

6 February 2015

Mr. Dwight C. Russell, P.E.  
MC-124  
Texas Commission on Environmental Quality  
MSW Permits Section, Waste Permits Division  
P.O. Box 13087  
Austin, Texas 78711-3087

**Subject: Response to Fourth Notice of Deficiency (NOD)  
Permit Modification – Oil and Gas Waste Processing  
Covel Gardens Landfill, MSW Permit No. 2093B  
San Antonio, Bexar County, Texas  
Tracking Nos. 18053589, 18358472, 18505711, and 1867183; RN100218338/CN600127856**

Dear Mr. Russell:

On behalf of Waste Management of Texas, Inc. (WMTX), Geosyntec Consultants (Geosyntec) has prepared this letter in response to the notice of deficiency (NOD) comments on the above-referenced permit modification request transmitted in a 21 January 2015 letter from the Texas Commission on Environmental Quality (TCEQ) to Waste Management of Texas, Inc. (WMTX).

#### **RESPONSE TO COMMENTS**

TCEQ's comments are presented below in italicized type, with responses immediately following the comments in regular type. Additionally, the resulting replacement pages to the permit modification application are enclosed with this letter to replace the previously submitted versions of the applicable pages. These revisions have an updated date reflecting the revision. A working copy is also attached to this submittal that uses an underline/strikethrough format, in order to mark the revised text, to highlight the revision and facilitate TCEQ's review.

*Comment: With regard to the proposed testing procedure for the centrifuge solids to be disposed in the landfill, the procedure should provide for:*

- *Representative sampling of the first batch of centrifuge solids and laboratory testing for the parameters listed in 25 TAC 289.259(d)(1)(A);*
- Response: A laboratory testing program has been added as requested. Section 2.2 has been revised to reference both field and laboratory testing, and details of the laboratory analytical testing program is described in Appendix IV-I-B.
- *Screening of the first batch and all subsequent batches using the radiation survey instrument in accordance with the survey instrument manufacturer's specifications (Note: If the scanning procedure on Page IV-I-B-1 of the application is consistent with manufacturer specifications, please state this in the application; otherwise, revise as necessary.);*

- Response: Appendix IV-I-B has been revised as requested.
- *Periodic repetition of laboratory analyses, at a minimum annually, to verify that the centrifuge solids continue to meet the exemption criteria in 25 TAC §289.259(d)(1)(A)(i) and (ii);*
- Response: Appendix IV-I-B has been revised to include laboratory analytical testing, and also includes the requested repetition of the lab analyses.
- *Placement of all laboratory analytical and field screening results in the facility operating record;*
- Response: Appendix IV-I-B has been revised as requested.
- *Measurement on each batch of centrifuge solids to demonstrate (radiation survey instrument) results of not greater than 50 µR/hr or other lower intensity value, as correlated from laboratory testing results, corresponding to the concentrations listed in 25 TAC §§289.259(d)(1)(A)(i) and (ii). The procedure should clarify that, on any given batch of centrifuge solids, if laboratory results are found to be greater than the concentrations in 25 TAC §289.259(d)(1)(A)(i) and (ii), while the radiation survey instrument results are less than 50 µR/hr, then a value of less than 50 µR/hr should be established as the baseline for requiring laboratory testing on future batches;*
- Response: Appendix IV-I-B has been revised as requested.

## **PART I FORM AND CERTIFICATION STATEMENT**

Pages 1 and 5 of the Part I Form are being submitted with this response. Page 5, the Signature Page, provides the certification statement signed by the applicant's responsible official.

## **CLOSURE**

One original and two copies of this submittal are being provided to the TCEQ MSW Permits Section in Austin. Also, one copy has been sent directly to TCEQ Region 13 Office, as indicated on the distribution list at the end of this letter. An electronic copy of this submittal has also been posted to the internet at the same URL as the initial posting of the application. If you have any questions regarding the information presented in this letter, please do not hesitate to contact the undersigned by telephone at (512) 451-4003, or by E-mail at [sgraves@geosyntec.com](mailto:sgraves@geosyntec.com).

Sincerely,



Scott M. Graves, P.E.  
Associate, Geosyntec Consultants, Inc.

Copy to: Mr. Cameron Lopez, TCEQ Region 13 Office  
Mr. Tim Champagne, WMTX

**PART I FORM UPDATE PAGES**  
**(includes Applicant's Certification Statement)**

The pages that follow are updates to the Part I Form which include the applicant's certification statement for this submittal.

Facility Name: Covel Gardens Landfill  
Permittee/Registrant Name: Waste Management of Texas, Inc.  
MSW Authorization #: 2093B  
Initial Submittal Date: 4-4-2014  
Revision Date: 2-6-2015



## Texas Commission on Environmental Quality

### Permit/Registration Modification and Temporary Authorization Application Form for an MSW Facility

#### 1. Reason for Submittal

- Initial Submittal       Notice of Deficiency (NOD) Response

#### 2. Authorization Type

- Permit       Registration

#### 3. Application Type

- Modification with Public Notice       Modification without Public Notice  
 Temporary Authorization (TA)       Modification for Name Change/Transfer

#### 4. Application Fees

- Pay by Check       Online Payment

If paid online, e-Pay Confirmation Number: 582EA000164351

#### 5. Application URL

Is the application submitted for a permit/registration modification with public notice?

- Yes       No

If the answer is "Yes", enter the URL address of a publicly accessible internet web site where the application and all revisions to that application will be posted in the space provided: [http:// www0.wm.com/wm/texas/permits.asp](http://www0.wm.com/wm/texas/permits.asp)

#### 6. Confidential Documents

Does the application contain confidential documents?

- Yes       No

If "Yes", cross-reference the confidential documents throughout the application and submit as a separate attachment in a binder clearly marked "CONFIDENTIAL."

### Signature Page

I, Steve Jacobs, Director of Disposal Operations,  
(Site Operator (Permittee/Registrant)'s Authorized Signatory) (Title)

certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature: [Handwritten Signature]

Date: 2-6-15

-----  
**TO BE COMPLETED BY THE OPERATOR IF THE APPLICATION IS SIGNED BY AN AUTHORIZED REPRESENTATIVE FOR THE OPERATOR**

I, \_\_\_\_\_, hereby designate \_\_\_\_\_  
(Print or Type Operator Name) (Print or Type Representative Name)

as my representative and hereby authorize said representative to sign any application, submit additional information as may be requested by the Commission; and/or appear for me at any hearing or before the Texas Commission on Environmental Quality in conjunction with this request for a Texas Water Code or Texas Solid Waste Disposal Act permit. I further understand that I am responsible for the contents of this application, for oral statements given by my authorized representative in support of the application, and for compliance with the terms and conditions of any permit which might be issued based upon this application.

\_\_\_\_\_  
Printed or Typed Name of Operator or Principal Executive Officer

\_\_\_\_\_  
Signature

SUBSCRIBED AND SWORN to before me by the said Steve Jacobs

On this 6th day of February, 2015

My commission expires on the 27th day of July, 2016

[Handwritten Signature]

Notary Public in and for

Travis

County, Texas

(Note: Application Must Bear Signature & Seal of Notary Public)



## **REDLINE/STRIKETHROUGH PAGES**

To facilitate TCEQ's review, the attached pages present a "redline/strikethrough" version of the following items, showing the proposed revisions:

- Part IV – Appendix IV-I, Oil and Gas Waste Processing Plan (Cover Page; Section 2.2; and Appendix IV-I-B).



*Prepared for:*

**Waste Management of Texas, Inc.**

8611 Covell Road  
San Antonio, Texas 78252  
(210) 623-8800

**OIL AND GAS WASTE PROCESSING PLAN  
PART IV – APPENDIX IV-I**

**COVEL GARDENS LANDFILL  
MSW PERMIT NO. 2093B  
SAN ANTONIO, BEXAR COUNTY, TEXAS**

*Prepared by:*

**Geosyntec**   
consultants

8217 Shoal Creek Blvd, Suite 200  
Austin, Texas 78757  
(512) 451-4003

April 2014

Revised ~~February~~ ~~November~~ 2015<sup>4</sup>

2. Field Scanning for the presence of naturally occurring radioactive material (NORM) using a scintillation meter with a sodium iodide detector, (or equivalent), along with periodic laboratory radiation testing. Operating procedures for the radiation testing of separated solids are provided in Appendix IV-I-B of this Plan. This includes identifying the radiation survey instrument types that may be used, along with the field scanning and laboratory testing monitoring frequency, methodology, and recording of radiation levels to demonstrate compliance with the oil and gas NORM waste exemption concentration requirements of 25 TAC §289.259(d). In addition, Appendix IV-I-B provides the methodology for further testing, storing, transporting and off-site disposal of separated solids with radiation levels not meeting criteria for on-site disposal.
- The separated water-phase oil and gas wastewater (i.e., process water, which is primarily a briny water) will be either: (i) solidified in accordance with Part IV, Sub-Appendix IV-A-1; (ii) managed as contaminated water as described in Part III, (Leachate and Contaminated Water Plan); or (iii) transported to a duly permitted/registered off-site disposal facility (e.g., a Class II injection well) that is authorized to accept this type of oil and gas related wastewater.
  - The separated oil-phase material (which is primarily spent diesel used in drilling fluids, along with incidental amounts of crude oil) that is recovered from the centrifuge process will be transported to an authorized off-site oil processing/reclamation facility that is permitted or authorized to receive this type of reclaimed material.

### **2.3 Off-Site Transport of Post-Processed Oil and Gas Wastes**

The off-site transport of the post-processed oil and gas wastes (i.e., the reclaimed oil and the separated water) shall be subject to applicable RRC requirements. For as long as these materials are within the facility's custody, the facility shall comply with all applicable RRC requirements regarding management of this waste (manifesting, recordkeeping, reporting, quantity records, verification of movement, etc.). Recovered oil and gas waste that will be transported off-site shall not be comingled with other wastes (e.g., solid waste, or non-oil and gas wastes) and will be transported and managed as required by TCEQ, RRC and TXDOT rules and requirements.



**SUB-APPENDIX IV-I-B**  
**OPERATING PROCEDURES FOR SEPARATED SOLIDS**  
**SCREENING**

## OPERATING PROCEDURES FOR SEPARATED SOLIDS SCREENING

The following procedures will be performed to manage separated solids resulting from the oil and gas waste processing described in this Plan:

### Laboratory Analytical Radiation Testing Program:

- Field Calibration. Representative sampling and subsequent laboratory analytical testing will be performed on the first batch of separated solids, to measure the radiation concentrations and verify that the material has concentrations below the allowable concentrations specified in 25 TAC §289.259(d)(1)(A) which defines exempt oil and gas NORM waste. More specifically:
  - A representative composite sample of the first batch will be obtained, averaged over any 100 square meters (m<sup>2</sup>) [e.g., approx. 33-ft by 33-ft] and averaged over the first 15 centimeters (cm) [i.e., 6-inches] of depth.
  - The sample will be tested in the laboratory, and in order for that batch to be managed as an exempt NORM waste, must have concentrations of:
    - i. 30 picocuries per gram (pCi/gm) or less of radium-226 or radium-228;  
or
    - ii. 150 pCi or less per gram of any other NORM radionuclide.
  - If radionuclide testing results indicate the batch is at or below these allowable concentrations (i.e., meets the exemption criteria), the material from that batch will be disposed of in the landfill.
  - If radionuclide testing results indicate the batch is above these allowable concentrations, the material from that batch is non-exempt NORM waste and will be managed and disposed in accordance with applicable state and federal regulatory requirements by transfer of the wastes for disposal to a land disposal facility licensed by the state regulatory department/agency; the U.S. Nuclear Regulatory Commission; an agreement state; a licensing state, or alternative methods authorized by The Railroad Commission of Texas, who has jurisdiction over the handling and disposal of NORM wastes produced during the exploration and production of oil and gas.
- Ongoing Laboratory Testing. The laboratory testing described above for the first batch will be repeated annually to verify that the separated solids material has concentrations below the allowable concentrations specified in 25 TAC §289.259(d)(1)(A).

- Use of Lab Results During Field Screening. The laboratory results will also be used to evaluate the effectiveness of the field screening radiation survey instrument and perform correlations if needed to revise the baseline allowable intensity value for field screening. This is described below.

### **Field Scanning Radiation Testing Program:**

- Overview. Material will be allowed to accumulate daily in the solids area and will be batch tested (field screened) for radiation intensity levels prior to disposal. Field screening using a radiation survey instrument meeting the requirements of 25 TAC §289.259(e) will be performed on the first batch and on all subsequent batches, to demonstrate results not greater than the allowable threshold intensity (established as described below). Testing will occur on average twice per day depending on volume of material accumulated in the solids box.
- Field Scanning Procedures. Testing will consist of passing the radiation survey instrument<sup>(see Note 1)</sup> (hereafter referred to as the “NORM meter”) across the surface area of the soil within the three sided box containing solids from the process. The instrument will be operated in accordance with its manufacturer’s specifications for batch screening, which will including the following:
  - o The NORM meter will be set to measure milliRoentgens per hour (mR/hr) (conversion to microRoentgens per hour ( $\mu$ R/hr) requires multiplying results by 1000).
  - o Once turned on, the meter will take approximately 30 seconds to warm up and stabilize to ensure statistical validity.
  - o The NORM meter can be used to measure mR/hr directly or as counts per minute (CPM) and converted to mR/hr. Typical operation mode will be in mR/hr.
  - o To perform a general survey of the separated solids, the NORM meter will be placed within 2 inches of the surface of the pile and moved around the pile for approximately 30 seconds. The highest value detected will be logged.
- Allowable Threshold Value for Field Screening:
  - o The default allowable threshold value for field screening is 50  $\mu$ R/hr. This value will be used for the field screening program, provided that the results of the laboratory testing described above confirm that the separated solids material has concentrations at or below the allowable concentrations specified in 25 TAC §289.259(d)(1)(A).

- If the laboratory testing results on the first batch or subsequent annual testing indicate concentrations greater than the allowable concentrations specified in 25 TAC §289.259(d)(1)(A) but the radiation survey instrument (field screening) results indicate less than 50 µR/hr (and the meter is determined to be functioning correctly) then a new lower baseline for the allowable threshold (i.e., less than 50 µR/hr) will be established and used for future field screening based on the laboratory results correlated to the field screening results. (Thus, the term “allowable threshold” refers to either 50 µR/hr, or the adjusted lower value described herein).
- Material Management – Passing Field Scanning Results. If the result of the field screening indicates the presence of radiation below the allowable threshold, the separated solids will be disposed of in the landfill. If field screening indicates the presence of radiation at or above the 50 µR/hr allowable threshold, the next steps will be taken as outlined below.
- Procedures for Field Screening Exceedances. If the result of the survey-field screening indicates the presence of radiation at or above 50 µR/hr the allowable threshold, a confirmatory survey-field screening will be performed using counts per minute to confirm the results. If the results confirm indicate levels at or above 50 µR/hr the allowable threshold, the material will be isolated by placement into a roll off container and covered with a tarp. The following label will be applied:
  1. yellow and black stating “Caution NORM (Naturally Occurring Radioactive Material) Is Present”, or;
  2. orange and black stating “Warning Contains NORM (Naturally Occurring Radioactive Material)” or;
  3. by marking the letters “NORM” legibly with a waterproof paint or ink.
- The isolated material will then be further tested in accordance with the procedures and for the parameters outlined in 25 TAC 289.259(d)(1)(A).
- If radionuclide testing results are ~~below~~ 30 picocuries per gram (pCi/gm) or less of radium-226 or radium-228, ~~and~~ 150 pCi or less of any other NORM radionuclide, material will be disposed of in the landfill.
- If radionuclide testing results are ~~at or~~ above 30 pCi/gm of radium-226 or radium-228 or 150 pCi of any other radionuclide, the material will be transported and disposed of at a licensed facility authorized to accept this waste.

- o Non-exempt NORM waste (i.e., NORM waste having radiation levels greater than the thresholds given in the two preceding bullet points) will be managed and disposed in accordance with applicable state and federal regulatory requirements by transfer of the wastes for disposal to a land disposal facility licensed by the state regulatory department/agency; the U.S. Nuclear Regulatory Commission; an agreement state; a licensing state, or alternative methods authorized by The Railroad Commission of Texas, who has ~~has~~ jurisdiction over the handling and disposal of NORM wastes produced during the exploration and production of oil and gas.

### **Field Instruments:**

Note 1: Two types of instruments, equivalent in their ability to measure radiation, may be used to conduct the field scanning to measure radiation, levels as follows:

A **scintillation counter**, which consists of a scintillator that generates photons of light in response to incident radiation, a sensitive photomultiplier tube which converts the light to an electrical signal, and the necessary electronics to process the photomultiplier tube output.

**Geiger Mueller tube**, which consists of a an instrument that generates a pulse of electrical current each time radiation passes through the halogen quenched tube and causes ionization.

Each type of instrument will be calibrated and operable to meet the calibration requirements of 25 TAC §289.259(e)(3) and will be capable of measuring microRöntgens per hour within the required range specified in 25 TAC §289.259(e)(1).

### **Recordkeeping:**

The results of all laboratory analytical and field screening tests described herein will be placed in the Site Operating Record in accordance with Section 3.12.1 of this Plan.

## **REPLACEMENT PAGES**

The items that follow are to completely replace the previous versions of these pages.

- Part IV – Appendix IV-I, Oil and Gas Waste Processing Plan (Cover Page; Table of Contents; Section 2.2; and Appendix IV-I-B)).



*Prepared for:*

**Waste Management of Texas, Inc.**  
8611 Covel Road  
San Antonio, Texas 78252  
(210) 623-8800

**OIL AND GAS WASTE PROCESSING PLAN  
PART IV – APPENDIX IV-I**

**COVEL GARDENS LANDFILL  
MSW PERMIT NO. 2093B  
SAN ANTONIO, BEXAR COUNTY, TEXAS**

*Prepared by:*

**Geosyntec**   
consultants

8217 Shoal Creek Blvd, Suite 200  
Austin, Texas 78757  
(512) 451-4003



FOR PERMIT PURPOSES ONLY

GEOSYNTEC CONSULTANTS, INC.  
TEXAS ENG. FIRM REGISTRATION NO. F-1182

April 2014  
Revised February 2015

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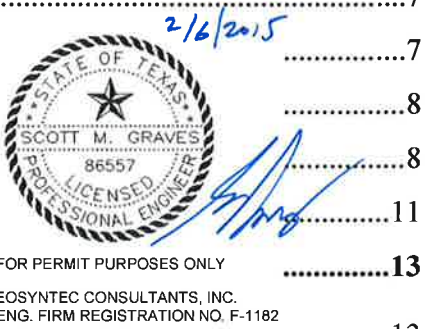
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 TEXAS ENG. FIRM REGISTRATION NO. F-1182

**APPENDICES**

Appendix IV-I-A Manufacturer’s Literature on Centrifuge Equipment

Appendix IV-I-B Operating Procedures for Separated Solids Screening

2. Field scanning for the presence of naturally occurring radioactive material (NORM) using a scintillation meter with a sodium iodide detector (or equivalent), along with periodic laboratory radiation testing. Operating procedures for the radiation testing of separated solids are provided in Appendix IV-I-B of this Plan. This includes identifying the radiation survey instrument types that may be used, along with the field scanning and laboratory testing monitoring frequency, methodology, and recording of radiation levels to demonstrate compliance with the oil and gas NORM waste exemption concentration requirements of 25 TAC §289.259(d). In addition, Appendix IV-I-B provides the methodology for further testing, storing, transporting and off-site disposal of separated solids with radiation levels not meeting criteria for on-site disposal.
- The separated water-phase oil and gas wastewater (i.e., process water, which is primarily a briny water) will be either: (i) solidified in accordance with Part IV, Sub-Appendix IV-A-1; (ii) managed as contaminated water as described in Part III, (Leachate and Contaminated Water Plan); or (iii) transported to a duly permitted/registered off-site disposal facility (e.g., a Class II injection well) that is authorized to accept this type of oil and gas related wastewater.
  - The separated oil-phase material (which is primarily spent diesel used in drilling fluids, along with incidental amounts of crude oil) that is recovered from the centrifuge process will be transported to an authorized off-site oil processing/reclamation facility that is permitted or authorized to receive this type of reclaimed material.

### **2.3 Off-Site Transport of Post-Processed Oil and Gas Wastes**

The off-site transport of the post-processed oil and gas wastes (i.e., the reclaimed oil and the separated water) shall be subject to applicable RRC requirements. For as long as these materials are within the facility's custody, the facility shall comply with all applicable RRC requirements regarding management of this waste (manifesting, recordkeeping, reporting, quantity records, verification of movement, etc.). Recovered oil and gas waste that will be transported off-site shall not be comingled with other wastes (e.g., solid waste, or non-oil and gas wastes) and will be transported and managed as required by TCEQ, RRC and TXDOT rules and requirements.

**SUB-APPENDIX IV-I-B**

**OPERATING PROCEDURES FOR SEPARATED SOLIDS  
SCREENING**

## **OPERATING PROCEDURES FOR SEPARATED SOLIDS SCREENING**

The following procedures will be performed to manage separated solids resulting from the oil and gas waste processing described in this Plan:

### **Laboratory Analytical Radiation Testing Program:**

- **Field Calibration.** Representative sampling and subsequent laboratory analytical testing will be performed on the first batch of separated solids, to measure the radiation concentrations and verify that the material has concentrations below the allowable concentrations specified in 25 TAC §289.259(d)(1)(A) which defines exempt oil and gas NORM waste. More specifically:
  - A representative composite sample of the first batch will be obtained, averaged over any 100 square meters (m<sup>2</sup>) [e.g., approx. 33-ft by 33-ft] and averaged over the first 15 centimeters (cm) [i.e., 6-inches] of depth.
  - The sample will be tested in the laboratory, and in order for that batch to be managed as an exempt NORM waste, must have concentrations of:
    - i. 30 picocuries per gram (pCi/gm) or less of radium-226 or radium-228;  
or
    - ii. 150 pCi or less per gram of any other NORM radionuclide.
  - If radionuclide testing results indicate the batch is at or below these allowable concentrations (i.e., meets the exemption criteria), the material from that batch will be disposed of in the landfill.
  - If radionuclide testing results indicate the batch is above these allowable concentrations, the material from that batch is non-exempt NORM waste and will be managed and disposed in accordance with applicable state and federal regulatory requirements by transfer of the wastes for disposal to a land disposal facility licensed by the state regulatory department/agency; the U.S. Nuclear Regulatory Commission; an agreement state; a licensing state, or alternative methods authorized by The Railroad Commission of Texas, who has jurisdiction over the handling and disposal of NORM wastes produced during the exploration and production of oil and gas.
- **Ongoing Laboratory Testing.** The laboratory testing described above for the first batch will be repeated annually to verify that the separated solids material has concentrations below the allowable concentrations specified in 25 TAC §289.259(d)(1)(A).

- Use of Lab Results During Field Screening. The laboratory results will also be used to evaluate the effectiveness of the field screening radiation survey instrument and perform correlations if needed to revise the baseline allowable intensity value for field screening. This is described below.

### **Field Scanning Radiation Testing Program:**

- Overview. Material will be allowed to accumulate daily in the solids area and will be batch tested (field screened) for radiation intensity levels prior to disposal. Field screening using a radiation survey instrument meeting the requirements of 25 TAC §289.259(e) will be performed on the first batch and on all subsequent batches, to demonstrate results not greater than the allowable threshold intensity (established as described below). Testing will occur on average twice per day depending on volume of material accumulated in the solids box.
- Field Scanning Procedures. Testing will consist of passing the radiation survey instrument<sup>(see Note 1)</sup> (hereafter referred to as the “NORM meter”) across the surface area of the soil within the three sided box containing solids from the process. The instrument will be operated in accordance with its manufacturer’s specifications for batch screening, which will including the following:
  - The NORM meter will be set to measure milliRoentgens per hour (mR/hr) (conversion to microRoentgens per hour ( $\mu$ R/hr) requires multiplying results by 1000).
  - Once turned on, the meter will take approximately 30 seconds to warm up and stabilize to ensure statistical validity.
  - The NORM meter can be used to measure mR/hr directly or as counts per minute (CPM) and converted to mR/hr. Typical operation mode will be in mR/hr.
  - To perform a general survey of the separated solids, the NORM meter will be placed within 2 inches of the surface of the pile and moved around the pile for approximately 30 seconds. The highest value detected will be logged.
- Allowable Threshold Value for Field Screening:
  - The default allowable threshold value for field screening is 50  $\mu$ R/hr. This value will be used for the field screening program, provided that the results of the laboratory testing described above confirm that the separated solids material has concentrations at or below the allowable concentrations specified in 25 TAC §289.259(d)(1)(A).

- If the laboratory testing results on the first batch or subsequent annual testing indicate concentrations greater than the allowable concentrations specified in 25 TAC §289.259(d)(1)(A) but the radiation survey instrument (field screening) results indicate less than 50  $\mu\text{R/hr}$  (and the meter is determined to be functioning correctly) then a new lower baseline for the allowable threshold (i.e., less than 50  $\mu\text{R/hr}$ ) will be established and used for future field screening based on the laboratory results correlated to the field screening results. (Thus, the term “allowable threshold” refers to either 50  $\mu\text{R/hr}$ , or the adjusted lower value described herein).
- Material Management – Passing Field Scanning Results. If the result of the field screening indicates the presence of radiation below the allowable threshold, the separated solids will be disposed of in the landfill. If field screening indicates the presence of radiation at or above the allowable threshold, the next steps will be taken as outlined below.
- Procedures for Field Screening Exceedances. If the result of the field screening indicates the presence of radiation at or above the allowable threshold, a confirmatory field screening will be performed using counts per minute to confirm the results. If the results confirm levels at or above the allowable threshold, the material will be isolated by placement into a roll off container and covered with a tarp. The following label will be applied:
  1. yellow and black stating “Caution NORM (Naturally Occurring Radioactive Material) Is Present”, or;
  2. orange and black stating “Warning Contains NORM (Naturally Occurring Radioactive Material)” or;
  3. by marking the letters “NORM” legibly with a waterproof paint or ink.
- The isolated material will then be further tested in accordance with the procedures and for the parameters outlined in 25 TAC 289.259(d)(1)(A).
- If radionuclide testing results are 30 picocuries per gram (pCi/gm) or less of radium-226 or radium-228, or 150 pCi or less of any other NORM radionuclide, material will be disposed of in the landfill.
- If radionuclide testing results are above 30 pCi/gm of radium-226 or radium-228 or 150 pCi of any other radionuclide, the material will be transported and disposed of at a licensed facility authorized to accept this waste.
- Non-exempt NORM waste (i.e., NORM waste having radiation levels greater than the thresholds given in the two preceding bullet points) will be managed

and disposed in accordance with applicable state and federal regulatory requirements by transfer of the wastes for disposal to a land disposal facility licensed by the state regulatory department/agency; the U.S. Nuclear Regulatory Commission; an agreement state; a licensing state, or alternative methods authorized by The Railroad Commission of Texas, who has jurisdiction over the handling and disposal of NORM wastes produced during the exploration and production of oil and gas.

**Field Instruments:**

Note 1: Two types of instruments, equivalent in their ability to measure radiation, may be used to conduct the field scanning to measure radiation, levels as follows:

A **scintillation counter**, which consists of a scintillator that generates photons of light in response to incident radiation, a sensitive photomultiplier tube which converts the light to an electrical signal, and the necessary electronics to process the photomultiplier tube output.

**Geiger Mueller tube**, which consists of a an instrument that generates a pulse of electrical current each time radiation passes through the halogen quenched tube and causes ionization.

Each type of instrument will be calibrated and operable to meet the calibration requirements of 25 TAC §289.259(e)(3) and will be capable of measuring microRoentgens per hour within the required range specified in 25 TAC §289.259(e)(1).

**Recordkeeping:**

The results of all laboratory analytical and field screening tests described herein will be placed in the Site Operating Record in accordance with Section 3.12.1 of this Plan.