walls are hollow tile with a stucco finish. The roofs were originally mission tile but were replaced with asphalt shingles on wood sheathing in 1966. The windows are wood double hung with single pane glazing, steel muntin inserts and interior protection screens. The floors are finished with terrazzo, ceramic tile, quarry tile, and asphalt tile. The walls are finished with white plaster and in some locations there is a 7 ft high cement plaster wainscot. The wainscots have been painted with a high gloss paint and the remaining walls have a flat finish. The ceilings are white plaster with a flat paint finish.
The one story bus station (No. 115) has a concrete foundation with a reinforced concrete slab. The steel frame with "H" columns and lally columns has a concrete plank roof. The walls are brick with a concrete block back-up and aluminum window walls with fixed and top hopper sash with enameled porcelain panels. The partitions are hollow tile.

The floors are concrete and ceramic tile. The ceilings are white plaster and acoustic panels.

Parcel No. 3

Building No. 88 is a single story wood frame structure with corrugated metal siding on one section and horizontal wood siding on the other. The roofing is corrugated metal throughout. The foundation may be concrete with an earthen floor.

Building No. 127 is a single story concrete block structure with a concrete floor. The wood frame gable roof is covered with asphalt shingles on wood sheathing.

The single story shed (unnumbered) is a wood frame structure with corrugated metal siding and roofing.

Parcel No. 4

Building No. 84 has a field stone foundation (lower level). The upper level is corrugated metal siding and roofing on a wood frame. The upper level floor is wood planking. There is an overhead door to the upper level at each end of the building.

Parcel No. 5

Building No. 77 is a two story structure with the first floor walls of field stone. The wood frame gambrel roof and dormers are covered with asphalt shingles.

The east (gable) section is a wood frame covered with horizontal wood siding. The windows are single glazed wood double hung sash with wood muntins.

Buildings Nos. 108, 109, and 110 are two story wood frame structures with concrete foundations, wood joists, and rafters. The exterior is covered with horizontal wood siding on the first floor and flat panels around the second floor at window height. The roofs are covered with asphalt shingles on wood sheathing. The windows are wood double hung sash with single pane glazing. The interior walls are gypsum wall board and plaster on metal lath. The floors are covered in carpet, asphalt tile, and ceramic tile.

Buildings Nos. 136, 137, 138, 139, 140, and 141 are single story wood frame structures with concrete foundations, wood joists and rafters. The exterior is covered with horizontal metal siding. The roofs are covered with asphalt shingles on wood sheathing. The windows are wood double hung sash with single pane glazing.

Parcel No. 6

Building No. 25 is a two story wood frame structure with concrete foundations and wood joists and rafters. The exterior walls are brick and half timber with stucco. The interior walls are white plaster on wood studs. The ceilings are white plaster. The roof is slate shingles on wood sheathing and asphalt shingles. The floors are oak strip flooring, asphalt tile, linoleum, ceramic tile, and carpet. The windows are wood double hung, fixed wood sash, and steel casement.

Building No. 27 is a garage with a concrete foundation and wood joists and rafters. The exterior walls are brick except the gable ends, which are horizontal wood siding. The roof is slate shingles on wood sheathing. There are two wood overhead doors with two rows of glass lites each.

Buildings Nos. 62 and 63 are two story structures with concrete foundations. The exterior walls are brick. The roofs are slate shingles on wood sheathing. The floors are asphalt tile and ceramic tile. The windows are wood double hung. The walls and ceilings are white plaster.

Buildings Nos. 132, 133, 134, and 135 are two story wood frame structures with concrete foundations, wood joists, and rafters. The exteriors are covered with horizontal metal siding. The roofs are covered with asphalt shingles on wood sheathing. The windows are wood double hung sash with single pane glazing.

Parcel No. 6 (Staff Court)

Buildings Nos. 20, 21, 22, 23 and 55 are two story structures with concrete foundations. The exterior walls are brick. The roofs are covered with slate shingles on wood sheathing. The windows are wood double hung sash with single glazing.

Building No. 54 is a two story structure with concrete foundation and steel trusses with steel purlins. The exterior walls are brick. The interior partitions are hollow tile with white plaster and 5.5 ft high tile wainscots. The ceilings are cement plaster. The windows are wood double hung sash with single glazing. The floors are terrazzo, ceramic tile, quarry tile, and asphalt tile. The roof is covered with slate shingles on wood sheathing.

7.4 BUILDING CONDITION

Parcel No. 1

The buildings on the Broad Acres Golf Course appears to be in good condition and are well maintained by the golf course management.

Parcel No. 2

In general the buildings on this parcel are in good condition, considering that they have been vacant for as long as 10 years. The scope of work for this study limited examination of the existing buildings to representative structures of a particular building type, i.e., every level and every room of the buildings were not examined. The following observations can be applied to all of the buildings in Parcel No. 2.

It appears that furniture and equipment were removed from most of the buildings before they were vacated; however, some buildings (Nos. 12, 36, and 97) still contain furniture (hospital type beds, kitchen equipment, mattresses, desks, chairs, etc.) as well as books, files, paper, piles of clothes, and rags.

The state has undertaken a program to secure the vacated buildings by covering the basement and first floor windows with plywood. The entrance doors into the buildings are locked as well as some of the fire doors between floors and the doors to the connecting tunnels and corridors.

There is evidence in some buildings of animal infestation. There are broken windows at some of the upper floors. The remains of pigeons and squirrels as well as bird droppings and nesting materials were noted (No. 12 third floor). There was no obvious evidence of insect infestation.

In some buildings where the windows have been boarded up, there is evidence of mold growing on the walls (Nos.32 and 34) of the interior partitions.

The paint is peeling from the walls, ceilings, and steel door frames in most buildings. The degree of peeling varies considerably from building to building (No. 34 and 6). The paint peels from the walls and ceilings in sheets, which eventually break off and fall to the floor. As a result, the floors are covered with paint chips. The amount of lead in the paint could present a potential hazard.

In general, there is no obvious evidence of structural problems. No major cracks were noted in the foundation walls or the lintels over doors or windows. Door frames appear plumb and level. There are no major cracks in the plaster on interior partitions or ceilings. Rooflines appear straight with no evidence of sagging. Most of the original mission tile roofs were replaced with asphalt shingles in 1964. Some of the shingle roofs are showing signs of deterioration. Most of the original built-up flat roofs were replaced in 1950 and 1964. There are some areas of ponding water on the flat roofs. In some cases this is due to plugged drains. In other areas there is evidence of water damage from roof leaks. The stucco wall finishes are largely intact. The wood windows and frames show signs of rot especially at the window sills. The steel windows show some signs of rust.. There is some evidence of flooding in the basements.

The Facility maintains the portions of the lawns that are seen by the public, namely along Third Avenue, Oak Street, and First Avenue. The remaining areas between the buildings are overgrown and some of the buildings (No. 15) becoming overgrown by vines and other vegetation. Trees and shrubs are also growing unchecked around many of the buildings. While this condition may be aesthetically pleasing, the vines in time can damage the exterior surface of the buildings as well as the roofs. The excessive vegetation does not allow the building surfaces to dry completely and creates a damp condition that permits the growth of mold which has been noted on some of the buildings.

Parcel No. 3

In general the structures on this parcel are in poor condition. The unnumbered shed contains some abandoned equipment and the shed itself is in a deteriorated condition. Building No 88 is heavily overgrown and in a deteriorated condition. Building No. 127

is a more substantial structure but does show some signs of roof damage. This building is open to the weather and vandals. Building Nos. 126 and 128 have been demolished and only the concrete floor slabs remain. Concrete block piers that were used as supports for tent platforms also still remain. At the old wastewater treatment plant area, the filter tanks are intact and filled with stone. The greenhouses are deteriorated (broken glass) and the site is heavily overgrown.

Parcel No. 4

The field stone foundation of Building No. 84 appears to be in relatively good condition. The interior of the building (wood frame) appears sound. The corrugated metal roof is badly rusted on the exterior and may be completely rusted through in some places. The building is heavily overgrown.

Parcel No. 5

The exterior of Building No. 77 appears to be in good condition. The stonework is intact and the joints are solid. The first floor windows have been covered for security. The paint on the wood siding and window frames show signs of peeling and flaking. The shingle roof appears to be in good condition but there are areas of mold growth at the dormers. The brick chimney is intact. The interior of Building No. 77 was not observed.

Building Nos. 108, 109, and 110 appear to be in good condition. The first floor windows have been covered for security. The paint on the wood siding is peeling. In general, the shingle roofs are in good condition but show some signs of deterioration. The chimneys are intact but show signs of weathering. The interior of Building No. 108 was observed. In general, the interior is in good condition, there are some signs of vandalism (holes in plaster walls, broken light fixtures, etc.). The relatively flat garage roofs are in poor condition.

Buildings Nos. 136, 137, 138, 139, 140, and 141 appear to be in good condition. The first floor windows have been covered on Building Nos. 136, 138, and 140. The metal siding is in good condition with little evidence of deterioration except for some fading. Some of the exterior wood work shows evidence of rotting. In general, the shingle roofs are in good condition. The interiors of these buildings were not observed.

Parcel No. 6

Building Nos. 25 and 27 appear to be in good condition. The first floor windows of Building No. 25 have been covered. The exterior brick walls are intact and the joints are sound. The half timber part of the building façade shows some signs of rotting where the paint has peeled away. Basically the slate shingles appear to be in good condition. Some of the flashings are deteriorating. The wood frame doors and windows show some signs of rotting.

The windows in the overhead doors at the garage (No. 27) are broken. The brick walls of the garage are in good condition as is the slate shingle roof. The horizontal wood siding at the gable ends shows some signs of deterioration where the paint has flaked or peeled away.

The interior of Building No. 25 was observed. For the most part the interior of the building is in remarkable condition. There is very little evidence of paint peeling from the walls or ceilings. The original oak floors are covered with carpet but where the floors are exposed the strip flooring is in good condition with tight joints. There is some evidence of water damage at the ceiling of the bay window of the first floor living room. There is some ceiling damage under the stairs to the basement. The steam service area of the basement has standing water on the floor.

Buildings Nos. 62 and 63 appear to be in relatively good condition. The first floor windows have been covered. The exterior brick walls are intact and the joints are sound. The exterior steel stairways to the second floors of both buildings show some signs of rust but are otherwise in good condition. The slate shingles appear to be in good condition although there is some deterioration of the wood moldings. The interior of these buildings were not observed.

Buildings Nos. 132, 133, 134, and 135 appear to be in good condition. The first floor windows have been covered on Building Nos. 132 and 135. The metal siding is in good condition with little evidence of deterioration except for some fading. There is some evidence of rot on the exterior wood trim. In general, the shingle roofs are in good condition. The interiors of these buildings were not observed.

Parcel No. 6 (Staff Court)

Buildings Nos. 20, 21, 22, 23, and 55 appear to be in good condition. The first floor windows have been covered on Building No. 21 only. The exterior brick walls are intact and the joints are sound. The slate shingles appear to be in good condition. There is some deterioration of the wood windows and frames. Some of the metal flashings show signs of failure due to rusting. There is evidence of mold growth at the ground line of some buildings. The wood horizontal siding appears to be in good condition with some flaking and peeling of the paint. The interior of Building No. 21 was examined by Gateway Environmental Services for lead paint and they observed that some of the walls were buckled and the humidity level was high. There is extensive mold growth. This building should not be entered without a respirator.

Building No. 54 appears to be in very good condition. The exterior brick walls are intact and the joints are sound. The slate shingles appear to be in good condition. The existing wood windows have been covered with storm windows. The exterior trim and flashing show few signs of deterioration. The interior of this building was not observed.

7.5 EXISTING UTILITIES

The existing utilities serving the RPC site include water distribution, sanitary sewers, storm sewers, gas distribution, electrical and telephone/data distribution.

The underground water distribution system for the RPC site is supplied from two 16-in. water mains one in Convent Road and one in Old Orangeburg Road. Each supply line passes through a meter house (Buildings Nos. 90 and 73) containing high flow and low flow pressure reducing valves, a turbine compound water meter and reduced pressure zone backflow preventer. The water distribution system provides potable water to all of the buildings on the RPC site. The various branches of the water system are controlled by buried valves that have an operating stem to grade which is covered with a cast iron valve box. Some of the existing water lines which pass through parcels that are part of the sale will be required by the Facility to remain active and will necessitate the granting of easements by the Town. Certain areas in some of the buildings on Parcel No. 2 contain fire sprinkler systems, however, most do not. The system also provides water to fire hydrants that are located at strategic points around the site.

The underground sanitary sewer system for the RPC site collects sewage from toilets, showers, sinks, floor, and equipment drains in the various buildings and transports it by gravity through a system of pipes to an on-site wastewater treatment plant (Building No. 68) where the effluent is pumped to a manhole on Lester Drive where it then flows by gravity to the Orangetown Wastewater Treatment Plant. Access to the buried sewer piping for maintenance is provided by manholes at numerous locations along the sewer lines. Some of the existing sanitary sewers which pass through property that is part of the sale are required by the Facility to remain active and will necessitate the granting of easements by the Town.

The underground storm sewer system for the RPC site collects stormwater runoff from the roadways and parking areas, overland runoff and stormwater from the building roofs in catch basins. The stormwater then travels by gravity to an outlet (outfall) usually located at a natural water course (lake, stream, pond, etc.). Access to the buried sewer piping for maintenance is provided by manholes at numerous locations along the sewer routes. Some of the existing storm sewers which pass through property that is part of the sale are required by the Facility to remain active and will necessitate the granting of easements by the Town.

The underground gas distribution system for the RPC site is supplied from a gas main in Convent Road. The supply main passes through a meter house (Building No. 120). The distribution system provides gas to certain buildings on the site for cooking in the various kitchen facilities as well as heating in some of the residential buildings along Blaisdell Road. The branches of the gas system are controlled by buried valves that have an operating stem to grade which is covered with a cast iron valve box. Some of the existing gas lines which pass through property that is part of the sale are required by the Facility to remain active and will necessitate the granting of easements by the Town.

The underground electrical distribution system for all of the buildings on the RPC site is supplied from an on-site power station and distributed throughout the site by buried conduits with switch gear, panels, transformers, and utility boxes for access. Some of the existing distribution conduits which pass through property that is part of the sale are required by the Facility to remain active and will necessitate the granting of easements by the Town. In addition to the power supplied to the buildings, the electrical distribution system provides power for street lights on all of the roadways and parking areas of the site.

The telephone/data distribution for the RPC site is provided through various overhead and underground lines. Some of the existing lines which pass through property that is part of the sale are required by the Facility to remain active and will necessitate the granting of easements by the Town.

The Facility provides chilled water from the powerhouse (Building No. 50) to the main buildings (Building Nos. 57 and 58) through an underground pipeline. The Facility requires that this service remains active. A portion of the pipeline passes through property that is part of the sale and will require the granting of an easement by the Town.

The Facility also provides steam from the powerhouse (Building No. 50) to the Children's Psychiatric Center (Building No. 24) through an underground pipeline. The Facility requires that this service remains active. A portion of the pipeline passes through property that is part of the sale and will require the granting of an easement by the Town.

Most of the buildings on the RPC site do not have independent heating and hot water sources. The buildings are heated by low pressure steam which is produced at the powerhouse (Building No. 50) and piped to the individual buildings where it is converted to hot water which is then distributed through a two pipe system to fin tube radiation or cast iron radiators with the condensate returned to the powerhouse. Domestic hot water supply is also produced at the powerhouse and piped to the individual buildings and returned to the powerhouse. A medium pressure steam supply and condensate return system is also provided to each building. The six pipelines are contained in underground concrete tunnels which connect the buildings with the powerhouse. While complete drawings of the tunnel locations are not currently available, it is prudent to assume that some of the services will be required by the Facility to remain active and will pass through property that is part of the sale, thereby necessitating the granting of easements by the Town.

7.6 DEMOLITION

7.6.1 General

Before any existing building can be demolished the following tasks must be completed:

1. All asbestos containing materials (ACM) for which a variance has not been obtained shall be removed and properly disposed of.

2. All fluorescent lamps and ballasts shall be removed and properly disposed of.

3. All utilities (water, sanitary, storm, gas, electrical, telephone/data, etc.) serving the building must be located, disconnected, and plugged or capped.

4. Solid wastes which are not considered construction and demolition (C&D) debris such as garbage, corrugated container board, carpeting, furniture, appliances, tires, drums, and containers, clothing, etc. shall be removed and properly disposed of.

If it is decided to demolish the buildings in order to clear the site for the construction of new structures or other use such as playing fields or a golf course additional tasks must be completed which include but are not necessarily limited to the following:

1. Limited clearing and disposal of existing trees, brush and stumps

2. Breaking up and disposal of existing concrete roadways, parking areas, curbs, and sidewalks.

3. Disconnection and/or rerouting of existing water, sanitary, storm, gas, electrical, and telephone/data lines with the abandoning of the existing lines and installation of new manholes, catch basins, gas, and water valves, fire hydrants, and street lights.

4. After the buildings are demolished the site shall be graded and filled as required to promote drainage and the site then seeded and mulched to prevent erosion.

7.6.2 Asbestos

The New York State Department of Labor's Asbestos Control Bureau oversees the abatement of toxic hazards associated with asbestos fiber during the rehabilitation, reconstruction or demolition of buildings and other structures originally constructed with asbestos containing materials. The Bureau enforces the New York State Labor Law and Industrial Code Rule 56 (asbestos). The requirements of this code include the licensing of contractors, certification of all persons working on asbestos projects, filing of notifications of large asbestos projects, and predemolition survey of buildings to identify any asbestos which may be present to ensure proper abatement of asbestos materials.

Code Rule 56 requires that a building survey be conducted prior to advertising for bids or commencing work on any demolition project by a certified inspector. The survey includes the inspection for and identification of all asbestos materials throughout the building to be demolished. The survey identifies and assesses the condition of asbestos material contained in fireproofing, acoustical and finish plasters, equipment insulation; piping and fitting insulation, roofing felts, boards, shingles, and flashings; dust and debris, vinyl asbestos tile, ceiling tile, gaskets/seals/sealants, and fire doors.

Based on the results of the asbestos survey conducted by Gateway Environmental Services, the asbestos abatement costs have been estimated and are presented in Table 7-6 for Parcel 2, Table 7-7 for Parcels 3 and 4, Table 7-8 for Parcel 5, and Table 7-9 for Parcel 6. A summary of the asbestos abatement for all parcels is presented in Table 7-10. These cost estimates are conservatively high because (1) estimate is based on unit price per building, there would be savings if all the buildings are abated at the same time and (2) some of the areas that had to be assumed positive because a similar area in another building tested negative or was not sampled, may actually be negative, if tested.

7.6.3 **Fluorescent Lamps**

Current regulations (NYSDEC Enforcement Directive 10/22/99) classify most fluorescent lamps (bulbs) as hazardous wastes due to the mercury content. As of January 6, 2000, handlers of hazardous waste lamps are able to chose between handling lamps under the regulations found in 6NYCRR Parts 370 through 374-3 and 376 or as universal wastes. The Part 370 regulations require that the lamps be shipped to a hazardous waste landfill. This approach mandates adherence to all the requirements for record keeping, collection, storage, and hazardous waste transportation. In an effort to streamline environmental regulations, EPA issued the Universal Waste Rule in 1995. The handlers of universal wastes meet less stringent requirements for collecting, storing, and transporting wastes. The wastes must comply fully with hazardous waste requirements

ROCKLAND PSYCHIATRIC CENTER

PARCEL NO. 2

ASBESTOS COST ANALYSIS - PINNACLE

Building 18

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	41,000	SF	$4.00	SF		$164,000.00	
Pipe Insulation	16,000	LF	$20.00	LF		$320,000.00	
Built-up Roofing /Flashing	28,000	SF	$5.00	SF		$140,000.00	
Window Caulk/Glazing	450	windows	$150.00	each		$67,500.00	
Other Misc.							
Sub Totals						$691,500.00	
Total Cost Building	**$691,500.00**						

Building 32

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	41,000	SF	$4.00	SF		$164,000.00	
Pipe Insulation	16,000	LF	$20.00	LF		$320,000.00	
Built-up Roofing /Flashing	28,000	SF	$5.00	SF		$140,000.00	
Window Caulk/Glazing	450	windows	$150.00	each		$67,500.00	
Other Misc.							
Sub Totals						$691,500.00	
Total Cost Building	**$691,500.00**						

Building 34

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	41,000	SF	$4.00	SF	$164,000.00		
Pipe Insulation	16,000	LF	$20.00	LF	$320,000.00		
Built-up Roofing /Flashing	28,000	SF	$5.00	SF	$140,000.00		
Window Caulk/Glazing	450	windows	$150.00	each	$67,500.00		
Sprayed Fireproofing Kitchen (not typical)	3,000	SF	$15.00	SF	$45,000.00		
Other Misc.							
Sub-Totals					$736,500.00		
Total Cost Building	**$736,500.00**						

Building 36

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	41,000	SF	$4.00	SF		$164,000.00	
Pipe Insulation	16,000	LF	$20.00	LF		$320,000.00	
Built-up Roofing /Flashing	28,000	SF	$5.00	SF		$140,000.00	
Window Caulk/Glazing	450	windows	$150.00	each		$67,500.00	
Other Misc.							
Sub Totals						$691,500.00	
Total Cost Building	**$691,500.00**						

ROCKLAND PSYCHIATRIC CENTER

PARCEL NO. 2

ASBESTOS COST ANALYSIS - PINNACLE

Building 38

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	900	SF	$4.00	SF		$3,600.00	
Pipe Insulation	5,000	LF	$20.00	LF		$100,000.00	
Roof Flashing	3,318	SF	$5.00	SF		$16,590.00	
Built-up Roofing	37,000	SF	$5.00	SF		$185,000.00	
Window Caulk/Glazing	250	windows	$150.00	each			$37,500.00
Other Misc.							
Sub-Totals						$305,190.00	$37,500.00
Total Cost Building	**$342,690.00**						

Building 95

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	500	SF	$4.00	SF		$2,000.00	
Pipe Insulation	1,500	LF	$20.00	LF		$30,000.00	
Roof Flashing	600	SF	$5.00	SF		$3,000.00	
Shingle Roof and Felt	4,600	SF	$5.00	SF			$23,000.00
Window Caulk/Glazing	55	windows	$150.00	each			$8,250.00
Other Misc.							
Sub-Totals						$35,000.00	$31,250.00
Total Cost Building	**$66,250.00**						

Building 96

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	500	SF	$4.00	SF		$2,000.00	
Pipe Insulation	1,500	LF	$20.00	LF		$30,000.00	
Roof Flashing	600	SF	$5.00	SF		$3,000.00	
Shingle Roof and Felt	4,600	SF	$5.00	SF			$23,000.00
Window Caulk/Glazing	55	windows	$150.00	each			$8,250.00
Other Misc.							
Sub-Totals						$35,000.00	$31,250.00
Total Cost Building	**$66,250.00**						

Building 97

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	500	SF	$4.00	SF		$2,000.00	
Pipe Insulation	500	LF	$20.00	LF		$10,000.00	
Roof Flashing	600	SF	$5.00	SF		$3,000.00	
Other Misc.							
Sub-Totals						$15,000.00	
Total Cost Building	**$15,000.00**						

TABLE 7-6 (Page 3 of 8)
ROCKLAND PSYCHIATRIC CENTER
PARCEL NO. 2
ASBESTOS COST ANALYSIS - PINNACLE

Building 98

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	500	SF	$4.00	SF		$2,000.00	
Pipe Insulation	1,500	LF	$20.00	LF		$30,000.00	
Roof Flashing	600	SF	$5.00	SF		$3,000.00	
Shingle Roof and Felt	4,600	SF	$5.00	SF			$23,000.00
Window Caulk/Glazing	55	windows	$150.00	each			$8,250.00
Other Misc.							
Sub-Totals						$35,000.00	$31,250.00
Total Cost Building	**$66,250.00**						

Building 99

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	500	SF	$4.00	SF		$2,000.00	
Pipe Insulation	1,500	LF	$20.00	LF		$30,000.00	
Roof Flashing	600	SF	$5.00	SF		$3,000.00	
Shingle Roof and Felt	4,600	SF	$5.00	SF			$23,000.00
Window Caulk/Glazing	55	windows	$150.00	each			$8,250.00
Other Misc.							
Sub-Totals						$35,000.00	$31,250.00
Total Cost Building	**$66,250.00**						

Building 100

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	500	SF	$4.00	SF		$2,000.00	
Pipe Insulation	1,500	LF	$20.00	LF		$30,000.00	
Roof Flashing	600	SF	$5.00	SF		$3,000.00	
Shingle Roof and Felt	4,600	SF	$5.00	SF			$23,000.00
Window Caulk/Glazing	55	windows	$150.00	each			$8,250.00
Other Misc.							
Sub-Totals						$35,000.00	$31,250.00
Total Cost Building	**$66,250.00**						

Building 101

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	1,200	SF	$4.00	SF			$4,800.00
Pipe Insulation	4,500	LF	$20.00	LF			$90,000.00
Roof Shingle, Flashing, Felt	6,000	SF	$5.00	SF			$30,000.00
Window Caulk/Glazing	50	windows	$150.00	each			$7,500.00
Other Misc.							
Sub-Totals							$132,300.00
Total Cost Building	**$132,300.00**						

TABLE 7-6 (Page 4 of 8)
ROCKLAND PSYCHIATRIC CENTER
PARCEL NO. 2
ASBESTOS COST ANALYSIS - PINNACLE

Building 12

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	13,900	SF	$4.00	SF		$55,600.00	
Pipe Insulation	2,500	LF	$20.00	LF		$50,000.00	
Roof Flashing	600	SF	$5.00	SF		$3,000.00	
Roof Shingle and Felt	11,000	SF	$5.00	SF			$55,000.00
Window Caulk/Glazing	172	windows	$150.00	each			$25,800.00
Other Misc.							
Sub-Totals						$108,600.00	$80,800.00
Total Cost Building	**$189,400.00**						

Building 26

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	15,200	SF	$4.00	SF	$60,800.00		
Pipe Insulation	200	LF	$20.00	LF		$4,000.00	
Roof Flashing	600	SF	$5.00	SF		$3,000.00	
Roof Shingle and Felt	11,000	SF	$5.00	SF			$55,000.00
Window Caulk/Glazing	172	windows	$150.00	each			$25,800.00
Other Misc.							
Sub-Totals					$60,800.00	$7,000.00	$80,800.00
Total Cost Building	**$148,600.00**						

Building 14

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	1,600	SF	$4.00	SF		$6,400.00	
Pipe Insulation	200	LF	$20.00	LF		$4,000.00	
Roof Flashing	600	SF	$5.00	SF		$3,000.00	
Roof Shingle and Felt	11,000	SF	$5.00	SF			$55,000.00
Window Caulk/Glazing	110	windows	$150.00	each			$16,500.00
Other Misc.							
Sub-Totals						$13,400.00	$71,500.00
Total Cost Building	**$84,900.00**						

Building 28

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	6,000	SF	$4.00	SF		$24,000.00	
Pipe Insulation	3,500	LF	$20.00	LF		$70,000.00	
Roof Flashing	600	SF	$5.00	SF	$3,000.00		
Window Caulk/Glazing	110	windows	$150.00	each			$16,500.00
Other Misc.							
Sub-Totals					$3,000.00	$94,000.00	$16,500.00
Total Cost Building	**$113,500.00**						

ROCKLAND PSYCHIATRIC CENTER

PARCEL NO. 2

ASBESTOS COST ANALYSIS - PINNACLE

Building 10

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	24,000	SF	$4.00	SF		$96,000.00	
Pipe Insulation	1,000	LF	$20.00	LF		$20,000.00	
Roof Flashing, Shingle/Tar	18,000	SF	$4.00	SF	$72,000.00		
Window Caulk/Glaze	270	windows	$150.00	each		$40,500.00	
Other Misc.							
Sub-Totals					$72,000.00	$156,500.00	
Total Cost Building	**$228,500.00**						

Building 13

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	4,300	SF	$4.00	SF			$17,200.00
Pipe Insulation	1,000	LF	$20.00	LF			$20,000.00
Roof Shingle, Flashing, Felt	5,900	SF	$5.00	SF			$29,500.00
Window Caulk/Glaze	50	windows	$150.00	each			$7,500.00
Other Misc.							
Sub-Totals							$74,200.00
Total Cost Building	**$74,200.00**						

Building 15

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	10,200	SF	$4.00	SF		$40,800.00	
Pipe Insulation	500	LF	$20.00	LF		$10,000.00	
Roof Flashing	950	SF	$5.00	SF		$4,750.00	
Shingle Roof and Felt	11,000	SF	$5.00	SF			$55,000.00
Window Caulk/Glazing	132	windows	$150.00	each			$19,800.00
Other Misc.							
Sub-Totals						$55,550.00	$74,800.00
Total Cost Building	**$130,350.00**						

Building 16

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	10,200	SF	$4.00	SF		$40,800.00	
Pipe Insulation	500	LF	$20.00	LF		$10,000.00	
Roof Flashing	950	SF	$5.00	SF		$4,750.00	
Shingle Roof and Felt	11,000	SF	$5.00	SF			$55,000.00
Window Caulk/Glazing	132	windows	$150.00	each			$19,800.00
Other Misc.							
Sub-Totals						$55,550.00	$74,800.00
Total Cost Building	**$130,350.00**						

TABLE 7-6 (Page 6 of 8)
ROCKLAND PSYCHIATRIC CENTER
PARCEL NO. 2
ASBESTOS COST ANALYSIS - PINNACLE

Building 42

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	10,200	SF	$4.00	SF		$40,800.00	
Pipe Insulation	500	LF	$20.00	LF		$10,000.00	
Roof Flashing	950	SF	$5.00	SF		$4,750.00	
Shingle Roof and Felt	11,000	SF	$5.00	SF			$55,000.00
Window Caulk/Glazing	132	windows	$150.00	each			$19,800.00
Other Misc.							
Sub-Totals						$55,550.00	$74,800.00
Total Cost Building	**$130,350.00**						

Building 40

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	300	SF	$4.00	SF	$1,200.00		
Pipe Insulation	200	LF	$20.00	LF		$4,000.00	
Roof Flashing	840	SF	$5.00	SF		$4,200.00	
Built-up Roofing	9,600	SF	$5.00	SF			$48,000.00
Acoustical Ceiling & Wall Plaster	12,900	SF	$8.00	SF	$103,200.00		
Window Caulk/Glazing	30	windows	$250.00	each	$7,500.00		
Other Misc.							
Sub-Totals					$111,900.00	$8,200.00	$48,000.00
Total Cost Building	**$168,100.00**						

Building 41

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	10,200	SF	$4.00	SF		$40,800.00	
Pipe Insulation	500	LF	$20.00	LF		$10,000.00	
Roof Flashing	950	SF	$5.00	SF	$4,750.00		
Other Misc.							
Sub-Totals					$4,750.00	$50,800.00	
Total Cost Building	**$55,550.00**						

Building 102

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	345	SF	$4.00	SF			$1,380.00
Pipe Insulation	100	LF	$20.00	LF			$2,000.00
Shingle Roof and Felt	345	SF	$5.00	SF			$1,725.00
Window Caulk/Glazing	10	windows	$150.00	each			$1,500.00
Other Misc.							
Sub-Totals							$6,605.00
Total Cost Building	**$6,605.00**						

ROCKLAND PSYCHIATRIC CENTER

PARCEL NO. 2

ASBESTOS COST ANALYSIS - PINNACLE

Building 115

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Shingle Roof and Felt	2,400	SF	$5.00	SF			$12,000.00
Window Caulk/Glazing	20	windows	$150.00	each			$3,000.00
Other Misc.							
Sub-Totals							$15,000.00
Total Cost Building	**$15,000.00**						

Building 2

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	11,450	SF	$4.00	SF		$45,800.00	
Pipe Insulation	2,600	LF	$20.00	LF		$52,000.00	
Roof Flashing	1,000	SF	$5.00	SF	$5,000.00		
Other Misc.							
Sub-Totals					$5,000.00	$97,800.00	
Total Cost Building	**$102,800.00**						

Building 3

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	11,450	SF	$4.00	SF		$45,800.00	
Pipe Insulation	2,600	LF	$20.00	LF		$52,000.00	
Roof Flashing	1,000	SF	$5.00	SF		$5,000.00	
Shingle Roof and Felt	12,000	SF	$5.00	SF			$60,000.00
Window Caulk/Glazing	158	windows	$150.00	each			$23,700.00
Other Misc.							
Sub-Totals						$102,800.00	$83,700.00
Total Cost Building	**$186,500.00**						

Building 4

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	4,800	SF	$4.00	SF			$19,200.00
Pipe Insulation	1,000	LF	$20.00	LF			$20,000.00
Shingle Roof and Felt	7,000	SF	$5.00	SF			$35,000.00
Window Caulk/Glazing	40	windows	$150.00	each			$6,000.00
Other Misc.							
Sub-Totals							$80,200.00
Total Cost Building	**$80,200.00**						

ROCKLAND PSYCHIATRIC CENTER
PARCEL NO. 2
ASBESTOS COST ANALYSIS - PINNACLE

Building 6

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	31,300	SF	$4.00	SF		$125,200.00	
Pipe Insulation	1,000	LF	$20.00	LF		$20,000.00	
Roof Flashing	2,200	SF	$5.00	SF	$11,000.00		
Window Caulk/Glazing	320	windows	$150.00	each			$48,000.00
Other Misc.							
Sub-Totals					$11,000.00	$145,200.00	$48,000.00
Total Cost Building	**$204,200.00**						

Building 7

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	31,300	SF	$4.00	SF		$125,200.00	
Pipe Insulation	1,000	LF	$20.00	LF		$20,000.00	
Roof Flashing	2,200	SF	$5.00	SF		$11,000.00	
Built-up Roofing	10,600	SF	$5.00	SF			$53,000.00
Window Caulk/Glazing	320	windows	$150.00	each			$48,000.00
Other Misc.							
Sub-Totals						$156,200.00	$101,000.00
Total Cost Building	**$257,200.00**						

Building 8

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	31,300	SF	$4.00	SF		$125,200.00	
Pipe Insulation	1,000	LF	$20.00	LF		$20,000.00	
Roof Flashing	2,200	SF	$5.00	SF		$11,000.00	
Built-up Roofing	10,600	SF	$5.00	SF			$53,000.00
Window Caulk/Glazing	320	windows	$150.00	each			$48,000.00
Other Misc.							
Sub-Totals						$156,200.00	$101,000.00
Total Cost Building	**$257,200.00**						

Building 9

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	19,660	SF	$4.00	SF		$78,640.00	
Pipe Insulation	750	LF	$20.00	LF		$15,000.00	
Roof Flashing	1,500	SF	$5.00	SF	$7,500.00		
Finished Ceiling Plaster	1,000	SF	$8.00	SF	$8,000.00		
Other Misc.							
Sub-Totals					$15,500.00	$93,640.00	
Total Cost Building	**$109,140.00**						

TOTAL PARCEL 2:	**$6,304,885.00**	**$1,020,450.00**	**$3,926,680.00**	**$1,357,755.00**

TABLE 7-7 (page 1 of 1)
ROCKLAND PSYCHIATRIC CENTER
PARCEL NO. 3 AND 4
ASBESTOS COST ANALYSIS - PINNACLE

The following three buildings are located at Parcels 3 and 4, but they are not believed to contain asbestos.

Building 88 (Parcel 3)

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	0	SF	$4.00	SF		$0.00	
Pipe Insulation	0	LF	$20.00	LF		$0.00	
Built-up Roofing /Flashing	0	SF	$5.00	SF		$0.00	
Window Caulk/Glazing	0	windows	$150.00	each		$0.00	
Other Misc.							
Sub Totals						$0.00	$0.00
Total Cost Building	**$0.00**						

Building 127 (Parcel 3)

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	0	SF	$4.00	SF		$0.00	
Pipe Insulation	0	LF	$20.00	LF		$0.00	
Built-up Roofing /Flashing	0	SF	$5.00	SF		$0.00	
Window Caulk/Glazing	0	windows	$150.00	each		$0.00	
Other Misc.							
Sub Totals						$0.00	$0.00
Total Cost Building	**$0.00**						

Building 84 (Parcel 4)

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	0	SF	$4.00	SF		$0.00	
Pipe Insulation	0	LF	$20.00	LF		$0.00	
Built-up Roofing /Flashing	0	SF	$5.00	SF		$0.00	
Window Caulk/Glazing	0	windows	$150.00	each		$0.00	
Other Misc.							
Sub Totals						$0.00	$0.00
Total Cost Building	**$0.00**						
TOTAL PARCELS 3 & 4:	**$0.00**				**$0.00**	**$0.00**	**$0.00**

TABLE 7-8 (Page 1 of 3)

ROCKLAND PSYCHIATRIC CENTER

PARCEL NO. 5

ASBESTOS COST ANALYSIS - PINNACLE

Building 77

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	1,300	SF	$4.00	SF			$5,200.00
Pipe Insulation	275	LF	$20.00	SF			$5,500.00
Shingle Roof and Felt	1,300	SF	$5.00	SF			$6,500.00
Window Caulk/Glazing	20	windows	$150.00	each			$3,000.00
Other Misc.							
Sub-Totals							$20,200.00
Total Cost Building	**$20,200.00**						

Building 108

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	900	SF	$4.00	SF		$3,600.00	
Roof Flashing	250	SF	$5.00	SF		$1,250.00	
Shingle Roof and Felt	1,300	SF	$5.00	SF			$6,500.00
Window Caulk/Glazing	20	windows	$150.00	each			$3,000.00
Boiler Gasket/Ins.	6	SF	$200.00	SF		$1,200.00	
Other Misc.							
Sub-Totals						$6,050.00	$9,500.00
Total Cost Building	**$15,550.00**						

Building 109

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	900	SF	$4.00	SF		$3,600.00	
Roof Flashing	250	SF	$5.00	SF		$1,250.00	
Shingle Roof and Felt	1,300	SF	$5.00	SF			$6,500.00
Window Caulk/Glazing	20	windows	$150.00	each			$3,000.00
Boiler Gasket/Ins.	6	SF	$200.00	SF		$1,200.00	
Other Misc.							
Sub-Totals						$6,050.00	$9,500.00
Total Cost Building	**$15,550.00**						

Building 110

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	900	SF	$4.00	SF	$3,600.00		
Roof Flashing	250	SF	$5.00	SF	$1,250.00		
Boiler Gasket/Ins.	6	SF	$200.00	SF	$1,200.00		
Other Misc.							
Sub-Totals					$6,050.00		
Total Cost Building	**$6,050.00**						

TABLE 7-8 (Page 2 of 3)
ROCKLAND PSYCHIATRIC CENTER
PARCEL NO. 5
ASBESTOS COST ANALYSIS - PINNACLE

Building 136

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	700	SF	$4.00	SF		$2,800.00	
Roof Flashing	300	SF	$5.00	SF		$1,500.00	
Shingle Roof and Felt	1,500	SF	$5.00	SF			$7,500.00
Sheetrock (SR) Tape/ Seam Compound	8,000	SF SR	$8.00	SF		$64,000.00	
Window Caulk/Glazing	25	windows	$150.00	each			$3,750.00
Other Misc.							
Sub Totals						$68,300.00	$11,250.00
Total Cost Building	**$79,550.00**						

Building 137

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	700	SF	$4.00	SF	$2,800.00		
Roof Flashing	300	SF	$18.00	SF	$5,400.00		
Sheetrock (SR) Tape/ Seam Compound	8,000	SF SR	$8.00	SF	$64,000.00		
Other Misc.							
Sub Totals					$72,200.00		
Total Cost Building	**$72,200.00**						

Building 138

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	700	SF	$4.00	SF		$2,800.00	
Roof Flashing	300	SF	$5.00	SF		$1,500.00	
Shingle Roof and Felt	1,500	SF	$5.00	SF			$7,500.00
Sheetrock (SR) Tape/ Seam Compound	8,000	SF SR	$8.00	SF		$64,000.00	
Window Caulk/Glazing	25	windows	$150.00	each			$3,750.00
Other Misc.							
Sub Totals						$68,300.00	$11,250.00
Total Cost Building	**$79,550.00**						

TABLE 7-8 (Page 3 of 3)
ROCKLAND PSYCHIATRIC CENTER
PARCEL NO. 5
ASBESTOS COST ANALYSIS - PINNACLE

Building 139

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	700	SF	$4.00	SF		$2,800.00	
Roof Flashing	300	SF	$5.00	SF		$1,500.00	
Shingle Roof and Felt	1,500	SF	$5.00	SF			$7,500.00
Sheetrock (SR) Tape/ Seam Compound	8,000	SF SR	$8.00	SF		$64,000.00	
Window Caulk/Glazing	25	windows	$150.00	each			$3,750.00
Other Misc.							
Sub Totals						$68,300.00	$11,250.00
Total Cost Building	**$79,550.00**						

Building 140

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	700	SF	$4.00	SF		$2,800.00	
Roof Flashing	300	SF	$5.00	SF		$1,500.00	
Shingle Roof and Felt	1,500	SF	$5.00	SF			$7,500.00
Sheetrock (SR) Tape/ Seam Compound	8,000	SF SR	$8.00	SF		$64,000.00	
Window Caulk/Glazing	25	windows	$150.00	each			$3,750.00
Other Misc.							
Sub Totals						$68,300.00	$11,250.00
Total Cost Building	**$79,550.00**						

Building 141

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	700	SF	$4.00	SF		$2,800.00	
Roof Flashing	300	SF	$5.00	SF		$1,500.00	
Shingle Roof and Felt	1,500	SF	$5.00	SF			$7,500.00
Sheetrock (SR) Tape/ Seam Compound	8,000	SF SR	$8.00	SF		$64,000.00	
Window Caulk/Glazing	25	windows	$150.00	each			$3,750.00
Other Misc.							
Sub Totals						$68,300.00	$11,250.00
Total Cost Building	**$79,550.00**						
TOTAL PARCEL 5:	**$527,300.00**				**$78,250.00**	**$353,600.00**	**$95,450.00**

TABLE 7-9 (Page 1 of 4)
ROCKLAND PSYCHIATRIC CENTER
PARCEL NO. 6
ASBESTOS COST ANALYSIS - PINNACLE

Building 25

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	650	SF	$4.00	SF		$2,600.00	
Pipe Insulation	500	LF	$20.00	LF		$10,000.00	
Roof Flashing, Shingle/Tar	2,300	SF	$5.00	SF		$11,500.00	
Window Caulk/Glazing	45	windows	$150.00	each		$6,750.00	
Other Misc.							
Sub Totals						$30,850.00	
Total Cost Building	**$30,850.00**						

Building 27

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	650	SF	$4.00	SF			$2,600.00
Pipe Insulation	100	LF	$20.00	LF			$2,000.00
Roof Flashing, Shingle	640	SF	$5.00	SF			$3,200.00
Window Caulk/Glazing	10	windows	$150.00	each			$1,500.00
Other Misc.							
Sub Totals							$9,300.00
Total Cost Building	**$9,300.00**						

Building 62

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	1,200	SF	$4.00	SF			$4,800.00
Pipe Insulation	275	LF	$20.00	LF			$5,500.00
Roof Flashing, Shingle/Tar	1,200	SF	$5.00	SF			$6,000.00
Window Caulk/Glazing	20	windows	$150.00	each			$3,000.00
Other Misc.							
Sub Totals							$19,300.00
Total Cost Building	**$19,300.00**						

Building 63

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	1,200	SF	$4.00	SF			$4,800.00
Pipe Insulation	275	LF	$20.00	LF			$5,500.00
Roof Flashing, Shingle/Tar	1,200	SF	$5.00	SF			$6,000.00
Window Caulk/Glazing	20	windows	$150.00	each			$3,000.00
Other Misc.							
Sub Totals							$19,300.00
Total Cost Building	**$19,300.00**						

ROCKLAND PSYCHIATRIC CENTER

PARCEL NO. 6

ASBESTOS COST ANALYSIS - PINNACLE

Building 132

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	1,800	SF	$4.00	SF	$7,200.00		
Roof Flashing	380	SF	$5.00	SF	$1,900.00		
Other Misc.							
Sub Totals					$9,100.00		
Total Cost Building	**$9,100.00**						

Building 133

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	1,800	SF	$4.00	SF		$7,200.00	
Roof Flashing	380	SF	$5.00	SF		$1,900.00	
Shingle Roof and Felt	1,500	SF	$5.00	SF			$7,500.00
Sheetrock (SR) Tape/ Seam Compound	8,000	SF SR	$8.00	SF		$64,000.00	
Window Caulk/Glazing	25	windows	$150.00	each			$3,750.00
Other Misc.							
Sub Totals						$73,100.00	$11,250.00
Total Cost Building	**$84,350.00**						

Building 134

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	1,800	SF	$4.00	SF		$7,200.00	
Roof Flashing	380	SF	$5.00	SF		$1,900.00	
Shingle Roof and Felt	1,500	SF	$5.00	SF			$7,500.00
Window Caulk/Glazing	25	windows	$150.00	each			$3,750.00
Other Misc.							
Sub Totals						$9,100.00	$11,250.00
Total Cost Building	**$20,350.00**						

Building 135

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	1,800	SF	$4.00	SF		$7,200.00	
Roof Flashing	380	SF	$5.00	SF		$1,900.00	
Shingle Roof and Felt	1,500	SF	$5.00	SF			$7,500.00
Window Caulk/Glazing	25	windows	$150.00	each			$3,750.00
Other Misc.							
Sub Totals						$9,100.00	$11,250.00
Total Cost Building	**$20,350.00**						

TABLE 7-9 (Page 3 of 4)
ROCKLAND PSYCHIATRIC CENTER
PARCEL NO. 6
ASBESTOS COST ANALYSIS - PINNACLE

Building 20

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	650	SF	$4.00	SF		$2,600.00	
Pipe Insulation	500	LF	$20.00	LF		$10,000.00	
Roof Flashing, Shingle/Tar	2,300	SF	$5.00	SF		$11,500.00	
Window Caulk/Glazing	45	windows	$150.00	each		$6,750.00	
Other Misc.							
Sub Totals						$30,850.00	
Total Cost Building	**$30,850.00**						

Building 23

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	650	SF	$4.00	SF	$2,600.00		
Pipe Insulation	500	LF	$20.00	LF	$10,000.00		
Roof Flashing, Shingle/Tar	2,300	SF	$5.00	SF	$11,500.00		
Window Caulk/Glazing	45	windows	$150.00	each	$6,750.00		
Other Misc.							
Sub Totals					$30,850.00		
Total Cost Building	**$30,850.00**						

Building 21

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	300	SF	$5.00	SF		$1,500.00	
Pipe Insulation	800	LF	$20.00	LF		$16,000.00	
Roof Flashing	800	SF	$5.00	SF		$4,000.00	
Window Caulk/Glazing	20	windows	$150.00	each	$3,000.00		
Other Misc.							
Sub Totals					$3,000.00	$21,500.00	
Total Cost Building	**$24,500.00**						

Building 22

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	300	SF	$5.00	SF		$1,500.00	
Pipe Insulation	800	LF	$20.00	LF		$16,000.00	
Roof Flashing	800	SF	$5.00	SF		$4,000.00	
Shingle Roof and Felt	3,300	SF	$5.00	SF			$16,500.00
Window Caulk/Glazing	20	windows	$150.00	each	$3,000.00		
Other Misc.							
Sub Totals					$3,000.00	$21,500.00	$16,500.00
Total Cost Building	**$41,000.00**						

TABLE 7-9 (Page 4 of 4)
ROCKLAND PSYCHIATRIC CENTER
PARCEL NO. 6
ASBESTOS COST ANALYSIS - PINNACLE

Building 54

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	6,000	SF	$4.00	SF			$24,000.00
Pipe Insulation	500	LF	$20.00	LF			$10,000.00
Roof Shingle, Flashing, Felt	9,000	SF	$5.00	SF			$45,000.00
Window Caulk/Glazing	100	windows	$150.00	each			$15,000.00
Other Misc.							
Sub Totals							$94,000.00
Total Cost Building	**$94,000.00**						

Building 55

Material	Quantity	Unit	Unit Cost	Unit	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
Floor Tile and Mastic	300	SF	$5.00	SF		$1,500.00	
Pipe Insulation	800	LF	$20.00	LF		$16,000.00	
Roof Flashing	800	SF	$5.00	SF		$4,000.00	
Shingle Roof and Felt	3,300	SF	$5.00	SF			$16,500.00
Window Caulk/Glazing	20	windows	$150.00	each	$3,000.00		
Other Misc.							
Sub Totals					$3,000.00	$21,500.00	$16,500.00
Total Cost Building	**$41,000.00**						

TOTAL PARCEL 2:	**$475,100.00**	**$48,950.00**	**$217,500.00**	**$208,650.00**

TABLE 7-10 (Page 1 of 1)
ROCKLAND PSYCHIATRIC CENTER
SUMMARY OF ASBESTOS COST ANALYSIS - PINNACLE

Block	Parcel	Asbestos Cost	Cost, Sampled Positive	Cost Assumed: Expect Positive (Not Sampled)	Cost Assumed: Sampled Negative or Not Sampled
(No.)	(No.)	($)	($)	($)	($)
Block A	2	$3,153,690.00	$736,500.00	$2,379,690.00	$37,500.00
Block B	2	$478,550.00	$0.00	$190,000.00	$288,550.00
Block C	2	$536,400.00	$63,800.00	$223,000.00	$249,600.00
Block D	2	$939,005.00	$188,650.00	$382,150.00	$368,205.00
Block E	2	$1,197,240.00	$31,500.00	$751,840.00	$413,900.00
	2	$6,304,885.00	$1,020,450.00	$3,926,680.00	$1,357,755.00
	3 & 4	$0.00	$0.00	$0.00	$0.00
	5	$527,300.00	$78,250.00	$353,600.00	$95,450.00
	6	$475,100.00	$48,950.00	$217,500.00	$208,650.00
	Sub Total	$7,307,285	$1,147,650	$4,497,780	$1,661,855
	Contingencies (8%)	$584,583	$91,812	$359,822	$132,948
	Engineering Design (10%)	$789,187	$123,946	$485,760	$179,480
	Construction Monitoring (5%)	$394,593	$61,973	$242,880	$89,740
	Total Capital Cost	**$9,075,648**	**$1,425,381**	**$5,586,243**	**$2,064,024**

for final recycling, treatment or disposal. Lamps disposed of under the Universal Waste Rule must be recycled. Small quantity handlers of universal waste (less than 11,000 lbs) must meet requirements for packaging that will minimize breakage, immediately cleaning up leaks or spills; and properly labeling containers. The recycling facility must comply with the requirements of 6NYCRR Parts 370 through 374-3 and obtain a Part 373 (Hazardous Waste) permit, if applicable.

While most of the rooms in the existing buildings are illuminated with incandescent fixtures the larger day rooms, dining/kitchen areas, offices, corridors, and halls of the buildings are illuminated with fluorescent lighting.

The estimated cost to remove, pack, transport, and recycle the existing fluorescent lamps in the buildings on Parcel No. 2 is $25,000.000 (17,000 lamps).

The estimated cost to remove, pack, transport, and recycle the existing fluorescent lamps in the buildings on Parcel Nos. 5 and 6 (including Staff Court) is $810.00 (550 lamps).

7.6.4 **Fluorescent Ballasts**

The Toxic Substances Control Act (TSCA) which banned the production of poly-chlorinated biphenyls (PCBs) in the United States was enacted in 1976. The specific regulations governing the use and disposal of PCBs are found in 40 CFR Part 761. TSCA regulates ballasts that contain PCBs [40CFR761.60(b)(2)(ii)].

All ballasts manufactured through 1979 contain PCBs. Ballasts manufactured after 1979 that do not contain PCBs are labeled “No PCBs”. If a ballast is not labeled “No PCBs” it must be assumed to contain PCBs.

Under TSCA, intact fluorescent ballasts that are not leaking PCBs may be disposed of in a municipal solid waste landfill. The EPA recommends packing and sealing them in 55 gal drums. One drum can hold between 150 to 300 ballasts and weigh as much as 1,000 lbs. The void spaces should be filled with an absorbent packing material.

Leaking PCB containing ballasts must be incinerated at a EPA approved high temperature incinerator.

High temperature incineration destroys PCBs, removing them from the waste stream permanently and removing the potential for future Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Liability. The average cost for incineration is approximately $5.25/ballast (not including packaging or transportation).

Recycling removes the PCB containing material for incineration or land disposal. The metals, such as copper and steel can be reclaimed for manufacturing other products. The average cost for recycling is approximately $3.50/ballast (not including packaging or transportation).

PCB containing ballasts may also be disposed of in a hazardous waste landfill. This method does not permanently eliminate PCBs from the waste stream and may lead to concern regarding future CERCLA liability. The average cost for this method of disposal is approximately $0.50/ballast (not including packaging or transportation).

The estimated cost to remove, pack, transport, and recycle the existing fluorescent ballasts in the buildings on Parcel No. 2 is $37,200.00 (4,250 fixtures).

The estimated cost to remove, pack, transport, and recycle the existing fluorescent ballasts in the buildings on Parcel Nos. 5 and 6 (including Staff Court) is $1,208.00 (138 fixtures).

7.6.5 **Clearing**

There are many large full growth trees located on the RPC property as well as shrubs and brush in those areas that are not maintained by the Facility. As many of the existing trees as possible that do not need to be removed for either access to the buildings for demolition or that would interfere with the final use of the site should be preserved and maintained.

The estimated cost to clear and dispose of the trees, shrubs, brush, and stumps and provide protection for the trees that might be damaged during demolition is as follows:

Parcel No. 2

Block A	$58,000.00
Block B	23,432.00
Block C	13,920.00
Block D	41,296.00
Block E	13,891.00
Total	$150,539.00

7.6.6 Solid Waste Removal

The estimated cost to remove, load into containers, transport and dispose of garbage, carpeting, furniture, appliances, clothing, etc. that remains in the buildings on Parcel No. 2 is $52,440.00 (2,280 cy).

7.6.7 Disconnect Utilities

The estimated cost to locate, disconnect, plugs, or cap the existing utilities (potable water, sanitary, storm, gas, electrical, telephone/data, etc.) is as follows:

Parcel No. 2

Block A Building Nos. 18, 32, 34, 36, and 38	$ 99,026.00
Block B Building Nos. 95 through 101	22,259.00
Block C Building Nos. 12, 26, 14, and 28	22,042.00
Block D Building Nos. 15, 16, 42, 41, 10, 40, 115, 102, and 13	36,986.00
Block E Building Nos. 2, 3, 4, 6, 7, 8, and 9	57,475.00
Total	$237,788.00

It must be noted that if the buildings on Parcel Nos. 5 and 6 are to be demolished that costs similar to those above would also apply.

7.6.8 Building Demolition

Under the revised Part 360 regulations effective 7/95 the definition of construction and demolition (C&D) debris has been narrowed, and certain specific types of materials have been expressly excluded. In accordance with 6NYCRR 360-1.2(b)(38), the only wastes now acceptable for deposition in a C&D landfill are uncontaminated solid waste resulting from the construction, remodeling, repair, and demolition of utilities, structures and roads and uncontaminated solid waste resulting from land clearing. Such waste includes, but is not limited to bricks, concrete, and other masonry materials, soil, rock, wood (including painted, treated, and coated wood, and wood products), land clearing debris, wall coverings, plaster, drywall, plumbing fixtures, nonasbestos insulation, roofing shingles, and other roof coverings, asphaltic pavement, glass, plastics that are not sealed in a manner that conceals other wastes, empty buckets 10 gals or less in size and having no more than 1 in. of residue remaining on the bottom, electrical wiring, and components containing no hazardous liquids, and pipe and metals that are incidental to any of the above.

Solid waste that is not C&D debris (even if resulting from the construction, remodeling, repair, and demolition of utilities, structures, and roads, and land clearing) includes but is not limited to asbestos waste, garbage, corrugated container board, electrical fixtures containing hazardous liquids such as fluorescent light ballasts or transformers, fluorescent lights, carpeting, furniture, appliances, tires, drums, containers greater than 10 gals in size, any containers having more than 1 in. of residue remaining on the bottom and fuel tanks.

Specifically excluded from the definition of construction and demolition debris is solid waste (including what otherwise would be construction and demolition debris) resulting from any processing technique, other than that employed at a Department (NYSDEC) approved C&D debris processing facility, that renders individual waste components unrecognizable, such as pulverizing or shredding.

The demolition of any building must be conducted safely and in accordance with Occupational Safety and Health Standards (OSHA) 29CFR1926 subpart T – Demolition. During demolition vermin should be controlled by employing a commercial applicator certified by NYSDEC to exterminate rodents and vermin in the buildings and tunnels to be demolished.

It is known that the buildings contain lead base paint; therefore the demolition contractor should take all necessary precautions (29CFR1926.62) to limit the exposure of his employees to the lead base paint debris as well as prohibit its release to the environment during all demolition operations.

The demolition contractor should also control dust during all demolition operations by wetting down masonry and plaster materials to prevent the spread of dust and dirt.

A building to be demolished should be enclosed with a temporary 8 ft high chain link fence with gates. Prior to starting demolition standing water should be pumped out of the basements. All glass, should be removed from windows, doors, fixtures, etc. before commencing demolition. The building should be demolished in a systematic manner story by story from the highest level down. The demolition should be completed above each floor level before disturbing supporting members on lower levels. Interior walls should be removed level to the lowest basement slab. The exterior basement walls should be removed to 2 ft below grade. The lowest basement slabs should be broken into pieces that are no larger than 3 ft in any dimension. The basements and other voids may be filled with compacted broken concrete or masonry materials up to 12 in. below the topsoil level. The 12 in. layer should be backfilled with select fill. The final surface should be graded to the adjacent contours and sloped to drain.

Generally any salvageable or historical items not stated to be retained by the Owner (Town) shall become the property of the Contractor and must be removed from the site before completion of the contract and at no additional cost to the Owner.

The estimated cost to demolish, load into containers, transport, and dispose of the demolition debris in a C&D landfill for the buildings on Parcel No. 2 is presented in Table 7-11.

7.6.9 **Site Demolition**

In addition to demolishing the existing buildings, the existing concrete roadways, curbs, sidewalks, and asphalt parking areas would have to be removed and disposed of to provide a clear site. The existing utilities such as the storm and sanitary manholes and catch basins would have to be abandoned by removing the surface frames and grates, plugging the existing pipes, and filling the structures with crushed stone up to a level 12

TABLE 7-11
ROCKLAND PSYCHIATRIC CENTER
PARCEL NO. 2
COST TO DEMOLISH, LOAD, TRANSPORT, AND DISPOSE OF BUILDINGS

	Bldg. No.	Cost
Block A		
	18	$313,643.00
	32	$313,643.00
	34	$380,930.00
	36	$301,349.00
	38	$289,712.00
	Subtotal Block A	$1,599,277.00
Block B		
	95	$38,379.00
	96	$38,379.00
	97	$38,379.00
	98	$38,379.00
	99	$38,379.00
	100	$38,379.00
	101	$129,219.00
	Subtotal Block B	$359,493.00
Block C		
	12	$106,490.00
	26	$106,490.00
	24	$81,722.00
	28	$61,267.00
	Subtotal Block C	$355,969.00
Block D		
	10	$166,435.00
	13	$38,579.00
	15	$73,253.00
	16	$73,253.00
	42	$73,253.00
	40	$96,677.00
	41	$66,897.00
	102	$1,114.00
	115	$7,862.00
	Subtotal Block D	$597,323.00
Block E		
	2	$79,817.00
	3	$79,817.00
	4	$43,524.00
	6	$206,991.00
	7	$206,991.00
	8	$206,991.00
	9	$104,109.00
	Subtotal Block E	$928,240.00

TOTAL PARCEL NO. 2 **$3,840,302.00**

in. below the topsoil level. The 12 in. layer is backfilled with select fill and the final surface graded to the adjacent contours and sloped for drainage. Some of the existing fire hydrants and street lights along First and Third Avenues and Maple Street would need to be isolated from the RPC water and power systems and remain in service. The balance of the hydrants and street lights could be removed. The valves which control the existing potable water distribution system should be closed on the lines that are no longer needed and the valve stems and boxes removed.

The estimated cost to demolish and dispose of the roadways, curbs, sidewalks, parking areas, storm, and sanitary manholes, catch basins, hydrants, and street lights on Parcel No. 2 is presented in Table 7-12.

It must be noted that if the buildings on Parcel Nos. 5 and 6 are to be demolished that costs similar to those above would also apply.

These estimated costs do not include the cost to disconnect the piping in the steam tunnels or to seal the tunnels themselves. The method used to seal the tunnels will depend on the final use of the land above them. If new buildings are to be constructed the tunnels may have to be completely demolished and the area backfilled.

7.6.10 **Site Restoration**

After the buildings have been demolished and the utilities removed the site should be graded to meet the adjacent contours and sloped for drainage. Some new catch basins and storm sewers may need to be installed to eliminate areas of standing water. After the site has been graded, some imported topsoil may be needed to be placed if there is not a sufficient amount of existing material. In order to prevent erosion of the finished ground surface the area should be seeded and covered with a mulching blanket or hydroseeded.

The estimated cost to grade, topsoil, and hydroseed the area of Parcel No. 2 (61 Ac) is $353,907.00

7.6.11 **Cost Summary**

The total cost to asbestos abate the buildings, clean out the buildings, demolish, clear and prepare the area of Parcel No. 2 is $14,570,677 (Table 7-13).

TABLE 7-12
ROCKLAND PSYCHIATRIC CENTER
PARCEL NO. 2
COST TO DEMOLISH AND DISPOSE OF ROADWAYS, CURBS, ETC.

Block	Cost
A	$186,967.00
B (includes part of Third Avenue)	$128,102.00
C	$56,560.00
D	$265,821.00
E	$92,113.00
Total of all Blocks	**$729,563.00**

TABLE 7-13
ROCKLAND PSYCHIATRIC CENTER
PARCEL NO. 2
COST SUMMARY

Asbestos Abatement		
Block A	$3,153,690.00	
Block B	$478,550.00	
Block C	$536,400.00	
Block D	$939,005.00	
Block E	$1,197,240.00	
Total Asbestos Abatement		**$6,304,885.00**
Fluorescent Lamps		**$25,000.00**
Fluorescent Ballasts		**$37,200.00**
Clearing		
Block A	$58,000.00	
Block B	$23,432.00	
Block C	$13,920.00	
Block D	$41,296.00	
Block E	$13,891.00	
Total Clearing		**$150,539.00**
Solid Waste Removal		**$52,440.00**
Disconnect Utilities		
Block A	$99,026.00	
Block B	$22,259.00	
Block C	$22,042.00	
Block D	$36,986.00	
Block E	$57,475.00	
Total Disconnect Utilities		**$237,788.00**
Building Demolition		
Block A	$1,599,277.00	
Block B	$359,493.00	
Block C	$355,969.00	
Block D	$597,323.00	
Block E	$928,240.00	
Total Building Demolition		**$3,840,302.00**
Site Demolition		
Block A	$186,967.00	
Block B	$128,102.00	
Block C	$56,560.00	
Block D	$265,821.00	
Block E	$92,113.00	
Total Site Demolition		**$729,563.00**
Site Restoration		**$353,907.00**

TOTAL	**$11,731,624**
Contingencies(8%)	**$938,530**
Engineering Design (10%)	**$1,267,015**
Construction Monitoring (5%)	**$633,508**
TOTAL COST PARCEL 2	**$14,570,677**

The costs to abate the buildings in Parcel 5 and 6, including contingencies, engineering design and construction monitoring, is $1,244,981. The total cost to remediate all the facility buildings and demolish/clear Parcel 2 is $15,815,658 (Table 7-14).

7.7 ADAPTIVE REUSE

7.7.1 General

Adaptive reuse means a change in building function from its original or recent past. The planning process is a critical factor in making adaptive reuse a viable and successful alternative to demolishing the existing buildings. The use of the buildings on Parcel No. 1 (Golf Course) will not change.

The buildings on Parcel No. 3 should be demolished as they are in a deteriorating condition and serve no useful purpose.

The building on Parcel No. 4 is in a stable condition but does not appear to serve a useful purpose and should be demolished.

The buildings on Parcel No. 5 can be either sold "as-is" for individual residences or the entire parcel sold for another residential use (townhouses). It has been suggested that Building No. 77 should be placed on the National Register of Historic Places. The building is a Dutch sandstone house that was built circa 1765. The National Register of Historic Places is the Nation's official list of cultural resources worthy of preservation. The Register is part of a national program to coordinate and support public and private efforts to identify, evaluate and protect historic and archeological resources. Listed properties include buildings, structures and objects that are significant in American history, architecture, archeology, engineering, and culture. The register is administered by the National Park Service. Properties are nominated to the National Register by the State Historic Preservation Officer (SHPO). Under Federal law, owners of private property listed in the National Register are free to maintain, manage, or dispose of their property as they choose provided that there is no Federal involvement.

The buildings on Parcel No. 6 were constructed for residential use. Building Nos. 132, 133, 134, and 135 along the East side of Blaisdell Road are single family homes which

TABLE 7-14
ROCKLAND PSYCHIATRIC CENTER
BUILDING REMEDIATION - TOTAL COSTS

TOTAL COST PARCEL 2	$14,570,677
Asbestos Cost Parcels 5 & 6	$1,002,400
Contingencies (8%)	$80,192
Engineering Design (10%)	$108,259
Construction Monitoring (5%)	$54,130
TOTAL ASBESTOS COSTS PARCELS 5 AND 6	$1,244,981
TOTAL BUILDING REMEDIATION COSTS	$15,815,658

could be sold "as-is" for individual residences or a portion of the parcel sold for another residential use (townhouses).

Building Nos. 20, 21, 22, 23, 54, and 55 on Parcel No. 6 were constructed for residential use as staff housing. These buildings are constructed around a circular drive on the south side of Old Orangeburg Road known as Staff Court. While the buildings were constructed for residential use the floor plans are more in the style of dormitories rather than apartment buildings. Building No. 54 has six living room and bedroom units with toilet on the first floor and 13 sleeping rooms with a common toilet for every two rooms and two bath facilities on the second floor. The first floor also has a common lounge, dining room, and kitchen. The state has not decided whether or not to offer this parcel of 5.97 acres to the Town. It would appear that the reuse of these buildings for residential use other than as dormitories would require a considerable amount of modification.

Undoubtedly the grandest structure on the RPC site is the Senior Director's Residence (Building No. 25) on Parcel No. 6. The 9,025 ft^2 residence has a living room, study, formal dining room, family dining room, kitchen with dining area, enclosed porch and three fireplaces on the first floor. A central stair leads to the second floor bedrooms. There is a large master bedroom, and six smaller bedrooms on the second floor as well as three bedrooms that may have been servants quarters with a back stair down to the first floor kitchen. The use of this building is limited to use as a residence or a clubhouse.

The final use of Parcel No. 8 will determine whether the empty reservoir tanks would need to be filled. This would involve removing the soil cover, demolishing the top slabs and the foundation walls two feet below grade, breaking up the base slab and filling the tanks with clean fill.

The largest concentration of buildings are on Parcel No. 2. The buildings were constructed primarily for the housing and treatment of psychiatric patients with other ancillary services such as cooking, dining, medical, recreation, administration, and staff housing. The reuse of these buildings for some use other than a medical facility would require an extensive amount of renovation and modification. Some of the existing buildings might have to be demolished to provide parking areas for the renovated buildings. The existing roadways are narrow and would require widening.

7.7.2 **Adaptive Reuse Factors**

The following factors must be considered in the planning stages of any reuse project:

- Compatibility of the building and the site for the proposed use
- Structural stability of the building and fire safety
- Parking needs for the proposed use.
- Extent of renovation/modification needed.
- The buildings architectural/historic and landmark value.
- Suitability of the location, including compatibility with surrounding uses.

Modifications performed on any building required for adaptive reuse must comply with the latest zoning, building, life safety, energy conservation codes and the requirements of the Americans with Disabilities Act (ADA).

7.7.3 **Asbestos**

Prior to beginning any construction for the renovation and modification of an existing building the asbestos contained in fire proofing, acoustical and finish plasters, equipment insulation piping and fitting insulation roofing felts, boards, shingles, and flashings; dust and debris; vinyl asbestos tile; ceiling tile, gaskets/seals/sealants, and fire doors must be abated by removing the material and disposing of it in a certified landfill.

7.7.4 **Fluorescent Lamps and Ballasts**

The fluorescent lamps and ballasts that are to be removed from existing light fixtures must be disposed of as described in 7.6.3 and 7.6.4.

7.7.5 **Lead**

As part of an on-going effort to protect children from lead poisoning, the EPA has developed standards to identify dangerous levels of lead in paint, dust, and soil. Health problems from exposure to lead can include profound developmental and neurological impairment in children. Because of the potential dangers, any exposure to deteriorated lead-based paint presents a hazard. These hazards my be paint chips, lead in dust, child-accessible or mouthable painted surfaces, friction surfaces of windows and doors, and lead in soil.

In New York State the "Final Rule" under sections 402, 403, and 404 of TSCA are administered by the EPA. Under the new standards, lead is considered a hazard if there are greater than 40 micrograms of lead in dust/ft^2 on floors; 250 micrograms of lead in dust/ft^2 on interior window sills and 400 parts per million (ppm) of lead in bare soil in children's play areas or 1200 ppm average for bare soil in the rest of the yard.

These regulations potentially affect residential and child-occupied (daycare centers, kindergartens, etc.) property owners, parents, lead paint professionals, and training providers.

Abatement means any measure or set of measures designed to permanently eliminate lead-based paint hazards. Abatement includes, but is not limited to, the removal of paint and dust, the permanent enclosure or encapsulation of lead-based paint, the replacement of painted surfaces or fixtures, or the removal or permanent covering of soil, when lead-based paint hazards are present in such paint, dust or soil; and all preparation, clean-up, disposal and post-abatement clearance testing activities associated with such measures. Abatement does not include renovation, remodeling, landscaping or other activities, when such activities are not designed to permanently eliminate lead-based paint hazards.

Where an employee may be occupationally exposed to lead during construction work the regulations found in 29 CFR 1926.62 (OSHA) apply.

The results of the lead-based paint survey (6.5) conducted by Gateway Environmental Services indicates the presence of lead in various concentrations on many surfaces throughout all of the buildings on the RPC site. In addition, the results of the lead soil sampling (5.1) indicates levels of lead in the soil that exceed the 400 ppm limit for children's play areas. The soil samples were taken close to the walls of the existing buildings. The high levels are probably due to the peeling of paint from the window frames, roofing, and flashing. The paint on the walls, ceilings, and door frames in the existing buildings is deteriorating and peeling. The floors are covered with paint chips from the peeled paint. Regardless of the final use of the existing buildings, the paint that is peeling but still attached to the structure would have to be removed, the loose chips picked up and the surfaces vacuumed and the accumulated material properly disposed of. Lead-based paint that is in good condition and adheres fully to the surface is usually not considered a hazard.

If the final use of the existing buildings would serve a purpose where children would occupy the space, a complete lead abatement program including additional surveys and sampling would have to be instituted.

7.7.6 **Utilities**

The existing utilities at the RPC site include water distribution, sanitary sewers, storm sewers, gas distribution, electrical distribution and telephone/data distribution. The Facility also provides chilled water, domestic hot water and steam to the buildings on the site.

The Facility will require that these utilities must remain in operation to serve the buildings that are to be retained by the State. Where these utilities pass through property that is sold, the State will require the granting of easements by the Town.

The existing utilities serve all of the buildings on the RPC site. Regardless of the final use of the existing buildings, the utilities which serve the buildings to be retained by the State would have to be separated and isolated from those serving the buildings to be sold. This would involve the installation of new sanitary and storm sewers and piping systems as well as rerouting the existing systems. New metering devices would have to be installed as well as required backflow prevention devices. Depending on the final use of the buildings, fire protection systems including sprinklers, hose racks, fire pumps, etc. may be required which could create an increased water demand. Likewise the gas distribution system would have to be isolated from the existing facility system and would also require the installation of new metering devices. The electrical distribution and the telephone/data systems in the buildings to be sold would have to be disconnected from the existing Facility system and reconfigured to accommodate the final use of the buildings.

The existing buildings are heated by a central steam system supplied from the powerhouse. Domestic hot water is also supplied to the existing buildings through a supply and return system from the powerhouse. These systems would need to be disconnected from the buildings sold to the Town, and new heating systems installed in each of the buildings. This could include replacing some or all of the existing piping and convection equipment as well as the installation of new fuel piping and equipment.

The existing buildings are not centrally air conditioned. Depending on the final use of the existing buildings new air conditioning equipment including ductwork, registers, compressors, dampers, etc. would have to installed in each building.

7.7.7 **Cost Summary**

As described in the preceding commentary, the costs for converting the existing buildings sold by the State to the Town to a use other than one very similar to the original use can be expected to be high. Many of the changes to the existing utilities would have to be made even if the final use of the existing buildings is similar to a medical facility.

The conversion of the buildings to a residential use would require major renovation work not only to provide space (floor plans) for such a use but to be in compliance with all applicable codes (zoning, building, life safety, and energy conservation). Some of the buildings would need to be demolished to provide for parking areas. The access roads would have to be replaced or widened.

Regardless of the final use (or demolition) of the existing buildings the asbestos containing materials would have to be removed by qualified personnel and legally disposed of. In areas where children would be housed or areas used for play the lead-based paint would have to be removed by qualified personnel and legally disposed of.

There are no current plans for the adaptive reuse of the buildings being offered for sale by the State to the Town, therefore, a dollar amount cannot be fixed for such plans. The purpose of this section has been to provide some insight into the potential costs involved in converting the buildings from their original function to a new and different one.

7.8 BUILDING MAINTENANCE

In the event the Town purchased the existing buildings from the State and decided not to demolish them or convert them to some other use, there would be some cost involved in maintaining them until such time as they could be demolished or renovated.

The State has undertaken a program to secure the vacant buildings by covering the windows on the first or ground floor and basement levels of each building. For insurance purposes the Town would need to maintain these security measures and perform routine building inspections to determine if there has been any damage.

The State maintains the grounds around the existing buildings which are easily seen by the public. The Town would have to assume this responsibility by mowing the lawns and clearing paths and roadways of debris. The growth of vines on the buildings and trees and shrubs growing close to the buildings should also be cleared.

The existing utilities would have to be separated and isolated from the Facility systems, however, the water lines serving the fire hydrants and the power lines to the existing street lights would have to be maintained.

It must be noted that while most of the existing buildings are in relatively good condition for having been vacant for as much as 10 years there are indications that some deterioration has begun. This deterioration will only continue and grow worse as time goes by. The cost of dealing with a severly deteriorated or collapsing structure can be considerable when compared to the cost of stabilizing and maintaining the structure so as to keep the rate of deterioration to a minimum.

7.9 OTHER CONSIDERATIONS

The condition of the existing storm and sanitary sewers is not known. Some field investigation using television cameras, dye or smoke testing may be necessary to determine their structural condition.

The costs discussed in this chapter do not include the engineering costs required for the preparation of the detailed plans and specifications that would be required for building and site demolition work, asbestos, and lead abatement programs, and existing utilities separation/isolation plans.

The engineering costs will depend on receiving as much of the construction information on the existing structures and site as possible from the State through the Office of Mental Health (OMH), Dormitory Authority of the State of New York (DASNY), Rockland Psychiatric Center (RPC) or another state agency or private consultant.

This information should include the original as-built architectural, structural, plumbing, heating, and ventilating, and electrical drawings for the existing buildings that are sold to the Town. The information should also include the as-built site plans for the property sold to the Town. The site plans should show the locations of the water distribution piping with valves and hydrants, sanitary sewers with manholes and storm sewers with manholes, catch basins, headwalls, and outfalls; gas distribution piping with valves; chilled water piping, electrical and telephone/data ductbanks, manways and street light locations; and the heating (steam) tunnels that contain the low and medium pressure steam supply and condensate return piping and the domestic hot water supply and return piping. The site plans should also show the topography of the site with the elevations noted and the location of the existing roadways and sidewalks. In addition to the original as-built information, drawings should be provided that show any changes that have been made over the years since the original construction was completed.

The need for this information cannot be over emphasized. Whether the existing buildings are demolished or reused, the architectural, structural, mechanical, and electrical drawings are vital for preparing demolition and/or abatement bidding documents as well as developing architectural plans for reusing the existing buildings. The site drawings are also vital to determine the easements that would have to granted to the Facility for utilities that must remain active as well as utility lines that would need to be disconnected or rerouted and may new lines that might have to be installed.

Without this information extensive field investigations would be required to determine the locations of the existing utilities as well as the layout and functions of the existing buildings.

CHAPTER 8

REMEDIAL ALTERNATIVES AND DISPOSAL SITES

8.1 INTRODUCTION

As part of the remedial plan for the RPC site, LMS has identified applicable alternatives for the debris piles, wastewater treatment plant (WWTP) sludge, and LBP-contaminated soils (included as a disposal site).

As previously discussed, the debris piles were grouped together and classified as Landfill Areas. Landfill A/C contains leaves, brush, stumps, metals, and other general rubbish. As close as can be determined, Landfill A/C is where most of the household debris generated at RPC was deposited and burned. This burning practice ceased in 1962 and the ash pile was covered, graded, and seeded to the satisfaction of the Rockland County Health Department. Landfill B contains approximately 99% concrete. This area also appears to be the area where asphalt petroleum drums were located, but these drums have been properly removed from the site. The exact boundaries of Landfill B-1 have been difficult to determine. This landfill is believed to contain yard wastes, such as mulch and grass clippings, and household trash as indicated by the large plastic bags, cans, and bottles. Compost Pile 1 contains a very large pile of wood chips placed on top of C&D debris. Compost Pile 2 appears to contain mostly piles of wood chips, with a couple of piles of dirt mixed with marble chips.

The WWTP sludge is located in an area near (west of) the old WWTP. This sludge is a non-hazardous solid waste, because the concentration of mercury found is less than the allowable level for re-use on a lawn or home garden. However, the concentrations of several metals are high enough to preclude a recommendation for re-use at the site.

With regard to the lead-contaminated soils in the immediate vicinity of the buildings, discussed in Section 7.7.5, the EPA allowable concentration of lead is 400 ppm where children will be in contact with bare soil. Although some of the samples contained concentrations greater than this amount, there were actual chips of paint included in the sample, which could have elevated the analyzed concentration. Also, it is acceptable to place a clean cover over the soils with concentrations of lead greater than 400 ppm. Nevertheless, it appears prudent that any soil containing paint chips be removed before allowing uses that may involve contact of children with the soils.

Options for management of the debris and lead-contaminated soils are based on general feasibility for application to this site given site-specific conditions and the relative costs involved. The discussion of these alternatives is based on the overall conclusion that none of the environmental conditions on the site merits action on the basis of its existence alone: action would only be necessary if and when the waste disposal sites are to be disturbed for the purpose of developing the site.

Further, as a reminder, no remedial action is required in the open fields; the soils in these fields may be graded as required for development. If the Town desires to provide assurance that no soil even slightly above the NYS cleanup objectives is contacted by users of playing fields, it may be worthwhile to sample surficial soils once a recreation area has been fully prepared for use, including the placement of topsoil. Effectively, the only soils that would be contacted on a playing field would be imported topsoil; construction specifications routinely require that imported topsoil be totally free of contamination.

8.2 NO IMMEDIATE ACTION

This alternative allows the debris piles, WWTP sludge, and LBP-contaminated soils to remain in place until site development begins to disturb these areas. There would be minimal or no initial cost involved with this alternative (until development began and necessitated remedial activity at the disturbed areas). The landfill areas could remain in place if the future site plan does not necessitate disturbing these areas and efforts are made to restrict access to these areas. If the future site usage of the landfill areas included only adding new fill, (i.e., that the landfill areas will not be disturbed) the landfills would be able to remain permanently in place.

Written documentation from NYSDEC has been included as Appendix C to demonstrate that the landfill areas have been identified as needing no further action, as long as they remain undisturbed. The no further action decisions for these areas are based on the conclusion that there are no environmental hazards in these areas.

In Appendix 3, Landfill B is that same as Area 2, Landfill A/C is the same as Area 7, Landfill B-1 is the same as Area 11, Compost Pile 1 includes Areas 3 and 4, and the WWTP sludge is the same as Area 9 (see also Table 3-1).

8.3 **MANAGEMENT OF EXISTING ON-SITE SOLID WASTES**

Another generic alternative is to remove all the material that is located within the designated landfill areas at the site. A contractor (or possibly Town workers) would clear and grub some areas to provide access to the landfill material. The material would be collected, stockpiled, and placed into trucks for removal from the site. It may be possible to be use Town workers and Town trucks to help reduce the cost of removing the material.

8.3.1 **Concrete Debris**

The large pieces of concrete debris could be placed into an on-site crusher to create an aggregate suitable for use at this site or sold locally. The crushed concrete could serve as a sub-base for parking lots and structures. Alternatively, the unprocessed concrete could be trucked to a construction site or to an off-site concrete crushing plant (e.g., the one at the Clarkstown Compost Facility).

8.3.2 **Brush, Wood Chips, Logs, and Stumps**

The wood material considered in this alternative includes brush, wood chips, logs, and tree stumps. It does not include man-made wood products, such as dimensional wood (this would be treated as C&D material).

An on-site wood chipper would process all of the brush, logs, and stumps located at the site. The wood chips may be able to be reused at the site as mulch for landscaping purposes. The wood chips may also be taken to either the Orangetown or Clarkstown Compost Facility for future use as mulch by local homeowners or landscapers.

Any wood chips at the site that are too decomposed or rotted for landscaping use would have to be hauled to an off-site disposal or processing facility.

8.3.3 **Subsurface Ash Deposit**

Historic burning of debris at Landfill A/C created an accumulation of ash material, which has since been properly covered, graded, and seeded. Since the ash was in place prior to the enactment of New York State's solid waste laws, the ash can remain in place if left undisturbed. If future use at the site necessitates the disturbance of this material, the ash may then be considered a solid waste and removal from the site would be necessary. Even if the ash remains in place and clean fill is placed over it, NYSDEC may decide to test the material to confirm that there is no danger to public health, but the cost of this testing would be minimal.

8.3.4 **Other Solid Wastes**

Other solid wastes (i.e., scrap metal, furniture, toys, domestic refuse, discarded appliances and vehicles) should be collected, stockpiled, and removed from the site to a solid waste disposal or recycling facility.

8.4 **WASTEWATER TREATMENT PLANT SLUDGE**

Although a number of contaminants have been identified in samples collected from the sludge, the concentrations are well within acceptable criteria for use in a lawn or home garden. Therefore, with the current information, it is believed that the sludge material could be used off-site as compost material. (It could also presumably be used on-site, but given the variety of chemicals above background levels and the assumed use of the property for youth recreation, on-site reuse is not recommended.)

The material could be trucked to the Orangetown or County Compost Facility, although taking the sludge material to the Orangetown Compost Facility may require an amendment to the facility's permit. In addition, a private solid waste facility could accept the WWTP sludge for further processing and recycling. It is important to note that each receiving facility will have its own acceptance criteria; further sampling should include all of the possible criteria so that the feasibility of utilizing these sites can be determined with confidence.

Federal regulation 40 CFR 503 sets the current standards for the use or disposal of sewage sludge. However, this regulation was established long after the sludge piles were formed at RPC. It is unclear at this point if NYSDEC will allow the material to be handled the same as currently generated WWTP sludge. However, since the contaminant levels in the sludge are far below what is allowed in sludges recycled for residential lawn and garden use (see NYS "Final Rule" sections 402, 403, and 404 of TSCA that are administered by the EPA), LMS has assumed for the sake of estimating disposal costs that this material can be composted the same as newly generated sludge. Given the decades-long period this sludge has been in place, it probably has already been well composted, and would act partially as a bulking agent in a mixed-feed composting operation.

8.5 LEAD-CONTAMINATED SOIL

Some surface soil samples were found to far exceed background concentrations for lead near most of the buildings; however some samples were less than the EPA allowable level of 400 ppm. This contamination is concluded to be from lead-based paint used at the site.

8.5.1 Remediation of the Lead-Contaminated Soils

A common technology to remediate the lead-contaminated soil is to remove a layer of soil in the contaminated area(s) and conduct sampling and testing to confirm that all soils with elevated levels of lead have been removed. The thickness and extent of the layer to be removed has not been determined, but would typically be 6 to 12-in. deep and within 10 ft of a building.

If a building is to be demolished, the soil surrounding that building can be pushed into the basement and used as fill material (with these lead concentrations). A clean fill layer will be placed over the top when grading takes place at the site.

If a building is to be reused, the soil excavation and disposal would be completed independently. As with any soil disposal project, the material would be stockpiled, sampled at a frequency of about one per 500 CY, and classified according to analytical results. This material can be used as fill in some areas of the site with a clean fill layer placed on top, depending on the future use of that area.

It is LMS' understanding that the land in Parcel 2 (or Core Area) would not be used for youth recreation with the buildings still in place. Therefore, soils in the parcel may either remain in place if the buildings remain standing, or bulldozed into the basement if the building is demolished. The cost for the latter approach is already included in the Parcel 2 Building Demolition costs, Chapter 7.

In the staff housing area (Parcels 5 and 6), there is more of a possibility of children coming into contact with the soil; in these areas LMS has assumed such an ultimate use, and estimate the cost of guarding against contact by children. Although various alternative actions including covering the soil or moving it elsewhere on the site, LMS has conservatively assumed that the top 6 in. of soil for 10 ft around each building would be removed and disposed of as contaminated soil.

8.6 LANDFILL CLOSURE ON-SITE

For the sake of completeness, LMS has also examined the possibility of the Town retaining the landfill materials on site, but moving all or most of the materials from their current locations in order to make active use of those sites.

The requirements for obtaining a solid waste landfill permit approval from NYSDEC (6 New York Codes, Rules, and Regulations (NYCRR) Part 360) include submission of detailed engineering reports on site geology and hydrogeology, adjacent land use, and environmental monitoring data; landfill construction, closure, and post-closure plans, and specifications; and long-term monitoring plans. The NYSDEC requirements (<u>only</u>) for a C&D landfill are less stringent than for a solid waste landfill, but the types of materials accepted in a C&D landfill are more stringent.

Part 360 defines solid waste as "…Any garbage, refuse, sludge from a wastewater treatment plant, water supply treatment plant, or air pollution control facility and other discarded materials…" Specific examples of solid wastes include: septage, scrap metal, furniture, toys, domestic refuse, discarded appliances and vehicles, and construction and demolition debris.

The regulation defines construction and demolition debris as "…Uncontaminated solids waste resulting from the construction, remodeling, repair, and demolition of utilities, structures and roads, and uncontaminated solid waste resulting from land clearing." Specific examples of C&D wastes include: bricks, concrete and other masonry materials, soil, rock, land clearing debris, asphaltic pavement, glass, plastics that are not sealed to conceal other wastes, and empty ten-gallon or less buckets.

Thus, a solid waste landfill may accept C&D wastes, as well as other solid wastes, but a C&D landfill may accept only C&D wastes.

In addition, NYSDEC may consider existing disposal sites to be C&D debris if the waste present is similar in nature and content to C&D debris.

8.6.1 Consolidation and Closure

If landfill closure on-site is preferred, the present landfill areas could be consolidated into one solid waste landfill to minimize the surface area that would have restricted future use. There are two sub-alternatives possible: (A) land filling only existing material and (B) land filling existing material plus the material from buildings that may be demolished from Parcel 2.

8.6.1.1 ***Using Existing Debris.*** This alternative would landfill only the material currently existing into one on-site solid waste landfill. Given the definition of a solid waste, if all materials in the on-site landfill areas were placed into one area, the resulting landfill would be a solid waste landfill. However, if only C&D materials were placed into the on-site landfill and unacceptable materials were separated and removed from the site, the resulting landfill could be classified as C&D and would have less stringent requirements than a solid waste landfill.

8.6.1.2 ***Using Existing Debris & Demolished Building Material.*** This alternative would involve a much larger area necessary for the landfill than if only on-site material was placed into the landfill. The material from the demolished buildings in addition to the existing debris would lead to a larger area of restricted future use. Similar to Section 8.3.1.1, if the material placed into the on-site landfill was C&D and not solid waste, the requirements of the resulting landfill would be less.

8.6.2 **Impact on Future Development of the Site**

There may be public opposition to on-site disposal of the material (either existing or from the demolished buildings), especially if the future use of the property or portions of the property involve youth recreation. Such opposition would lengthen the time to obtain permits from NYSDEC to establish the new landfill.

Post-closure, a solid waste landfill must be maintained through grass cuttings, erosion control (quarterly inspections and inspections after major rain storm events), soil gas (methane) monitoring and control, and local groundwater monitoring. These maintenance and monitoring practices must be maintained for at least the minimum 30 year post-closure time period, unless NYSDEC grants approval to eliminate some or all of these requirements.

However, if the site contains an on-site C&D landfill, there are fewer requirements for the closing of this type of landfill. After the landfill is closed per C&D landfill regulations, the surface may be used for many recreational uses (e.g., golf course).

Pending NYSDEC approval, the demolished building material and the soils surrounding that buildings that may contain higher concentrations of lead and other metals, may be used to form the hills in a future golf course, if a specified amount of clean fill is placed over the top.

8.7 COSTS OF ALTERNATIVES

On-site landfill closure is not a recommended alternative for this site due to the pending site usages and likely public opposition. Thus this alternative has not been included in the cost table, Table 8-1.

Given the unknown future uses at this property, the following cost estimates are based on what is currently known and assumptions about what remedial measures may be taken at the different areas.

The costs for three alternatives have been calculated. In each alternative, efforts will be made during clearing and grubbing to retain larger trees because the future use of the site is not known. Most areas will require varying amounts of clearing and grubbing; certain areas (Compost Piles 1 and 2 and the areas with the LBP-contaminated soils) will not require clearing and grubbing. Once the area is cleared and grubbed, the material would be excavated and loaded onto trucks. The transportation cost includes transporting the material to a local off-site location. The costs of each alternative may be reduced if the Town has trucks and manpower available to complete this work. Disposal costs are dependent on the type of disposal that is assumed for each type of material.

Alternative 1 assumes that the material in Landfills B, B1, A/C, Compost Pile 2, and the sludge material will be removed from the site and recycled. It is assumed that the unprocessed concrete will be recycled at the Town facility, used at a local construction site or crushed and used as a sub-base for parking areas or structures on-site (with no disposal cost). Rubbish will be removed from the site and hauled to a solid waste landfill. Any C&D material will be removed from the site and hauled to a C&D or solid waste landfill. The compost and sludge material is assumed to be acceptable for processing and recycling (with no disposal cost). Once again, the cost for placing the LBP-contaminated soils into the foundations of the Parcel 2 demolished buildings is included in the costs given in Chapter 7.

Alternative 2 includes the same scenarios for Landfills B, B1, A/C, Compost Pile 2, and the sludge material as Alternative 1. However, Alternative 2 assumes that the

TABLE 8-1 (Page 1 of 2)
ROCKLAND PSYCHIATRIC CENTER
REMEDIATION AND DISPOSAL COSTS

Landfill Designation	Type of Material *	Percent of Whole	Area (ft^2)	Ave. Depth (ft)	Volume (cy)	Clear & Grub ($4,625/acre)	Excavate & Load ($10/cy)	Transport ($1.06/ton*mile)***	Disposal ($80/ton)	Total Cost (2002 dollars)
ALTERNATIVE 1: REMEDIATION OF SOLID WASTE, EXCAVATION AND LOADING OF SOILS										
Landfill B	concrete	99	100,238	1.5	5,569	$10,642.76	$55,687.50	$119,533.22	$0.00	$185,863.47
	rubbish	1	1,013	1.5	56	$107.50	$562.50	$362.22	$2,733.75	$3,765.97
	TOTAL	-	101,250	1.5	5,625	$10,750.26	$56,250.00	-	-	**$189,629.45**
Landfill B1	concrete	80	65,700	1.5	3,650	$6,975.72	$36,500.00	$78,347.25	$0.00	$121,822.97
	C&D	10	8,213	1.5	456	$871.97	$4,562.50	$7,181.83	$54,202.50	$66,818.80
	rubbish	10	8,213	1.5	456	$871.97	$4,562.50	$2,938.02	$22,173.75	$30,546.24
	TOTAL	-	82,125	1.5	4,563	$8,719.65	$45,625.00	-	-	**$219,188.01**
Landfill A/C	C&D	10	6,023	2.5	558	$639.49	$5,576.85	$8,778.52	$66,253.00	$81,247.87
	rubbish	10	6,023	2.5	558	$639.49	$5,576.85	$3,591.21	$27,103.50	$36,911.06
	compost	80	48,184	2.5	4,461	$5,115.96	$44,614.81	$25,537.52	$0.00	$75,268.29
	TOTAL	-	60,230	2.5	5,577	$6,394.94	$55,768.52	-	-	**$193,427.22**
Compost Pile 2	C&D	15	1687.5	3.5	219	$0.00	$2,187.50	$3,443.34	$25,987.50	$31,618.34
	compost	85	9562.5	3.5	1,240	$0.00	$12,395.83	$7,095.38	$0.00	$19,491.21
	TOTAL	-	11,250	3.5	1,458	$0.00	$14,583.33	-	-	**$51,109.55**
Sludge Material	sludge	100	44,450	0.5	823	$4,719.50	$8,231.48	$11,779.25	$0.00	$24,730.23
	TOTAL	-	44,450	0.5	823	$4,719.50	$8,231.48	-	-	**$24,730.23**
			ALTERNATIVE 1 SUBTOTAL:			**$30,584.35**	**$180,458.33**	**$268,587.77**	**$198,454.00**	**$678,084.45**
									Contingencies (8%)	**$54,246.76**
									Engineering Design (10%)	**$73,233.12**
									Construction Monitoring (5%)	**$36,616.56**
									ALTERNATIVE 1 TOTAL:	**$842,180.89**

ROCKLAND PSYCHIATRIC CENTER
REMEDIATION AND DISPOSAL COSTS

Landfill Designation	Type of Material *	Percent of Whole	Area (ft^2)	Ave. Depth (ft)	Volume (cy)	Clear & Grub ($4,625/acre)	Excavate & Load ($10/cy)	Transport ($1.06/ton*mile)***	Disposal ($80/ton)	Total Cost (2002 dollars)
ALTERNATIVE 2: REMEDIATION OF SOLID WASTE AND REMEDATION OF SOILS										
Lead-Contaminated	soil	100	24,110	0.5	446	$0.00	$4,464.81	$7,666.98	$79,563.00	$91,694.79
Soil (Parcel 5 & single	TOTAL	-	24,110	0.5	446	$0.00	$4,464.81	-	-	**$91,694.79**
family units in Parcel 6)										
Lead-Contaminated	soil	100	22,998	0.5	426	$0.00	$4,258.89	$7,313.36	$44,846.10	$56,418.35
Soil (Parcel 6 -	TOTAL	-	22,998	0.5	426	$0.00	$4,258.89	-	-	**$56,418.35**
Staff Court)										
Lead-Contaminated	soil	100	3,495	0.5	65	$0.00	$647.22	$1,111.41	$6,815.25	$8,573.88
Soil (Parcel 6 -	TOTAL	-	3,495	0.5	65	$0.00	$647.22	-	-	**$8,573.88**
Director's House)										
			ALTERNATIVE 2 SUBTOTAL:			**$30,584.35**	**$189,829.26**	**$284,679.52**	**$329,678.35**	**$834,771.48**
									Contingencies (8%)	**$66,781.72**
									Engineering Design (10%)	**$90,155.32**
									Construction Monitoring (5%)	**$45,077.66**
									ALTERNATIVE 2 TOTAL:	**$1,036,786.18**
ALTERNATIVE 3: REMEDIATION OF COMPOST PILE 1										
Compost Pile 1	concrete	10	7,215	12	3,207	$0.00	$32,066.67	$68,831.10	$0.00	$100,897.77
	C&D	60	43,290	12	19,240	$0.00	$192,400.00	$302,856.84	$2,285,712.00	$2,780,968.84
	compost	30	21,645	12	9,620	$0.00	$96,200.00	$55,064.88	$0.00	$151,264.88
	TOTAL	-	72,150	12	32,067	$0.00	$320,666.67	-	-	**$3,033,131.49**
			ALTERNATIVE 3 SUBTOTAL:			**$30,584.35**	**$510,495.93**	**$711,432.34**	**$2,615,390.35**	**$3,867,902.97**
									Contingencies (8%)	**$309,432.24**
									Engineering Design (10%)	**$417,733.52**
									Construction Monitoring (5%)	**$208,866.76**
									ALTERNATIVE 3 TOTAL:	**$4,803,935.49**

* - Type of Material: Compost, Concrete, Rubbish, Sludge.
** - Transport cost assumes material being hauled is soil (density of 120 lb/ft^3).
*** - Transportation assumed to be 10 miles for costing purposes.

LBP-contaminated soil from Parcels 5 and 6 will have to be transported and disposed of at on off-site facility.

Alternative 3 is the same as Alternative 2, except that the material at Compost Pile 1 is included. The material at Compost Pile 1 was not included in the previous alternatives because it is difficult to make an assumption about the type and amount of materials that are present at this location. It is believed that there is a large volume of fill material in this location, but the composition of it is unknown. Compost Pile 1 is an area where material was used as fill; the material was not placed on the ground surface in piles, as it was in the other areas. The amount and types of material was estimated by observation only, there were no borings installed to confirm that the volume of C&D material estimated is actually present.

Because of the potential very high cost of moving this material, it is recommended that the existing configuration be maintained if at all possible.

REFERENCES

1. Phase I Environmental Site Assessment, Rockland Psychiatric Center – Prepared by PSI for Empire State Development Corporation, October 1996

2. Rockland Psychiatric Center, Options for Reuse – Prepared by Kasler Assoc., Craig Whitaker Architects, Kenneth LeBrun Consultants for Town of Organgetown, April 1998

3. Hudson River Region Facilities Profile – Office of Mental Health, January 1990

4. Report of Solid Waste Disposal Practices, Rockland Psychiatric Center, December 3, 1981

5. Study to Identify Possible Hazardous Waste Disposal Sites Within and adjacent to the Borders of Rockland County, NY – Prepared by Waste Management Group, Inc., September 1981

6. Report on Day Care Center Lead-Based Paint Risk Assessment – Prepared by LMS for Facilities Development Corp. (DASNY), May 1995

7. RPC Groundwater Investigation, Stage 1 (April 1998), Stage 2 (October 1998), Stage 3 (1999), and Stage 4 (March 2000) – Prepared by LMS for DASNY

8. Correspondence between Alan Fuchs, PE, NYSDEC and Scott Bard, OMH on Rockland Psychiatric Center Solid Waste Disposal Sites – August 1998 to November 1999

9. Quarterly Progress Report (February 2002 for Bedrock Wells located at Rockland Psychiatric Center) – Prepared by EA Environmental, for DASNY, April 12, 2002

10. Construction Summary and Redline Drawing for Perchloroethene Recovery Sump Upgrade, RPC, Orangeburg, NY – Prepared by EA Environmental, for DASNY, June 20, 2002

11. Rockland Psychiatric Center, Spill Prevention Control and Countermeasure (SPCC) Plan – Prepared by LMS for Office of Mental Health, 1999.

12. Letter Report to DASNY – RPC Radon Sampling – Prepared by LMS, June 1996

APPENDIX A

(not included in this bound copy)

APPENDIX B

(not included in this bound copy)

APPENDIX C

New York State
Office of Mental Health

James L. Stone, MSW, CSW, Commissioner

Capital District Psychiatric Center – Units Q & R
75 New Scotland Avenue, Albany, New York 12208

October 19, 1999

Mr. Alan A. Fuchs, P.E.
Regional Solid Waste Engineer
NYS Department of
Environmental Conservation
Region 3
21 South Putt Corners Road
New Paltz, NY 12561-1696

Re: Rockland Psychiatric Center
Solid Waste Disposal Sites
(OMH Project No. F917930)

Dear Mr. Fuchs:

This is in response to your letter of September 2, 1999, in which you request the status of the sites not addressed in the 5/13/99 Investigation Report For Landfill and Waste Disposal Sites, prepared by Bergmann Associates.

I have been informed by Rockland P. C. personnel that required cleanup work has been completed at sites 2, 3, 4, 7 and 11. Work is still required at site 1, and removal of surface debris at site 8 continues in preparation for the required Part 360 closure. Site 1 has been problematic in cleanup because of the sharp metal present from the demolished metal shed. Site 5 - mulch pile and site 6 - wood chips may not require cleanup. Site 9 - sewage rakings requires no further action as stated in your letter of 9/2. Sites 10, 12 and 15 are minor debris that will be removed if it hasn't been already.

To ensure that work is completed to your Department's satisfaction, a conference call or site visit can be scheduled to review work completed to date. As far as a schedule for the closure of the landfill - site 8, and resolution of the ashfill - sites 13 and 14, OMH is on target with the schedule prepared for the Environmental Audit as follows:

Retain consultant:	10/23/98
Submit Investigation Report	5/26/99
Submit Final Closure Design	12/1/99 * now expected 3/1/2000
Start Construction	5/1/2000 * now expected 7/1/2000
Complete Construction	11/1/2000 * now expected 12/31/2000

I have asked DASNY to have the consultant revise the investigation report to incorporate your concerns and to commence the additional investigations required and the closure design. Work will be progressed as soon as possible.

Please contact me if further information is required, at 518-473-5823. Thank you for your assistance.

cc: D. Beemer
R. Gecsedi
J. Baxter/Bergmann
S. Hommel
M. Labate
J. Gewirtzman
R. Ostrom
J. Benz

Sincerely,

A. Scott Bard

A. Scott Bard
Environmental Compliance
Program Director
BUREAU OF CAPITAL OPERATIONS

New York State Department of Environmental Conservation
Division of Solid & Hazardous Materials, Region 3
21 South Putt Corners Road, New Paltz, NY 12561-1696
Telephone: (914) 256-3144 FAX (914) 255-3414
Website:www.dec.state.ny.us E-mail: aafuchs@gw.dec.state.ny.us

To: John Berry
From: Scott Bard
11/9/99
- Comments
MO

99 NOV -8 PM 4:10

John P. Cahill
Commissioner

November 2, 1999

A. Scot Bard
Environmental Compliance
Bureau of Capital Operations
Office of Mental Health
75 New Scotland Ave.
Albany NY 12208

RE: Rockland Psychiatric Center Solid Waste Disposal Sites

Dear Mr. Bard,

This is in response to your letter of October 19, 1999 which responded to the Department's September 2, 1999 letter. The time frames outlined in your letter are acceptable to the Department. This schedule will enable the solid waste sites at Rockland Psychiatric Center to be completely closed by December 31, 2000. To reiterate the status I have listed the Departments understanding of the sites below:

A. Sites 2, 3, 4, 7 and 11 have been cleaned up. Department staff will stop by at some future date to inspect and confirm that these sites are complete.

B. Site 1 is still being worked on. The Department expects that clean up of this will be completed no later than 12/31/00.

C. Site 5, 6 & 9 required no further action.

D. Site 10, 12, 15 may require additional removal. The Department expects that clean up of this will be completed no later than 12/31/00.

E. Site 8, 13, and 14 require additional work. The Department expects to receive a revised closure design by March 1, 2000 which addresses the Department's comments. The closure work should be completed by December 31, 2000.

If you have any questions pertaining to the above status and expectations please contact me at (914) 256-3137.

Sincerely,

Alan A. Fuchs

Alan A. Fuchs
Regional Solid Waste Engineer

New York State Department of Environmental Conservation
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John P. Cahill
Commissioner

November 30, 1999

A. Scot Bard
Environmental Compliance
Bureau of Capital Operations
Office of Mental Health
75 New Scotland Ave.
Albany NY 12208

99 DEC -5 AM 9:10

RE: Rockland Psychiatric Center Investigation Report

Dear Mr. Bard:

The Department of Environmental Conservation (Department) inspected the Rockland Psychiatric Center sites on November 16, 1999 in order to confirm the status of sites 2,3,4,7 and 11 as stated in my November 2, 1999 letter to you. The results of that inspection are listed below:

Site 2: This is a concrete dump with a few pieces of metal remaining. The visible metal should still be removed.

Site 3: The material causing the violation was removed.

Site 4: The material causing the violation was removed.

Site 7. The material causing the violation was removed.

Site 11: The site looked to be cleaned up but was difficult to locate. In addition, a new site 11a was noted with waste disposed at it. This site was located in the north western corner of the property just off the fields. There is actually a small road/trail made by vehicles. Please take a look at and see if material can be removed.

The Department awaits your revised closure design which is scheduled to be completed by March 1, 2000. If you have any questions pertaining to the above information please contact me at (914) 256-3137.

Sincerely,

Alan A. Fuchs

Alan A. Fuchs PE
Regional Solid Waste Engineer

gwcc: A Klauss