## APPENDIX C

C-1: *2009 Maintenance and Repair Report and Annual Inspection Report, Southwest Funston Landfill, Fort Riley, Kansas,* June 10, 2009 and Photographs of the Site Access Controls, the Landfill Cover Repair and the Rock Armoring of the Upper Riverbank Slope in September-October 2009

C-2: CD of SFL Historical Analytical Data

2009

# MAINTENANCE AND REPAIR REPORT

and

# ANNUAL INSPECTION REPORT

# SOUTHWEST FUNSTON LANDFILL

# FORT RILEY, KANSAS

**June 10, 2009**

## 1. INTRODUCTION

The Operations and Maintenance (O&M) Plan for Southwest Funston Landfill (SFL) dated September 30, 1996 requires that a Maintenance/Repair Report be prepared whenever these activities are accomplished. Landfill repairs were accomplished during the period of May 20 through July 16, 2008. The repaired areas were reseeded with native grass seed during winter/spring of 2009.

The calendar year 2009 inspection of Southwest Funston Landfill was conducted on May 11, 2009. The sky was clear and the temperature was 55 degrees Fahrenheit. The inspection team included two environmental protection specialists and an agronomist from the Directorate of Public Works, Environmental Division, Fort Riley, Kansas, two environmental scientists from the Kansas Department of Health and Environment, and a civil engineer from the U.S. Army Corps of Engineers, Kansas City District. The landfill surface and vegetative cover, signage, and the Kansas River bank stabilization were included in this inspection.

## 2. 2009 MAINTENANCE AND REPAIR REPORT

Differential settlement on the eastern half of landfill was repaired during 2008 through a contract executed by the Corps of Engineers, Kansas City District. The details of the project, that were reported in the 2008 Inspection Report, follow:

Contractor: McKinzie Construction, Inc., Kansas City, Missouri

Contract Amount: $266,252

Performance Period: June thru July 2008.

Project Scope:

- Approximately 10,000 cubic yards of fill were placed, graded and compacted to restore differentially settled areas to their original grade on the eastern half of the landfill.

The areas that were repaired during June and July 2008 were seeded with a native grass mixture in January 2009 and repaired areas that were missed during the initial seeding were seeded on April 8, 2009. The following seed mixture was sown in the repaired areas:

| Species | Cultivar | by Weight | Pounds per Acre |
|---|---|---|---|
| Switchgrass | Blackwell | 25.00 | 2.0 |
| Westeren Wheatgrass | Barton | 18.75 | 1.5 |
| Sideoats Gramma | El Reno | 18.75 | 1.5 |
| Big Bluestream | Kaw | 12.50 | 1.0 |
| Little Bluestream | Aldous | 12.50 | 1.0 |
| Indiangrass | Osage | 12.50 | 1.0 |
| | | 100.0 | 8.0 |

## 3. 2009 INSPECTION RESULTS

### 3.1 Native Soil Cover

3.1.1 Observed Condition – As has been noted in previous inspections, the native grasses are mature, healthy and in excellent condition on a majority of the landfill.

3.1.2 Deficiencies Noted/Recommendations

- The grasses on the landfill were burned on April 22, 2009 which provided an excellent opportunity to observe and record the location of depressions on the landfill surface. The coordinates of photographs taken of observed differential settlement, ponded areas and eroded areas during this inspection are provided in Table 1 and the locations are plotted on Figure 1. The photographs are included in Attachment A to this report. These areas will be included in the next cover repair project that is currently scheduled for 2013.

- Repairs to the eastern half of the landfill were accomplished during June and July 2008 and those areas were seeded in January and April 2009. During this inspection, it was noted that native grass planted as a part of those repairs were beginning to show signs of development.

- Four species of State of Kansas noxious weeds have been observed on the landfill during previous inspections: Sericea lespedeza (Lespedeza cuneata (Dumount) G. Don), Field bindweed (*Convolvus arvensis L.*), Johnsongrass (*Sorghum halepense (L.) Pers.*), and musk thistle (*Cardus nutans L.).* Because of the recent burn, it was not possible to positively locate and identify those species during this inspection. An Oak Ridge Institute for Science and Education (ORISE) researcher who is investigating different methods of noxious weed surveying and prediction models inspected the landfill for the presence of Sericea lespedeza during the fall of 2008. The results of his inspection are shown on figure 2.

**Table 1**
**Location of Photographs**
**2009 Southwest Funston Landfill Inspection**
**May 11, 2009**

| Photo No. | Latititude | Longitude |
|---|---|---|
| SFL2009-1 | 39.08881 | -96.74163 |
| SFL2009-2 | 39.08936 | -96.74098 |
| SFL2009-3 | 39.08844 | -96.74034 |
| SFL2009-4 | 39.08672 | -96.73954 |
| SFL2009-5 | 39.08647 | -96.73941 |
| SFL2009-6 | 39.08579 | -96.73784 |
| SFL2009-7 | 39.08625 | -96.73729 |
| SFL2009-8 | 39-08139 | -96.73773 |
| SFL2009-9 | Not Recorded | Not Recorded |
| SFL2009-10 | Not Recorded | Not Recorded |

Coordinates are NAD 83, Zone 14, Decimal Degrees

### 3.2 Kansas River Bank Stabilization

3.2.1 Observed Condition - The bank stabilization structure is performing as designed. There is no evidence of erosion, sloughing, or scour of the revetment. The current condition of the rock revetment is shown in photographs SFL2009-9 and SFL2009-10 at Attachment A.

3.2.2 Deficiencies Noted/Recommendations – None

**3.3 Signage** – Signs have been placed at the primary and secondary access gates and along Well House Road warning that access to the landfill is restricted and that potentially hazardous conditions may be present. During this inspection it was noted that the information on the signs was current.

**3.4 Monitoring Wells** – The monitoring wells were not specifically included in this inspection. They are inspected during each sampling event. During the March/April 2009 sampling event, the majority of all outstanding deficiencies in the monitoring wells were repaired. The details of those repairs were reported in the Daily Quality Control Reports that are included as Attachment B to this report.

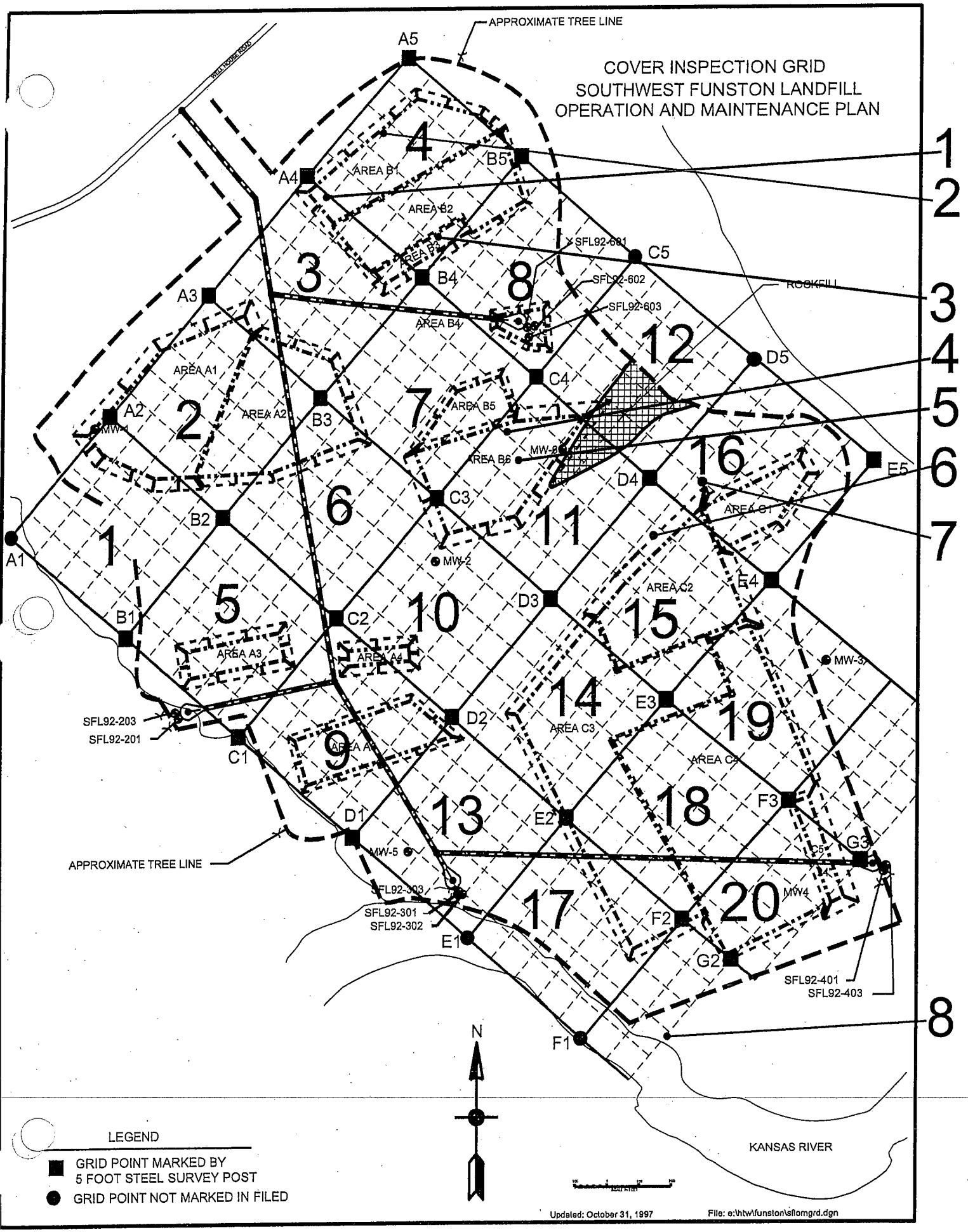
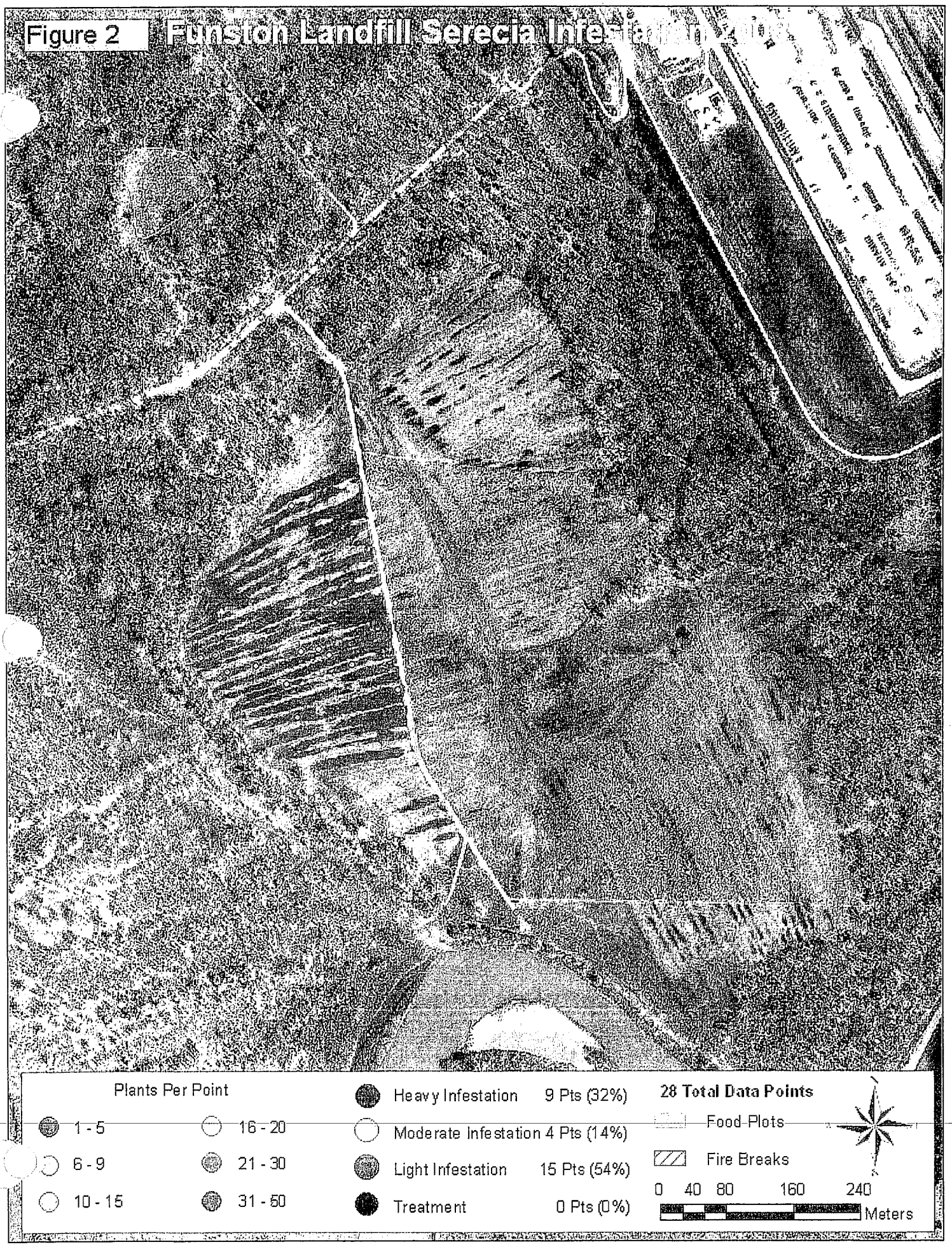



Figure 1 - Location of photographs taken during May 11, 2009 inspection.

Figure 2 Funston Landfill Serecia Infe[illegible]



# Attachment A

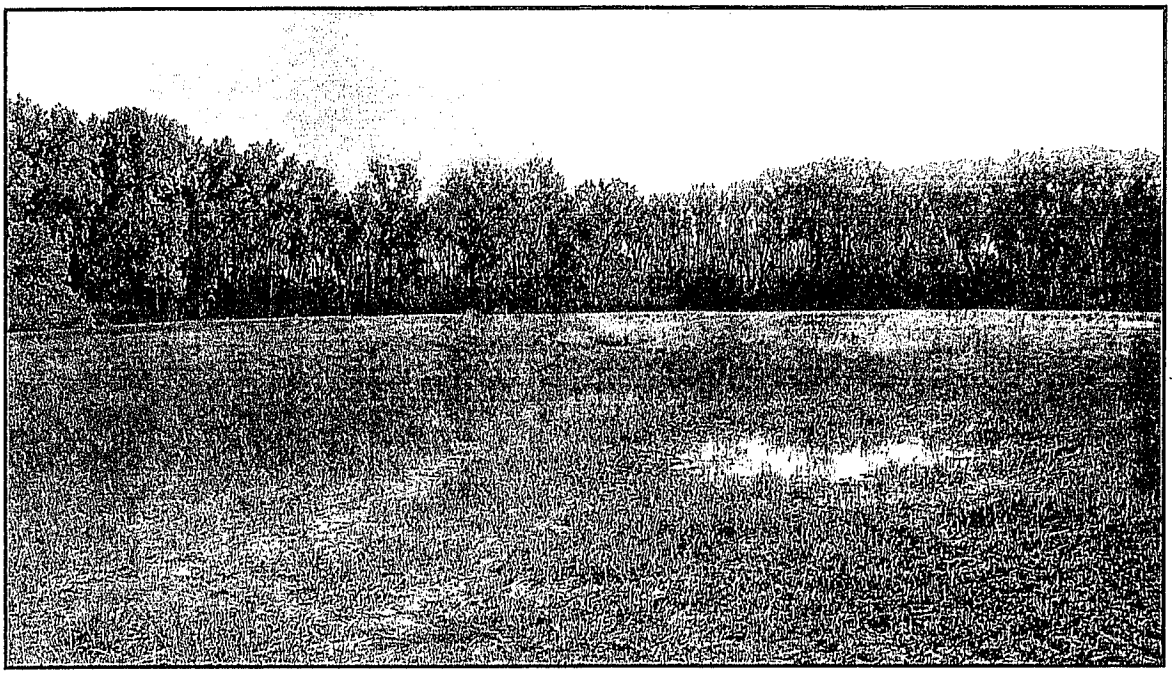
# Photographs

# 2009 Inspection

# Southwest Funston Landfill

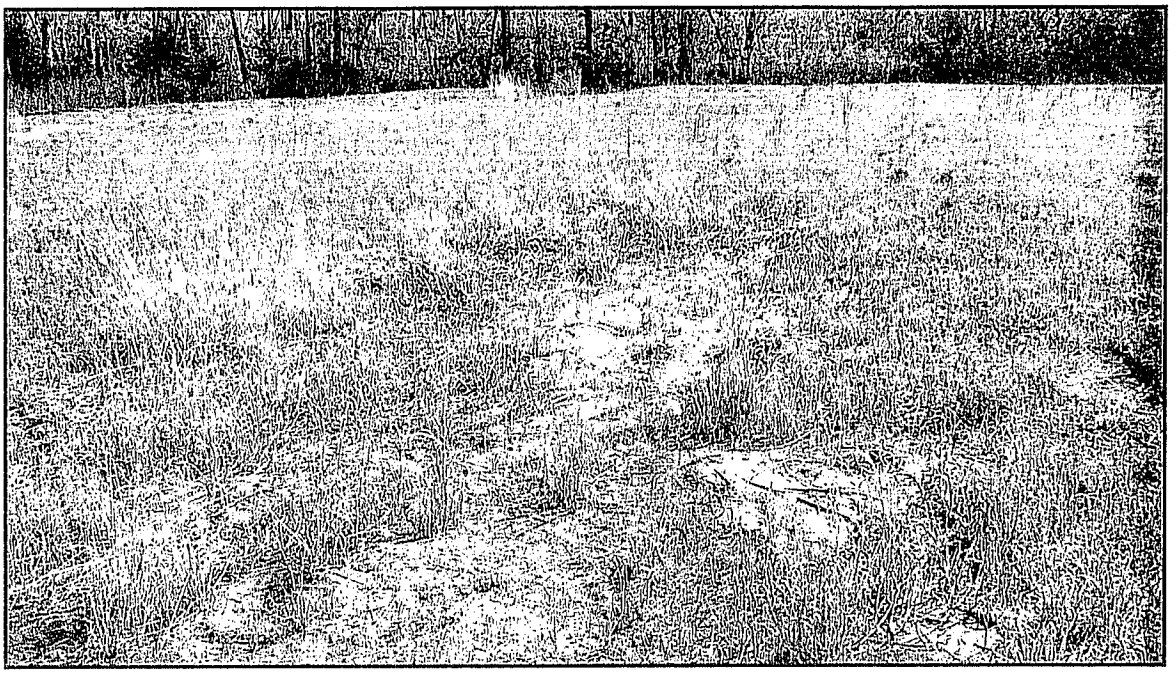
# Fort Riley, Kansas

# May 11, 2009

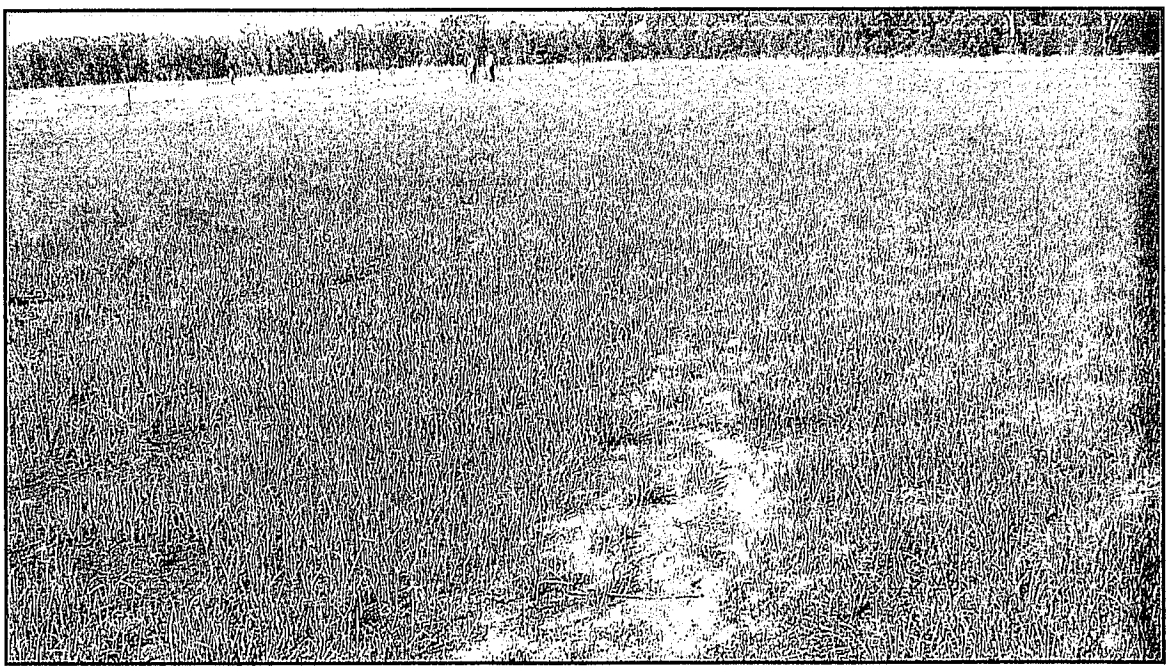


Photograph SFL2009-1 – View looking east of differential settlement/ponding in northeast quadrant of landfill (11May 09).

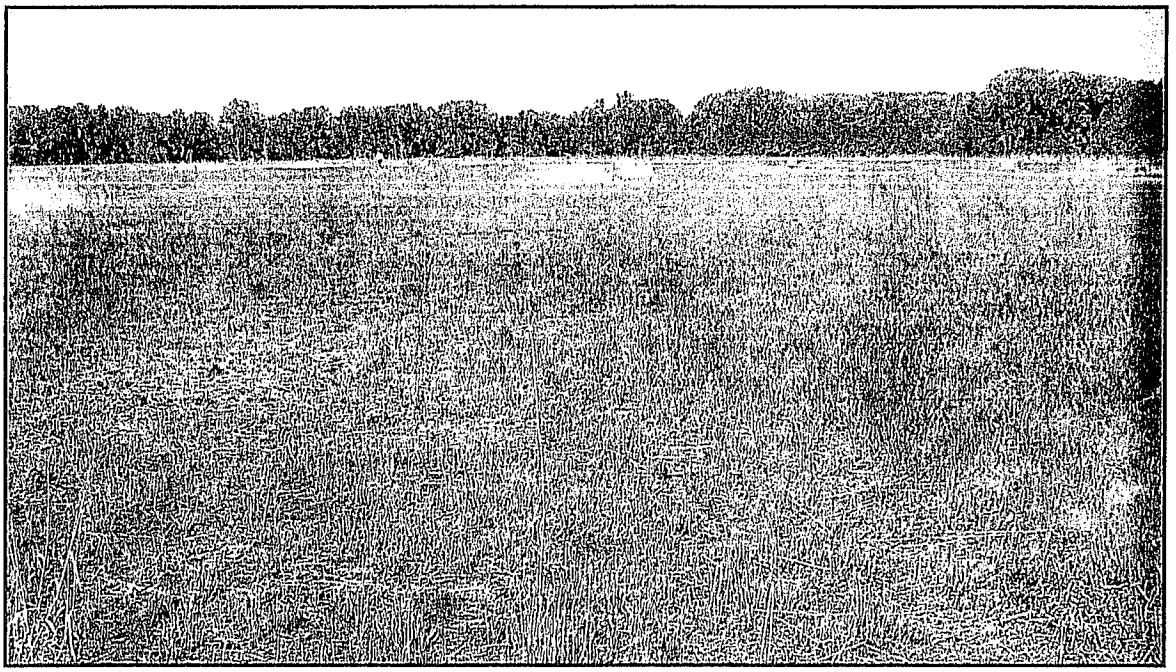
Photograph SFL2009-2 – View looking east of standing water in northeast quadrant of landfill (11 May 09).



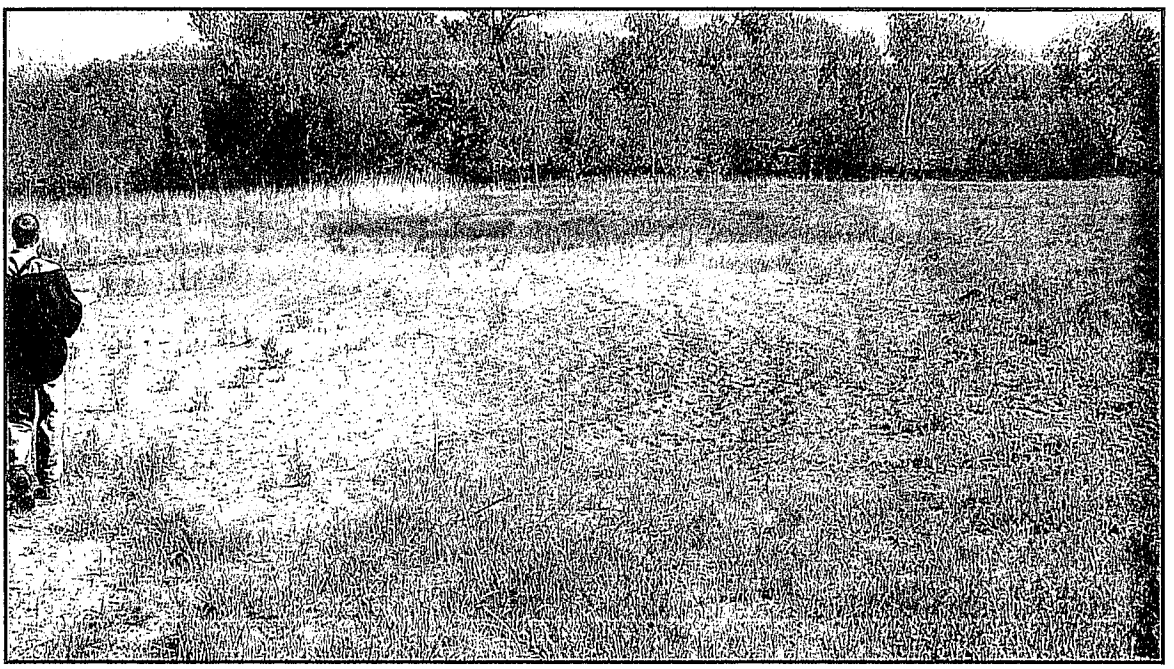
Photograph SFL2009-3 – View looking east at newly repaired area in northeast quadrant of landfill (11May 09).



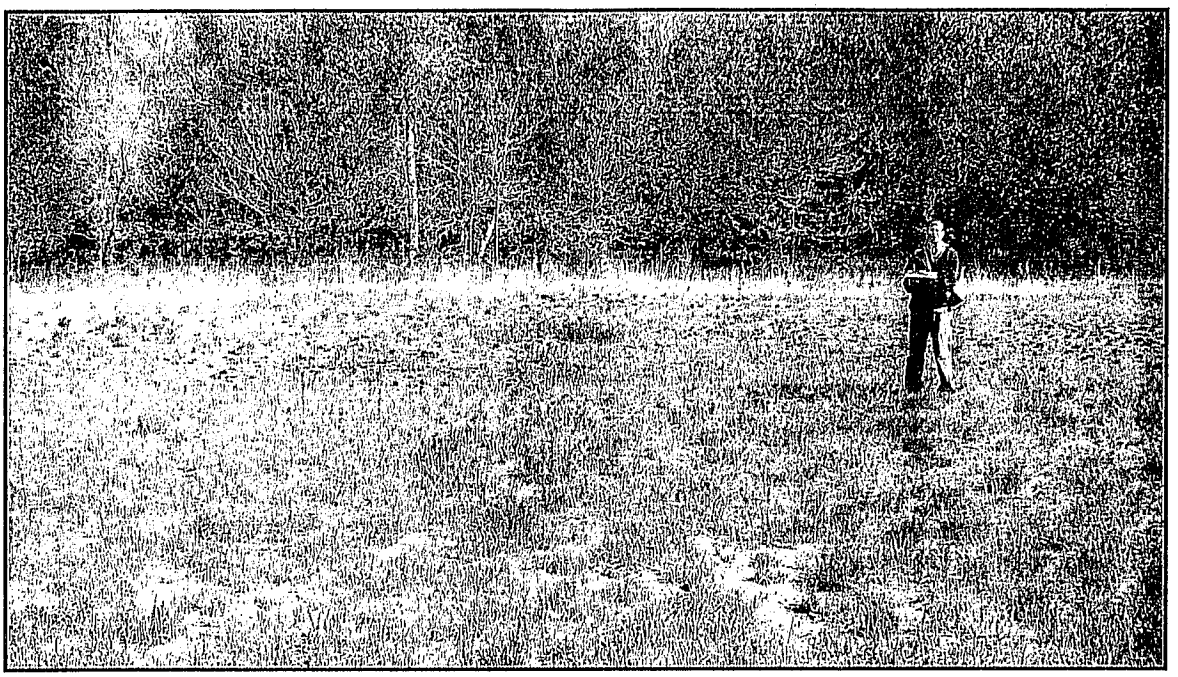
Photograph SFL2009-4 – View looking west of differential settlement/ponding in east central portion of landfill (11 May 09).



Photograph SFL2009-5 – View looking west of differential settlement in central portion of east half of landfill (11May 09).

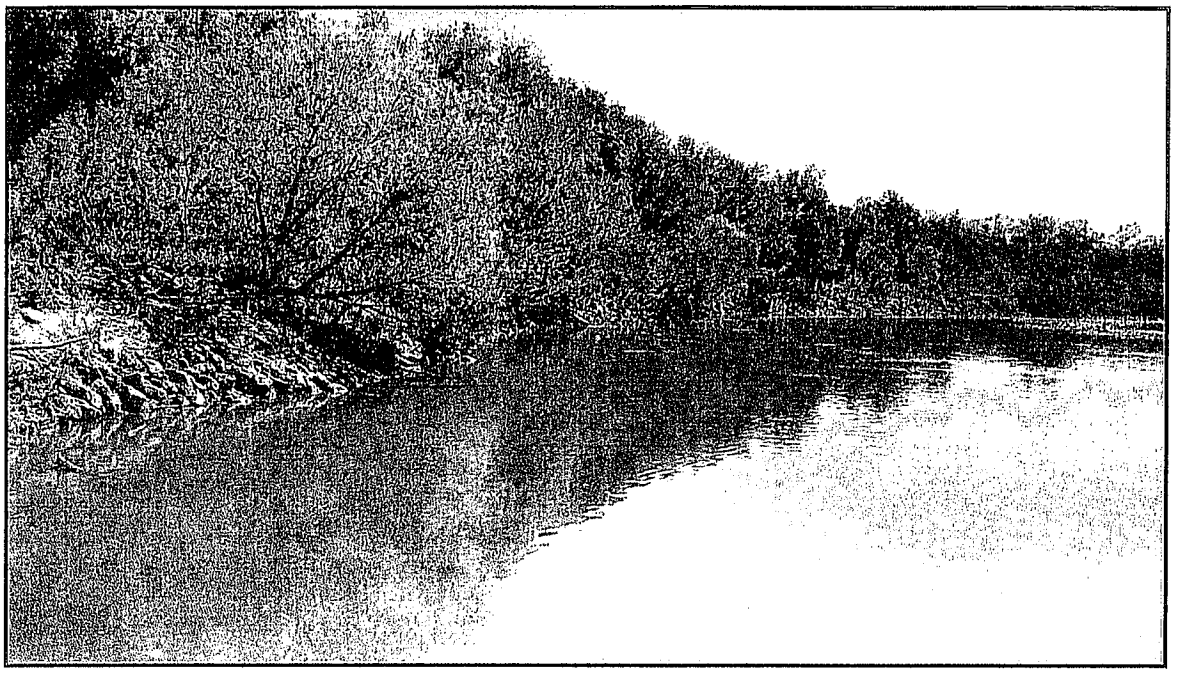


Photograph SFL2009-6 – View looking east of standing water in east central section of the landfill (11 May 09).

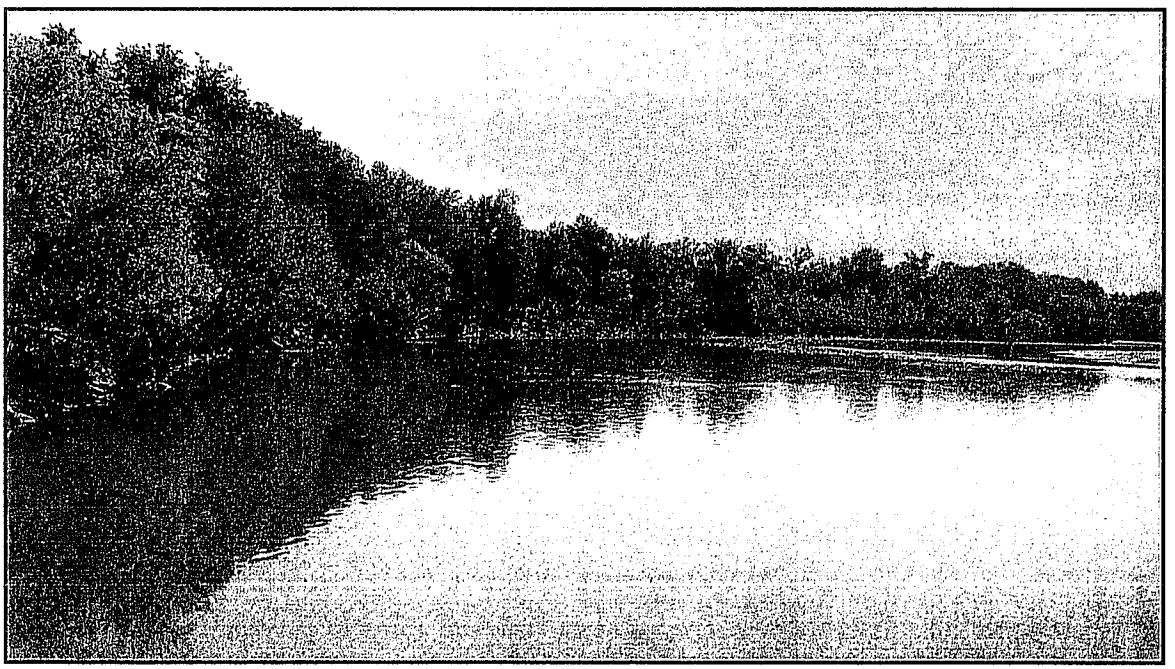


Photograph SFL2009-7 – Differential settlement/ponding at east central edge of landfill (11May 09).

Photograph SFL2009-8 – Back cut erosion at downstream end of revetment (11 May 09).



Photograph SFL2009-9 – Upstream reach of rock revetment (11May 09).



Photograph SFL2009-10 – Downstream reach of rock revetment (11 May 09).

# Attachment B

## Daily Quality Control Reports

## March/April 2009 Sampling Event

## Southwest Funston Landfill

## Fort Riley, Kansas

# DAILY QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| Site: SFL – Fort Riley | Project Manager: R. Stenson | Quality Control: F. Bader | Page No.: __1__ of __1__ |
| Date: 3-30-09 | Week No.: 1 | Hours on Site: 8 | Work Order & Task: W912DQ-08-D-0031-0001 - Groundwater |
| Written By: Phillip Riley | | Reviewed By: R. Stenson 3-30-09 | |
| Weather/Temperature: Clear skies, temp 45-68 and windy. | | | |
| Location of Work: Southwest Funston Landfill | | | |

| Project Personnel: Phillip Riley, Matthew Chidlow | Equipment: | Visitors/Affiliation: |
|---|---|---|
| • Field Team Leader: Phillip Riley | RKI Eagle Methane Detector | NONE |
| • CQC Manager: | QED : Interface probe | |
| • SSHO: Phillip Riley | | |
| • Others: Andrea Austin of Fort Riley | | |

Work Performed by CTI:

Check in at gate, proceed to the Site Restoration Office and meet Dr. Shields. Discuss the project scope and picked up the keys to the SFL site and equipment storage room. Drive to the equipment room, unload and sort the field equipment. Calibrate the RKI Eagle to 500ppm methane standard calibration gas. Proceed to the SFL site and collect static water levels from the wells identified in the project scope of work.
Upon opening of the protective casing of each well, the RKI Eagle was used to check the well casing for methane.
The RKI Eagle detected methane at Monitoring Well SFL 92-601 in excess of 100% of the LEL.
Upon completion of the water level measurement, returned to the equipment room to exchange equipment and prepare for monitoring well equipment inspection and repair. Return to SFL and remove the tubing from SFL 92-603, measure tubing, depth to well bottom and replacement pump length. Six feet of additional tubing is required to place the replacement pump at the proper inlet depth. Checked fitting sizes etc.
Depart the Post for Manhattan to pick up carbon dioxide gas for use with the pump controller. Upon pick up of the gas, work was complete.
Return to hotel and complete paperwork and communications.

Safety Observations/Violations/Comments:

NONE
-
-
-

Calibration of Field Equipment (See Calibration Logs in File):

RKI Eagle was calibrated to a 500ppm methane standard calibration gas.

-

Certification:

I certify that the above report is complete and correct and that I, or my authorized representative, have inspected all work performed this day and have determined that all materials, equipment, and workmanship are in strict compliance with the plans and specification, except as may be noted above.

Signature: Phillip Riley

# DAILY QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| Site: SFL – Fort Riley | Project Manager: R. Stenson | Quality Control: F. Bader | Page No.: __1__ of __1__ |
| Date: 3-31-09 | Week No.: 1 | Hours on Site: 8 | Work Order & Task: W912DQ-08-D-0031-0001 - Groundwater |
| Written By: Phillip Riley | | Reviewed By: R. Stenson 3-30-09 | |

Weather/Temperature: Mostly cloudy skies, temp 35 - 45 and windy.

Location of Work: Southwest Funston Landfill

| Project Personnel: Phillip Riley, Matthew Chidlow | Equipment: | Visitors/Affiliation: |
|---|---|---|
| • Field Team Leader: Phillip Riley | QED Bladder pump controller | NONE |
| • CQC Manager: | QED : Interface probe | |
| • SSHO: Phillip Riley | | |
| • Others: Andrea Austin of Fort Riley | | |

Work Performed by CTI:

Check in at gate, proceed to the equipment storage room and pick up one of the rebuilt QED T 1100 bladder pumps to install into SFL 92-603. Proceed to SFL and attempt to install the pump, but additional fitting required will install pump on 4-1. Continued with pump equipment visual inspection, check for air leaks and functional testing. Discrepancies noted below.
SFL92-601 : Repaired leak in air line fitting, kink in discharge line and re attached the discharge line to the well cap.
SFL94-03A : Replaced well cap and adjusted the length of the tubing to place the pump inlet at the center of the screened interval.
SFL92-303 : 6′ pump has air leak from gasket inside discharge housing, pump required replacement, will replace on 4-1-09.
SFL92-403 : Pump and tubing in good working order.
SFL92-401: Tubing was 2′ too long for the pump inlet to be placed correctly. Removed 2′ of tubing.
SFL94-04B: Tubing was 3′ too long for the pump inlet to be placed correctly. Removed 3′ of tubing.
SFL94-02A: Tubing was 2′ too long for the pump inlet to be placed correctly. Removed 2′ of tubing.
SFL97-903: Tubing was 4′ too long for the pump inlet to be placed correctly. Removed 4′ of tubing.
Return to hotel and complete paperwork and communications. Pick up additional fittings at hardware store.

Safety Observations/Violations/Comments:

NONE

Calibration of Field Equipment (See Calibration Logs in File):

No equipment required calibration

Certification:

I certify that the above report is complete and correct and that I, or my authorized representative, have inspected all work performed this day and have determined that all materials, equipment, and workmanship are in strict compliance with the plans and specification, except as may be noted above.
Signature: Phillip Riley

# DAILY QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| Site: SFL – Fort Riley | Project Manager: R. Stenson | Quality Control: F. Bader | Page No.: 1 of 1 |
| Date: 4-1-09 | Week No.: 1 | Hours on Site: 10 | Work Order & Task: W912DQ-08-D-0031-0001 - Groundwater |
| Written By: Phillip Riley | | Reviewed By: R. Stenson 4-1-09 | |
| Weather/Temperature: Clear to partly cloudy, temp 25 - 55. | | | |
| Location of Work: Southwest Funston Landfill | | | |

| Project Personnel: Phillip Riley, Matthew Chidlow | Equipment: | Visitors/Affiliation: |
|---|---|---|
| • Field Team Leader: Phillip Riley | QED Bladder pump controller | NONE |
| • CQC Manager: | QED : Interface probe | |
| • SSHO: Phillip Riley | Hach 2100P Turbidimeter | |
| • Others: Andrea Austin of Fort Riley | YSI #556 Water Quality Instrument | |

Work Performed by CTI:

Check in at gate, proceed to the equipment storage room and install fittings and tubing on the replacement QED T 1100 bladder pumps.
Proceed to SFL to install the pumps into wells SFL92-603 and SFL92-303. Functionally tested each pump and confirmed operation.
Received a rental YSI Model 556 instrument from vendor. This instrument was calibrated by the vendor prior to delivery.
Calibrated the equipment and tested the response of the colorimeter kit to a standard Fe2+ solution.
Performed low flow groundwater sampling at wells SFL92-303, SFL94-03A, SFL94-02A and SFL94-04B.
Calibrated the Dissolved Oxygen sensor to 100% at each location. Placed purge water into sanitary manhole #96.
SFL94-04B turbidity stability was not achieved but the measured value dropped below 30 NTU as required by the method.
A noticeable improvement to the purge water quality was observed at SFL94-02A. The pump inlet is now above the bottom of the well and the colloidal material observed during the 2008 sampling event was absent.
Note: Wells SFL94-03A, SFL94-02A and SFL94-04B were not scheduled to be sampled today. Due to rain forecast overnight and on 4-2-09, these wells were sampled in order to ensure safe access to the wells and reduce the possibility of weather impact on project completion.

Safety Observations/Violations/Comments:

NONE

Calibration of Field Equipment (See Calibration Logs in File):

YSI Model 556 calibrated by the vendor 4-1-09, Hach 2100P turbidimeter calibrated on site.

Checked response of the Ferrous Iron test kit against a standard solution.

Certification:

I certify that the above report is complete and correct and that I, or my authorized representative, have inspected all work performed this day and have determined that all materials, equipment, and workmanship are in strict compliance with the plans and specification, except as may be noted above.

Signature: Phillip Riley

# DAILY QUALITY CONTROL REPORT

| | | | |
|---|---|---|---|
| Site: SFL – Fort Riley | Project Manager: R. Stenson | Quality Control: F. Bader | Page No.: __1__ of __1__ |
| Date: 4-2-09 | Week No.: 1 | Hours on Site: 9.5 | Work Order & Task: W912DQ-08-D-0031-0001 - Groundwater |
| Written By: Phillip Riley | | Reviewed By: R. Stenson | |

Weather/Temperature: Sleet, snow and wind in AM, to clear and 50 in afternoon.

Location of Work: Southwest Funston Landfill

| Project Personnel: Phillip Riley, Matthew Chidlow | Equipment: | Visitors/Affiliation: |
|---|---|---|
| • Field Team Leader: Phillip Riley | QED Bladder pump controller | Ryan Weiser KDHE |
| • CQC Manager: | QED : Interface probe | |
| • SSHO: Phillip Riley | Hach 2100P Turbidimeter | |
| • Others: Andrea Austin of Fort Riley | YSI #556 Water Quality Instrument | |

Work Performed by CTI:

Check in at gate, proceed to building # 407 to meet with Dr. Shields and visit the PSF and AGL sites. Discuss the projects and requirements. Proceed to SFL to continue the groundwater sampling. Calibrate the field water quality instruments and begin at well SFL92-401.
Continue at well SFL92-403. The purged groundwater parameters reach the required level of stability noticeably quicker than in 2008. This is likely a result of the corrected pump inlet positions, the pump inlet screens are now located above the bottom of the wells.
At 1300, met with Ryan Weiser of KDEH and Andrea Austin of Fort Riley to collect split samples at SFL92-603. Mr. Weiser and Ms Austin observed the entire groundwater purge and sample process, the samples were collected at 1355.
Conducted sampling at wells SFL92-601 and SFL97-903 with no problems. Collected MS/MSD sample at SFL92-601.
Note: calibrated the Dissolved Oxygen sensor to 100% at each location. Placed purge water into sanitary manhole #96.
This completes the SFL well repair and groundwater sampling projects. The samples are securely packed on ice awaiting shipment to the laboratories on 4-3-09.

Safety Observations/Violations/Comments:

NONE

Calibration of Field Equipment (See Calibration Logs in File):

YSI Model 556 and Hach 2100P turbidimeter were calibrated on site.

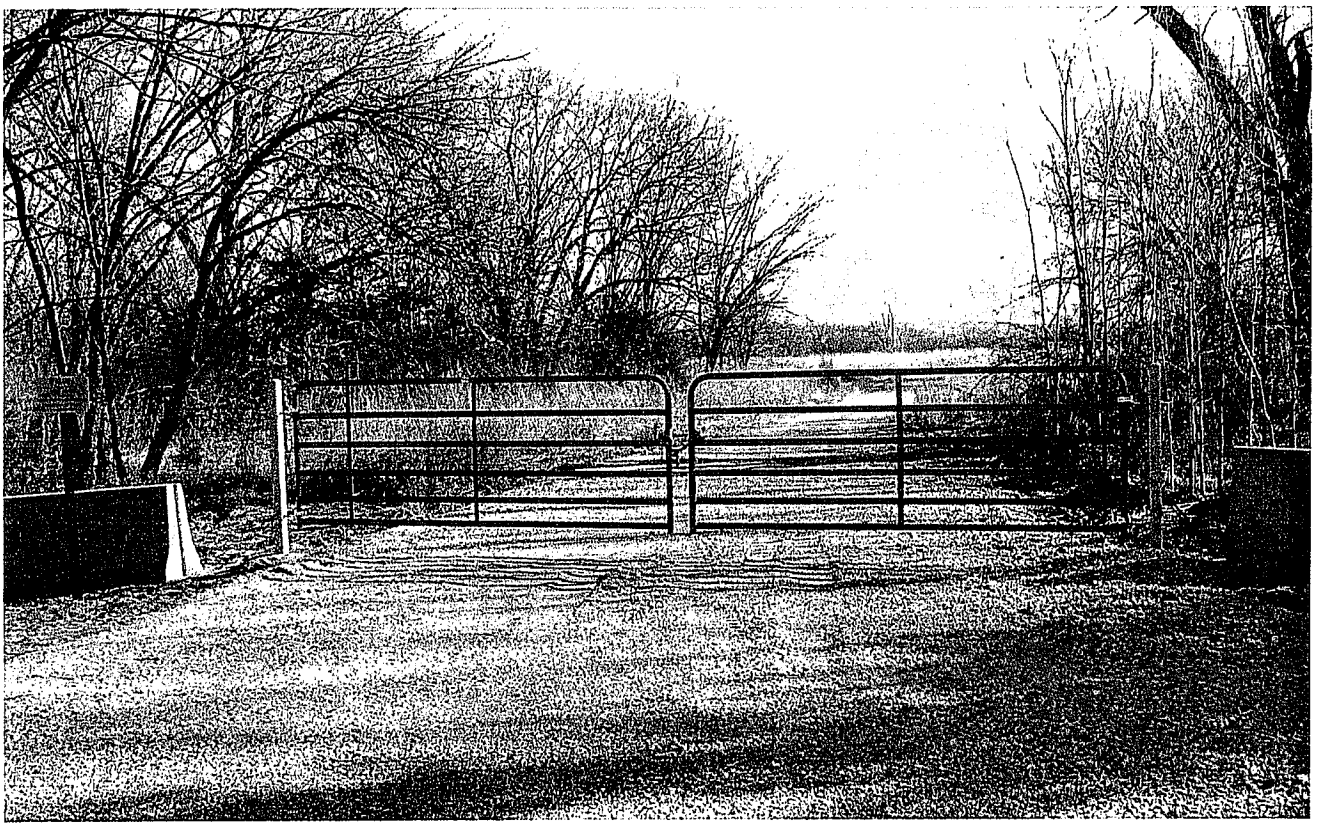
Checked response of the Ferrous Iron test kit against a standard solution.

Certification:

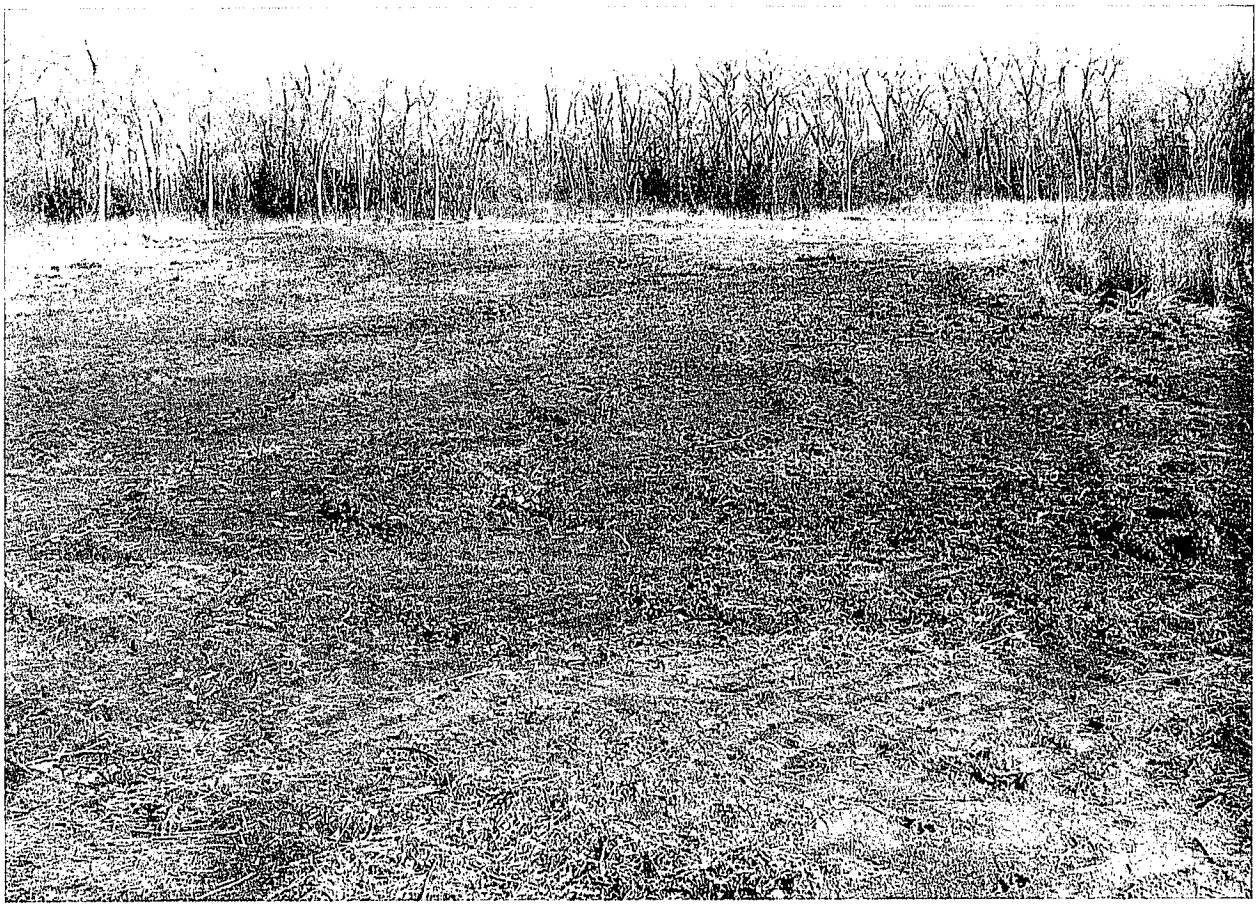
I certify that the above report is complete and correct and that I, or my authorized representative, have inspected all work performed this day and have determined that all materials, equipment, and workmanship are in strict compliance with the plans and specification, except as may be noted above.

Signature: Phillip Riley

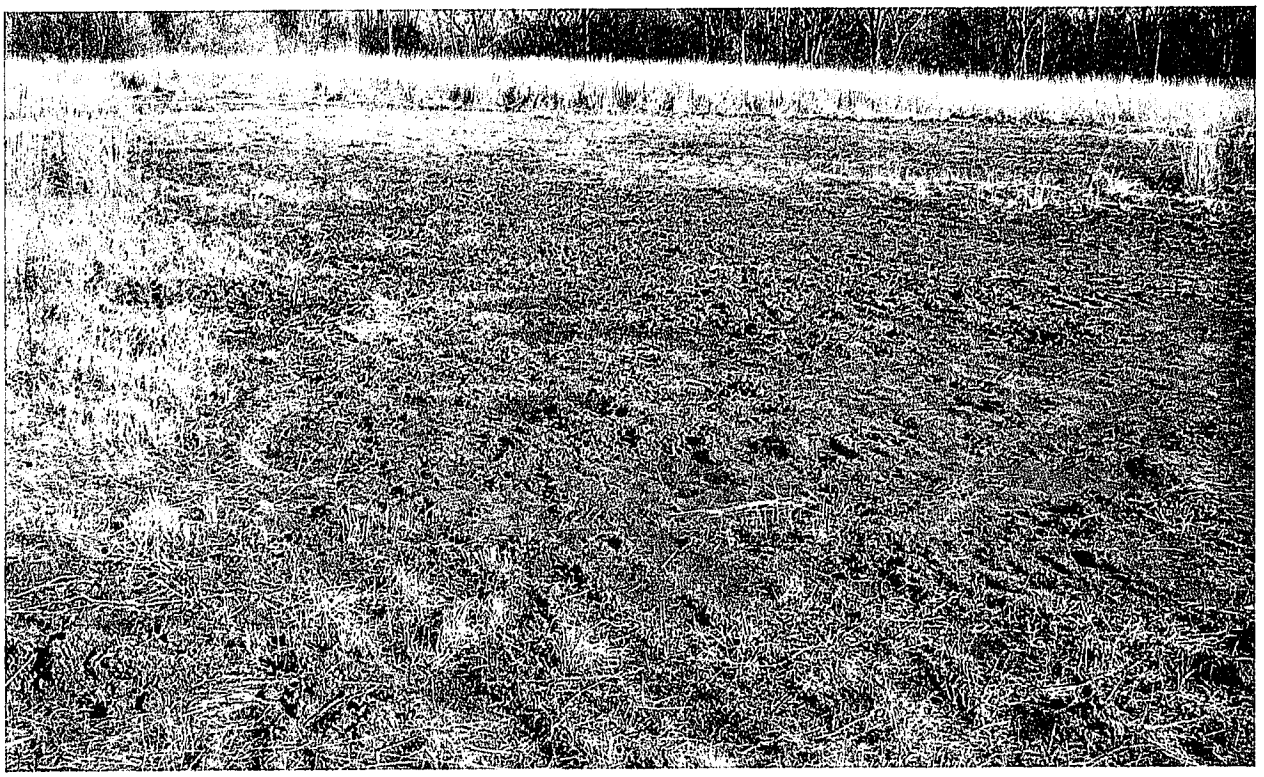
Photograph of SFL (30 November 2009)-1: View looking south at the entrance to the Southwest Funston Landfill-site access controls replaced/updated in September-October 2009: Warning Signage, Locked Gates, and Concrete Barriers



Photograph of SFL (23 November 2009)-2: Landfill cover repair of differential settlement/ponding in northeast quadrant of the Southwest Funston Landfill in September –October 2009



Photograph of SFL (30 November 2009)-3: Landfill cover repair of differential settlement/ponding at east central edge of landfill



Photograph of SFL (23 November 2009)-4: Rock armoring of the landfill upper riverbank slope of rubble areas to cover slate, tar material, and 4% Chrysotile asbestos tiles in October 2009

Photograph of SFL (23 November 2009)-5: Two-hundred-fifty (250) linear feet of rock armoring of the landfill-upper riverbank slope to cover the exposed rubble of slate, tar materials, and 4% Chrysotile asbestos tiles in October 2009