



RAILROAD COMMISSION OF TEXAS

OIL AND GAS DIVISION

PERMIT TO STORE, HANDLE, TREAT, RECYCLE, AND RE-USE CERTAIN NON-HAZARDOUS
OIL AND GAS WASTES

Permit No. MR-0049
AMMENDED

TERVITA LLC
10613 W SAM HOUSTON PKWY SUITE 300
HOUSTON TX 77064

Based on information contained in the original application received April 19, 2016, and subsequent information received to date, you are hereby authorized to store, handle, treat and recycle certain oil and gas waste as specified below for re-use for the following load-bearing structures in the referenced Railroad Commission of Texas (RRC) Oil and Gas Districts: lease roads and surfaces, lease drilling and production pads, and county roads.

Permit Type: On-Lease Mobile Recycling

Permit No. MR-0049

Authorization for On-Lease Commercial Solid Oil and Gas Waste Recycling
State of Texas

RRC Districts 01, 02, 03, 04, 05, 06, 7B, 7C, 08, 8A, 09, and 10

NARRATIVE DESCRIPTION OF PROCESS

The permittee will treat oil and gas waste generated on the same oil and gas lease, on-site for reuse. Drill cuttings, drilling fluids and solids generated from drilling operations received from the generator will be transferred to the on-lease treatment and mixing area, where solids will be processed and stabilized through the use of cement, lime, sand, fly ash, kiln dust or other solidification media. Mixing is conducted mechanically utilizing a trackhoe or pug mill. Treated waste will be transferred to the recycled material storage area until each lot has passed the appropriate analytical criteria. Waste that has passed the analytical requirements will be marked as recycled product until used as road base for lease roads or lease pads, or county roads. Any waste that does not meet any of the analytical requirements will be placed back into the treatment process until it meets permit criteria or is disposed of in an authorized manner.

Authority is granted to receive, store, handle, and treat oil and gas wastes in accordance with Texas Administrative Code (TAC) Title 16, Part 1, Chapter 3.8 (Statewide Rule 8) and Texas Administrative Code (TAC) Title 16, Part 1, Chapter 4, Subchapter B and subject to the following minimum conditions:

I. GENERAL PERMIT CONDITIONS

- A. The effective date of this permit is August 19, 2016.
- B. The authority granted by this permit expires on August 18, 2021.
- C. This permit may be considered for administrative renewal upon review by the RRC. Any request for renewal must be received at least 60 days prior to the permit expiration date to have the permit continue during the renewal process.

- D. This permit is not transferable without the written consent of the RRC. Any request for transfer of this permit should be filed with Technical Permitting in Austin at least 60 days before the permittee wishes the transfer to take place.
- E. Any deviation from this permit must be approved by amendment from Technical Permitting in Austin before implementation.
- F. The permittee is responsible for, but not limited to the following obligations:
 - 1. The permittee shall manage the recyclable product (road base) generated by the recycling unit until custody of the recyclable product is either transferred to a buyer for reuse, applied for use at the designated location, or it is disposed of in an authorized manner.
 - 2. The permittee shall ensure the proper management of any oil and gas waste or partially treated waste generated by the treatment process until it meets analytical requirements and custody is transferred, or the generated waste resulting from the treatment process is disposed of in an authorized manner.
 - 3. The permittee shall remediate any soil, surface water, or groundwater affected by spills or leaks resulting from activities associated with the recycling unit. The appropriate District Office shall be notified in accordance with RRC Rules.
 - 4. The permittee shall divert stormwater away from the storage and treatment area, and collect and dispose of any stormwater that is contaminated as a result of contact with recyclable product, oil and gas waste, or partially treated waste generated by the recycling unit until custody of the recyclable product or waste is transferred for reuse.
- G. This permit does not authorize the discharge from the treatment sites of any oil and gas waste, including contaminated contact stormwater.
- H. The oil and gas waste, partially treated waste, and recyclable product must be mixed, stored, handled and applied in such a manner that the oil and gas waste, partially treated waste, and recyclable product will not migrate off the site or enter any drainage ditch, dry creek, flowing creek, river or any other body of surface water.
- I. Safety Data Sheets (SDS) must be submitted to Technical Permitting in Austin for any chemical or biological agents proposed to be used in the treatment or stabilization of waste. Use of the chemical or biological agent is contingent upon RRC approval.
- J. Any soil, treatment media, or other debris contaminated by a spill of waste or any other waste materials at any well sites must be containerized immediately and re-processed through the treatment cycle or disposed of in an authorized manner.
- K. The permittee must make all records required by this permit available for review and copying upon request of RRC personnel.
- L. Unless otherwise required by conditions of this permit, construction, use, and maintenance of the treatment site must be in accordance with the information represented in the permit application and attachments thereto.
- M. All chemical laboratory analyses required to be performed in accordance with this permit must be performed using appropriate EPA Methods or Standard Methods by an independent National Environmental Laboratory Accreditation Program (NELAP) certified laboratory neither owned nor operated by the permittee. Any sample collected for laboratory analysis must be collected and preserved in a manner appropriate for that analytical method as specified by 40 CFR, Part 136. All geotechnical testing is to be performed utilizing tests standardized by the American Society for Testing and Materials (ASTM) and certified by a Texas licensed Professional Engineer.

- N. Failure to comply with any provision of this permit will be cause for modification, suspension or termination of this permit. This permit may be canceled if Technical Permitting determines that the permittee is in violation of the conditions of this permit or if the permittee's operations are causing or allowing pollution of surface or subsurface water.

II. AUTHORIZED WASTES

- A. Only oil and gas wastes subject to the jurisdiction of the RRC that are non-hazardous or exempt from Resource Conservation and Recovery Act (RCRA), Subtitle C may be received. You may receive, store, handle, treat and process only the following non-injectable, non-reclaimable oil and gas wastes:
1. Water-based drilling fluids and associated cuttings;
 2. Oil-based drilling fluids and associated cuttings; and
 3. Soils contaminated with produced water, crude oil, or condensate.
- B. Waste treatment compounds, biological agents or accelerators, cement, lime, sand, limestone, fly ash, kiln dust, soil, sawdust, and/or other solidification media must be stored appropriately in aboveground enclosed containers at any well site.
- C. No asbestos-containing material regulated under the Clean Air Act or polychlorinated biphenyl (PCB) - containing material regulated under the Toxic Substances Control Act (TSCA) may be accepted for processing at any well site.
- D. No oil and gas Naturally Occurring Radioactive Material (NORM) waste as defined in 16 TAC §4.603 (Oil and Gas NORM) or waste from a facility that is licensed by the Texas Department of State Health Services to process or treat oil and gas NORM waste may be received at any well site.

III. TRIAL RUN

The permittee shall demonstrate to the satisfaction of Technical Permitting and the local District Office the ability to successfully process 1,000 cubic yards of oil and gas waste with this recycling unit, before any additional waste is received or processed.

- A. Technical Permitting in Austin and the appropriate District Office must be notified in writing at least 48 hours before waste processing begins.
- B. One sample of the partially treated waste must be collected from every 200 cubic yards of the first 1,000 cubic yards to be processed at the well site(s) and analyzed for parameters listed in Permit Condition IV.D.2., as well as wetting and drying durability by ASTM D 559-96 or ASTM D 559-03, modified to provide that samples are compacted and molded from finished partially treated waste. Total weight loss after 12 cycles may not exceed 15 percent.
- C. A written report of the Trial Run must be submitted to Technical Permitting in Austin and the appropriate District Office within 30 days of receipt of the analyses required in Permit Condition IV.D.2. The written report must include the following information:
1. Summary of Trial Run and a narrative of the process;
 2. Volume of waste material processed;
 3. The type of waste (as described in Permit Condition II.A.) treated and a description of the waste material;

4. Volume of stabilization material used; and
 5. Copies of all records and geotechnical and chemical laboratory analytical reports required by Permit Conditions III.B., III.C. and IV.D.2.
- D. The final processed material must comply with the limitations of Permit Condition IV.D.2.
- E. No additional waste may be received or processed, while the results of the Trial Run are reviewed by Technical Permitting. Any roadbase produced during the Trial Run may not be used until Technical Permitting has received the Trial Run report and provides written confirmation that the Trial Run requirement has been fulfilled.
- F. A Trial Run must be completed for each treatment method to be utilized.

IV. SITING, CONSTRUCTION, OPERATION AND PROCESS CONTROL

A. SITING

1. The storage cells at the drill sites and the location at the receiving sites must not be located:
 - a. Within a 100 year floodplain;
 - b. In a streambed; or
 - c. In a sensitive area as defined by 16 TAC §3.91(a) 2.
2. The storage cells at the drill sites and the location at the receiving sites must be located:
 - a. Above the top of the seasonal high water table;
 - b. At least 150 feet from surface water; and
 - c. At least 150 feet from public, domestic, or irrigation water wells.

B. CONSTRUCTION

1. Any storage cells and staging pits located at the well sites must be designed to prevent stormwater runoff from entering the area.
2. Any storage cells and staging pits located at the well sites must be surrounded by berms with a minimum height of two feet and a slope no steeper than three to one (horizontal to vertical) ratio on each side.
3. Earthen berms must be constructed around the on-lease treatment and mixing area and the recycled material storage area, and must be compacted or constructed of material that meets 95% standard Proctor (ASTM D-698) or 90-92% modified Proctor (ASTM D-1557) density. The berm shall be constructed to a height of at least two feet and shall maintain a slope no steeper than a one to three (vertical to horizontal) ratio, unless constructed of concrete or equivalent material (firewalls). These structures must be used to divert non-contact storm water around the waste management areas and contain and isolate contact storm water within the waste management units.
4. Treatment must only occur on oil or gas leases or drilling units owned by the same operator who generated the waste.
5. Untreated waste, partially treated waste and treated waste must be stored in lined pits, lined pads, above ground storage devices, or water tight roll-off boxes. The liner must meet one of the following conditions:
 - a. High-density polyethylene (HDPE) or polypropylene with a thickness of at least 30 mils, or equivalent;

- b. Concrete with a thickness of at least six inches;
- c. Compacted clay with a thickness of at least two feet compacted to 95% Standard Proctor or 90-92% Modified Proctor density, or with a demonstrated permeability of 1×10^{-7} cm/s; or
- d. Water tight roll-off boxes.

C. OPERATION

1. The permittee must notify the appropriate District Office in writing 48 hours prior to operations commencing at each lease location. Notification must include the location of the site in latitude and longitude in decimal degrees accurate to four decimal places using the WGS 84 datum. Notification must also include waste generator information including, when assigned: Lease Number or Gas I.D. Number and Well Number, American Petroleum Institute (API) Number or county road number. The permittee may commence operations under the permit 48 hours after notice to the appropriate District Office.
2. The volume of untreated waste, partially treated waste, and recyclable product (road base) must not exceed 14,400 cubic yards at each treatment site.
3. The permittee must obtain written permission from the surface owner of the lease upon which recycling will take place.
4. The permittee must obtain written permission from the surface owner of the lease prior to placing the recyclable product on the surface for re-use.
5. Re-use of the recyclable product is restricted to on-lease roads or on-lease pads, or county roads.
6. The permittee must obtain and submit written authorization from a County Commissioner(s) to the RRC prior to the road base being applied to a county road under their jurisdiction.
7. Waste must be mixed and stabilized at the well site with appropriate amounts or mixtures of treatment and stabilization agents. Mixing must be done mechanically with a trackhoe, dozer, pug mill, or comparable machinery.
8. To maintain adequate segregation of the final treated material there must be at least five feet of spacing between recyclable product, partially treated waste or untreated waste lots until the parameter limitations specified in Permit Condition IV.D.2. are received and demonstrate that the material meets requirements for use as road base. Each 800-cubic yard lot of waste used for Process Control sampling must maintain at least five feet of spacing from any other 800-cubic yard lot. Each 800-cubic yard lot of recyclable product must be labeled with a sign identifying its unique lot identification number and corresponding laboratory analysis number. Once laboratory analyses confirm the material has met permit specifications, the appropriate lot will be labeled "OK FOR USE" and used as road base.
9. The recycling unit may operate at a single lease for no longer than one year. Within the 60 days that follow the recycling unit relocation, all processing equipment must be removed; all untreated waste, partially treated waste, and other related waste must be disposed of in an authorized manner; all recyclable product must be reused or disposed of in an authorized manner; and final grading and site restoration must be completed in accordance with Permit Condition VI.
10. Appropriate measures must be taken to control dust at all times.
11. Inspections must be conducted weekly during recycling operations. If an inspection indicates a leak in any liner, tank, or berm, it must be repaired immediately.

12. Contact stormwater collected within any bermed area must be removed and disposed of in an authorized manner.

D. PROCESS CONTROL

1. Bench scale tests must be performed as needed to determine optimum mixing design.
2. A sample of the final treated material must be tested for the parameters listed below for every 800 cubic yards of material produced. Each 800-cubic yard lot sample must be composed of a composite of four sub-samples obtained at 200-cubic yard intervals. Each 800-cubic yard lot sample must have a complete chain-of-custody and must be analyzed for the following parameters:

<u>PARAMETER</u>	<u>LIMITATION</u>
Compressive Strength by a Texas Department of Transportation (TX DOT) approved method: ASTM D698, ASTM D1557, Tex-113-E, Tex-120-E, Tex-121E, Tex-117-E, or equivalent	35 psi minimum

Synthetic Precipitation Leaching Procedure (SPLP)
 by *EPA Method 1312/6010/6020/7471A*

<u>PARAMETER</u>	<u>LIMITATION</u>
Arsenic	< 5.00 mg/l
Barium	< 100.00 mg/l
Cadmium	< 1.00 mg/l
Chromium	< 5.00 mg/l
Lead	< 5.00 mg/l
Mercury	< 0.20 mg/l
Selenium	< 1.00 mg/l
Silver	< 5.00 mg/l
Zinc	< 5.00 mg/l
 Benzene by <i>EPA Method 1312/8021/8260B</i>	 < 0.50 mg/l

1:4 Solid: Solution 7 Day Leachate Test¹

Chlorides	< 700.00 mg/l
Total Petroleum Hydrocarbon (TPH)	< 100.00 mg/l
 pH (Standard Units)	 6 – 12.49

¹ Footnote for **1:4 Solid: Solution 7 Day Leachate Test**

Louisiana Administrative Code (LAC 43: XIX. Subpart 1 if the hydraulic conductivity of the molded sample is less than 1×10^{-6} cm/sec, a leachate liquid formed by leaching the molded sample itself with four times the molded sample volume of distilled water may be tested for chlorides, TPH and pH.

3. Any material not meeting the limitations specified in Permit Condition IV.D.2. shall be returned to the mixing cycle and reprocessed or disposed of in an authorized manner.
4. Processed waste meeting or exceeding process control parameters listed in Condition IV.D.2. is a recycled product and is suitable for use as lease roads, drilling pads, lease pads, and county roads as approved by the appropriate County Commissioner(s).

V. RECORDKEEPING AND REPORTING REQUIREMENTS

A. RECORD KEEPING

1. Records must be kept of all waste treated for a period of three (3) years from the date of treatment. These records must include the following:
 - a. Name of the generator;
 - b. Source of the waste (Lease Number or Gas I.D. Number and Well Number, or API Number);
 - c. Date the waste is processed at the treatment site;
 - d. Volume of the waste processed at the treatment site;
 - e. Name and RRC permit number of the carrier if the waste or road base is transported off of the generating lease;
 - f. Latitude and Longitude in decimal degrees of each treatment and receiving site accurate to four decimal places using WGS 84 datum, including the Lease Number or Gas I.D. Number and Well Number, API Number, or County Road Number;
 - g. Documentation that the landowner of the lease has approved of the use of the recyclable product on the landowner's property;
 - h. Documentation that the county commissioner(s) have approved the use of the recyclable product on the county roads if used on county roads;
 - i. Documentation indicating the approximate location where processed material is used including a topographic map showing the location of the area;
 - j. Documentation that the lease operator has approved the recycling operation on their lease and assumes responsibility for the use of the recycled material in a manner consistent with its authorized use.
 - k. Copies of analyses per 800 yd³ lot demonstrating that the final processed material has met the limitations in Permit Condition IV.D.2.

B. REPORTING

1. The permittee shall submit a **Quarterly Report** containing the following information:
 - a. The report shall contain applicable information as required in Conditions II, III, IV, V and VI of this permit.
 - b. The quarterly reporting periods shall be January 1 through March 31, April 1 through June 30, July 1 through September 30, and October 1 through December 31 of each year.
 - c. The reports shall be submitted to Technical Permitting in Austin and the appropriate District Office no later than the 30th day of the month following each reporting period, or each April 30th, July 30th, October 30th, and January 30th, respectively.

- d. An Executive Summary shall be included that describes facility operations and relevant activities that occurred during the specific quarter.
- e. Data tables presenting volumes or amounts of treated waste shall be included.
- f. Analytical results as specified in Permit Conditions IV.D.2. shall be included.
- g. The laboratory analytical reports and the corresponding chain of custody shall be provided for all chemical analyses performed. For compressive strength analyses, each test report shall contain an explanation of why a specific test method was selected for each sample of final treated material.

VI. CLOSURE

- A. All temporary pits or pads associated with the recycling process must be closed as required by Statewide Rule 8.
- B. All recyclable material (road base) must be re-used for lease roads, lease pads, and county roads, or must be disposed of in an authorized manner.
- C. All unused free standing waste water remaining within a pit, pad or water tight roll-off box must be disposed of in an authorized manner.
- D. All equipment and materials brought onsite for the purpose of recycling oil and gas waste must be removed from each site and any dikes leveled or removed, unless the lease holder requests otherwise in writing.
- E. The contents of any vessels or other containers must be disposed of in an authorized manner.
- F. Contouring, final grading, and reseeded of disturbed areas must be completed.

This authorization is granted subject to review and cancellation should investigation show that such authorization is being abused.

APPROVED AND ISSUED ON August 19, 2016.



Grant Chambless, P.G.
Manager, Environmental Permits & Support
Technical Permitting

Note:

- 1) Permit has been amended to reflect a correction in the volume of untreated waste, partially treated waste, and recyclable product (road base) permitted at the treatment site.

cc: RRC - San Antonio / 01 and 02
RRC - Houston / 03
RRC - Corpus Christi / 04
RRC - Kilgore / 05 and 06
RRC - Abilene / 7B and 7C
RRC - Midland / 08 and 08A
RRC - Wichita Falls / 09
RRC - Pampa / 10