SECTION 8 SPILLS AND DISCHARGES

8.1 Spills

Appropriate measures necessary to prevent spills and to cleanup spills of any toxic and other pollutants shall be taken. If possible spills are anticipated, materials handling procedures and storage must be specified in the NMP.

8.1.1 Spill Notification

All spills must be reported to EPA and NMED.

The permittee shall report any noncompliance that may endanger human health or the environment. Any information must be provided orally to within twenty-four (24) hours from the time that the permittee becomes aware of the circumstances to EPA at 214-665-6595. A written submission shall also be provided to EPA within fourteen (14) days of the time the permittee becomes aware of the circumstances.

The report shall contain the following information:

- A description of the noncompliance and its cause;
- The period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and
- Steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

8.1.2 Spill Control Practices

The following practices will be followed for spill prevention and cleanup:

- Manufacturers recommended methods for spill cleanup will be clearly posted and site personnel will be made aware of the procedures and the location of the information and cleanup supplies.
- Materials and equipment necessary for spill cleanup will be kept in the material storage area onsite. Equipment and materials will include but not be limited to brooms, dustpans, mops, rags, gloves, goggles, kitty litter, sand, sawdust, and plastic and metal trash containers specifically for this purpose.
- All spills will be cleaned up immediately after discovery.
- The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with a hazardous substance.
- Spills of toxic or hazardous material will be reported to the appropriate State or local government agency, regardless of size.

8.2 Discharges

The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment. The permittee shall, at all times, properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and

maintenance includes the operation of backup or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.

8.2.1 Discharge Notification

All discharges must be reported to EPA and NMED.

If, for any reason, there is a discharge of pollutants to a water of the United States, the permittee is required to make immediate oral notification within 24-hours to EPA Region 6, Compliance and Assurance Division, Water Enforcement Branch (6EN-W), Dallas, Texas at 214-665-6595, and notify EPA and NMED in writing within fourteen (14) working days of the discharge from the facility. In addition, the permittee shall keep a copy of the notification submitted to EPA together with the other records required by this permit. The discharge notification shall include the following information:

- A description of the discharge and its cause, including a description of the flow path to the receiving water body and an estimate of the flow and volume discharged.
- The period of non-compliance, including exact dates and times, the anticipated time it is expected to continue, and steps taken or planned to reduce, eliminate and prevent recurrence of the discharge.

8.2.2 Monitoring Requirements for All Discharges from Retention Structures

In the event of any overflow or other discharge of pollutants from a manure and/or wastewater storage or retention structure, whether or not authorized by this permit, the following actions shall be taken:

1. All discharges shall be sampled and analyzed.

   Samples must, at a minimum, be analyzed for the following parameters: total nitrogen, nitrate nitrogen, ammonia nitrogen, total phosphorus, *E. coli* bacteria, five-day biochemical oxygen demand (BOD_5), total suspended solids, pH, and temperature. The discharge must be analyzed in accordance with approved EPA methods for water analysis listed in 40 CFR Part 136.
2. Record an estimate of the volume of the release and the date and time.
3. Samples shall consist of grab samples collected from the over-flow or discharges from the retention structure. A minimum of one sample shall be collected from the initial discharge (within 30 minutes). The sample shall be collected and analyzed in accordance with EPA approved methods for water analysis listed in 40 CFR 136. Samples collected shall be representative of the monitored discharge.
4. If conditions are not safe for sampling, the permittee must provide documentation of why samples could not be collected and analyzed. For example, the permittee may be unable to collect samples during dangerous weather conditions (such as local flooding, high winds, hurricane, tornadoes, electrical storms, etc.). However, once dangerous conditions have passed, the permittee shall collect a sample from the retention structure (pond or lagoon) from which the discharge occurred.

5. Monitoring results must be submitted to EPA Region 6, Compliance Assurance and Enforcement Division, within thirty (30) days of the discharge event at the address listed in Part V.1 of this permit.

SECTION 9 CLOSURES

9.1 Closure of Lagoons and other Manure, Process Wastewater Storage and Handling Structures

The following conditions shall apply to the closure of lagoons and other earthen or synthetic lined basins and other manure, litter, or process wastewater storage and handling structures:

1) Closure of Lagoons and Other Surface Impoundments
   a) No lagoon or other earthen or synthetic lined basin shall be permanently abandoned.
   b) Lagoons and other earthen or synthetic lined basins shall be maintained at all times until closed.
   c) All lagoons and other earthen or synthetic lined basins must be properly closed if the permittee ceases operation. In addition, any lagoon or other earthen or synthetic lined basin that is not in use for a period of twelve (12) consecutive months must be properly closed unless the facility is financially viable, intends to resume use of the structure at a later date, and either:
      i) maintains the structure as though it were actively in use, to prevent compromise of structural integrity; or
      ii) removes manure and wastewater to a depth of one foot or less and refills the structure with clean water to preserve the integrity of the synthetic or earthen liner. In either case, the permittee shall submit a written report to EPA within thirty (30) days of basin closure detailing the actions taken , and shall conduct routine inspections, maintenance, and record keeping as though the structure were in use. Prior to restoration of use of the structure, the permittee shall notify EPA in writing and provide the opportunity for inspection.
   d) All closure of lagoons and other earthen or synthetic lined basins must be consistent with New Mexico NRCS Conservation Practice Standard Code 360 (Closure of Waste Impoundments). Consistent with this standard the permittee shall remove all waste materials to the maximum extent practicable and dispose of them in accordance with the permittee's nutrient management plan, unless otherwise authorized by EPA.
   e) Unless otherwise authorized by EPA, completion of closure for lagoons and other earthen or synthetic lined basins shall occur as promptly as practicable after the permittee ceases to operate or, if the permittee has not ceased operations, twelve (12) months from the date on which the use of the structure ceased, unless the lagoons or basins are being maintained for possible future use in accordance with the requirements above.

2) No other manure, litter, or process wastewater storage and handling structure shall be abandoned. Closure of all such structures shall occur as promptly as practicable after the permittee has ceased to operate, or, if the permittee has not ceased to operate, within twelve (12) months after the date on which the use of the structure ceased. To close a manure, litter, or process wastewater storage and handling structure, the permittee shall remove all manure, litter, or process wastewater and dispose of it in accordance with the permittee's nutrient management plan, or document its transfer from the permitted facility in accordance with off-site transfer requirements.

SECTION 10 CERTIFICATIONS

10.1 Permittee Certification

"I 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 that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Name (Type or Print): Don Oppliger

Title (Type or Print): Owner

Phone No.: 575-389-5321

Signature:

Date: 12/22/09

All applications, reports or information submitted to the EPA or required by General Permit NMG010000 shall be signed and certified consistent with 40 CFR §122.22 (attached).

Electronic Code of Federal Regulations
e-CFR™

e-CFR Data is current as of July 31, 2009

Title 40: Protection of Environment

PART 122—EPA ADMINISTERED PERMIT PROGRAMS: THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
Subpart B—Permit Application and Special NPDES Program Requirements

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§ 122.22 Signatories to permit applications and reports (applicable to State programs, see §123.25).

(a) *Applications.* All permit applications shall be signed as follows:

(1) *For a corporation.* By a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: (i) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who perfoms similar policy- or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

Note: EPA does not require specific assignments or delegations of authority to responsible corporate officers identified in §122.22(a)(1)(i). The Agency will presume that these responsible corporate officers have the requisite authority to sign permit applications unless the corporation has notified the Director to the contrary. Corporate procedures governing authority to sign permit applications may provide for assignment or delegation to applicable corporate positions under §122.22(a)(1)(ii) rather than to specific individuals.

(2) *For a partnership or sole proprietorship.* By a general partner or the proprietor, respectively; or

(3) *For a municipality, State, Federal, or other public agency.* By either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes: (i) The chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).

(b) All reports required by permits, and other information requested by the Director shall be signed by a person described in paragraph (a) of this section, or by a duly authorized representative of that person. A person is a duly authorized representative only if:

(1) The authorization is made in writing by a person described in paragraph (a) of this section;

(2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company, (A duly authorized representative may thus be either a named individual or any individual occupying a named position.) and,

(3) The written authorization is submitted to the Director.

(c) *Changes to authorization.* If an authorization under paragraph (b) of this section is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph (b) of this section must be submitted to the Director prior to or together with any reports, information, or applications to be signed by an authorized representative.

(d) (*fication.* Any person signing a document under paragraph (a) or (b) of this section shall make the following certification:

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 that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

(Clean Water Act (33 U.S.C. 1251 *et seq.*), Safe Drinking Water Act (42 U.S.C. 300f *et seq.*), Clean Air Act (42 U.S.C. 7401 *et seq.*), Resource Conservation and Recovery Act (42 U.S.C. 6901 *et seq.*))

[48 FR 14153, Apr. 1, 1983, as amended at 48 FR 39619, Sept. 1, 1983; 49 FR 38047, Sept. 29, 1984; 50 FR 6941, Feb. 19, 1985; 55 FR 48063, Nov. 16, 1990; 65 FR 30907, May 15, 2000]

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10.2 Certified Specialists

Brad Wieck with Enviro-Ag Engineering, Inc. meets the qualifications of a certified planner/specialist in New Mexico. Documentation from the New Mexico USDA-NRCS is attached.

USDA United States Department of Agriculture
Natural Resources Conservation Service

TechReg Technical Service Provider Registry

Technical Service Provider Resume

ANISSA M PURSWELL
3404 AIRWAY BLVD
AMARILLO, TX 79118

Phone: (806) 353-6123
Email: anissa@enviroag.com

Preferred Contact Method: Email
Can speak Spanish: No
TSP Type: Individual TSP

B - Associated Companies/Agencies

Business Name	Business Id	

C1 - Relevant Accreditation/Licenses

Certifying Organization	State	Certification Description	License Number	Expiration Date
State Government	TX	Nutrient Management State Certification	xxx3041	12/31/2009
University of Tennesee or Iowa State University	All	Manure Wastewater Handling and Storage Certification	xx-125	05/25/2010
University of Tennesee or Iowa State University	All	Nutrient Management - Organic and Inorganic Certification	xx-125	05/25/2010
University of Tennesee or Iowa State University	All	CNMP Plan Development - Land Treatment Certification	xx-125	05/25/2010
University of Tennesee or Iowa State University	All	CNMP Plan Development - MWHS Certification	xx-125	05/25/2010
University of Tennesee or Iowa State University	All	CNMP Plan Development - Nutrient Management Certification	xx-125	05/25/2010
University of Tennesee or Iowa State University	All	CNMP Plan Development - Total Plan Certification	xx-125	05/25/2010

C2 - Organic Qualification

Organic Qualification

D - Education and Training

Institution Name	Area of Study	Degree	Completion Date
Texas A&M University	Agricultural Engineering	Bachelor of Science	12/15/1998
Texas A&M University	Agricultural Journalism	Bachelor of Science	12/15/1998
Texas A&M University	Agricultural Engineering	Master of Engineerin	12/15/2001

E - Relevant Work Experience

Date	Description
04/24/2001	CAFO permit application preparation for dairies, feedyards and swine operations. Prepare CAFO Nutrient Management Plans and TCEQ Nutrient Utilization Plans for dairies, feedyards and swine operations. Assist with site design and layout for animal waste management and treatment systems. Field surveying using Global Positioning System technology. Soil sampling using GPS field grids. Experience with data processing and analysis using ArcView GIS. Air quality permit applications for grain elevators, feedmills, cottonseed delinting plants.
01/15/1999	Research included the design and construction of swine waste management treatment technologies. Wastewater sample collection and analysis. Statistical analysis of collected data. Teaching assistant for Water Quality Engineering course.
01/15/1994	Assisted with the design and implementation of construction wetlands for water quality. Assisted with preparation of course materials for Water Quality Engineering course and Onsite Wastewater Treatment training.

F - Familiarity with NRCS Guidelines, Criteria, Standards, and Specifications

Description
Animal Waste Management Field Handbook
Code 313 Waste Storage Facility
Code 316 Animal Mortality Facility
Code 317 Composting Facility
Code 359 Waste Treatment Lagoon
Code 360 Closure of Waste Impoundments
Code 362 Diversion

Code 378 Pond
Code 393 Filter Strip
Code 412 Grassed Waterways
Code 441 Irrigation: Microirrigation
Code 443 Irrigation: Surface and Subsurface
Code 521 Pond Sealing/Lining: Bentonite
Code 521A Pond Sealing/Lining: Flexible Membrane
Code 521B Pond Sealing/Lining: Soil Dispersant
Code 590 Nutrient Management
Code 633 Waste Utilization
Code 656 Constructed Wetlands
Code 785 Particulate Emissions Management

F1 - NRCS Conservation Planning Training Requirement

Description
I have received NRCS Training Modules or equivalent

F2 - NRCS TSP Orientation

Description
I have received the TSP Orientation Modules and Exam

G,H - Technical Services This TSP is Certified to Perform

State	Category	Technical Services
AZ	CNMP Plan Development - Land Treatment	Channel Bank Vegetation (322) Conservation Cover (327) Conservation Crop Rotation (328) Contour Buffer Strips (332) Contour Farming (330) Cover Crop (340) Cross Wind Ridges (589A) Cross Wind Trap Strips (589C) Deep Tillage (324) Diversion (362) Field Border (386) Filter Strip (393) Grassed Waterway (412) Hedgerow Planting (422) Herbaceous Wind Barriers (603) Hillside Ditch (423) Lined Waterway or Outlet (468) Mulching (484) Residue Management, Mulch Till (329B) Residue Management, No-Till/Strip Till (329A) Residue Management, Ridge Till (329C) Residue Management, Seasonal (344) Rock Barrier (555) Roof Runoff Structure (558) Row Arrangement (557) Runoff Management System (570) Soil Salinity Management-Nonirrigated (571) Stripcropping (585) Structure for Water Control (587) Subsurface Drain (606) Surface Roughening (609) Terrace (600) Underground Outlet (620) Vegetative Barrier (601) Waterspreading (640)
AZ	Nutrient Management - Organic and Inorganic	Nutrient Management (590) Waste Utilization (633)
AZ	CNMP Plan Development - Nutrient Management	Nutrient Management (590) Waste Utilization (633)
AZ	CNMP Plan Development - Feed Management	Feed Management (592)

CO	CNMP Plan Development - Land Treatment	Channel Bank Vegetation (322) Conservation Cover (327) Conservation Crop Rotation (328) Contour Buffer Strips (332) Contour Farming (330) Cover Crop (340) Cross Wind Ridges (589A) Cross Wind Trap Strips (589C) Deep Tillage (324) Diversion (362) Field Border (386) Filter Strip (393) Grassed Waterway (412) Hedgerow Planting (422) Herbaceous Wind Barriers (603) Hillside Ditch (423) Lined Waterway or Outlet (468) Mulching (484) Residue Management, Mulch Till (329B) Residue Management, No-Till/Strip Till (329A) Residue Management, Ridge Till (329C) Residue Management, Seasonal (344) Rock Barrier (555) Roof Runoff Structure (558) Row Arrangement (557) Runoff Management System (570) Soil Salinity Management-Nonirrigated (571) Stripcropping (585) Structure for Water Control (587) Subsurface Drain (606) Surface Roughening (609) Terrace (600) Underground Outlet (620) Vegetative Barrier (601) Waterspreading (640)
CO	Nutrient Management - Organic and Inorganic	Nutrient Management (590) Waste Utilization (633)
CO	CNMP Plan Development - Nutrient Management	Nutrient Management (590) Waste Utilization (633)
CO	CNMP Plan Development - Feed Management	Feed Management (592)
IA	CNMP Plan Development - Land Treatment	Channel Bank Vegetation (322) Conservation Cover (327) Conservation Crop Rotation (328) Contour Buffer Strips (332) Contour Farming (330) Cover Crop (340) Cross Wind Ridges (589A) Cross Wind Trap Strips (589C) Deep Tillage (324) Diversion (362) Field Border (386) Filter Strip (393) Grassed Waterway (412) Hedgerow Planting (422) Herbaceous Wind Barriers (603) Hillside Ditch (423) Lined Waterway or Outlet (468) Mulching (484) Residue Management, Mulch Till (329B) Residue Management, No-Till/Strip Till (329A) Residue Management, Ridge Till (329C) Residue Management, Seasonal (344) Rock Barrier (555) Roof Runoff Structure (558) Row Arrangement (557) Runoff Management System (570) Soil Salinity Management-Nonirrigated (571) Stripcropping (585)

		Structure for Water Control (587) Subsurface Drain (606) Surface Roughening (609) Terrace (600) Underground Outlet (620) Vegetative Barrier (601) Waterspreading (640)
IA	Nutrient Management - Organic and Inorganic	Nutrient Management (590) Waste Utilization (633)
IA	CNMP Plan Development - Nutrient Management	Nutrient Management (590) Waste Utilization (633)
IA	CNMP Plan Development - Feed Management	Feed Management (592)
KS	CNMP Plan Development - Land Treatment	Channel Bank Vegetation (322) Conservation Cover (327) Conservation Crop Rotation (328) Contour Buffer Strips (332) Contour Farming (330) Cover Crop (340) Cross Wind Ridges (589A) Cross Wind Trap Strips (589C) Deep Tillage (324) Diversion (362) Field Border (386) Filter Strip (393) Grassed Waterway (412) Hedgerow Planting (422) Herbaceous Wind Barriers (603) Hillside Ditch (423) Lined Waterway or Outlet (468) Mulching (484) Residue Management, Mulch Till (329B) Residue Management, No-Till/Strip Till (329A) Residue Management, Ridge Till (329C) Residue Management, Seasonal (344) Rock Barrier (555) Roof Runoff Structure (558) Row Arrangement (557) Runoff Management System (570) Soil Salinity Management-Nonirrigated (571) Stripcropping (585) Structure for Water Control (587) Subsurface Drain (606) Surface Roughening (609) Terrace (600) Underground Outlet (620) Vegetative Barrier (601) Waterspreading (640)
KS	Nutrient Management - Organic and Inorganic	Nutrient Management (590) Waste Utilization (633)
KS	CNMP Plan Development - Nutrient Management	Nutrient Management (590) Waste Utilization (633)
KS	CNMP Plan Development - Feed Management	Feed Management (592)
NM	CNMP Plan Development - Land Treatment	Channel Bank Vegetation (322) Conservation Cover (327) Conservation Crop Rotation (328) Contour Buffer Strips (332) Contour Farming (330) Cover Crop (340) Cross Wind Ridges (589A) Cross Wind Trap Strips (589C) Deep Tillage (324) Diversion (362) Field Border (386) Filter Strip (393) Grassed Waterway (412) Hedgerow Planting (422) Herbaceous Wind Barriers (603)

		Hillside Ditch (423) Lined Waterway or Outlet (468) Mulching (484) Residue Management, Mulch Till (329B) Residue Management, No-Till/Strip Till (329A) Residue Management, Ridge Till (329C) Residue Management, Seasonal (344) Rock Barrier (555) Roof Runoff Structure (558) Row Arrangement (557) Runoff Management System (570) Soil Salinity Management-Nonirrigated (571) Stripcropping (585) Structure for Water Control (587) Subsurface Drain (606) Surface Roughening (609) Terrace (600) Underground Outlet (620) Vegetative Barrier (601) Waterspreading (640)
NM	Nutrient Management - Organic and Inorganic	Nutrient Management (590) Waste Utilization (633)
NM	CNMP Plan Development - Nutrient Management	Nutrient Management (590) Waste Utilization (633)
NM	CNMP Plan Development - Feed Management	Feed Management (592)
OK	CNMP Plan Development - Land Treatment	Channel Bank Vegetation (322) Conservation Cover (327) Conservation Crop Rotation (328) Contour Buffer Strips (332) Contour Farming (330) Cover Crop (340) Cross Wind Ridges (589A) Cross Wind Trap Strips (589C) Deep Tillage (324) Diversion (362) Field Border (386) Filter Strip (393) Grassed Waterway (412) Hedgerow Planting (422) Herbaceous Wind Barriers (603) Hillside Ditch (423) Lined Waterway or Outlet (468) Mulching (484) Residue Management, Mulch Till (329B) Residue Management, No-Till/Strip Till (329A) Residue Management, Ridge Till (329C) Residue Management, Seasonal (344) Rock Barrier (555) Roof Runoff Structure (558) Row Arrangement (557) Runoff Management System (570) Soil Salinity Management-Nonirrigated (571) Stripcropping (585) Structure for Water Control (587) Subsurface Drain (606) Surface Roughening (609) Terrace (600) Underground Outlet (620) Vegetative Barrier (601) Waterspreading (640)
OK	Nutrient Management - Organic and Inorganic	Nutrient Management (590) Waste Utilization (633)
OK	CNMP Plan Development - Nutrient Management	Nutrient Management (590) Waste Utilization (633)
OK	CNMP Plan Development - Feed Management	Feed Management (592)

TX	Land Treatment - Buffer	Contour Buffer Strips (332) Cross Wind Trap Strips (589C) Field Border (386) Filter Strip (393) Hedgerow Planting (422) Herbaceous Wind Barriers (603) Vegetative Barrier (601)
TX	Land Shaping	Bedding (310) Irrigation Land Leveling (464) Land Clearing (460) Land Reclamation, Landslide Treatment (453) Land Reconstruction, Abandoned Mined Land (543) Land Smoothing (466) Obstruction Removal (500) Precision Land Forming (462) Recreation Land Grading and Shaping (566) Spoil Spreading (572)
TX	Reservoir Sealing	Pond Sealing or Lining, Bentonite Sealant (521C) Pond Sealing or Lining, Flexible Membrane (521A) Pond Sealing or Lining, Soil Dispersant (521B)
TX	Surface Water Detention/Retention	Aquaculture Ponds (397) Dam (402) Dam, Diversion (348) Dike (356) Dry Hydrant (432) Fish Raceway or Tank (398) Grade Stabilization Structure (410) Irrigation or Regulating Reservoir (552) Irrigation Storage Reservoir (436) Irrigation System, Tailwater Recovery (447) Pond (378) Sediment Basin (350) Structure for Water Control (587) Subsurface Drain (606) Water and Sediment Control Basin (638) Wetland Creation (658) Wetland Enhancement (659) Wetland Restoration (657)
TX	Water Management (Drainage)	Bedding (310) Drainage Water Management (554) Mole Drain (482) Open Channel (582) Pumped Well Drain (532) Pumping Plant (533) Structure for Water Control (587) Subsurface Drain (606) Surface Drainage, Field Ditch (607) Surface Drainage, Main or Lateral (608) Underground Outlet (620) Vertical Drain (630)
TX	CNMP Plan Development - Land Treatment	Channel Bank Vegetation (322) Conservation Cover (327) Conservation Crop Rotation (328) Contour Buffer Strips (332) Contour Farming (330) Cover Crop (340) Cross Wind Ridges (589A) Cross Wind Trap Strips (589C) Deep Tillage (324) Diversion (362) Field Border (386) Filter Strip (393) Grassed Waterway (412) Hedgerow Planting (422) Herbaceous Wind Barriers (603) Hillside Ditch (423) Lined Waterway or Outlet (468) Mulching (484)

		Residue Management, Mulch Till (329B) Residue Management, No-Till/Strip Till (329A) Residue Management, Ridge Till (329C) Residue Management, Seasonal (344) Rock Barrier (555) Roof Runoff Structure (558) Row Arrangement (557) Runoff Management System (570) Soil Salinity Management-Nonirrigated (571) Stripcropping (585) Structure for Water Control (587) Subsurface Drain (606) Surface Roughening (609) Terrace (600) Underground Outlet (620) Vegetative Barrier (601) Waterspreading (640)
TX	CNMP Plan Development - Manure and Wastewater Handling and Storage	Animal Mortality Facility (316) Closure of Waste Impoundment (360) Composting Facility (317) Constructed Wetland (656) Heavy Use Area Protection (561) Manure Transfer (634) Pumping Plant (533) Roof Runoff Structure (558) Waste Storage Facility (313) Waste Treatment Lagoon (359) Waste Utilization (633) Wastewater Treatment Strip (635)
TX	CNMP Plan Development - Total Plan	Animal Mortality Facility (316) Channel Bank Vegetation (322) Closure of Waste Impoundment (360) Composting Facility (317) Conservation Cover (327) Conservation Crop Rotation (328) Constructed Wetland (656) Contour Buffer Strips (332) Contour Farming (330) Cover Crop (340) Cross Wind Ridges (589A) Cross Wind Trap Strips (589C) Deep Tillage (324) Diversion (362) Feed Management (592) Field Border (386) Filter Strip (393) Grassed Waterway (412) Heavy Use Area Protection (561) Hedgerow Planting (422) Herbaceous Wind Barriers (603) Hillside Ditch (423) Lined Waterway or Outlet (468) Manure Transfer (634) Mulching (484) Nutrient Management (590) Pumping Plant (533) Residue Management, Mulch Till (329B) Residue Management, No-Till/Strip Till (329A) Residue Management, Ridge Till (329C) Residue Management, Seasonal (344) Rock Barrier (555) Roof Runoff Structure (558) Row Arrangement (557) Runoff Management System (570) Soil Salinity Management-Nonirrigated (571) Stripcropping (585) Structure for Water Control (587) Subsurface Drain (606) Surface Roughening (609)

		Terrace (600) Underground Outlet (620) Vegetative Barrier (601) Waste Storage Facility (313) Waste Treatment Lagoon (359) Waste Utilization (633) Wastewater Treatment Strip (635) Waterspreading (640)
TX	Non Irrigation Water Conveyance	Dry Hydrant (432) Pipeline (516) Spring Development (574)
TX	Nutrient Management - Organic and Inorganic	Nutrient Management (590) Waste Utilization (633)
TX	Land Treatment - Vegetative Land Stabilization	Channel Bank Vegetation (322) Conservation Cover (327) Cover Crop (340) Mulching (484)
TX	CNMP Plan Approval	Animal Mortality Facility (316) Channel Bank Vegetation (322) Closure of Waste Impoundment (360) Composting Facility (317) Conservation Cover (327) Conservation Crop Rotation (328) Constructed Wetland (656) Contour Buffer Strips (332) Contour Farming (330) Cover Crop (340) Cross Wind Ridges (589A) Cross Wind Trap Strips (589C) Deep Tillage (324) Diversion (362) Feed Management (592) Field Border (386) Filter Strip (393) Grassed Waterway (412) Heavy Use Area Protection (561) Hedgerow Planting (422) Herbaceous Wind Barriers (603) Hillside Ditch (423) Lined Waterway or Outlet (468) Manure Transfer (634) Mulching (484) Nutrient Management (590) Pumping Plant (533) Residue Management, Mulch Till (329B) Residue Management, No-Till/Strip Till (329A) Residue Management, Ridge Till (329C) Residue Management, Seasonal (344) Rock Barrier (555) Roof Runoff Structure (558) Row Arrangement (557) Runoff Management System (570) Stripcropping (585) Structure for Water Control (587) Subsurface Drain (606) Surface Roughening (609) Terrace (600) Underground Outlet (620) Vegetative Barrier (601) Waste Storage Facility (313) Waste Treatment Lagoon (359) Waste Utilization (633) Wastewater Treatment Strip (635) Waterspreading (640)
TX	CNMP Plan Development - Nutrient Management	Nutrient Management (590) Waste Utilization (633)

TX	Manure and Wastewater Handling and Storage	Animal Mortality Facility (316) Closure of Waste Impoundment (360) Composting Facility (317) Constructed Wetland (656) Heavy Use Area Protection (561) Manure Transfer (634) Pumping Plant (533) Roof Runoff Structure (558) Waste Storage Facility (313) Waste Treatment Lagoon (359) Waste Utilization (633) Wastewater Treatment Strip (635)
TX	CNMP Plan Development - Feed Management	Feed Management (592)
TX	CAP - CNMP Plan Approval	Animal Mortality Facility (316) Channel Bank Vegetation (322) Closure of Waste Impoundment (360) Composting Facility (317) Conservation Cover (327) Conservation Crop Rotation (328) Constructed Wetland (656) Contour Buffer Strips (332) Contour Farming (330) Cover Crop (340) Cross Wind Ridges (589A) Cross Wind Trap Strips (589C) Deep Tillage (324) Diversion (362) Feed Management (592) Field Border (386) Filter Strip (393) Grassed Waterway (412) Heavy Use Area Protection (561) Hedgerow Planting (422) Herbaceous Wind Barriers (603) Hillside Ditch (423) Lined Waterway or Outlet (468) Manure Transfer (634) Mulching (484) Nutrient Management (590) Pumping Plant (533) Residue Management, Mulch Till (329B) Residue Management, No-Till/Strip Till (329A) Residue Management, Ridge Till (329C) Residue Management, Seasonal (344) Rock Barrier (555) Roof Runoff Structure (558) Row Arrangement (557) Runoff Management System (570) Stripcropping (585) Structure for Water Control (587) Subsurface Drain (606) Surface Roughening (609) Terrace (600) Underground Outlet (620) Vegetative Barrier (601) Waste Storage Facility (313) Waste Treatment Lagoon (359) Waste Utilization (633) Wastewater Treatment Strip (635) Waterspreading (640)

I - States and Counties This TSP Provides Technical Services In

State	Counties Where Technical Services Are Provided
AZ	All Counties
CO	All Counties
IA	All Counties
KS	All Counties

NM	All Counties
OK	All Counties
TX	All Counties

CNMP Planners in New Mexico
(current as of November 2009)

AREA	NRCS Planner	TSP Planner (potentially statewide)	Planner and New Mexico Professional Engineer
East	Rachel Armstrong-m,l,n,c	Mary Barron-m,l,n	
	Matt Wiseman-m,l,n	Mike Smith	Brad Wieck-m,l,n
	Mark Lewis-l,n	Kyle Keim-l,n,c	
	Johnna Wier-l,n	Chet Wyant –l	
	Sean Lewis - l,n		
	Dean Bruce – l, n	Jay Lazarus	
NW	Mark McKinley - m	John McCatharn-m,l,n	John McCatharn-m,l,n
	Hope Tran - m	Reddy Ganta –l	Mark McKinley-m
		Jordan Vaughn	
SE	Tom Marshall-l,n,c	Joy Wagner	
	Raquel Montoya – l, n	Loney Ashcraft-m,l,n	
	Louis King-m,l,n	Carroll French –c	
	Tim Henry-l,n	Brad Wieck-m,l,n	
	Dean Pritchett-m,l,n	Linda Armstrong	
SW	Santiago Misquez-l,n	Gill Sorg –m,l,n	
	Mary Sanchez – l, n	Darrel Reasner-l,n	
	Luis Garcia – l,n		
SO	Linda Scheffe-m,l,n		
	Rudy Garcia – l, n		

M= Manure Handling and Storage Specialist
L = Land Treatment Specialist
N = Nutrient Management Specialist
C = New Mexico Certified Crop Adviser

SECTION 11 RECORD KEEPING FORMS

11.1 Soil and Manure/Wastewater Nutrient Analysis

SOIL ANALYSIS REPORT

CLIENT: 6224	ENVIRO-AG ENGINEERING INC 3404 AIRWAY BLVD AMARILLO, TX 79118

Servi-Tech Laboratories
www.servitechlabs.com

6921 S. Bell
Amarillo, TX 79109
800.557.7509
806.677.0093
Fax 806.677.0329

LAB NO:	11797 - 11798
INVOICE NO:	111548
DATE RECEIVED:	10/06/2009
DATE REPORTED:	11/25/2009

SOIL ANALYSIS RESULTS FOR: OPPLIGER FEEDYARD SOUTH **FIELD IDENTIFICATION:** LMU 1

METHOD USED:			2:1 Water-Soil		2:1 Water-Soil		Mod. WB	Cd Reduction		Mehlich 3 ICP	Ammonium Acetate									
Lab Number	Sample ID	Sample Depth	Soil pH	Buffer pH	Sol. Salts mmho/cm	Excess Lime	% Organic Matter	Nitrate-Nitrogen ppm	lb. N/A	Phosphorus ppm P	Potassium ppm K	Sulfur ppm	lb. S/A	Calcium ppm Ca	Magnesium ppm Mg	Sodium ppm Na	Zinc ppm Zn	Iron ppm Fe	Manganese ppm Mn	Copper ppm Cu	Boron ppm B
11797	LMU 1	0 - 6	7.7		0.52	No	1.8	<1	<2	178	495	43	77	2065	650	108					
11798	LMU 1	6 - 24	8.0		0.55	No	0.9	11	59	46	312	48	259	3119	639	113					

FERTILIZER RECOMMENDATIONS: POUNDS ACTUAL NUTRIENT PER ACRE

Lab Number	Sample ID	Crop To Be Grown	Yield Goal	Lime, ECC Tons/A to raise pH to: 6.0	6.5	7.0	N	P_2O_5	K_2O	Zn	S	Mn	Cu	MgO	B	Ca	Cl
11797	LMU 1																
11798	LMU 1																

Cation Exchange Capacity

CEC	%H	%K	%Ca	%Mg	%Na
17	0	7	59	31	3
22	0	4	70	24	2

SPECIAL COMMENTS AND SUGGESTIONS:

Lab Number(s): 11797
Servi-Tech Laboratory fertilizer recommendations were not requested.

Analyses are representative of the samples submitted

Samples are retained 30 days after report of analysis

Explanations of soil analysis terms are available upon request

Reviewed and Approved By: Brandon Hulsey, Quality Assurance Officer

Brandon Hulsey

11/25/2009 4:48 pm

SOIL ANALYSIS REPORT

CLIENT: 6224	ENVIRO-AG ENGINEERING INC 3404 AIRWAY BLVD AMARILLO, TX 79118

Servi-Tech Laboratories
www.servitechlabs.com

6921 S. Bell
Amarillo, TX 79109
800.557.7509
806.677.0093
Fax 806.677.0329

LAB NO:	11799 - 11800
INVOICE NO:	111548
DATE RECEIVED:	10/06/2009
DATE REPORTED:	11/25/2009

SOIL ANALYSIS RESULTS FOR: OPPLIGER FEEDYARD SOUTH **FIELD IDENTIFICATION:** LMU 2

METHOD USED:			2:1 Water-Soil		2:1 Water-Soil		Mod. WB	Cd Reduction		Mehlich 3 ICP	Ammonium Acetate									
Lab Number	Sample ID	Sample Depth	Soil pH	Buffer pH	Sol. Salts mmho/cm	Excess Lime	% Organic Matter	Nitrate-Nitrogen ppm	Nitrate-Nitrogen lb. N/A	Phosphorus ppm P	Potassium ppm K	Sulfur ppm	Sulfur lb. S/A	Calcium ppm Ca	Magnesium ppm Mg	Sodium ppm Na	Zinc ppm Zn	Iron ppm Fe	Manganese ppm Mn	Copper ppm Cu	Boron ppm B
11799	LMU 2	0 - 6	7.7		0.47	No	1.8	24	43	178	406	40	72	1818	547	91					
11800	LMU 2	6 - 24	7.9		0.48	No	0.8	17	92	74	306	46	248	2155	601	111					

FERTILIZER RECOMMENDATIONS: POUNDS ACTUAL NUTRIENT PER ACRE

Lab Number	Sample ID	Crop To Be Grown	Yield Goal	Lime, ECC Tons/A to raise pH to: 6.0	6.5	7.0	N	P_2O_5	K_2O	Zn	S	Mn	Cu	MgO	B	Ca	Cl
11799	LMU 2																
11800	LMU 2																

Cation Exchange Capacity

CEC	%H	%K	%Ca	%Mg	%Na
15	0	7	60	30	3
17	0	5	63	29	3

SPECIAL COMMENTS AND SUGGESTIONS:

Lab Number(s): 11799
Servi-Tech Laboratory fertilizer recommendations were not requested.

Analyses are representative of the samples submitted

Samples are retained 30 days after report of analysis

Explanations of soil analysis terms are available upon request

Reviewed and Approved By: Brandon Hulsey, Quality Assurance Officer

Brandon Hulsey

11/25/2009 4:48 pm

SOIL ANALYSIS REPORT

CLIENT: 6224	ENVIRO-AG ENGINEERING INC 3404 AIRWAY BLVD AMARILLO, TX 79118

Servi-Tech Laboratories
www.servitechlabs.com

6921 S. Bell
Amarillo, TX 79109
800.557.7509
806.677.0093
Fax 806.677.0329

LAB NO:	11801 - 11802
INVOICE NO:	111548
DATE RECEIVED:	10/06/2009
DATE REPORTED:	11/25/2009

SOIL ANALYSIS RESULTS FOR: OPPLIGER FEEDYARD SOUTH **FIELD IDENTIFICATION:** LMU 3A

METHOD USED:			2:1 Water-Soil		2:1 Water-Soil		Mod. WB	Cd Reduction		Mehlich 3 ICP	Ammonium Acetate									
Lab Number	Sample ID	Sample Depth	Soil pH	Buffer pH	Sol. Salts mmho/cm	Excess Lime	% Organic Matter	Nitrate-Nitrogen ppm	Nitrate-Nitrogen lb. N/A	Phosphorus ppm P	Potassium ppm K	Sulfur ppm	Sulfur lb. S/A	Calcium ppm Ca	Magnesium ppm Mg	Sodium ppm Na	Zinc ppm Zn	Iron ppm Fe	Manganese ppm Mn	Copper ppm Cu	Boron ppm B
11801	LMU 3A	0 - 6	7.7		0.59	No	1.9	37	67	257	904	49	88	1978	564	87					
11802	LMU 3A	6 - 24	7.9		0.65	No	0.9	36	194	45	616	50	270	2150	559	89					

FERTILIZER RECOMMENDATIONS: POUNDS ACTUAL NUTRIENT PER ACRE

Lab Number	Sample ID	Crop To Be Grown	Yield Goal	Lime, ECC Tons/A to raise pH to: 6.0	6.5	7.0	N	P_2O_5	K_2O	Zn	S	Mn	Cu	MgO	B	Ca	Cl
11801	LMU 3A																
11802	LMU 3A																

Cation Exchange Capacity

CEC	%H	%K	%Ca	%Mg	%Na
17	0	13	57	27	2
17	0	9	62	27	2

SPECIAL COMMENTS AND SUGGESTIONS:

Lab Number(s): 11801
Servi-Tech Laboratory fertilizer recommendations were not requested.

Analyses are representative of the samples submitted. Samples are retained 30 days after report of analysis. Explanations of soil analysis terms are available upon request.

Reviewed and Approved By: Todd Whatley, Laboratory Manager

Todd D. Whatley

11/25/2009 6:05 pm

Servi-Tech Laboratories
6921 S. Bell • Amarillo, TX 79109
www.servitechlabs.com

Phone: 806.677.0093
800.557.7509
Fax: 806.677.0329

Lab No.: **516**

LABORATORY ANALYSIS REPORT

Report Date: 12/04/2009 05:02 pm

Send To: 6224

ENVIRO-AG ENGINEERING INC
3404 AIRWAY BLVD
AMARILLO, TX 79118

Todd Whatley
Laboratory Manager

Results For: OPPLIGER FEEDYARD SOUTH
Sample ID: MANURE
Date Received: 11/20/2009

Invoice No: 402247

		Analysis (dry basis)	Analysis (as rec'd)	Total content, lbs per ton (as rec'd)	Estimated available first year*, lbs per ton (as rec'd)
NUTRIENTS					
Nitrogen					
Total Nitrogen	%	2.61	1.76	35.2	20.2
Organic Nitrogen	%	1.97	1.33	26.6	11.5
Ammonium Nitrogen	%	0.644	0.434	8.7	8.7
Nitrate+Nitrite Nitrogen	%	<0.003	<0.002	<0.1	<0.1
Major and Secondary Nutrients					
Phosphorus	%	0.773	0.548		
Phosphorus as P2O5	%	1.77	1.26	25.2	22.7
Potassium	%	1.96	1.39		
Potassium as K2O	%	2.35	1.67	33.4	33.4
OTHER PROPERTIES					
Moisture	%		32.6		
Total Solids	%		67.4	1348	
Organic Matter	%	49.9	33.6	672	
Ash	%	50.1	33.8	676	
C:N Ratio	ratio	11.1	11.1		

* Assumes 43% of organic nitrogen available during first crop year after application. Assumes 100% of ammonium and nitrate nitrogen available, but should be adjusted for potential field losses at application site.

Servi-Tech Laboratories
6921 S. Bell • Amarillo, TX 79109
www.servitechlabs.com

Phone: 806.677.0093
800.557.7509
Fax: 806.677.0329

Lab No: **517**

LABORATORY ANALYSIS REPORT

Report Date: 12/02/2009 04:55 pm

Send To: 6224	ENVIRO-AG ENGINEERING INC 3404 AIRWAY BLVD AMARILLO, TX 79118

Todd Whatley
Laboratory Manager

Client Name:	OPPLINGER FY SOUTH	**Invoice No:**	402247
Sample ID:	WASTEWATER		
Date Received:	11/20/2009		

	Analysis results		lbs/acre-in	meq/L
NUTRIENTS				
Nitrogen				
Total Nitrogen	343	mg/L	78	
Organic Nitrogen	113	mg/L	26	
Ammonia Nitrogen	230	mg/L	52	16.4
Nitrate+Nitrite Nitrogen	<1	mg/L	0	0
Major and Secondary Nutrients				
Phosphorus	59	mg/kg		
Phosphorus as P2O5	140	mg/kg	32	
Potassium	849	mg/kg		21.7
Potassium as K2O	1020	mg/kg	231	
OTHER PROPERTIES				
Moisture	99.5	%		
Total Solids	0.5	%	1134	
Organic Matter	0.2	%	453	
Ash	0.3	%	680	
C:N Ratio	3.4	ratio		

11.2 Daily and Weekly Logs

Facility Name

DAILY/WEEKLY FACILITY INSPECTION

WEEK OF THRU

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
Weather	**Weather**	**Weather**	**Weather**	**Weather**	**Weather**	**Weather**
Temp:	Temp:	Temp:	Temp:	Temp:	Temp:	Temp:
Precip (a):	Precip (a):	Precip (a):	Precip (a):	Precip (a):	Precip (a):	Precip (a):
Sky Conditions:	Sky Conditions:	Sky Conditions:	Sky Conditions:	Sky Conditions:	Sky Conditions:	Sky Conditions:
Water Lines Inspection (b)	**Water Lines Inspection (b)**	**Water Lines Inspection (b)**	**Water Lines Inspection (b)**	**Water Lines Inspection (b)**	**Water Lines Inspection (b)**	**Water Lines Inspection (b)**
Inspected:	Inspected:	Inspected:	Inspected:	Inspected:	Inspected:	Inspected:
Irrigation Hours Pumped / Field #	**Irrigation** Hours Pumped / Field #	**Irrigation** Hours Pumped / Field #	**Irrigation** Hours Pumped / Field #	**Irrigation** Hours Pumped / Field #	**Irrigation** Hours Pumped / Field #	**Irrigation** Hours Pumped / Field #
Crop Yields Field #/Crop / Tons or Bu	**Crop Yields** Field #/Crop / Tons or Bu	**Crop Yields** Field #/Crop / Tons or Bu	**Crop Yields** Field #/Crop / Tons or Bu	**Crop Yields** Field #/Crop / Tons or Bu	**Crop Yields** Field #/Crop / Tons or Bu	**Crop Yields** Field #/Crop / Tons or Bu
On-Site Manure Tonnage Applied / Field #	**On-Site Manure** Tonnage Applied / Field #	**On-Site Manure** Tonnage Applied / Field #	**On-Site Manure** Tonnage Applied / Field #	**On-Site Manure** Tonnage Applied / Field #	**On-Site Manure** Tonnage Applied / Field #	**On-Site Manure** Tonnage Applied / Field #

WEEKLY RETENTION STRUCTURE INSPECTION REPORT

(Please answer Yes, No, N/A)

Seepage from embankment _____

Signs of cracks in embankment _____

Embankment erosion control present _____

Erosion on exterior slopes _____

Erosion on interior slopes _____

Trees within root zone of RCS _____

Excess solids present _____

OTHER STRUCTURAL CONTROLS

erraces/dikes free of silt and functional _____

Sludge basins present and functional _____

Sludge basins need cleaning _____

Drainage area isolated

Pond Marker Reading

_____ (in feet)

_____ (in feet)

_____ (in feet)

_____

PREVENTATIVE MAINTENANCE LOG

Motors of Dewatering Equipment

Check oil levels _____

Change oil/lube bearings _____

Electric panel inspected _____

System fully operational _____

Pumps/Agitators/Screens

Operational _____

Check oil/lubricate _____

Agitator Operational _____

Screen openings clean and operational _____

Scrapters/augers operational

Sprinkler Systems

Check oil in gearboxes _____

Grease/lube bearings and chains _____

Properly secure/drain system for winter _____

Replace leaky joints and worn nozzles _____

Inspect hoses for wear and leaks _____

Valves operational _____

Flowline free of leaks

Notes:

(a) If rainfall exceeds 1 inch, record the pond marker level for that day.

Record sky conditions 24 hours before and after land application.

(b) Inspect all water lines, including drinking water and cooling water lines, located within the drainage area of the ponds.

11.3 Manure Transfer

Date	Amount Removed (tons)	Recipient	Address of Recipient

11.4 Animal Mortality Handling Practices

Date:	Animal Mortality Practices Reviewed:	Inspector's Signature	Comments
Example: *Jan. 2009*	*Rendering*	*Facility Manager*	

11.5 Discharge/Spills from all Manure and Wastewater Storage Structures

Complete the following information in the event of a discharge. Make a copy of the completed form and submit to the EPA and NMED within 14 days of the discharge. Maintain the original in the PPP.

Cause of discharge:

_____

_____

Flow path description to the body of water discharged into:

_____

_____

Volume and flow estimates of discharge:

_____

_____

Discharge starting date: _____ Time: _____
Discharge ending date: _____ Time: _____

Steps being taken to reduce, eliminate, and prevent future discharge:

_____

_____

Were samples taken? ☐ Yes ☐ No

If yes, where were the samples sent? _____

Date submitted _____

Attach chain of custody report and analysis to this form.

If the discharge is caused by precipitation, fill out the following:

Date	Time Started	Time Ending	Rainfall Measurement

Was EPA notified within 24 hours of the discharge? ☐ Yes ☐ No

Date written notification was sent to EPA: _____

Date written notification was sent to NMED: _____

SAMPLING

Sampling Containers:
Polyethylene or glass wide-mouth bottles with screw-caps should be used. Containers should never be reused without proper sterilization. Polyethylene containers are generally used in wastewater collection.

Number of Samples:
A minimum of one grab sample should be collected from the initial discharge (within 30 minutes when possible) form the RCS

If dangerous climatic conditions prohibit the collection of samples document the conditions PPP. Once dangerous conditions have passed, collect a sample from the RCS.

Sampling Procedures:
Locate a point where the discharge is leaving the RCS. The site selected should allow collection of a sample representative of the discharge.

Collect a gram sample directly into a sample bottle. Remove the bottle top cover and protect from contamination. Avoid touching the inside of the closure. Position the bottle towards the current flow and away from the hand of the collector. Hold the bottle securely at the base with one hand and plunge it mouth down into the water. The sampling depth should be 6 to 12 inches below the water surface. Tip the bottle slightly upwards to allow air to exit and the bottle to fill. Remove bottle from the stream and add appropriate preservative, if necessary. Tightly cap and label bottle.

Avoid collecting large nonhomogeneous particles and objects. Do not rinse the sample container with the sample. Collect approximately 1 liter of sample for each method of preservation. Fill the sample container completely when analyzing for ammonia to prevent nitrification.

Transfer of Custody and Shipment of Samples:
Cool sample to 39 degrees Fahrenheit and keep temperature constant until analysis. Insulated containers are preferable to assure proper maintenance of storage temperature. Sample bottle tops should not be immersed in water during shipment or storage.

Holding times, intervals between collection and analysis, should be as short as possible to minimize change in the sample. Holding times listed in sample parameters and preparation is maximum times accepted by the EPA.

Samples should be packed properly to prevent breakage. The shipping container should be sealed or locked so that any evidence of tampering may be readily detected. Use of tamper proof evidence tape is recommended.

Responsibility for proper packaging, labeling, and transferring of possession of the sample lies with the person taking it.

All sample shipments must be accompanied by a completed, signed and dated change-of-custody record and other pertinent forms. A copy of these forms should be retained by the originator. All receipt associated with the shipment should be retained.

When transferring possession of samples, the transferee must sign and record the date and time of the chain-of-custody record. In general, custody transfers are made for each sample, although samples may be transferred as a group. Each person who takes custody must fill in the appropriate section of the chain-of-custody record.

Sample Identification:

- facility name/location
- sample site description
- sample number
- signature/initials of the collector for each sample
- date and time of collection
- indication of a grab or composite sample
- identification of the parameter to be analyzed
- preservative used
- indication of any unusual condition at the sampling location and/or in the appearance of the wastewater
- notation of conditions such as pH, temperature and appearance that may change before the laboratory analysis

Quality Control:

Duplicate samples are separate samples taken from the same source at the same time. These samples provide a check on sampling equipment and precision techniques.

Split samples are samples that have been divided into two containers for analysis by separate laboratories. These samples provide an excellent means of identifying discrepancies in the permittee's analytical techniques and procedures.

Sample preservation blanks are samples of distilled water to which a known quantity of preservative is added. They are analyzed to determine the effectiveness of the preservative, providing a check on the contamination of chemical preservatives.

Sample Parameters and Preparation:

Parameter	Container*	Preservative	Max Hold Time	Sample Volume
E.coli Bacteria	P,G			
Ammonia Nitrogen and Total Phosphorus	P,G	Cool to 39°F H2SO4 to pH<2	28 days	1,000 ml
BOD_5 (Biochemical Oxygen Demand)	P,G	Cool to 39°F	48 hours	1 liter
Total Nitrogen Nitrate-Nitrogen TSS (Total Suspended Solids)	P,G	Cool to 39°F	48 hours	1,000 ml
pH ↕				
Temperature				

**G = Glass, P = Polyethylene*

↕ *Omit pH if sample is extracted in 72 hours*

11.6 Employee Training

Employees responsible for permit compliance must be regularly trained or informed of any information pertinent to the proper operation and maintenance of the facility and waste disposal.

Training shall include topics such as land application of wastes, proper operation and maintenance of the facility, good housekeeping and material management practices, necessary record-keeping requirements, and spill response and clean up.

Date: ____________________
Topic(s) Discussed (check all that apply):

☐ Land Application ☐ Material Management ☐ Spill Response & Cleanup
☐ Facility Operation & Maintenance ☐ Good Housekeeping ☐ Recordkeeping

Employee(s) Present	**Responsibility**

Trainer: __________________________ **Signature:** __________________________

Date: ____________________
Topic(s) Discussed (check all that apply):

☐ Land Application ☐ Material Management ☐ Spill Response & Cleanup
☐ Facility Operation & Maintenance ☐ Good Housekeeping ☐ Recordkeeping

Employee(s) Present	**Responsibility**

Trainer: __________________________ **Signature:** __________________________

Date: ____________________
Topic(s) Discussed (check all that apply):

☐ Land Application ☐ Material Management ☐ Spill Response & Cleanup
☐ Facility Operation & Maintenance ☐ Good Housekeeping ☐ Recordkeeping

Employee(s) Present	**Responsibility**

Trainer: __________________________ **Signature:** __________________________

11.7 Crops and Yields

Field ID & Year	Planned Crop	Expected Yield	Actual Crop Planted	Actual Yield

11.8 Wastewater Application Calculations – Narrative Approach

	Application Calculations	Rate LMU No: ____
1	Determine nutrient component from soil (lbs-N/ac or lbs-P2O5): **Nitrogen = (lbs./ac-in from both 0-6 and 6-24 soil profiles shown on soil test), Phosphorus = (lbs./ac-in from the 0-6 soil profile shown on soil test)**	
2	Determine annual nutrient requirement from cropping scheme, (lbs-N/ac or lbs-P2O5) **Crop Requirement = (from Planning Tools – S-Crops), For Phosphorus – Adjust for Phosphorus Index (PI). (refer to PI Sheets)**	
3	Determine remaining nutrients needed for crop requirement, (lbs-N/ac or lbs-P2O5) **= (Line 2 -Line 1)**	
4	Determine nutrient concentration from effluent (lbs-N/ac-in) **Nitrogen = (lbs./ac-in value from effluent test, Phosphorus = (lbs./ac-in P2O5 value from effluent test)**	
5	Effluent Adjustment: Determine nutrient concentration assuming an estimated % available each year. **% Available N = ((Organic * 49%) + (Ammonia N * 75%))/TN; TN per ac-in * % available = adjusted Phosphorus = (lbs./ac-in of P2O5 in value from effluent test) @ 100% available**	
6	Enter acreage to be irrigated, (acres)	
7	Determine volume of effluent needed to meet crop requirement, (ac-ft)* **=(Line 3 / Line 5) / 12**	
8	Conversion to total gallons **=(Line 7 x 325,851)**	
9	Conversion to acre-inches per acre **=(Line 3/ Line 5)**	

	Application Calculations	Rate LMU No: ____
1	Determine nutrient component from soil (lbs-N/ac or lbs-P2O5): **Nitrogen = (lbs./ac-in from both 0-6 and 6-24 soil profiles shown on soil test), Phosphorus = (lbs./ac-in from the 0-6 soil profile shown on soil test)**	
2	Determine annual nutrient requirement from cropping scheme, (lbs-N/ac or lbs-P2O5) **Crop Requirement = (from Planning Tools – S-Crops), For Phosphorus – Adjust for Phosphorus Index (PI). (refer to PI Sheets)**	
3	Determine remaining nutrients needed for crop requirement, (lbs-N/ac or lbs-P2O5) **= (Line 2 -Line 1)**	
4	Determine nutrient concentration from effluent (lbs-N/ac-in) **Nitrogen = (lbs./ac-in value from effluent test, Phosphorus = (lbs./ac-in P2O5 value from effluent test)**	
5	Effluent Adjustment: Determine nutrient concentration assuming an estimated % available each year. **% Available N = ((Organic * 49%) + (Ammonia N * 75%))/TN; TN per ac-in * % available = adjusted Phosphorus = (lbs./ac-in of P2O5 in value from effluent test) @ 100% available**	
6	Enter acreage to be irrigated, (acres)	
7	Determine volume of effluent needed to meet crop requirement, (ac-ft)* **=(Line 3 / Line 5) / 12**	
8	Conversion to total gallons **=(Line 7 x 325,851)**	
9	Conversion to acre-inches per acre **=(Line 3/ Line 5)**	

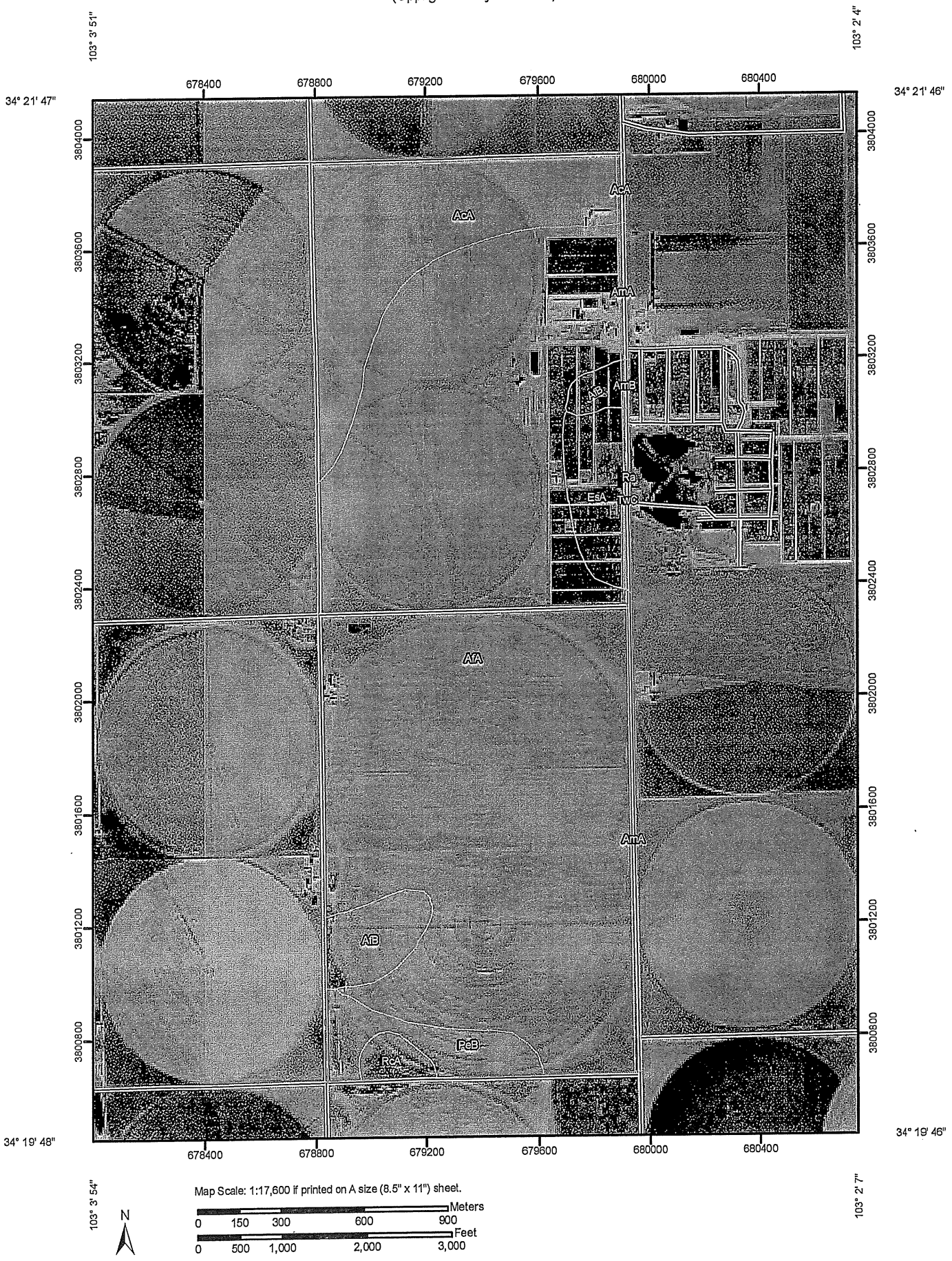
11.9 Manure Application Calculations

	Application Calculations	Rate LMU No: ____
1	Determine nutrient component from soil (lbs-N/ac or lbs-P2O5): **Nitrogen = (lbs./ac-in from both 0-6 and 6-24 soil profiles shown on soil test), Phosphorus = (lbs./ac-in from the 0-6 soil profile shown on soil test)**	
2	Determine annual nutrient requirement from cropping scheme, (lbs-N/ac or lbs-P2O5) **Crop Requirement = (from Planning Tools – S-Crops), For Phosphorus – Adjust for Phosphorus Index (PI). (refer to PI Sheets)**	
3	Determine remaining nutrients needed for crop requirement, (lbs-N/ac) = **(Line 2 -Line 1)**	
4	Determine nutrient component from solid manure (lbs-N/ton) **Nitrogen = (lbs./ton value from manure test), Phosphorus = (lbs./ton P2O5 value from manure test)**	
5	Assume 50% of nitrogen available in first year **% Available N = ((Organic * 53%) + (Ammonia N * 75%))/TN; TN per ac-in * % available = adjusted, Phosphorus = (lbs./ac-in of P2O5 in value from effluent test) @ 100% available**	
6	Total nitrogen available in first year, (lbs-N/ton) = **(Line 4) x (Line 5)**	
7	Enter the amount of solid manure to be applied, (tons)	
8	Number of acres the manure will be applied to, (acres)	
9	Determine application rate, (lbs/acre) = **(Line 7) x (Line 6)**	

	Application Calculations	Rate LMU No: ____
1	Determine nutrient component from soil (lbs-N/ac or lbs-P2O5): **Nitrogen = (lbs./ac-in from both 0-6 and 6-24 soil profiles shown on soil test), Phosphorus = (lbs./ac-in from the 0-6 soil profile shown on soil test)**	
2	Determine annual nutrient requirement from cropping scheme, (lbs-N/ac or lbs-P2O5) **Crop Requirement = (from Planning Tools – S-Crops), For Phosphorus – Adjust for Phosphorus Index (PI). (refer to PI Sheets)**	
3	Determine remaining nutrients needed for crop requirement, (lbs-N/ac) = **(Line 2 -Line 1)**	
4	Determine nutrient component from solid manure (lbs-N/ton) **Nitrogen = (lbs./ton value from manure test), Phosphorus = (lbs./ton P2O5 value from manure test)**	
5	Assume 50% of nitrogen available in first year **% Available N = ((Organic * 53%) + (Ammonia N * 75%))/TN; TN per ac-in * % available = adjusted, Phosphorus = (lbs./ac-in of P2O5 in value from effluent test) @ 100% available**	
6	Total nitrogen available in first year, (lbs-N/ton) = **(Line 4) x (Line 5)**	
7	Enter the amount of solid manure to be applied, (tons)	
8	Number of acres the manure will be applied to, (acres)	
9	Determine application rate, (lbs/acre) = **(Line 7) x (Line 6)**	

SECTION 12 SUPPORTING DOCUMENTATION

Soil Map—Curry County and Southwest Part of Quay County, New Mexico, and Parmer County, Texas
(Oppliger Feedyard South)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Oceans
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:17,600 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 13N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Curry County and Southwest Part of Quay County, New Mexico
Survey Area Data: Version 8, Dec 9, 2008

Soil Survey Area: Parmer County, Texas
Survey Area Data: Version 8, Oct 26, 2009

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Date(s) aerial images were photographed: 1/15/1996; 3/3/1996

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Curry County and Southwest Part of Quay County, New Mexico (NM669)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AcA	Acuff loam, 0 to 1 percent slopes	124.4	13.7%
AfA	Amarillo fine sandy loam, 0 to 1 percent slopes	670.5	73.6%
AfB	Amarillo fine sandy loam, 1 to 3 percent slopes	30.2	3.3%
EsA	Estacado loam, 0 to 1 percent slopes	29.0	3.2%
PeB	Pep loam, 1 to 3 percent slopes	29.3	3.2%
RcA	Ranco clay, 0 to 1 percent slopes, frequently ponded	8.6	0.9%
Subtotals for Soil Survey Area		**892.1**	**98.0%**
Totals for Area of Interest		**910.5**	**100.0%**

Parmer County, Texas (TX369)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AcA	Acuff loam, 0 to 1 percent slopes	1.8	0.2%
AmA	Amarillo fine sandy loam, 0 to 1 percent slopes	12.2	1.3%
AmB	Amarillo fine sandy loam, 1 to 3 percent slopes	1.0	0.1%
Ra	Randall clay	0.1	0.0%
TwC	Tulia-Potter complex, 1 to 5 percent slopes	3.4	0.4%
Subtotals for Soil Survey Area		**18.4**	**2.0%**
Totals for Area of Interest		**910.5**	**100.0%**

Map Unit Description (Brief, Generated)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this report, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

The Map Unit Description (Brief, Generated) report displays a generated description of the major soils that occur in a map unit. Descriptions of non-soil (miscellaneous areas) and minor map unit components are not included. This description is generated from the underlying soil attribute data.

Additional information about the map units described in this report is available in other Soil Data Mart reports, which give properties of the soils and the limitations, capabilities, and potentials for many uses. Also, the narratives that accompany the Soil Data Mart reports define some of the properties included in the map unit descriptions.

Report—Map Unit Description (Brief, Generated)

Curry County and Southwest Part of Quay County, New Mexico

Map Unit: AcA—Acuff loam, 0 to 1 percent slopes

Component: Acuff (90%)

The Acuff component makes up 90 percent of the map unit. Slopes are 0 to 1 percent. This component is on tablelands, plains. The parent material consists of loamy eolian deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R077CY022TX Deep Hardland 16-21" Pz ecological site. Nonirrigated land capability classification is 4c. Irrigated land capability classification is 1 This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 8 percent.

Map Unit: AfA—Amarillo fine sandy loam, 0 to 1 percent slopes

Component: Amarillo (85%)

The Amarillo component makes up 85 percent of the map unit. Slopes are 0 to 1 percent. This component is on tablelands, plains. The parent material consists of loamy eolian deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R077CY036TX Sandy Loam 16-21" Pz ecological site. Nonirrigated land capability classification is 4c. Irrigated land capability classification is 2e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 10 percent.

Map Unit: AfB—Amarillo fine sandy loam, 1 to 3 percent slopes

Component: Amarillo (85%)

The Amarillo component makes up 85 percent of the map unit. Slopes are 1 to 3 percent. This component is on tablelands, plains, playa slopes. The parent material consists of loamy eolian deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R077CY036TX Sandy Loam 16-21" Pz ecological site. Nonirrigated land capability classification is 4c. Irrigated land capability classification is 2e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 40 percent.

Map Unit: EsA—Estacado loam, 0 to 1 percent slopes

Component: Estacado (90%)

The Estacado component makes up 90 percent of the map unit. Slopes are 0 to 1 percent. This component is on tablelands, plains. The parent material consists of loamy eolian deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R077CY028TX Limy Upland 16-21" Pz ecological site. Nonirrigated land capability classification is 4c. Irrigated land capability classification is 2e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 30 percent. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Map Unit: PeB—Pep loam, 1 to 3 percent slopes

Component: Pep (90%)

The Pep component makes up 90 percent of the map unit. Slopes are 1 to 3 percent. This component is on playa slopes, plains, tablelands. The parent material consists of loamy eolian deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R077CY028TX Limy Upland 16-21" Pz ecological site. Nonirrigated land capability classification is 4c. Irrigated land capability classification is 3e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 33 percent.

Map Unit: RcA—Ranco clay, 0 to 1 percent slopes, frequently ponded

Component: Ranco (90%)

The Ranco component makes up 90 percent of the map unit. Slopes are 0 to 1 percent. This component is on playa floors, tablelands. The parent material consists of clayey lacustrine deposits. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is low. Available water to a depth of 60 inches is moderate. Shrink-swell potential is very high. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 3 inches during May, June, September, October. Organic matter content in the surface horizon is about 1 percent. This component is in the R077CY027TX Playa 16-21" Pz ecological site. Nonirrigated land capability classification is 6w. This soil meets hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 10 percent.

Parmer County, Texas

Map Unit: AcA—Acuff loam, 0 to 1 percent slopes

Component: Acuff (100%)

The Acuff component makes up 100 percent of the map unit. Slopes are 0 to 1 percent. This component is on plains on plateaus. The parent material consists of Loamy eolian deposits from the Blackwater Draw Formation of Pleistocene age.. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R077CY022TX Deep Hardland 16-21" Pz ecological site. Nonirrigated land capability classification is 3e. Irrigated land capability classification is 2e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 40 percent.

Map Unit: AmA—Amarillo fine sandy loam, 0 to 1 percent slopes

Component: Amarillo (100%)

The Amarillo component makes up 100 percent of the map unit. Slopes are 0 to 1 percent. This component is on plains on plateaus. The parent material consists of Loamy eolian deposits from the Blackwater Draw Formation of Pleistocene age.. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R077CY036TX Sandy Loam 16-21" Pz ecological site. Nonirrigated land capability classification is 3e. Irrigated land capability classification is 2e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 40 percent.

Map Unit: AmB—Amarillo fine sandy loam, 1 to 3 percent slopes

Component: Amarillo (100%)

The Amarillo component makes up 100 percent of the map unit. Slopes are 1 to 3 percent. This component is on playa slopes on plateaus, plains on plateaus. The parent material consists of Loamy eolian deposits from the Blackwater Draw Formation of Pleistocene age.. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R077CY036TX Sandy Loam 16-21" Pz ecological site. Nonirrigated land capability classification is 3e. Irrigated land capability classification is 3e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 40 percent.

Map Unit: Ra—Randall clay

Component: Randall (70%)

The Randall component makes up 70 percent of the map unit. Slopes are 0 to 1 percent. This component is on playa floors on plateaus. The parent material consists of clayey lacustrine deposits of Quaternary age. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is low. Available water to a depth of 60 inches is moderate. Shrink-swell potential is very high. This soil is not flooded. It is occasionally ponded. A seasonal zone of water saturation is at 0 inches during May, June, July, August, September, October, November. Organic matter content in the surface horizon is about 1 percent. This component is in the R077CY027TX Playa 16-21" Pz ecological site. Nonirrigated land capability classification is 6w. This soil meets hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 10 percent.

Component: Unnamed, minor components (30%)

Generated brief soil descriptions are created for major components. The Unnamed soil is a minor component.

Map Unit: TwC—Tulia-Potter complex, 1 to 5 percent slopes

Component: Tulia (85%)

The Tulia component makes up 85 percent of the map unit. Slopes are 1 to 5 percent. This component is on draws on plateaus, playa slopes on plateaus. The parent material consists of calcareous, loamy eolian deposits from the Blackwater Draw Formation of Pleistocene age. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is moderate. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R077CY028TX Limy Upland 16-21" Pz ecological site. Nonirrigated land capability classification is 4e. Irrigated land capability classification is 4e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 33 percent.

Component: Potter (15%)

The Potter component makes up 15 percent of the map unit. Slopes are 1 to 5 percent. This component is on draws on breaks, scarps on breaks. The parent material consists of calcareous, loamy alluvium in the Ogallala Formation of Miocene-Pliocene age.. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R077EY068TX Very Shallow 16-24" Pz ecological site. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 38 percent.

Data Source Information

Soil Survey Area: Curry County and Southwest Part of Quay County, New Mexico
Survey Area Data: Version 8, Dec 9, 2008

Soil Survey Area: Parmer County, Texas
Survey Area Data: Version 8, Oct 26, 2009

Selected Soil Interpretations

This report allows the customer to produce a report showing the results of the soil interpretation(s) of his or her choice. It is useful when a standard report that displays the results of the selected interpretation(s) is not available.

When customers select this report, they are presented with a list of interpretations with results for the selected map units. The customer may select up to three interpretations to be presented in table format.

For a description of the particular interpretations and their criteria, use the "Selected Survey Area Interpretation Descriptions" report.

Report—Selected Soil Interpretations

Selected Soil Interpretations– Curry County and Southwest Part of Quay County, New Mexico					
Map symbol and soil name	Pct. of map unit	Awm - irrigation disposal of wastewater		Awm - land application of dry and slurry manure (tx)	
		Rating class and limiting features	Value	Rating class and limiting features	Value
AcA—Acuff loam, 0 to 1 percent slopes					
Acuff	90	Not limited			
AfA—Amarillo fine sandy loam, 0 to 1 percent slopes					
Amarillo	85	Somewhat limited			
		Filtering capacity	0.01		
AfB—Amarillo fine sandy loam, 1 to 3 percent slopes					
Amarillo	85	Somewhat limited			
		Filtering capacity	0.01		
EsA—Estacado loam, 0 to 1 percent slopes					
Estacado	90	Not limited			
PeB—Pep loam, 1 to 3 percent slopes					
Pep	90	Not limited			
RcA—Ranco clay, 0 to 1 percent slopes, frequently ponded					
Ranco	90	Very limited			
		Slow water movement	1.00		
		Ponding	1.00		
		Depth to saturated zone	1.00		

Selected Soil Interpretations– Parmer County, Texas					
Map symbol and soil name	Pct. of map unit	Awm - irrigation disposal of wastewater		Awm - land application of dry and slurry manure (tx)	
		Rating class and limiting features	Value	Rating class and limiting features	Value
AcA—Acuff loam, 0 to 1 percent slopes					
Acuff	100	Not limited		Not limited	
AmA—Amarillo fine sandy loam, 0 to 1 percent slopes					
Amarillo	100	Not limited		Not limited	
AmB—Amarillo fine sandy loam, 1 to 3 percent slopes					
Amarillo	100	Not limited		Not limited	
Ra—Randall clay					
Randall	70	Very limited		Very limited	
		Slow water movement	1.00	Percs slowly	1.00
		Ponding	1.00	Ponding	1.00
		Depth to saturated zone	1.00	Depth to saturated zone	1.00
				Runoff	0.50
TwC—Tulia-Potter complex, 1 to 5 percent slopes					
Tulia	85	Not limited		Not limited	
Potter	15	Somewhat limited		Somewhat limited	
		Droughty	0.86	Droughty	0.85
				Seepage	0.20

Data Source Information

Soil Survey Area: Curry County and Southwest Part of Quay County, New Mexico
Survey Area Data: Version 8, Dec 9, 2008

Soil Survey Area: Parmer County, Texas
Survey Area Data: Version 8, Oct 26, 2009

Selected Soil Interpretations

This report allows the customer to produce a report showing the results of the soil interpretation(s) of his or her choice. It is useful when a standard report that displays the results of the selected interpretation(s) is not available.

When customers select this report, they are presented with a list of interpretations with results for the selected map units. The customer may select up to three interpretations to be presented in table format.

For a description of the particular interpretations and their criteria, use the "Selected Survey Area Interpretation Descriptions" report.

Report—Selected Soil Interpretations

Selected Soil Interpretations– Curry County and Southwest Part of Quay County, New Mexico					
Map symbol and soil name	Pct. of map unit	Dhs - catastrophic mortality, large animal disposal, pit		Dhs - catastrophic mortality, large animal disposal, trench	
		Rating class and limiting features	Value	Rating class and limiting features	Value
AcA—Acuff loam, 0 to 1 percent slopes					
Acuff	90	Somewhat limited		Somewhat limited	
		Water gathering	0.17	Water gathering	0.17
AfA—Amarillo fine sandy loam, 0 to 1 percent slopes					
Amarillo	85	Somewhat limited		Somewhat limited	
		Water gathering	0.17	Water gathering	0.17
AfB—Amarillo fine sandy loam, 1 to 3 percent slopes					
Amarillo	85	Somewhat limited		Somewhat limited	
		Water gathering	0.17	Water gathering	0.17
EsA—Estacado loam, 0 to 1 percent slopes					
Estacado	90	Somewhat limited		Somewhat limited	
		Water gathering	0.17	Water gathering	0.17
PeB—Pep loam, 1 to 3 percent slopes					
Pep	90	Somewhat limited		Somewhat limited	
		Water gathering	0.33	Water gathering	0.33

Selected Soil Interpretations– Curry County and Southwest Part of Quay County, New Mexico					
Map symbol and soil name	Pct. of map unit	Dhs - catastrophic mortality, large animal disposal, pit		Dhs - catastrophic mortality, large animal disposal, trench	
		Rating class and limiting features	Value	Rating class and limiting features	Value
RcA—Ranco clay, 0 to 1 percent slopes, frequently ponded					
Ranco	90	Very limited		Very limited	
		Wetness	1.00	Wetness	1.00
		Ponding	1.00	Ponding	1.00
		Cutbanks cave	0.50	Cutbanks cave	0.50
		Water gathering	0.50	Water gathering	0.50
		Clay content	0.50	Clay content	0.50

Selected Soil Interpretations– Parmer County, Texas					
Map symbol and soil name	Pct. of map unit	Dhs - catastrophic mortality, large animal disposal, pit		Dhs - catastrophic mortality, large animal disposal, trench	
		Rating class and limiting features	Value	Rating class and limiting features	Value
AcA—Acuff loam, 0 to 1 percent slopes					
Acuff	100	Somewhat limited		Somewhat limited	
		Water gathering surface	0.10	Water gathering surface	0.10
AmA—Amarillo fine sandy loam, 0 to 1 percent slopes					
Amarillo	100	Somewhat limited		Somewhat limited	
		Water gathering surface	0.10	Water gathering surface	0.10
		Clay content	0.01	Clay content	0.01
AmB—Amarillo fine sandy loam, 1 to 3 percent slopes					
Amarillo	100	Somewhat limited		Somewhat limited	
		Water gathering surface	0.10	Water gathering surface	0.10
		Clay content	0.01	Clay content	0.01
Ra—Randall clay					
Randall	70	Very limited		Very limited	
		Wetness	1.00	Wetness	1.00
		Ponding	1.00	Ponding	1.00
		Unstable excavation walls	0.50	Unstable excavation walls	0.50
		Water gathering surface	0.50	Water gathering surface	0.50
		Clay content	0.50	Clay content	0.50

Selected Soil Interpretations– Parmer County, Texas					
Map symbol and soil name	Pct. of map unit	Dhs - catastrophic mortality, large animal disposal, pit		Dhs - catastrophic mortality, large animal disposal, trench	
		Rating class and limiting features	Value	Rating class and limiting features	Value
TwC—Tulia-Potter complex, 1 to 5 percent slopes					
Tulia	85	Somewhat limited		Somewhat limited	
		Water gathering surface	0.20	Water gathering surface	0.20
Potter	15	Somewhat limited		Somewhat limited	
		Water gathering surface	0.03	Water gathering surface	0.03
		Large stones	0.01	Large stones	0.01

Data Source Information

Soil Survey Area: Curry County and Southwest Part of Quay County, New Mexico
Survey Area Data: Version 8, Dec 9, 2008

Soil Survey Area: Parmer County, Texas
Survey Area Data: Version 8, Oct 26, 2009

RUSLE2 Related Attributes

This report summarizes those soil attributes used by the Revised Universal Soil Loss Equation Version 2 (RUSLE2) for the map units in the selected area. The report includes the map unit symbol, the component name, and the percent of the component in the map unit. Soil property data for each map unit component include the hydrologic soil group, erosion factors Kf for the surface horizon, erosion factor T, and the representative percentage of sand, silt, and clay in the surface horizon.

Report—RUSLE2 Related Attributes

RUSLE2 Related Attributes– Curry County and Southwest Part of Quay County, New Mexico							
Map symbol and soil name	Pct. of map unit	Hydrologic group	Kf	T factor	Representative value		
					% Sand	% Silt	% Clay
AcA—Acuff loam, 0 to 1 percent slopes							
Acuff	90	B	.37	5	42.1	37.9	20.0
AfA—Amarillo fine sandy loam, 0 to 1 percent slopes							
Amarillo	85	B	.28	5	69.6	16.4	14.0
AfB—Amarillo fine sandy loam, 1 to 3 percent slopes							
Amarillo	85	B	.28	5	69.6	16.4	14.0
EsA—Estacado loam, 0 to 1 percent slopes							
Estacado	90	B	.37	5	39.8	37.7	22.5
PeB—Pep loam, 1 to 3 percent slopes							
Pep	90	C	.37	5	42.1	37.9	20.0
RcA—Ranco clay, 0 to 1 percent slopes, frequently ponded							
Ranco	90	D	.20	5	26.1	28.9	45.0

RUSLE2 Related Attributes– Parmer County, Texas							
Map symbol and soil name	Pct. of map unit	Hydrologic group	Kf	T factor	Representative value		
					% Sand	% Silt	% Clay
AcA—Acuff loam, 0 to 1 percent slopes							
Acuff	100	B	.28	5	41.4	37.1	21.5
AmA—Amarillo fine sandy loam, 0 to 1 percent slopes							
Amarillo	100	B	.24	5	66.1	19.9	14.0
AmB—Amarillo fine sandy loam, 1 to 3 percent slopes							
Amarillo	100	B	.24	5	66.1	19.9	14.0

RUSLE2 Related Attributes– Parmer County, Texas							
Map symbol and soil name	Pct. of map unit	Hydrologic group	Kf	T factor	Representative value		
					% Sand	% Silt	% Clay
Ra—Randall clay							
Randall	70	D	.32	5	17.1	27.9	55.0
TwC—Tulia-Potter complex, 1 to 5 percent slopes							
Tulia	85	B	.24	3	64.5	19.5	16.0
Potter	15	B	.32	1	37.9	35.6	26.5

Data Source Information

Soil Survey Area: Curry County and Southwest Part of Quay County, New Mexico
Survey Area Data: Version 8, Dec 9, 2008

Soil Survey Area: Parmer County, Texas
Survey Area Data: Version 8, Oct 26, 2009

Physical Soil Properties

This table shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

Sand as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter. In this table, the estimated sand content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Silt as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter. In this table, the estimated silt content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, saturated hydraulic conductivity (Ksat), plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3- or 1/10-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute linear extensibility, shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Saturated hydraulic conductivity (Ksat) refers to the ease with which pores in a saturated soil transmit water. The estimates in the table are expressed in terms of micrometers per second. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity (Ksat) is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at 1/3- or 1/10-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. The amount and type of clay minerals in the soil influence volume change.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design commonly is needed.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In this table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter. The content of organic matter in a soil can be maintained by returning crop residue to the soil.

Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Erosion factors are shown in the table as the K factor (Kw and Kf) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and Ksat. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor Kf indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind and/or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are described in the "National Soil Survey Handbook."

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Reference:

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. (http://soils.usda.gov)

Report—Physical Soil Properties

Physical Soil Properties– Curry County and Southwest Part of Quay County, New Mexico														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
AcA—Acuff loam, 0 to 1 percent slopes														
Acuff	0-7	30-42- 50	30-38- 45	15-20- 25	1.30-1.55	4.23-14.11	0.14-0.16	0.0-2.9	1.0-2.0	.37	.37	5	6	48
	7-33	30-34- 70	10-37- 45	25-30- 35	1.40-1.65	4.23-14.11	0.16-0.18	0.0-2.9	0.5-1.0	.32	.32			
	33-57	30-34- 70	10-37- 45	25-30- 35	1.40-1.65	4.23-14.11	0.16-0.18	0.0-2.9	0.5-1.0	.32	.32			
	57-80	25-35- 50	25-38- 45	20-28- 35	1.40-1.65	4.23-14.11	0.16-0.18	0.0-2.9	0.0-0.2	.32	.32			
AfA—Amarillo fine sandy loam, 0 to 1 percent slopes														
Amarillo	0-9	55-70- 75	5-16- 25	10-14- 18	1.35-1.55	14.11-42.34	0.11-0.15	0.0-2.9	0.5-1.0	.28	.28	5	3	86
	9-42	40-55- 70	5-17- 35	20-28- 35	1.30-1.60	4.23-14.11	0.16-0.18	0.0-2.9	0.2-0.7	.32	.32			
	42-80	30-34- 45	25-37- 45	15-30- 32	1.35-1.55	4.23-14.11	0.13-0.15	0.0-2.9	0.1-0.3	.37	.37			
AfB—Amarillo fine sandy loam, 1 to 3 percent slopes														
Amarillo	0-10	55-70- 75	5-16- 25	10-14- 18	1.35-1.55	14.11-42.34	0.11-0.15	0.0-2.9	0.5-1.0	.28	.28	5	3	86
	10-35	40-55- 70	5-17- 35	20-28- 35	1.30-1.60	4.23-14.11	0.16-0.18	0.0-2.9	0.2-0.7	.32	.32			
	35-80	25-63- 70	10-14- 40	20-23- 35	1.40-1.65	4.00-14.00	0.10-0.16	0.0-2.9	0.1-0.5	.32	.32			

Physical Soil Properties– Curry County and Southwest Part of Quay County, New Mexico														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
EsA—Estacado loam, 0 to 1 percent slopes														
Estacado	0-11	30-40- 50	30-38- 50	18-23- 27	1.30-1.45	4.23-14.11	0.14-0.16	0.0-2.9	1.0-3.0	.37	.37	5	4L	86
	11-20	25-35- 40	25-34- 40	27-31- 35	1.35-1.50	4.23-14.11	0.18-0.20	0.0-2.9	1.0-3.0	.32	.32			
	20-80	25-35- 40	25-34- 40	27-31- 35	1.35-1.60	4.23-14.11	0.18-0.20	3.0-5.9	0.5-1.0	.32	.32			
PeB—Pep loam, 1 to 3 percent slopes														
Pep	0-14	35-42- 50	25-38- 45	15-20- 25	1.25-1.40	4.23-14.11	0.14-0.16	0.0-2.9	1.0-2.0	.37	.37	5	4L	86
	14-30	25-39- 45	5-37- 45	20-25- 35	1.40-1.50	4.23-14.11	0.15-0.17	0.0-2.9	0.1-1.0	.37	.37			
	30-80	25-35- 40	25-34- 45	27-31- 35	1.40-1.55	4.23-14.10	0.18-0.20	3.0-5.9	0.1-0.5	.32	.32			
RcA—Ranco clay, 0 to 1 percent slopes, frequently ponded														
Ranco	0-5	15-26- 35	15-29- 35	40-45- 50	1.20-1.40	0.01-0.42	0.12-0.18	9.0-25.0	0.5-2.0	.20	.20	5	7	38
	5-12	15-26- 35	20-29- 45	40-45- 50	1.25-1.40	0.01-0.42	0.12-0.18	9.0-25.0	0.5-1.0	.20	.20			
	12-80	15-26- 35	25-29- 45	40-45- 50	1.30-1.45	0.01-0.42	0.11-0.15	9.0-25.0	0.1-0.5	.20	.20			

Physical Soil Properties– Parmer County, Texas														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
AcA—Acuff loam, 0 to 1 percent slopes														
Acuff	0-10	-41-	-37-	13-22- 30	1.30-1.55	4.00-14.00	0.12-0.18	0.0-2.9	1.0-2.0	.28	.28	5	6	48
	10-36	-56-	-15-	25-30- 35	1.40-1.65	4.00-14.00	0.14-0.19	0.0-2.9	0.5-1.0	.32	.32			
	36-80	-55-	-17-	20-28- 35	1.35-1.65	4.00-14.00	0.10-0.16	0.0-2.9	0.5-1.0	.32	.32			
AmA—Amarillo fine sandy loam, 0 to 1 percent slopes														
Amarillo	0-11	-66-	-20-	10-14- 18	1.35-1.60	14.00-42.00	0.11-0.15	0.0-2.9	0.5-1.0	.24	.24	5	3	86
	11-38	-55-	-17-	20-28- 35	1.30-1.65	4.00-14.00	0.14-0.18	0.0-2.9	0.1-0.5	.32	.32			
	38-66	-55-	-17-	20-28- 35	1.40-1.80	4.00-14.00	0.10-0.15	0.0-2.9	0.1-0.5	.32	.32			
AmB—Amarillo fine sandy loam, 1 to 3 percent slopes														
Amarillo	0-11	-66-	-20-	10-14- 18	1.35-1.60	14.00-42.00	0.11-0.15	0.0-2.9	0.5-1.0	.24	.24	5	3	86
	11-38	-55-	-17-	20-28- 35	1.30-1.65	4.00-14.00	0.14-0.18	0.0-2.9	0.1-0.5	.32	.32			
	38-66	-55-	-17-	20-28- 35	1.40-1.80	4.00-14.00	0.10-0.15	0.0-2.9	0.1-0.5	.32	.32			
Ra—Randall clay														
Randall	0-6	-17-	-28-	50-55- 60	1.20-1.40	0.01-0.42	0.12-0.18	9.0-25.0	0.5-2.0	.32	.32	5	7	38
	6-32	-17-	-28-	50-55- 60	1.25-1.40	0.01-0.42	0.12-0.18	9.0-25.0	0.1-1.0	.32	.32			
	32-80	-17-	-28-	50-55- 60	1.30-1.45	0.42-1.40	0.11-0.15	9.0-25.0	0.1-0.5	.32	.32			

Physical Soil Properties– Parmer County, Texas															
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
TwC—Tulia-Potter complex, 1 to 5 percent slopes														
Tulia	0-17	-65-	-20-	12-16- 20	1.35-1.55	14.00-42.00	0.10-0.14	0.0-2.9	0.5-1.0	.24	.24	3	3	86
	17-63	-34-	-37-	20-30- 40	1.35-1.55	4.00-14.00	0.07-0.15	3.0-5.9	0.1-0.5	.28	.32			
	63-80	-34-	-37-	20-30- 40	1.45-1.65	4.00-14.00	0.10-0.16	3.0-5.9	0.1-0.5	.28	.32			
Potter	0-12	-38-	-36-	18-27- 35	1.35-1.55	4.00-14.00	0.12-0.16	0.0-2.9	0.5-1.0	.28	.32	1	4L	86
	12-64	-42-	-37-	15-21- 27	1.40-1.65	4.00-42.00	0.01-0.06	0.0-2.9	0.1-0.5	.10	.32			

Data Source Information

Soil Survey Area: Curry County and Southwest Part of Quay County, New Mexico
Survey Area Data: Version 8, Dec 9, 2008

Soil Survey Area: Parmer County, Texas
Survey Area Data: Version 8, Oct 26, 2009

ENVIRO-AG
EAE
ENGINEERING, INC.

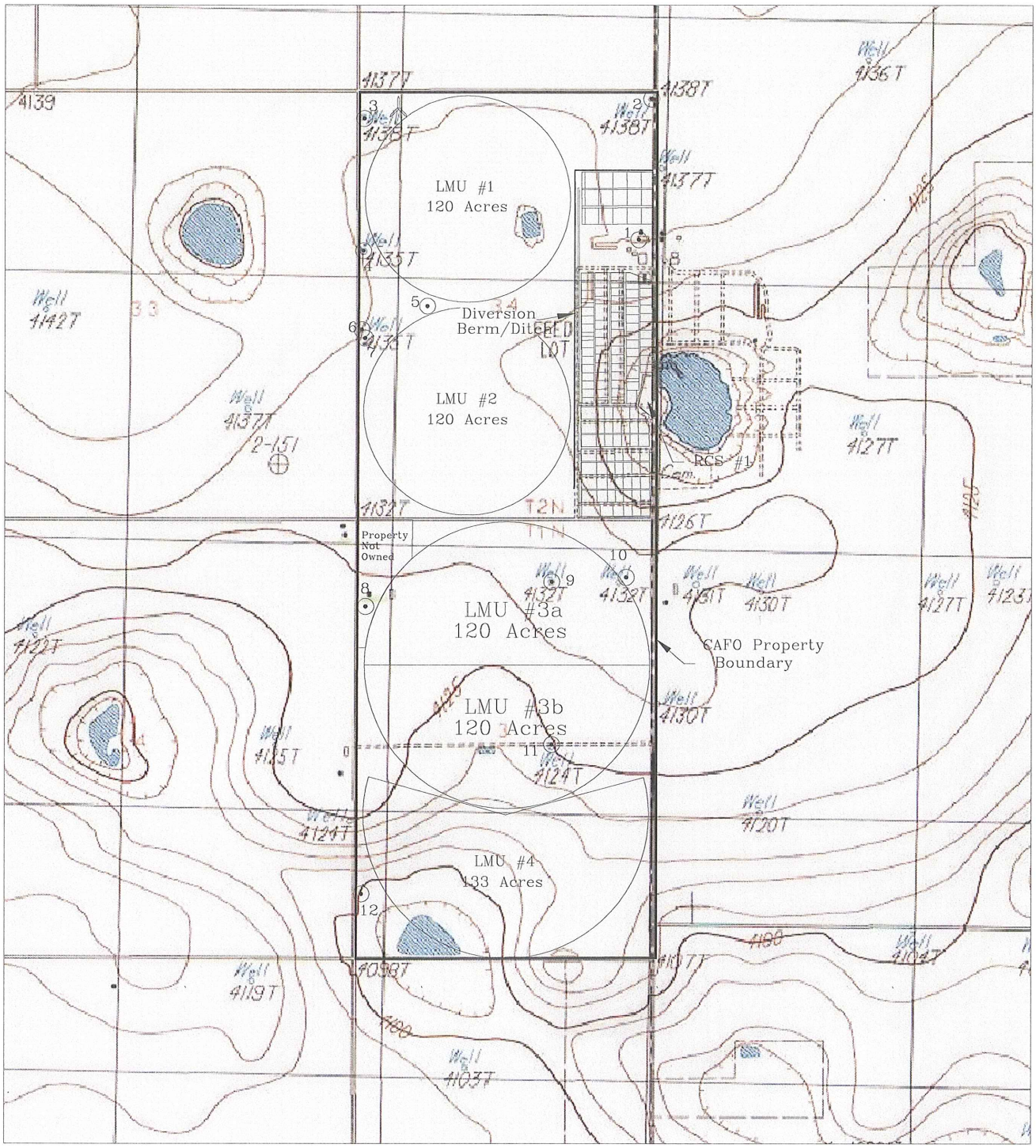
WATER WELLS
SETBACKS OR COMPLIANCE ALTERNATIVES
Oppliger Feedyard (South)
Curry County, New Mexico

Enviro-Ag Engineering, Inc. (EAE) have identified existing water wells located on the property which do not meet the specified land application setback requirements for well heads. As a compliance alternative, the following table demonstrates conservation practices or field-specific conditions will provide pollutant reductions equivalent or better than the reductions that would be achieved by the 100-foot setback:

Table 1: Water Well Information

Map Number	BMPs
1	1.) Well located up gradient of feedyard pens and land application. 2.) Well includes a concrete surface slab. 3.) Maintain surface gradients sloping away from the wellhead outside the concrete foundation to prevent the ponding of effluent in the proximity to the well. 4.) Each wellhead will be observed on regular intervals.
2	1.) Well located up gradient of feedyard pens and land application. 2.) Well includes a concrete surface slab. 3.) Maintain surface gradients sloping away from the wellhead outside the concrete foundation to prevent the ponding of effluent in the proximity to the well. 4.) Each wellhead will be observed on regular intervals.
3	Maintain 100-ft setback.
4	Maintain 100-ft setback.
5	1.) Well located outside the pivot. 2.) Well includes a concrete surface slab. 3.) Maintain surface gradients sloping away from the wellhead outside the concrete foundation to prevent the ponding of effluent in the proximity to the well. 4.) Each wellhead will be observed on regular intervals.
6	Maintain 100-ft setback or properly plug well.
7	Maintain 100-ft setback.

Map Number	BMPs
8	Maintain 100-ft setback.
9	1.) Well will be covered with a protective structure/shield to prevent direct contact between the effluent and the wellhead. 2.) Well includes a concrete surface slab. 3.) Maintain surface gradients sloping away from the wellhead outside the concrete foundation to prevent the ponding of effluent in the proximity to the well. 4.) Each wellhead will be observed on regular intervals.
10	1.) Well will be covered with a protective structure/shield to prevent direct contact between the effluent and the wellhead. 2.) Well includes a concrete surface slab. 3.) Maintain surface gradients sloping away from the wellhead outside the concrete foundation to prevent the ponding of effluent in the proximity to the well. 4.) Each wellhead will be observed on regular intervals.
11	1.) Well will be covered with a protective structure/shield to prevent direct contact between the effluent and the wellhead. 2.) Well includes a concrete surface slab. 3.) Maintain surface gradients sloping away from the wellhead outside the concrete foundation to prevent the ponding of effluent in the proximity to the well. 4.) Each wellhead will be observed on regular intervals.
12	Maintain 100-ft setback.



Legend:

- ⊙ Denotes Well with Buffer and/orBMPs
- ⌀ Denotes Non-Visible Water Well
- Denotes Wind Turbine

Source: TOPO! Software, National Geographic Seamless Topographic Maps on CD-Rom, 2001. Pleasure Lake, NM TX, 1980

N
W E
S

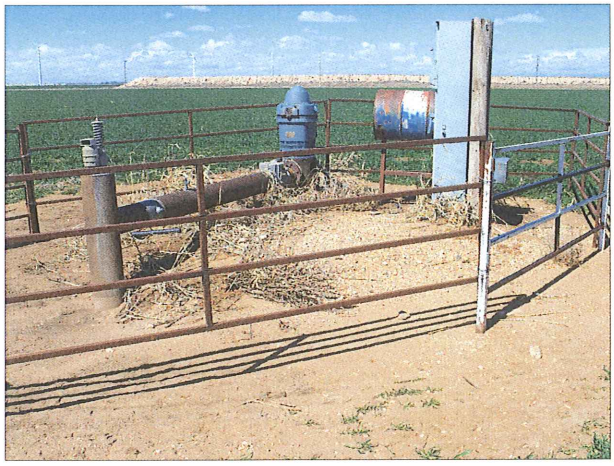
1/4-MI 0

SCALE

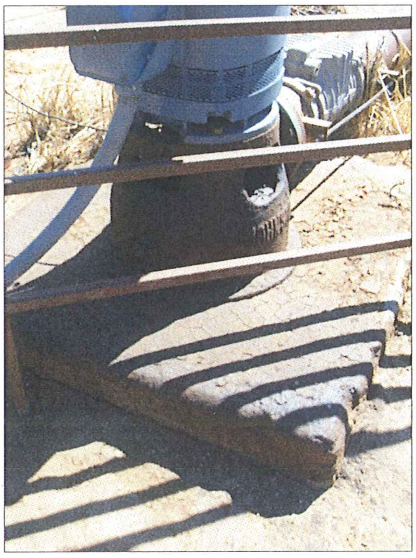
Oppliger Feedyard South Farwell Curry County, NM	Well Map	ENVIRO-AG ENGINEERING, INC. Enviro-Ag Engineering, Inc. ENGINEERING CONSULTANTS 3404 Airway Boulevard AMARILLO, TEXAS 79118 TEL (806) 353-6123 FAX (806) 353-4132

Well #5

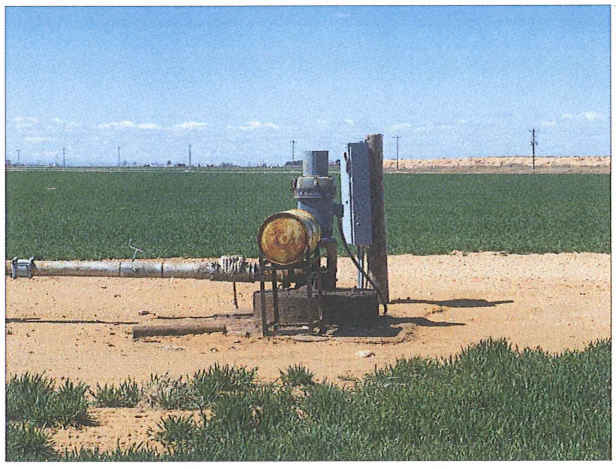
Well #5



Well #9

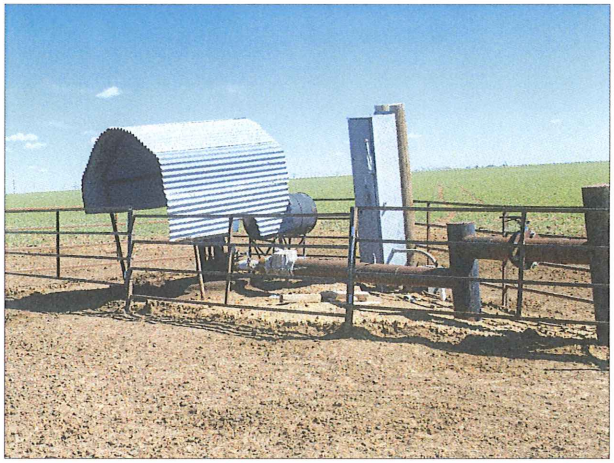


Well #9



Well #10

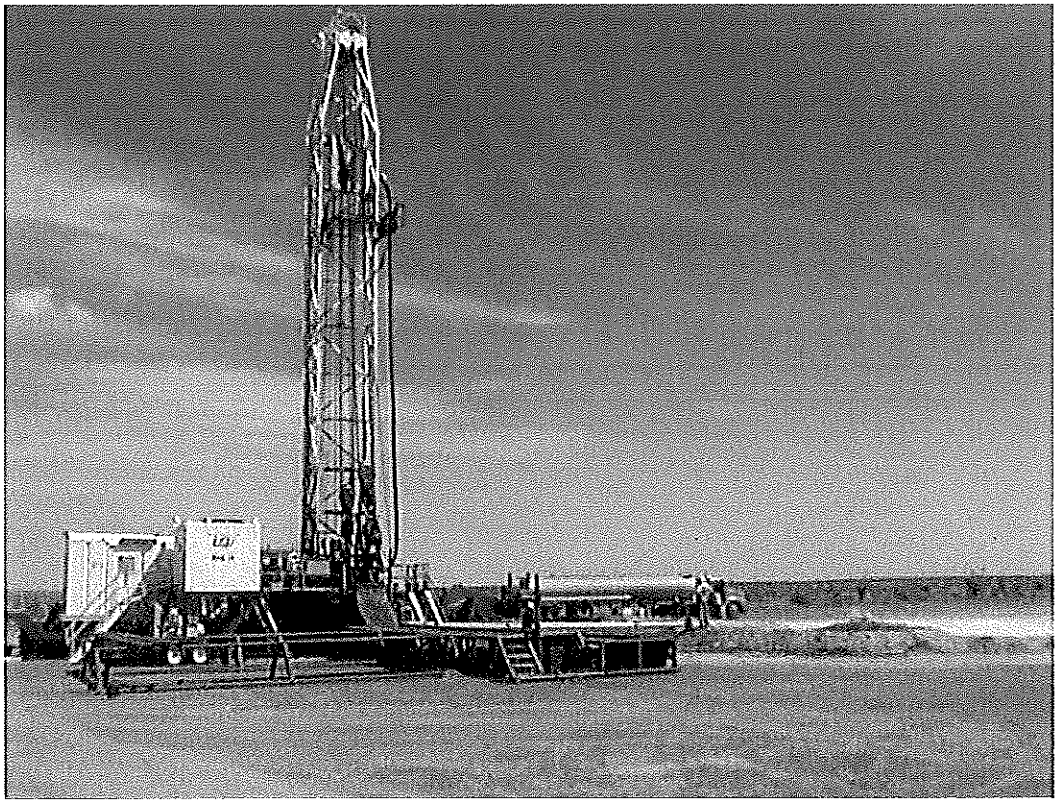
Well #10



Well #11

Well #11

RULES AND REGULATIONS GOVERNING WELL DRILLER LICENSING; CONSTRUCTION, REPAIR AND PLUGGING OF WELLS



Adopted August 31, 2005

John R. D'Antonio, Jr., PE

State Engineer

B. Well casing: The well casing shall have sufficient wall thickness to withstand formation and hydrostatic pressures placed on the casing during installation, well development, and use.

C. Well plugging: A non-artesian well that is abandoned or not properly constructed shall be immediately plugged. A plan for plugging the well shall be filed with - and approved by - the state engineer prior to plugging. The state engineer may require that the plugging process be witnessed by an authorized representative.

(1) Methods and materials: To plug a well, the entire well shall be filled from the bottom upwards to land surface using a tremie pipe. The well shall be plugged with neat cement slurry, bentonite based plugging material, or other sealing material approved by the state engineer for use in the plugging of non-artesian wells. Wells that do not encounter a water bearing stratum shall be immediately plugged by filling the well with drill cuttings or clean native fill to within ten (10) feet of land surface and by plugging the remaining ten (10) feet of the well to land surface with a plug of neat cement slurry, bentonite based plugging material, or other sealing material approved by the state engineer.

(2) Contamination indicated: Wells encountering contaminated water or soil may require coordination between the office of the state engineer and the New Mexico environment department (or other authorized agency or department) prior to the plugging of the well. Specialty plugging materials and plugging methods may be required.

(3) Plugging record: A licensed well driller shall keep a record of each well plugged as the work progresses. The well driller shall file a complete plugging record with the state engineer and the permit holder no later than twenty (20) days after completion of the plugging. The plugging record shall be on a form prescribed by the state engineer and shall include the name and address of the well owner, the well driller's name and license number, the name of each drill rig supervisor that supervised the well plugging, the state engineer file number for the well, the location of the well (reported in latitude and longitude using a global positioning system (gps) receiver capable of five (5) meters accuracy), the date when plugging began, the date when plugging concluded, the plugging material(s) used, the depth of the well, the size and type of casing, the location of perforations, the location of the sanitary seal, and other information deemed necessary by the state engineer. The plugging record shall include a completed well log. The well log shall include detailed information on the depth and thickness of all strata plugged, including whether each stratum was water bearing.

D. Repair requirements: A well driller license is not required to install or repair pumping equipment.

[19.27.4.30 NMAC - Rp, SE 66-1, Article 4-14, 8-31-2005]

19.27.4.31 WELL DRILLING - ARTESIAN WELL REQUIREMENTS: No artesian well shall be constructed that allows ground water to flow uncontrolled to the land surface or move appreciably between geologic units. For regulatory purposes, the determination of whether a well is artesian shall be made by the state engineer. A licensed well driller shall ensure that well drilling activities associated with the drilling of artesian wells are made in accordance with 19.27.4.29 NMAC and the following requirements:

A. Plan of operations: The permittee or owner of the land upon which the well drilling is planned shall provide a description of the proposed work on a form prescribed by the state engineer. The plan of operations shall list the materials to be used and include the cementing and testing procedures. The plan of operations shall be completed by a licensed well driller. A plan of operations must be approved by the state engineer before the drilling of any artesian well. Drilling of an artesian well shall be made in accordance with a plan of operations approved by the state engineer.

B. Construction inspection: The casing, cementing, plugging, and testing of an artesian well shall be witnessed by an authorized representative of the state engineer.

C. Artesian wells - no prior knowledge of artesian stratum: In the course of drilling a well, if a previously unidentified artesian stratum is encountered, such that underground water is flowing uncontrolled to the land surface or between geologic units, the flow shall be controlled immediately. The state engineer shall be immediately notified that an artesian stratum was encountered, and a plan of operations shall be submitted in accordance with Subsection A of 19.27.4.31 NMAC.

D. Casing and coupling material requirements: Couplings and threaded steel casing used in the construction of an artesian well shall meet minimum American petroleum institute (API) specifications (the API casing specifications are listed in the table below). If the well casing or joint connection proposed in the plan of operations is not listed in the table below, the specifications for the casing and connections shall be approved by the state engineer prior to well drilling. If casing length exceeds one thousand (1,000) feet and the diameter of the casing is thirteen and three-eighths (13⅜) inch diameter or larger, H-grade or better shall be used. The casing for artesian wells shall be inspected by an authorized representative of the state engineer prior to well construction.

unanticipated artesian bore holes, the compressive strength of neat cement shall be one thousand (1,000) psi or more before artesian head is shut-in at the wellhead.

J. Repair requirements: When an artesian well is in need of repair, the permittee or owner of the land upon which the well is located shall provide a plan of operations to the state engineer. The plan of operations shall be prepared in accordance with Subsection A of 19.27.4.31 NMAC. Before repairs are made to an artesian well, the well shall first be inspected by an authorized representative of the state engineer to determine if the condition of the well is such that it may be repaired. When a leak in the casing is found and the casing and well are otherwise in good condition, the state engineer may allow the well to be repaired. A packer or bridge plug may be required to complete necessary well repairs. The use of a lead packer is prohibited. An inspection shall be made at the completion of the work to determine if the repair is satisfactory. During an inspection, the well shall be open to allow for the entrance of equipment for testing and inspection.

K. Plugging requirements: An artesian well that is abandoned or not properly constructed shall be immediately plugged. Plugging of an artesian well shall require submittal of a plan of operations in accordance with Subsection A of 19.27.4.31 NMAC. The well shall be plugged from the bottom upwards with a neat cement slurry. The well plugging shall be witnessed by an authorized representative of the state engineer.

(1) Well plugging, contamination indicated: Wells encountering contaminated water or soil may require coordination between the office of the state engineer and the New Mexico environment department (or other authorized agency or department) prior to the plugging of the well. Specialty plugging materials and plugging methods may be required.

(2) Plugging record: A licensed well driller shall keep a record of each well plugged as the work progresses. A plugging record shall be filed in accordance with Paragraph 3 of Subsection C of 19.27.4.30 NMAC.
[19.27.4.31 NMAC - Rp, SE 66-1, Articles 4-15, 4-16, 4-17, 4-18, and 4-19, 8-31-2005]

19.27.4.32 - 19.27.4.35 RESERVED

19.27.4.36 REQUIREMENTS FOR MINE DRILL HOLES THAT ENCOUNTER WATER: Any person drilling a mine drill hole that encounters a water bearing stratum shall plug that hole in accordance with Subsection C of 19.27.4.30 NMAC or Subsection K of 19.27.4.31 NMAC within 30 days of encountering the water bearing stratum.

A. Well record required: Within thirty (30) days after the date of the discovery of water, a well record shall be filed in accordance with Subsection K of 19.27.4.29 NMAC.

B. Artesian water encountered: If artesian water is encountered in the process of drilling a mine drill hole, the drill hole shall be constructed or plugged in accordance with 19.27.4.31 NMAC.
[19.27.4.36 NMAC - Rp, SE 66-1, Article 4-21, 8-31-2005]

19.27.4.37 REQUEST FOR VARIANCE: The rules in 19.27.4.29 NMAC, 19.27.4.30 NMAC, and 19.27.4.31 NMAC are not intended to cover every situation encountered during well drilling. Geologic conditions vary across the state, and may warrant the need to deviate from the rules contained in 19.27.4.29 NMAC, 19.27.4.30 NMAC, or 19.27.4.31 NMAC. A request for a variance to a rule in 19.27.4 NMAC shall be submitted in writing by an qualified applicant, permit holder, or licensed well driller. It is recommended that a request for variance be prepared by a licensed well driller. The request shall include a detailed justification for the variance and shall demonstrate that such a variance is necessary to preclude unreasonable hardship or that application of a rule in 19.27.4 NMAC would not be practicable. The state engineer may grant the variance if he finds the request to be reasonable and just. The state engineer shall respond in writing to the request for variance and, if the variance if granted, the state engineer may impose terms and conditions.
[19.27.4.37 NMAC - Rp, SE 66-1, Article 4-22, 8/31/2005]

19.27.4.38 LIBERAL CONSTRUCTION: This part shall be liberally construed to carry out its purpose.
[19.27.4.38 NMAC - N, 8/31/2005]

19.27.4.39 SEVERABILITY: If any portion of this part is found to be invalid, the remaining portion of this part shall remain in force and not be affected.
[19.27.4.39 NMAC - N, 8-31-2005]

HISTORY OF 19.27.4 NMAC: