

ATTACHMENT X
FRESH KILLS CLOSURE CONSTRUCTION AND END USE

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FRESH KILLS CLOSURE CONSTRUCTION AND END USE

1.0 FRESH KILLS LANDFILL CLOSURE ACTIVITY

1.1 Phase-Down of Waste Acceptance at Fresh Kills

In March 2001 the last barge of waste was transported to the Fresh Kills Landfill and landfilled at Section 1/9. Over the next several months, the only wastes disposed at the site were incidental to the decommissioning of the waste handling facilities, i.e., the clean-out of barges and the cleanup of the landfill area complex.

Between the year 2000 and the final delivery of waste to the Landfill, the DSNY continued to divert more waste from Fresh Kills than was targeted by the Fresh Kills Closure Task Force. The success of the diversion program, which resulted in less waste placed at Fresh Kills than anticipated, left DSNY with a void of between 6 and 7 million cubic yards of fill for final grading purposes.

Following the destruction of the World Trade Center on September 11, 2001, Section 1/9 was made available to support the investigation and recovery operations. After sorting, screening and searching the material brought from the World Trade Center site, debris was buried at the site following the generalized sequence of construction for final cover sub-base grading set forth in draft final cover designs.

On December 28, 2001, Governor Pataki issued an Executive Order with respect to the closure of the Fresh Kills Landfill. Specifically, the order temporarily suspended, until further notice, Environmental Conservation Law Section 27-0706(b) to the extent that debris removed from the site of the World Trade Center would be accepted for disposal at Section 1/9 of the Fresh Kills Landfill after January 1, 2002. Subsequently, DSNY and NYSDEC entered into Modification No. 8 to the Fresh Kills Landfill Order on Consent, which added provisions to address the Executive Order.

Remains from the World Trade Center site continued to be brought to Section 1/9 through June 28, 2002. Processing of this material continued through July 26, 2002. Demobilization of processing operations was completed on August 2, 2002. Approximately 1.3 million tons of material from the World Trade Center were placed at Section 1/9 between September 2001 and June 2002.

1.2 Landfill Gas Systems

GSF Energy, LLC (GSF) continued to operate and maintain the landfill gas collection, flaring, recovery and processing facilities at the Landfill under a landfill gas concession agreement the DSNY entered into in 1998. Under this agreement, GSF operated and maintained the existing DSNY landfill gas flare and control system in the inactive sections of the Landfill and expanded the existing landfill gas recovery and processing facility to allow for the recovery and sale of all of the gas generated at Fresh Kills. The NYSDEC permit for the expansion project, for which GSF and the DSNY were co-applicants, was issued on June 2, 2000.

A landfill gas transmission main, which conveys landfill gas from the inactive sections of the Landfill to the LFG Recovery Facility located near Section 1/9, was completed in April 2001. Following completion of final cover sub-base construction in the southern sector of Section 6/7 in 2001, the landfill gas collection system was expanded throughout this area, and the transmission main was connected to the collection system. Landfill gas extraction wellheads at Section 6/7 were raised in conjunction with re-contouring activities during 2002.

In January 2003, GSF, which owned and operated landfill gas control facilities at the Landfill, gave notice of surrender of the concession. In its notice, GSF stated that it was surrendering the concession because “gas in commercial quantities was not obtainable from the Landfill.” As discussed above, the concession agreement provided for GSF as co-permittee and owner of the landfill gas control facilities at the Landfill; as such, GSF was required for operations and maintenance of all landfill gas emission control, odor control and processing systems at the Landfill. Since GSF provided notice 180 days before surrender, the notice implied that within six months DSNY would be left without an operator of these systems.

DSNY entered into negotiations with GSF for continued operation of the facilities. An amended agreement, under which DSNY is the owner and GSF is the operator of the facilities, was entered into in January 2004. The amended agreement addresses operation of the landfill gas emission control and processing facilities, as well as continued build-out of the facilities through June 2006. DSNY solicited proposals for a new vendor to manage, operate and maintain these facilities in 2005. A multi-year contract was awarded in June 2006. The contractor assumed responsibility for the operation and facility management in July 2006.

1.3 Fresh Kills Consent Order

The 1990 Fresh Kills Landfill Consent Order between the DSNY and NYSDEC was modified in April 2000 to withdraw the permit application, require cessation of waste acceptance by January 1, 2002, and address remaining closure issues (Modification #7). This modification added a new Appendix A-15, Landfill Closure and Post-Closure, which included numerous milestones for landfill closure and post-closure care. Modification #8, which amended the date for cessation of waste acceptance to reflect placement of World Trade Center material and provided for extensions of certain Appendix A-15 milestones, was entered into in December 2001.

The first of the milestones under Modification #7, the initiation of final cover construction at Section 6/7, was met before July 2000. Final cover design reports for Sections 6/7 and 1/9 were submitted on January 30, 2001 and January 4, 2002. As a result of delays associated with placement of remains from the World Trade Center, DSNY requested a 60-day time extension for the initiation of final cover construction at Section 1/9. The time extension, extending the February 1, 2002 construction initiation date by 60 days, was requested in a letter to NYSDEC dated January 11, 2002. Initial final cover construction activities at Section 1/9—specifically, pre-loading of drainage swale embankments—commenced in mid-March 2002. DSNY has now satisfied all milestones under the Consent Order except for submittal of Closure Construction Certification Reports and submittal of recurring annual reports.

1.4 1996 Clean Water/Clean Air Bond Act Funds for Fresh Kills Landfill Closure

\$75 million in funds were specifically earmarked in the 1996 Clean Water/Clean Air Bond Act (Bond Act) for the Fresh Kills Landfill closure construction and related projects. The state indicated that it would support appropriation of Bond Act funds for Fresh Kills only after modification of the Fresh Kills Consent Order was completed and an application was submitted. The Consent Order was modified in April 2000, and following a series of pre-application meetings with NYSDEC, the completed grant application was submitted in February 2001, identifying an initial \$137,000,000 in work, which would be reimbursed at 50% of eligible costs. In May 2001 the contract for reimbursement was executed, and in August 2001 the City submitted vouchers for the \$137,000,000. Based on the available appropriations, the City was reimbursed for \$45,000,000. Following appropriation of the balance of the Bond Act funds, the City submitted a second application in October 2002 for the balance of the Bond Act funds, identifying another \$37,000,000 of eligible work. A new contract was executed in March 2003, and in April 2003 the carryover costs from the initial application were vouchered for payment. In December 2003 the balance of the projects were vouchered for payment.

1.5 Fresh Kills Closure Plans

Final cover designs for Sections 6/7 and 1/9, developed in accordance with the adjusted Sequence of Fill Plans for the 2001 cessation of waste acceptance, were prepared in accordance with Consent Order Appendix A-15, as detailed below. The Sequence of Fill Plans were designed to maintain the stability of the soils underlying the landfill and prevent erosion of the side slopes by carefully managing the placement of waste in different phases.

Each landfilling phase defines the location and quantity of waste placement to meet what is technically known as “final grade” in a specified area of the Landfill. Final grades are established by state regulations that specify the maximum allowable slopes of a landfill area. If portions of the landfill are not filled to final grade, erosion, uncontrolled stormwater runoff and instability could occur. Deviations from these grades will be corrected during closure construction. When the final grade is achieved, including an allowance for the settlement of refuse over time, the placement of final cover can begin.

In addition to the final cover designs for Sections 6/7 and 1/9, a Final Closure Plan, which addressed regulatory requirements for closure of all four Landfill sections, was prepared and submitted as a draft on October 30, 2002. The Final Closure Plan included descriptions and plans for various systems for Landfill closure, including the final cover system; the landfill gas control system; the leachate containment, collection and treatment systems; and a final end use plan. Following receipt and incorporation of NYSDEC comments provided on March 5, 2003, the Final Closure Plan was submitted to NYSDEC on June 5, 2003.

1.5.1 Section 6/7 Closure Plans

On January 30, 2001, DSNY submitted the Section 6/7 Final Cover Design Report to NYSDEC. The scope of the report encompassed the engineering and design information to complete the closure construction for this landfill section. Following NYSDEC's review of the report, DSNY was advised on April 18, 2001, that the report was approved.

Following the end of waste disposal operations at Section 6/7 in June 1999, clean fill was placed at Section 6/7 to correct areas that had settled and to establish regulatory grades needed for final cover. This fill material was delivered to Fresh Kills under the Inter-Agency Cover Program, which diverts clean soils and fill from excavation projects around the City to the Landfill at no cost to DSNY. Placement of this sub-base grading fill at Section 6/7, which started in fall 1999, continued through April 2003. Sub-base grading in the southern areas of Section 6/7 was completed in June 2001. Sub-base grading in the northern sectors of the site began in February 2001 and was substantially completed by April 2003, with the exception of drainage swale embankments. More than 2,000,000 cubic yards of material were placed to complete these re-contouring activities.

In conjunction with re-contouring activities during 2002, landfill gas extraction wellheads were raised. Several drainage swale embankments were pre-loaded in 2002. However, DSNY discontinued pre-loading of drainage swale embankments in 2003 as a result of GSF's notice of surrender of the concession for landfill gas control facilities. Additional pre-loading of drainage swale embankments would have required the raising of wellheads in areas where embankments

would be constructed. In consideration of GSF's extending the notice of surrender period beyond 180 days, DSNY relieved GSF of its requirement to perform additional non-routine maintenance, including raising of wellheads.

During review of the concession agreement, DSNY realized that one aspect of GSF's design for the landfill gas collection system could lead future maintenance problems. Specifically, GSF's design, which had already been approved by NYSDEC and partially implemented, called for all collection pipelines to be constructed below the final cover geomembrane. Repairs to the collection pipelines would therefore entail cutting through the geomembrane and subsequent repair to the geomembrane following repair of the collection pipelines.

DSNY proposed an equivalent design under which the landfill gas collection piping would be placed above the final cover geomembrane. This equivalent design, which will allow DSNY to better maintain the integrity of the geomembrane, was included in the Request for Approval of Design Equivalents and Design Variance to the Final Cover Design Reports, which was submitted to NYSDEC on October 8, 2003. The design equivalents and variance, which also included an alternative design for drainage swales to reflect proposed changes in the landfill gas collection system, delayed DSNY's plans to issue a contract for the remainder of final cover construction at Section 6/7, which had been planned for 2003.

Following receipt of NYSDEC comments on the requests for design equivalents and variance, responses to NYSDEC comments were submitted on December 22, 2003. The equivalent design was approved by NYSDEC in April 2004 and incorporated into the closure designs.

DSNY resumed construction of the interim and final drainage systems, based on the approved variance, in August 2004, and substantially completed this construction in June 2005. Construction documents for the completion of closure construction at Section 6/7 were completed in December 2005. In June 2006, a contract for this work was awarded. Construction is scheduled to be completed in 2010.

1.5.2 Section 1/9 Closure Plans

On April 27, 2001, DSNY submitted the Draft Section 1/9 Final Cover Design Report to NYSDEC. The scope of this report encompassed the engineering and design information to complete the closure construction for this landfill section. In August 2001, NYSDEC provided final comments on the draft report. Following the destruction of the World Trade Center on September 11, 2001, DSNY requested and was granted a 60-day time extension to address NYSDEC's comments and modify the Section 1/9 Final Cover Design Report to accommodate the handling, processing and disposal of material from the World Trade Center. The final report was submitted to NYSDEC on January 4, 2002.

Materials from the World Trade Center were buried at Section 1/9 following sorting and screening activities. Approximately 1.3 million tons of these materials were buried at the site. Placement of World Trade Center materials, generally followed the sequence of construction for final cover sub-base grading set forth in the Draft Section 1/9 Final Cover Design Report.

After NYSDEC approval of Section 1/9 Final Cover Design Report, contract documents were prepared and issued to re-contour the site with excavated waste. However, the award of a contract for the relocation of the waste was delayed pending a decision regarding a memorial for the attack on the World Trade Center. The City subsequently re-assessed its policy regarding placement of waste material adjacent to remains from the World Trade Center. Following this policy re-assessment, DSNY decided that final cover sub-base grading in Section 1/9 would be done with clean fill material. Therefore, the contract for relocation of waste was canceled.

As a result of delays associated with placement of remains from the World Trade Center, DSNY requested a 60-day time extension for the initiation of final cover construction at Section 1/9. The time extension, extending the February 1, 2002, construction initiation date by 60 days, was requested in a letter to NYSDEC dated January 11, 2002. Initial final cover construction activities—specifically, pre-loading of drainage swale embankments at Section 1/9—commenced in mid-March 2002. In addition to preparing the sub-grade for final cover in this area, the embankments were intended to provide interim drainage control.

Re-contouring activities at Section 1/9, which were projected to begin in late 2002, were delayed after demobilization of World Trade Center-related activities was completed later than planned. In addition, re-contouring activities at Section 6/7 took longer than planned, as discussed further in the discussion of Section 6/7 in this report. When re-contouring activities at Section 1/9 were initiated in 2003, work was shifted from the areas where materials from the World Trade Center were placed to other areas. This shift resulted from wellhead maintenance issues raised by GSF's notice of surrender of the concession for landfill gas control facilities. More than 2,000,000 cubic yards of sub-base grading material have been placed.

DSNY requested approval of several design equivalents and a design variance to the Section 1/9 and Section 6/7 Final Cover Design Reports in a submittal to NYSDEC of October 8, 2003. These equivalents and variances followed DSNY consideration of ways to facilitate post-closure maintenance and to expedite the implementation of closure construction without substantially revising the design. DSNY requested that NYSDEC review and approve each of these design variances and equivalences as an independent item. Following receipt of NYSDEC comments on these requests, responses to NYSDEC comments were submitted on December 22, 2003.

In addition to the design equivalents and design variance, alterations to the final cover design at Section 1/9 were made in 2003 as a result of the policy re-assessment regarding placement of waste material adjacent to remains from the World Trade Center. An alternate design for certain work specified in the Section 1/9 Final Cover Design Report was submitted to NYSDEC on October 23, 2003. Whereas the original design called for waste from a separate, smaller mound in the northeast portion of Section 1/9 to be relocated to the main mound, the alternate design called for use of clean fill at the main mound and final cover to be placed on the separate mound. The preliminary estimate of material needed for sub-base grading at Section 1/9 is approximately four million cubic yards. In January 2006, NYSDEC approved this alternate design.

Because of the need for clean fill material under the alternate final cover design, DSNY explored other sources of material for sub-base grading. Under the process described in an application for a Beneficial Use Determination (BUD) submitted to NYSDEC on November 24, 2003, processed dredge material (PDM) from the New York-New Jersey Harbor Estuary would be used as grading fill beneath the final cover. The PDM could be brought to the landfill by barge rather than by truck, thereby allowing the material to be delivered at a faster rate. Delivery of this material by barge also would reduce truck traffic to and from the landfill and respond to concerns of neighboring residents. The BUD was approved by NYSDEC on February 25, 2004 and modified in August 2005. In November 2005, PDM was being used to supplement other soils for the final cover sub-base grading. See Attachment V, sub-section 3.3.2.2 for additional information about the BUD.

In order to ensure marine access for the closure construction projects, a permit application for the maintenance dredging of Fresh Kills was completed and submitted to NYSDEC and the U.S. Army Corps of Engineers (USACE) on April 15, 2004. The NYSDEC permit was received in June 2004, and a draft USACE permit was issued in September 2004. These permits provide for dredging of Fresh Kills through 2014. Sub-base grading is planned to be completed in 2008, when final cover construction is planned to begin. Current plans anticipate the completion of closure construction in 2014.

1.6 Post-Closure Monitoring and Maintenance

The final Post-Closure Monitoring and Maintenance Operations Manual was submitted to NYSDEC on December 13, 2002, in accordance with Consent Order Appendix A-15. NYSDEC approved the manual on June 19, 2003. The procedures delineated in this manual were implemented during 2003; these procedures included monitoring and maintenance of the final cover and drainage systems; environmental monitoring; operation and maintenance of the leachate treatment plant and containment and collection system; and operation and maintenance of the landfill gas collection and control system.

1.7 Leachate Collection and Processing

Minimizing leachate requires an active leachate prevention program that includes implementing a variety of stormwater controls and applying the impermeable final cover described above. To manage the leachate that remains in the landfill mounds, DSNY constructed a collection and containment system from which leachate is conveyed to the Fresh Kills leachate treatment plant. The collection and containment system is composed of an underground cutoff wall around Sections 1/9 and 6/7, and a system of wells, pipes and pumps that collect and transmit the leachate to the treatment plant. In Sections 2/8 and 3/4, where final cover has already been placed, collection wells and drains collect leachate that is pumped to the treatment plant.

Construction of additional perimeter leachate drains at Sections 2/8 and 3/4 was completed in the summer of 2001. These additional drains, which are designed to collect up to 80% of the total leachate potentially emitted from Sections 2/8 and 3/4, were installed in settlement of a lawsuit that alleged that leachate from the closed sections of the landfill was not being adequately controlled.

The current capacity of the leachate treatment plant is more than one million gallons of leachate per day. The plant treats the ammonia, organic matter and several metals that are the primary constituents of leachate. Because treated leachate is discharged into local waterways, the leachate control program is designed to meet state water quality and other regulatory standards and is continually monitored by DSNY and the state.

The leachate treatment plant and leachate collection and containment system is operated and maintained by a contractor under DSNY's direction. DSNY issued a Request for Proposals for continuation of these services in August 2003. A minimum five-year contract to provide operation, maintenance and facility management for the Fresh Kills Landfill leachate system was executed in June 2004.

A modification to the leachate treatment plant's State Pollutant Discharge Elimination System (SPDES) permit was approved in June 2003, allowing the co-treatment of landfill gas condensate at the leachate treatment plant. DSNY began co-disposal/treatment of condensate in

August 2004 at one portion of the leachate treatment plant. Once the bacteria population was acclimated to this change, procedures were established to introduce all the condensate directly to the plant.

1.8 Long-Term Environmental Monitoring

An important component of the Landfill's closure plans is the 30-year post-closure environmental monitoring program, which defines long-term closure activities, environmental monitoring, post-closure requirements and end-use alternatives. Under the closure plans, DSNY will continue to operate and maintain the facilities and environmental monitoring infrastructure at the Landfill that control and monitor stormwater, leachate and landfill gas for at least 30 years after the Landfill is closed.

A revised long-term environmental monitoring plan was included in the Post-Closure Monitoring and Maintenance Operations Manual that was submitted to NYSDEC on December 13, 2002. NYSDEC approved the manual, including the long-term environmental monitoring plan, on June 19, 2003. The manual includes provisions for quarterly groundwater monitoring, annual surface water monitoring, biennial sediment and benthic ecology monitoring, and quarterly landfill gas migration monitoring.

The landfill gas migration monitoring well array was modified for the long-term environmental monitoring program included in the final Post-Closure Monitoring and Maintenance Operations Manual. The modified array was based on the perimeter of the entire Fresh Kills Landfill complex, rather than the perimeters of the four landfill sections, as was used previously. DSNY began using the modified array in July 2003.

2.0 FRESH KILLS END USE PLANS

DSNY, along with the Staten Island Borough President's Office; the City Departments of City Planning, Parks and Cultural Affairs; state and federal regulatory agencies; and others have been working together on the long-term planning process for the reuse of Fresh Kills. A necessary

component of this process is the development of a conceptual master plan for the landfill that, within the context of regulatory and infrastructure constraints, could provide for the gradual introduction of increasingly intensive and comprehensive land uses. Future Fresh Kills land uses could include restored habitats, open spaces, and active and passive recreation.

During 2001, the City initiated a design competition for an End Use Master Plan. By August 2001, 15 pre-qualified design teams submitted proposals for evaluation by a committee with representatives from DSNY and the City Departments of City Planning (NYDCP), Cultural Affairs, and Parks and Recreation (NYDPR), along with the New York State Departments of State and Environmental Conservation and the Municipal Arts Society. Six design teams were selected to prepare conceptual designs. The conceptual designs were submitted in December 2001, and evaluated by a jury comprised of design professionals and officials from the City and New York State.

An expanded scope of work was released in June 2002 to the three highest-ranked teams to negotiate a contract for the development of an End Use Master Plan. The expanded scope included public scoping of the end use design for the Fresh Kills site; public outreach; the environmental review and regulatory filing processes; and the design of early interventions planned for the site. The City received proposals in September 2002 and ranked the proposals.

The City with NYDCP taking the lead, entered into contract with a team led by Field Operations in July 2003 for development of the End Use Master Plan. The contract is overseen by a City multi-agency Contract Steering Committee, the goals of which are to provide guidance and recommendations to the planning process and to reflect input and data in each member's area of expertise.

The End Use Master Plan will shape future uses, open spaces, and general building design and layout; describe the infrastructure, such as roads and drainage systems, required to support the plan components; and provide recommendations for financing site improvements and stewardship, including natural resources management.

The proposed End Use Master Plan was presented for public comment during the spring of 2006. NYCDPR, the lead agency for the environmental review, conducted a public scoping process for the Generic Environmental Impact Statement (GEIS) that will support the final End Use Master Plan. A Draft GEIS for this project is anticipated to be issued in 2007.

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