

SALTWATER REVEGETATION DEMONSTRATION PROJECT

**FINAL REPORT Clean Water Act, Section 319(h) Nonpoint
Source Implementation Program Contract Number 02-20**

Young Soil & Water Conservation District



USDA-Natural Resources Conservation Service Graham, Texas

TSSWCB Office Temple, Texas

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INTRODUCTION

In the fall of 2004 the NRCS office in Graham, Texas was approached by a local landowner needing advice on how to reclaim a denuded area that was caused by salt water kill from oilfield activity, probably dating back to the nineteen fifties. There are many of these areas located not only in Young County, but in North Central Texas as well. Some of these areas are related to oil field activity, however many are due to the naturally occurring high salt content in the soil. Not only are these sites unproductive and an eyesore, but down stream sedimentation causes stream bank degradation, loss of vegetation and decreased water quality.

In March 2005, the Young SWCD executed an agreement with the Texas State Soil and Water Conservation Board to develop and oversee a demonstration project. This project would involve 10 acres on one landowner located in the northwest part of Young County. This area had severe gullies up to four foot deep and twenty foot wide and was void of all vegetation.

A sixty/forty match was established with \$15,060 being cost-shared and \$10,040 being paid by the producer. On this project the NRCS would design diversion terraces to protect the area from outside water. They would also make recommendations on how to shape the existing rills and gullies and recommend adapted plants as well as potential new varieties that would grow in high saline soils. NRCS would then recommend a mulching process that would protect from heavy rainfall impacts and allow protection for the germinating seedlings.

The Young SWCD would schedule a field day to show results of the project using before and after pictures and discuss the step by step process that was used. All educational materials and advertising for the field day would be provided by Texas Cooperative Extension. Turner Seed Company agreed to provide different varieties of seed at no cost.

PROGRAM DEVELOPMENT

The Young SWCD signed the Interagency Cooperative Contract with the Texas State Soil and Water Conservation Board (TSSWCB) on May 3, 2005, agreeing to be the performing agency to handle all of the financing of the cost share process. It was determined that the starting date for this project would be October 1, 2005 and it would continue for eighteen months.

A conservation plan was written with the landowner in October 2005 listing the steps he needed to take to carry out this program. In November of 2005, a TSSWCB representative met with the Young SWCD to discuss the procedure of requesting the reimbursement funds and the timing of the reports due.

PROJECT ACCOMPLISHMENTS

The project was started on December 1, 2005 with the removal of the mesquite trees on the outer edge of the area to be shaped. The shaping of the gullies started on December 5th and the diversion terrace was designed and staked out. After taking elevation shots around the area to be shaped, the south diversion was staked, however the north area diversion would not work due to the slope putting water back into the shaped area. The north diversion was deleted.

The area was then plowed and fertilized according to a soils test with the fertilizer being incorporated into the soils during the last tillage operation. On March 16th the area was seeded to fourteen different species of plants that had the potential to germinate in the high saline soils content. A switchgrass mulch was added on March 21st, using a bale buster borrowed from the Knox City Plant Materials Center. A fence to protect from grazing had been erected earlier.

The Young SWCD sponsored a field day on November 1, 2006 to give an overview of the whole project. Thirty-six people were in attendance. Results were not as good as expected due to the lower than normal rainfall. It is expected that plant coverage will take three to four years.

PROJECT ACCOMPLISHMENT BY TASKS

Task 1: Implementation of conservation practices on demonstration site.

Objective: To implement conservation practices that will help to stabilize the area and reduce soil losses.

Subtask 1.1 Install diversion terrace to provide protection from outside water.

A diversion terrace was installed on the south side, however the north side had no feasible site.

Subtask 1.2 Critical area shaping will be to smooth existing gullies.

The area was shaped to a parabolic shape using two dozers.

Subtask 1.3 A proper seedbed will be established for grass planting.

Seedbed preparation was done by plowing with a tandem disc three times.

Subtask 1.4 Different seeding and mulching methods will be used to establish best grass cover.

It was decided to use only one seeding method, but to use 14 different species of plants. The Truex grass drill was used to plant all species. The area was then mulched using 20 round bales of switchgrass hay. The use of a bale buster hay processor was donated by the NRCS Plant Materials Center in Knox City.

Subtask 1.5 Fertilizer will be applied according to a soil test.

A soil test was taken and the correct fertilizer was applied and incorporated into the soil during the last tillage operation.

Subtask 1.6 Fencing will be installed to protect area until grass is well established.

A five strand barb wire fence was constructed early in the project to protect from grazing.

Subtask 1.7 Measure soils savings using the gross erosion equation.

The gross erosion equation was used to figure soil loss with an estimated 2595 tons per acre being lost before shaping and seeding and 210 tons per acre being lost after for a total savings of 2385 tons per acre.

Subtask 1.8 Prepare Quarterly and Final Reports.

All quarterly reports are complete with this being the final report.

Task 2: Conservation tour of demonstration site.

Objective: To allow landowners to view the results of the demonstration site

Subtask 2.1: The Young SWCD will conduct a field day to show results of the project.

A field day was held on November 1, 2006 to discuss the problem of high salt content in soils and possible solutions to solve these problems. (See appendix)

Subtask 2.2 The Young SWCD will advertise the field day, make brochures and pictures of before and after work of the project.

The field day was advertised on the radio and through the local news paper. Flyers were also put up at farm and ranch stores through out the county. (see appendix)

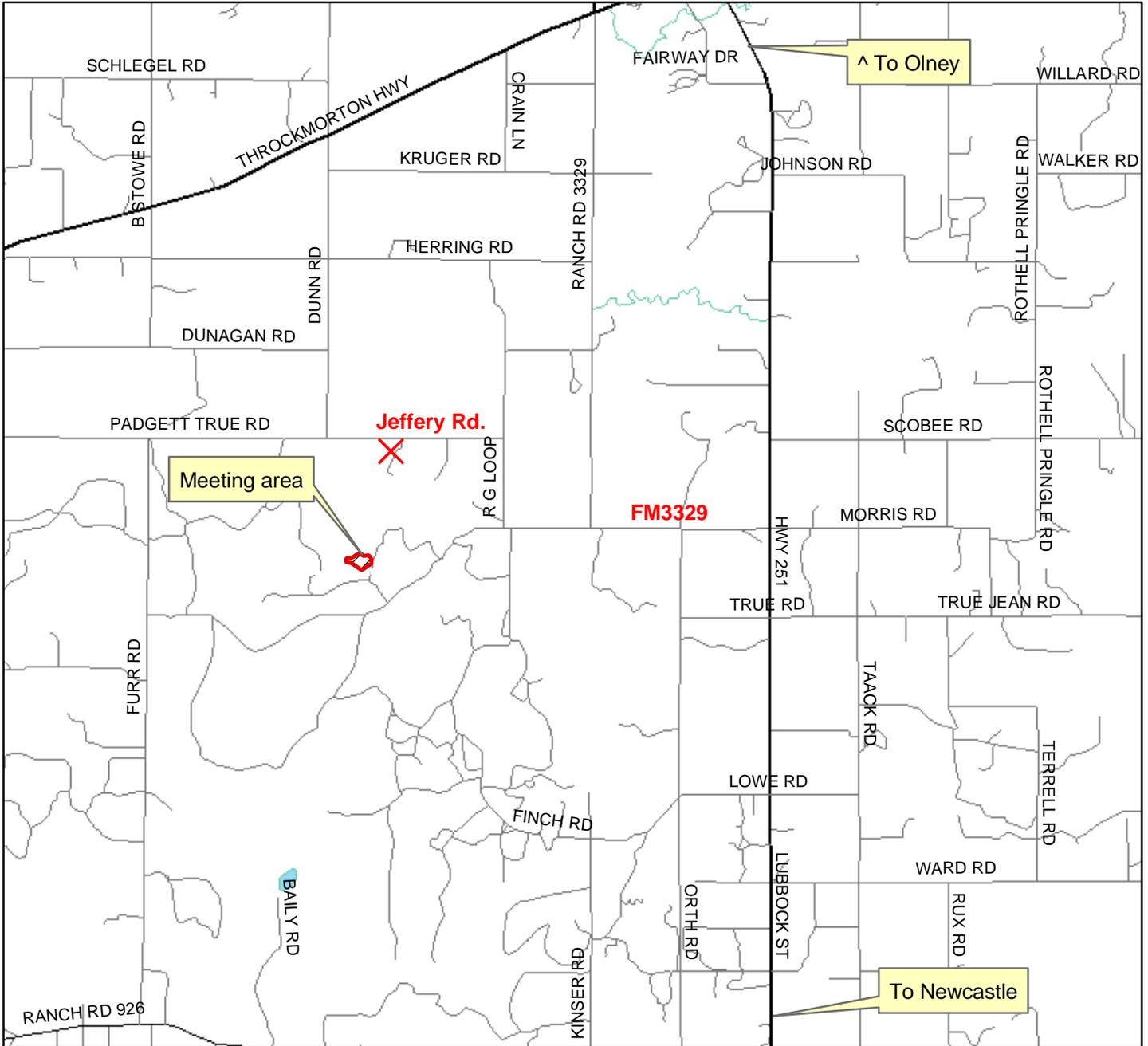
Subtask 2.3 Additional educational materials and advertising for the field Day will be provided by Texas Cooperative Extension.

The local extension agent advertised the field day in his newsletter and educational materials were on site for the landowners to pick up. (see appendix)

Meeting Location- Salt Revegetation

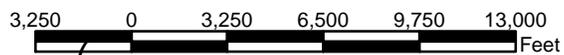
Customer(s): J W GUINN
District: YOUNG SOIL & WATER CONSERVATION DISTRICT

Field Office: GRAHAM SERVICE CENTER
Agency: NRCS
Assisted By:
State and County: TX, YOUNG



Legend

 salt_project

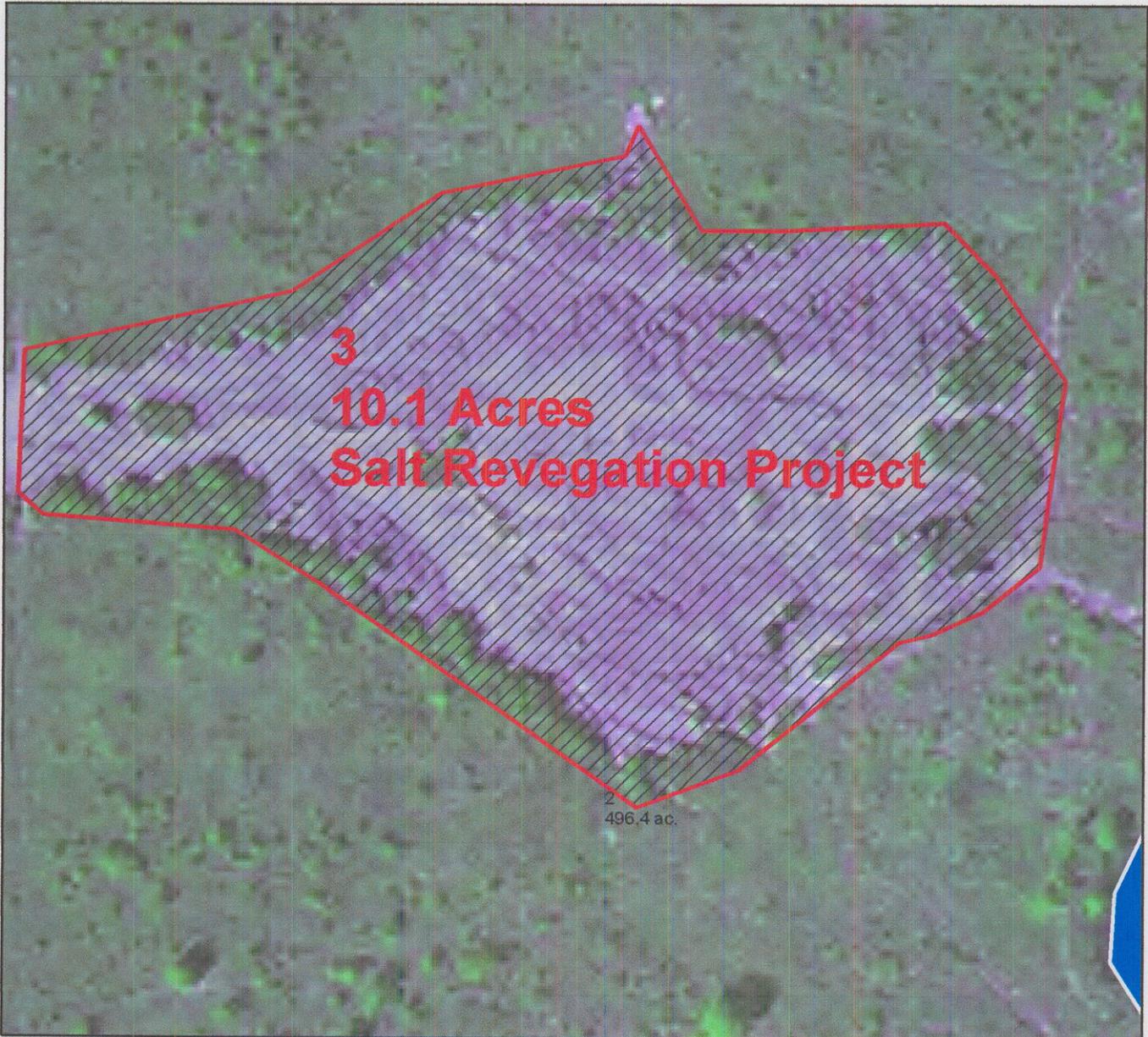


Conservation Plan Map

Date: 10/5/2005

Customer(s): J W GUINN
District: YOUNG SOIL & WATER CONSERVATION DISTRICT
Approximate Acres: 10.1

Field Office: GRAHAM SERVICE CENTER
Agency: NRCS
Assisted By: John W Paclik
State and County: TX, YOUNG



Legend

-  salt_project
-  Pond



Image:



TOTAL COSTS OF SALT KILL REVEGETATION PROJECT

SHAPING PLUS DT CONSTRUCTION	\$10,951.75
SEEDBED PREPERATION - PLOWING	\$911.97
FERTILIZER AND SPREADING	\$268.00
SEED AND SEEDING	\$818.75
MULCHING	\$1096.25
FENCE	\$5577.00

TOTAL \$19,623.72

COST PER ACRE (10.1 AC.) - \$1942.94

Seeding Mixture
Donated by Turner Seed Co.

<u>Seed</u>	<u>Lbs.</u>
Alkali sacaton	8
Common Bermuda	20
Spar bluestem	4
Illinois bundleflower	25
Alamo switchgrass	4
Texas panicum	10
Maxmalian sunflower	2
Jose tall wheatgrass	20
4-wing saltbush	16
Tall dropseed	4
Kleingrass	10
Big sacaton	8.1
Texas dropseed	19
Prostrate kochia	5

SALT DAMAGE REVEGETATION DEMONSTRATION PROJECT

By Troy Reinke RMS

A demonstration project to reclaim a salt damaged area has been approved for grant monies by the Texas State Soil and Water Conservation Board. This project comes under the 319 legislature passed by Texas Congress. It awards money from the Environmental Protection Agency (EPA), to be used for high priority conservation projects. EPA then relinquishes the money to the Texas State Board to assist landowners with projects such as these.

Salt damaged areas, or scalds, are an unsightly eyesore to many landowners throughout Young County. These areas are not only unsightly, but contribute excessive amounts of soil and salts to the watersheds, polluting many downstream creeks, lakes and ponds. The abundance of salt left from a numerous spills, has destroyed the soils ability to grow grasses and other plants to protect itself from the effects of water erosion.

J.W. Guinn, a landowner in Zone 1 of Young County, contacted John Paclik, District Conservationist – NRCS, inquiring about any assistance in rehabilitating a salt scald area located on his property just southwest of Olney. Mr. Guinn stated that the area was several acres in size, void of any desirable vegetation, and forming deep gullies. John informed Mr. Guinn that there were several conservation practices that could be installed, but currently there were no cost-share programs available for such a project. A couple months later, a news release discussing the 319 grant program came across John's desk. He discussed this with Mr. Guinn and the Young Soil and Water Conservation District, as the money would actually be funded from the State Board through the district. Both were agreeable and a proposal was made at the monthly Young SWCD business meeting. The proposal was made for shaping and reseeding the area to control soil erosion. The Young SWCD then submitted the proposal to the State Board. Approval was given a short time later.

John, along with team members Gerald Voss, Soil Conservation Technician, from Throckmorton Field Office, Troy Reinke, Rangeland Management Specialist, Graham Field Office, evaluated the site for potential conservation practices. The site was studied for slope, soils makeup, drainage area, and salt content. The team later developed a conservation plan and began the design work for reshaping the area. Grasses and forbs that are highly tolerant to salt are still being studied for use in reestablishing suitable vegetation on the site. The site will be shaped and vegetated to stabilize the slopes and reduce soil erosion losses. Along with shaping and reseeding, extensive oil field debris clean up, and construction of diversion terraces will have to be done in order to finish the project.

The purpose of this project is to have a successful demonstration area to use to show other landowners with similar problems how to repair their own salt scald areas. A successful completion of this project is anticipated for May 1, 2007. The Young SWCD will conduct a field day, in conjunction with Texas Cooperative Extension Service, to showcase the demonstration project. Speakers will be on hand to discuss the different aspects of completing such a project. They will talk about engineering practices, reseeding options, and benefits to both man and wildlife.

SALT KILL REVEGETATION FIELD DAY SCHEDULED

There are many parts of the county that show salt damages, whether it is from natural or from old oilfield activity. A field day has been scheduled for Wednesday, November 1st on the J.W. Guinn ranch south of Olney to show the results of a demonstration project conducted this year by the Young Soil and Water Conservation District and the Natural Resources Conservation Service. The field day starts at 9:30 AM with everyone meeting at the entrance to Mr. Guinn's ranch gate on Jeffery Road. "This is a good example of what can be or cannot be done to improve these ugly sites," said John Paclik with the local NRCS office.

Last fall we received grant monies to do a turn key job on trying to reclaim 10 acres of land gullied from saltwater leaks from old tank batteries. This area was shaped late last winter, fertilized and disked a couple of times and then seeded to a mixture of 14 different species of plants to see which would be the most adaptive to the saline soils. "We did not have the best spring and summer rains as we had hoped for, but this is all part of the demonstration project," Paclik stated.

A layer of switchgrass hay was applied as a mulch to provide protection from rainfall and keep the soil shaded and cooler for the seed to germinate.

Enlarged pictures of the sequence of events will be on hand to show what has been done on this project. A number of specialists will be on hand to discuss all of the different steps used to work on this project.

Lunch will be provided at the field day. Please RSVP to the NRCS at 549-0422 for lunch or to get directions.

SALT KILL REVEGETATION FIELD DAY

A field day to show the results of a salt kill revegetation project was held in Young County on November 1st. Approximately 40 people were on hand to see the final results of this project which was conducted on the J.W. Guinn place southwest of Olney, Texas.

Grant funds were applied for and received last fall through the 319 demonstration project program. These are funds set aside by the Environmental Protection Agency(EPA) and funneled through the Texas State Soil and Water Conservation Board partnered with a local sponsor. In this case the sponsor was the Young Soil and Water Conservation District. Other sponsors included the Natural Resources Conservation Service, Young County Extension Service, and Turner Seed Company.

There are many salt scarred areas, occurring naturally or from oil field activity, in North Central Texas that are not only an eyesore but are unproductive. The loss of vegetation causes water quality degradation and sedimentation downstream.

“Our intention was to do a turn key job on trying to reclaim 10 acres of land gullied from saltwater, in this case caused by old oilfield activity,” said John Paclik, District Conservationist with the Natural Resources Conservation Service. Last winter this area was shaped, fertilized, and disked a couple times and then seeded to a mixture of 14 different species of plants to see which would be the most adaptive to the saline soils. A layer of switchgrass hay was applied as a mulch to provide protection from intensive rainfall and to keep the soil shaded and moist to allow for better germination of the seeds.

Mr. Gunn explained his objective was to reclaim the area and eventually get a cover of vegetation. Lee Munz, Texas State Board Project Manager, discussed the 319 projects funds available through EPA. Gerald Voss, conservation technician, talked about the shaping and smoothing process that changed an extensive gullied area to a tillable area that a seedbed could be prepared. Soils information and the amount of salt in the soils were discussed by Soil Scientist, Sidney Paulson and Byron Lorenz.

Troy Reinke, Range Management Specialist, gave an overview of the 14 different species of seeds planted and conducted a walking tour of the plants growing on the site. Agronomist, Andy Spencer, followed up with possible alternatives that work on different levels of salt damage. District Conservationist, concluded with a summary of costs to complete the project.

“We did not have the best spring and summer rains as we had hoped for to make this a success,” Paclik said. However, part of the project required fencing the area to protect it from grazing, therefore allowing existing plants to get a good root system, as well as, allowing more seed to germinate next spring. With time, the area should have a decent plant cover that will eliminate the erosion problem and drastically improve the water quality downstream.

Ag Update ~ Fall 2006

J. Brad Morrison
Young County Extension Agent - Agriculture

The drought continues, so what is a producer to do? In the realm of management tools, take a hard look at the Pasture Rangeland and Forage Risk Management Pilot Insurance Program, better known as rainfall insurance. (Stan Bevers will detail the program at the NCTCC on November 2nd. Insurance deadline is November 30) After talking to knowledgeable sources, this appears to be a insurance program that can really be a benefit. Coverage is capable of returning two dollars for every dollar invested. Why such returns? The government would like to get out of blanket disaster programs and move to risk management or insurance based producer programs. Bottom line, individual producer responsibility.

A very short-term help, is TDA's Livestock Assistance Grant Program. Apply through TDA for these grants. An application can be obtained right now from TDA at 1- 800-TELL - TDA. Suffered livestock forage production losses from March 7, 2006- August 31, 2006 are eligible. Examples of losses may include: cost of lost forage, supplemental feeding cost, livestock relocating cost, feed transportation cost, emergency water cost, etc. . . How much can a grant be? It will depend on the number of applications as to how far the funds will go. They will be based on a per head basis. The max a producer can receive is \$10,000.

Droughts produce hardship but increase wisdom. Start now to develop a management plan for the next drought. As ag producers we hope for the best and wait to long to react, thus drastic measures are required. Give serious consideration to the stocking rate to which you return when conditions improve. Develop realistic forage thresholds and graze by them.

When a drought gets upon us we tend to look for a means to "get them by" rather than maintaining adequate body condition. Cows go to 4 or 3 rather than the minimal 5 BCS rating. Result, disastrous conception rates. Manage for reproductive efficiency as a function of nutrition. In good and bad times maintain the herd in a minimum body condition score of 5.

Lastly for feeding and marketing benefits develop a 90 day or shorter calving season. The practice allows the most effective management and optimizes efficiency. When we do get to restock, buy the ones that fit a 90 day plan.

13th ANNUAL NORTH CENTAL TEXAS CATTLEMAN'S CLINIC

When/Where: Thursday, November 2, 1:00 p.m. Young County Arena, Highway 380 East, Graham

Topics: The Change in our Climate-Real or Perceived?; Rainfall Insurance; Drought Survival; Market Outlook/Projections

Speakers: Dr. John Neilson Gammon, TAMU Climatologist; Dr. Stan Bevers Extension Economist; Dr. Ron Gill Extension Livestock Economist

Meal: Ribeye Steak Supper \$5 Donation

Organizers: TCE Offices of Young, Palo Pinto, Jack and Stephens County's

Special: TDA Pesticide Credit

ATTENTION: RSVP by TUESDAY, OCTOBER 31 - 940.549.0737

CHANGES IN OUR WEATHER

Has our weather pattern really changed? Global Warming, fact or fiction? This is always a major topic of discussion in the ag community and it would seem that a climate shift has occurred in the past 10 plus years. Is this just a blip or a new reality? By attending the North Central Texas Cattleman's clinic one will come away with answers to the above question. The clinic is happy to have Dr. John Neilson Gammon, a Climatologist with the Meteorology Department at Texas A&M on hand to answer such questions and make future projections on the topic. Dr. Gammon's research deals with these exact questions. Dr. Gammon is a MIT Graduate and will give a scientific view of what is fact or fiction about or climate.

SALT KILL RE-VEGETATION FIELD DAY

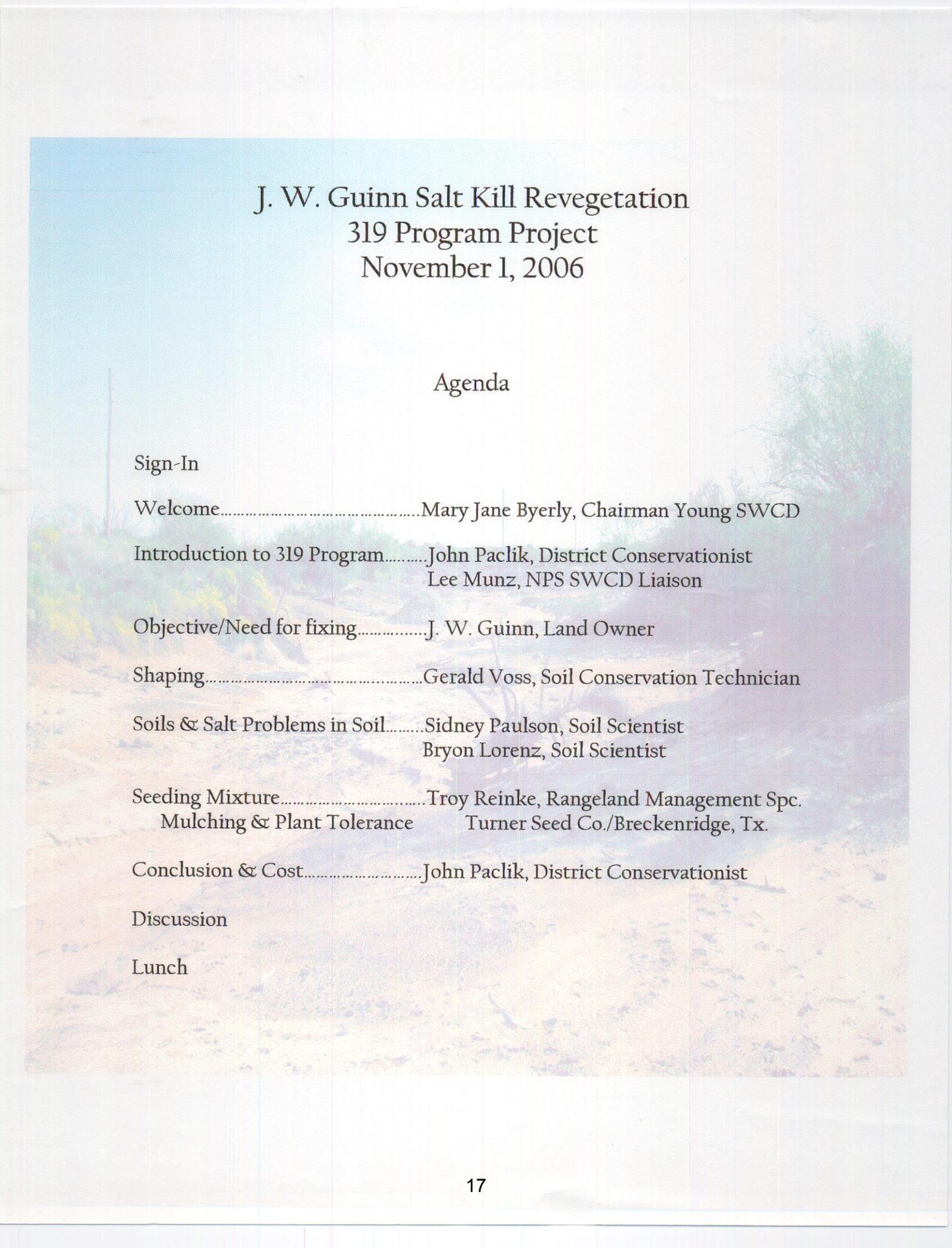
Where: J.W. Guinn's off of Jeffery Road SW of Olney
When: Wednesday November 1, 9:30 a.m.
Lunch: Provided by Young County SWCD Board
RSVP: SWCD 940.549.0422 Ext. 3
Attention: TDA Pesticide Credit
Sponsors: Young County SWC; Graham NRCS, Tx Cooperative Extension, Turner Seed
Field day features forage plots planted into salty ground shows what is or is not a realistic option for salt scalds.

NATIONAL ANIMAL IDENTIFICATION SYSTEM

NAIS is still on schedule. According to the USDA-APHIS website, the private/state tracking databases should be operational by early 2007. Also, the following goals have been established:

- 1) by Jan. 1, 2007, 25 % of premises will be registered and 5% of animals born in 2006 will be tagged;
- 2) by Jan. 1, 2008, 70% of premises will be registered and 40% of animals born in 2007 will be tagged;
- 3) by Jan. 1, 2009, 100% of premises will be registered and 100% of animals born in 2008 will be tagged. However, the Texas Animal Health Commission has postponed addressing proposed regulations for premises registration until the winter or spring of 2007. (Premises can be voluntarily registered at this point by contacting Texas Animal Health Commission, <http://www.tahc.state.tx.us/>)

Extension programs serve people of all ages regardless of socioeconomic level, race, color, sex, religion, disability or national origin. Information given herein is for educational purposes only. References to commercial products or



J. W. Guinn Salt Kill Revegetation
319 Program Project
November 1, 2006

Agenda

Sign-In

Welcome.....Mary Jane Byerly, Chairman Young SWCD

Introduction to 319 Program.....John Paclik, District Conservationist
Lee Munz, NPS SWCD Liaison

Objective/Need for fixing.....J. W. Guinn, Land Owner

Shaping.....Gerald Voss, Soil Conservation Technician

Soils & Salt Problems in Soil.....Sidney Paulson, Soil Scientist
Bryon Lorenz, Soil Scientist

Seeding Mixture.....Troy Reinke, Rangeland Management Spc.
Mulching & Plant Tolerance Turner Seed Co./Breckenridge, Tx.

Conclusion & Cost.....John Paclik, District Conservationist

Discussion

Lunch



Gullies three to four foot deep show the damage done by oilfield activity in years past.



The white area shows the high salt content in the soil.



Massive erosion had taken place leaving areas clumped with mesquite and weeds.



Intensive shaping not only smoothed the area, but mixed to soil layers to reduce the salt content.



Ripping was needed to break-up the subsoil.



Completed seedbed ready for seeding.



View from top to bottom



A grass drill was used to plant 14 different species.



Loading a round bale of switchgrass into bale buster.



Mulching using the bale buster gave a fairly uniform layer of hay.



The switchgrass hay protected the soil from intensive rains.



A fence was installed to provide protection from grazing.



Six months after seeding, plants are still sparse due to the extreme dry conditions.



Kleingrass and common bermuda seemed to tolerate the salty soils better than the other plants.



Technician Gerald Voss, explains the shaping process during the field day.



Owner J.W. Guinn, in black cap, and wife listen intently to the discussions during the field day.



Range Management Specialist, Troy Reinke, explains to interested landowners what plants responded to the salty soils.



Plants were flagged during the field day for proper identification.



The Young SWCD had photos enlarged for the field day to show all of the steps of the shaping and seeding process.



Mr. Guinn and SWCD board members rate this a success even though solid plant coverage was not obtained the first year.