PROPOSED REMEDIAL ACTION PLAN
Cortland Remote Holder Site
City of Cortland, Cortland County, New York
Site No. 712012

February 2010

Prepared by:
Division of Environmental Remediation
New York State Department of Environmental Conservation

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SECTION 1: SUMMARY AND PURPOSE OF THE PROPOSED PLAN

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), is proposing a remedy for the above referenced site. The disposal of hazardous waste at the site has resulted in threats to public health and the environment that would be addressed by the remedy proposed by this Proposed Remedial Action Plan (PRAP). The disposal of hazardous wastes at this site, as more fully described in Sections 5 of this document, have contaminated various environmental media. The proposed remedy, discussed in detail in Section 8, is intended to attain the remedial action objectives identified for this site in Section 6 for the protection of public health and the environment. This PRAP identifies the preferred remedy, summarizes the other alternatives considered, and discusses the reasons for the preferred remedy. The Department will select a final remedy for the site only after careful consideration of all comments received during the public comment period.

The Department has issued this PRAP in accordance with the requirements of New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York, 6 NYCRR Part 375. This document is a summary of the information that can be found in the site related reports and documents which are available for review at the document repositories. The public is encouraged to review the reports and documents, which are available at the following repositories:

Cortland Free Library
32 Church Street
Cortland, New York 13045
Monday - Thursday 9:30 PM - 8:00 PM
Friday 9:30 AM - 5:30 PM,
Saturday 9:30 AM - 4:30 PM

NYSDEC Albany Office
Mr. William Ports
625 Broadway
Albany, New York 12233-7014
(518) 402-9662
Monday - Friday 8:30 AM - 4:30 PM

NYSDEC Region 7
615 Erie Boulevard West
Syracuse, New York 13204-2400
Monday - Friday 8:30 AM - 4:30 PM

The Department seeks input from the community on all PRAPs. A public comment period has been set from February 16, 2010 to March 18, 2008 to provide an opportunity for public participation in the remedy selection process. A public meeting is scheduled for March 4, 2010 at the St. Marys School beginning at 7:00 PM.

At the meeting, the findings of the remedial investigation (RI) and the feasibility study (FS) will be presented along with a summary of the proposed remedy. After the presentation, a question-and-answer period will be

held, during which verbal or written comments may be submitted on the PRAP. Written comments may also be sent to Mr. Ports at the following address: NYSDEC, 625 Broadway, Albany, New York, 12233-7014 through March 18, 2008.

The Department may modify the proposed remedy or select another of the alternatives presented in this PRAP, based on new information or public comments. Therefore, the public is encouraged to review and comment on all of the alternatives identified here. Comments will be summarized and addressed in the responsiveness summary section of the Record of Decision (ROD). The ROD is the Department's final selection of the remedy for this site.

SECTION 2: SITE DESCRIPTION AND HISTORY

2.1: Location and Description

The Cortland Remote Holder Site is located in the City of Cortland on Charles Street (see Figures 1and 2). The site is less than a quarter acre in area, and consists of two adjoining land parcels and part of the city street, in an urban residential setting. The parcels are currently unoccupied residential properties at 43 and 45 Charles Street. The site is surrounded on three sides by residential properties and the St. Mary's School is located across Charles Street to the west. The single family residences that formerly existed on the site were demolished in December 2009.

This site was the location of a former remote gas holder, which was a tank used for storage prior to distribution of manufactured gas that was generated elsewhere. The tank foundation was likely set below the soil surface. The underlying soils consist primarily of clayey silt with cobbles, gravel and fill material (See Figure 3). The fill material consists of ash, bricks, firebrick, coal, glass, bottles and cinders and extends to approximately 10 to 13 feet below the ground surface. A thin darkly stained silt and ash layer (0.2 to 1.0 foot thick) was present from 9 to 12 feet below ground surface in some soil borings. Groundwater at the site was observed at a depth of about 14 to 15 feet, with flow towards the east.

2.2: Operational/Disposal History

In 1858 the Homer & Cortland Gas Light Company constructed and operated a manufactured gas plant (MGP) at 216 South Main Street, in the Village of Homer, New York, just north of the City of Cortland. The plant made combustible gas from coal and operated from approximately 1858 until 1935. The gas was provided to homes, businesses and industries in much the same way natural gas is used today. In 1867 the Homer & Cortland Gas Light Company acquired property at the Charles Street location to construct a 22,000 cubic foot gas holder as part of their gas distribution network. The former tank was called a remote gas holder. Sometime between 1915 and 1926 the former remote gas holder was removed, and houses were constructed at 43 and 45 Charles Street. In 2007 NYSEG acquired the 43 and 45 Charles Street properties from the previous owners.

2.3: Remedial History

Between 2005 and 2007, NYSEG conducted a Preliminary Site Assessment (PSA), which involved a geophysical survey; test trenching; monitoring well installation; groundwater and soil sampling; and sub-slab soil vapor and indoor air monitoring of the two homes at the site.

Sub-slab soil vapor and indoor air monitoring performed found that volatile organic compounds were present at levels that were consistent with homes not affected by environmental contamination. The Department and NYSDOH determined that no action was needed at that time to address the potential for soil vapor intrusion in the two residences. The PSA was completed in November 2007.

SECTION 3: LAND USE

The Department may consider the current, intended, and reasonable anticipated future land use of the site and its surroundings when assessing the nature and extent of contamination. For this site alternatives that may restrict the use of the site to restricted residential criteria as described in Part 375-1.8 (g) are being evaluated in addition to unrestricted SCGs because, the two properties are currently zoned by the City of Cortland as R-4 which would allow multifamily dwellings; personal and professional services; single-family and two-family dwellings. The future use will remain consistent with the City of Cortland's R-4 designation. The Department will evaluate the unrestricted and restricted residential Soil Cleanup Objectives found in Part 375-6.8(b) in assessing the nature and extent of contamination.

A comparison of the appropriate SCGs for the identified land use against the unrestricted use SCGs for the site contaminants is included in the Tables for the media being evaluated in section 5.1.2.

SECTION 4: ENFORCEMENT STATUS

Potentially Responsible parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

The Department and the New York State Electric and Gas (NYSEG) entered into a multi-site Consent Order on March 30, 1994 and subsequently modified that order on March 26, 2007 to include the Cortland Remote Holder Site. The Order obligates the responsible parties to implement a full remedial program.

SECTION 5: SITE CONTAMINATION

A remedial investigation has been conducted to determine the nature and extent of contamination and to evaluate the alternatives for addressing the significant threats to human health and the environment.

5.1: Summary of the Remedial Investigation

The purpose of the Remedial Investigation (RI) was to define the nature and extent of any contamination resulting from previous activities at the site. The RI was conducted between May 2008 and March 2009. The field activities and findings of the investigation are described in the RI Report.

The RI included collecting and analyzing surface and subsurface soil samples to further define the nature and extent of contamination resulting from the operation of the former remote gas holder. This information further delineated the soil contamination beyond the limits identified in the Preliminary Site Assessment Report. Groundwater samples and soil vapor samples were taken during the site characterization.

The following general activities are conducted during an RI:

- Soil borings,

- Sampling of surface and subsurface soils,
- Sampling of groundwater,
- Human Health Exposure Assessments.

5.1.1: Standards, Criteria, and Guidance (SCGs)

The remedy must conform with promulgated standards and criteria that are directly applicable, or that are relevant and appropriate. The selection of a remedy must also take into consideration guidance, as appropriate. Standards, Criteria and Guidance are hereafter called SCGs.

To determine whether the contaminants identified in various media are present at levels of concern, the data from the RI were compared to media specific SCGs. The Department has developed SCGs for groundwater, surface water, sediments, and surface and subsurface soil. The NYSDOH has developed SCGs for drinking water and soil vapor intrusion. The tables found in the following Sections list the applicable SCG in the footnotes. For a full listing of all SCGs see: http://www.dec.ny.gov/regulations/61794.html

Based on the RI results, in comparison to the SCGs and potential public health and environmental exposure routes, certain media and areas of the site require remediation. These are summarized in Section 5.1.2. More complete information can be found in the RI Report.

5.1.2: Nature and Extent of Contamination

This section describes the findings of the Remedial Investigation. As described in the RI report, waste/source materials were identified at the site and are impacting groundwater and soil.

This section describes the findings for all environmental media that were evaluated. As described in the RI report, soil samples were collected to further characterize the nature and extent of contamination beyond the information gathered in the PSA.

For each media, a table summarizes the findings of the investigation. The tables present the range of contamination found at the site in the media and compares the data with the applicable SCGs for the site. The contaminants are arranged into four categories; volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides/ polychlorinated biphenyls (PCBs), and inorganics (metals). For comparison purposes the SCGs are provided for each medium that allows for unrestricted use. For soil, if applicable, the Restricted Use SCOs identified in Section 3 are also presented.

Groundwater

Groundwater at the site was observed to occur at a depth of about 14 to 15 feet, with flow to the east with a low horizontal gradient. The first set of groundwater monitoring results, from the site characterization, showed no detections of site related contaminants. The second set of results identified one well (PZ-3) with detections of several site related contaminants at low levels. This monitoring well sample was more turbid than the other groundwater samples, suggesting that the contamination is associated with particles of soil entrained in the sample. The groundwater contaminants found were not found in the down gradient wells, which indicates that the contamination is not moving beyond the area of the former remote gas holder.

Table 1 - Groundwater			
Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
SVOCs			
Benzo(a)anthracene	0.27	0.002	1/2
Benzo(a)pyrene	0.27	ND	1/2
Benzo(k)fluoranthene	0.27	0.002	1/2
Indeno(1,2,3-cd)pyrene	0.34	0.002	1/2

a - ppb: parts per billion, which is equivalent to micrograms per liter, ug/L, in water.
b- SCG: Standard Criteria or Guidance - Ambient Water Quality Standards and Guidance Values (TOGs 1.1.1), 6 NYCRR Part 703, Surface water and Groundwater Quality Standards, and Part 5 of the New York State Sanitary Code (10 NYCRR Part 5).

Based on the findings of the RI, the presence of the remote holder has not resulted in the contamination of groundwater.

Soil

Surface and subsurface soil samples were collected at the site during the RI. Surface soil samples were collected from a depth of 0-2 inches to assess direct human exposure. Figure 4 shows the surface soil locations which exceed the unrestricted soil cleanup objectives for PAHs and metals. The PAHs and metals that exceeded their SCOs for unrestricted use in on-site surface soil samples were benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h) anthracene, indeno(1,2,3-cd) pyrene, lead and mercury. Subsurface soil samples were collected from a depth of 2 - 20 feet to assess soil contamination impacts to groundwater. The presence of a darkly stained ash and silt layer was found 9 to 12 feet below the ground surface. The concentrations of SVOCs in this layer ranged 4.3 to 7,300 ppm. See Figure 3. The results indicate that soil at the site exceeds the unrestricted and restricted residential SCOs for volatile and semi-volatile organics and metals.

Table 2 - Soil					
Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCG[b] (ppm)	Frequency Exceeding Unrestricted SCG	Restricted Residential SCG[c] (ppm)	Frequency Exceeding Restricted Residential SCG
Metals					
Arsenic	2.3-25	13	2/74	16	2/74
Barium	23.9-404	350	1/74	400	1/74
Cadmium	ND-4.2	2.5	1/74	4.3	0/74
Chromium, trivalent	5.8-77	30	1/74	180	0/74
Copper	7.3-72.9	50	1/26	270	0/26

Lead	3.6-3320	63	29/74	400	3/74
Total Mercury	ND-2.3	0.18	16/74	0.81	2/74
SVOCs					
Dibenzofuran	ND-200	7	8/93	59	3/93
Acenaphthene	ND-230	20	3/93	100	1/93
Acenapthylene	ND-150	100	2/93	100	2/93
Anthracene	ND-620	100	4/93	100	4/93
Benzo(a)anthracene	ND-670	1	38/93	1	38/93
Benzo(a)pyrene	ND-410	1	36/93	1	36/93
Benzo(b)fluoranthene	ND-610	1	39/93	1	39/93
Benzo(g,h,i)perylene	ND-140	100	2/93	100	2/93
Benzo(k)fluoranthene	ND-200	0.8	27/93	3.9	12/93
Chrysene	ND-650	1	36/93	3.9	18/93
Dibenz(a,h)anthracene	ND-69	0.33	30/93	0.33	30/93
Fluoranthene	NA-150	100	6/93	100	6/93
Fluorene	ND-370	30	5/93	100	2/93
Indeno(1,2,3-cd)pyrene	ND-160	0.5	40/93	0.5	40/93
Naphthalene	ND-160	12	6/93	100	2/93
o-Cresol	ND-0.94	0.33	2/74	100	0/74
p-Cresol	ND-4.9	0.33	4/74	100	0/74
Phenanthrene	ND-1000	100	7/93	100	7/93
Phenol	ND-2.4	0.33	2/74	100	0/74
Pyrene	ND-1000	100	6/93	100	6/93
VOCs					
Acetone	ND-0.088	0.05	1/63	100	0/63
Benzene	ND-.12	0.06	1/76	4.8	0/76
Ethylbenzene	ND-53	1	1/76	41	1/76
Xylene (mixed)	ND-640	0.26	1/76	100	1/76

a - ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;
b - SCG: Part 375-6.8(a), Unrestricted Soil Cleanup Objectives.
c - SCG: Part 375-6.8(b), Restricted Residential Soil Cleanup Objectives.

The primary soil contaminants are polycyclic aromatic hydrocarbons (PAHs) associated with residues from the operation of the former remote gas holder. As noted on Figure 4, the primary soil contamination is associated with the former remote gas holder and is found in surface and sub-surface soils depths ranging 9 to 12 feet below ground surface. PAHs and metals surface soil contamination was found above the SCOs for unrestricted use in on-site surface soil samples.

Based on the findings of the Remedial Investigation, the disposal of hazardous waste has resulted in the contamination of soil. The site contaminants identified in soil which are considered to be the primary contaminants of concern, to be addressed by the remedy selection process are, polycyclic aromatic hydrocarbons (PAHs).

Soil Vapor Intrusion

The evaluation of the potential for soil vapor intrusion resulting from the presence of site related soil or groundwater contamination was evaluated by the sampling of soil vapor, sub-slab soil vapor under structures, and indoor air inside structures. At this site due to the presence of buildings in the impacted area a full suite of samples were collected to evaluate whether soil vapor intrusion was occurring.

Sub-slab soil vapor and indoor air monitoring performed found that volatile organic compounds were present at levels that were consistent with homes not affected by environmental contamination. The Department and NYSDOH determined that no action was needed at that time to address the potential for soil vapor intrusion in the two residences.

No site-related soil vapor contamination of concern was identified during the Site Characterization. Therefore, no remedial alternatives need to be evaluated for soil vapor.

5.2: Interim Remedial Measures

An interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before issuance of the Record of Decision.

There were no IRMs performed at this site during the RI.

5.3: Summary of Human Exposure Pathways:

This section describes the current or potential human exposures (the way people may come in contact with contamination) that may result from the site contamination. A more detailed discussion of the human exposure pathways can be found in the RI report available at the document repository. An exposure pathway describes the means by which an individual may be exposed to contaminants originating from a site. An exposure pathway has five elements: [1] a contaminant source, [2] contaminant release and transport mechanisms, [3] a point of exposure, [4] a route of exposure, and [5] a receptor population.

Contaminant release and transport mechanisms carry contaminants from the source to a point where people may be exposed. The exposure point is a location where actual or potential human contact with a contaminated medium may occur. The route of exposure is the manner in which a contaminant actually enters or contacts the body (e.g., ingestion, inhalation, or direct contact). The receptor population is the people who are, or may be, exposed to contaminants at a point of exposure.

An exposure pathway is complete when all five elements of an exposure pathway exist. An exposure pathway is considered a potential pathway when one or more of the elements currently does not exist, but could in the future.

No complete exposure pathways exist at this site. At this site the potential exposure pathways are:

- Dermal contact with contaminated soil;
- Incidental ingestion of contaminated soils; and
- Inhalation of contaminated dust.

Exposure to contaminated groundwater is unlikely because the area is served by public water. However, the potential for exposure to contaminated groundwater in the future, although remote due to the limited impact to groundwater, exists if wells were to be installed on-site or construction was to occur below the groundwater table. Site-related contamination was detected in surface and subsurface soils. Redevelopment of the site or subsurface utility work in the future could bring workers into contact with residual contaminated sub-surface material.

The soil vapor intrusion investigation conducted at the site indicated that there is no complete pathway to on-site residences via soil vapor intrusion.

5.4: Summary of Environmental Assessment

This section summarizes the assessment of existing and potential future environmental impacts presented by the site. Environmental impacts may include existing and potential future exposure pathways to fish and wildlife receptors, wetlands, groundwater resources, and surface water.

No complete or potentially complete environmental exposure pathways or ecological risks were identified as part of the investigations. Based on knowledge of the site and its location in an urban residential setting with fully developed surrounding property uses no fish and wildlife resources were identified on the site, adjacent to or down gradient from the site. Furthermore, the minor soil contamination identified does not extend beyond the existing site and adjacent street. Based on the site setting a Fish and Wildlife Impact Analysis was not performed at this site.

Groundwater resources at the site exist but only a low level of contamination was identified in a single well on the site. The groundwater contaminants found were not found in the down gradient wells which indicates that contamination is not moving beyond the area of the former remote gas holder.

Site related contamination is not impacting groundwater.

SECTION 6: SUMMARY OF THE REMEDIATION OBJECTIVES

The objectives for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375. The goal for the remedial program is to restore the site to pre-disposal conditions to the extent feasible. At a minimum, the remedy shall eliminate or mitigate all significant threats to public health and the environment presented by the contamination identified at the site through the proper application of scientific and engineering principles.

The remedial objectives for this site are:

Public Health Protection

Soil

- Prevent inhalation, ingestion and direct contact with contaminated soil.

SECTION 7: SUMMARY OF THE EVALUATION OF ALTERNATIVES

To be selected the remedy must be protective of human health and the environment, be cost-effective, comply with other statutory requirements, and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. Potential remedial alternatives for the Site were identified, screened and evaluated in the feasibility study report which is available at the document repositories established for this site.

A summary of the remedial alternatives that were considered for this site is presented below. Cost information is presented in the form of present worth, which represents the amount of money invested in the current year that would be sufficient to cover all present and future costs associated with the alternative. This enables the costs of remedial alternatives to be compared on a common basis. As a convention, a time frame of 30 years is used to evaluate present worth costs for alternatives with an indefinite duration. This does not imply that operation, maintenance, or monitoring would cease after 30 years if remediation goals are not achieved.

7.1: Description of Remedial Alternatives

The following alternatives were considered to address the contaminated media identified at the site as describe in Section 5:

Alternative 1: No Action

The No Action Alternative is evaluated as a procedural requirement and as a basis for comparison. This alternative leaves the site in its present condition and does not provide any additional protection to public health and the environment.

Alternative 2: Site Management

The Site Management Alternative requires only institutional controls for the site. This alternative includes institutional controls, in the form of an environmental easement, fence and a site management plan, necessary to protect public health from any contamination identified in on-site and off-site soil. Figure 5 shows the area addressed by this alternative. Access to the site would be controlled by the fence which would restrict its use. The site would remain vacant and would not be used for a designated purpose.

Present Worth: $113,000
Capital Cost: $66,000
Annual Costs: $3,000

Alternative 3: Surface Soil Removal, Cover, Institutional Controls

This alternative includes addressing surface soil to allow placement of a soil or asphalt cover system. Surface soil would either be removed for offsite disposal or consolidated on-site beneath a cover as appropriate. The soil cover system for any exposed surface soil consists of a demarcation layer, 18 inches of clean fill and 6 inches of clean topsoil meeting Part 375 restricted residential use SCOs with vegetation. The paved cover option consists of placing an asphalt or concrete cover at least 6 inches thick. This alternative includes institutional controls, in the form of an environmental easement and a site management plan to protect public health from any contamination identified in the on-site soil. The off-site (Charles Street) subsurface soil contamination would be addressed in the site management plan. This alternative considers the anticipated future use of the site which is expected to be open space. Figure 6 shows the area to be covered by the soil and asphalt cover system.

Present Worth (Grass-Asphalt):.....$296,000-$291,000
Capital Cost: .....$249,000-$251,000
Annual Costs:.....$3,000-$2,600

Alternative 4: On-Site Soil Removal, Institutional Controls

This alternative includes soil removal to meet predisposal conditions by achieving the unrestricted use SCOs on-site. The off-site soils (Charles Street) would be addressed by a site management plan. The estimated volume of soil excavated would be approximately 1,350 cubic yards. Excavated areas would be backfilled with soil meeting Part 375 unrestricted use SCOs. The excavation area for this alternative is shown on Figure 8 as the On-Site Excavation Area.

Present Worth: $651,000
Capital Cost: $651,000
Annual Costs:.....$0

Alternative 5: In Situ Treatment On-Site Soils, Institutional Controls

This alternative would include treatment of on-site soils utilizing solidification to treat on-site soil exceeding restricted residential use SCOs. This alternative includes institutional controls, in the form of an environmental easement and a site management plan, necessary to protect public health from any contamination identified in the on-site and off-site soil. The site use would be limited to restricted residential because contamination would remain. Off-site soil contamination would be addressed by a site management plan. This is the same area addressed in Alternative 4 and is shown on Figure 7.

Present Worth: $762,000
Capital Cost: $715,000
Annual Costs:.....$3,000

Alternative 6: Restoration to Pre-Disposal or Unrestricted Conditions

This alternative achieves all of the SCGs discussed in Section 5.1.1 and soil meets the unrestricted soil clean objectives listed in Part 375-6.8 (a). This alternative includes excavation and off-site disposal of all waste and soil contamination above the unrestricted soil cleanup objectives, both on-site and off-site. The remedy will not rely on

engineering or institutional controls to prevent future exposure. There is no site management, no restrictions or institutional controls and no periodic review. Figure 8 shows the area addressed by this alternative.

Capital Cost: $809,000

7.2 Evaluation of Remedial Alternatives

The criteria to which potential remedial alternatives are compared are defined in 6 NYCRR Part 375, which sets forth the requirements for the remediation of inactive hazardous waste disposal sites in New York. A detailed discussion of the evaluation criteria and comparative analysis is included in the feasibility study.

The first two evaluation criteria are termed "threshold criteria" and must be satisfied in order for an alternative to be considered for selection.

1. Protection of Human Health and the Environment. This criterion is an overall evaluation of each alternative's ability to protect public health and the environment.

2. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether a remedy will meet environmental laws, regulations, and other standards and criteria. In addition, this criterion includes the consideration of guidance which the Department has determined to be applicable on a case-specific basis.

The next six "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies.

3. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation. If wastes or treated residuals remain on-site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the engineering and/or institutional controls intended to limit the risk, and 3) the reliability of these controls.

4. Reduction of Toxicity, Mobility or Volume. Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.

5. Short-term Impacts and Effectiveness. The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and/or implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared against the other alternatives.

6. Implementability. The technical and administrative feasibility of implementing each alternative are evaluated. Technical feasibility includes the difficulties associated with the construction of the remedy and the ability to monitor its effectiveness. For administrative feasibility, the availability of the necessary personnel and materials is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, institutional controls, and so forth.

7. Cost-Effectiveness. Capital costs and annual operation, maintenance, and monitoring costs are estimated for each alternative and compared on a present worth basis. Although cost-effectiveness is the last balancing criterion

evaluated, where two or more alternatives have met the requirements of the other criteria, it can be used as the basis for the final decision. The costs for each alternative are presented in the Remedial Alternatives Cost Table 3

Table 3
Remedial Alternative Costs

Remedial Alternative	Capital Cost ($)	Annual Costs ($)	Total Present Worth ($)
1. No Action	0	0	0
2. Site Management	$66,000	$3,000	$113,000
3. Surface Soil Removal, Cover (Grass-Asphalt), Institutional Controls	$249,000-$251,000	$3,000-$2,600	$296,000-$291,000
4. On-Site Soil Removal, Institutional Controls	$651,000	0	$651,000
5. In Situ Treatment On-Site Soils, Institutional Controls	$715,000	$3,000	$762,000
6. Restoration to Pre-Disposal or Unrestricted Conditions	$809,000	0	$809,000

8. Land Use. When cleanup to pre-disposal conditions is determined to be infeasible, the Department may consider the current, intended, and reasonable anticipated future land use of the site and its surroundings in the selection of the soil remedy.

The final criterion, Community Acceptance, is considered a "modifying criterion" and is taken into account after evaluating those above. It is evaluated after public comments on the Proposed Remedial Action Plan have been received.

9. Community Acceptance. Concerns of the community regarding the investigation, the evaluation of alternatives, and the PRAP are evaluated. A responsiveness summary will be prepared that describes public comments received and the manner in which the Department will address the concerns raised. If the selected remedy differs significantly from the proposed remedy, notices to the public will be issued describing the differences and reasons for the changes.

SECTION 8: SUMMARY OF THE PROPOSED REMEDY

The Department is proposing Alternative 3, Surface Soil Removal, Cover and Institutional Controls as the remedy for this site. The elements of this remedy are described at the end of this section.

8.1 Basis for Selection

The proposed remedy is based on the results of the RI and the evaluation of alternatives.

Alternative 3 is being proposed because, as described below, it satisfies the threshold criteria and provides the best balance of the balancing criterion described in Section 7.2. It would achieve the remediation goals for the site by addressing the contaminated surface soils up to a depth of 2 feet. The alternative will evaluate consolidating soils in an area which would be covered with clean soil and vegetation or an asphalt cover. Alternative 3 addresses the surface soils which represent the most significant exposure pathway. This alternative is an effective measure to address the soil contamination at the site.

Alternative 1 (No Action) does not provide protection to public health and the environment with the existing conditions, does not meet the SCGs and does not satisfy RAOs. Alternative 1 was rejected and will not be evaluated further. Because Alternatives 2, 3, 4, 5 and 6 satisfy the threshold criteria, the remaining criteria are particularly important in selecting a final remedy for the site. Alternatives 2 through 5 rely on varying levels of institutional controls and/or a SMP to provide protection to human health and meet RAOs.

Long-term effectiveness is best accomplished by those alternatives involving excavation of the contaminated overburden soils (Alternatives 3, 4 and 6). The major portion of the contamination is in the former footprint of the remote gas holder and the highest levels are located 9 to 12 feet below the surface. Alternative 6 results in removal of almost all of the chemical contamination found in the on-site and off-site areas and eliminates the need for institutional controls for property use restrictions and long-term monitoring. Contamination would remain in the on-site and off-site areas for Alternatives 3, 4, and 5 above SCGs, and future exposure to remaining contamination would be addressed by a soil or asphalt cover and pavement, property use restrictions, site management plan and periodic inspections. For Alternative 2, site management remains effective, but it would be less desirable because the long-term effectiveness and reliability of controlling site access with a fence. Alternative 3 addresses the contaminated soil by installing a cover which effectively reduces potential exposure to surface soil. Alternative 4 would be more effective than Alternative 3 because it removes some of the on-site contaminated soil. Alternative 5, which treats the soil in place, would be effective in the long-term, but less effective as compared to the soil removal in Alternative 6.

Alternative 2 would control potential exposures with institutional controls only and would not reduce the toxicity, mobility or volume of contaminants remaining. Alternative 3, excavation and off-site disposal, would not reduce the toxicity, mobility and volume of on-site waste. Alternative 4 requires the excavation of approximately 1,350 cubic yards of contaminated soil. Alternative 5 would permanently reduce the mobility of contaminants by use of chemical treatment to solidify the soils in place. Alternative 6 would remove a greater volume of contaminated soils which reduces the toxicity, mobility and volume of on-site waste by transferring the material to an approved off-site location. Depending on the off-site disposal facility, the volume of the material would not be reduced for Alternative 6.

Alternatives 2 through 6 all would have short-term impacts to the community and workers which could be controlled, however, Alternative 2 would have the smallest impact. The time needed to achieve the remediation goals is also the shortest for Alternative 2. Alternatives 3, 4, 5 and 6 would take longer to achieve the remediation goals and the short-term impacts increase with the greater potential for short-term impacts occurring with Alternative 5 and 6 because of the greater soil volume for solidification or removal. Alternative 6 would require Charles Street to be shut down while the excavation of contaminated soil in the street. Alternatives 3, 4 and 5 would have progressively greater short-term impacts.

Alternatives 2, 3, 4, 5 and 6 are favorable in that they would be readily implementable technically and administratively. Alternative 3, 4, 5 and 6 would increase the truck traffic on local roads. Alternative 5 would require testing to determine the correct mixture to solidify the soil and this may create some uncertainty regarding the implementability of Alternative 5 due to the nature of the subsurface soil.

The costs of the alternatives vary significantly. Alternative 2 has a low cost, but the contaminated soil would not be addressed other than by institutional controls. With its large volume of soil to be handled, Alternative 6 (excavation and off-site disposal) would have the highest present worth cost. Consolidation and capping (Alternative 3) would be much less expensive than Alternative 6, yet it would provide protection of the human health. The present worth costs of Alternatives 4 and 5 would be higher than Alternative 3, although the capital cost for Alternative 5 would be higher than that of Alternative 4. The long-term maintenance cost for Alternatives 2, 3 and 5 would be the same. The long-term maintenance costs for Alternatives 4 and 6 are less than the other alternatives because of the contaminated soil removal.

The specific use of the site would be decided by the property owner in accordance with local zoning. Alternative 3 would restrict the future use of the site to restricted residential use because at least some contaminated soil would remain on the property, whereas Alternatives 4 and 6 would remove the contaminated soil permanently. However, the remaining contamination associated with Alternative 3 would be controllable with the cover and implementation of institutional controls and a Site Management Plan. With Alternatives 4 and 6 restrictions on the site use would not be necessary because the contaminated surface and subsurface soil in the unsaturated overburden would be removed.

The estimated present worth cost to implement the remedy is $296,000. The cost to construct the remedy is estimated to be $251,000 and the estimated average annual costs for 30 years is $3,000.

8.2 **Elements of the Proposed Remedy**

The elements of the proposed restricted use remedy are as follows:

1. A remedial design program would be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program.

2. A site cover will be installed on the properties comprising the site to allow for restricted residential use of the site. This cover will consist of either buildings, pavement/sidewalks or a soil cover in areas of exposed surface soil. The soil cover will consist of a minimum of two feet of soil, meeting the restricted residential requirements for cover material set forth in 6 NYCRR Part 375-6.8(d), places over a demarcation layer. The upper six inches of the soil will be of sufficient quality to maintain a vegetation layer.

3. Existing surface soils will either be removed for off-site disposal or may be consolidated on-site beneath the site cover. Up to two feet of soil will be removed, as needed in areas of exposed surface soil, or as needed for pavement/building construction in order to maintain existing grades at the site.

4. To maximize the net environmental benefit, Green remediation and sustainability efforts are considered in the design and implementation of the remedy to the extent practicable, including;

- using renewable energy sources
- reducing green house gas emissions
- encouraging low carbon technologies
- fostering green and healthy communities
- conserving natural resources
- increasing recycling and reuse of clean materials
- preserving open space and working landscapes
- enhancing recreational use of natural resources
- designing cover systems to be usable for habitat or recreation
- designing storm water management systems to recharge aquifers

5. Imposition of an institutional control in the form of an environmental easement for the controlled property that:

(a) requires the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3).
(b) allows the use and development of the property for restricted residential use, subject to local zoning laws,
(c) prohibits agriculture or vegetable gardens on the controlled property; and
(d) requires compliance with the Department approved Site Management Plan.

6. Since the remedy results in contamination remaining at the site that does not allow for unrestricted use, a Site Management Plan is required, which includes the following:

(a) an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to assure the following institutional and/or engineering controls remain in place and effective:

Institutional Controls: The Environmental Easement discussed in Paragraph 5 above.

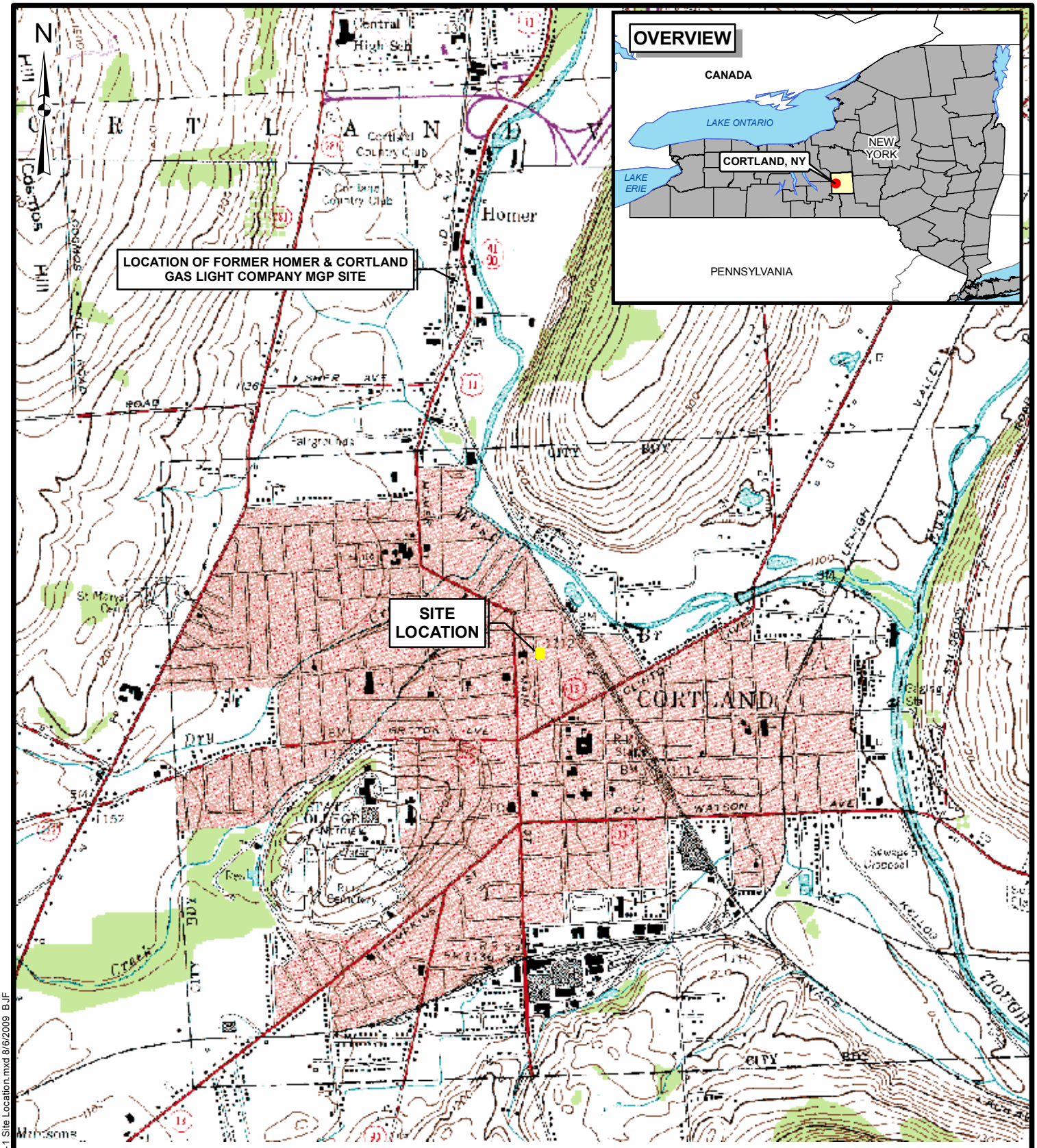
Engineering Controls: The soil cover discussed in Paragraph 3 above.

This plan includes, but may not be limited to:

(i) Soil Management Plan which details the provisions for management of future excavations in areas of remaining contamination;
(ii) descriptions of the provisions of the environmental easement including any land use and groundwater;
(iii) provisions for the management and inspection of the identified engineering controls;
(iv) maintaining Department notification; and
(v) the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls;

(b) a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but will not be limited to:

(i) monitoring and inspection of the cover to assess the performance and effectiveness of the remedy; and
(ii) a schedule of monitoring and frequency of submittals to the Department.



SOURCE: USGS 7.5 Minute Quadrangles - Cortland, NY - 1955 and Homer, NY - 1988.

2,000 0 2,000
Feet

URS

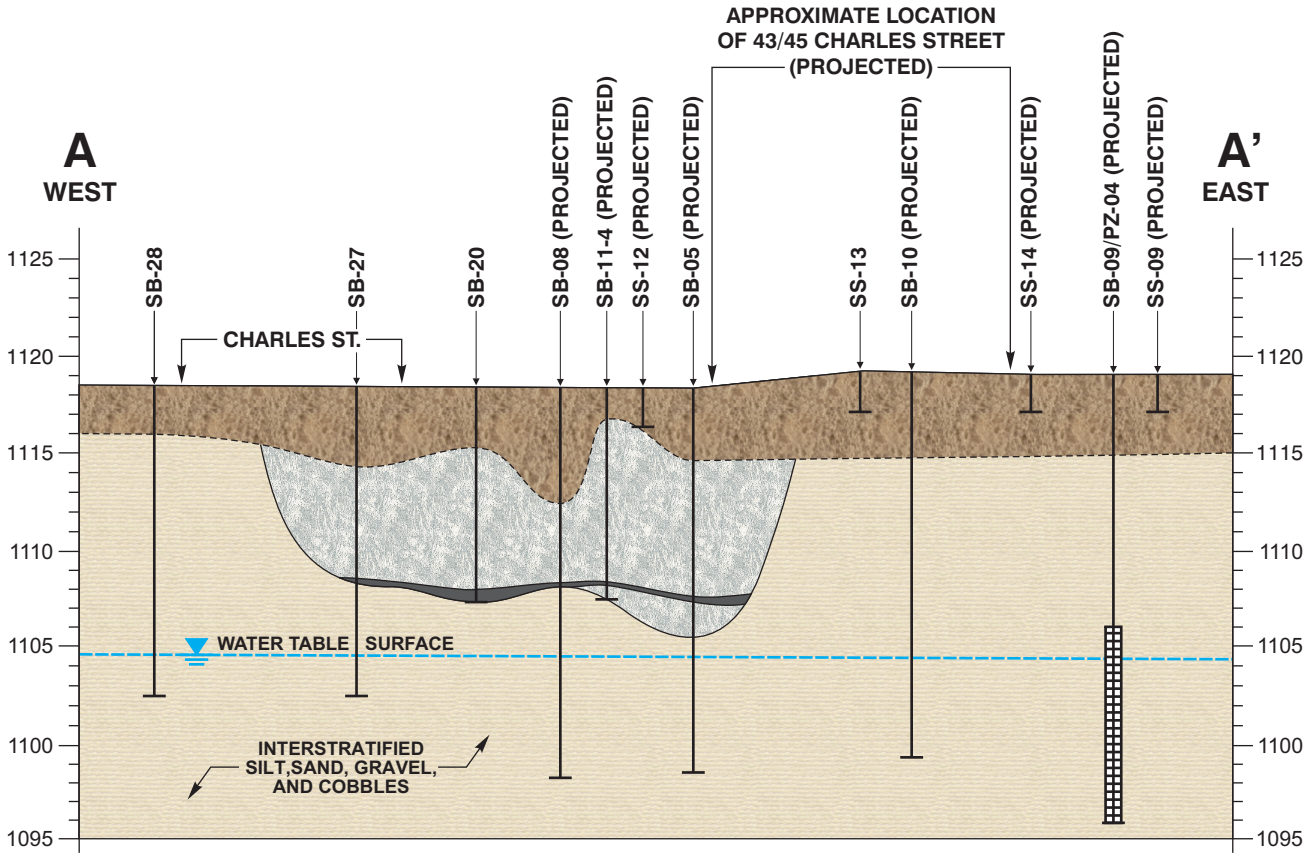
NYSEG - CORTLAND
SITE LOCATION MAP

FIGURE 1

N:\11174305.00000\DB\GIS\FS_Aug2009\FIG 1-1 Site Location.mxd 8/6/2009 BJF

Figure 2
Site Location Map
Cortland Remote Holder Site

AG20278-11176029-082009-GCM



Very darkly stained Ash and Silt with mild to moderate odor typically associated with MGP sites.

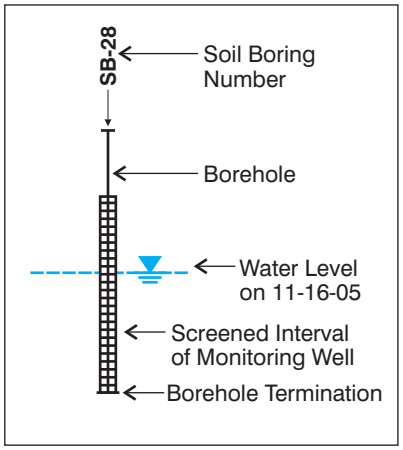
Reworked Silt, Sand, Gravel, and Cobbles with minor amounts of urban fill material

Fill (Ash and Cinders)

Interstratified Silt, Sand, Gravel, and Cobbles

NOTES:
1. Location of the section is shown on Figure 1-2.
2. Water table surface based on November 16, 2005.
3. Trace coal fragments were observed from 12-16 feet at location SB-09/PZ-04 indicating reworked native materials may be present to that depth.

Horizontal Scale: 1" = 20'
Vertical Scale: 1" = 10'



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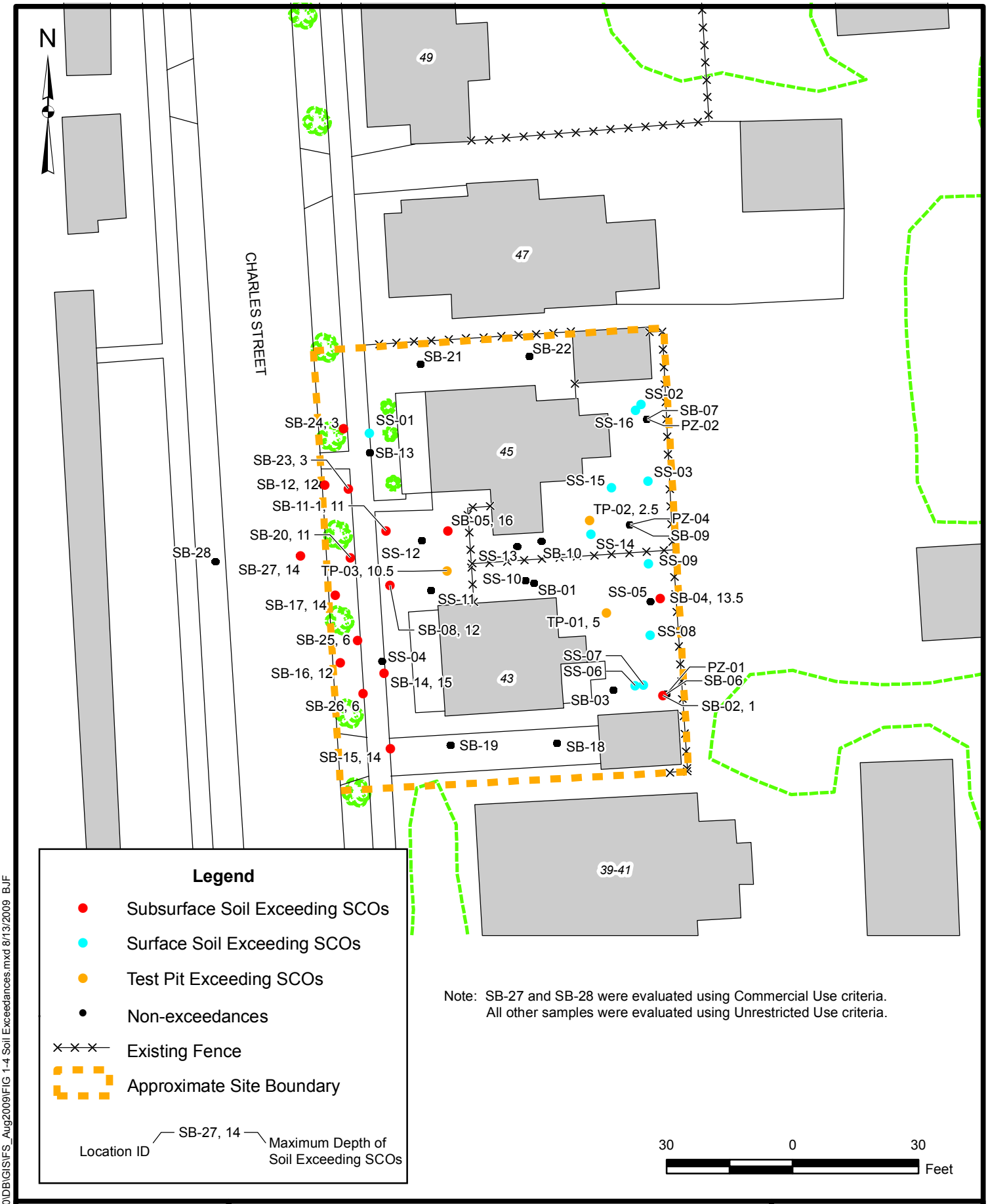
NYSEG-CORTLAND
CROSS SECTION A-A'

FIGURE 3



Note: SB-27 and SB-28 were evaluated using Commercial Use criteria.
All other samples were evaluated using Unrestricted Use criteria.

N:\11174305.00000\DB\GIS\FS_Aug2009\FIG 1-4 Soil Exceedances.mxd 8/13/2009 BJF

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NYSEG - CORTLAND
SOIL EXCEEDING SCGs

FIGURE 4

Legend

- Proposed Fence
- Approximate Site Boundary
- Buildings to be removed by NYSEG

30 0 30
Feet

N:\11174305.00000\DB\GIS\FS_Aug2009\FIG 4-1 ALT 2.mxd 9/22/2009 BJF

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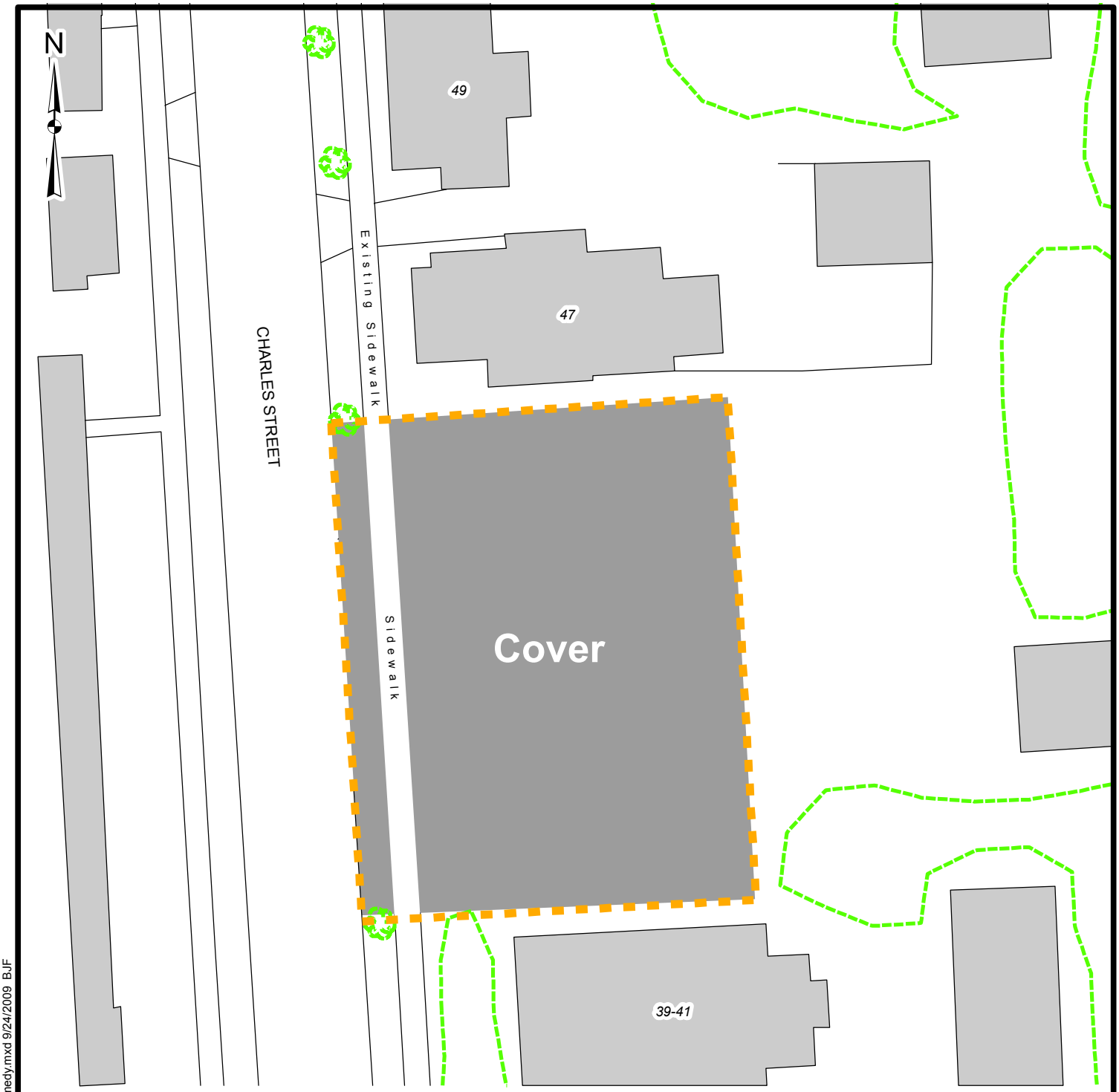
NYSEG - CORTLAND
CONCEPTUAL LAYOUT FOR ALTERNATIVE 2

FIGURE 5



Legend

Approximate Site Boundary

Cover

30 0 30

Feet

NYSEG - CORTLAND
CONCEPTUAL LAYOUT FOR RECOMMENDED REMEDY

FIGURE 6

N:\11174305.00000\DB\GIS\FS_Aug2009\FIG 6-1 Recommended Remedy.mxd 9/24/2009 BJF

Legend

Approximate Site Boundary

ISS Area (volume = 1350 cy)

30 0 30

Feet

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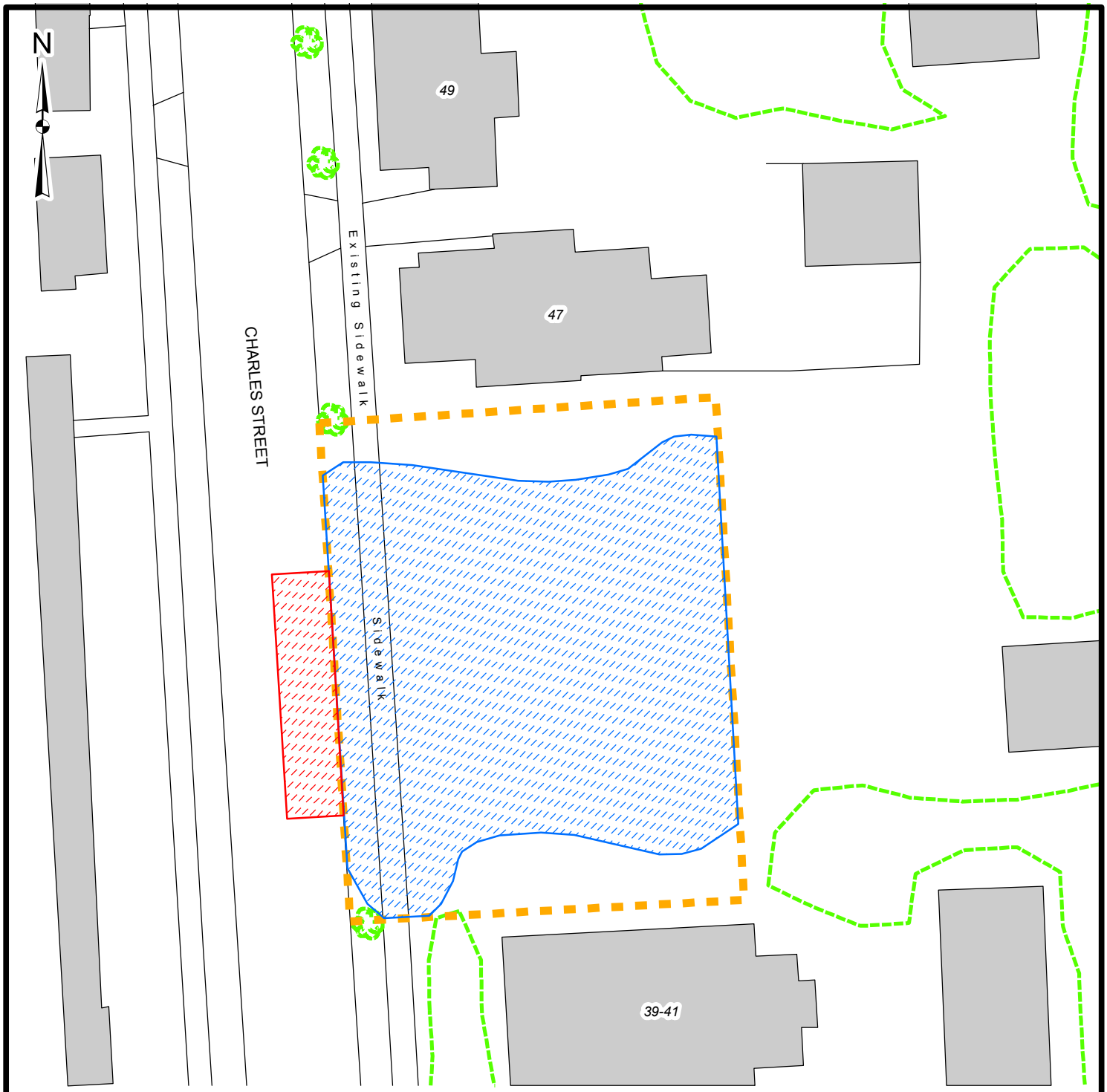
NYSEG - CORTLAND
CONCEPTUAL LAYOUT FOR ALTERNATIVE 5

FIGURE 7

N:\11174305.00000\DB\GIS\FS_Aug2009\FIG 4-5 ALT 5.mxd 8/20/2009 BJF



Legend

- Approximate Site Boundary
- On-Site Soil Excavation Area (volume = 1350 cy)
- Off-Site Soil Excavation Area (volume = 228 cy)

30 0 30
Feet

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NYSEG - CORTLAND
CONCEPTUAL LAYOUT FOR ALTERNATIVE 6

FIGURE 8

N:\11174305.00000\DB\GIS\FS_Aug2009\FIG 4-6 ALT 6.mxd 8/20/2009 BJF