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T E C H N I C A L M E M O R A N D U M

TO: Jerome Cruz—Washington State Department of Ecology

cc: Rob Howie—South Park Property Development, L.L.C.
Robert De La Llata—South Park Property Development, L.L.C.
Sheila Strehle—Seattle Public Utilities
Jeff Neuner—Seattle Public Utilities
Joe Hicker—King County
Clifford T. Schmitt—Farallon Consulting, L.L.C.

FROM: Russell Luiten P.E., Project Engineer
Thaddeus J. Cline, P.E., L.G., L.H.G., Principal Civil Engineer/Hydrogeologist

DATE: April 4, 2017

RE: **LANDFILL CAP**
ANNUAL INSPECTION SUMMARY REPORT—2015
SPPD PROPERTY
SOUTH PARK LANDFILL SITE
SEATTLE, WASHINGTON
FARALLON PN: 408-002

Farallon Consulting, L.L.C. (Farallon) prepared this technical memorandum to describe the results of the landfill cap annual inspections for 2015 on behalf of South Park Property Development, L.L.C. (SPPD) to satisfy the requirements for annual interim action progress reporting for the SPPD landfill cap specified in the *Interim Action Work Plan, South Park Landfill Site, Seattle, Washington* dated February 22, 2013, and the *Interim Action Compliance Monitoring Plan, Appendix C of the Interim Action Work Plan, South Park Landfill Site, Seattle, Washington* dated February 22, 2013, both prepared by Farallon for SPPD (Interim Action Work Plan). The *Operation and Maintenance Plan Landfill Cap, South Park Landfill Site, Seattle, Washington* dated August 24, 2015, prepared by Farallon for SPPD (O&M Plan) provides details for landfill cap operation and maintenance and progress reporting.

BACKGROUND

An interim action, consisting of landfill gas control, surface water control, landfill capping, and institutional controls, was conducted under terms of an amendment to Agreed Order No. 6706 and

the Washington State Model Toxics Control Act Cleanup Regulation as established in Chapter 173-340 of the Washington Administrative Code (WAC 173-340), specifically WAC 173-340-430 (Interim Action). The amendment to Agreed Order No. 6706, with the Interim Action Work Plan attached as Exhibit E, was executed by Seattle Public Utilities, SPPD, and the Washington State Department of Ecology with an effective date of June 6, 2013. The Interim Action was conducted to reduce the threat to human health or the environment by eliminating or substantially reducing one or more pathways for exposure to hazardous substances at a 19.4-acre portion of the closed 39-acre South Park Landfill in Seattle, Washington (King County Tax Parcel No. 3224049005) (herein referred to as the SPPD Property) (Figures 1 and 2). The area at which the Interim Action is being conducted includes the SPPD Property and those areas contiguous with the SPPD Property where buried mixed municipal solid waste extends beneath City of Seattle rights-of-way along 5th Avenue South and South Sullivan Street to the east and south of the SPPD Property, respectively, as shown in relation to the properties comprising the South Park Landfill in Figure 2.

As documented in the *Interim Action Construction Completion Report, South Park Landfill Site, Seattle, Washington* dated August 14, 2015, prepared by Farallon for SPPD (Construction Completion Report), the landfill cap and stormwater control elements of the Interim Action were constructed between April 2014 and April 2015. The landfill cap consists of asphaltic concrete and low-permeability membrane systems, which are designed to limit potential exposure to subsurface materials and infiltration of stormwater and its subsequent contact with solid waste limiting the creation of leachate. The landfill cap also serves to convey stormwater runoff to catchment structures and ultimately off the SPPD Property and to enhance the efficiency of the landfill gas collection and control system. A more detailed description of the landfill cap is provided in the Construction Completion Report and in the O&M Plan.

2015 OPERATIONS

This technical memorandum summarizes the periodic inspections and repairs of the landfill cap over the course of 2015 and since issuing the Construction Completion Report. As outlined in Section 3, Operation and Maintenance Activities, of the O&M Plan, the O&M Professional, Mr. Robert de la Llata, under the direction of the Project Coordinator, Mr. Robert Howie, conducted routine landfill cap inspections in 2015. Site Visual Inspection and Repair Forms that document inspections and maintenance work conducted by SEACON, LLC (SEACON) for third and fourth quarter 2015 are provided in Attachment A. While SEACON conducted periodic inspections during first and second quarter 2015, the O&M Plan was not in place until third quarter.

The third quarter 2015 inspection was performed on July 10, 2015. Minor erosion of soil covering the low-permeability membrane was observed in some areas upslope of the northern stormwater bioswale. Runoff from the asphaltic concrete cap flowing through breaks in top-of-slope curbing and onto the low-permeability membrane cap was observed to be initiating erosion. The erosion resulted in penetrations of the low-permeability membrane cap that were classified as Type C

Penetrations[1]. Conditions were monitored and options for an effective repair were evaluated. No other maintenance issues were observed during the third quarter 2015 inspection.

The fourth quarter 2015 inspection was performed on October 10, 2015. Erosion of soil covering the low-permeability membrane was observed upslope of the northern stormwater bioswale in areas adjacent to the parking lot curb cuts. The soil erosion exposed the low-permeability membrane, but no solid waste was visible. The erosion resulted in penetrations of the low-permeability membrane cap that were classified as Type B Penetrations[2]. On October 18, 2015, repairs were completed in these areas with new sod and biodegradable mesh screening. Adjacent curb cuts were filled with concrete grout to limit future soil erosion. No other maintenance issues were observed during the fourth quarter 2015 inspection.

2016 OPERATIONS

The landfill cap and stormwater elements of the Interim Action continued to be inspected per the O&M Plan on a quarterly basis in 2016 to monitor conditions of these systems and to make repairs as necessary. These quarterly inspections were documented on Site Visual Inspection and Repair Forms included in the landfill cap annual inspection summary technical memorandum for 2016.

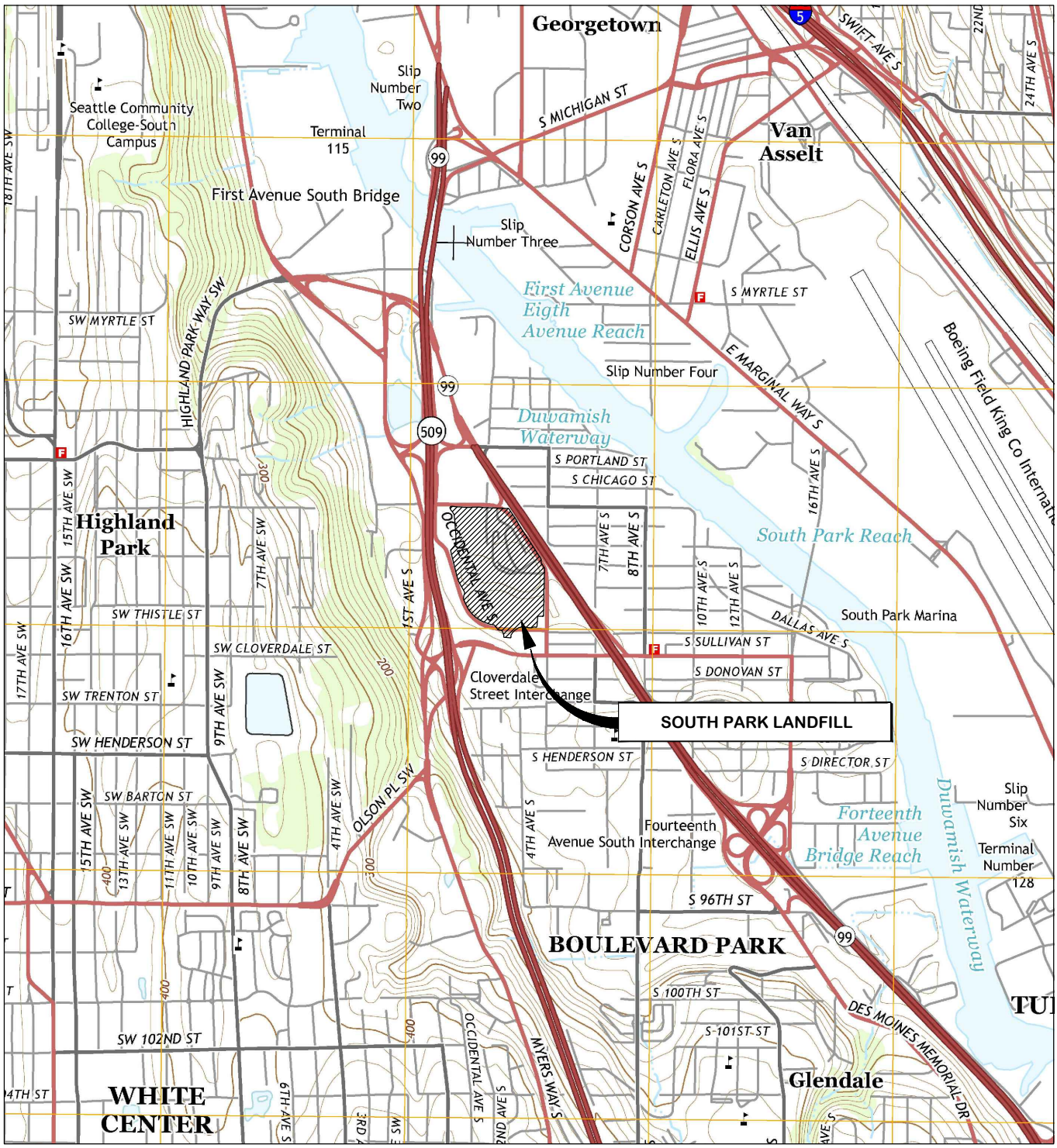
Attachments: Figure 1, *Vicinity Map*
Figure 2, *Landfill Cap*
Attachment A, Site Visual Inspection and Repair Forms

[1] Per the O&M Plan, Type C Penetration: smaller than approximately 1 square foot (e.g., cracks) in the landfill cap or stormwater management facilities with no observed exposed solid waste but that could result in influx of stormwater or atmospheric air or discharge of methane.
[2] Per the O&M Plan, Type B Penetration: greater than approximately 1 square foot in the landfill cap or stormwater management facilities with no observed exposed solid waste but that could result in influx of stormwater or atmospheric air or discharge of methane.

FIGURES

LANDFILL CAP ANNUAL INSPECTION SUMMARY REPORT—2015
SPPD Property
South Park Landfill Site
Seattle, Washington

Farallon PN: 408-002



REFERENCE: 7.5 MINUTE USGS QUADRANGLE SEATTLE SOUTH, WASHINGTON. DATED 2014

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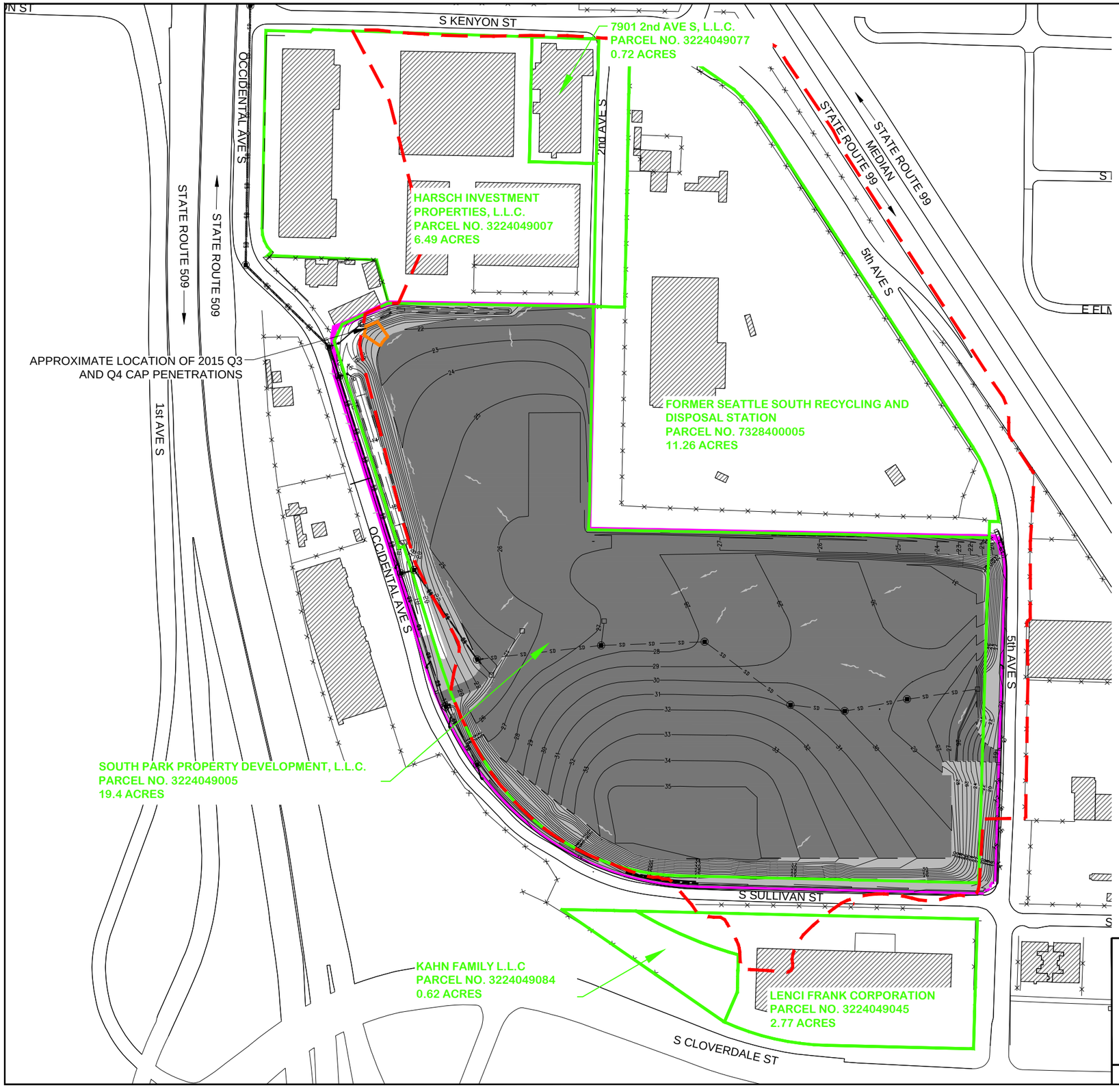
FIGURE 1

VICINITY MAP
SPPD PROPERTY, SOUTH PARK LANDFILL SITE
SEATTLE, WASHINGTON

FARALLON PN: 408-002

Drawn By: DEW | Checked By: TC | Date: 03/17/2016 | Disk Reference: BASEMAPb



LEGEND

- SOUTH PARK LANDFILL BOUNDARY
- KING COUNTY TAX PARCEL BOUNDARY
- INTERIM ACTION AREA
- FENCE
- EXISTING BUILDING
- APPROXIMATE EXTENT OF LOW PERMEABILITY MEMBRANE CAP
- APPROXIMATE EXTENT OF ASPHALTIC CONCRETE CAP
- 35 — DESIGN ELEVATION CONTOUR
- SD — SD — STORMDRAIN LINE
- SURFACE DRAINAGE FLOW LINE
- STORMDRAIN CATCH BASIN
- STORMDRAIN MANHOLE

NOTES:

1. FIGURE INCLUDES INFORMATION PRESENTED IN COLOR. PHOTOCOPIES MAY NOT DEPICT ALL INTENDED INFORMATION ON THE ORIGINAL DRAWING.
2. ALL LOCATIONS ARE APPROXIMATE

N

0 200

APPROXIMATE SCALE IN FEET

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FIGURE 2

LANDFILL CAP
SPPD PROPERTY, SOUTH PARK LANDFILL SITE
SEATTLE, WASHINGTON

FARALLON PN: 408-002

Drawn By: ROL Checked By: TC Date: 03/01/2017 Disk Reference: BASEMAPb

ATTACHMENT A
SITE VISUAL INSPECTION AND REPAIR FORMS

LANDFILL CAP ANNUAL INSPECTION SUMMARY REPORT—2015
SPPD Property
South Park Landfill Site
Seattle, Washington

Farallon PN: 408-002

Inspector's Initials RPD
Date July 10, 2015

SITE VISUAL INSPECTION AND REPAIR FORM
LANDFILL CAP
South Park Landfill Site Interim Action Area

Date of Inspection: 7-10-15

Name of Inspector: Robert de la Llata

The purpose of periodic site inspections is to identify damage to the landfill cap and stormwater management facilities from operations, differential settlement, slope failure, deterioration of materials, or other factors that could result in potential contact with solid waste, influx of surface water runoff and atmospheric air, or discharge of methane.

VISUAL SURVEY

Using the attached checklist, inspect landfill cap and stormwater management facilities. Summarize the results of the visual inspection below:

Site is good except the NW corner swale. Erosion has occured not bad but will keep checking when the rain starts in the fall.

PROJECT COORDINATOR NOTIFICATION

Notify the Project Coordinator in the space below of penetrations greater than approximately 1 square foot in the landfill cap or stormwater management facilities with observed exposed solid waste (**Type A Penetrations**).

Notify the Project Coordinator in the space below of penetrations greater than approximately 1 square foot in the landfill cap or stormwater management facilities with no observed exposed solid waste but that could result in influx of stormwater or atmospheric air or discharge of methane (**Type B Penetrations**).

Notify the Project Coordinator in the space below of penetrations smaller than approximately 1 square foot (e.g., cracks) in the landfill cap or stormwater management facilities with no observed exposed solid waste but that could result in influx of stormwater or atmospheric air or discharge of methane (**Type C Penetrations**).

Type C

Inspector's Initials RPD
Date July 10, 2015

REPAIR RECOMMENDATION

Notify the Project Coordinator in the space below of repair recommendations to prevent potential contact with solid waste, influx of surface water runoff and atmospheric air, or discharge of methane. Indicate the recommended repair schedule (Type A Penetrations: within 2 weeks; Type B Penetrations: within 1 month; Type C Penetrations: within 2 months).

No repairs needed at This Time.

SITE INSPECTION SKETCHES/PHOTOGRAPHS

In the area below, provide an appropriate sketch(s) indicating areas inspected and locations of problem areas with recommended repairs. Include additional pages and photographs of problem areas as appropriate.

Inspection Certification:

Rob Howie 7-10-15

Project Coordinator **Date**

Robert delallata property Manager 7-10-15

O&M Professional **Date**

Inspector's Initials RPD
Date July 10, 2015

REPAIR RECORD

In the area below, summarize repairs made upon direction of the Project Coordinator. Include the date, personnel, and materials used.

NONE AT This Time

Approval of Repair Completion:

Rob Howie 7-10-15

Project Coordinator **Date**

Inspector's Initials RPD
Date July 10 - 2015

VISUAL INSPECTION CHECKLIST

ASPHALTIC CONCRETE CAPPED AREAS

Open cracks and/or ruts	None	✓	Repair Needed	
Differential settlement	None	✓	Repair Needed	
Spalling of surface	None	✓	Repair Needed	

Observed Cap Penetration Type(s) (A, B, C):

Recommended Repair Type/Location:

LOW-PERMEABILITY MEMBRANE CAPPED AREAS

Erosion of cover soil	None	✓	Repair Needed	
Exposed geotextile barrier	None	✓	Repair Needed	
Holes/signs of unauthorized digging	None	✓	Repair Needed	

Observed Cap Penetration Type(s) (A, B, C):

Recommended Repair Type/Location:

STORMWATER MANAGEMENT FACILITIES

Evidence of facility repair needed	None	✓	Repair Needed	
Signs of water infiltration below structures	None	✓	Repair Needed	
Erosion of soil	None	✓	Repair Needed	
Exposed geotextile or membrane	None	✓	Repair Needed	
Holes/signs of unauthorized digging	None	✓	Repair Needed	

Invasive deep-rooted plants

Recommended Repair Type/Location:

Inspector's Initials RPD
Date 10/10/15

SITE VISUAL INSPECTION AND REPAIR FORM
LANDFILL CAP
South Park Landfill Site Interim Action Area

Date of Inspection: 10/10/15

Name of Inspector: Robert de la Llata

The purpose of periodic site inspections is to identify damage to the landfill cap and stormwater management facilities from operations, differential settlement, slope failure, deterioration of materials, or other factors that could result in potential contact with solid waste, influx of surface water runoff and atmospheric air, or discharge of methane.

VISUAL SURVEY

Using the attached checklist, inspect landfill cap and stormwater management facilities. Summarize the results of the visual inspection below:

NW corner swale is showing signs of water/soil erosion

PROJECT COORDINATOR NOTIFICATION

Notify the Project Coordinator in the space below of penetrations greater than approximately 1 square foot in the landfill cap or stormwater management facilities with observed exposed solid waste (**Type A Penetrations**).

Notify the Project Coordinator in the space below of penetrations greater than approximately 1 square foot in the landfill cap or stormwater management facilities with no observed exposed solid waste but that could result in influx of stormwater or atmospheric air or discharge of methane (**Type B Penetrations**).

Notify the Project Coordinator in the space below of penetrations smaller than approximately 1 square foot (e.g., cracks) in the landfill cap or stormwater management facilities with no observed exposed solid waste but that could result in influx of stormwater or atmospheric air or discharge of methane (**Type C Penetrations**).

~~Type A~~ Type B RPD

Inspector's Initials RPD
Date 10/10/15

REPAIR RECOMMENDATION

Notify the Project Coordinator in the space below of repair recommendations to prevent potential contact with solid waste, influx of surface water runoff and atmospheric air, or discharge of methane. Indicate the recommended repair schedule (Type A Penetrations: within 2 weeks; Type B Penetrations: within 1 month; Type C Penetrations: within 2 months).

please repair The soil erosion that has accrued @ The N W corner storm water swale, dirT needs To be placed Back and plan new GRASS as per siTe drawings. spec.

SITE INSPECTION SKETCHES/PHOTOGRAPHS

In the area below, provide an appropriate sketch(s) indicating areas inspected and locations of problem areas with recommended repairs. Include additional pages and photographs of problem areas as appropriate.

Inspection Certification:

Rob Howie

Project Coordinator **Date**

Robert de laHata 10/10/15

O&M Professional **Date**

Inspector's Initials RPD
Date 10/10/15

REPAIR RECORD

In the area below, summarize repairs made upon direction of the Project Coordinator. Include the date, personnel, and materials used.

The soil has been restored and screening has been placed along with new grass To keep it from eroding in heavy rains

materials
Existing soil

Approval of Repair Completion:

Robert delallata 10/18/15

Project Coordinator **Date**

PROJECT: TD 601	**South Park Parking Lot Remediation**				
Seacon					
				Total	**$784.74**
DATES COVERED	2/26/2016				
BID ITEM / WORK PERFORMED	T&M to Seacon				
	Touch up Seed NW Corner/Bioswale vicinity				
LABOR	HOURS		RATE	EXTENDED	
Todd Brannon - Hydroseed Operator/Foreman	3	R	$40.60	$121.80	
		OT	$57.21	$0.00	
Margarito Zuniga- Landscape Labor	3	R	$25.82	$77.46	
		OT	$35.62	$0.00	
Landscape Labor		R	$25.82	$0.00	
		OT	$35.62	$0.00	
SUBTOTAL				$199.26	
MARKUP	12%			$23.91	
LABOR TOTAL					**$223.17**
EQUIPMENT	HOURS		RATE	EXTENDED	
H04 1995 Mack Truck wFinn 3300 seeder	3	Hr	$57.80	$173.40	
				$0.00	
				$0.00	
				$0.00	
SUBTOTAL				$173.40	
MARKUP	12%			$20.81	
EQUIPMENT TOTAL					**$194.21**
MATERIALS	AMOUNT		COST	EXTENDED	
erosion bioswale seed	35		$1.20	$42.00	
fertilizer	130		$0.45	$58.50	
mulch	650		$0.35	$227.50	
SUBTOTAL				$328.00	
MARKUP	12%			$39.36	
MATERIAL TOTAL					**$367.36**
TOTAL AMOUNT DUE THIS SHEET					**$784.74**

Inspector's Initials RPD
Date 10/10/15

VISUAL INSPECTION CHECKLIST

ASPHALTIC CONCRETE CAPPED AREAS

Open cracks and/or ruts	None	✓	Repair Needed	
Differential settlement	None	✓	Repair Needed	
Spalling of surface	None	✓	Repair Needed	

Observed Cap Penetration Type(s) (A, B, C):

Recommended Repair Type/Location:

LOW-PERMEABILITY MEMBRANE CAPPED AREAS

Erosion of cover soil	None		Repair Needed	✓
Exposed geotextile barrier	None	✓	Repair Needed	
Holes/signs of unauthorized digging	None	✓	Repair Needed	

Observed Cap Penetration Type(s) (A, B, C):

Recommended Repair Type/Location:

STORMWATER MANAGEMENT FACILITIES

Evidence of facility repair needed	None	✓	Repair Needed	
Signs of water infiltration below structures	None	✓	Repair Needed	
Erosion of soil	None		Repair Needed	✓
Exposed geotextile or membrane	None		Repair Needed	✓
Holes/signs of unauthorized digging	None	✓	Repair Needed	
Invasive deep-rooted plants				

Recommended Repair Type/Location:

NW CORNER SWALE.