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START 3

Superfund Technical Assessment and Response Team 3 – Region 8

United States
Environmental Protection Agency
Contract No. EP-W-05-050

CALIFORNIA GULCH OPERABLE UNIT 11
REMEDIAL ACTION REPORT
Lake County, Colorado

TDD No. 0509-13

June 3, 2013

URS
OPERATING SERVICES, INC.

In association with:
Garry Struthers Associates, Inc.
LT Environmental, Inc.
OTIE
TechLaw, Inc.
Tetra Tech EMI

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June 3, 2013

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SUBJECT: START 3, EPA Region 8, Contract No. EP-W-05-050, TDD No. 0509-13, Remedial Action Report, California Gulch Operable Unit 11, Lake County, Colorado

Dear Mike:

Enclosed are four copies of the Remedial Action Report for the California Gulch Operable Unit 11 site.

If you have any questions, please call me at 505-269-1925.

Very truly yours,

URS OPERATING SERVICES, INC.

Jan Christner, P.E.
Environmental Engineer

cc: Charles W. Baker/UOS (w/o attachment)
File/UOS

REMEDIAL ACTION REPORT

CALIFORNIA GULCH OPERABLE UNIT 11
Lake County, Colorado

EPA Contract No. EP-W-05-050
TDD No. 0509-13

Prepared By:
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Charles W. Baker, START 3 Program Manager, UOS

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REMEDIAL ACTION REPORT

CALIFORNIA GULCH OPERABLE UNIT 11
Lake County, Colorado

EPA Contract No. EP-W-05-050
TDD No. 0509-13

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File (electronic copy)	START 3, EPA Region 8

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1.0 BACKGROUND

The California Gulch Superfund Site, located in Lake County, Colorado, was listed on the National Priorities List (NPL) in 1983 and covers about 18 square miles. The site is divided into 12 Operable Units (OUs) including 11 geographic OUs plus a site-wide surface water and groundwater OU (OU 12). OU 11 includes 2.5 square miles of contaminated property along the Upper Arkansas River from the confluence of California Gulch to the confluence of Two-Bit Gulch (Figure 1). This Remedial Action Report describes the OU 11 Remedial Action. It was prepared in accordance with U.S. Environmental Protection Agency (EPA) Office of Solid Waste and Emergency Response (OSWER) Directive 9320.2-22 and will be used, along with the Remedial Action Reports for OU 1 through 10 and OU 12, as the basis for development of the site Final Close-Out Report.

1.1 RECORD OF DECISION

The Record of Decision (ROD) was signed in 2005 and specifies the Remedial Action Objectives (RAOs) and selected remedy (EPA 2005). The following RAOs were presented in the ROD:

1. Minimize future human exposures of heavy metals as defined in the human health Baseline Risk Assessment.
2. Minimize erosion of Fluvial Mine Waste Deposits into the Arkansas River as determined necessary to prevent further harm to aquatic life.
3. Control leaching and migration of metals from contaminated materials into groundwater.
4. Reduce toxins in plants and improve plant demographics in the Irrigated Meadows, Riparian Areas, and Fluvial Deposits as determined necessary.
5. Reduce exposures of wildlife and livestock to heavy metals in soil and vegetation at toxic concentrations via direct exposure or bioaccumulation.

The selected remedy includes:

- Initial treatment and maintenance of irrigated meadows areas. Initial treatment will consist of lime amendment, or lime/organic amendment, deep tilling, and seeding.
- Continued maintenance of tailings deposits treated during prior response actions, as necessary. Maintenance will include inspections and periodic application of lime and/or organic amendments.

- Initial treatment and maintenance of remaining tailings deposits. Initial treatment will consist of lime and organic amendment, and deep tilling followed by seeding to physically stabilize the mine wastes through the establishment of vegetation.
- No active revegetation of the (vegetated) riparian areas, although specific riparian areas may be remediated if deemed appropriate during design.
- Institutional controls on irrigated meadows, tailings deposits, and riparian areas. Institutional controls will be implemented to prevent changes in current land use unless the risks under the new land use are demonstrated to be below a level of concern using EPA risk assessment and Institutional Control Overlay District adopted by Lake County consistent with the State's Environmental Covenant Law.

Cleanup levels were not established because the remedial action did not reduce contaminant concentrations in site media. Performance criteria for treated soils and for vegetation characteristics were established during development of the remedial design and are described in Section 4.1 below.

1.2 PRIOR RESPONSE ACTIONS

The ROD requires continued maintenance of tailings deposits treated during removal/response actions conducted from 1998 through 2000 (demonstration areas) (URS Operating Services, Inc. [UOS] 2007). This section describes treatment of the demonstration areas.

EPA's Environmental Response Team (ERT) and the U.S. Department of Agriculture (USDA) proposed in situ soil stabilization using biosolids and lime amendments to increase vegetation and reduce metals mobility from the tailings to the river and surrounding land. This mixture, when applied to the surface of mine tailings, can reduce the mobility of metals ions, increase metals ion absorption, provide a growth medium with sufficient physical properties for vegetative growth, and increase the water holding capacity of the soil. This treatment was considered an innovative treatment technology, so four reasonably accessible tailings deposits with a range of metals concentrations (low, medium, and high) were identified to be used as demonstration areas. In the subsequent 2 years, additional demonstration areas were identified for similar treatments. Removal actions taken in 1998, 1999, and 2000 included in situ soil amendment of approximately 40 acres of barren mine waste deposits. The deposits were treated with varying combinations of biosolids cake, biosolids pellets, biosolids compost, cow manure compost, agricultural grade lime, fine grade lime, and woodchips followed by hydromulching and seeding and in some cases

irrigation (due to drought conditions). Exposed stream banks were stabilized to prevent re-entrainment of recently tilled soils. The demonstration area locations are shown on Maps 1 through 9. Table 1 summarizes the treatments applied at each location. Maintenance performed as part of the removal action included addition of lime to one area in 2000, addition of wood chips and other materials to bare and sparsely vegetated deposits in 2003, and re-treatment of bare areas in 2009.

Monitoring wells were installed around two of the project locations and one untreated mine waste deposit to allow long-term monitoring of the effect of fluvial tailings on groundwater and river quality, to supplement the information already gathered for soil amendment/revegetation demonstration sites, and to provide an indication of the effectiveness of treatment. Wells located upgradient of the tailings generally had lower concentrations than wells located within or downgradient of tailings. Wells located within the tailings had the highest metals concentrations, and concentrations decreased significantly downgradient of the tailings. Groundwater metals concentrations appeared to vary more from seasonal variations and location relative to the tailings than from the application of soil amendments.

EPA's ERT performed studies to compare conditions in the mine waste deposits before and after treatment using chemical, physical, and biological parameters (Brown *et al* 2005). A comparison of pre-treatment and post-treatment conditions indicated that metals mobility was reduced as shown by reduced extractable metals concentrations; soil chemical and physical characteristics improved and toxicity to plants and earthworms decreased; metals concentrations in plant tissues were greater than at uncontaminated reference sites but were not above phytotoxic concentrations and appeared to be dropping over time; body burden of lead and cadmium in small mammals was elevated but generally below thresholds associated with injury or other compromised function; and body burden of zinc was insignificant. The treatments decreased risks to human health and the environment by stabilizing the tailings with respect to erosion, reducing peak loading to the river from surficial metals salts during storm events, and establishing a cover over contaminated soils. The treatments were not shown to introduce unacceptable risk to wildlife or grazing animals. No significant effect on metals concentrations in groundwater has been proven to result from the demonstration areas.

1.3 REMEDIAL DESIGN

The remedy specified in the ROD was developed more fully during the remedial design (UOS and Reclamation Research Group [RRG] 2007, 2008a). Design studies performed for the Milltown Reservoir/Clark Fork River Superfund site in Montana were used to expedite the design process, and additional sampling and analysis was performed on potential OU 11 treatment areas to supplement information from previous studies. Systematic soil sampling and analysis for pH, total metals, organic carbon, salinity, and acid base account was performed to assist in identifying treatment areas and soil amendment requirements. Visual inspection of vegetation quality and soil characteristics was performed to assist in delineating treatment areas and depths. Areas with encroaching vegetation were not included for treatment. Isolated areas with difficult access were not treated. Landowner preferences for non-treatment were honored.

The remedy for the irrigated meadows was treatment of soils with lime, fertilizer, and compost and reseeding. Specifically, the remedy for the irrigated meadows included the following:

- *Treatment Depth*: Barren areas and areas with visible tailings greater than 6 inches deep were treated to a depth of 12 inches. Less impacted areas were treated to a depth of 6 inches. Areas with good vegetation were left undisturbed.
- *Lime and fertilizer addition and mixing to full depth of treatment:* A master lime rate of 22 tons per 1,000 tons soil was developed based on sampling results and a 10 percent factor of safety. The fertilizer application rate of 70 pounds P_2O_5/1,000 tons soil was developed based on the rate used successfully in nearby test plots.
- *Organic amendment and mixing to full depth of treatment:* The organic amendment rate was developed to achieve a target of 1.5 to 2.5 percent total organic carbon in treated soils.
- *Seeding and mulching:* Seed mixes were developed for each property based on species viability, metals tolerance, land use, landowner preferences, and cost. Straw mulch was added to protect seed and hold moisture.
- *Land use:* Livestock grazing was discontinued for 2 to 3 years following treatment to allow establishment of a successful vegetative cover. Wildlife grazing was not controlled. The landowner/manager determined irrigation practices. While referred to as "irrigated meadows" due to the mechanism by which the land became contaminated,

the Seppi Ranch and Bureau of Land Management (BLM) properties have not been irrigated since before implementation of the remedy.

The remedy for the fluvial deposits included the following.

- *Treatment Depth:* The full depth of tailings was treated to the extent practical, with a maximum treatment depth of 42 inches. Treatment depths were identified using test pits, visual identification of tailings, and field metals analysis. Treatment depths varied over individual fluvial deposits.
- *Lime and fertilizer addition and mixing to full depth of treatment:* Two master lime rates of 30 tons per 1,000 tons soil and 60 tons per 1,000 tons soil were developed based on sampling results, and a master rate was assigned to each fluvial deposit depending on acid base potential data. Fluvial deposits with extremely high acid base potential were assigned a custom rate. The fertilizer application rate of 70 pounds P_2O_5 per 1,000 tons soil was developed based on the rate used successfully in nearby test plots.
- *Organic amendment and mixing to full depth of treatment or 12 inches, whichever was less:* The organic amendment rate was developed to achieve a target of 1.5 to 2.5 percent total organic carbon in treated soils.
- *Seeding and mulching:* The seed mix was developed based on species viability, metals tolerance, and cost. Straw mulch was added to protect seed and hold moisture.

The following table summarizes the remedial design for treating the irrigated meadows and fluvial deposits. More detail is provided in the Remedial Work Plan (UOS and RRG 2007) and Draft Addendum (UOS and RRG 2008a).

Treatment Summary

Design Element	Irrigated Meadows (Smith Ranch, Seppi Ranch, and BLM)	Fluvial Deposits
Site Preparation	Clear and grub. Pre-till to loosen soil.	Clear and grub.
Spread Lime	22 tons/1,000 tons soil and adjusted for lime quality and reactivity and a safety factor of 10 percent.	The net lime application rate was 30 tons/1,000 tons soil, 60 tons/1,000 tons soil, or a custom rate for areas with particularly high acid base potential. The lime rate was adjusted for lime quality and reactivity and a safety factor of 25 percent.

Treatment Summary

Design Element	Irrigated Meadows (Smith Ranch, Seppi Ranch, and BLM)	Fluvial Deposits
Spread Fertilizer	70 pounds P_2O_5/1,000 tons soil	70 pounds P_2O_5/1,000 tons soil
Mix Lime and Fertilizer	Mix lime and fertilizer with 6 inches or 12 inches soil using multiple tillage passes.	Mix lime and fertilizer with full depth of tailings up to 42 inches.
Spread Organic Matter	Target of 1.5 percent to 2.5 percent total organic carbon. The compost application rate was adjusted for compost quality.	Target of 1.5 percent total organic carbon. The compost application rate was adjusted for compost quality.
Till Organic Matter	Till organic matter to full depth of treatment.	Till organic matter to full depth of treatment with a maximum of 12 inches.
Seedbed Preparation	Pick rocks larger than 4-inch diameter. Till to ensure no clods larger than 4-inch diameter.	Till to ensure no clods larger than 4-inch diameter. Roughly grade surface.
Seed	Drill seed with custom seed mixes for each landowner (Table 3).	Broadcast or drill seed with fluvial deposit seed mix (Table 3).
Mulch	Straw/Hay – 2,000 pounds/acre	Straw/Hay – 2,000 pounds/acre

The fluvial deposits are located within the Arkansas River floodplain. Vulnerable streambanks adjacent to the treatment areas were stabilized to prevent erosion of the treated deposits in the short term. Stabilization measures for three types of streambanks were designed.

- *Type 1 Streambanks:* Streambanks subject to high energy flows of the Arkansas River were treated by placing rock roll (cobble rolled into fencing material and placed at the base of the treated material); 10 foot wide strip of clean fill placed behind the rock roll; coir log tucked into the soil behind the rock roll; willow plantings; *Carex* mats transplanted between willow plantings to effect a minimum of 80 percent cover, and seeding bare areas not covered by willows or *Carex* mats.
- *Type 2 Streambanks:* Streambanks subject to lower intensity forces from the Arkansas River or side channels were stabilized using coir log tucked into the soil at the base of the treated material; clean fill placed behind the coir log (not included for Type 2 Modified); willow plantings; *Carex* mats transplanted between willow plantings to effect a minimum of 80 percent cover; and seeding bare areas not covered by willows or *Carex* mats.

- *Type 3 Streambanks:* Relatively stable streambanks located along side channels where a larger buffer zone between the channel and the treated fluvial deposit was needed were stabilized with willow and *Carex* plantings.

There were no ROD amendments, explanation of significant differences, or technical impracticability waivers.

2.0 CONSTRUCTION ACTIVITIES

This section describes remedial action construction efforts including mobilization and site preparation, soil amendment, streambank stabilization, and demobilization and road removal. EPA's Remedial Action Contract (RAC) contractor, Pacific Western Technologies, Ltd. (PWT) contracted with Frontier Environmental Services, Inc. (FESI) to perform construction. Additional information is available in the Technical Construction Completion Report (FESI 2010). In the following descriptions, the irrigated meadows treatment locations are grouped by landowner or land manager (Smith Ranch, Seppi Ranch, and BLM property).

2.1 MOBILIZATION AND SITE PREPARATION

Construction trailers and support facilities were set up on the Smith Ranch during 2008 and on the City of Aurora Hayden Ranch in 2009.

Key equipment used to implement the remedial action included the following: Stoltzfus lime spreader, Herd fertilizer spreader, Kuhn 8250 compost spreader, Kuhn Knight 2044 compost spreader, Rome harrow, Land Pride broadcast spreader, Truax drill seeder, Finn straw blower, Finn crimper, and an Allu processing bucket. Other equipment included tractors, excavators, backhoes, loaders, bulldozers, haul and dump trucks, generators, pumps, welders, power tools, hand tools, and site vehicles. Equipment was staged near the construction trailers.

Key materials (suppliers listed in parentheses) included the following: 12,350 tons lime (Clean Energy, LLC); 23,600 tons compost (BOSS, Inc., and Select Materials, Inc.); 2,894 pounds seed (Arkansas Valley Seed Solutions, WinField Solutions); 167 tons straw mulch (Murray Farms); 24 tons fertilizer (Frontier Fertilizer); 1,200 linear feet coir logs (Partex Geotextiles); and 18 culverts with flared end sections, non-woven geotextiles, and many biologs (Skyline Steel). Additional materials included 1,500 linear feet of silt fence, non-woven geotextile (for new road construction), steel and wood stakes, chain link fencing, 10,100 feet of smooth and barbed wire

fencing, t-posts, welded wire fencing, wood posts, and 11,600 linear feet electric fence. Materials were staged near the construction trailers or near the installation/application site. Lime and compost slated for use on and adjacent to the Smith Ranch and Seppi Ranch properties were delivered to the Smith staging area. Lime and compost for use on BLM property and the southern fluvial deposits were delivered to temporary staging areas near the treatment locations.

Elevated roads were constructed throughout the fluvial deposits to access treatment areas using on-site materials screened from the borrow sources. The roads typically consisted of geotextile fabric with a bottom and middle cobble stabilization layer (4-inch to 10-inch diameter cobble), an upper fines layer (minus ¾-inch diameter fines), and a surface gravel layer (¾-inch to 2-inch diameter gravel). Borrow materials totaling 51,620 tons were developed from a Lake County borrow site and a borrow site on the Arkansas River Ranch property and used for road construction and Type 1 and Type 2 streambanks. At the completion of work, the Lake County borrow area was graded and the Arkansas River Ranch borrow area was graded and seeded with a native seed mix. Roads were removed or converted to trails during 2011 and seeded.

Fencing was installed on the Seppi Ranch and Smith Ranch properties to prevent unauthorized access and restrict grazing. Various forms of fencing were used depending on location and landowner preference and applicability to rotational grazing. Fencing was already in place on the BLM irrigated meadows and no additional fencing was added. Gates were installed where necessary to expedite construction. Fencing was not installed on the fluvial deposits with the exception of fluvial deposit AG that was fenced 1 year after treatment to prohibit excessive horse grazing such as occurred at that location in 2010.

2.2 TREATMENT

EPA, PWT, and FESI performed a walk-through of each treatment area prior to treatment. The perimeter of the treatment area and depth of treatment were confirmed, site features that required special treatment were identified, and treatment areas were surveyed. Many of the fluvial deposits were segmented to allow varying depths of treatment within a single deposit, and each segment was surveyed separately. Fencing and irrigation ditches were removed as necessary to perform the treatment.

The irrigated meadows were pre-tilled prior to treatment. Lime was spread using a Stoltzfus lime spreader, and fertilizer was spread using a Herd broadcast fertilizer spreader, both calibrated to

dispense a given amount over an area. The lime and fertilizer were tilled to the prescribed depth using a Rome harrow. Test pits were excavated and visually inspected, in situ pH was measured, and soil samples were collected to confirm the in situ measurements. After compliance with liming and mixing requirements was confirmed, compost was spread using a compost spreader calibrated to dispense a given amount over an area, then the compost was tilled into the soil using the same equipment as was used to incorporate lime and fertilizer. Test pits were excavated and a visual inspection was performed to confirm adequate mixing. Secondary irrigation ditches were reconstructed on the Smith property. The irrigated meadows were prepared for seeding by removing rocks greater than 4-inch diameter and grading the soil. The irrigated meadows were drill seeded using a drill seeder with separate compartments for large and small seeds to ensure even distribution of the various seed species. Straw mulch was applied and crimped before or after drill seeding. Treatment was performed on 151 acres of irrigated meadows. Table 2 shows the treatment quantities for each irrigated meadows polygon. Table 3 shows the seed mixes used for each property. Appendix B provides the survey map, soil amendment calculations, actual materials applied, and quality assurance/quality control (QA/QC) documentation for each treatment area.

Fluvial deposits were not pre-tilled but were cleared and grubbed as needed. Streambank stabilization features were installed as prescribed in the Remedial Work Plan. A predetermined amount of lime was spread evenly over a known area using a bulldozer, and fertilizer was spread similarly using a bucket. The lime and fertilizer were tilled to the prescribed depth using an Allu processing bucket attached to a D9 excavator. The Allu provided thorough mixing of soils containing up to 12 inch rock and allowed mixing to variable depths and in odd-sized treatment areas. Test pits were excavated and visually inspected, in situ pH was measured, and soil samples were collected to confirm the in situ measurements. After compliance with liming and mixing requirements was confirmed, a predetermined amount of compost was spread across a known area and tilled to the prescribed depth using the Allu processing bucket. Test pits were excavated and a visual inspection was performed to confirm adequate mixing. Channels were installed to mimic pre-treatment conditions and prevent erosion of treated tailings. The fluvial deposits were prepared for seeding by roughly grading the surface; a smooth grade was not used because the adjacent natural riparian areas did not have an even grade. Seed was applied using a handheld broadcast seeder and the seed was incorporated into the ground using chain link fencing dragged by hand or behind a small construction vehicle. Mulch was applied and crimped before or after seeding. Treatment was performed on 18.4 acres of fluvial deposits in addition to the 40 acres of

fluvial deposits treated as demonstration projects. Table 4 shows the treatment quantities for each fluvial deposit. Table 3 shows the fluvial deposit seed mix. Appendix B provides the survey map, soil amendment calculations, actual materials applied, and QA/QC documentation for each treatment area.

2.3 STREAMBANK STABILIZATION

Streambank stabilization features were installed where needed to protect treated deposits from near-term erosion. Three types of stabilization features were used. For Type 1 streambanks, contaminated material was removed from within 10 feet of the streambank and placed on the adjacent untreated fluvial deposit where it was later treated with the rest of the fluvial tailings. Rock rolls were constructed in-place by placing chain link fencing at the streambank location, adding cobble-sized borrow materials, wrapping the fencing around the cobbles, and tying the resulting log with high strength metal wire. Rebar with attached washers was used to firmly attach the rock roll to the streambank and underlying cobble. Borrow soil was placed in the 10 foot zone behind the rock roll, and coir log was placed on top of the soil behind the rock roll and fastened with rebar with attached washers. Mature willows and *Carex* mats were excavated from the floodplain and placed in the 10-foot buffer zone, and the buffer zone was seeded with the fluvial deposit seed mix (Table 3) using a broadcast seeder. Type 1 streambanks constructed during the summer were watered as needed. Type 2 streambanks were constructed in native streambank material by placing and attaching coir logs to the streambank as described above. Type 3 streambanks, used in relatively stable streambanks located along side channels where a larger buffer zone between the channel and the treated fluvial deposit was needed, were constructed by planting young or mature willow transplants or *Carex* mats near the streambank. A total of 2,530 linear feet of streambank stabilization features were constructed.

2.4 DEMOBILIZATION AND ROAD REMOVAL

Construction equipment and the associated support facilities were removed from the site in fall 2009 and the support areas were seeded after compacted soils were loosened. Fencing installed on the Seppi Ranch and Smith Ranch was left in place to facilitate appropriate grazing management practices. Culverts placed to allow construction equipment access were removed unless needed for the current land use.

Construction roads were removed, converted to trails, or left in place in at the preference of the landowner or land manager. The roads that were constructed on the west side of the Arkansas River remained in place at landowner request to allow fishing access. The roads that were constructed on the east side of the Arkansas River were removed or converted to trails. The road rock and gravel materials were stockpiled at three designated locations, and the geotextile was properly disposed at a landfill. The remaining soils were prepared for seeding, broadcast seeded with the Colorado State Parks Reclamation Mix or the Colorado State Parks Upland Mix (Table 3), and dragged with chain link fencing towed by an all-terrain vehicle to cover the seed. The associated culverts were removed and salvaged or recycled. Willows were transplanted at one former culvert location, and all of the former culvert crossings were seeded with the fluvial deposit seed mix. A section of the temporary access road approximately 4,200 feet long was converted into trails. Some of the trail segments were completely removed down to the original floodplain grade, other segments were partially reduced in width and height, and a few segments were left as constructed to accommodate existing culverts. The trail surfaces were seeded using the Colorado State Parks seed mixes and the areas were walked with excavator tracks to embed the seed.

2.5 DEVIATIONS FROM THE REMEDIAL DESIGN

In general, the remedial action was performed in accordance with the remedial design. Exceptions are noted here.

The target organic carbon content in treated soils was originally 2.5 percent but was changed to 1.5 percent for the 2009 construction season. In early phases of the project, the compost application rate was set to achieve 2.5 percent organic carbon assuming zero organic carbon content prior to compost application. Results from post-treatment soil samples collected during 2008 showed values much greater than 2.5 percent in all areas, indicating that the extra compost was unneeded. Additionally, a change in the properties of the compost being provided by the 2008 supplier required a change in source material. The original compost source had been accepted during 2008 despite having somewhat high salinity because it had high organic content, thus requiring less volume of material and lower trucking costs to achieve the target organic carbon content in treated soils. During spring 2009 it was observed that seed was not germinating in some irrigated meadows soils treated during 2008, particularly areas where larger quantities of compost were applied. A review of initial QA/QC sample results for 2009 indicated that the compost slated for delivery to the site was more saline and less fully composted than the material

supplied during 2008. Therefore, the decision was made to find a better source of compost. The material identified as the best value due to material properties, cost per cubic yard, and the amount of trucking required was considerably more expensive than the original compost, but the decision to switch sources was made because the new source would be cost-effective in the long term due to lower maintenance requirements and higher likelihood of success. After consideration of soil data showing moderate organic carbon content in untreated soils and much greater than 2.5 percent organic carbon in treated soils, and due to the cost of changing to higher quality compost, the target organic carbon addition rate was reduced to 1.5 percent for all areas. The performance criteria were not changed, so the impacts of this change were considered minor and an explanation of significant change (ESD) was deemed unnecessary.

State personnel associated with Natural Resource Damages (NRD) restoration work requested changes in bank stabilization techniques at some locations. The changes were considered minor and did not affect the protectiveness of the remedy, so an explanation of significant change (ESD) was deemed unnecessary.

3.0 CHRONOLOGY OF EVENTS

Date	Event
1998	Action Memo for Removal Demonstration projects
	Installation of 10 acres of demonstration revegetation projects on fluvial deposits
1999	Installation of 20 acres of demonstration revegetation projects on fluvial deposits
2000	Installation of 10 acres of demonstration revegetation projects on fluvial deposits
2005	**OU 11 ROD signed September 28, 2005**
2006-2007	Remedial design studies
2007	Remedial Work Plan completed April 2, 2007
	Remedial action assigned to Remedial Action Contract (RAC) contractor Pacific Western Technologies (PWT).
2008	Draft Addendum, Remedial Work Plan, March 14, 2008
	Construction subcontract awarded to Frontier Environmental Services, Inc. (FESI) by PWT June 17, 2008.
	FESI mobilized to site and compost and lime deliveries begin July 14, 2008.
	Smith Ranch remediation began July 24, 2008. The following polygons were treated during 2008 and seeded in October 2008: SM-2, SM-3, SM-4, SM-5, SM-6, and SM-7.
	Seppi Ranch remediation began August 11, 2008. The following polygons were treated during 2008 and seeded in October 2008: SE-1, SE-2, SE-3, SE-4, SE-5, and SE-6.
	Fluvial deposit treatment began August 18, 2008. The following fluvial deposit was treated during 2009 and seeded in October 2009: FB.

Date	Event
Winter 2008-2009	Development of borrow sources and construction of access roads to fluvial deposits.
2009	Continued remediation on Seppi and Smith Ranches. The following polygons were treated during 2009 and seeded in October 2009: Seppi-7, Seppi-8, Seppi-9, Smith-1.
	Treatment began on fluvial deposits adjacent to Seppi property March 30, 2009. The following deposits were treated and seeded in spring 2009: AG, AH, AI.
	Treatment began on BLM property. The following polygons were treated during 2009 and seeded in October 2009: BLM-1, BLM-2, BLM-3, BLM-4, BLM-5, BLM-6, BLM-7.
	Fluvial deposit treatment on Arkansas River Ranch and Hayden Ranch properties. The following fluvial deposits were treated in 2009 and seeded during October 2009: NA, NC, ND, NN, NP, NR, NT, NW, OA, OB, OC, OE, OG, OH, OI, OJ, PA, PE, PG, PH, PJ, PM, PN, PP, QA, QD, QF, QG, QH, QI, QJ, QK, QL, QM, QN, QO, QP, QR, QV, QX.
	Tier 1/Tier 2 monitoring on irrigated meadows and fluvial deposit treated in 2008 and on Removal Action demonstration areas during August 2009.
	Treatment of bare areas identified during monitoring of Removal Action demonstration areas during September 2009.
	Construction activities completed November 18, 2009.
2010	Maintenance activities included additional compost incorporation, drill seeding, broadcast seeding, fence installation and repairs, road maintenance and repairs, noxious weed control, erosional channel backfilling, and streambank repairs.
	2010 monitoring and vegetation assessment August 8 to 12, 2010
2011	2011 monitoring and vegetation assessment July 22 to 30, 2011
	Maintenance activities performed from October 2011 to January 2012 included supplemental drill seeding and broadcast seeding, noxious weed control, erosional channel backfilling, and streambank repairs.
	Construction road removal and revegetation or conversion to trails. Road materials were taken to three staging areas for later use by Colorado State Parks and Lake County. Construction of supplemental streambank stabilization features designed by Colorado State Parks (CSP) to address 2011 flooding damage with the potential to impact treated fluvial deposits. Work was coordinated with CSP to complement natural resource damage work being performed beginning in fall 2011.
Ongoing	Periodic monitoring and maintenance, as needed, to be conducted in accordance with the Monitoring and Maintenance Plan.
	Transition monitoring and maintenance responsibilities to State of Colorado when performance criteria have been met.
	Five-year reviews will be performed for OU 11 in conjunction with review of the entire California Gulch Superfund Site. The OU was evaluated as part of the 2011 5-year review, and the next review is scheduled for 2016.

4.0 PERFORMANCE CRITERIA AND CONSTRUCTION QUALITY CONTROL

Performance criteria were established during the remedial design process to measure the success of the remedy in meeting the RAOs. A thorough construction quality control process was established to ensure

the soil amendments were applied and incorporated into the soil in accordance with the remedial design, thus providing the best potential for remedy success and minimizing the need for maintenance.

4.1 PERFORMANCE CRITERIA

Performance criteria and site monitoring are described in the Monitoring and Maintenance Plan (UOS and RRG 2010). A soil and vegetation assessment performed in 2005 on six of the demonstration area fluvial deposits, irrigated meadows determined to pose elevated environmental risk, irrigated meadows test plots, and several riparian and irrigated meadows reference locations was used in development of the performance criteria (UOS 2006). The initial monitoring results as related to the performance criteria are summarized below and the detailed results are provided in annual monitoring and maintenance reports (URS and RRG 2011a,b, and pending). The performance criteria and the results of monitoring are summarized below by treatment group (Seppi Ranch, Smith Ranch, BLM, and fluvial deposits).

Criterion	Performance Results			
Soil pH ≥ 7.0	Post-treatment pH			
		Minimum	Maximum	Average
	Seppi	7.0	7.8	7.4
	Smith	7.1	8.0	7.6
	BLM	7.3	8.1	7.6
	Fluvial Deposits	7.3	7.8	7.6
Soil acid-base potential > 0 tons $CaCO_3$/1,000 tons soil	Post-treatment acid-base potential (tons $CaCO_3$/1,000 tons soil)			
		Minimum	Maximum	Average
	Seppi	18	77	45.8
	Smith	24	110	56.5
	BLM	11	25	17.7
	Fluvial Deposits	16	180	57
Soil organic carbon ≥ 1.5 percent	Post-treatment organic carbon (percent)			
		Minimum	Maximum	Average
	Seppi	4.1	18.5	7.6
	Smith	4.5	14.1	9.0
	BLM	1.9	5.1	3.2
	Fluvial Deposits	2.5	14.3	5.2
Electrical Conductivity < 4.0 deciSiemens per meter	Post-treatment electrical conductivity (deciSiemens per meter)			
		2008-09	2011	
	Seppi	13.4	4.6	
	Smith	18.5	7.8	
	BLM	6.8	4.3	
	Fluvial Deposits	10.9	6.1	

Criterion	Performance Results
Fertility – N, P, and K levels appropriate for plant establishment; no or little evidence of fertility-caused chlorosis	Nitrogen, phosphorus, and potassium concentrations were many times greater than the levels recommended for agriculture and there was little chlorosis in plants.
Available Metals – SPLP Metals concentrations decrease after treatment	Post-treatment SPLP comparison (pre-removal concentration/post-removal concentration) Cadmium / Copper / Lead / Manganese / Zinc Seppi Ranch 22 / 0.29 / 2 / 11 / 40 Smith Ranch 14 / 0.32 / 3 / 3 / 20 BLM 48 / 0.55 / 2 / 131 / 102 Fluvial Deposits 186 / 35 / 59 / 534 / 433
Vegetation Cover ≥ 45 percent perennial species in irrigated meadows and ≥ 60 percent perennial species in fluvial deposits	Average vegetation cover by perennial species (percent) 2009* / 2010* / 2011 Seppi 43 / 32 / 32 Smith 55 / 56 / 31 BLM NA / 21 / 27 Fluvial Deposits 73 / 44 / 51
Species Richness ≥ 4 desirable species in irrigated meadows and fluvial deposits	Average number of desirable species 2010* / 2011 Seppi 8.6 / 11.5 Smith 10.6 / 8.7 BLM 6.4 / 8.1 Fluvial Deposits 9.2 / 10.0
Aboveground Biomass ≥ 250 grams/square meter in the irrigated meadows and ≥ 700 grams/square meter in the fluvial deposits	Average aboveground biomass (grams per square meter) 2010* / 2011 Seppi 460 / 112 Smith 653 / 295 BLM NA / 132 Fluvial Deposits 202 / 535
Plant Reproduction	2010* / 2011 Seppi Good / Good Smith Good / Good BLM Fair to Good / Fair Fluvial Deposits Good / Good to Excellent

* The 2009 and 2010 values show the characteristics for the areas assessed or sampled during the monitoring event. Areas with limited vegetation were not evaluated and/or sampled.

Due to land management changes and reconsideration of performance criteria that were based on data from long-established irrigated meadows and sub-irrigated riparian locations with no mining impacts, the criteria for vegetation cover and production (biomass) may be amended to include provisions for reduced vegetation cover and production (biomass) requirements in areas that are not irrigated or sub-irrigated, in areas with grazing impacts, and during drought periods. The adjustments are considered necessary to accurately reflect the wide range of conditions present at

the treatment locations and the variability that might be expected due to grazing and water availability.

4.2 CONSTRUCTION QUALITY CONTROL

Construction performance standards were established in the Construction Sampling and Analysis Plan and Quality Assurance Project Plan (CSAP/QAPP) (UOS and RRG 2008b). Sampling and analysis, field measurements, and materials tracking and inspection were conducted in accordance with the CSAP/QAPP. The measures used to ensure project quality included the following.

- Sampling and Analysis
  - Lime (from source and from delivered material)
  - Compost (from source and from delivered material)
  - Soils (pre-treatment and post-treatment)
- Field Testing and Observations
  - Application rate calculations
  - Equipment calibrations
  - pH measurements (in situ and on-site laboratory testing)
  - Moisture content
  - Treatment depth
  - Mixing (lime, compost)
  - Seeding
  - Erosion Control
  - Bank Stabilization (rock roll and coir log placement and security, planting density)
- Materials Tracking and Inspection
  - Lime
  - Compost
  - Fertilizer
  - Seed

- Mulch
- Coir Log
- Bank stabilization materials

4.2.1 Sampling and Analysis

Summarized results of lime and compost analysis are presented in Tables 5 and 6. Laboratory results for soil sampling are described in Section 4.1. The lime, compost, and treated soils met construction quality standards except as noted in Section 2.5. Pre-treatment and post-treatment soil sample results confirmed that treatments resulted in adequate neutralization of acidic soils and introduction of adequate organic carbon and nutrients. Initial soil samples showed excess salinity, but salinity decreased over time and did not appear to impact the overall remedy performance.

QA/QC laboratory samples met the criteria established in the Construction SAP/QAPP and the Monitoring and Maintenance Plan.

4.2.2 Field Testing and Observations

Field testing and observations were used to determine if the remedy was being constructed in accordance with the Remedial Work Plan. Deficiencies were addressed in the field such that all deficiencies were corrected prior to completion approval of each polygon or fluvial deposit.

Visual inspections of test pits indicated uniform application and tillage of lime. The average in situ and paste pH values measured in the field for construction QA/QC are shown below.

	Average In Situ pH	Average Paste pH
Seppi Ranch	7.3	7.2
Smith Ranch	7.7	7.6
BLM	7.6	7.4
Fluvial Deposits	7.1	7.1

The final in situ and paste pH measurements exceeded pH 7 in all the irrigated meadows and exceeded 6.5 in all of the fluvial deposits. In a few instances, the initial pH did not

meet the construction QA/QC criteria. In those cases, additional lime was added and tilled, and the subsequent pH evaluations passed the construction QA/QC criteria.

Visual inspections of test pits indicated uniform application and tillage of compost; however, compost remained on the surface at locations used to stage the compost prior to application. Most of the surficial compost was re-tilled into the soils, but compost remained on the surface in some locations.

Treatment areas were inspected by PWT/E2, FESI, and EPA prior to final approval. The QA/QC field sheets for each treatment area are provided in Appendix B.

4.2.3 Materials Tracking and Inspection

All materials supplied to the site were tracked from delivery to use. Soil amendments were staged in piles and the piles were tracked so sample results could be used to determine application rates. All products delivered and used on site for erosion control and/or streambank stabilization were checked for quality of construction and conformance with the specifications and drawings.

5.0 FINAL INSPECTION AND CERTIFICATIONS

Inspections were held regularly during construction of the remedial action. The EPA Remedial Project Manager (RPM) inspected each of the treated areas and the associated features. A punch list of items requiring completion was created and the items were all completed by FESI and checked by PWT prior to demobilization.

The EPA RPM inspected the maintenance work on November 2, 2010 and January 5, 2012. Remaining work items were reviewed and a punch list was prepared specifying additional work to be completed. The punch list items were completed by FESI and checked by PWT prior to demobilization.

A list of potential maintenance items was prepared by EPA and PWT and provided to Colorado Parks and Wildlife for monitoring and maintenance during 2012 runoff. A site walk-through was conducted on March 5, 2012, attended by the EPA RPM, two representatives of Colorado Parks and Wildlife, and the PWT project manager.

Health and safety requirements were met during implementation of the remedial action. Workers were trained and met other requirements in accordance with the U.S. Code of Federal Regulations (49 CFR

1910.120. No injuries occurred during the remedial action and no traffic incidents associated with transportation of large quantities of soil amendments were reported.

6.0 OPERATION AND MAINTENANCE ACTIVITIES

Monitoring and maintenance of treated areas was performed during 2009, 2010, and 2011. The actions performed each year are shown below.

6.1 2009 MONITORING AND MAINTENANCE ACTIONS

Vegetation monitoring and site surveys for bare areas, erosion, and noxious weeds were performed on the demonstration area fluvial deposits and irrigated meadows treated during 2008. Bare areas identified by visual observation and field pH tests were treated with the same method as that used for the remedial action. Four hundred and five tons of lime, 694 pounds of phosphate fertilizer, 103 tons of compost, 37 pounds of seed, and 2,680 pounds of mulch were used for maintenance of 2.4 acres of previously treated fluvial deposits. Significant erosional features were not present. Individual noxious weed plants were sprayed. Monitoring and maintenance activities are described more fully in the 2008/2009 Monitoring and Maintenance Report (UOS and RRG 2011a).

6.2 2010 MONITORING AND MAINTENANCE ACTIONS

Vegetation monitoring and site surveys for bare areas, erosion, and noxious weeds were performed on all of the treated areas.

2010 maintenance activities included the following.

- Noxious weed control (individual plants were sprayed);
- Erosional channel maintenance in five fluvial deposits;
- Streambank repairs and maintenance including reconstruction of rock roll, coir log installation, willow transplants, and broadcast seeding;
- Compost incorporation in bare portions of compost staging areas (3.7 percent of total area treated);
- Seedbed preparation and drill seeding in bare, sparsely vegetated, and recently disturbed areas of the irrigated meadows and on fluvial deposits FA and OE;
- Broadcast seeding in bare and sparsely vegetated areas in the fluvial deposits;

- Fencing installation and repair;
- Road maintenance and repair (one location where Arkansas River bank eroded during spring runoff); and
- Irrigation ditch maintenance, installation and cleanout of culverts, overgrowth removal, and grading treated soils on portions of the Smith Ranch.

Monitoring and maintenance activities are described in the 2010 Monitoring and Maintenance Report (UOS and RRG 2011b) and the Remedial Action Maintenance Summary Final Report (PWT 2011).

6.3 2011 MONITORING AND MAINTENANCE ACTIONS

Vegetation monitoring and site surveys for bare areas, erosion, and noxious weeds was performed on all of the treated areas.

2011 maintenance activities included the following.

- Noxious weed control.
- Erosional channel maintenance in fluvial deposits.
- Streambank repairs and maintenance including coir log attachment, willow transplants, and broadcast seeding.
- Installation of bank stabilization measures in native streambanks that did not contain mine waste but would impact treated areas if not stabilized. Toe wood structures (215 linear feet), brush mattressing (25 linear feet), and soil lifts (75 linear feet) were used.
- Supplemental drill seeding in bare and sparse areas in the irrigated meadows and fluvial deposits OE and FB.
- Supplemental broadcast seeding in bare and sparse areas in the fluvial deposits.
- Minor fence repairs.

Monitoring and maintenance activities are described more fully in the 2011 Monitoring and Maintenance Report (UOS and RRG pending) and the 2011 Road Removal and Project Maintenance Summary Final Report (PWT 2012).

6.4 ONGOING MONITORING AND MAINTENANCE

Vegetation monitoring and site surveys for bare areas, erosion, and noxious weeds in treatment areas will continue. EPA will conduct the monitoring until such time as the remedy is considered operational and functional. at which time the State of Colorado will assume monitoring responsibilities. Monitoring will be performed at a minimum of once every 5 years.

Natural resource trustees will arrange for long-term weed management performed through the Lake County weed commissioner.

6.5 INSTITUTIONAL CONTROLS

Institutional controls will be negotiated with the landowners to ensure the remedy remains protective. EPA and the State of Colorado will work with the land owners (private land) and land managers (public lands) to put into place environmental covenants to ensure the current land use, agricultural or recreational, will remain. The covenant will state that if land uses are to change, EPA and the State will be notified to ensure future land use changes are consistent with the remedy.

7.0 CONTACT INFORMATION

7.1 ENVIRONMENTAL PROTECTION AGENCY

The EPA directed the remedial action.

Michael Holmes
EPA Remedial Project Manager
U. S. Environmental Protection Agency, Region 8
Mail Code: 8EPR-SR
1595 Wynkoop Street
Denver, Colorado 80202-1129

7.2 STATE OF COLORADO

The State of Colorado coordinated with EPA during the remedial action.

Craig Gander
Environmental Protection Specialist
Superfund and Voluntary Cleanup Unit
Colorado Department of Public Health and Environment
HMWMD-RP-B2

4300 Cherry Creek Drive South
Denver, Colorado 80246-1530

7.3 REMEDIAL ACTION CONTRACTORS

The Remedial Action was conducted under the RACs contract. The RACs contractor was PWT, who was responsible for project administration, contract administration, and construction oversight.

Pacific Western Technologies, Ltd.
11049 West 44th Avenue, Suite 200
Wheat Ridge, CO 80033

Key personnel from PWT include the following:

Jim Bush, RAC2 Program Manager
John DeAngelis, Project Manager
Dorothea Hoyt, Project Engineer

PWT subcontracted a portion of project oversight to E2 Consulting Engineers, Inc.

E2 Consulting Engineers, Inc.
450 E 17th Avenue, Suite 200
Denver, CO 80203

Key personnel from E2 included:

Roger Merrick, Colorado Operations Manager

FESI performed construction services under subcontract with PWT. Frontier performed oversight functions for construction quality assurance, health and safety management, and the implementation of the scope of work for the California Gulch OU11 remediation. The construction oversight responsibilities were performed concurrently by PWT. The project manager addressed technical and contractual issues. The EPA observed the performance of work at the site, reviewing all major and minor work milestones according to the specifications and drawings. FESI and PWT provided construction modification and review of design drawings and specifications, as needed.

Frontier Environmental Services, Inc.
770 Simms Street, Suite 110
Golden, Colorado 80401

Key personnel from Frontier Environmental Services, Inc. included:

Dan Hinds, President/Construction Supervisor
Clay Combrink, Construction Manager, Construction QA/QC Manager
Brent Scarbrough, Project Engineer

7.4 START CONTRACTORS

Technical support was provided to EPA under the START3 contract. Key personnel included:

Jan Christner
URS Operating Services, Inc.
999 18th Street, Suite 900
Denver, Colorado 80202

Stuart Jennings
KC Harvey
376 Gallatin Park Drive
Bozeman, Montana 59715

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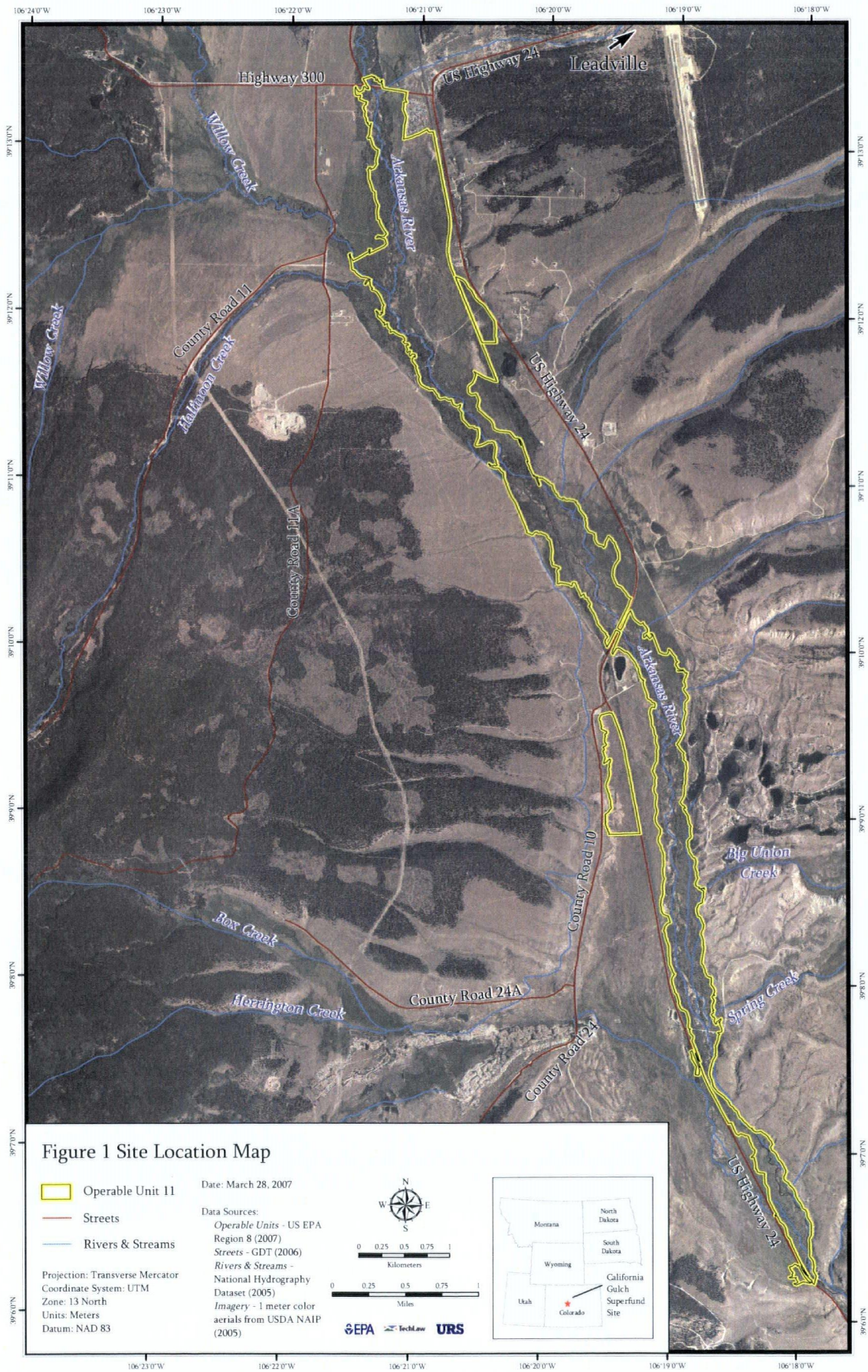
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Leadville
Highway 300
US Highway 24
Willow Creek
Arkansas River
County Road 11
Halfmoon Creek
County Road 11A
US Highway 24
Arkansas River
Big Union Creek
County Road 10
Box Creek
Herrington Creek
County Road 24A
Spring Creek
County Road 24
US Highway 24
Figure 1 Site Location Map
Operable Unit 11
Streets
Rivers & Streams
Projection: Transverse Mercator
Coordinate System: UTM
Zone: 13 North
Units: Meters
Datum: NAD 83
Date: March 28, 2007
Data Sources:
Operable Units - US EPA Region 8 (2007)
Streets - GDT (2006)
Rivers & Streams - National Hydrography Dataset (2005)
Imagery - 1 meter color aerials from USDA NAIP (2005)
N
W
E
S
0 0.25 0.5 0.75 1
Kilometers
0 0.25 0.5 0.75 1
Miles
EPA
TechLaw
URS
Montana
North Dakota
South Dakota
Wyoming
Utah
Colorado
California Gulch Superfund Site

TABLE 1
Treatment Summary – Removal Demonstration Area Fluvial Deposits

Deposit	Year	Treatment	Monitoring/Notes
AA/AB/AC	1999	100 dt/a biosolids compost + cow manure compost + 100 t/a agricultural grade limestone. Incorporated to approximately 1 foot using an excavator.	Groundwater Monitoring (UMW19)
	2003	10 t/a wood chips, 35 t/a fish pond sediments, and 20 t/a dolomite added to portions of AC.	
AD/AE	1999	100 dt/a biosolids + cow manure compost + 100 t/a agricultural grade limestone. Incorporated to approximately 1 foot using an excavator.	Resuspension Study. Soil Functionality.
CA	1999	100 dt/a biosolids pellets + 100 t/a agricultural grade limestone. Incorporated to approximately 1 foot using an excavator.	
	2003	10 t/a wood chips, 35 t/a fish pond sediments, and 20 t/a dolomite added.	
CD/CJ/CK	1999	100 dt/a biosolids pellets + 100 t/a agricultural grade limestone. Incorporated to approximately 1 foot using an excavator.	Groundwater Monitoring (UMW01 - 02, 13). Soil Functionality. USGS Vadose Zone Study
	2003	10 t/a wood chips, 35 t/a fish pond sediments, and 20 t/a dolomite added.	
CE	1999	100 dt/a biosolids pellets + 100 t/a agricultural grade limestone. Incorporated to approximately 8 inches using an excavator.	Resuspension Study. Soil Functionality.
CL/CN/CO	1998	100 dt/a biosolids cake + 100 t/a 3/8"- agricultural grade lime. Incorporated to approximately one foot with Metrogrow disc. Sugar beet lime added and raked in (shallow) during Summer 2001.	Groundwater Monitoring (UMW03 - 05, 14). Resuspension Study. Soil Functionality. USGS Vadose Zone Study
	2003	10 t/a wood chips, 35 t/a fish pond sediments, and 20 t/a dolomite added.	
CP/CR/CS	1999	100 dt/a biosolids pellets + 100 t/a agricultural grade limestone.	Groundwater Monitoring (UMW15). Resuspension Study. Soil Functionality.
	2003	10 t/a wood chips, 35 t/a fish pond sediments, and 20 t/a dolomite added.	
FA/FB		FA: USDA Test Plots (1998) FB: CSU/ASARCO Test Plots (1997-1999)	Groundwater Monitoring (UMW06 - 09)
LA/LB	2000	115 dt/a biosolids pellets + 105 t/a fine grained agricultural grade limestone.	
	2003	10 t/a wood chips, 35 t/a fish pond sediments, and 20 t/a dolomite added.	
LC	2000	46 dt/a biosolids pellets + 40 dt/a compost + 90 t/a fine grained lime kiln dust. 20 lb/a native seed[3]. 600 lb/a phosphate on east half only.	University of Washington (UW) Demonstration Site. UW Test Plots on south end.
	2003	10 t/a wood chips, 35 t/a fish pond sediments, and 20 t/a dolomite added.	

TABLE 1
Treatment Summary – Removal Demonstration Area Fluvial Deposits

Deposit	Year	Treatment	Monitoring/Notes
LD	2000	46 dt/a biosolids pellets + 40 dt/a compost + 30 t/a fine grained lime kiln dust. Half plot 20 lb/a native seed[3]. Half plot 20 lb/a perennial rye seed.	UW Demonstration Site. Root wads for bank stabilization/fish habitat.
	2003	10 t/a wood chips, 35 t/a fish pond sediments, and 20 t/a dolomite added.	
LH	2000	30 dt/a biosolids pellets + 60 dt/a compost + 120 t/a fine agricultural grade limestone.	
LI	2000	20 dt/a biosolids pellets + 40 dt/a compost + 80 t/a fine grained agricultural grade limestone.	
	2003	10 t/a wood chips, 35 t/a fish pond sediments, and 20 t/a dolomite added.	
LK	2000	46 dt/a biosolids pellets + 40 dt/a compost + 30 t/a fine grained lime kiln dust. 5 t/a native hay with seed.	UW Demonstration Site.
	2003	10 t/a wood chips, 35 t/a fish pond sediments, and 20 t/a dolomite added.	
LL	2000	46 dt/a biosolids pellets + 40 dt/a compost + 30 t/a fine grained lime kiln dust. No seed.	UW Demonstration Site.
LM	2000	30 dt/a biosolids pellets + 55 dt/a compost + 115 t/a agricultural grade limestone.	Deflection weirs for bank stabilization/fish habitat.
LN	2000	30 dt/a biosolids pellets + 50 dt/a compost + 105 t/a fine grained agricultural grade limestone.	Resuspension Study. USGS Vadose Zone Study.
	2003	10 t/a wood chips, 35 t/a fish pond sediments, and 20 t/a dolomite added to the very south end of LN.	
LO	2000	60 dt/a biosolids pellets + 25 dt/a compost + 105 t/a fine grained agricultural grade limestone.	
	2003	10 t/a wood chips, 35 t/a fish pond sediments, and 20 t/a dolomite added.	
LP	2000	70 dt/a biosolids pellets + 30 dt/a compost + 125 t/a fine grained agricultural grade limestone.	
LP (cont.)	2003	10 t/a wood chips, 35 t/a fish pond sediments, and 20 t/a dolomite added.	
LQ	2000	30 dt/a biosolids pellets + 50 dt/a compost + 100 t/a fine grained lime agricultural grade limestone.	
	2003	10 t/a wood chips, 35 t/a fish pond sediments, and 20 t/a dolomite added.	
LR	2000	30 dt/a biosolids pellets + 50 dt/a compost + 100 t/a fine grained agricultural grade limestone.	
LS	2000	35 dt/a biosolids pellets + 60 dt/a compost + 120 t/a fine grained agricultural grade limestone.	
LV	2000	30 dt/a biosolids pellets + 50 dt/a compost + 105 t/a fine grained agricultural grade limestone.	

TABLE 1
Treatment Summary – Removal Demonstration Area Fluvial Deposits

Deposit	Year	Treatment	Monitoring/Notes
	2003	10 t/a wood chips, 35 t/a fish pond sediments, and 20 t/a dolomite added during 2003.	
MB/ME	1998	100 dt/a biosolids cake + 100 t/a 3/8"- agricultural grade lime.	Groundwater Monitoring (UMW10 - 12). Resuspension Study. Soil Functionality.
	2003	10 t/a wood chips, 35 t/a fish pond sediments, and 20 t/a dolomite added.	
MG/MH/MI/ MK	1999	100 dt/a compost + 100 t/a 3/8"- agricultural grade lime	
MP/MQ	1998	100 dt/a biosolids cake + 100 t/a 3/8"- agricultural grade lime	
NB/NG/NH/ NI/NL	1999	100 dt/a compost + 100 t/a 3/8"- agricultural grade lime	Groundwater Monitoring (UMW16 - 18) Soil Functionality.
RA/RB	1998	100 dt/a biosolids cake + 100 t/a 3/8"- agricultural grade lime.	Resuspension Study. Soil Functionality.
	2003	10 t/a wood chips, 35 t/a fish pond sediments, and 20 t/a dolomite added.	

TABLE 2
Treatment Summary – Irrigated Meadows

Location	Year Complete	Treatment Area	0:45:0 Fertilizer (pounds)	Lime Depth (inches)	Lime Applied (cubic yards)	Compost Depth (inches)	Compost Applied (cubic yards)	Seed Applied (pounds)	Mulch Applied (tons)
Seppi Ranch									
Seppi 1	2008	6.56	1,000	6	429	6	655	122	11
Seppi 1A	2008	4.43	1354	12	579	12	1,478		
Seppi 2	2008	0.35	200	NA	NA	NA	NA	NA	NA
Seppi 3	2009	4.19	1,281	12	343	12	1400	56	4.2
Seppi 4	2008	1.09	600	NA	NA	NA	NA	NA	NA
Seppi 5	2008	2.44	1,250	NA	NA	NA	NA	NA	NA
Seppi 6	2009	1.64	500	12	212	12	547	21	1.64
Seppi 7	2009	2.03	350	6	142	6	244.1	22.5	2
Seppi 8	2009	5.73	1,750	12	785	12	1971	63	5.7
Seppi 9	2009	1.56	500	12	215	12	300	17	1.6
Smith Ranch									
Smith 1	2009	13.82	4,250	12	1,881	12	2,437	194	13.8
Smith 2	2008	32.55	5,150	6	2,131	6	3,245	477	32.5
Smith 3	2008	0.55	200	12	75.5	12	180	17.5	0.575
Smith 4	2008	1.29	400	12	191	12	446	39.2	1.6
Smith 5	2008	0.77	150	6	50.6	6	76.5	23	0.775
Smith 6	2008	15.51	2,373	6	1,068	6	1,705	339	15.6
Smith 7	2008	5.62	1,720	12	760	12	2,040	122.4	1.02
BLM									
BLM 1	2009	10.94	3,350	12	803	6	2,172	192	10.9

TABLE 2
Treatment Summary – Irrigated Meadows

Location	Year Complete	Treatment Area	0:45:0 Fertilizer (pounds)	Lime Depth (inches)	Lime Applied (cubic yards)	Compost Depth (inches)	Compost Applied (cubic yards)	Seed Applied (pounds)	Mulch Applied (tons)
BLM 2	2009	31.75	10,750	12	2,367	6	6,956	550	31.5
BLM 3	2009	4.20	650	6	139	6	826	74	4.2
BLM 4	2009	1.37	425	12	89	6	277	24	1.4
BLM 5	2009	1.29	200	6	41	6	276	22.5	1.3
BLM 6	2009	0.13	20	6	4.5	6	25	2.3	0.14
BLM 7	2009	3.79	1,150	12	247	6	748	66	3.8

TABLE 3
Seed Mixes Used in California Gulch OU11 Remedial Action

Seppi Ranch Seed Mix Slender W/G, San Luis Western W/G, Rosanna Sheep Fescue, Covar Clover, Alsike (not in Seppi 1) Climax Timothy Prairie Junegrass (not in Seppi 1) Canada Bluegrass, Reubens Redtop	**Smith Ranch Seed Mix** Meadow Brome, Fleet or Montana Slender Wheatgrass, San Luis Smooth Brome, Manchar Western Wheatgrass, Rosanna Climax Timothy Alsike Cover Prairie Junegrass Canada Bluegrass, Reubens Redtop Red Fescue (2010 Reseed only)
BLM Seed Mix Mountain Brome Slender Wheatgrass, San Luis Western Wheatgrass, Rosanna Canada Wildrye Mountain Big Sage Blue Flax Prairie Junegrass Rocky Mtn Penstemon Fringe Sage	**Fluvial Deposits** Slender Wheatgrass, San Luis Western Wheatgrass, Rosanna Canada Bluegrass, Reubens Redtop Tufted Hairgrass Prairie Junegrass Baltic Rush Common Yarrow Rydberg's Penstemon Bluejoint Reedgrass (not FA/FB) Yarrow (not FA/FB) Rocky Mountain Penstemon (not FA/FB)
Colorado State Parks Reclamation Mix Slender Wheatgrass, Pryor Alpine Bluegrass Tufted Hairgrass Alpine Timothy Prairie Junegrass Aspen Fleabane	**Colorado State Parks Upland Mix** Indian Ricegrass, Rimrock Western Wheatgrass, Barton Slender Wheatgrass, Pryor Blue Grama, Hachita Prairie Junegrass Fringed Sage
1998 Demonstration Sites Western Yarrow Streambank Wheatgrass Western Wheatgrass Ticklegrass Beaked Sedge Tufted Hairgrass Meadow Barley Prairie Junegrass Annual Rye Grass Alpine Bluegrass White Dutch Clover Field Peas Jose Tall Wheatgrass Canadian Wild Rye Canada Bluegrass, Reubens Alkali Grass, Fults Red Top **Wetland areas by deposits CL and MP/MQ:** Bluejoint Reedgrass Tufted Hairgrass Baltic Rush Cinquefoil Fowl Mannagrass Sloughgrass Beaked Sedge	**1999 and 2000 demonstration sites** Jose Tall Wheatgrass Canadian Wild Rye Canadian Bluegrass Red Top Tufted Hairgrass Rosanna Western Wheatgrass Smooth Brome Grass Yarrow Alsike Clover Small Burnett ***LC and LD – Hand Seeded in 2001*** White Yarrow Golden Banner Ticklegrass Bluejoint Reedgrass Tufted Hairgrass Big Bluegrass Fowl Bluegrass

TABLE 4
Treatment Summary – Fluvial Deposits

Fluvial Deposit Identifier	Surveyed Area (acres)	0:45:0 Fertilizer (pounds)	Lime Depth (inches)	Lime Applied (cubic yards)	Compost Depth (inches)	Compost Applied (cubic yards)	Seed Applied (pounds pure live seed)	Mulch Applied (pounds)
AG	0.455	500	42	619	12	99.9	10.5	851
AH	0.466	150	6 to 18	104	6 to 12	57.6	10.7	888
AI	0.315	200	12 to 36	183	12	65.3	7.5	592
FA/FB	1.889	759	6 to 36	1020	6 to 12	680	25.58	2775
NA	0.056	8.6	6	4.8	6	9.5	1.3	148
NC	0.133	40	30	58.5	12	52	3	296
ND	0.271	172	12 to 30	98.5	12	101	7.4	592
NN	0.298	69	6 to 12	60.8	6 to 12	63.7	8	555
NP	0.167	102	24	110	12	61.6	4.5	296
NR	0.686	292	12 to 18	168	12	244	18.8	1480
NT	0.797	183	6 to 30	188	6 to 12	172	21.8	1739
NW	0.342	104	30	146	12	130	7.8	629
OA	0.729	450	6 to 30	1100	6 to 12	222	16.5	1369
OB	0.258	120	12 to 24	240	12	81	6.6	481
OC	0.278	60.6	6 to 18	36.5	6 to 12	58.8	6.3	518
OE	1.633	580	6 to 30	244	6 to 12	520	44.8	3034
OH	0.161	70.5	12 to 24	30.3	12	47.3	3.7	296
OI	0.106	50	18	29.3	12	42.3	2.4	185
OJ	0.715	199	6 to 18	155	6 to 12	138	16.6	1332
PA	0.336	225	18 to 30	128	12	127	9.2	629
PE	0.285	69	6 to 12	39	6 to 12	84.8	6.5	592
PG	1.102	281	6 to 30	291	6 to 12	145	26.2	2035
PJ	1.062	550	6 to 24	637	6 to 12	421	29.9	2035

TABLE 4
Treatment Summary – Fluvial Deposits

Fluvial Deposit Identifier	Surveyed Area (acres)	0:45:0 Fertilizer (pounds)	Lime Depth (inches)	Lime Applied (cubic yards)	Compost Depth (inches)	Compost Applied (cubic yards)	Seed Applied (pounds pure live seed)	Mulch Applied (pounds)
PM	0.2	30	6	13	6	27.6	5.5	370
PN	0.036	11	12	6.1	12	14.8	1	74
PP	0.195	59.8	12	17	12	38.5	5.3	370
QA	0.043	27	12 to 30	6.6	12	8.05	1.3	92.5
QD	0.418	309	8 to 36	176	8 to 12	153	11.2	777
QF	1.475	804	12 to 30	456	12	582	40.6	2738
QG	0.471	242	6 to 12	144	6 to 12	165	13	888
QH	0.264	130	12 to 30	70.1	12	90.6	7.2	481
QI	0.195	73.2	12 to 18	38.2	12	68.2	5.5	370
QJ	0.046	18.1	16	10.6	12	18.1	1.5	92.5
QK	0.124	49.3	16	26.6	12	43.9	2.8	222
QL	0.101	33	6 to 24	13.1	6 to 12	18.2	3.3	185
QM	0.053	32.4	24	18.7	12	20.9	1.2	111
QN	0.925	580	6 to 30	338	6 to 12	357	25.2	1702
QO	0.405	145	12 to 24	246	12	108	9.11	740
QP	0.597	325	6 to 36	160	6 to 12	174	13.6	1110
QR	0.08	18.5	6 to 20	9.31	6 to 12	15.3	1.8	148
QX	0.105	64	24	76.4	12	40.6	2.4	185
QV	0.144	66.1	18	38.4	12	56.8	3.3	259

1) BOSS compost applied in A's and FA/FB (0.5935 tons/cubic yard (ton/cy))
2) Select compost used in all other FDs (0.687 ton/cy)
3) Clean Energy lime used throughout (0.6321 ton/cy)
4) Applied straw mulch weight was based on an average weight of 37 lbs / bale and straw mulch target values based on design rate of 1 ton / acre.
5) FD seed mix for the A's was 88% pure live seed (PLS), the FA/FB mix was 87% PLS and the remainder was 85% PLS.

TABLE 5
Construction Quality Assurance/Quality Control – Lime Quality

Analysis	Average	Standard Deviation	Minimum	Maximum	# Samples
Calcium, sat_ paste (meq/L)	24.9	4.64	17	31.9	15
Conductivity, sat_ paste (mmhos/cm)	7.76	0.99	5.56	9.1	15
Dry Bulk Density (g/cm^3)	0.77	0.03	0.7	0.81	15
Lime as $CaCO_3$ (percent)	81.2	2.03	76.7	84.5	15
Magnesium, sat_ paste (meq/L)	83.3	12.7	52.5	108	15
Moisture (As Received)	28.1	2.55	22.6	32.6	15
No_ 10 Sieve (percent)	0.23	0.30	0	1.1	15
No_ 60 Sieve (percent)	1.31	2.05	0.2	8.5	15
Pan (percent)	98.4	2.30	90.4	99.8	15
pH, sat_ paste	8.1	0.10	7.9	8.2	15
Sodium Adsorption Ratio	0.33	0.14	0.14	0.71	15
Sodium, sat_ paste (meq/L)	2.44	1.10	0.9	5.29	15

meq/L Milliequivalents per liter
mmhos/cm Millimhos per centimeter
g/cm^3 Grams per cubic centimeter

TABLE 6
Construction Quality Assurance/Quality Control – Compost Quality

	Average	Standard Deviation	Minimum	Maximum	# Samples
BOSS Compost - 2008					
Ammonia as N, KCL Extract	1,400	518	282	2,650	47
Conductivity (mmhos/centimeter)	38.6	3.53	31.8	43.4	47
Density (grams/cubic centimeter)	0.633	0.028	0.54	0.7	47
Dry Bulk Density (g/cm^3)	0.586	0.041	0.47	0.65	47
Nitrate as N (mg/kg)	79.3	15.3	11	100	45
Organic Carbon (percent)	28.8	2.16	26.1	36.5	47
Organic Matter (percent)	49.7	3.71	45.1	62.9	47
Pan (weight percent<1-inch sieve)	100	0	100	100	47
pH, sat_ paste	7.06	0.207	6.6	7.6	47
Phosphorus (mg/kg)	8,430	841	5920	9,990	47
Total Kjeldahl Nitrogen (mg/kg)	18,400	2,400	13,600	22,700	47
BOSS Compost - 2009					
Ammonia as N, KCL Extract	892	95.5	774	1,030	5
Conductivity (mmhos/centimeter)	38.5	2.12	35.3	40.3	5
Density (grams/cubic centimeter)	0.634	0.019	0.61	0.66	5
Dry Bulk Density (g/cm^3)	0.594	0.022	0.56	0.62	5
Nitrate as N (mg/kg)	110	24.1	68	127	5
Organic Carbon (percent)	25.6	0.760	24.6	26.3	5
Organic Matter (percent)	44.1	1.31	42.5	45.4	5
Pan (weight percent<1-inch sieve)	100	0	100	100	5
pH, sat_ paste	7.66	0.055	7.6	7.7	5
Phosphorus (mg/kg)	7,446	433	7,070	8,090	5
Total Kjeldahl Nitrogen (mg/kg)	16,120	1,620	14,500	18,700	5
Select Compost – 2009					
Ammonia as N, KCL Extract	718	12.2	683	735	15
Conductivity (mmhos/centimeter)	27.1	2.61	22.5	32.9	15
Density (grams/cubic centimeter)	0.818	0.055	0.7	0.88	15
Dry Bulk Density (g/cm^3)	0.768	0.058	0.62	0.84	15
Nitrate as N (mg/kg)	830	340	327	1,340	15
Organic Carbon (percent)	13.5	2.47	11	19	15

TABLE 6
Construction Quality Assurance/Quality Control – Compost Quality

	Average	Standard Deviation	Minimum	Maximum	# Samples
Organic Matter (percent)	23.3	4.28	19	32.8	15
Pan (weight percent<1-inch sieve)	100	0	100	100	15
pH, sat_ paste	8.59	0.103	8.4	8.7	15
Phosphorus (mg/kg)	5,150	531	4,290	5,960	15
Total Kjeldahl Nitrogen (mg/kg)	9,520	1,990	6,390	13,200	15

TABLE 7
Construction Quality Assurance/Quality Control – pH Measurements – Irrigated Meadows

Location	In Situ pH				Paste pH			
	Average	Standard Deviation	Range	# Samples	Average	Standard Deviation	Range	# Samples
SEPPI RANCH								
Seppi 1 West	7.4	0.17	7.3 – 7.7	6	7.3	0.18	7.0 – 7.5	6
Seppi 1 East	7.12	0.16	7.0 – 7.3	5	7.26	0.30	6.9 – 7.7	5
Seppi 3	7.16	0.23	7.0 – 7.3	5	7.12	0.13	6.9 – 7.2	5
Seppi 6	7.15	0.21	7.0 – 7.3	2	7.0	0.1	6.9 – 7.1	3
Seppi 7	7.5	0	7.5	3	7.47	0.06	6.9 – 7.5	3
Seppi 8	7.3	0.24	7.0 – 7.5	6	7.17	0.19	6.9 – 7.5	12
Seppi 9	7.65	0.21	7.5 – 7.8	2	7.4	0.16	7.2 – 7.6	4
SMITH RANCH								
Smith 1	7.38	0.21	7.0 – 7.7	12	7.42	0.18	7.1 – 7.7	24
Smith 2	7.63	0.38	7.3 – 8.3	33	7.24	0.32	6.3 – 7.7	33
Smith 3	8.0	0	8.0	2	7.43	0.12	7.3 – 7.6	6
Smith 4	8.0	0	8.0	2	7.43	0.12	7.3 – 7.6	6
Smith 5	7.65	0.49	7.3 – 8.0	2	7.43	0.12	7.3 – 7.6	6
Smith 6	7.88	0.24	7.0 – 8.0	56	7.92	0.39	7.1 – 8.7	56
Smith 7	7.44	0.39	7.0 – 8.0	17	7.43	0.27	6.8 - 8	40
BLM								
BLM1	7.18	0.23	7.0 – 7.5	11	7.50	0.09	7.3 – 7.6	23
BLM2 North	7.85	0.29	7 – 8.3	32	7.46	0.32	6.5 – 8.0	45
BLM2 South	7.26	0.54	6.0 – 8.0	11	7.43	0.35	6.7 – 8.5	31
BLM3	7.22	0.22	7.0 – 7.5	5	7.24	0.05	7.2 – 7.3	5
BLM4	7.40	0.14	7.3 – 7.5	2	7.36	0.15	7.2 – 7.6	5
BLM5	7.5	0	7.5	2	7.50	0.14	7.4 – 7.6	2
BLM6	7.5	--	7.5	1	7.8	--	7.8	1
BLM 7	7.6	0.12	7.5 – 7.8	4	7.39	0.23	7.1 – 7.8	8

TABLE 8
Construction Quality Assurance/Quality Control – pH Measurements – Fluvial Deposits

Location	In Situ pH				Paste pH			
	Average	Standard Deviation	Range	# Samples	Average	Standard Deviation	Range	# Samples
AG	7.30	0.40	6.7 - 7.5	4	7.01	0.09	6.9 - 7.2	10
AH	7.15	0.57	6.3 - 7.5	4	7.15	0.17	7 - 7.3	4
AI	6.49	0.72	5.75 - 7.2	4	7.23	0.18	7.1 - 7.5	6
FA/FB	7.68	0.32	7.0 - 8.0	29	--	--	--	--
NA	6.75	--	6.75 - 6.75	1	6.60	--	6.6 - 6.6	1
NC	7.62	0.36	7.3 - 8	5	6.96	0.05	6.9 - 7	5
ND	7.23	0.23	7 - 7.5	7	7.02	0.08	6.9 - 7.1	9
NP	6.50	0.00	6.5 - 6.5	9	6.77	0.05	6.7 - 6.8	9
NN	7.40	0.12	7.3 - 7.5	4	7.35	0.17	7.2 - 7.6	4
NR	7.26	0.28	7 - 7.8	8	7.03	0.29	6.6 - 7.3	6
NT	--	--	--	0	7.04	0.05	7 - 7.1	7
NW	7.25	0.26	7 - 7.5	10	7.14	0.31	6.6 – 7.4	14
OA	7.86	0.20	7.5 - 8	8	7.20	0.14	7 - 7.4	9
OB	7.31	0.33	7 - 7.7	11	7.67	0.10	7.5 - 7.8	7
OC	--	--	--	0	7.18	0.26	6.9 - 7.6	5
OE	7.16	0.49	5.5 - 7.6	20	7.05	0.14	6.9 - 7.3	6
OH	7.22	0.26	7 - 7.5	9	7.54	0.49	6.8 - 8.2	12
OI	7.15	0.14	7 - 7.25	5	6.85	0.05	6.8 - 6.9	8
OJ	7.67	0.54	7 - 8.5	15	7.25	0.34	6.7 - 7.7	16
PA	6.82	0.12	6.75 - 7	7	7.05	0.14	6.8 - 7.2	8
PE	7.58	0.20	7.5 - 8	6	7.05	0.10	6.9 - 7.2	6
PG	7.30	0.21	7 - 7.5	8	7.07	0.09	7 - 7.2	9
PJ	6.79	0.22	6.5 - 7	25	7.13	0.25	6.8 - 7.5	25
PM	6.75	0.35	6.5 - 7	2	6.75	0.35	6.5 - 7	2
PN	7.00	0.00	7 - 7	2	6.50	0.17	6.3 - 6.6	3
PP	7.00	0.00	7 - 7	2	7.40	0.14	7.3 - 7.5	2
QA	7.00	0.00	7 - 7	7	7.19	0.16	6.9 - 7.4	7
QD	7.24	0.30	6.7 - 7.5	11	6.98	0.14	6.7 - 7.2	12
QF	7.12	0.21	7 - 7.5	31	6.87	0.38	6.1 - 8.1	39
QG	6.57	0.13	6.5 - 6.8	9	7.10	0.27	6.7 - 7.6	9

TABLE 8
Construction Quality Assurance/Quality Control – pH Measurements – Fluvial Deposits

Location	In Situ pH				Paste pH			
	Average	Standard Deviation	Range	# Samples	Average	Standard Deviation	Range	# Samples
QH	7.01	0.23	6.5 - 7.3	9	7.78	0.28	7.4 - 8.2	12
QI	6.50	0.00	6.5 - 6.5	5	6.80	0.22	6.6 - 7.1	8
QJ	7.00	0.00	7 - 7	2	6.60	0.14	6.5 - 6.7	2
QL	6.63	0.16	6.5 - 6.8	7	7.36	0.54	6.8 - 8	7
QM	6.70	0.00	6.7 - 6.7	9	6.81	0.17	6.5 - 7	9
QN	7.00	0.00	7 - 7	6	7.13	0.23	6.8 - 7.4	6
QO	7.18	0.20	7 - 7.5	12	7.39	0.40	6.6 - 8	13
QP	6.72	0.30	6.3 - 7.5	36	7.20	0.27	6.8 - 8.2	36
QR	6.73	0.15	6.5 - 6.8	4	7.40	0.41	6.8 - 7.7	4
QV	6.50	0.00	6.5 - 6.5	3	7.07	0.12	7 - 7.2	3
QX	7.00	0.00	7 - 7	5	6.80	0.10	6.7 - 6.9	5

APPENDIX A

Site Maps

Map 1
Fluvial Deposits: AA, AB, AC, AD, AE, AG, AH, AI
Irrigated Meadows: SE1, SE3, SE4, SE5, SE6

Map 2
Fluvial Deposits: CA, CD, CE, CJ, CK, CL, CN, CO, CP, CR, CS, FB
Irrigated Meadows: SE7, SE8, SE9, SM1, SM2

Map 3
Fluvial Deposits: None
Irrigated Meadows: SM1, SM2, SM3, SM4, SM5, SM6, SM7

Map 4
Fluvial Deposits: LA, LB, LC, LD, LH, LI, LK, LL, LM, LN, LO, LP, LQ, LR, LS, LV
Irrigated Meadows: None

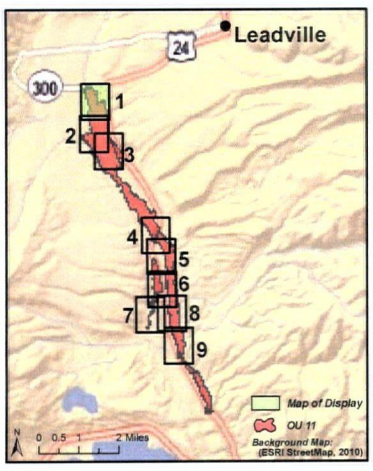
Map 5
Fluvial Deposits: MB, ME, MG, MH, MI, MK, MJ, NA, NB, NG
Irrigated Meadows: BLM1

Map 6
Fluvial Deposits: NC, ND, NH, NI, NN, NO, NP, NR, NT, NW, OA, OB, OC, OE, OH, OI, OJ, PA, PE
Irrigated Meadows: BLM1, BLM2, BLM3, BLM4, BLM5

Map 7
Fluvial Deposits: None
Irrigated Meadows: BLM2, BLM4, BLM5, BLM6, BLM7

Map 8
Fluvial Deposits: OE, OH, OI, OJ, PA, PE, PG, PJ, PM, PN, PP, QA, QD
Irrigated Meadows: None

Map 9
Fluvial Deposits: QD, QF, QG, QH, QI, QJ, QK, QL, QM, QN, QO, QP, QR, QV, QX
Irrigated Meadows: None



California Gulch Superfund Site Operable Unit 11

TechLaw

0 125 250 500 Feet

0 50 100 200 Meters

- Grazing Exclosure
- Monitoring Point
- Smith-Seppi Property Line
- ===== Construction Road
- Restoration Line
- Treatment Area (Fluvial) (Lime Depth displayed in parenthesis)
- Treatment Area (Irrigated Meadows) (Lime Depth displayed in parenthesis)
- NPL Boundary

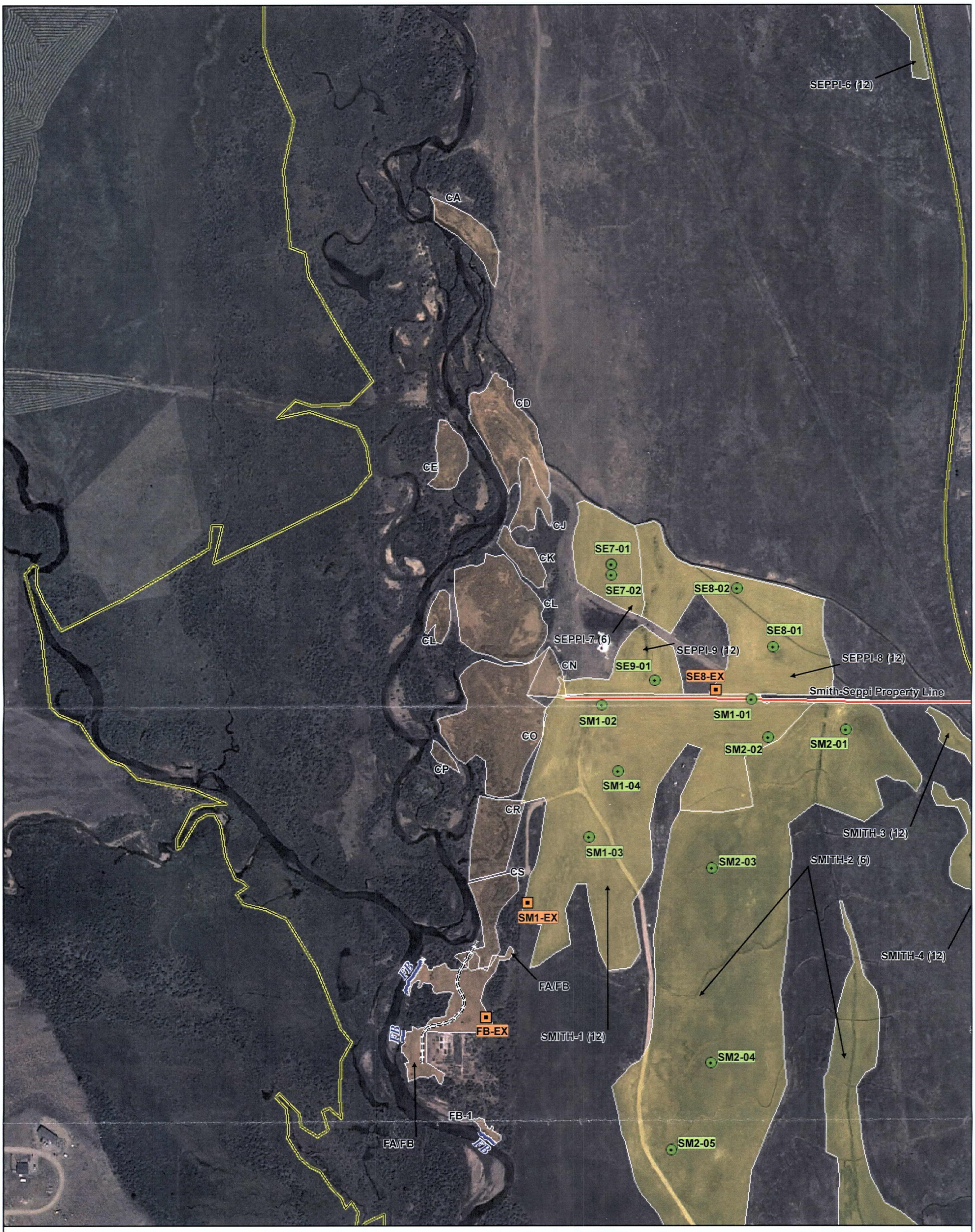
Map 1 of Map Series

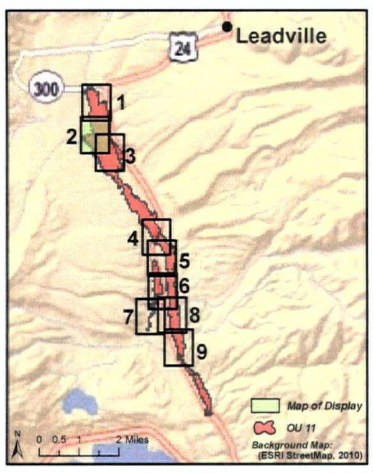
Date: March 16, 2010

Projection/Corrdinate System: Colorado State Plane Central Feet NAD 1983

Data Sources:

Monitoring Points: PWT (2008, 2009)
Treatment Areas: UOS and MFG (1998-2000); PWT (2008-2009)
Smith-Seppi Property Line and NPL Boundary: ESAT (2007)
Construction Roads, Restoration Lines, and Grazing Enclosures: PWT (2008-2009)
Imagery: 1-meter aerial photograph USDA NAIP (2009)





California Gulch Superfund Site Operable Unit 11

TechLaw

0 125 250 500 Feet

0 50 100 200 Meters

- Grazing Exclosure
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- Construction Road
- Restoration Line
- Treatment Area (Fluvial) (Lime Depth displayed in parenthesis)
- Treatment Area (Irrigated Meadows) (Lime Depth displayed in parenthesis)
- NPL Boundary

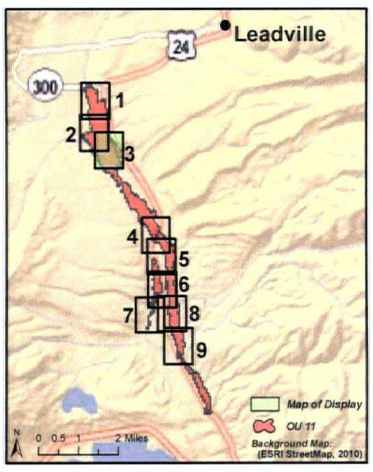
Map 2 of Map Series

Date: March 16, 2010

Projection/Corrdinate System: Colorado State Plane Central Feet NAD 1983

Data Sources:

Monitoring Points: PWT (2008, 2009)
Treatment Areas: UOS and MFG (1998-2000); PWT (2008-2009)
Smith-Seppi Property Line and NPL Boundary: ESAT (2007)
Construction Roads, Restoration Lines, and Grazing Enclosures: PWT (2008-2009)
Imagery: 1-meter aerial photograph USDA NAIP (2009)



California Gulch Superfund Site Operable Unit 11

0 125 250 500 Feet

0 50 100 200 Meters

- Grazing Exclosure
- Monitoring Point
- Smith-Seppi Property Line
- Construction Road
- Restoration Line
- Treatment Area (Fluvial) (Lime Depth displayed in parenthesis)
- Treatment Area (Irrigated Meadows) (Lime Depth displayed in parenthesis)
- NPL Boundary

Map 3 of Map Series

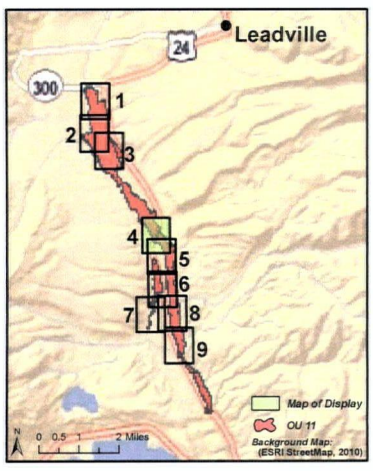
Date: March 16, 2010

Projection/Corrdinate System: Colorado State Plane Central Feet NAD 1983

Data Sources:

Monitoring Points: PWT (2008, 2009)
Treatment Areas: UOS and MFG (1998-2000); PWT (2008-2009)
Smith-Seppi Property Line and NPL Boundary: ESAT (2007)
Construction Roads, Restoration Lines, and Grazing Enclosures: PWT (2008-2009)
Imagery: 1-meter aerial photograph USDA NAIP (2009)

LA
LB
LH
LC
LD
LK
LI
LN
LO
LM
LL
LP
LV
LR
LS
LQ
MB



California Gulch Superfund Site Operable Unit 11

TechLaw

0 125 250 500 Feet

0 50 100 200 Meters

- Grazing Exclosure
- Monitoring Point
- Smith-Seppi Property Line
- Construction Road
- Restoration Line
- Treatment Area (Fluvial) (Lime Depth displayed in parenthesis)
- Treatment Area (Irrigated Meadows) (Lime Depth displayed in parenthesis)
- NPL Boundary

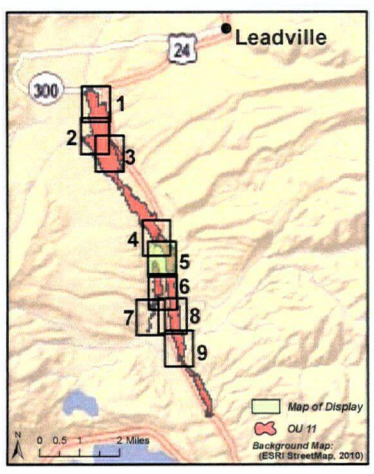
Map 4 of Map Series

Date: March 16, 2010

Projection/Corrdinate System: Colorado State Plane Central Feet NAD 1983

Data Sources:

Monitoring Points: PWT (2008, 2009)
Treatment Areas: UOS and MFG (1998-2000); PWT (2008-2009)
Smith-Seppi Property Line and NPL Boundary: ESAT (2007)
Construction Roads, Restoration Lines, and Grazing Enclosures: PWT (2008-2009)
Imagery: 1-meter aerial photograph USDA NAIP (2009)



California Gulch Superfund Site Operable Unit 11

TechLaw

0 125 250 500 Feet

0 50 100 200 Meters

- Grazing Exclosure
- Monitoring Point
- Smith-Seppi Property Line
- Construction Road
- Restoration Line
- Treatment Area (Fluvial) (Lime Depth displayed in parenthesis)
- Treatment Area (Irrigated Meadows) (Lime Depth displayed in parenthesis)
- NPL Boundary

Map 5 of Map Series

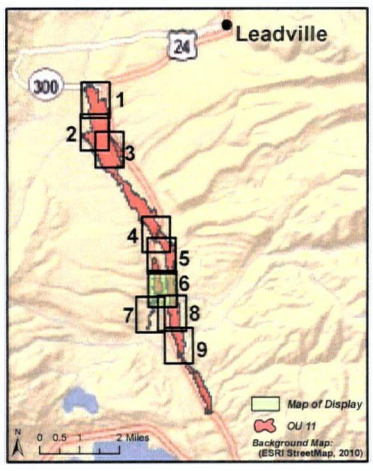
Date: March 16, 2010

Projection/Corrdinate System: Colorado State Plane Central Feet NAD 1983

Data Sources:

Monitoring Points: PWT (2008, 2009)
Treatment Areas: UOS and MFG (1998-2000); PWT (2008-2009)
Smith-Seppi Property Line and NPL Boundary: ESAT (2007)
Construction Roads, Restoration Lines, and Grazing Enclosures: PWT (2008-2009)
Imagery: 1-meter aerial photograph USDA NAIP (2009)

California Gulch Superfund Site Operable Unit 11



0 125 250 500 Feet

0 50 100 200 Meters

- Grazing Exclosure
- Monitoring Point
- Smith-Seppi Property Line
- Construction Road
- Restoration Line
- Treatment Area (Fluvial) (Lime Depth displayed in parenthesis)
- Treatment Area (Irrigated Meadows) (Lime Depth displayed in parenthesis)
- NPL Boundary

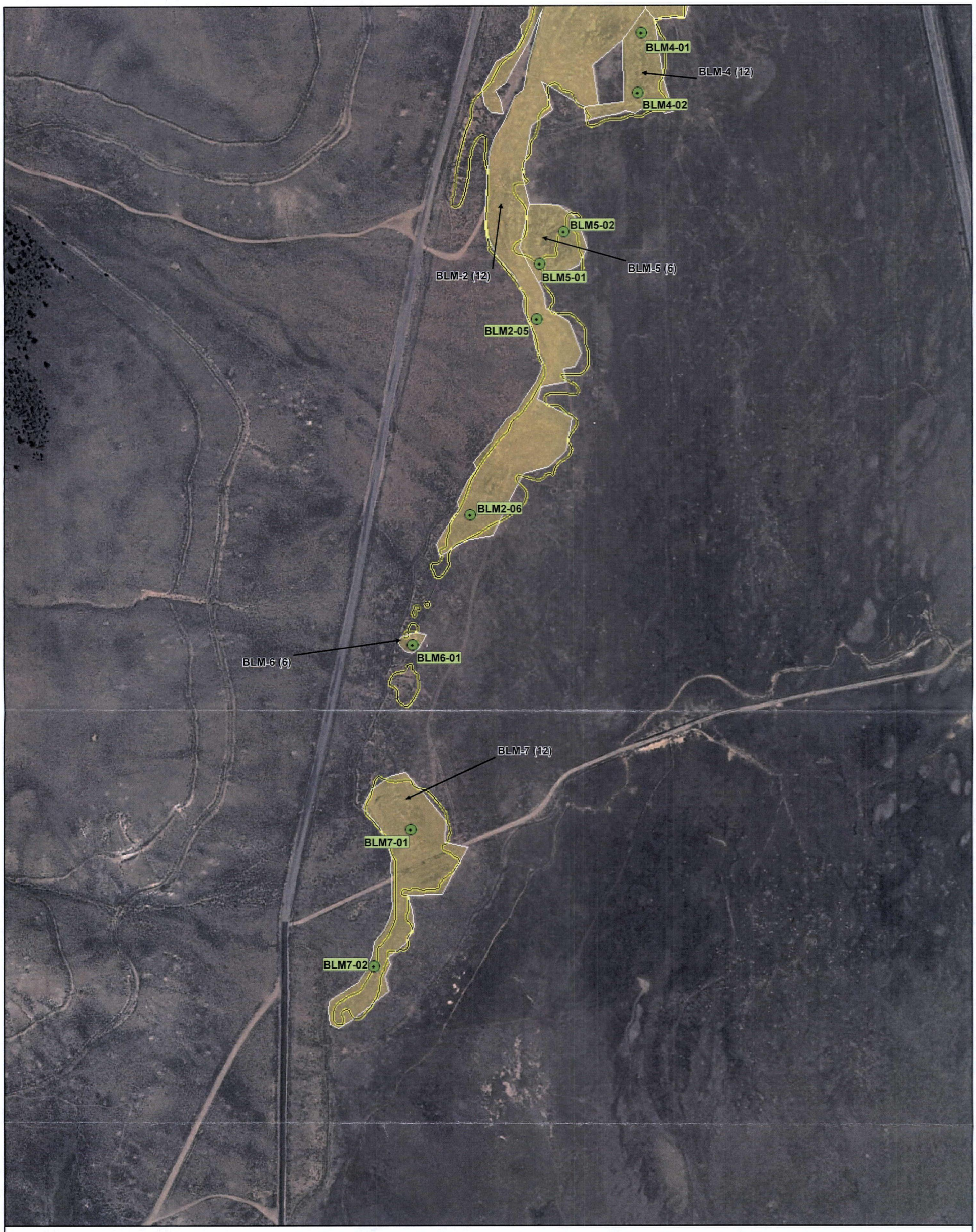
Map 6 of Map Series

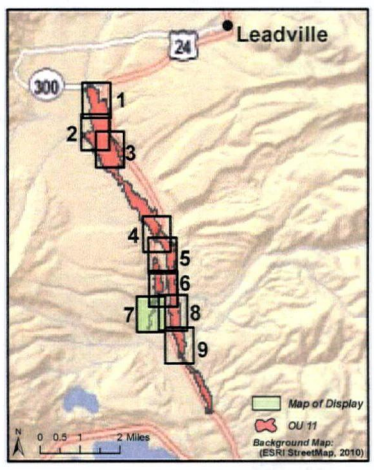
Date: March 16, 2010

Projection/Corrdinate System: Colorado State Plane Central Feet NAD 1983

Data Sources:

Monitoring Points: PWT (2008, 2009)
Treatment Areas: UOS and MFG (1998-2000); PWT (2008-2009)
Smith-Seppi Property Line and NPL Boundary: ESAT (2007)
Construction Roads, Restoration Lines, and Grazing Enclosures: PWT (2008-2009)
Imagery: 1-meter aerial photograph USDA NAIP (2009)





California Gulch Superfund Site Operable Unit 11

N W E S

TechLaw

0 125 250 500 Feet

0 50 100 200 Meters

- Grazing Exclosure
- Monitoring Point
- Smith-Seppi Property Line
- ===== Construction Road
- Restoration Line
- Treatment Area (Fluvial) (Lime Depth displayed in parenthesis)
- Treatment Area (Irrigated Meadows) (Lime Depth displayed in parenthesis)
- NPL Boundary

Map 7 of Map Series

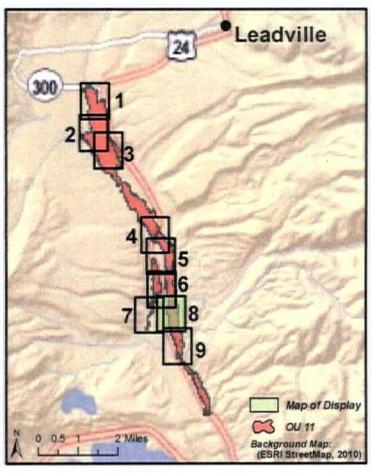
Date: March 16, 2010

Projection/Corrdinate System: Colorado State Plane Central Feet NAD 1983

Data Sources:

Monitoring Points: PWT (2008, 2009)
Treatment Areas: UOS and MFG (1998-2000); PWT (2008-2009)
Smith-Seppi Property Line and NPL Boundary: ESAT (2007)
Construction Roads, Restoration Lines, and Grazing Enclosures: PWT (2008-2009)
Imagery: 1-meter aerial photograph USDA NAIP (2009)

OC-4 (18)
OC-3 (6)
OE-3 (6)
OE-1 (30)
OE-2 (6)
OE-EX
OE-4 (12)
OH-1
OH-1 (18)
OI-1 (18)
OH-3 (12)
OH-2 (24)
OH-3
PE-3 (6)
OJ-1 (6)
PA-2 (24)
OJ-2 (12)
PA-1 (18)
OJ-3 (18)
PE-4
PE-1 (12)
PA-3 (24)
PE
OJ-4 (18)
PA-4 (30)
OJ-5 (6)
OJ-6 (18)
PE-2 (12)
PG-2 (18)
PG-3 (18)
PG-1 (6)
PG-4 (30)
PJ
PJ-1 (18)
PJ-3 (18)
PJ-2 (24)
PJ-4 (6)
PJ-5 (24)
PJ-6
PM (6)
PN (12)
PP-1 (12)
PP-2 (12)
QA-2 (12)
QA-1 (30)
QD-5 (12)
QD-1 (8)
QD-3 (12)
QD-2 (36)
QD-4 (16)
QF-2 (12)
QF-1 (24)
QF-3 (18)



California Gulch Superfund Site Operable Unit 11

N W E S

TechLaw

0 125 250 500 Feet

0 50 100 200 Meters

- Grazing Exclosure
- Monitoring Point
- Smith-Seppi Property Line
- Construction Road
- Restoration Line
- Treatment Area (Fluvial) (Lime Depth displayed in parenthesis)
- Treatment Area (Irrigated Meadows) (Lime Depth displayed in parenthesis)
- NPL Boundary

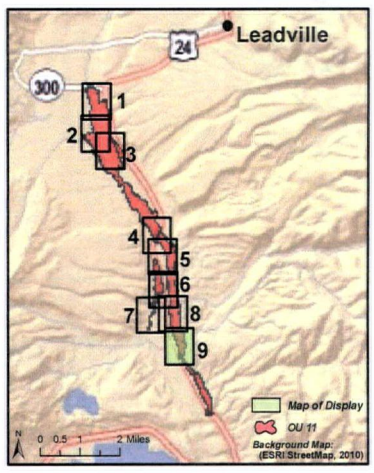
Map 8 of Map Series

Date: March 16, 2010

Projection/Corrdinate System: Colorado State Plane Central Feet NAD 1983

Data Sources:
Monitoring Points: PWT (2008, 2009)
Treatment Areas: UOS and MFG (1998-2000); PWT (2008-2009)
Smith-Seppi Property Line and NPL Boundary: ESAT (2007)
Construction Roads, Restoration Lines, and Grazing Enclosures: PWT (2008-2009)
Imagery: 1-meter aerial photograph USDA NAIP (2009)

QD-1 (8)
QD-2 (36)
QD-3 (12)
QD-4 (16)
QD-5 (12)
QF-1 (24)
QF-2 (12)
QF-3 (18)
QF-EX
QF-4 (30)
QF-5 (12)
QF-6 (30)
QF-7 (12)
QF-8 (24)
QF-9 (18)
QF-10 (12)
QG-1 (6)
QG-2 (30)
QG-3 (12)
QH-1 (30)
QH-2 (12)
QH-3 (18)
QH-4 (18)
QI-1 (12)
QI-2 (18)
QJ (16)
QK (16)
QL-1 (6)
QL-2 (6)
QL-3 (24)
QL-4 (6)
QL-5 (18)
QM-S (24)
QN-1 (18)
QN-2 (30)
QN-3 (12)
QN-4 (6)
QO-1 (24)
QO-2 (12)
QO-3 (24)
QO-4 (12)
QP
QP-1 (12)
QP-2 (30)
QP-3 (24)
QP-4 (30)
QP-5 (6)
QP-6 (30)
QP-7 (30)
QP-8 (12)
QP-9 (36)
QR-1 (20)
QR-2 (6)
QV-1 (18)
QV-2 (18)
QX-N (24)
QX-S (24)
RA
RB



California Gulch Superfund Site Operable Unit 11

0 125 250 500 Feet
0 50 100 200 Meters

- Grazing Exclosure
- Monitoring Point
- Smith-Seppi Property Line
- Construction Road
- Restoration Line
- Treatment Area (Fluvial) (Lime Depth displayed in parenthesis)
- Treatment Area (Irrigated Meadows) (Lime Depth displayed in parenthesis)
- NPL Boundary

Map 9 of Map Series

Date: March 16, 2010

Projection/Corrdinate System: Colorado State Plane Central Feet NAD 1983

Data Sources:
Monitoring Points: PWT (2008, 2009)
Treatment Areas: UOS and MFG (1998-2000); PWT (2008-2009)
Smith-Seppi Property Line and NPL Boundary: ESAT (2007)
Construction Roads, Restoration Lines, and Grazing Enclosures: PWT (2008-2009)
Imagery: 1-meter aerial photograph USDA NAIP (2009)

APPENDIX B1

Seppi and Smith Construction Documents

Activity Tracking Form
Irrigated Meadows
Clear, Grub, Grade, Pre-Till

Irrigated Meadow Polygon Name/ID: Seep: 1 West Side (6-inch)

Activity Start Date: 10-21-08

Activity End Date: 10-21-08

Activities Verified As Completed (indicate NA if appropriate)

✓ Completed pre-remediation site walk and final delineation of remediation boundaries.

✓ Survey points for post-treatment depth verification were identified and elevations documented by survey crew before any ground disturbance. Rates will vary from 4 per acre down to 1 per 5 acres depending on Subcontractor's demonstration of compliance with QC requirements for tillage depth. **(Attach or reference survey data)**

✓ EPA collected pre-remediation full remediation depth composite samples at a rate of ~ 1 per 5 acres and the sample locations were surveyed

✓ Removed and disposed of existing trash or debris in accordance with Specification Section 01 74 16.

NA Cleared dead or decadent large woody vegetation if present and placed outside the remediation area in locations identified by the Contractor. Remaining grass and small woody vegetation tilled in place.

NA Locations, extent and width of secondary irrigation ditches to be removed have been surveyed.

✓ Graded the remediation areas as necessary for effective remediation.

✓ Pre-tilled the remediation areas to a minimum depth of 6 inches.

NA If rocks were removed from the remediation area, they were staged or disposed of as directed by the Contractor.

Quantity of Work Estimated in Proposal: NA - Subsequently split into 6 and 12 inch areas

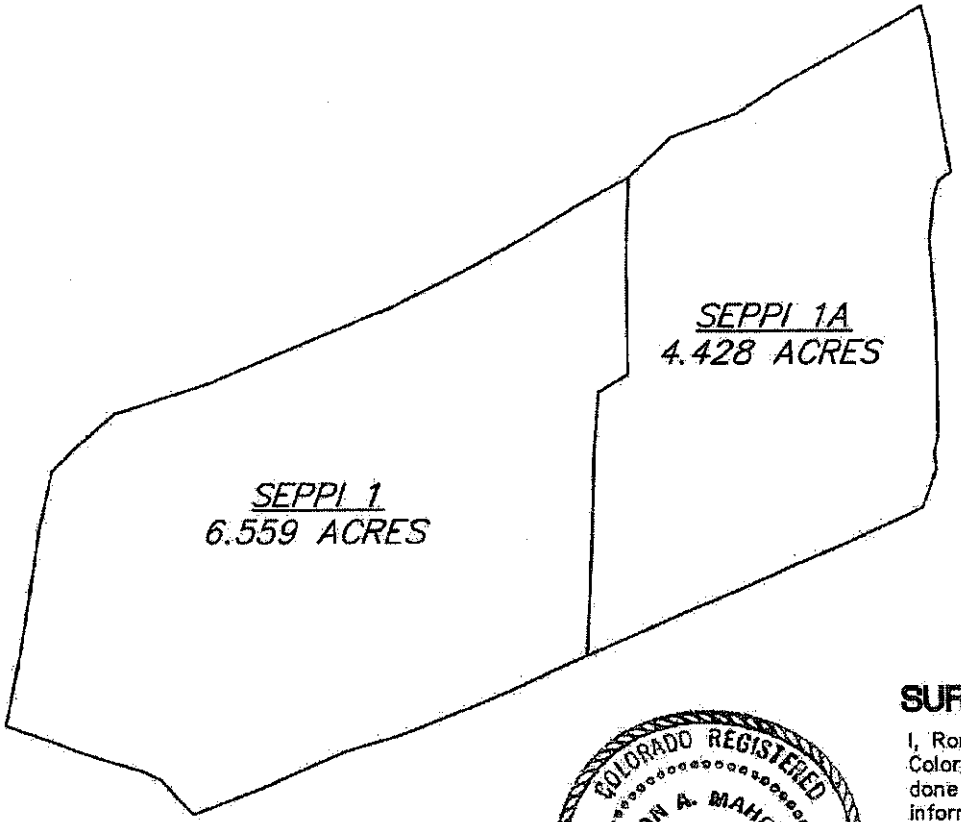
Quantity of Work Performed: 6.559 acres

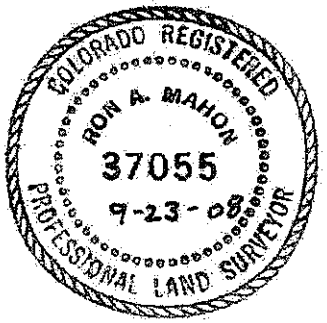
Survey Data/Date: 09-23-08

Note: Attach copies of the survey data to this form or reference location of supporting survey data

Signature of Contractor — Date: 10-27-08

Signature of Subcontractor — Date: 10-27-08





SURVEYOR'S CERTIFICATE

I, Ron Mahon, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

Ron A. Mahon P.L.S. 37055

Inter-Mountain Engineering Ltd.
40881 US HWY 6&24, STE 203 BOX 978 AVON, CO 81620 PH: (970)949-5072
8392 CONTINENTAL DIVIDE RD. SUITE 107 LITTLETON, CO 80127 PH: (303)948-6228

CLIENT: FRONTIER ENVIRONMENTAL INC.

This document was prepared for the exclusive use of the Client specified hereon. The use of this document or the information contained herein by any other person or entity is not authorized. In the event that any other person or entity desires to use this document or the information contained herein for any purpose they must first obtain written authorization from Inter-Mountain Engineering. This document and any information contained herein is intended to be used within one year of the date hereof. Use after that period is not authorized.

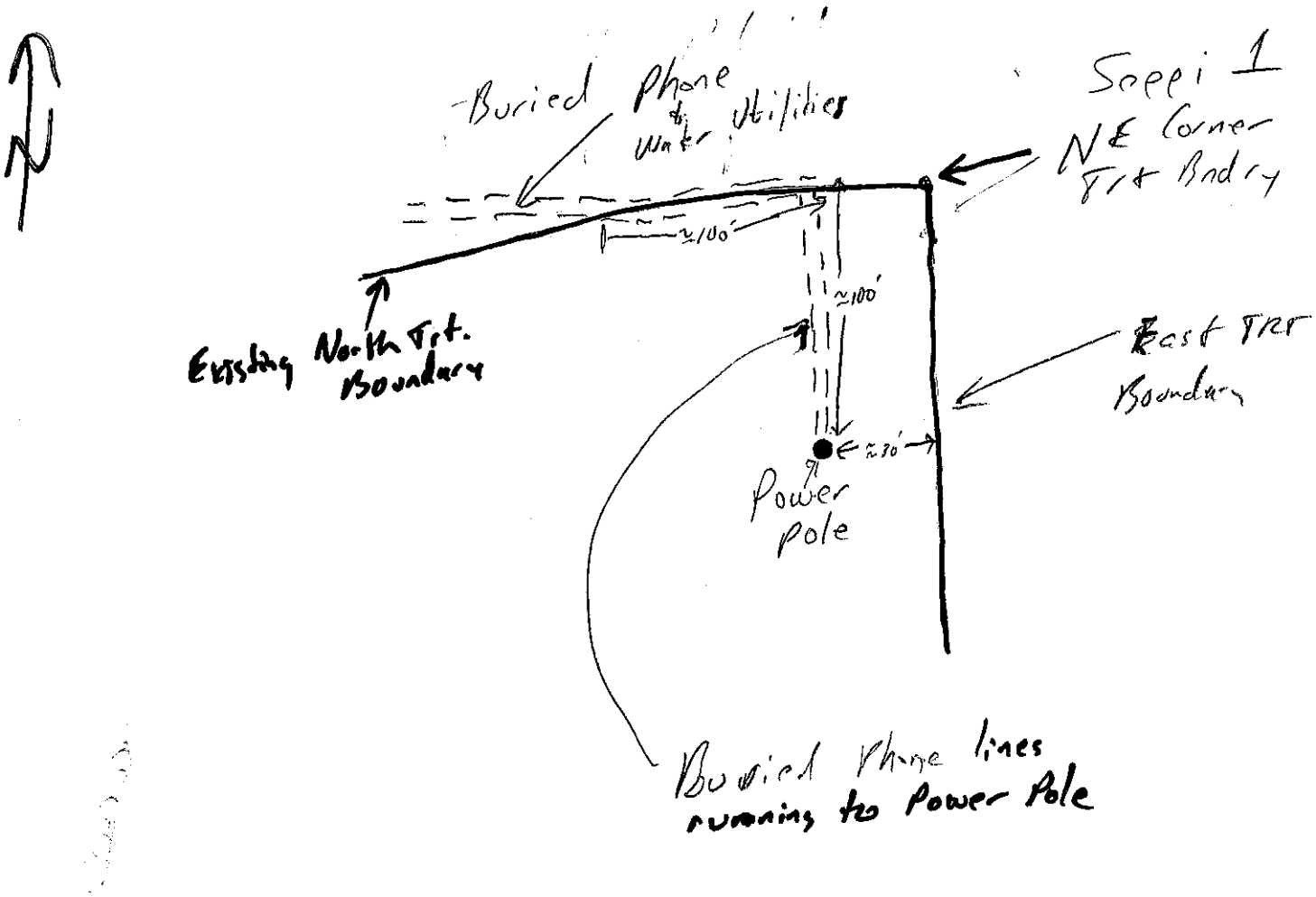
SEPPI 1 AND SEPPI 1A

CALIFORNIA GULCH CERCLA SITE

OPERABLE UNIT NUMBER 11

LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=200'
DATE ISSUED:	9-23-08
PROJECT NO.	08-0032
EXHIBIT	



Power Pole and Buried lines are all within Prt Area extending 100' at a 90° angle. Power Pole Also has guy cables supports and would be difficult to maneuver Rome Harrow around the pole and cables.

Activity Tracking Form
Irrigated Meadows
Clear, Grub, Grade, Pre-Till

Irrigated Meadow Polygon Name/ID: Seepi 1 East (12-inch)

Activity Start Date: 10-27-08

Activity End Date: 10-28-08

Activities Verified As Completed (indicate NA if appropriate)

✓ Completed pre-remediation site walk and final delineation of remediation boundaries.

✓ Survey points for post-treatment depth verification were identified and elevations documented by survey crew before any ground disturbance. Rates will vary from 4 per acre down to 1 per 5 acres depending on Subcontractor's demonstration of compliance with QC requirements for tillage depth. **(Attach or reference survey data)**

✓ EPA collected pre-remediation full remediation depth composite samples at a rate of ~ 1 per 5 acres and the sample locations were surveyed

✓ Removed and disposed of existing trash or debris in accordance with Specification Section 01 74 16.

NA Cleared dead or decadent large woody vegetation if present and placed outside the remediation area in locations identified by the Contractor. Remaining grass and small woody vegetation tilled in place.

NA Locations, extent and width of secondary irrigation ditches to be removed have been surveyed.

✓ Graded the remediation areas as necessary for effective remediation. Dozer work required to achieve

✓ Pre-tilled the remediation areas to a minimum depth of 6 inches.

NA If rocks were removed from the remediation area, they were staged or disposed of as directed by the Contractor.

Quantity of Work Estimated in Proposal: NA Subsequently split into 6 and 12 inch areas

Quantity of Work Performed: 4.428 acres

Survey Data/Date: 09-23-08

Note: Attach copies of the survey data to this form or reference location of supporting survey data

Signature of Contractor — Date: 10-31-08

Signature of Subcontractor — Date: 10-31-08

Lime Application Rate Calculation Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: **Seppi 1 - 6" Till Area (West Side)**

POLYGON CHARACTERISTICS

Net Application Rate (22 dry tons/1000 tons soil unless noted otherwise)	22	dry tons/1000 tons soil
Mixing Safety Factor (10% unless noted otherwise)	10.00%	%
% Rock (0 unless noted otherwise)	0.00%	%
Treatment Depth	6	inches
Total Area	6.559	acres

LIME CHARACTERISTICS

Lime Particle Size Distribution					
Percent >10 mesh		X 0.1	=	0.0000	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.0004	(B)
Percent < 60 mesh	99.92%	X 1.0	=	0.9992	(C)
Lime Reactivity			=	0.9996	(Sum of A, B, and C)

Calcium Carbonate Equivalence		82.20%	%
Percent Moisture		28.4%	%
Bulk Density	0.75 grams/cc	= 0.632	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * (1000 tons soil/acre/6") * Treatment Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 41.13 tons/acre = 269.80 tons total
= 1.89 lbs/ft2

Lime Rate = 65.08 cubic yards/acre = 426.85 cy total

Signature: [signature] 10-23-08

Date:

Signature: [signature] 10/22/08

Lime Application Rate Calculation Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: **Seppi 1 - 12" Till Area (East Side)**

POLYGON CHARACTERISTICS

Net Application Rate (22 dry tons/1000 tons soil unless noted otherwise)	22 dry tons/1000 tons soil
Mixing Safety Factor (10% unless noted otherwise)	10.00% %
% Rock (0 unless noted otherwise)	0.00% %
Treatment Depth	12 inches
Total Area	4.428 acres

LIME CHARACTERISTICS

Lime Particle Size Distribution					
Percent >10 mesh		X 0.1	=	0.0000	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.0004	(B)
Percent < 60 mesh	99.92%	X 1.0	=	0.9992	(C)
			=	0.9996	(Sum of A, B, and C)
Lime Reactivity				82.20% %	
Calcium Carbonate Equivalence				28.4% %	
Percent Moisture					
Bulk Density	0.75 grams/cc		=	0.632	tons/cy

CALCULATE LIME RATE

$$\text{Lime Rate} = \frac{\text{Net Application Rate} *(1+ \text{Mixing Factor}/100)* (1 - \%\ \text{Rock}/100) * (1000\ \text{tons soil/acre}/6") * \text{Treatment Depth}}{(\text{Lime Reactivity}) * (\text{Calcium Carbonate Equivalence}/100) * (1 - \%\ \text{Moisture}/100)}$$

Lime Rate = 82.27 tons/acre = 364.29 tons total

= 3.78 lbs/ft2

Lime Rate = 130.16 cubic yards/acre = 576.33 cy total

Signature: [signature] 10-23-08

Date:

Signature: [signature] 10/22/08

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: Sapp: 1

Date: 10-22-08 Time: ~~09:25~~ 09:40 – 10:45

Field Application Rate: 41.13 tons/acre (1.89 psf) (psf = tons/acre*0.0459)

Total Tarp Dimensions: 27 (sq. ft.) (3X3 X 3 tarps)

Tolerance
1.89 + 10% = 2.08
1.89 – 10% = 1.72

Test 1 Material Weight: 38.5 (lbs.) Rate: 1.46 psf
(10,10 + 9.0 + 8.5) – 7.5

Test 2 Material Weight: 43.5 (lbs.) Rate: 1.61 psf
12 + 15 + 24 – 7.5

Test 3 Material Weight: 50.5 (lbs.) Rate: 1.87 psf
25 + 15 + 18 – 7.5

Test 4 Material Weight: 53.5 (lbs.) Rate: 1.98 psf
19 + 28 + 14 – 7.5

~~Test 5 Material Weight: _____ (lbs.) Rate: _____ psf~~

Print / Sign Name: Clay E. Combrink / Clay E. Combrink
Frontier Representative

Print / Sign Name: John A. McAfee / John A. McAfee
PWT / EPA Representative

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: Seppi 1

Date: 10-23-08 Time: 08:45

Field Application Rate: 41.03 tons/acre (1.89 psf) (psf = tons/acre*0.0459)

Total Tarp Dimensions: 27 (sq. ft.)

Tolerance

1.89 + 10% = 2.08

1.89 - 10% = 1.72

Test 1 Material Weight: 44.5 (lbs.) Rate: 1.65 psf

25 + 12 + 15 - 7.5

Test 2 Material Weight: _____ (lbs.) Rate: _____ psf

Test 3 Material Weight: _____ (lbs.) Rate: _____ psf

Test 4 Material Weight: _____ (lbs.) Rate: _____ psf

Test 5 Material Weight: _____ (lbs.) Rate: _____ psf

Print / Sign Name: Clay E. Combrink / Clay E. Combrink
Frontier Representative

Print / Sign Name: John A. DeAngelis / John A. DeAngelis
PWT / EPA Representative

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: Soggi 1 East (12-inch)

Date: 10-29-08 Time: 09:05

Field Application Rate: 41.13 tons/acre (1.89 psf) (psf = tons/acre*0.0459)

Total Tarp Dimensions: 27 (sq. ft.)

Tolerance
1.89 + 10% = 2.08
1.89 − 10% = 1.72

Test 1 Material Weight: 56.5 (lbs.) Rate: 2.09 psf
29.0 + 24.0 + 11.0 − 7.5

Test 2 Material Weight: 51.5 (lbs.) Rate: 1.98 psf
31.0 + 20.0 + 10.0 − 7.5

Test 3 Material Weight: 55.5 (lbs.) Rate: 2.05 psf
28.0 + 11.0 + 24.0 − 7.5

Test 4 Material Weight: _____ (lbs.) Rate: _____ psf

Test 5 Material Weight: _____ (lbs.) Rate: _____ psf

CWP 10-29-08

Print / Sign Name: Clay E. Combrink / Clay E. Combrink
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

FERTILIZER CALIBRATION

- Place a known weight (e.g., one 50-lb bag) into the spreader hopper.
- Follow the operations manual to set the equipment to meet the design field application rate (e.g., spreader opening, travel speed, RPMs, etc.)
- Make one pass dispersing the fertilizer until the contents of the spreader are emptied.
- Measure the area over which the fertilizer was applied
- Divide the weight of material applied by the total area it was applied to, convert to lbs/acre, and compare to the design field application rate.
- An acceptable test will be within 10% of the required rate.

Fertilizer Calibration Record

Date: 10-31-08 Time: 13:30

Irrigated Meadow / Fluvial Deposit Polygon ID: Segment 1 West (6-inch)

Fertilizer Type: 0 : 45 : 0 (N:P:K)

Design Field Application Rate: 153 lbs/acre (± 10% range = 139 to 168)

Calibration Data for one 50 pound bag of fertilizer: Target 60 X 240

Dimensions over which bag was spread: 60 feet x 245 feet

Total Calibration Area: 14700 (ft^2) * 1 acre / 43560 ft^2 = 0.337 acres

Calibrated Application Rate: 148 (lbs/acre)

Quality Control Data for Field Application Verification:

Area of Polygon: 6.559 (acres)

Total Weight to be Applied: 1003 (lbs)

# of 50 lb. Bags to be Applied: 20 bags

* 4 hole gate setting @ 153 lbs./ac.

Print / Sign Name: Clay E. Combrink / Clay E. Combrink
Frontier Representative

Print / Sign Name: [signature]
PWT / EPA Representative

FERTILIZER CALIBRATION

- Place a known weight (e.g., one 50-lb bag) into the spreader hopper.
- Follow the operations manual to set the equipment to meet the design field application rate (e.g., spreader opening, travel speed, RPMs, etc.)
- Make one pass dispersing the fertilizer until the contents of the spreader are emptied.
- Measure the area over which the fertilizer was applied
- Divide the weight of material applied by the total area it was applied to, convert to lbs/acre, and compare to the design field application rate.
- An acceptable test will be within 10% of the required rate.

Fertilizer Calibration Record

Date: 10-31-08 Time: 13:30

Irrigated Meadow / Fluvial Deposit Polygon ID: Seep: 1 East (12-inch)

Fertilizer Type: 0 : 45 : 0 (N:P:K)

~~Design Field Application Rate~~: 306 lbs/acre (± 10% range = ~~336 to~~ 278 to 336)

Calibration Data for one 50 pound bag of fertilizer:

Dimensions over which bag was spread: 60 feet x 245 feet

Total Calibration Area: 14700 (ft^2) * 1 acre / 43560 ft^2 = 0.337 acres

Calibrated Application Rate: 148 (lbs/acre)

X 2 passes for Seep: 1 East

= 296 lbs/acre

See Calibration Seep: 1 West 10-31-08 13:30

Quality Control Data for Field Application Verification:

Area of Polygon: 9.428 (acres)

Total Weight to be Applied: 1355 (lbs)

~~# of 50 lb. Bags to be Applied~~: 27 bags

Print / Sign Name: Clay E. Combrink / Clay E. Combrink
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

SUPER - CROP

50 LBS. (22.7 kg) NET WT.

fertilizer

super phosphate

GUARANTEED ANALYSIS	
NITROGEN (N)	0%
AVAIL. PHOSPHORIC ACID (P_2O_5)	45%
SOLUBLE POTASH (K_2O)	0%
SULFUR (Combined) (S)	%
IRON (Fe)	%

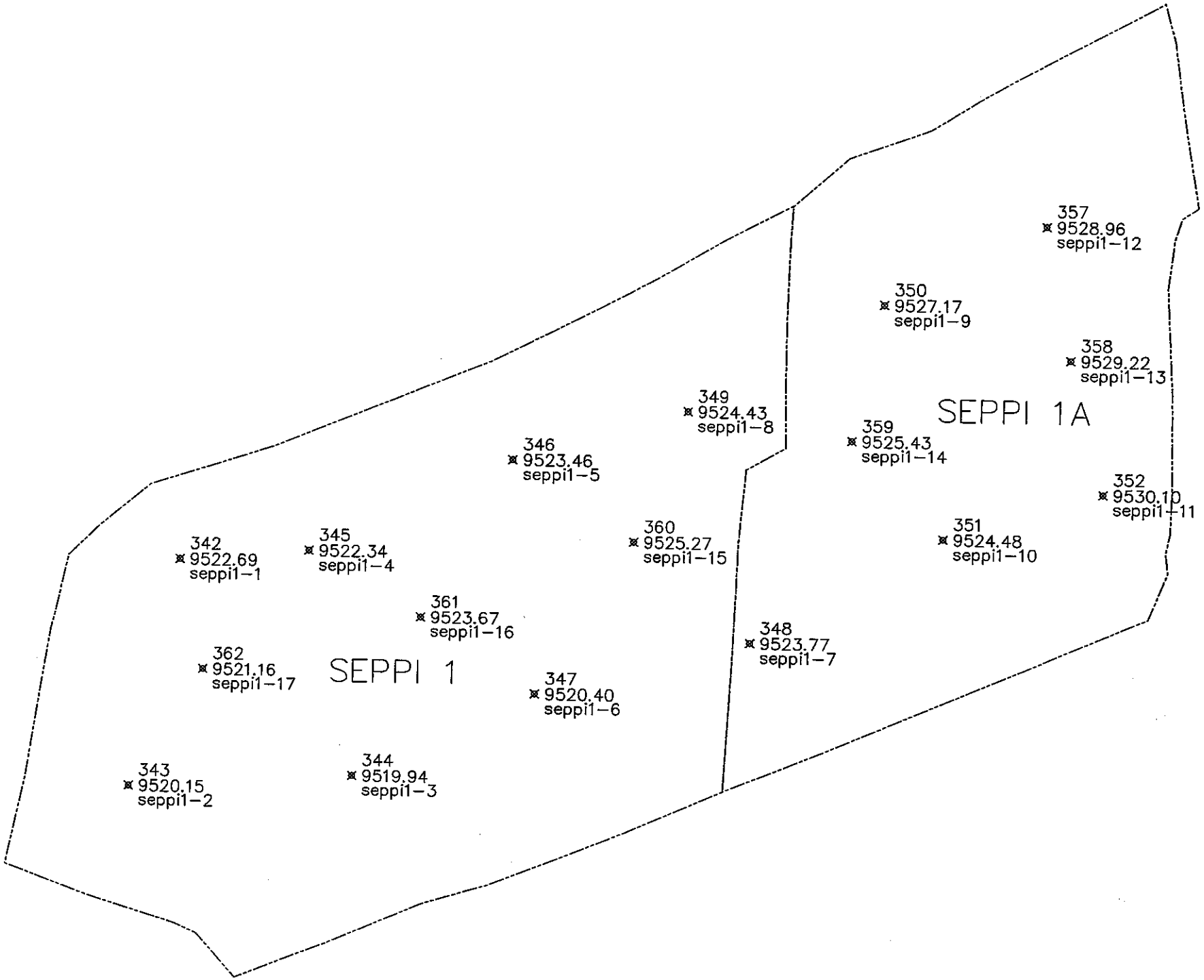
AMERICAN PRIDE CO-OP

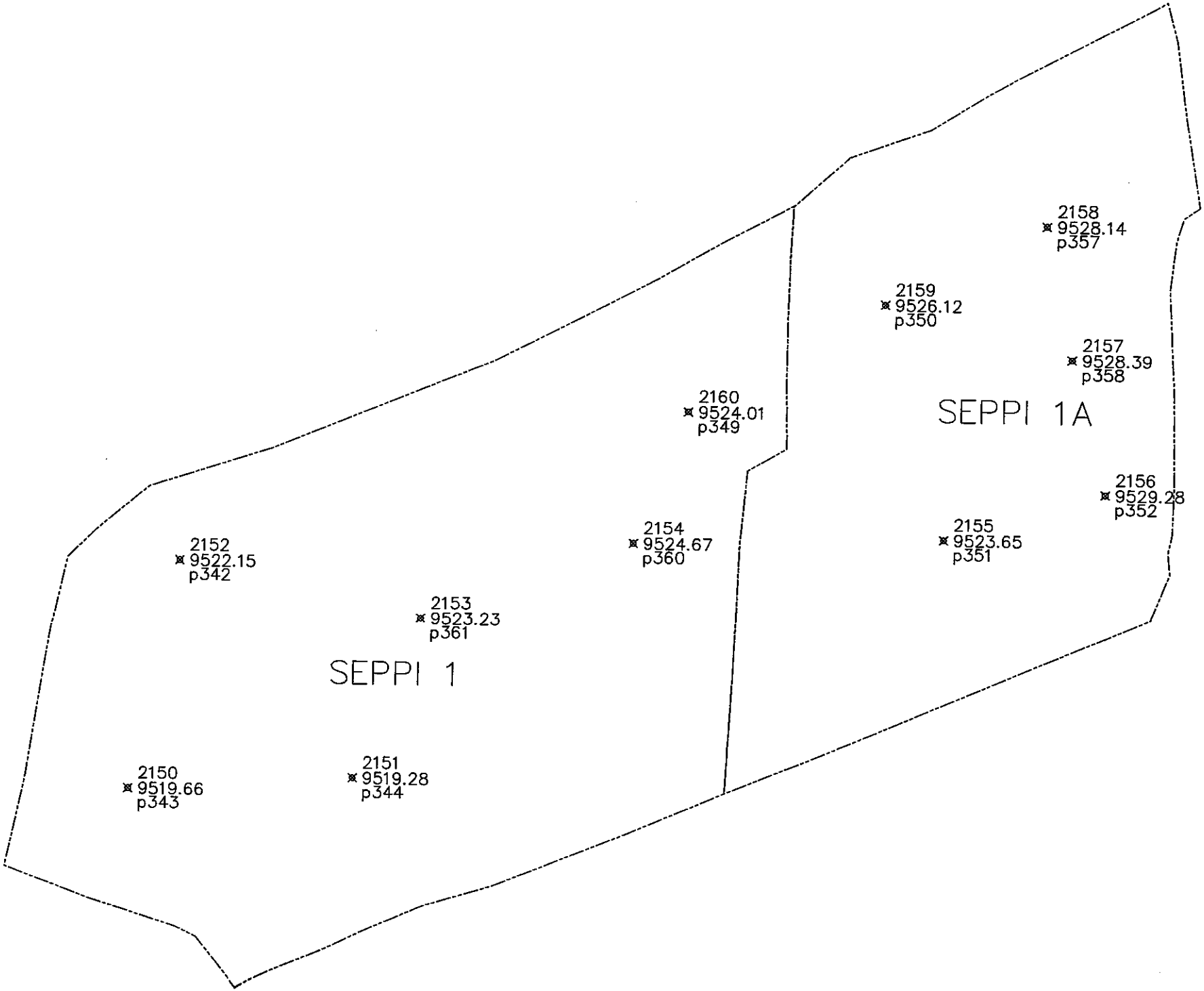
HENDERSON, COLORADO 80640

DIRECTIONS FOR USE:

GENERAL - Phosphate is one of the 3 major plant nutrients. Phosphate base fertilizers are used as a root and shoot stimulant for new lawn sites. Phosphates are generally highly water insoluble and therefore do not move very much through the soil. For best results, phosphates should be applied at the rate of 10-15 lbs. per 1000 square feet and mixed well in the top 6-8 inches of soil with a roto-tiller, disc, harrow, etc. This rate can be used for new lawn sites, in vegetable and flower gardens.

- High rates can be applied without injuring the plant.


357
9528.96
seppi1–12
350
9527.17
seppi1–9
358
9529.22
seppi1–13
349
9524.43
seppi1–8
SEPPI 1A
359
9525.43
seppi1–14
346
9523.46
seppi1–5
352
9530.10
seppi1–11
360
9525.27
seppi1–15
351
9524.48
seppi1–10
342
9522.69
seppi1–1
345
9522.34
seppi1–4
361
9523.67
seppi1–16
348
9523.77
seppi1–7
362
9521.16
seppi1–17
SEPPI 1
347
9520.40
seppi1–6
343
9520.15
seppi1–2
344
9519.94
seppi1–3


2158
9528.14
p357
2159
9526.12
p350
2157
9528.39
p358
2160
9524.01
p349
SEPPI 1A
2156
9529.28
p352
2154
9524.67
p360
2155
9523.65
p351
2152
9522.15
p342
2153
9523.23
p361
SEPPI 1
2150
9519.66
p343
2151
9519.28
p344

Pre-Existing Grade Shots					Bottom of Post-Tillage Shots					Delta Range
SEPPI 1										
342	1505133.751	2758645.095	9522.6905	seppi1-1	2152	1505134	2758646	9522.153	p342	0.5378
343	1504930.248	2758602.578	9520.1505	seppi1-2	2150	1504930	2758603	9519.659	p343	0.4912
344	1504942.725	2758803.332	9519.9396	seppi1-3	2151	1504943	2758803	9519.28	p344	0.6595
349	1505273.135	2759096.496	9524.4254	seppi1-8	2160	1505273	2759096	9524.008	p349	0.4172
360	1505155.691	2759049.618	9525.275	seppi1-15	2154	1505156	2759049	9524.667	p360	0.6085
361	1505085.61	2758862.143	9523.6724	seppi1-16	2153	1505086	2758862	9523.228	p361	0.4442
SEPPI 1A										
350	1505370.755	2759268.664	9527.1741	seppi1-9	2159	1505371	2759269	9526.119	p350	1.0552
351	1505162.838	2759323.969	9524.4756	seppi1-10	2155	1505163	2759324	9523.654	p351	0.8221
352	1505205.197	2759466.011	9530.0963	seppi1-11	2156	1505205	2759466	9529.283	p352	0.8133
357	1505442.311	2759411.57	9528.9558	seppi1-12	2158	1505442	2759411	9528.137	p357	0.8187
358	1505324.581	2759435.162	9529.2154	seppi1-13	2157	1505325	2759435	9528.394	p358	0.8215

Acceptable
Range
(0.4-0.7)

(0.8-1.2)

Pre-Existing Grade Shots					Bottom of Post-Tillage Shots					Delta Range
365	1504983.559	2759418.892	9526.5827	seppi3-1	2165	1504984	2759419	9525.739	p365	0.8441
366	1504835.15	2759450.804	9526.2054	seppi3-2	2164	1504835	2759451	9525.35	p366	0.855
368	1504728.638	2759545.931	9526.1407	seppi3-4	2163	1504729	2759546	9525.012	p368	1.1287
372	1504469.108	2759687.38	9521.0489	seppi3-8	2162	1504469	2759687	9520.229	p372	0.8195
376	1504181.697	2759445.066	9511.7901	seppi3-11	2161	1504181	2759445	9510.957	p376	0.8332

Acceptable
Range
(0.8-1.2)

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: Seep 1 (West - 6")

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	HCl Fizz?
343	7.3	7.0	7.5	None	Y
342	7.5	7.0	8.0	None	Y
344	7.3	7.0	7.5	None	Y
361	7.3	7.0	7.5	None	Y
360	7.7	7.5	8.0	None	Y
349	7.3	7.0	7.5	None	Y

Name/Signature: [signature] **Date:** 11-03-08

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record Fluvial Deposit/Irrigated Meadows Polygon: Seep 1 West (6 inch)

Location	Container Weight (g)	Soil Weight (g)	Total (Water + Soil) Water Weight (g)	pH
344	0.0	19.2	38.8	7.0
360	0.0	17.9	35.4	7.4
361	0.0	20.4	40.9	7.4
342	0.0	18.3	36.9	7.5
349	0.0	19.1	38.4	7.3
343	0.0	19.6	38.2	7.2

Name/Signature: [signature] **Date:** 10-03-08

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: Seepi 1 (East) 1A

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	HCl Fizz to Depth?
356	7.0	7.0	7.0	None	Yes
357	7.0	7.0	7.0	None	Yes
358	7.3	7.0	7.5	None	Yes
352	7.0	7.0	7.0	None	Yes
351	7.0	7.0	7.0	None	Yes

Name/Signature: [signature] **Date:** 11-04-08

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Calibrated scale
Screened soil

Paste pH Record

Fluvial Deposit/Irrigated Meadows Polygon: Sepp. 1A (East side) T-12

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
350	2.2	15.3	15.4	7.7
351	2.2	17.0	17.0	7.4
352	2.2	17.2	17.3	7.2
357	2.2	18.2	18.3	6.9
358	2.1	17.8	17.8	7.1

Name/Signature: Roger Merrick

Date: 11/4/08

Activity Tracking Form
Irrigated Meadows
Spread & Incorporate Lime and Fertilizer in 6" areas

Irrigated Meadow Polygon Name/ID: Seep. 1 (west)

Activity Start Date: 10-22-08

Activity End Date: 11-03-08

Activities Verified As Completed (indicate NA if appropriate)

Lime and Fertilizer Application

✓ EPA calculated field application rate based on material quality, rock content & depth

Lime rate = 41.4 tons/acre

Fertilizer rate = 153 pounds/acres

✓ EPA and/or PWT was present for lime and fertilizer spreader calibrations.

✓ Lime was spread across the remediation area at the calculated field lime application rate using a calibrated spreader (unadjusted application rate is 22 tons lime/ acre) in 6 inch remediation areas.

✓ Fertilizer applied had a nitrogen:phosphorous:potassium (N:P:K) ratio of 0:45:0. **(Attach copy of fertilizer certification)**

✓ Fertilizer was spread across the remediation area at the specified field fertilizer application rate using a calibrated spreader. Unadjusted rate is 70 pounds of P2O5 per 1,000 tons of soil or 153 lbs of 0:45:0 fertilizer/acre in 6" till areas

✓ Lime and fertilizer were not applied to any areas with standing water, that was cemented, consolidated, caked, or frozen.

✓ Lime and fertilizer were not applied just before or during significant rain events.

✓ Lime and fertilizer were not spread under windy conditions where wind is sufficient to blow lime and fertilizer off the ground surface before they can be tilled.

Tilling of Lime and Fertilizer

✓ Lime and fertilizer were incorporated into the soil by tilling as soon as possible after spreading, and always by the end of the same day that the lime or fertilizer was spread.

✓ Lime and fertilizer were tilled into the soil using a minimum of 3 passes unless the Subcontractor demonstrated that the proposed equipment was able to meet the mixing standards in fewer passes. Successive passes crossed the previous pass at a 90 degree angle.

Activity Tracking Form
Irrigated Meadows
Spread & Incorporate Lime and Fertilizer in 6" areas

Irrigated Meadow Polygon Name/ID: Seep. 1 (west)

✓ Lime and fertilizer were spread and thoroughly incorporated to the full design depth with an acceptable remediation depth tolerance for 6-inch till areas of 5 inches to 8 inches. To verify this, test pits were excavated and locations surveyed at a rate of: **(check one)**

_____ 4 / acre (at beginning of project)

✓ 1 / acre (after effectiveness proven & with EPA approval)

_____ 1 / 5 acres (with EPA approval)

✓ PWT and/or EPA were present during all Subcontractor remediation depth surveys and conducted visual and field pH testing to evaluate effectiveness of mixing **(Attach pH test results)**

Quantity of Lime Applied: 271 tons

Quantity of Fertilizer Applied: 1000 lbs. / 20 bags

Quantity of Work Estimated in Proposal: _____

Quantity of Work Performed: 6.559 acres

Survey Data/Date: 09-23-08

Note: Attach copies of daily calibration records, fertilizer certs, pH test results and survey data

Signature of Contractor _____ Date 11-11-08

Signature of Subcontractor _____ Date 11-11-08

Activity Tracking Form
Irrigated Meadows
Spread & Incorporate Lime and Fertilizer in 12" areas

Irrigated Meadow Polygon Name/ID: Seppi 2A (East)

Activity Start Date: 10-29-08

Activity End Date: 11-03-08

Activities Verified As Completed (indicate NA if appropriate)

Lime and Fertilizer Application

✓ EPA calculated field application rate based on material quality, rock content & depth

Lime rate = 82.7 tons/acre

Fertilizer rate = 306 pounds/acres

✓ EPA and/or PWT was present for lime and fertilizer spreader calibrations.

✓ Lime was spread across the remediation area at the calculated field lime application rate using a calibrated spreader (unadjusted application rate of 44 tons lime / acre) in 12 inch remediation areas.

✓ Fertilizer applied had a nitrogen:phosphorous:potassium (N:P:K) ratio of 0:45:0. **(Attach copy of fertilizer certification)**

✓ Fertilizer was spread across the remediation area at the specified field fertilizer application rate using a calibrated spreader. Unadjusted rate is 70 pounds of P2O5 per 1,000 tons of soil or 306 lbs of 0:45:0 fertilizer / acre in 12" till areas.

✓ Lime and fertilizer were not applied to any areas with standing water, that was cemented, consolidated, caked, or frozen.

✓ Lime and fertilizer were not applied just before or during significant rain events.

✓ Lime and fertilizer were not spread under windy conditions where wind is sufficient to blow lime and fertilizer off the ground surface before they can be tilled.

Tilling of Lime and Fertilizer

✓ Lime and fertilizer were incorporated into the soil by tilling as soon as possible after spreading, and always by the end of the same day that the lime or fertilizer was spread.

✓ Lime and fertilizer were tilled into the soil using a minimum of 3 passes unless the Subcontractor demonstrated that the proposed equipment was able to meet the mixing standards in fewer passes. Successive passes crossed the previous pass at a 90 degree angle.

Activity Tracking Form
Irrigated Meadows
Spread & Incorporate Lime and Fertilizer in 12" areas

Irrigated Meadow Polygon Name/ID: Seep. 1A (East)

✓ Lime and fertilizer were spread and thoroughly incorporated to the full design depth with an acceptable remediation depth tolerance for 12-inch till areas of 10 inches to 14 inches. To verify this, test pits were excavated and locations surveyed at a rate of: **(check one)**

_____ 4 / acre (at beginning of project)

✓ 1 / acre (after effectiveness proven & with EPA approval)

_____ 1 / 5 acres (with EPA approval)

✓ PWT and/or EPA were present during all Subcontractor remediation depth surveys and conducted visual and field pH testing to evaluate effectiveness of mixing **(Attach pH test results)**

Quantity of Lime Applied: 366 tons

Quantity of Fertilizer Applied: 1354 lbs. / 27 bags

Quantity of Work Estimated in Proposal: ~~4.428 ac~~

Quantity of Work Performed: 4.428 acres

Survey Data/Date: 09-23-08

Note: Attach copies of daily calibration records, fertilizer certs, pH test results and survey data

Signature of Contractor — Date: 11-11-08

Signature of Subcontractor — Date: 11-11-08

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in yd^3/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.
- Repeat.

938 Loader 1 Bucket = 3.25 yd^3

Compost Spreader Calibration Record

Review SMS

6.5 yd^3

12'×220 = 2640 ft^2 ; 12×240 = 2880 ft^2

Avg 1020

1 pass

Date: 11-05-08 Time: 10:00

Irrigated Meadow / Fluvial Deposit Polygon ID: Seep 1 West (6")

Design Application Rate: 100.2 (yd^3/acre)

Tolerance 100.2 - 10% = 91.1 → 0.071 acres → 3093 ft^2

100.2 + 10% = 110.2 → 0057 acres → 2483 ft^2

207'×12' to 258'×12'

Calibration Data for one load of compost:

	Test Run 1	Test Run 2	Average
Compost Quantity (yd^3)	6.50	6.50	
Compost was spread over (ft^2) 17'×170'	= 2890	17'×180' = 3060	2975
Calibration area (acres)			0.068
Calibrated Application Rate (yd^3/acre)			95.6

Quality Control Data for Field Application Verification:

(A) Design Application Rate: 100.2 (yd^3/acre)

(B) Average Calibrated Application Rate: 95.6 (yd^3/acre)

Passes to be Applied: ≈ 1 passes (= A/B)

Print / Sign Name: Clay E. Combrink / Clay E. Combrink

Frontier Representative

Print / Sign Name: John G. Hunter

PWT / EPA Representative

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in yd^3/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.
- Repeat.

Compost Spreader Calibration Record

Date: 11-06-08 Time: 14:55

Irrigated Meadow / Fluvial Deposit Polygon ID: Seep. 1 (west)

Design Application Rate: 100.2 (yd^3/acre) 100.2 − 10% = 91.1 → 0.071 acres or 3093 ft^2
100.2 + 10% = 110.2 → 0.059 acres or 2483 ft^2

Calibration Data for one load of compost:

	Test Run 1	Test Run 2	Average
Compost Quantity (yd^3)	6.50	6.50	
Compost was spread over (ft^2) 17'x150'	2550	17x165 2805	2678
Calibration area (acres)			0.061
Calibrated Application Rate (yd^3/acre)			106.6

Quality Control Data for Field Application Verification:

(A) Design Application Rate: 100.2 (yd^3/acre)

(B) Average Calibrated Application Rate: 106.6 (yd^3/acre)

Passes to be Applied: ~ 1 passes (= A/B)

Print / Sign Name: Clay E. Combrink / Clay E. Combrink
Frontier Representative

Print / Sign Name: Ruth G. Ruth
PWT / EPA Representative

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in yd^3/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.
- Repeat.

Compost Spreader Calibration Record

Tolerance: +10% = 367 yd^3/acre
-10% = 304 yd^3/acre

Date: 11-07-08 Time: 08:15

Irrigated Meadow / Fluvial Deposit Polygon ID: Seep: 1A (EAST)

Design Application Rate: 334 (yd^3/acre)

Calibration Data for one load of compost:

#1	#2
6.50	6.50
17'x75 (1275)	17x60'(1020)
0.029	0.023
224 yd^3/acre	283 yd^3/acre

Adjusted push Run Twice

	Test Run 1	Test Run 2	Average
Compost Quantity (yd^3)	6.50	6.50	
Compost was spread over (ft^2)	17 x 55 = 935	17'x50' = 850	
Calibration area (acres)	0.021	0.019	
Calibrated Application Rate (yd^3/acre)	309	342	325

Quality Control Data for Field Application Verification:

(A) Design Application Rate: 334 (yd^3/acre)

(B) Average Calibrated Application Rate: 325 (yd^3/acre)

Passes to be Applied: ~ 1 passes (= A/B)

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

Activity Tracking Form
Irrigated Meadows
Spread & Incorporate Organic Material in 6" areas

Irrigated Meadow Polygon Name/ID: Seep 1 (west)

Activity Start Date: 11-05-08

Activity End Date: 11-07-08

Activities Verified As Completed (indicate NA if appropriate)

✓ Amendments have been applied at a field application rate calculated by EPA and as directed by PWT. Calculated application rate was 105 403 tons/acre

✓ Organic amendment was spread evenly across the remediation area using a calibrated agricultural manure spreader or other accepted equipment. **(Attach calibration records)**

✓ Organic amendment was applied uniformly. Rutting and compaction of the surface was minimized during application of organic amendment.

✓ Organic material was not applied to any area with standing water or areas that were frozen. Organic material was not applied before or during any significant rain events.

✓ Organic material was not spread under windy conditions where wind was sufficient to blow organic material off the ground surface before it can be tilled.

✓ Organic matter was tilled to the full remediation depth using a minimum of 2 passes unless the Subcontractor demonstrated that the proposed equipment has met the mixing standards in fewer passes and received approval of the EPA. The second tillage pass crosses the initial pass at a 90 degree angle.

✓ Organic material was tilled to a tolerance for 6-inch till areas of 5 inches to 8 inches. To verify this, test pits were surveyed at a rate of: **(check one)**
PWT verified thickness of organic material by hand-excavating test pits

_____ 4 / acre (at beginning of project)

_____ 1 / acre (after effectiveness proven & with EPA approval)

_____ 1 / 5 acres (with EPA approval)

✓ PWT and/or EPA was present during all Subcontractor surveys to verify remediation depth. (Above)

✓ PWT and/or EPA conducted field testing, monitored and verified remediation depth, and has evaluated the effectiveness of mixing. Areas with large unremediated clumps of soil or large areas of unmixed soil amendments, if identified, were re-tilled.

Quantity of Organic Material Applied: 6555 CY

Quantity of Work Estimated in Proposal: 6559 CY

Quantity of Work Performed: 6.559

Survey Data/Date: 09-23-08

Activity Tracking Form
Irrigated Meadows
Spread & Incorporate Organic Material in 6" areas

Irrigated Meadow Polygon Name/ID: Seep 1 (west)

Note: Attach copies of the daily calibration records and survey data to this form

Signature of Contractor _____ Date 11-11-08

Signature of Subcontractor _____ Date 11-11-08

Note: Former Compost Stockpile Area Re-Graded, Re-Tilled October 2009

Activity Tracking Form
Irrigated Meadows
Spread & Incorporate Organic Material in 12" areas

Irrigated Meadow Polygon Name/ID: Seppi 1A (East)

Activity Start Date: 11-07-08

Activity End Date: 11-10-08

Activities Verified As Completed (indicate NA if appropriate)

✓ Amendments have been applied at a field application rate calculated by EPA and as directed by the PWT. Calculated application rate was 334 yds tons/acre.

✓ Organic amendment has been spread evenly across the remediation area using a calibrated agricultural manure spreader or other accepted equipment. **(Attach calibration records)**

✓ Organic amendment has been applied uniformly. Rutting and compaction of the surface was minimized during application of organic amendment.

✓ Organic material was not applied to any area with standing water or areas that were frozen. Organic material was not applied before or during any significant rain events.

✓ Organic material was not spread under windy conditions where wind was sufficient to blow organic material off the ground surface before it can be tilled.

✓ Organic matter has been tilled to the full remediation depth using a minimum of 2 passes unless the Subcontractor demonstrated that the proposed equipment has met the mixing standards in fewer passes and received approval of the EPA. The second tillage pass crosses the initial pass at a 90 degree angle.

✓ Organic material has been tilled to a tolerance for 12-inch till areas of 10 inches to 14 inches. To verify this, test pits were surveyed at a rate of: **(check one)**
PWT hand-excavated test pits to verify compost thickness

_____ 4 / acre (at beginning of project)

_____ 1 / acre (after effectiveness proven & with EPA approval)

_____ 1 / 5 acres (with EPA approval)

NA _____ PWT and/or EPA was present during all Subcontractor surveys to verify remediation depth. (Above)

✓ Contractor \ EPA has conducted field testing, monitored and verified remediation depth, and has evaluated the effectiveness of mixing. Areas with large unremediated clumps of soil or large areas of unmixed soil amendments have been re-tilled.

Quantity of Organic Material Applied: 1478 CY

Quantity of Work Estimated in Proposal: _____

Quantity of Work Performed: 4.928 acres

Survey Data/Date: 09-23-08

Activity Tracking Form
Irrigated Meadows
Spread & Incorporate Organic Material in 12" areas

Irrigated Meadow Polygon Name/ID: Seep: 1A / (East)

Note: Attach copies of the daily calibration records and survey data to this form

Signature of Contractor — Date: 11-11-08

Signature of Subcontractor — Date: 11-11-08

Note:
Former Co-post Stockpile
Areas Re-graded,
Re-Tilled October 2008

Seeder Calibration Form

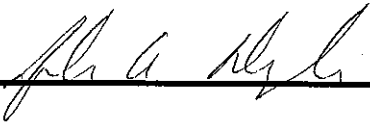
Calibration Form Instructions

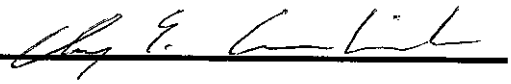
1) Enter the Polygon ID, Polygon acreage, Calibration Date, Target seed rate(s), %PLS in each seed mix, and % seed in each each mix
2) Perform seeder calibration per the manufacturers' instructions 3 times and enter the total weight of bulk seed mix in grams collected for each seed box
3) For each individual calibration run, verify that the achieved rate is within ±20 % of the 1/2 Target Rate
4) After the 3rd calibration run, verify that the 3 Run Average rate is within ±10% of the 1/2 Target Rate

NOTE: The BLUE text shows the "calculated values" based on the entered data

Polygon ID Seppi 1-1A **Acres:** 10.987 **Date:** 11/18/08

	Seed Mix 1		Seed Mix 2	
Target Rate	8.00	lbs PLS / acre	1.60	lbs PLS / acre
% PLS in seed mix	86%		87%	
Dilution Factor	100%	(% seed)	100%	(% seed)
Target Application Rate	9.30	bulk pounds / acre	1.84	bulk pounds / acre
	102.2	Total bulk pounds	20.2	total bulk pounds
1/2 Target Rate (2 passes)	4.65	bulk pounds / acre	0.92	bulk pounds / acre
	51.1	1/2 of total bulk pounds	10.1	1/2 of total bulk pounds
Test Run 1	9.20	total grams in 3 bags	2.00	total grams in 3 bags
	4.60	bulk lbs/acre	1.00	bulk lbs/acre
Test Run 2	9.20	total grams in 3 bags	2.00	total grams in 3 bags
	4.60	bulk lbs/acre	1.00	bulk lbs/acre
Test Run 3	10.30	total grams in 3 bags	1.60	total grams in 3 bags
	5.15	bulk lbs/acre	0.80	bulk lbs/acre
3 Run Average	9.57	total grams in 3 bags	1.87	total grams in 3 bags
	4.78	bulk lbs/acre	0.93	bulk lbs/acre
For QC Checks:				
+20% of 1/2 Target Rate	5.58	bulk pounds / acre	1.10	bulk pounds / acre
-20% of 1/2 Target Rate	3.72	bulk pounds / acre	0.74	bulk pounds / acre
+10% of 1/2 Target Rate	5.12	lbs seed mix / acre	1.01	lbs seed mix / acre
-10% of 1/2 Target Rate	4.19	lbs seed mix / acre	0.83	lbs seed mix / acre

PWT Signature: 

Frontier Signature: 

Kind: SMALL SEED MIX
Lot: 2139111

Kind & Variety:	Pure%	Germ:	Origin:
CLIMAX TIMOTHY	61.57	90	CN
CANADA BLUEGRASS, REUBENS	30.79	90	WA
REDTOP	5.72	97	WA

Seppi-1, 1a Sm. 2008

Crop: .21% Inert: 1.25% Weed: .46% Net Wt: 22# (19.2 PLS#) 12 ACRES

Noxious Weed: None Found Test Date: 6/08

REMARKS: FRONTIER ENVIRONMENTAL
JOB: SEPPI 1 SPECIAL
ARKANSAS VALLEY SEED, 4333 HWY 66, LONGMONT CO 80504

Kind: LARGE SEED MIX
Lot: 2139129

Kind & Variety:	Pure%	Germ%	Origin:
WESTERN W/G, ROSANNA	71.77	90	WA
SHEEP FESCUE, COVAR	11.58	93	WA
ALSIKE CLOVER	11.57	93	MT

2008 Seppi-1, 1a Lg.

Crop: .24% Inert: 4.74% Weed: .11% Net Wt: 37.33# (32 PLS#) 4 ACRES

Noxious Weed: None Found Test Date: 6/08

REMARKS: FRONTIER ENVIRONMENTAL
JOB: SEPPI 1 SPECIAL
ARKANSAS VALLEY SEED, 4333 HWY 66, LONGMONT CO 80504

T@
-T@ Ark Valley Seed

Supplying QUALITY Seed
With INTEGRITY Since 1945

PRELIMINARY INVOICE

Limitation of Warranty and Finance Charge Agreement are part of the terms and conditions of this sale. See back of this invoice.

www.avseeds.com
rabbitears@seedsolutions.com

Page Number	-	1
Date	-	11/14/08
Customer	-	446479
Brn/Plt	-	DEN
Related PO	-	
Order Nbr	-	2435225 SO
Invoice	-	

Sold To: FRONTIER ENVIRONMENTAL
5350 VIVAIN ST UNIT B
ARVADA CO 80002

Ship To: FRONTIER ENVIRONMENTAL
5350 VIVAIN ST UNIT B
ARVADA CO 80002

Tax ID:
Tax Cert:

Request Date	Customer P.O.	F.O.B.	Ship Via
11/14/08	PROJECT 080602		DAN 303-234-9350

Inst :

Description	Lot Number	Quantity Shipped	UM	Price	Extended Price	Tax
LARGE SEED MIX Native Grass Mix-Bulk 6 PLS#/ACRE @ $35.00/ACRE X 12 ACRES JOB: SEPPI 1 SPECIAL	2139129	112.0000	LB	3.7500	420.00	Y
SMALL SEED MIX Native Grass Mix-Bulk 1.6 PLS#/ACRE @ $5.00/ACRE X 12 ACRES JOB: SEPPI 1 SPECIAL	2139111	22.0000	LB	2.7273	60.00	Y

Sales Tax

Total Order

Terms Net 30 Days

Net Due Date 12/14/08

Tax Rt 2.900

460.00

Arkansas Valley Seed
4333 Hwy. 66
Longmont, CO 80504
(877) 907-3337
(970) 535-4522 Fax

Arkansas Valley Seed
4625 Colorado Blvd.
Denver, CO 80216
(877) 957-3337
(303) 320-7516 Fax

Arkansas Valley Seed
12th & Santa Fe Tracks
Rocky Ford, CO 81067
(719) 254-7469
(719) 254-4115 Fax

Colorado Seed
195 N. Washington
Monte Vista, CO 81144
(719) 852-3505
(719) 852-4942 Fax

Wilbers Seed
809 N. Broadway
Miller, SD 57362
(800) 952-2233
(605) 853-2639 Fax

COLORADO DEPARTMENT OF AGRICULTURE
DIVISION OF PLANT INDUSTRY
700 Kipling Street, Suite 4000
Lakewood, Colorado 80215-8000
(303) 239-4149

TRANSIT CERTIFICATE
WEED FREE FORAGE CROP CERTIFICATION ACT 35-27.5

TO WHO IT MAY CONCERN:

The forage crop, to which this Transit Certificate relates, has been officially certified according to the Colorado Weed Free Forage Crop Certification Act 35-27.5. Pursuant to those standards, the information below has been included in this Transit Certificate concerning said certification. The Certificate of Inspection relating to said forage crop is on file at the:

Colorado Department of Agriculture
Division of Plant Industry
700 Kipling Street, Suite 4000
Lakewood, Colorado 80215-8000
Telephone: (303) 239-4149
FAX: (303) 239-4177

Sec: 1, 1A
3, 6

PLEASE PRINT IN INK

Murray Farms — J.B. Murray
Grower's Name — Grower's Signature

Adams
County of Origin

Identify Forage Crop Type: Wheat Straw

634 — 10/28/08
Bales Sold — Date of Sale

IDENTIFICATION
INSPECTOR'S INITIALS DHF
GROWER'S INITIALS JBM.
FIELD NUMBER F-8
DATE 7/05/07

(Identification found in upper right corner of Certificate of Inspection: Form DPI-WF-05)

FORAGE CERTIFIED ACCORDING TO THE REGIONAL WEED FREE FORAGE STANDARDS

NOTE: Forage certified under the Colorado Weed Free Forage Crop Certification Act shall be baled with at least one strand of **blue and orange** colored twine or **galvanized** wire.

GROWER MUST ISSUE WHITE COPY TO PURCHASER; MAIL PINK COPY TO DEPARTMENT OF AGRICULTURE; KEEP GREEN COPY FOR FILE FOR EACH SALE.

Activity Tracking Form
Irrigated Meadows
Mulch Application

Irrigated Meadow Polygon Name/ID: Seep. 1-1A

Activity Start Date: 11-17-08

Activity End Date: 11-17-08

Activities Verified As Completed (indicate NA if appropriate)

✓ Mulch certified as weed free **(attached Certification documentation)**

✓ Mulch was stored properly and not degraded by water or other contaminants before use.

✓ Mulch has been applied immediately after seeding unless the nature of the mulch required that it must be incorporated into the soil; in that case the mulch has been applied before seeding. Applied prior to drill seeding as per S. Jennings DMR.

NA If wood mulch was applied, the application rate was 10 to 12 tons per acre, or 50 to 60 cubic yards per acre using a blower, flail spreader, or other means that provided even distribution across the remediated area. Depending on the nature of the wood mulch, it may have been left as a surface application or may have been crimped or lightly disked into the top 2 inches to prevent dispersion **(Circle method used)**.

✓ If straw or native hay mulch was applied, the application rate was 2,000 pounds per acre using equipment specifically designed for application of mulch at a uniform rate to produce a mat covering the seed. Straw or native hay mulch was crimped using crimping equipment with round, notched blades approximately ¼-inch thick by 18 inches in diameter spaced 8 inches apart. The crimper was equipped with disc scrapers and had sufficient weight to force the vegetative mulch to a minimum depth of 3-inches into the soil. Mulch was crimped within 24 hours of application.

✓ Stormwater, sediment, and erosion control measures remained in place throughout implementation of the remedy and has been maintained in good condition during and after mulch placement to prevent surface water run-on and run-off that may damage the remediated area.

Quantity of Mulch Applied: 22,000 lbs. / 440 bales

Quantity of Work Estimated in Proposal:

Quantity of Work Performed: 10.98 acres

Survey Data/Date: 09-23-08

Note: Attach copies of the daily calibration records, weed free certification and survey data to this form

Signature of Contractor — Date: 11-26-08

Signature of Subcontractor — Date: 11-26-08

Activity Tracking Form
Irrigated Meadows
Seedbed Preparation and Seeding

Irrigated Meadow Polygon Name/ID: Seepi 1-1A

Activity Start Date: 11-19-08

Activity End Date: 11-19-08

Activities Verified As Completed (indicate NA if appropriate)

✓ EPA and/or PWT has collected and ~~analyzed~~ soil samples to verify performance standards have been met. Frequency is 1 per 5 acres.

Preparation of the Seedbed

✓ Seedbed has been smoothed to the extent practical for effective seeding.

✓ Removed or disaggregated clods greater than 4 inches in diameter from the top 6 inches of soil.

✓ Removed rocks and cobbles greater than 4 inches in diameter from the surface.

✓ The surface has been compacted by equipment that produces a uniform rough textured surface. The seedbed for the Irrigated Meadows is firm allowing the heel of a boot to penetrate approximately 0.5 to 1 inch.

✓ Plowed or disked areas compacted by vehicle traffic to reduce compaction.

✓ There were no erosional features present prior to seeding.

✓ Loosened areas compacted by weather or colonized by weeds resulting from time gaps between remediation and seeding, as necessary.

Seed Application

NA Lab samples show acid-base account and TOC test results in acceptable ranges before seeding. Samples collected, results not available prior to seeding date

✓ Seeding done outside the month of October was approved by EPA.

✓ The seedbed was evaluated by EPA and/or PWT immediately prior to seeding to ensure seedbed requirements were achieved and that the seedbed has not degraded since amendments were applied and tilled.

✓ Used the appropriate seed mixes for the Smith, (Seppi) 1-1A Special and BLM Irrigated Meadow sites identified in Tables IM-2, IM-3, and IM-4. Deviations approved by EPA.

✓ Applied seed using calibrated equipment at rates shown in Tables IM-2, IM-3, or IM-4. Rates are in lbs PLS / acre. The seed has been applied within 10 percent (by weight) of the rate specified.

Seed mix used: Attached Application Rate: Attached (# PLS / acre)

✓ Seed was stored properly and not degraded by water or other contaminants before use.

Activity Tracking Form
Irrigated Meadows
Seedbed Preparation and Seeding

Irrigated Meadow Polygon Name/ID: Seep 1-1A

✓ Seed was not applied to any area with standing water or areas that are frozen. Seed was not applied before or during any significant rain events or during wet conditions when seed equipment could cause ruts in the ground or prevent good seed placement.

✓ Seed was not spread under windy conditions where wind was sufficient to blow seed off the ground surface.

✓ Wherever possible, areas were drill seeded. Seed was applied to the appropriate depth of 0.25 to 0.5 inches. Drill seeding was applied in 2 applications, each at half the seeding rate specified in Tables IM-2, IM-3, and IM-4. The direction of the second application was perpendicular to the first application. Seed mix may have been diluted with rice hulls or other Contractor-accepted material, if necessary to achieve the lower seeding rate.

✓ For each acre seeded, the hopper and applicator tubes were checked for clogged tubes and to verify even application rates. Checked periodically during application; Used full amount targeted

Quantity of Seed Applied: 102 lbs. Lg. / 20 lbs. Sm.

Quantity of Work Estimated in Proposal:

Quantity of Work Performed: 10.98 acres

Survey Data/Date: 09-23-08

Note: Attach copies of the daily calibration records, seed certification forms, and survey data to this form. Also, note sample numbers for acid-base account and TOC lab tests.

Signature of Contractor — Date: 11-26-08

Signature of Subcontractor — Date: 11-26-08

Note: Drill Seeded the former compost Stockpile Areas in October 2009

Kind: SEPPI SPECIAL MIX 2009 Re Seed
Lot: 2148013

Large Seed

Kind & Variety:	Pure%	Germ%	Origin:
WESTERN W/G, ROSANNA	49.93	90	SD
SHEEP FESCUE, COVAR	18.08	83	WA
ALSIKE CLOVER	15.27	98	CAN
CLIMAX TIMOTHY	7.90	95	CAN
CANADA BLUEGRASS, REUEBENS	3.25	92	WA
RED TOP	1.54	97	WA

Crop: .06% Inert: 3.65% Weed: .38% Net Wt: 16.75# (14.50 PLS) 2.5 ACRES

Noxious Weed: None Found Test Date: 5/09

Remarks: FRONTIER ENVIRONMENTAL
JOB: EPA 04-11 LEADVILLE

LARGE SEED - 14#

Winfield Solutions PO Box 64589 St Paul, MN 55164

Kind: SEPPI SPECIAL MIX 2009 Reseed
Lot: 2148013

Small Seed

Kind & Variety:	Pure%	Germ%	Origin:
WESTERN W/G, ROSANNA	49.93	90	SD
SHEEP FESCUE, COVAR	18.08	83	WA
ALSIKE CLOVER	15.27	98	CAN
CLIMAX TIMOTHY	7.90	95	CAN
CANADA BLUEGRASS, REUEBENS	3.25	92	WA
RED TOP	1.54	97	WA

Crop: .06% Inert: 3.65% Weed: .38% Net Wt: 16.75# (14.50 PLS) 2.5 ACRES

Noxious Weed: None Found Test Date: 5/09

Remarks: FRONTIER ENVIRONMENTAL
JOB: EPA 04-11 LEADVILLE

SMALL SEED - 2.75#

Winfield Solutions PO Box 64589 St Paul, MN 55164

Seeder Calibration Form

Calibration Form Instructions

1) Enter the Polygon ID, Polygon acreage, Calibration Date, Target seed rate(s), %PLS in each seed mix, and % seed in each each mix
2) Perform seeder calibration per the manufacturers' instructions 3 times and enter the total weight of bulk seed mix in grams collected for each seed box
3) For each individual calibration run, verify that the achieved rate is within ±20 % of the 1/2 Target Rate
4) After the 3rd calibration run, verify that the 3 Run Average rate is within ±10% of the 1/2 Target Rate

NOTE: The BLUE text shows the "calculated values" based on the entered data

Polygon ID Seppi 1 (reseed) **Acres:** 2.50 – Former Shelyites **Date:** 10/15/09

	Seed Mix 1		Seed Mix 2	
Target Rate	5.00	lbs PLS / acre	1.00	lbs PLS / acre
% PLS in seed mix	87%		87%	
Dilution Factor	100%	(% seed)	100%	(% seed)
Target Application Rate	5.78	bulk pounds / acre	1.16	bulk pounds / acre
	14.4	Total bulk pounds	2.9	total bulk pounds
1/2 Target Rate (2 passes)	2.89	bulk pounds / acre	0.58	bulk pounds / acre
	7.2	1/2 of total bulk pounds	1.4	1/2 of total bulk pounds
Test Run 1	5.10	total grams in 3 bags	1.00	total grams in 3 bags
	2.55	bulk lbs/acre	0.50	bulk lbs/acre
Test Run 2	6.30	total grams in 3 bags	1.00	total grams in 3 bags
	3.15	bulk lbs/acre	0.50	bulk lbs/acre
Test Run 3	5.20	total grams in 3 bags	1.30	total grams in 3 bags
	2.60	bulk lbs/acre	0.65	bulk lbs/acre
3 Run Average	5.53	total grams in 3 bags	1.10	total grams in 3 bags
	2.77	bulk lbs/acre	0.55	bulk lbs/acre
For QC Checks:				
+20% of 1/2 Target Rate	3.47	bulk pounds / acre	0.69	bulk pounds / acre
-20% of 1/2 Target Rate	2.31	bulk pounds / acre	0.46	bulk pounds / acre
+10% of 1/2 Target Rate	3.18	lbs seed mix / acre	0.64	lbs seed mix / acre
-10% of 1/2 Target Rate	2.60	lbs seed mix / acre	0.52	lbs seed mix / acre

PWT Signature: Roger A. Wright

Frontier Signature:

Activity Tracking Form
Irrigated Meadows
Clear, Grub, Grade, Pre-Till

Irrigated Meadow Polygon Name/ID: Seppi 3

Activity Start Date: 10-30-08

Activity End Date: 10-30-08

Activities Verified As Completed (indicate NA if appropriate)

✓ Completed pre-remediation site walk and final delineation of remediation boundaries.

✓ Survey points for post-treatment depth verification were identified and elevations documented by survey crew before any ground disturbance. Rates will vary from 4 per acre down to 1 per 5 acres depending on Subcontractor's demonstration of compliance with QC requirements for tillage depth. **(Attach or reference survey data)**

✓ EPA collected pre-remediation full remediation depth composite samples at a rate of ~ 1 per 5 acres and the sample locations were surveyed

✓ Removed and disposed of existing trash or debris in accordance with Specification Section 01 74 16.

NA Cleared dead or decadent large woody vegetation if present and placed outside the remediation area in locations identified by the Contractor. Remaining grass and small woody vegetation tilled in place.

NA Locations, extent and width of secondary irrigation ditches to be removed have been surveyed.

NA Graded the remediation areas as necessary for effective remediation.

✓ Pre-tilled the remediation areas to a minimum depth of 6 inches.

NA If rocks were removed from the remediation area, they were staged or disposed of as directed by the Contractor.

* Mark in Field Monitoring Well and Survey Benchmarks for Protection SAD

Quantity of Work Estimated in Proposal: _____

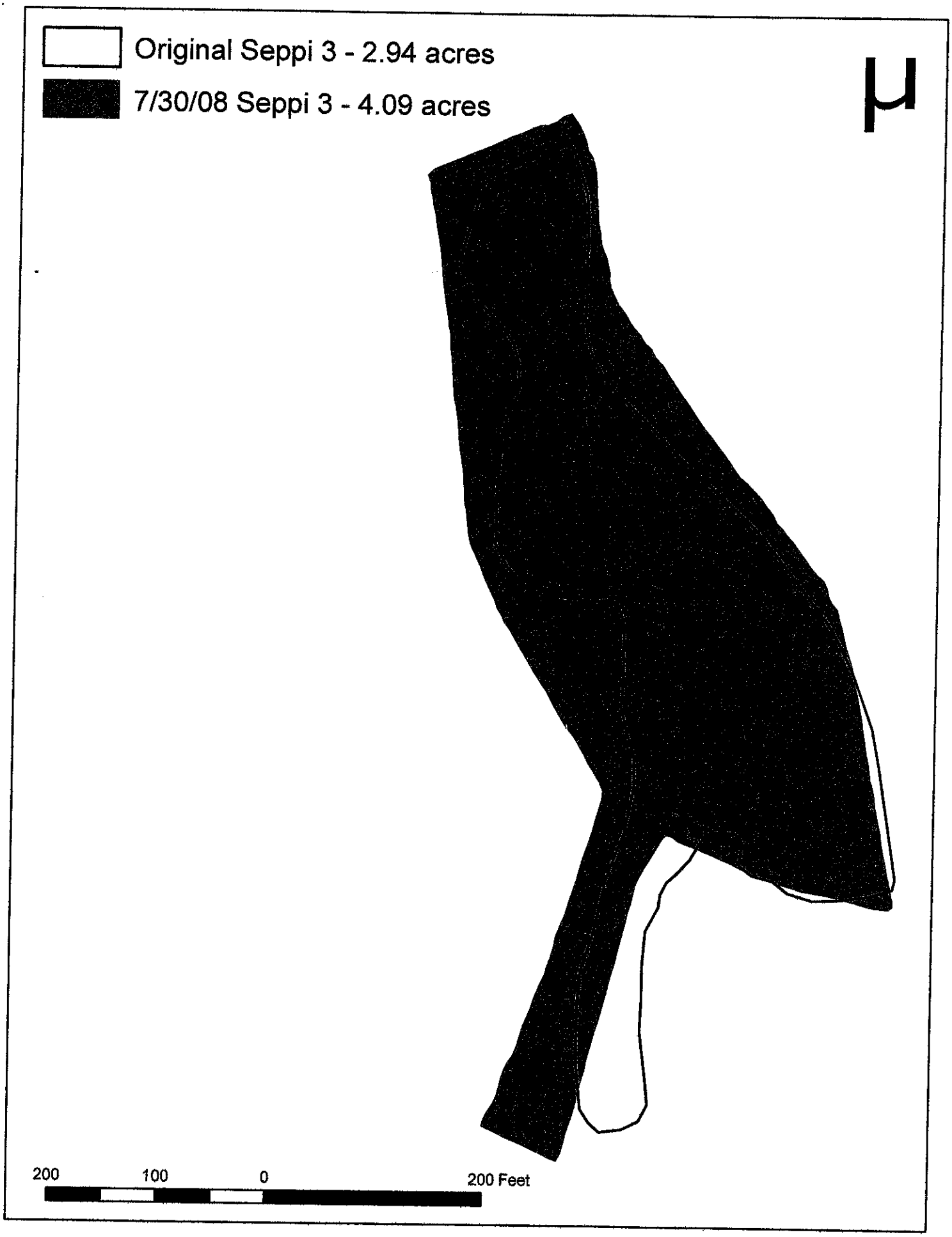
Quantity of Work Performed: 4.189 acres

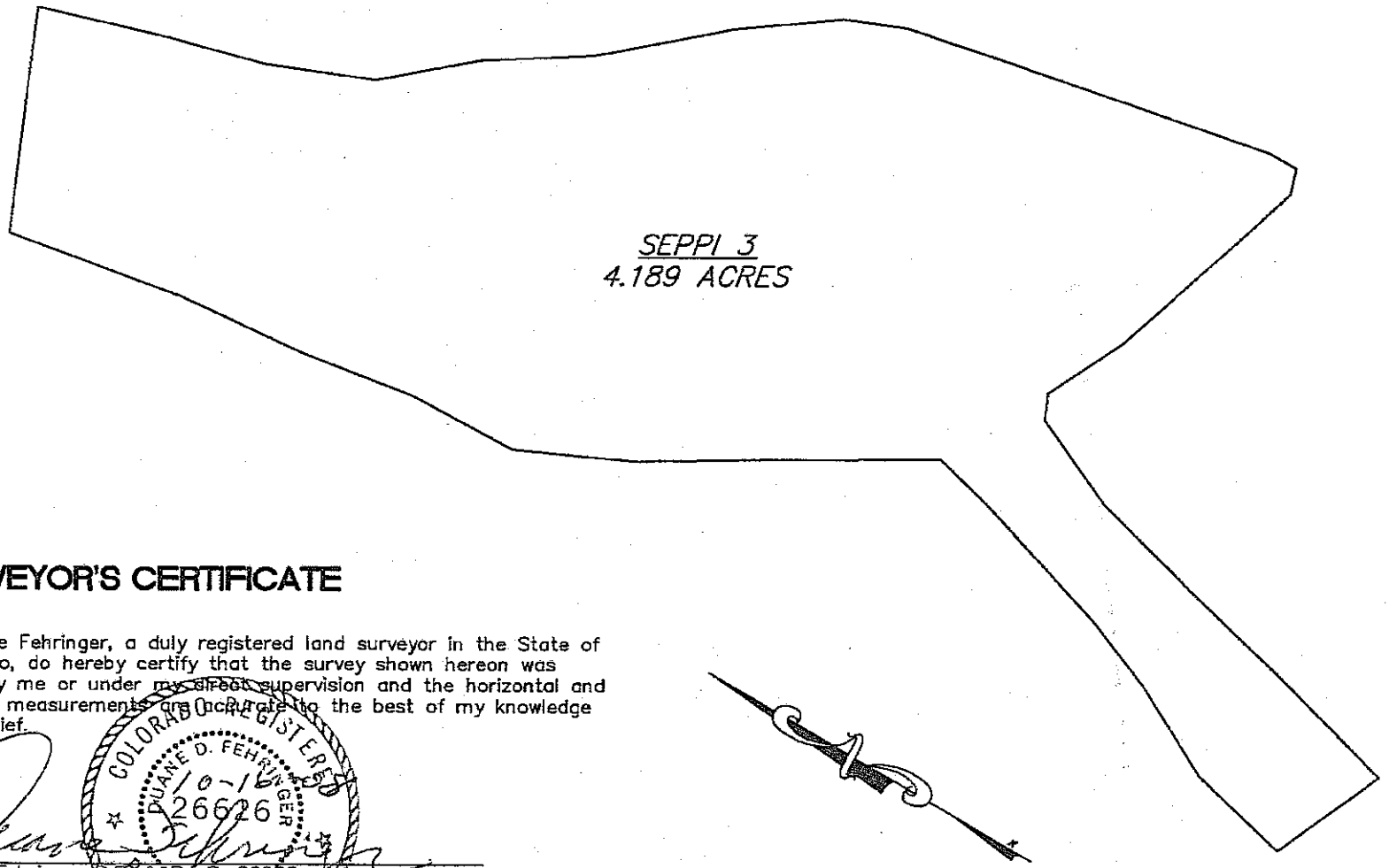
Survey Data/Date: 10-15-08

Note: Attach copies of the survey data to this form or reference location of supporting survey data

[signature] 10-31-08
Signature of Contractor Date

[signature] 10-31-08
Signature of Subcontractor Date


Original Seppi 3 - 2.94 acres
7/30/08 Seppi 3 - 4.09 acres
μ
200
100
0
200 Feet



SURVEYOR'S CERTIFICATE

I, Duane Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal and vertical measurements are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 10-16 26626 P.E. AND P.L.S.

Duane Fehringer P.E. & P.L.S. 26626

Inter-Mountain Engineering Ltd.
40881 US HWY 6&24, STE 203 BOX 978 AVON, CO 81620 PH: (970)949-5071
8392-CONTINENTAL DIVIDE RD, SUITE 107 LITTLETON, CO 80127 PH: (303)948-6220

CLIENT: FRONTIER ENVIRONMENTAL INC.

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SEPPI 3

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=100'
DATE ISSUED:	10-13-08
PROJECT NO.	08-0032
DWGNO	

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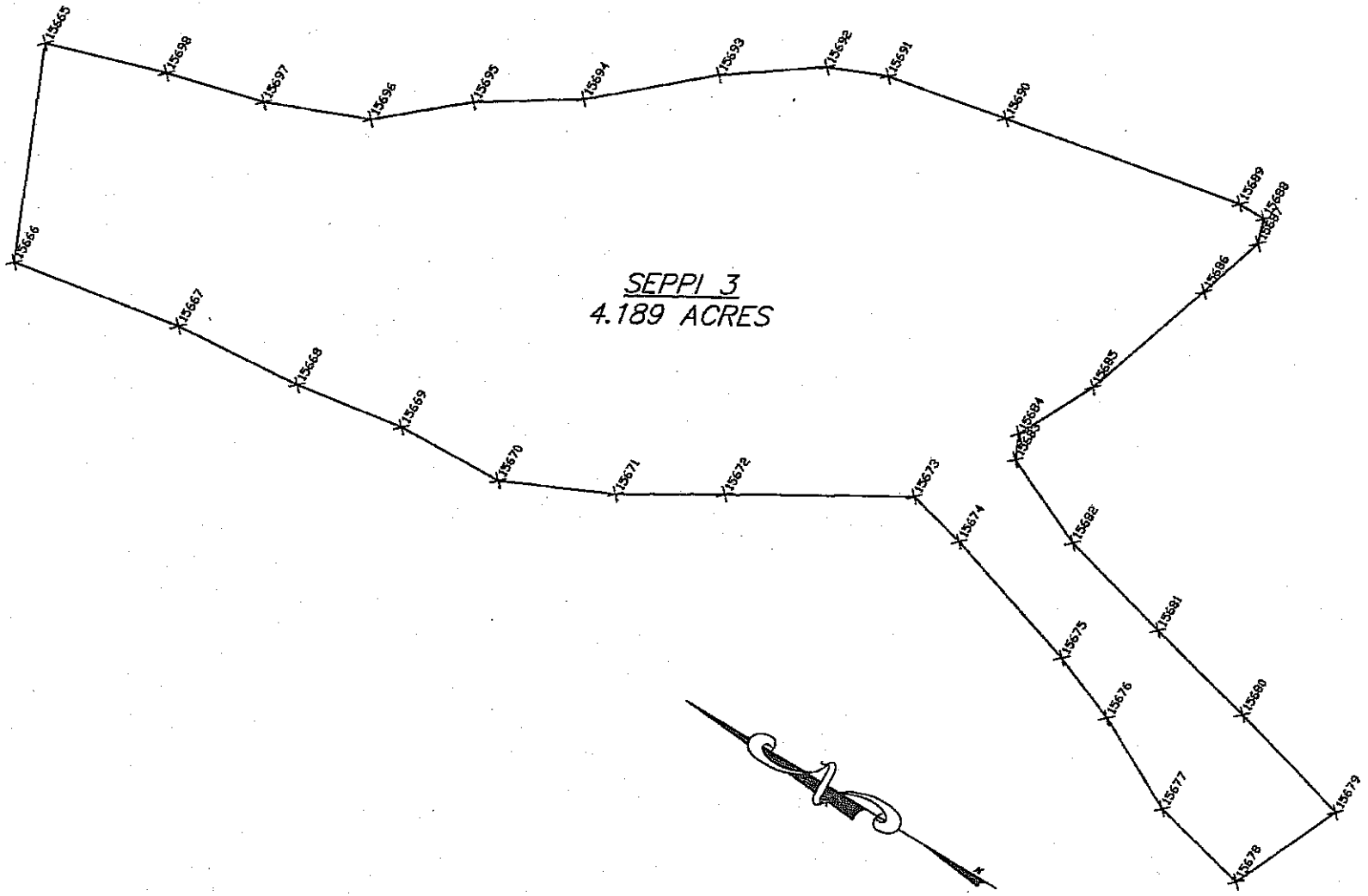

Inter-Mountain Engineering Ltd.
40881 US HWY 6&24, STE 203 BOX 978 AVON, CO 81620 PH: (970)949-5072
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SEPPI 3

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=100'
DATE ISSUED:	10-13-08
PROJECT NO.	08-0032
DWGNT	

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Draft Only

Lime Application Rate Calculation Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: **Seppi 3**

POLYGON CHARACTERISTICS

Net Application Rate (22 dry tons/1000 tons soil unless noted otherwise)	22	dry tons/1000 tons soil
Mixing Safety Factor (10% unless noted otherwise)	10.00%	%
% Rock (0 unless noted otherwise)	0.00%	% — Need to investigate
Treatment Depth	12	inches
Total Area	4.09	acres

Still Need Surveyed Area

LIME CHARACTERISTICS

Lime Particle Size Distribution					
Percent >10 mesh		X 0.1	=	0.0000	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.0004	(B)
Percent < 60 mesh	99.92%	X 1	=	0.9992	©
Lime Reactivity			=	0.9996	(Sum of A, B, and C)

Calcium Carbonate Equivalence		82.20%	%
Percent Moisture		28.4%	%
Bulk Density	0.75 grams/cc	= 0.632	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * (1000 tons soil/acre/6") * Treatment Depth / (Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 82.27 tons/acre = 336.48 tons total

= 3.78 lbs/ft2 1.89 (two-pass rate in lbs/ft2)

Lime Rate = 130.16 cubic yards/acre = 532.34 cy total

Signature: John C. Davis

Date: 10-23-08

Signature: _____

Date: _____

FERTILIZER CALIBRATION

- Place a known weight (e.g., one 50-lb bag) into the spreader hopper.
- Follow the operations manual to set the equipment to meet the design field application rate (e.g., spreader opening, travel speed, RPMs, etc.)
- Make one pass dispersing the fertilizer until the contents of the spreader are emptied.
- Measure the area over which the fertilizer was applied
- Divide the weight of material applied by the total area it was applied to, convert to lbs/acre, and compare to the design field application rate.
- An acceptable test will be within 10% of the required rate.

Fertilizer Calibration Record

Date: 11-03-08 Time: 09:00

Irrigated Meadow / Fluvial Deposit Polygon ID: Seep: 3

Fertilizer Type: 0 : 45 : 0 (N:P:K)

Design Field Application Rate: 306 lbs/acre (± 10% range = 278 to 337)

Calibration Data for one 50 pound bag of fertilizer:

Dimensions over which bag was spread: 60 feet x 259 feet

Total Calibration Area: 15,540 (ft^2) * 1 acre / 43560 ft^2 = 0.357 acres

Calibrated Application Rate: 140.1 (lbs/acre) X 2 passes = 280.1

Quality Control Data for Field Application Verification:

Tolerance ± 10%

278 to 337 lbs/acre

Area of Polygon: 4.189 (acres)

Total Weight to be Applied: 1282 (lbs)

# of 50 lb. Bags to be Applied: 26 bags

Print / Sign Name: Clay E. Cambridge / Clay E. Cambridge
Frontier Representative

Print / Sign Name: M G Mylis
PWT / EPA Representative

SUPER-CROP

50 LBS. (22.7 kg) NET WT.

fertilizer

super phosphate

GUARANTEED ANALYSIS	
NITROGEN (N)	0%
AVAIL. PHOSPHORIC ACID (P_2O_5)	45%
SOLUBLE POTASH (K_2O)	0%
SULFUR (Combined) (S)	%
IRON (Fe)	%

AMERICAN PRIDE CO-OP

HENDERSON, COLORADO 80640

DIRECTIONS FOR USE:

GENERAL - Phosphate is one of the 3 major plant nutrients. Phosphate base fertilizers are used as a root and shoot stimulant for new lawn sites. Phosphates are generally highly water insoluble and therefore do not move very much through the soil. For best results, phosphates should be applied at the rate of 10-15 lbs. per 1000 square feet and mixed well in the top 6-8 inches of soil with a roto-tiller, disc, harrow, etc. This rate can be used for new lawn sites, in vegetable and flower gardens.

- High rates can be applied without injuring the plant.

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: Seepi 1 East (12-inch) — Also used for Seepi 3 10-31-08 JWM

Date: 10-29-08 Time: 09:05

Field Application Rate: 41.13 tons/acre (1.89 psf) (psf = tons/acre*0.0459)

Total Tarp Dimensions: 27 (sq. ft.)

Tolerance
1.89 ± 10% = 2.08
1.89 − 10% = 1.72

Test 1 Material Weight: 56.5 (lbs.) Rate: 2.09 psf
29.0 + 24.0 + 11.0 − 7.5

Test 2 Material Weight: 57.5 (lbs.) Rate: 1.98 psf
31.0 + 20.0 + 10.0 − 7.5

Test 3 Material Weight: 55.5 (lbs.) Rate: 2.05 psf
28.0 + 11.0 + 24.0 − 7.5

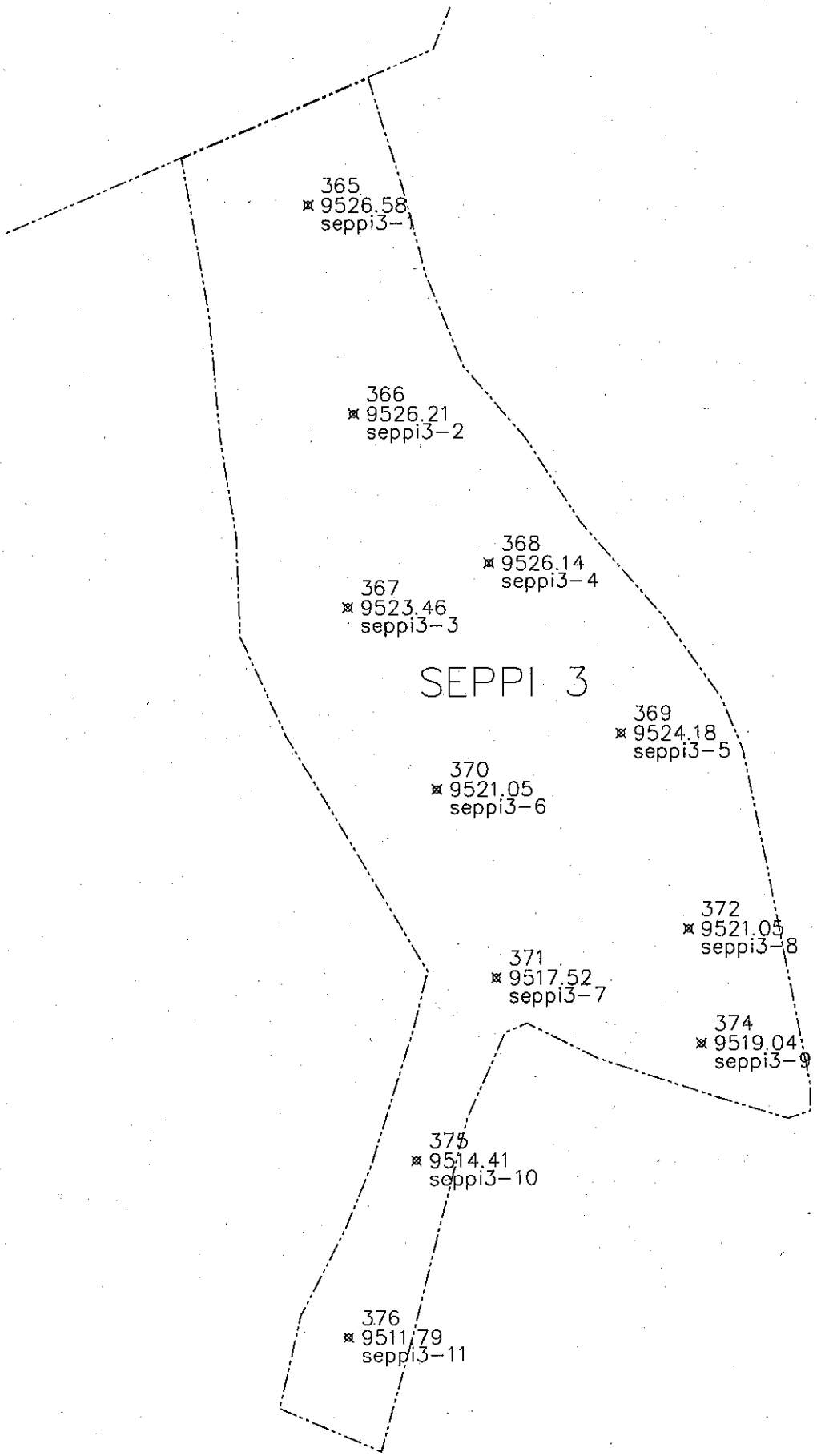
Test 4 ~~Material Weight~~: _____ (lbs.) Rate: _____ psf

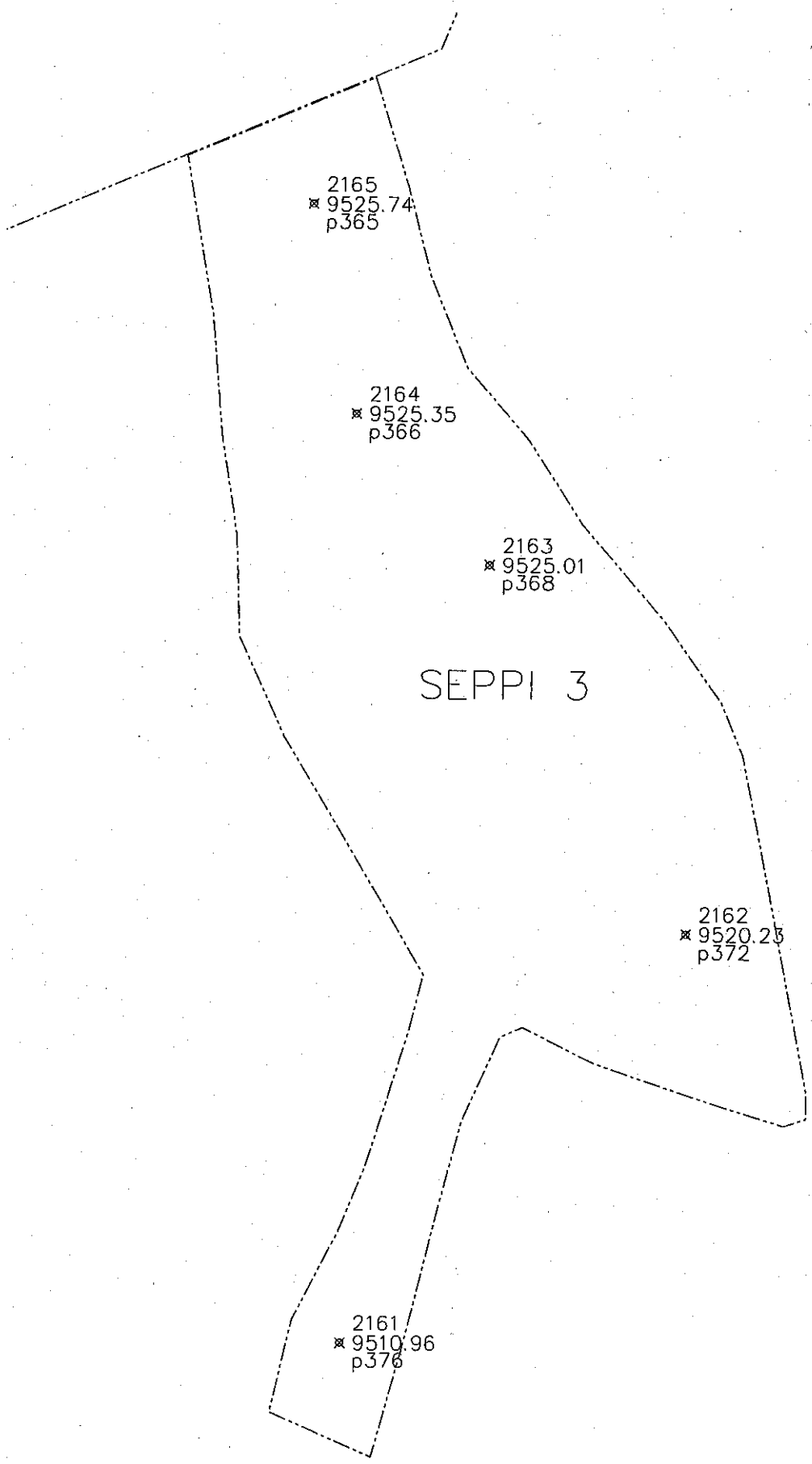
JWM 10-29-08

Test 5 Material Weight: _____ (lbs.) Rate: _____ psf

Print / Sign Name: Clay E. Combrink / Clay E. Combrink
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative


365
9526.58
seppi3-1
366
9526.21
seppi3-2
368
9526.14
seppi3-4
367
9523.46
seppi3-3
SEPPI 3
369
9524.18
seppi3-5
370
9521.05
seppi3-6
372
9521.05
seppi3-8
371
9517.52
seppi3-7
374
9519.04
seppi3-9
375
9514.41
seppi3-10
376
9511.79
seppi3-11


2165
9525.74
p365
2164
9525.35
p366
2163
9525.01
p368
SEPPI 3
2162
9520.23
p372
2161
9510.96
p376

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: Soppi 3

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	Acid Fizz Full Depth?
374	7.3	7.0	7.5	None	Yes
365	7.5	7.0	8.0	None	Yes
366	7.0	6.5	7.5	None	Yes
368	7.0	7.0	7.0	None	Yes
372	7.0	7.0	7.0	None	Yes

Name/Signature: Jack G Mehl Date: 11-04-08

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Fluvial Deposit/Irrigated Meadows/Polygon: **Paste pH Record** Seppi 3

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
372				7.1
366				7.2
376				7.2
368				7.2
365				6.9
372-dup	2.2	17.8	16.15	7.1

Gilson Method

Name/Signature: Gerald Nauman / Roger Merrick **Date:** 11/5/08

Activity Tracking Form
Irrigated Meadows
Spread & Incorporate Lime and Fertilizer in 12" areas

Irrigated Meadow Polygon Name/ID: Seep 3

Activity Start Date: 10-31-08

Activity End Date: 11-03-08

Activities Verified As Completed (indicate NA if appropriate)

Lime and Fertilizer Application

✓ EPA calculated field application rate based on material quality, rock content & depth

Lime rate = 82.7 tons/acre

Fertilizer rate = 306 pounds/acres

✓ EPA and/or PWT was present for lime and fertilizer spreader calibrations.

✓ Lime was spread across the remediation area at the calculated field lime application rate using a calibrated spreader (unadjusted application rate of 44 tons lime / acre) in 12 inch remediation areas.

✓ Fertilizer applied had a nitrogen:phosphorous:potassium (N:P:K) ratio of 0:45:0. **(Attach copy of fertilizer certification)**

✓ Fertilizer was spread across the remediation area at the specified field fertilizer application rate using a calibrated spreader. Unadjusted rate is 70 pounds of P2O5 per 1,000 tons of soil or 306 lbs of 0:45:0 fertilizer / acre in 12" till areas.

✓ ~~Lime and fertilizer~~ were not applied to any areas with standing water, that was cemented, consolidated, caked, or frozen.

✓ Lime and fertilizer were not applied just before or during significant rain events.

✓ Lime and fertilizer were not spread under windy conditions where wind is sufficient to blow lime and fertilizer off the ground surface before they can be tilled.

Tilling of Lime and Fertilizer

✓ Lime and fertilizer were incorporated into the soil by tilling as soon as possible after spreading, and always by the end of the same day that the lime or fertilizer was spread.

✓ Lime and fertilizer were tilled into the soil using a minimum of 3 passes unless the Subcontractor demonstrated that the proposed equipment was able to meet the mixing standards in fewer passes. Successive passes crossed the previous pass at a 90 ~~degree angle.~~

Activity Tracking Form
Irrigated Meadows
Spread & Incorporate Lime and Fertilizer in 12" areas

Irrigated Meadow Polygon Name/ID: Seep 3

✓ Lime and fertilizer were spread and thoroughly incorporated to the full design depth with an acceptable remediation depth tolerance for 12-inch till areas of 10 inches to 14 inches. To verify this, test pits were excavated and locations surveyed at a rate of: **(check one)**

_____ 4 / acre (at beginning of project)

✓ 1 / acre (after effectiveness proven & with EPA approval)

_____ 1 / 5 acres (with EPA approval)

✓ PWT and/or EPA were present during all Subcontractor remediation depth surveys and conducted visual and field pH testing to evaluate effectiveness of mixing **(Attach pH test results)**

Quantity of Lime Applied: 343 tons

Quantity of Fertilizer Applied: 1281 lbs. / 25 Bags

Quantity of Work Estimated in Proposal: _____

Quantity of Work Performed: 4.189 acres

Survey Data/Date: 10-15-08

Note: Attach copies of daily calibration records, fertilizer certs, pH test results and survey data

Signature of Contractor _____ Date 11-11-08

Signature of Subcontractor _____ Date 11-11-08

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in yd^3/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.
- Repeat.

Compost Spreader Calibration Record

Date: 11-10-08 Time: 10:00

Irrigated Meadow / Fluvial Deposit Polygon ID: Seep 3

Design Application Rate: 334 (yd^3/acre) Tolerance 784 ft^2 to 915 ft^2

Calibration Data for one load of compost:

	Test Run 1	Test Run 2	Average
Compost Quantity (yd^3)	6.50	6.50	
Compost was spread over (ft^2) 18'X47' =	846	19x45 = 855	851
Calibration area (acres)			0.019
Calibrated Application Rate (yd^3/acre)			342

Quality Control Data for Field Application Verification:

(A) Design Application Rate: 334 (yd^3/acre)

(B) Average Calibrated Application Rate: 342 (yd^3/acre)

Passes to be Applied: ≈ 1 passes (= A/B)

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in yd^3/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.
- Repeat.

Compost Spreader Calibration Record

Date: 11-11-08 Time: 08:25

Irrigated Meadow / Fluvial Deposit Polygon ID: Seep: 3

Design Application Rate: 334 (yd^3/acre)

Calibration Data for one load of compost:

	Test Run 1	Test Run 2	Average
Compost Quantity (yd^3)	6.50	6.50	
Compost was spread over (ft^2) 20'x45'	900	22'x40' = 880	890
Calibration area (acres)			0.020
Calibrated Application Rate (yd^3/acre)			325

Quality Control Data for Field Application Verification:

(A) Design Application Rate: 334 (yd^3/acre)

(B) Average Calibrated Application Rate: 325 (yd^3/acre)

Passes to be Applied: ≈ 1 passes (= A/B)

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in yd^3/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.
- Repeat.

Compost Spreader Calibration Record

Date: 11-12-08 Time: 07:35

Irrigated Meadow / Fluvial Deposit Polygon ID: Seep 3

Design Application Rate: 334 (yd^3/acre)

Calibration Data for one load of compost:

	Test Run 1	Test Run 2	Average
Compost Quantity (yd^3)			6.50
Compost was spread over (ft^2) 22'x40'	880	21'x42 = 882	881
Calibration area (acres)			0.020
Calibrated Application Rate (yd^3/acre)			325

Quality Control Data for Field Application Verification:

(A) Design Application Rate: 334 (yd^3/acre)

(B) Average Calibrated Application Rate: 325 (yd^3/acre)

Passes to be Applied: ≈ 1 passes (= A/B)

Print / Sign Name: Clay E. Combrink / [signature]
Frontier Representative

Print / Sign Name: [illegible] / [signature]
PWT / EPA Representative

Activity Tracking Form
Irrigated Meadows
Spread & Incorporate Organic Material in 12" areas

Irrigated Meadow Polygon Name/ID: Seepi 3

Activity Start Date: 11-10-08

Activity End Date: 11-11-08

Activities Verified As Completed (indicate NA if appropriate)

✓ Amendments have been applied at a field application rate calculated by EPA and as directed by the PWT. Calculated application rate was 354403 tons/acre.

✓ Organic amendment has been spread evenly across the remediation area using a calibrated agricultural manure spreader or other accepted equipment. **(Attach calibration records)**

✓ Organic amendment has been applied uniformly. Rutting and compaction of the surface was minimized during application of organic amendment.

✓ Organic material was not applied to any area with standing water or areas that were frozen. Organic material was not applied before or during any significant rain events.

✓ Organic material was not spread under windy conditions where wind was sufficient to blow organic material off the ground surface before it can be tilled.

✓ Organic matter has been tilled to the full remediation depth using a minimum of 2 passes unless the Subcontractor demonstrated that the proposed equipment has met the mixing standards in fewer passes and received approval of the EPA. The second tillage pass crosses the initial pass at a 90 degree angle.

✓ Organic material has been tilled to a tolerance for 12-inch till areas of 10 inches to 14 inches. To verify this, test pits were surveyed at a rate of: **(check one)** PWT hand-dug test pits randomly to verify uniform thickness

____ 4 / acre (at beginning of project)

____ 1 / acre (after effectiveness proven & with EPA approval)

____ 1 / 5 acres (with EPA approval)

NA (see above) PWT and/or EPA was present during all Subcontractor surveys to verify remediation depth.

✓ Contractor \ EPA has conducted field testing, monitored and verified remediation depth, and has evaluated the effectiveness of mixing. Areas with large unremediated clumps of soil or large areas of unmixed soil amendments have been re-tilled.

Quantity of Organic Material Applied: 1400 CY

Quantity of Work Estimated in Proposal:

Quantity of Work Performed: 4,169 acres

Survey Data/Date: 10-15-08

Seeder Calibration Form

Calibration Form Instructions

1) Enter the Polygon ID, Polygon acreage, Calibration Date, Target seed rate(s), %PLS in each seed mix, and % seed in each each mix
2) Perform seeder calibration per the manufacturers' instructions 3 times and enter the total weight of bulk seed mix in grams collected for each seed box
3) For each individual calibration run, verify that the achieved rate is within ±20 % of the 1/2 Target Rate
4) After the 3rd calibration run, verify that the 3 Run Average rate is within ±10% of the 1/2 Target Rate

NOTE: The BLUE text shows the "calculated values" based on the entered data

Polygon ID Seppi 3 **Acres:** 4.189 **Date:** 11/13/08

	Seed Mix 1		Seed Mix 2	
Target Rate	7.00	lbs PLS / acre	3.00	lbs PLS / acre
% PLS in seed mix	86%		88%	
Dilution Factor	91%	(% seed)	90%	(% seed)
Target Application Rate	8.98	bulk pounds / acre	3.79	bulk pounds / acre
	37.6	Total bulk pounds	15.9	total bulk pounds
1/2 Target Rate (2 passes)	4.49	bulk pounds / acre	1.89	bulk pounds / acre
	18.8	1/2 of total bulk pounds	7.9	1/2 of total bulk pounds
Test Run 1	8.70	total grams in 3 bags	4.10	total grams in 3 bags
	4.35	bulk lbs/acre	2.05	bulk lbs/acre
Test Run 2	9.10	total grams in 3 bags	4.30	total grams in 3 bags
	4.55	bulk lbs/acre	2.15	bulk lbs/acre
Test Run 3	8.90	total grams in 3 bags	4.00	total grams in 3 bags
	4.45	bulk lbs/acre	2.00	bulk lbs/acre
3 Run Average	8.90	total grams in 3 bags	4.13	total grams in 3 bags
	4.45	bulk lbs/acre	2.07	bulk lbs/acre
For QC Checks:				
+20% of 1/2 Target Rate	5.39	bulk pounds / acre	2.27	bulk pounds / acre
-20% of 1/2 Target Rate	3.59	bulk pounds / acre	1.52	bulk pounds / acre
+10% of 1/2 Target Rate	4.94	lbs seed mix / acre	2.08	lbs seed mix / acre
-10% of 1/2 Target Rate	4.04	lbs seed mix / acre	1.70	lbs seed mix / acre

PWT Signature: _____

Frontier Signature: _____

The Arkansas Valley Seed

Supplying QUALITY Seed
With INTEGRITY Since 1945

PRELIMINARY INVOICE

Limitation of Warranty and Finance Charge Agreement are part of the terms and conditions of this sale. See back of this invoice.

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rabbitears@seedsolutions.com

Page Number	-	1
Date	-	11/07/08
Customer	-	446479
Brn/Plt	-	DEN
Related PO	-	
Order Nbr	-	2434523 SO
Invoice	-	

Sold To: FRONTIER ENVIRONMENTAL
5350 VIVAIN ST UNIT B
ARVADA CO 80002

Ship To: CASH SALES AVS DVR CASH
4625 COLORADO BLVD
DENVER CO 80216

Tax ID:
Tax Cert:

Request Date	Customer P.O.	F.O.B.	Ship : DAN 303-234-9350 Inst :
11/06/08			

Description	Lot Number	Quantity Shipped	UM	Price	Extended Price	Tax
SMALL mix Native Grass Mix-Bulk 1.25pls#/ac x 34/ac @ 5.00/ac	2130880	48.0000	LB	3.5417	170.00	Y
LARGE MIX Native Grass Mix-Bulk 7 PLS#/AC X 19/AC @ 22.00/CC	2130890	139.0000	LB	2.8489	396.00	Y

Terms			Sales Tax	Total Order
Due upon receipt of in	Net Due Date 11/17/08	Tax Rt 3.620	20.49	586.49

Arkansas Valley Seed
4333 Hwy. 66
Longmont, CO 80504
(877) 907-3337
(970) 535-4522 Fax

Arkansas Valley Seed
4625 Colorado Blvd.
Denver, CO 80216
(877) 957-3337
(303) 320-7516 Fax

Arkansas Valley Seed
12th & Santa Fe Tracks
Rocky Ford, CO 81067
(719) 254-7469
(719) 254-4115 Fax

Colorado Seed
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Monte Vista, CO 81144
(719) 852-3505
(719) 852-4942 Fax

Wilbers Seed
809 N. Broadway
Miller, SD 57362
(800) 952-2233
(605) 853-2639 Fax

Activity Tracking Form
Irrigated Meadows
Seedbed Preparation and Seeding

Irrigated Meadow Polygon Name/ID: Seepi 3

Activity Start Date: ~~11-13-08~~ gmo 11-12-08

Activity End Date: 11-14-08

Activities Verified As Completed (indicate NA if appropriate)

✓ EPA and/or PWT has collected ~~and analyzed~~ gmo soil samples to verify performance standards have been met. Frequency is 1 per 5 acres.

Preparation of the Seedbed

✓ Seedbed has been smoothed to the extent practical for effective seeding.

✓ Removed or disaggregated clods greater than 4 inches in diameter from the top 6 inches of soil.

NA Removed rocks and cobbles greater than 4 inches in diameter from the surface. Rocks ~~not sieved~~ minimal to none

✓ The surface has been compacted by equipment that produces a uniform rough textured surface. The seedbed for the Irrigated Meadows is firm allowing the heel of a boot to penetrate approximately 0.5 to 1 inch.

✓ Plowed or disked areas compacted by vehicle traffic to reduce compaction.

✓ There were no erosional features present prior to seeding.

✓ Loosened areas compacted by weather or colonized by weeds resulting from time gaps between remediation and seeding, as necessary.

Seed Application

NA Lab samples show acid-base account and TOC test results in acceptable ranges before seeding.
gmo Samples not analyzed

✓ Seeding done outside the month of October was approved by EPA.

✓ The seedbed was evaluated by EPA and/or PWT immediately prior to seeding to ensure seedbed requirements were achieved and that the seedbed has not degraded since amendments were applied and tilled.

✓ Used the appropriate seed mixes for the Smith, Seppi, and BLM Irrigated Meadow sites identified in Tables IM-2, IM-3, and IM-4. Deviations approved by EPA.

✓ Applied seed using calibrated equipment at rates shown in Tables IM-2, IM-3, or IM-4. Rates are in lbs PLS / acre. The seed has been applied within 10 percent (by weight) of the rate specified.

Seed mix used: Attached Application Rate: Attached (# PLS / acre)

✓ Seed was stored properly and not degraded by water or other contaminants before use.

Activity Tracking Form
Irrigated Meadows
Seedbed Preparation and Seeding

Irrigated Meadow Polygon Name/ID: Seep; 3

✓ Seed was not applied to any area with standing water or areas that are frozen. Seed was not applied before or during any significant rain events or during wet conditions when seed equipment could cause ruts in the ground or prevent good seed placement.

✓ Seed was not spread under windy conditions where wind was sufficient to blow seed off the ground surface.

✓ Wherever possible, areas were drill seeded. Seed was applied to the appropriate depth of 0.25 to 0.5 inches. Drill seeding was applied in 2 applications, each at half the seeding rate specified in Tables IM-2, IM-3, and IM-4. The direction of the second application was perpendicular to the first application. ~~Seed mix may have been diluted with rice hulls or other Contractor-accepted material, if necessary to achieve the lower seeding rate.~~ N/A

✓ For each acre seeded, the hopper and applicator tubes were checked for clogged tubes and to verify even application rates. Checked periodically during application

Quantity of Seed Applied: Small: 16 lbs. Large: 40 lbs.

Quantity of Work Estimated in Proposal: _____

Quantity of Work Performed: 4.189 acres

Survey Data/Date: 10-15-08

Note: Attach copies of the daily calibration records, seed certification forms, and survey data to this form. Also, note sample numbers for acid-base account and TOC lab tests.

[signature] 11-21-08
Signature of Contractor Date

[signature] 11-25-08
Signature of Subcontractor Date

Note: Entire Treatment Area Re-Seeded w/Drill Seeder 10-15-09

Activity Tracking Form
Irrigated Meadows
Mulch Application

Irrigated Meadow Polygon Name/ID: Seep i 3

Activity Start Date: 11-17-08

Activity End Date: 11-17-08

Activities Verified As Completed (indicate NA if appropriate)

✓ Mulch certified as weed free **(attached Certification documentation)**

✓ Mulch was stored properly and not degraded by water or other contaminants before use.

✓ Mulch has been applied immediately after seeding unless the nature of the mulch required that it must be incorporated into the soul; ~~in that case the mulch has been applied before seeding~~. NA

NA If wood mulch was applied, the application rate was 10 to 12 tons per acre, or 50 to 60 cubic yards per acre using a blower, flail spreader, or other means that provided even distribution across the remediated area. Depending on the nature of the wood mulch, it may have been left as a surface application or may have been crimped or lightly disked into the top 2 inches to prevent dispersion **(Circle method used)**.

✓ If straw or native hay mulch was applied, the application rate was 2,000 pounds per acre using equipment specifically designed for application of mulch at a uniform rate to produce a mat covering the seed. Straw or native hay mulch was crimped using crimping equipment with round, notched blades approximately ¼-inch thick by 18 inches in diameter spaced 8 inches apart. The crimper was equipped with disc scrapers and had sufficient weight to force the vegetative mulch to a minimum depth of 3-inches into the soil. Mulch was crimped within 24 hours of application.

✓ Stormwater, sediment, and erosion control measures remained in place throughout implementation of the remedy and has been maintained in good condition during and after mulch placement to prevent surface water run-on and run-off that may damage the remediated area.

Quantity of Mulch Applied: 8400 / 168 bales

Quantity of Work Estimated in Proposal:

Quantity of Work Performed: 4.189 acres

Survey Data/Date: 10-15-08

Note: Attach copies of the daily calibration records, weed free certification and survey data to this form

Signature of Contractor — Date: 11-21-08

Signature of Subcontractor — Date: 11-24-08

COLORADO DEPARTMENT OF AGRICULTURE
DIVISION OF PLANT INDUSTRY
700 Kipling Street, Suite 4000
Lakewood, Colorado 80215-8000
(303) 239-4149

TRANSIT CERTIFICATE
WEED FREE FORAGE CROP CERTIFICATION ACT 35-27.5

TO WHO IT MAY CONCERN:

The forage crop, to which this Transit Certificate relates, has been officially certified according to the Colorado Weed Free Forage Crop Certification Act 35-27.5. Pursuant to those standards, the information below has been included in this Transit Certificate concerning said certification. The Certificate of Inspection relating to said forage crop is on file at the:

Colorado Department of Agriculture
Division of Plant Industry
700 Kipling Street, Suite 4000
Lakewood, Colorado 80215-8000
Telephone: (303) 239-4149
FAX: (303) 239-4177

Sec: 1, 11
3, 6

PLEASE PRINT IN INK

Murray Farms — L B Murray
Grower's Name — Grower's Signature

Adams
County of Origin

Identify Forage Crop Type: Wheat Straw

634 — 10/28/08
Bales Sold — Date of Sale

IDENTIFICATION
INSPECTOR'S INITIALS DHF
GROWER'S INITIALS LBM.
FIELD NUMBER F-8
DATE 7/05/07

(Identification found in upper right corner of Certificate of Inspection: Form DPI-WF-05)

FORAGE CERTIFIED ACCORDING TO THE REGIONAL WEED FREE FORAGE STANDARDS

NOTE: Forage certified under the Colorado Weed Free Forage Crop Certification Act shall be baled with at least one strand of **blue and orange** colored twine or **galvanized** wire.

GROWER MUST ISSUE WHITE COPY TO PURCHASER; MAIL PINK COPY TO DEPARTMENT OF AGRICULTURE; KEEP GREEN COPY FOR FILE FOR EACH SALE.

2008

Kind: SPECIAL LARGE MIX
Lot: 2138898

Kind & Variety:	Pure%	Germ%	Origin:
SLENDER W/G, SAN LUIS	56.51	92	WA
WESTERN W/G, ROSANNA	41.04	95	WA

Crop: .12% Inert: 2.25% Weed: .09% Net Wt: 38.61# (35 PLS#) 5/AC

Noxious Weed: None Found Test Date: 6/08

REMARKS: FRONTIER ENVIRONMENTAL
ARKANSAS VALLEY SEED, 4333 HWY 66, LONGMONT CO 80504

Kind: SEPPI RANCH IRR. MIX
Lot: 2139079

Kind & Variety:	Pure%	Germ%	Origin:
SHEEP FESCUE, COVAR	32.28	93	WA
CLOVER, ALSIDE	32.28	93	MT
CLIMAX TIMOTHY	16.68	90	CN
PRAIRIE JUNEGRASS	6.82	88	WA
CANADA BLUEGRASS, REUBENS	6.67	90	WA
REDTOP	3.09	97	WA

Crop: .05% Inert: 1.60% Weed: .54% Net Wt: 30# (27 PLS#) 9 ACRES

Noxious Weed: None Found Test Date: 6/08

REMARKS: FRONTIER ENVIRONMENTAL
ARKANSAS VALLEY SEED, 4333 HWY 66, LONGMONT CO 80504

Seed 3 & 6

Kind: SEPPI REGULAR MIX
Lot: 2148032

Kind & Variety:	Pure%	Germ%	Origin:
SLENDER W/G, SAN LUIS	37.64	95	WA
WESTERN W/G, ROSANNA	29.80	90	SD
SHEEP FESCUE, COVAR	10.78	83	WA
ALSIKE CLOVER	9.12	98	CAN
CLIMAX TIMOTHY	4.70	95	CAN
PRAIRIE JUNEGRASS	1.95	92	WA
CANADA BLUEGRASS, REUBENS	1.94	92	WA
RED TOP	.99	91	CAN

Lg seed

Crop: .07% Inert: 2.79% Weed: .22% Net Wt: 28# (25 PLS) 2.50 ACRES

Noxious Weed: None Found Test Date: 5/09

Remarks: FRONTIER ENVIRONMENTAL

JOB: EPA OU-11 LEADVILLE

LARGE SEED 20.25#

Winfield Solutions PO Box 64589 St Paul, MN 55164

Re Seed - 2009

Kind: SEPPI REGULAR MIX
Lot: 2148032

Kind & Variety:	Pure%	Germ%	Origin:
SLENDER W/G, SAN LUIS	37.64	95	WA
WESTERN W/G, ROSANNA	29.80	90	SD
SHEEP FESCUE, COVAR	10.78	83	WA
ALSIKE CLOVER	9.12	98	CAN
CLIMAX TIMOTHY	4.70	95	CAN
PRAIRIE JUNEGRASS	1.95	92	WA
CANADA BLUEGRASS, REUBENS	1.94	92	WA
RED TOP	.99	91	CAN

Small

Crop: .07% Inert: 2.79% Weed: .22% Net Wt: 28# (25 PLS) 2.50 ACRES

Noxious Weed: None Found Test Date: 5/09

Remarks: FRONTIER ENVIRONMENTAL

JOB: EPA OU-11 LEADVILLE

SMALL SEED 7.75#

Winfield Solutions PO Box 64589 St Paul, MN 55164

Seeder Calibration Form

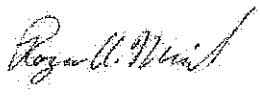
Calibration Form Instructions

1) Enter the Polygon ID, Polygon acreage, Calibration Date, Target seed rate(s), %PLS in each seed mix, and % seed in each each mix
2) Perform seeder calibration per the manufacturers' instructions 3 times and enter the total weight of bulk seed mix in grams collected for each seed box
3) For each individual calibration run, verify that the achieved rate is within ±20 % of the 1/2 Target Rate
4) After the 3rd calibration run, verify that the 3 Run Average rate is within ±10% of the 1/2 Target Rate

NOTE: The BLUE text shows the "calculated values" based on the entered data

Polygon ID Seppi 3 (reseed) **Acres:** 3.50 **Date:** 10/14/09 (for 10/15)

	Seed Mix 1		Seed Mix 2	
Target Rate	7.00	lbs PLS / acre	3.00	lbs PLS / acre
% PLS in seed mix	89%		89%	
Dilution Factor	100%	(% seed)	100%	(% seed)
Target Application Rate	7.84	bulk pounds / acre	3.36	bulk pounds / acre
	27.4	Total bulk pounds	11.8	total bulk pounds
1/2 Target Rate (2 passes)	3.92	bulk pounds / acre	1.68	bulk pounds / acre
	13.7	1/2 of total bulk pounds	5.9	1/2 of total bulk pounds
Test Run 1	7.30	total grams in 3 bags	3.50	total grams in 3 bags
	3.65	bulk lbs/acre	1.75	bulk lbs/acre
Test Run 2	8.20	total grams in 3 bags	3.40	total grams in 3 bags
	4.10	bulk lbs/acre	1.70	bulk lbs/acre
Test Run 3	8.00	total grams in 3 bags	3.60	total grams in 3 bags
	4.00	bulk lbs/acre	1.80	bulk lbs/acre
3 Run Average	7.83	total grams in 3 bags	3.50	total grams in 3 bags
	3.92	bulk lbs/acre	1.75	bulk lbs/acre
For QC Checks:				
+20% of 1/2 Target Rate	4.70	bulk pounds / acre	2.02	bulk pounds / acre
-20% of 1/2 Target Rate	3.14	bulk pounds / acre	1.34	bulk pounds / acre
+10% of 1/2 Target Rate	4.31	lbs seed mix / acre	1.85	lbs seed mix / acre
-10% of 1/2 Target Rate	3.53	lbs seed mix / acre	1.51	lbs seed mix / acre

PWT Signature: 

Frontier Signature:

Seeder Calibration Form

Calibration Form Instructions

1) Enter the Polygon ID, Polygon acreage, Calibration Date, Target seed rate(s), %PLS in each seed mix, and % seed in each each mix
2) Perform seeder calibration per the manufacturers' instructions 3 times and enter the total weight of bulk seed mix in grams collected for each seed box
3) For each individual calibration run, verify that the achieved rate is within ±20 % of the 1/2 Target Rate
4) After the 3rd calibration run, verify that the 3 Run Average rate is within ±10% of the 1/2 Target Rate

NOTE: The BLUE text shows the "calculated values" based on the entered data

Polygon ID Seppi 3 (reseed) **Acres:** 3.50 **Date:** 10/14/09 (for 10/15)

	Seed Mix 1		Seed Mix 2	
Target Rate	7.00	lbs PLS / acre	3.00	lbs PLS / acre
% PLS in seed mix	89%		89%	
Dilution Factor	100%	(% seed)	100%	(% seed)
Target Application Rate	7.84	bulk pounds / acre	3.36	bulk pounds / acre
	27.4	Total bulk pounds	11.8	total bulk pounds
1/2 Target Rate (2 passes)	3.92	bulk pounds / acre	1.68	bulk pounds / acre
	13.7	1/2 of total bulk pounds	5.9	1/2 of total bulk pounds
Test Run 1	7.30	total grams in 3 bags	3.50	total grams in 3 bags
	3.65	bulk lbs/acre	1.75	bulk lbs/acre
Test Run 2	8.20	total grams in 3 bags	3.40	total grams in 3 bags
	4.10	bulk lbs/acre	1.70	bulk lbs/acre
Test Run 3	8.00	total grams in 3 bags	3.60	total grams in 3 bags
	4.00	bulk lbs/acre	1.80	bulk lbs/acre
3 Run Average	7.83	total grams in 3 bags	3.50	total grams in 3 bags
	3.92	bulk lbs/acre	1.75	bulk lbs/acre
For QC Checks:				
+20% of 1/2 Target Rate	4.70	bulk pounds / acre	2.02	bulk pounds / acre
-20% of 1/2 Target Rate	3.14	bulk pounds / acre	1.34	bulk pounds / acre
+10% of 1/2 Target Rate	4.31	lbs seed mix / acre	1.85	lbs seed mix / acre
-10% of 1/2 Target Rate	3.53	lbs seed mix / acre	1.51	lbs seed mix / acre

PWT Signature: _____

Frontier Signature: _____

Activity Tracking Form
Irrigated Meadows
Clear, Grub, Grade, Pre-Till

Irrigated Meadow Polygon Name/ID: Seep 6

Activity Start Date: 11-04-08

Activity End Date: 11-04-08

Activities Verified As Completed (indicate NA if appropriate)

✓ Completed pre-remediation site walk and final delineation of remediation boundaries.

✓ Survey points for post-treatment depth verification were identified and elevations documented by survey crew before any ground disturbance. Rates will vary from 4 per acre down to 1 per 5 acres depending on Subcontractor's demonstration of compliance with QC requirements for tillage depth. **(Attach or reference survey data)** 1 Per Acre

✓ EPA collected pre-remediation full remediation depth composite samples at a rate of ~ 1 per 5 acres and the sample locations were surveyed

✓ Removed and disposed of existing trash or debris in accordance with Specification Section 01 74 16.

NA Cleared dead or decadent large woody vegetation if present and placed outside the remediation area in locations identified by the Contractor. Remaining grass and small woody vegetation tilled in place.

NA Locations, extent and width of secondary irrigation ditches to be removed have been surveyed.

NA Graded the remediation areas as necessary for effective remediation.

✓ Pre-tilled the remediation areas to a minimum depth of 6 inches.

NA If rocks were removed from the remediation area, they were staged or disposed of as directed by the Contractor.

Quantity of Work Estimated in Proposal: _____

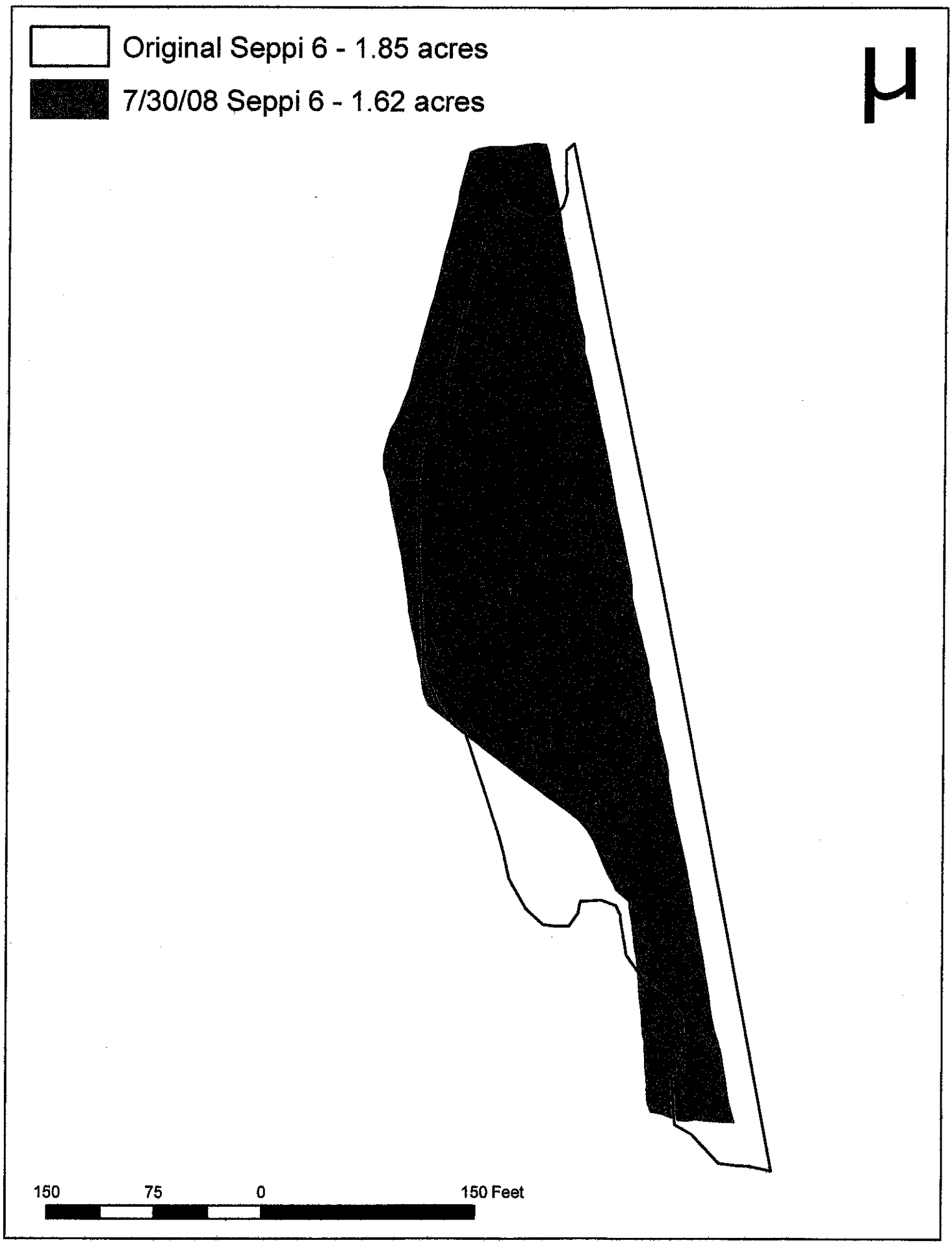
Quantity of Work Performed: 1.638 acres

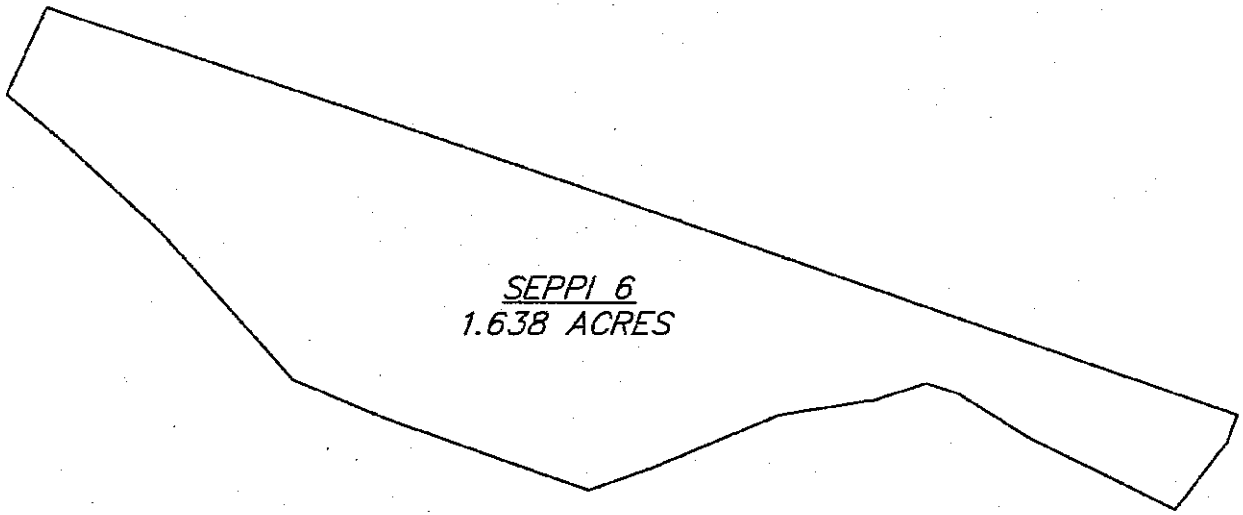
Survey Data/Date: 10-16-08

Note: Attach copies of the survey data to this form or reference location of supporting survey data

Signature of Contractor _____ Date 11-05-08

Signature of Subcontractor _____ Date 11-05-08


Original Seppi 6 - 1.85 acres
7/30/08 Seppi 6 - 1.62 acres
μ
150
75
0
150 Feet

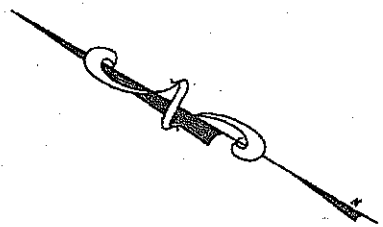


SURVEYOR'S CERTIFICATE

I, Duane Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal and vertical measurements are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 10-16-08 26626 AND L.S.

Duane Fehringer P.E. & P.L.S. 26626



Inter-Mountain Engineering Ltd.
40801 US HWY 6&24, STE 103 BOX 978 AVON, CO 81620 PH: (970)949-5072
8992 CONTINENTAL DIVIDE RD, SUITE 107 LITTLETON, CO 80127 PH: (303)948-6220

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SEPPI 6

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=100'
DATE ISSUED:	10-13-08
PROJECT NO.	08-0032
EXHIBIT	

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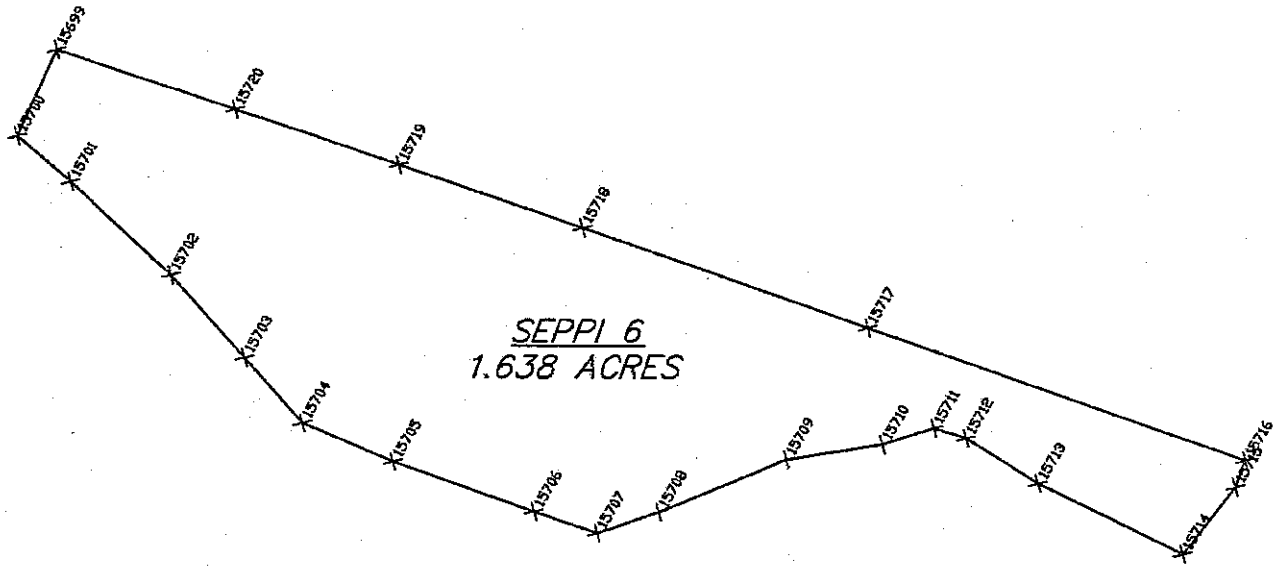

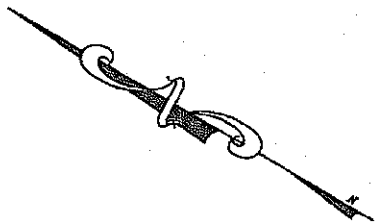

Inter-Mountain Engineering Ltd.
40501 US HWY 6&24, STE 203 BOX 978 AVON, CO 81620 PH: (970)949-5972
3392 CONTINENTAL DIVIDE RD, SUITE 107 LITTLETON, CO 80127 PH: (303)948-6210

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SEPPI 6

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=100'
DATE ISSUED:	10-13-08
PROJECT NO.	08-0032
EXHIBIT	

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Draft Only

Lime Application Rate Calculation Form

Irrigated Meadows

Irrigated Meadow Polygon Name/ID: **Seppi 6**

POLYGON CHARACTERISTICS

Net Application Rate (22 dry tons/1000 tons soil unless noted otherwise)	22	dry tons/1000 tons soil
Mixing Safety Factor (10% unless noted otherwise)	10.00%	% need to investigate
% Rock (0 unless noted otherwise)	0.00%	%
Treatment Depth	12	inches
Total Area	1.62	acres

need surveyed area

LIME CHARACTERISTICS

Lime Particle Size Distribution

Percent >10 mesh		X 0.1	=	0.0000	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.0004	(B)
Percent < 60 mesh	99.92%	X 1	=	0.9992	©
Lime Reactivity			=	0.9996	(Sum of A, B, and C)

Calcium Carbonate Equivalence		82.20%	%
Percent Moisture		28.4%	%
Bulk Density	0.75 grams/cc	= 0.632	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * (1000 tons soil/acre/6") * Treatment Depth
/ (Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 82.27 tons/acre = 133.28 tons total

= 3.78 lbs/ft2 1.89 (two-pass rate in lbs/ft2)

Lime Rate = 130.16 cubic yards/acre = 210.85 cy total

Signature: _____

Date: 10-23-08

Signature: _____

Date: _____

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: Seep 6

Date: 11-12-08 Time: 14:55

Field Application Rate: 82.3 tons/acre (1.89 psf) (psf = tons/acre*0.0459) x 2 applications

Total Tarp Dimensions: 27 (sq. ft.)

Tolerance
1.89 + 10% = 2.08
1.89 − 10% = 1.72

Test 1 Material Weight: 47.5 (lbs.) Rate: 1.76 psf
55 lbs total - 7.5 tare (3 buckets)

Test 2 Material Weight: 46.5 (lbs.) Rate: 1.72 psf
54 lbs Total - 7.5 tare

Test 3 Material Weight: _____ (lbs.) Rate: _____ psf

Test 4 Material Weight: _____ (lbs.) Rate: _____ psf

Test 5 Material Weight: _____ (lbs.) Rate: _____ psf

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

FERTILIZER CALIBRATION

- Place a known weight (e.g., one 50-lb bag) into the spreader hopper.
- Follow the operations manual to set the equipment to meet the design field application rate (e.g., spreader opening, travel speed, RPMs, etc.)
- Make one pass dispersing the fertilizer until the contents of the spreader are emptied.
- Measure the area over which the fertilizer was applied
- Divide the weight of material applied by the total area it was applied to, convert to lbs/acre, and compare to the design field application rate.
- An acceptable test will be within 10% of the required rate.

Fertilizer Calibration Record

Date: 11-11-08 Time: 10:35

Irrigated Meadow / Fluvial Deposit Polygon ID: Seep 6

Fertilizer Type: 0 : 45 : 0 (N:P:K)

Design Field Application Rate: 306 lbs/acre (± 10% range = 278 to 337)

153 lbs/acre 1 bag = 50 lbs / 153 = 0.327 x 43,560 = 14,235 / 60' spread = 237' / length

237 + 10% = 261

237 - 10% = 215

Calibration Data for one 50 pound bag of fertilizer:

Dimensions over which bag was spread: 60 feet x 235 feet

Total Calibration Area: ~~23530~~ 14100 (ft^2) * 1 acre / 43560 ft^2 = ~~0.054~~ 0.324 acres

Calibrated Application Rate: 154.3 (lbs/acre) x 2 applications = 309 lbs/acre

Quality Control Data for Field Application Verification:

Area of Polygon: 1.638 (acres)

Total Weight to be Applied: ≈ 500 (lbs)

# of 50 lb. Bags to be Applied: 10 bags

Print / Sign Name: Clay E. Combrink / [signature]
Frontier Representative

Print / Sign Name: John A. McManus / [signature]
PWT / EPA Representative

SUPER-CROP

50 LBS. (22.7 kg) NET WT.

fertilizer

super phosphate

GUARANTEED ANALYSIS	
NITROGEN (N)	0%
AVAIL. PHOSPHORIC ACID (P_2O_5)	45%
SOLUBLE POTASH (K_2O)	0%
SULFUR (Combined) (S)	%
IRON (Fe)	%

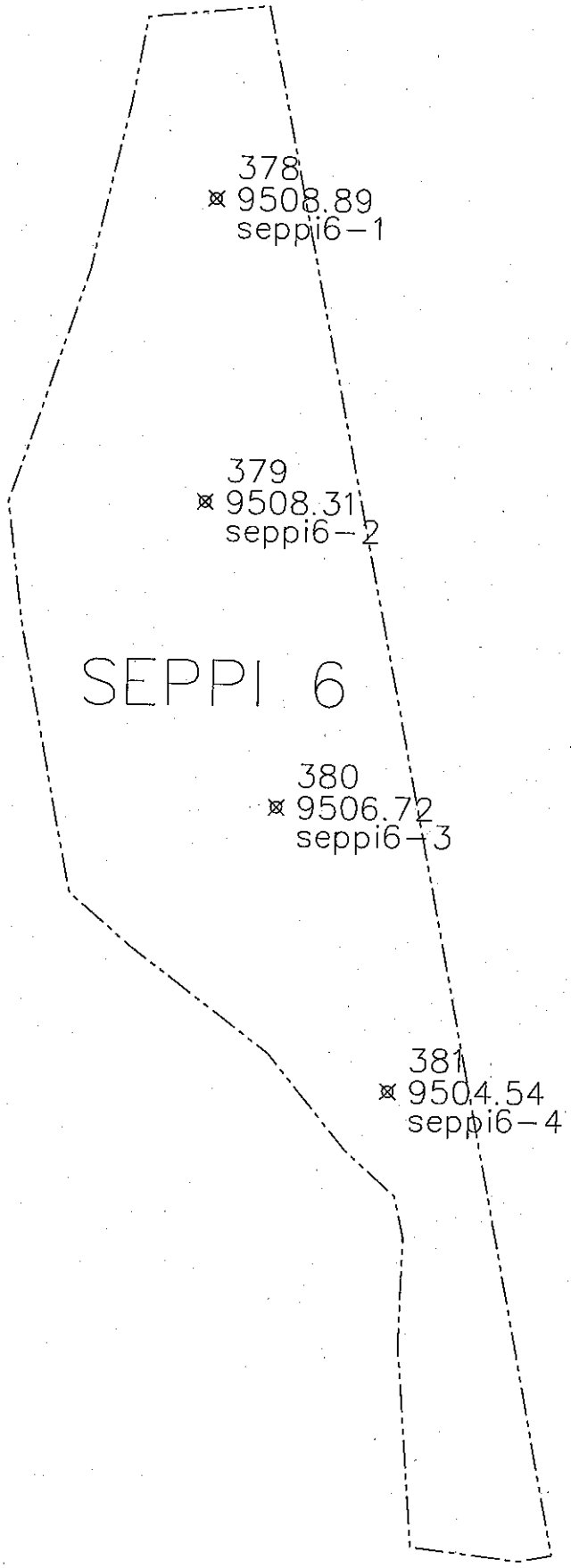
AMERICAN PRIDE CO-OP

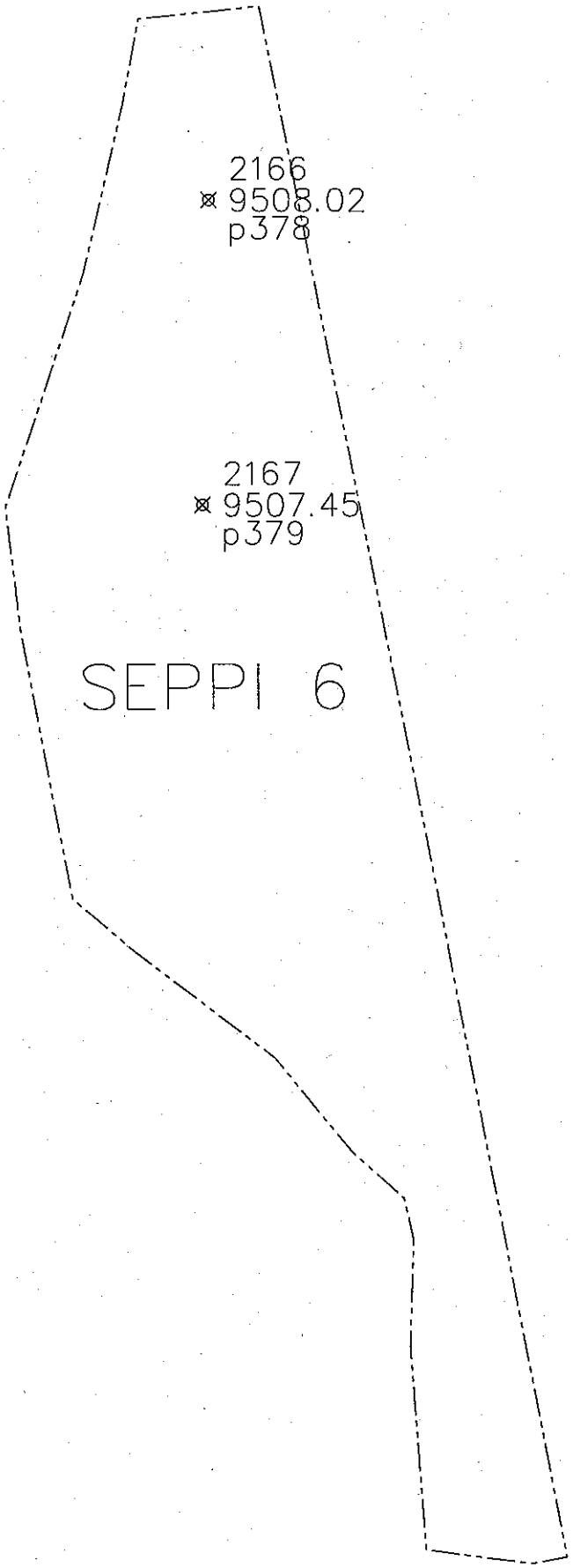
HENDERSON, COLORADO 80640

DIRECTIONS FOR USE:

GENERAL - Phosphate is one of the 3 major plant nutrients. Phosphate base fertilizers are used as a root and shoot stimulant for new lawn sites. Phosphates are generally highly water insoluble and therefore do not move very much through the soil. For best results, phosphates should be applied at the rate of 10-15 lbs. per 1000 square feet and mixed well in the top 6-8 inches of soil with a roto-tiller, disc, harrow, etc. This rate can be used for new lawn sites, in vegetable and flower gardens.

- High rates can be appliedwithout injuring the plant.


378
9508.89
seppi6-1
379
9508.31
seppi6-2
SEPPI 6
380
9506.72
seppi6-3
381
9504.54
seppi6-4


2166
9508.02
p378
2167
9507.45
p379
SEPPI 6

Pre-Existing Grade Shots					Bottom of Post-Tillage Shots					Delta Range	Acceptable Range (0.8-1.2)
378	1503513.638	2759902.74	9508.892	seppi6-1	2166	1503513.702	2759902.698	9508.019	p378	0.873	
379	1503378.337	2759900.018	9508.31	seppi6-2	2167	1503378.210	2759900.013	9507.45	p379	0.86	

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: Soppi 6

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	Acid Fizz?
379	7.3	7.0	7.5	NA	Y
378	7.0	7.0	7.0	NA	Y

Name/Signature: John A. Rothrock

Date: 11-14-01

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record Soppi 6

Fluvial Deposit/Irrigated Meadows Polygon:

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
379	0.0	20.5	19.5	6.9
378	0.0	21.3	20.1	7.0
(Dupe) 378	0.0	20.1	20.6	7.1

Name/Signature: [signature]

Date: 11-17-05

Activity Tracking Form

Irrigated Meadows

Spread & Incorporate Lime and Fertilizer in 12" areas

Irrigated Meadow Polygon Name/ID: Seepi 6

Activity Start Date: 11-12-08

Activity End Date: 11-12-08

Activities Verified As Completed (indicate NA if appropriate)

Lime and Fertilizer Application

_____ EPA calculated field application rate based on material quality, rock content & depth

Lime rate = 82.3 tons/acre

Fertilizer rate = 306 pounds/acres

✓ EPA and/or PWT was present for lime and fertilizer spreader calibrations.

✓ Lime was spread across the remediation area at the calculated field lime application rate using a calibrated spreader (~~unadjusted application rate of 44 tons lime / acre~~) in ~~12 inch remediation areas.~~ 12"

✓ Fertilizer applied had a nitrogen:phosphorous:potassium (N:P:K) ratio of 0:45:0. **(Attach copy of fertilizer certification)**

✓ Fertilizer was spread across the remediation area at the specified field fertilizer application rate using a calibrated spreader. Unadjusted rate is 70 pounds of P2O5 per 1,000 tons of soil or 306 lbs of 0:45:0 fertilizer / acre in 12" till areas.

✓ ~~Lime and~~ fertilizer were not applied to any areas with standing water, that was cemented, consolidated, caked, or frozen.

✓ Lime and fertilizer were not applied just before or during significant rain events.

✓ Lime and fertilizer were not spread under windy conditions where wind is sufficient to blow lime and fertilizer off the ground surface before they can be tilled.

Tilling of Lime and Fertilizer

✓ Lime and fertilizer were incorporated into the soil by tilling as soon as possible after spreading, and always by the end of the same day that the lime or fertilizer was spread.

✓ Lime and fertilizer were tilled into the soil using a minimum of 3 passes unless the Subcontractor demonstrated that the proposed equipment was able to meet the mixing standards in fewer passes. Successive passes crossed the previous pass at a 90 ~~degree angle.~~

Activity Tracking Form
Irrigated Meadows
Spread & Incorporate Lime and Fertilizer in 12" areas

Irrigated Meadow Polygon Name/ID: Seep 6

✓ Lime and fertilizer were spread and thoroughly incorporated to the full design depth with an acceptable remediation depth tolerance for 12-inch till areas of 10 inches to 14 inches. To verify this, test pits were excavated and locations surveyed at a rate of: **(check one)**

_____ 4 / acre (at beginning of project)

✓ 1 / acre (after effectiveness proven & with EPA approval)

_____ 1 / 5 acres (with EPA approval)

✓ PWT and/or EPA were present during all Subcontractor remediation depth surveys and conducted visual and field pH testing to evaluate effectiveness of mixing **(Attach pH test results)**

Quantity of Lime Applied: 134 tons

Quantity of Fertilizer Applied: 500 lbs. (10 bags)

Quantity of Work Estimated in Proposal: _____

Quantity of Work Performed: 1.638 acres

Survey Data/Date: 10-16-08

Note: Attach copies of daily calibration records, fertilizer certs, pH test results and survey data

[signature] 11-21-08
Signature of Contractor Date

[signature] 11-25-08
Signature of Subcontractor Date

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in yd^3/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.
- Repeat.

Compost Spreader Calibration Record

Date: 11-18-08 Time: 08:40

Irrigated Meadow / Fluvial Deposit Polygon ID: Seed 6

Design Application Rate: 334 (yd^3/acre)

Calibration Data for one load of compost:

	Test Run 1	Test Run 2	Average
Compost Quantity (yd^3)			6.50
Compost was spread over (ft^2) 17x48	816	16x50 = 900	858
Calibration area (acres)			~~0.008~~ 0.020
Calibrated Application Rate (yd^3/acre)			325

Quality Control Data for Field Application Verification:

(A) Design Application Rate: 334 (yd^3/acre)

(B) Average Calibrated Application Rate: 325 (yd^3/acre)

Passes to be Applied: ≈ 1 passes (= A/B)

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

Activity Tracking Form
Irrigated Meadows
Spread & Incorporate Organic Material in 12" areas

Irrigated Meadow Polygon Name/ID: Seep 6

Activity Start Date: 11-18-08

Activity End Date: 11-18-08

Activities Verified As Completed (indicate NA if appropriate)

✓ Amendments have been applied at a field application rate calculated by EPA and as directed by the PWT. Calculated application rate was 33403 tons/acre.

✓ Organic amendment has been spread evenly across the remediation area using a calibrated agricultural manure spreader or other accepted equipment. **(Attach calibration records)**

✓ Organic amendment has been applied uniformly. Rutting and compaction of the surface was minimized during application of organic amendment.

✓ Organic material was not applied to any area with standing water or areas that were frozen. Organic material was not applied before or during any significant rain events.

✓ Organic material was not spread under windy conditions where wind was sufficient to blow organic material off the ground surface before it can be tilled.

✓ Organic matter has been tilled to the full remediation depth using a minimum of 2 passes unless the Subcontractor demonstrated that the proposed equipment has met the mixing standards in fewer passes and received approval of the EPA. The second tillage pass crosses the initial pass at a 90 degree angle.

✓ Organic material has been tilled to a tolerance for 12-inch till areas of 10 inches to 14 inches. To verify this, test pits were surveyed at a rate of: **(check one)** PWT randomly hand-excavated test pits after application to verify thickness.

_____ 4 / acre (at beginning of project)

_____ 1 / acre (after effectiveness proven & with EPA approval)

_____ 1 / 5 acres (with EPA approval)

NA PWT and/or EPA was present during all Subcontractor surveys to verify remediation depth.
Am n (Also)

✓ Contractor \ EPA has conducted field testing, monitored and verified remediation depth, and has evaluated the effectiveness of mixing. Areas with large unremediated clumps of soil or large areas of unmixed soil amendments have been re-tilled.

Quantity of Organic Material Applied: 547 CY

Quantity of Work Estimated in Proposal: _____

Quantity of Work Performed: 1.638 acres

Survey Data/Date: 10-16-08

Activity Tracking Form
Irrigated Meadows
Spread & Incorporate Organic Material in 12" areas

Irrigated Meadow Polygon Name/ID: Seep 6

Note: Attach copies of the daily calibration records and survey data to this form

Signature of Contractor — Date: 11-21-08

Signature of Subcontractor — Date: 11-25-08

COLORADO DEPARTMENT OF AGRICULTURE
DIVISION OF PLANT INDUSTRY
700 Kipling Street, Suite 4000
Lakewood, Colorado 80215-8000
(303) 239-4149

TRANSIT CERTIFICATE
WEED FREE FORAGE CROP CERTIFICATION ACT 35-27.5

TO WHO IT MAY CONCERN:

The forage crop, to which this Transit Certificate relates, has been officially certified according to the Colorado Weed Free Forage Crop Certification Act 35-27.5. Pursuant to those standards, the information below has been included in this Transit Certificate concerning said certification. The Certificate of Inspection relating to said forage crop is on file at the:

Colorado Department of Agriculture
Division of Plant Industry
700 Kipling Street, Suite 4000
Lakewood, Colorado 80215-8000
Telephone: (303) 239-4149
FAX: (303) 239-4177

Sec: 1, 1A
3,6

PLEASE PRINT IN INK

Murray Farms — L.B. Murray
Grower's Name — Grower's Signature

Adams
County of Origin

Identify Forage Crop Type: Wheat Straw

634 — 10/28/08
Bales Sold — Date of Sale

IDENTIFICATION
INSPECTOR'S INITIALS DHF
GROWER'S INITIALS LBM.
FIELD NUMBER F-8
DATE 7/05/07

(Identification found in upper right corner of Certificate of Inspection: Form DPI-WF-05)

FORAGE CERTIFIED ACCORDING TO THE REGIONAL WEED FREE FORAGE STANDARDS

NOTE: Forage certified under the Colorado Weed Free Forage Crop Certification Act shall be baled with at least one strand of **blue and orange** colored twine or **galvanized** wire.

GROWER MUST ISSUE WHITE COPY TO PURCHASER; MAIL PINK COPY TO DEPARTMENT OF AGRICULTURE; KEEP GREEN COPY FOR FILE FOR EACH SALE.

Activity Tracking Form
Irrigated Meadows
Mulch Application

Irrigated Meadow Polygon Name/ID: ~~Seep 3~~ Seep 6

Activity Start Date: 11-19-08

Activity End Date: 11-19-08

Activities Verified As Completed (indicate NA if appropriate)

✓ Mulch certified as weed free **(attached Certification documentation)**

✓ Mulch was stored properly and not degraded by water or other contaminants before use.

✓ ~~Mulch has been applied immediately after seeding unless the nature of the mulch required that it must be incorporated into the soil~~; in that case the mulch has been applied before seeding. Mulch applied prior to drill seeding as approved by S. Jennings

NA If wood mulch was applied, the application rate was 10 to 12 tons per acre, or 50 to 60 cubic yards per acre using a blower, flail spreader, or other means that provided even distribution across the remediated area. Depending on the nature of the wood mulch, it may have been left as a surface application or may have been crimped or lightly disked into the top 2 inches to prevent dispersion **(Circle method used)**.

✓ If (straw) or native hay mulch was applied, the application rate was 2,000 pounds per acre using equipment specifically designed for application of mulch at a uniform rate to produce a mat covering the seed. Straw or native hay mulch was crimped using crimping equipment with round, notched blades approximately ¼-inch thick by 18 inches in diameter spaced 8 inches apart. The crimper was equipped with disc scrapers and had sufficient weight to force the vegetative mulch to a minimum depth of 3-inches into the soil. Mulch was crimped within 24 hours of application.

✓ Stormwater, sediment, and erosion control measures remained in place throughout implementation of the remedy and has been maintained in good condition during and after mulch placement to prevent surface water run-on and run-off that may damage the remediated area.

Quantity of Mulch Applied: 3270 lbs. (65 bales

Quantity of Work Estimated in Proposal:

Quantity of Work Performed: 1.638 acres

Survey Data/Date: 10-16-08

Note: Attach copies of the daily calibration records, weed free certification and survey data to this form

[signature] 11-21-08
Signature of Contractor Date

[signature] 11-25-08
Signature of Subcontractor Date

Seeder Calibration Form

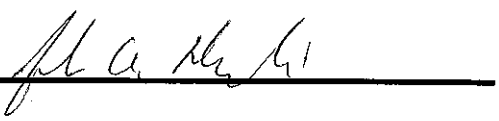
Calibration Form Instructions

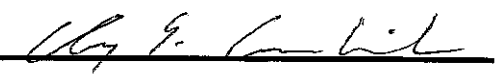
1) Enter the Polygon ID, Polygon acreage, Calibration Date, Target seed rate(s), %PLS in each seed mix, and % seed in each each mix
2) Perform seeder calibration per the manufacturers' instructions 3 times and enter the total weight of bulk seed mix in grams collected for each seed box
3) For each individual calibration run, verify that the achieved rate is within ±20 % of the 1/2 Target Rate
4) After the 3rd calibration run, verify that the 3 Run Average rate is within ±10% of the 1/2 Target Rate

NOTE: The BLUE text shows the "calculated values" based on the entered data

Polygon ID Seppi 6 **Acres:** 1.638 **Date:** 11/20/08

	Seed Mix 1		Seed Mix 2	
Target Rate	7.00	lbs PLS / acre	3.00	lbs PLS / acre
% PLS in seed mix	86%		88%	
Dilution Factor	91%	(% seed)	90%	(% seed)
Target Application Rate	8.98	bulk pounds / acre	3.79	bulk pounds / acre
	14.7	Total bulk pounds	6.2	total bulk pounds
1/2 Target Rate (2 passes)	4.49	bulk pounds / acre	1.89	bulk pounds / acre
	7.4	1/2 of total bulk pounds	3.1	1/2 of total bulk pounds
Test Run 1	9.00	total grams in 3 bags	4.20	total grams in 3 bags
	4.50	bulk lbs/acre	2.10	bulk lbs/acre
Test Run 2	9.10	total grams in 3 bags	4.10	total grams in 3 bags
	4.55	bulk lbs/acre	2.05	bulk lbs/acre
Test Run 3	9.20	total grams in 3 bags	3.60	total grams in 3 bags
	4.60	bulk lbs/acre	1.80	bulk lbs/acre
3 Run Average	9.10	total grams in 3 bags	3.97	total grams in 3 bags
	4.55	bulk lbs/acre	1.98	bulk lbs/acre
For QC Checks:				
+20% of 1/2 Target Rate	5.39	bulk pounds / acre	2.27	bulk pounds / acre
-20% of 1/2 Target Rate	3.59	bulk pounds / acre	1.52	bulk pounds / acre
+10% of 1/2 Target Rate	4.94	lbs seed mix / acre	2.08	lbs seed mix / acre
-10% of 1/2 Target Rate	4.04	lbs seed mix / acre	1.70	lbs seed mix / acre

PWT Signature: 

Frontier Signature: 

Kind: SPECIAL LARGE MIX
Lot: 2138898

Kind & Variety:	Pure%	Germ%	Origin:
SLENDER W/G, SAN LUIS	56.51	92	WA
WESTERN W/G, ROSANNA	41.04	95	WA

Crop: .12% Inert: 2.25% Weed: .09% Net Wt: 38.61# (35 PLS#) 5/AC

Noxious Weed: None Found Test Date: 6/08

REMARKS: FRONTIER ENVIRONMENTAL
ARKANSAS VALLEY SEED, 4333 HWY 66, LONGMONT CO 80504

Seed
3 66

2008

Kind: SEPPI RANCH IRR. MIX
Lot: 2139079

Kind & Variety:	Pure%	Germ%	Origin:
SHEEP FESCUE, COVAR	32.28	93	WA
CLOVER, ALSIDE	32.28	93	MT
CLIMAX TIMOTHY	16.68	90	CN
PRAIRIE JUNEGRASS	6.82	88	WA
CANADA BLUEGRASS, REUBENS	6.67	90	WA
REDTOP	3.09	97	WA

Crop: .05% Inert: 1.60% Weed: .54% Net Wt: 30# (27 PLS#) 9 ACRES

Noxious Weed: None Found Test Date: 6/08

REMARKS: FRONTIER ENVIRONMENTAL
ARKANSAS VALLEY SEED, 4333 HWY 66, LONGMONT CO 80504

PRELIMINARY INVOICE

Arkansas Valley Seed

Supplying QUALITY Seed With INTEGRITY Since 1945

Limitation of Warranty and Finance Charge Agreement are part of the terms and conditions of this sale. See back of this invoice.

www.avseeds.com
rabbitears@seedsolutions.com

Page Number	-	1
Date	-	11/07/08
Customer	-	446479
Brn/Plt	-	DEN
Related PO	-	
Order Nbr	-	2434525 SO
Invoice	-	

Sold To: FRONTIER ENVIRONMENTAL
5350 VIVAIN ST UNIT B
ARVADA CO 80002

Ship To: CASH SALES AVS DVR CASH
4625 COLORADO BLVD
DENVER CO 80216

Tax ID:
Tax Cert:

Request Date	Customer P.O.	F.O.B.	Ship : DAN 303-234-9350
11/06/08			Inst :

Description	Lot Number	Quantity Shipped	UM	Price	Extended Price	Tax
SMALL mix Native Grass Mix-Bulk 1.25pls#/ac x 34/ac @ 5.00/ac	2130860	40.0000	LB	3.5417	170.00	Y
LARGE MIX Native Grass Mix-Bulk 7 PLS#/AC X 10/AC @ 22.00/AC	2130898	139.0000	LB	2.8469	396.00	Y

		Sales Tax	Total Order
Terms Due upon receipt of in	Net Due Date 11/17/08	Tax Rt 3.620	20.49	586.49

RABBIT EARS BRAND

Arkansas Valley Seed
4333 Hwy. 66
Longmont, CO 80504
(877) 907-3337
(970) 535-4522 Fax

Arkansas Valley Seed
4625 Colorado Blvd.
Denver, CO 80216
(877) 957-3337
(303) 320-7516 Fax

Arkansas Valley Seed
12th & Santa Fe Tracks
Rocky Ford, CO 81067
(719) 254-7469
(719) 254-4115 Fax

Colorado Seed
195 N. Washington
Monte Vista, CO 81144
(719) 852-3505
(719) 852-4942 Fax

Wilbers Seed
809 N. Broadway
Miller, SD 57362
(800) 952-2233
(605) 853-2639 Fax

Activity Tracking Form
Irrigated Meadows
Seedbed Preparation and Seeding

Irrigated Meadow Polygon Name/ID: Seppi 6

Activity Start Date: 11-19-08

Activity End Date: 11-20-08

Activities Verified As Completed (indicate NA if appropriate)

✓ EPA and/or PWT has collected ~~and analyzed~~ and soil samples to verify performance standards have been met. Frequency is 1 per 5 acres.

Preparation of the Seedbed

✓ Seedbed has been smoothed to the extent practical for effective seeding.

✓ Removed or disaggregated clods greater than 4 inches in diameter from the top 6 inches of soil.

✓ Removed rocks and cobbles greater than 4 inches in diameter from the surface. Rocks none to minimal

✓ The surface has been compacted by equipment that produces a uniform rough textured surface. The seedbed for the Irrigated Meadows is firm allowing the heel of a boot to penetrate approximately 0.5 to 1 inch.

✓ Plowed or disked areas compacted by vehicle traffic to reduce compaction.

✓ There were no erosional features present prior to seeding.

✓ Loosened areas compacted by weather or colonized by weeds resulting from time gaps between remediation and seeding, as necessary.

Seed Application

NA Lab samples show acid-base account and TOC test results in acceptable ranges before seeding. Results not available prior to seeding

✓ Seeding done outside the month of October was approved by EPA.

✓ The seedbed was evaluated by EPA and/or PWT immediately prior to seeding to ensure seedbed requirements were achieved and that the seedbed has not degraded since amendments were applied and tilled.

✓ Used the appropriate seed mixes for the Smith, Seppi, and BLM Irrigated Meadow sites identified in Tables IM-2, IM-3, and IM-4. Deviations approved by EPA.

✓ Applied seed using calibrated equipment at rates shown in Tables IM-2, IM-3, or IM-4. Rates are in lbs PLS / acre. The seed has been applied within 10 percent (by weight) of the rate specified.

Seed mix used: A Hauled Application Rate: A Hauled (# PLS / acre)

✓ Seed was stored properly and not degraded by water or other contaminants before use.

Activity Tracking Form
Irrigated Meadows
Seedbed Preparation and Seeding

Irrigated Meadow Polygon Name/ID: Sepp: 6

✓ Seed was not applied to any area with standing water or areas that are frozen. Seed was not applied before or during any significant rain events or during wet conditions when seed equipment could cause ruts in the ground or prevent good seed placement.

✓ Seed was not spread under windy conditions where wind was sufficient to blow seed off the ground surface.

✓ Wherever possible, areas were drill seeded. Seed was applied to the appropriate depth of 0.25 to 0.5 inches. Drill seeding was applied in 2 applications, each at half the seeding rate specified in Tables IM-2, IM-3, and IM-4. The direction of the second application was perpendicular to the first application. ~~Seed mix may have been diluted with rice hulls or other Contractor-accepted material, if necessary~~ to achieve the lower seeding rate. N/A

✓ For each acre seeded, the hopper and applicator tubes were checked for clogged tubes and to verify even application rates. Checked periodically during application

Quantity of Seed Applied: 15 lbs. Lg. / 6 lbs. Sm.

Quantity of Work Estimated in Proposal:

Quantity of Work Performed: 1.638 acres

Survey Data/Date: 10-16-08

Note: Attach copies of the daily calibration records, seed certification forms, and survey data to this form. Also, note sample numbers for acid-base account and TOC lab tests.

Signature of Contractor — Date: 11-21-08

Signature of Subcontractor — Date: 11-25-08

Note: Re-Seeded Entire Area Using Drill Seeder October, 2009

Seeder Calibration Form

Calibration Form Instructions

1) Enter the Polygon ID, Polygon acreage, Calibration Date, Target seed rate(s), %PLS in each seed mix, and % seed in each each mix
2) Perform seeder calibration per the manufacturers' instructions 3 times and enter the total weight of bulk seed mix in grams collected for each seed box
3) For each individual calibration run, verify that the achieved rate is within ±20 % of the 1/2 Target Rate
4) After the 3rd calibration run, verify that the 3 Run Average rate is within ±10% of the 1/2 Target Rate

NOTE: The BLUE text shows the "calculated values" based on the entered data

Polygon ID Seppi 6 (reseed) **Acres:** 1.25 **Date:** 10/14/09

	Seed Mix 1		Seed Mix 2	
Target Rate	7.00	lbs PLS / acre	3.00	lbs PLS / acre
% PLS in seed mix	89%		89%	
Dilution Factor	100%	(% seed)	100%	(% seed)
Target Application Rate	7.84	bulk pounds / acre	3.36	bulk pounds / acre
	9.8	Total bulk pounds	4.2	total bulk pounds
1/2 Target Rate (2 passes)		bulk pounds / acre		bulk pounds / acre
	4.9	1/2 of total bulk pounds	2.1	1/2 of total bulk pounds
Test Run 1	11.60	total grams in 3 bags	1.40	total grams in 3 bags
	5.80	bulk lbs/acre	0.70	bulk lbs/acre
Test Run 2	12.20	total grams in 3 bags	1.20	total grams in 3 bags
	6.10	bulk lbs/acre	0.60	bulk lbs/acre
Test Run 3	10.90	total grams in 3 bags	1.40	total grams in 3 bags
	5.45	bulk lbs/acre	0.70	bulk lbs/acre
3 Run Average	11.57	total grams in 3 bags	1.33	total grams in 3 bags
	5.78	bulk lbs/acre	0.67	bulk lbs/acre
For QC Checks:				
+20% of 1/2 Target Rate	4.70	bulk pounds / acre	2.02	bulk pounds / acre
-20% of 1/2 Target Rate	3.14	bulk pounds / acre	1.34	bulk pounds / acre
+10% of 1/2 Target Rate	4.31	lbs seed mix / acre	1.85	lbs seed mix / acre
-10% of 1/2 Target Rate	3.53	lbs seed mix / acre	1.51	lbs seed mix / acre

PWT Signature: _____

Frontier Signature: _____

Kind: SEPPI REGULAR MIX
Lot: 2148032

Kind & Variety:	Pure%	Germ%	Origin:
SLENDER W/G, SAN LUIS	37.64	95	WA
WESTERN W/G, ROSANNA	29.80	90	SD
SHEEP FESCUE, COVAR	10.78	83	WA
ALSIKE CLOVER	9.12	98	CAN
CLIMAX TIMOTHY	4.70	95	CAN
PRAIRIE JUNEGRASS	1.95	92	WA
CANADA BLUEGRASS, REUBENS	1.94	92	WA
RED TOP	.99	91	CAN

Crop: .07% Inert: 2.79% Weed: .22% Net Wt: 28# (25 PLS) 2.50 ACRES
Noxious Weed: None Found Test Date: 5/09
Remarks: FRONTIER ENVIRONMENTAL
JOB: EPA OU-11 LEADVILLE

LARGE SEED 20.25#
Winfield Solutions PO Box 64589 St Paul, MN 55164

Re Seed 2009

Kind: SEPPI REGULAR MIX
Lot: 2148032

Kind & Variety:	Pure%	Germ%	Origin:
SLENDER W/G, SAN LUIS	37.64	95	WA
WESTERN W/G, ROSANNA	29.80	90	SD
SHEEP FESCUE, COVAR	10.78	83	WA
ALSIKE CLOVER	9.12	98	CAN
CLIMAX TIMOTHY	4.70	95	CAN
PRAIRIE JUNEGRASS	1.95	92	WA
CANADA BLUEGRASS, REUBENS	1.94	92	WA
RED TOP	.99	91	CAN

Crop: .07% Inert: 2.79% Weed: .22% Net Wt: 28# (25 PLS) 2.50 ACRES
Noxious Weed: None Found Test Date: 5/09
Remarks: FRONTIER ENVIRONMENTAL
JOB: EPA OU-11 LEADVILLE

SMALL SEED 7.75#
Winfield Solutions PO Box 64589 St Paul, MN 55164

Polygon Completion Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: Seep: 7

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
December 2008	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.5. **Comments/Deviations:**
December 2008	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.6. **Comments/Deviations:**
04-16-09 ~~04-14-09~~ JMS	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Sections 3.6 and 3.7A through 3.7E. **Comments/~~Deviations~~:** Applied lime + fert on 04-14-09; Completed Incorp. on 04-16-09 Completed paste pH (net requirements) on 04-17-09
04-23-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.7F through 3.7I. Applied Compost 04-22-09 **Comments/Deviations:**
N/A		Completed replacement of irrigation ditches in accordance with Specification Section 3.8. **Comments/Deviations:**
10-01-09	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.9. **Comments/Deviations:** Plans Dray 05-22-09; Dozer-Tracks 09-30 & 10-01-09
06-04-09		Completed mulching in accordance with Specification Section 3.10. **Comments/Deviations:** Mulched in muddy conditions; need to address ruts 09-30 & 10-01 - Tracked ruts w/Dozer — Satisfactory
N/A		Completed reinstallation of fencing in accordance with Specification Section 3.11. **Comments/Deviations:**
11-02-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.15. **Comments/Deviations:**

Quantity of Work Estimated in Proposal: N/A Addressed in Invoice Documents Only

Quantity of Work Performed: N/A

11-04-09
Signature of ~~Subcontractor~~ Contractor Date

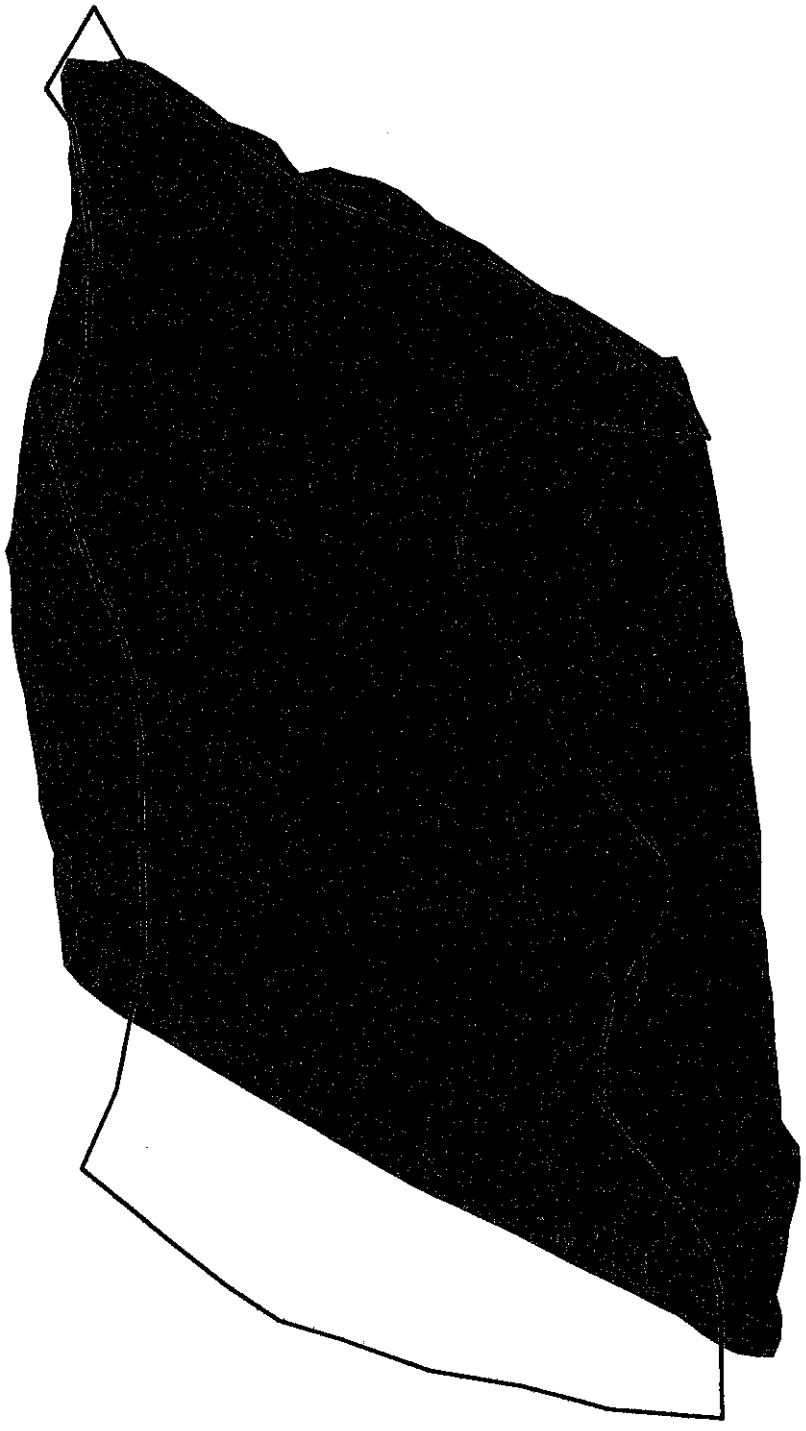
4/5/09
Signature of Contractor (Sub) Date

Original Seppi 7 - 1.65 acres

7/30/08 Seppi 7 - 2.01 acres

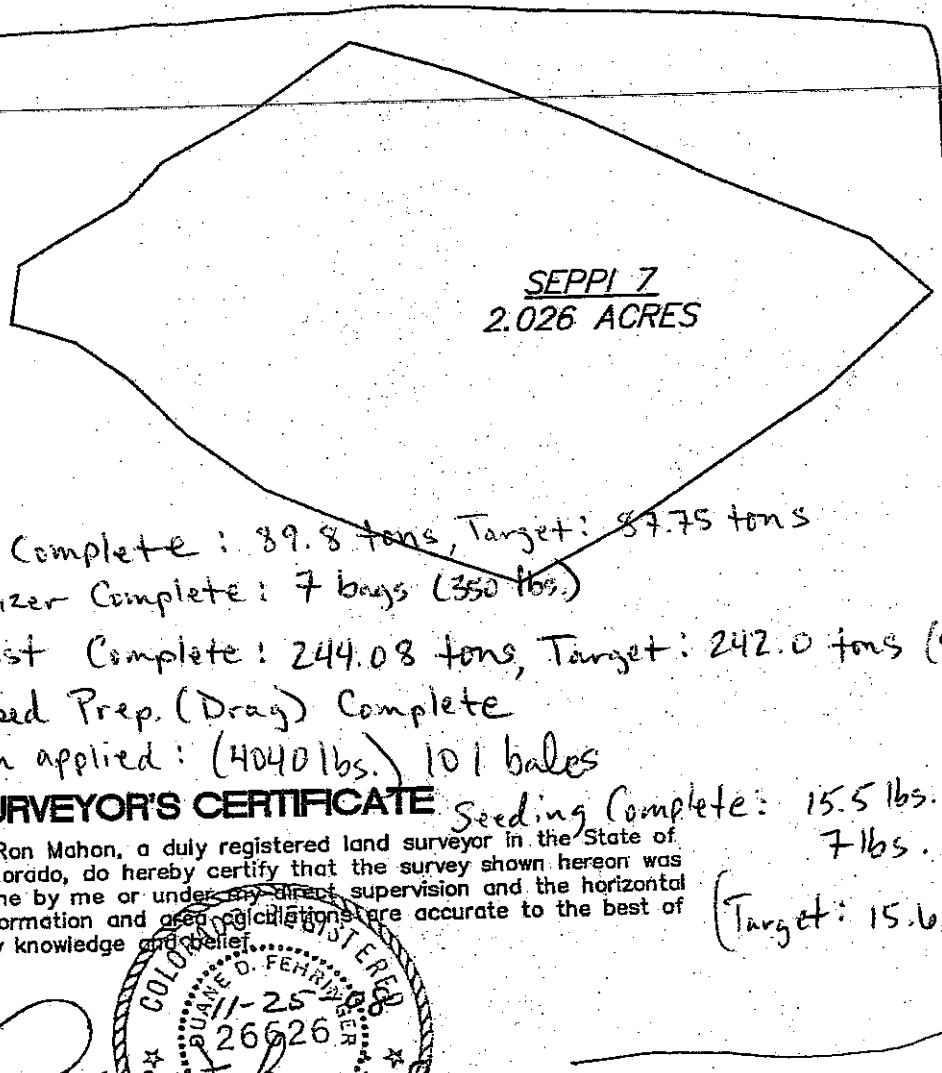
μ

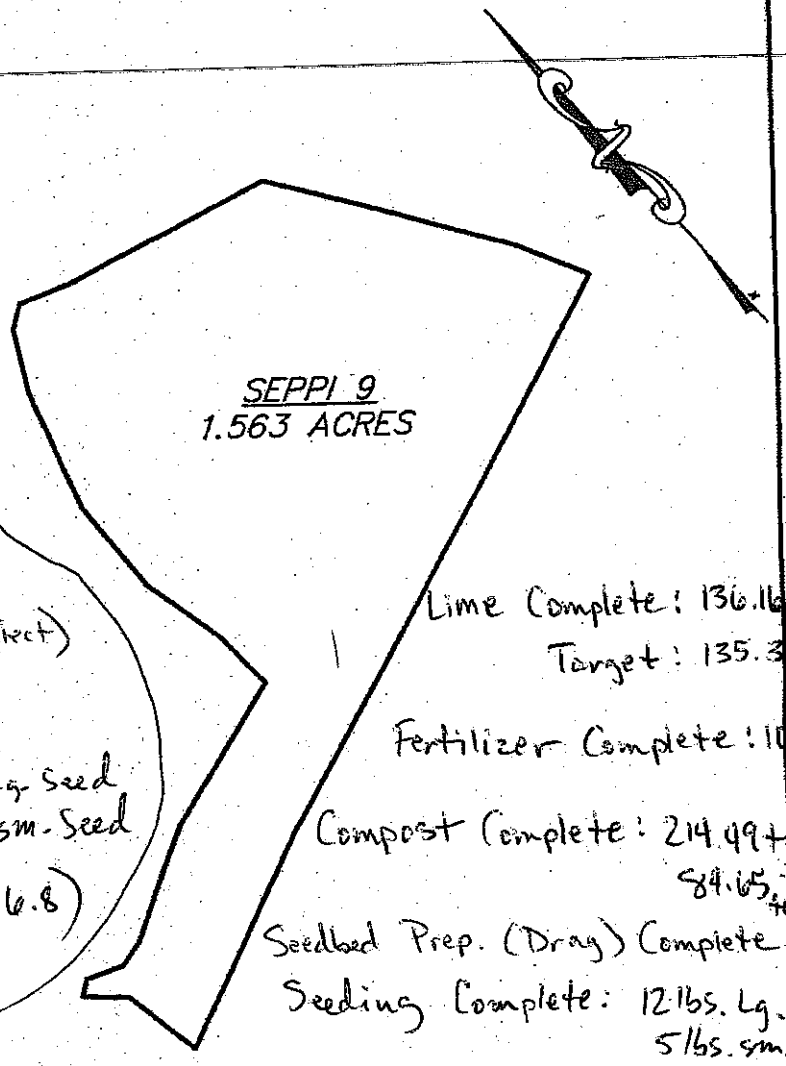
See Next Page for Final



100 50 0 100 Feet

-Complete-





Lime Complete: 89.8 tons, Target: 87.75 tons
Fertilizer Complete: 7 bags (350 lbs.)
Compost Complete: 244.08 tons, Target: 242.0 tons (Select)
Seedbed Prep. (Drag) Complete
Mulch applied: (4040 lbs.) 101 bales

SURVEYOR'S CERTIFICATE

I, Ron Mahon, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

Seeding Complete: 15.5 lbs. Lg. Seed
7 lbs. sm. Seed
(Target: 15.6/6.8)

COLORADO REGISTERED DUANE D. FEHRINGER 11-25-08 26626 L.S. AND P.E.

Duane D. Fehringer P.E. & P.L.S. 26626

Lime Complete: 136.16 tons,
Target: 135.39 tons

Fertilizer Complete: 10 bags (500 lbs.)

Compost Complete: 214.49 tons (Select)
84.65 tons (Boss)

Seedbed Prep. (Drag) Complete

Seeding Complete: 12 lbs. Lg. Seed
5 lbs. sm. seed

(Target: 12.0/5.2)

Inter-Mountain Engineering Ltd.
46581 US HWY 6&24, STE 283 BOX 978 AVON, CO 81620 PH: (970)949-5872
8391 CONTINENTAL DIVIDE RD, SUITE 107 LITTLETON, CO 80127 PH: (303)948-4229

CLIENT: FRONTIER ENVIRONMENTAL, INC.

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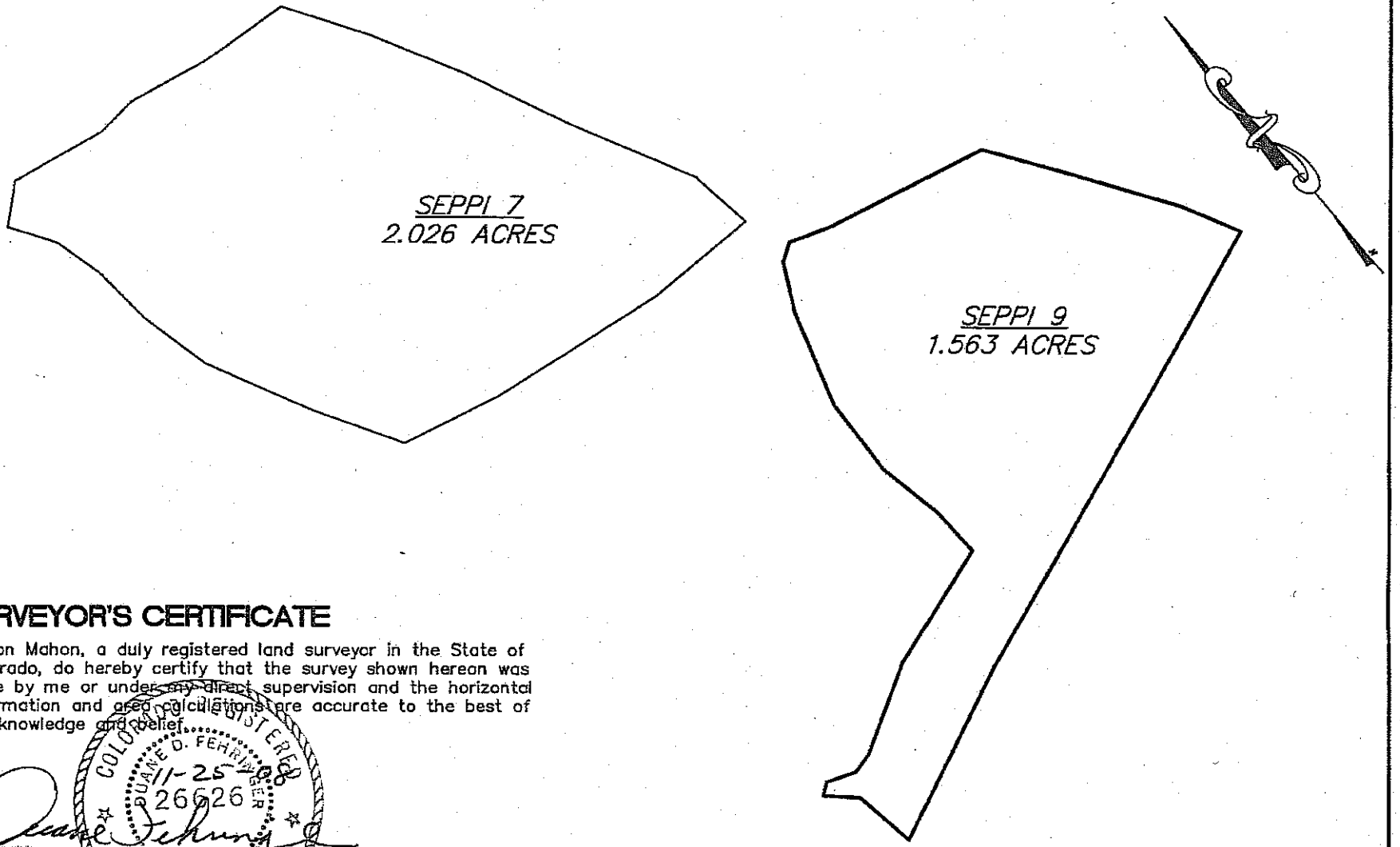
SEPPI 7 AND SEPPI 9
CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=100'
DATE ISSUED:	11-25-08
PROJECT NO.	08-0032
SHEET	

* Pre-Tilled



SURVEYOR'S CERTIFICATE

I, Ron Mahon, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED
DUANE D. FEHRINGER
11-25-08
26626
P.E. AND P.L.S.

Duane D. Fehringer P.E. & P.L.S. 26626

Inter-Mountain Engineering Ltd.
40891 US HWY 6&24, STE 203 BOX 978 AVON, CO 81620 PH: (970)949-5072
8351 CONTINENTAL DIVIDE RD, SUITE 147 LITTLETON, CO 80127 PH: (303)948-6210

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SEPPI 7 AND SEPPI 9

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=100'
DATE ISSUED:	11-25-08
PROJECT NO.	08-0032
SHEET	

MOISTURE CONTENT

- Tare Container
- Weigh sample. Record wet sample weight.
- Dry sample until sample appears dry, minimum of 1 hour on hotplate or in oven
- Weigh sample. Record dry sample weight
- Calculate % Moisture = (Wet weight – Dry weight)/Wet Weight

Moisture Content Record for Lime/Compost (circle one)

Date	Wet Weight (g)	Dry Weight (g)	Water Weight (g)	% Moisture	
	Pan 2 Tare 0.29 oz	oz			East Pile
04-10-09	3.70 - 0.29 =	2.67 - 0.29 =			
	3.41	2.38	1.03		Trial 1
	96.67	67.42	29.25	43%	
	Pan 3 Tare 0.29 oz				
04-13-09	1.94 - 0.29 = 1.65	1.56 - 0.29 = 1.27	0.38 / 1.09	30.0%	East Pile
					Tr 2
	Pan 1 Tare = 0.29 oz				West Pile
04-13-09	1.75 - 0.29 = 1.46	1.38 - 0.29 = 1.09			
	41.4 g	30.9 g	10.5 g	34.0%	
					X = 32.0%
					Applied to Sept 7

Name/Signature: _____ **Date:** 04-13-09

West Lime Pile

AG, Sept. 8, 9, Smith 1

MOISTURE CONTENT

- Tare Container
- Weigh sample. Record wet sample weight.
- Dry sample until sample appears dry, minimum of 1 hour on hotplate or in oven
- Weigh sample. Record dry sample weight
- Calculate % Moisture = (Wet weight – Dry weight)/Wet Weight

Moisture Content Record for Lime/Compost (circle one)

Date	Wet Weight (g)	Dry Weight (g)	Water Weight (g)	% Moisture
04-14-09	Pan 1 Tare = 8.3g 45.9 - 8.3 = 37.6	37.2 - 8.3g = 27.9	9.7	34.8 %
04-14-09	Pan 2 = 8.3g 56.2 - 8.3g = 47.9	43.4 - 8.3g = 35.1	12.8	36.5 %
				Avg. = 35.7%

Name/Signature: [signature]

Date: 04-15-09

Lime Application Rate Calculation Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: **Seppi 7**

POLYGON CHARACTERISTICS

Net Application Rate (22 dry tons/1000 tons soil unless noted otherwise)	22 dry tons/1000 tons soil
Mixing Safety Factor (10% unless noted otherwise)	10.00% %
% Rock (0 unless noted otherwise)	0.00% %
Treatment Depth	6 inches
Total Area	2.026 acres

LIME CHARACTERISTICS

Lime Particle Size Distribution

Percent >10 mesh		X 0.1	=	0.0000	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.0004	(B)
Percent < 60 mesh	99.92%	X 1	=	0.9992	©
			=	0.9996	(Sum of A, B, and C)

Lime Reactivity

Calcium Carbonate Equivalence		82.20%	%
Percent Moisture		32.0%	%
Bulk Density	0.75 grams/cc	= 0.632	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * (1000 tons soil/acre/6") * Treatment Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 43.31 tons/acre = 87.75 tons total
= 1.99 lbs/ft2

Lime Rate = 68.52 cubic yards/acre = 138.83 cy total

Signature: [signature]

Date: 4/13/09

Signature: [signature]

Date: 04-17-09

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: Seep 7

Date: 04-13-09 Time: 14:30 - 15:30

Field Application Rate: 43.31 tons/acre (1.99 psf) (psf = tons/acre*0.0459)

Total Tarp Dimensions: 27 (sq. ft.)

Tare Buckets 1.7 each x 3 = 5.1 lbs

Test 1 Material Weight: 40.28 (lbs.) Rate: 1.49 * psf
(17.44 + 12.14 + 15.80) - 5.1

Test 2 Material Weight: 55.1 (lbs.) Rate: 2.04 ✓ psf
(20.22 + 25.78 + 14.20) - 5.1

Test 3 Material Weight: 45.9 (lbs.) Rate: 2.44 * psf
(27.14 + 23.98 + 15.84) - 5.1

Test 4 Material Weight: 53.64 (lbs.) Rate: 1.99 ✓ psf
(21.68 + 22.80 + 14.26) - 5.1

Test 5 Material Weight: 52.82 (lbs.) Rate: 1.96 ✓ psf
(17.08 + 15.24 + 25.60) - 5.1

} OK

Tolerance
1.99 + 10% = 2.19
1.99 - 10% = 1.81

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: Seepi 7

Date: 04-14-09 Time: 08:50

Field Application Rate: 43.31 tons/acre (1.99 psf)

Tolerance
1.99 + 10% = 2.19
1.99 − 10% = 1.81

Total Tarp Dimensions: 27 (sq. ft.)

Tare wt 3 buckets = 5.1 #

Test 1 Material Weight: 50.96 (lbs.) Rate: 1.89 ✓ psf

(19.14 + 21.72 + 15.18) − 5.1 =
Test 2 Material Weight: 38.81 (lbs.) Rate: 1.44 * psf

(20.46 + 14.09 + 9.30) − 5.1 =
Test 3 Material Weight: 44.28 (lbs.) Rate: 1.64 * psf

(19.10 + 19.92 + 10.36) − 5.1
Test 4 Material Weight: 53.28 (lbs.) Rate: 1.97 ✓ psf

(25.16 + 31.28 + 11.94) − 5.1 =
Test 5 Material Weight: 55.18 (lbs.) Rate: 2.04 ✓ psf

09:23 START TRT Seepi 7

(24.24 + 13.14 + 22.90) − 5.1

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: John A. McAuley
PWT / EPA Representative

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

AMD

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: Seepi 7 and Seepi 8

Date: 04-14-09 Time: 08:50

Field Application Rate: 43.31 tons/acre (1.99 psf)

Tolerance
1.99 + 10% = 2.19
1.99 − 10% = 1.81

Total Tarp Dimensions: 27 (sq. ft.)

Tare wt 3 buckets = 5.1 #

Test 1 Material Weight: 50.96 (lbs.) Rate: 1.89 ✓ psf

(19.14 + 21.72 + 15.18) − 5.1 =
Test 2 Material Weight: 38.81 (lbs.) Rate: 1.44 * psf

(20.46 + 14.09 + 9.30) − 5.1 =
Test 3 Material Weight: 44.28 (lbs.) Rate: 1.64 * psf

(19.10 + 19.92 + 10.36) − 5.1
Test 4 Material Weight: 53.28 (lbs.) Rate: 1.97 ✓ psf

(25.16 + 31.28 + 11.94) − 5.1 =
Test 5 Material Weight: 55.18 (lbs.) Rate: 2.04 ✓ psf

09:23 START TRT Seepi 7

(24.24 + 13.14 + 22.90) − 5.1

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: John A. McAndrews
PWT / EPA Representative

Note: Started Seepi 8 also today using this calibration, double rate for 12" treatments. JAM

FERTILIZER CALIBRATION

- Place a known weight (e.g., one 50-lb bag) into the spreader hopper.
- Follow the operations manual to set the equipment to meet the design field application rate (e.g., spreader opening, travel speed, RPMs, etc.)
- Make one pass dispersing the fertilizer until the contents of the spreader are emptied.
- Measure the area over which the fertilizer was applied
- Divide the weight of material applied by the total area it was applied to, convert to lbs/acre, and compare to the design field application rate.
- An acceptable test will be within 10% of the required rate.

Fertilizer Calibration Record

Date: 04-14-09 Time: 15:30

Irrigated Meadow / Fluvial Deposit Polygon ID: Seep 7

Fertilizer Type: 0 : 45 : 0 (N:P:K)

Design Field Application Rate: 153 lbs/acre (± 10% range = 139 to 168)

Calibration Data for one 50 pound bag of fertilizer:

Dimensions over which bag was spread: 57 feet x 237 feet

Total Calibration Area: 13,509 (ft^2) * 1 acre / 43560 ft^2 = 0.310 acres

Calibrated Application Rate: 161 (lbs/acre)

Quality Control Data for Field Application Verification:

Area of Polygon: 2.026 (acres)

Total Weight to be Applied: 350 (lbs) } as per B. Scarbrough (FFSI) ≈ 173 lbs/acre

# of 50 lb. Bags to be Applied: 7 bags } (over-~~applied~~ applied 1 bag) JMM

Print / Sign Name: [signature]
Frontier Representative

Print / Sign Name: [signature]
PWT / EPA Representative

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: Seep 7

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	Acid Fizz?
P430	7.5	7.5	7.5	No	Yes
P428	7.5	7.5	7.5	No	Yes
P427	7.5	7.5	7.5	No	Yes

04-17-09

Name/Signature: [signature]

Date: 04-17-09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Fluvial Deposit/Irrigated Meadows Polygon: **Paste pH Record** Seepi 7

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
P430	0.0	14.9	14.9	7.4
P428	0.0	18.0	17.3	7.5
P427	0.0	17.7	17.5	7.5

04-17-09

Performed 1 point calibration w/ pH 7.0 buffer prior to test.

Name/Signature: [signature] **Date:** 04-17-09

MOISTURE CONTENT

Seepi 7
Select Metals

- Tare Container
- Weigh sample. Record wet sample weight.
- Dry sample until sample appears dry, minimum of 1 hour on hotplate or in oven
- Weigh sample. Record dry sample weight
- Calculate % Moisture = (Wet weight – Dry weight)/Wet Weight

Moisture Content Record for Lime/Compost (circle one)

Date	Wet Weight (g)	Dry Weight (g)	Water Weight (g)	% Moisture
Truck 28 04-21-09	Tare Pan = 8.3g 57.6 - 8.3 = 49.3	47.2 - 8.3 = 38.9	10.4	21.1 %
Truck 20 04-21-09	Tare Pan 2 = 8.3g 60.2 - 8.3 = 51.9	50.0 - 8.3 = 41.7	10.2	19.7 %
				$\bar{x}$ = 20.4

Name/Signature: Jodi A. Hyde

Date: 04-21-09

Compost Application Rate Calculation Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: **Seppi 7**

POLYGON CHARACTERISTICS

Target % Organic Carbon (1.5% for T-6, 2.5% for T-12)			1.50% %
Treatment Depth			6 inches ✓
Treatment Area			2.026 acres ✓

COMPOST CHARACTERISTICS

Percent Organic Carbon			15.78%	%
Percent Moisture			20.40% ✓	%
Wet Bulk Density	0.797 grams/cc	=	0.672	tons/cy ✓

CALCULATE COMPOST APPLICATION RATE

Compost = $\dfrac{\text{Target \% OC * depth * 1000 tons/acre/6"}}{\text{Compost \% OC * (1- \%Moisture/100)}}$

Compost Rate =	119.45 tons/acre	=	242.00 tons total
Compost Rate =	177.88 cubic yards/acre	=	360.38 cy total ✓

Signature: Roger A. Merrick Digitally signed by Roger A. Merrick DN: cn=Roger A. Merrick, o=US, o=E2 Consulting Engineers, Inc., email=roger.merrick@e2.com Location: Denver, CO Date: 2009.04.22 10:38:31 -06'00'

Date: 04-22-09

Signature: [signature]

Date: 04-22-09

KUHN COMPOST SPREADER RATES

Date	Kuhn Push Ram Feed (percent)	Kuhn Mph	Polygon	Calibration Area sq. ft	Calibration Vol. (CY)	Calibration Acreage	Target App Rate (yd3/acre)	Calibration Trial Rate (yd3/acre)	Compost	Comment
4/29/2009	60	2.0	Seppi 8	689	6.5	0.016	391.5	[redacted]	Select	
4/29/2009	30	2.0	Seppi 8	7,800	6.5	0.179	60	36.3	BOSS	Trial 1, Seppi 8
4/29/2009	35	2.5	Seppi 8	4,680	6.5	0.107	60	[redacted]	BOSS	Trial 4, Seppi 8
4/29/2009	39	2.0	Seppi 8	3,250	6.5	0.075	60	87	BOSS	Trial 3, Seppi 8
4/29/2009	45	2.0	Seppi 8	2,550	6.5	0.058	60	112	BOSS	Trial 2, Seppi 8 (note Seppi 9 target rate)
4/29/2009	45	2.0	Seppi 9	2,533	6.5	0.058	113.8	[redacted]	BOSS	Trial 1, Seppi 9
5/8/09	37	2.0	Sm 1				158	34.2	Select	Trial 1, Smith 1
5/8/09	42	2.0	Sm 1				158	101.0	Select	Trial 2, Smith 1
5/8/09	49	2 - 2.5	Sm 1				158	97.0	Select	Trial 3, Smith 1
5/8/09	45	2 - 2.5	Sm 1				158	94.0	Select	Trial 4, Smith 1
5/8/09	42	3.0	Sm 1				158	61.0	Select	Trial 5, Smith 1
5/8/09	42	2.5	Sm 1				158	[redacted]	Select	Trial 6, Smith 1 (Used for 1/2 rate)
5/8/09	42	2.5	Sm 1				158	[redacted]	Select	Repeat, Smith 1 (Used for 1/2 rate)
5/11/09	42	2.5	Sm 1	3249	4.25	0.07	79	56.98	Select	
5/11/09	42	2.5	Sm 1	2618	4.25	0.06	79	70.71	Select	
5/11/09	42	2.5	Sm 1	2210	4.25	0.05	79	83.77	Select	
5/11/09	42	2.5	Sm 1	2700	4.25	0.06	79	68.57	Select	
5/11/09	42	2.5	Sm 1	3058	4.25	0.07	79	60.54	Select	
5/11/09	42	2.5	Sm 1	2600	4.25	0.06	79	71.20	Select	
5/11/09	42	2.5	Sm 1	2622	4.25	0.06	79	70.61	Select	
5/11/09	42	2	Sm 1	2750	4.25	0.06	79	67.32	Select	
5/11/09	50	2.3	Sm 1	1501	4.25	0.03	79	123.34	Select	
5/11/09	45	2.3	Sm 1	2318	4.25	0.05	79	79.87	Select	
5/11/09	45	2.3	Sm 1	2794	4.25	0.06	79	66.26	Select	
5/11/09	45	2.3	Sm 1	2500	4.25	0.06	79	74.05	Select	
5/11/09	45	2.3	Sm 1	2772	4.25	0.06	79	66.79	Select	
5/11/09	45	2.1	Sm 1	1800	4.25	0.04	79	102.85	Select	
5/11/09	45	2.3	Sm 1	2580	4.25	0.06	79	71.76	Select	
5/11/09	42	2.3	Sm 1	2142	4.25	0.05	79	86.43	Select	
5/11/09	42	2.3	Sm 1	2516	4.25	0.06	79	73.58	Select	
5/11/09	42	2.3	Sm 1	2730	4.25	0.06	79	67.81	Select	
5/11/09	42	2.3	Sm 1	2700	4.25	0.06	79	68.57	Select	
5/11/09	42	2.3	Sm 1	2760	4.25	0.06	79	67.08	Select	
5/11/09	42	2.3	Sm 1	2783	4.25	0.06	80	66.52	Select	

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: Seep: 7 Compost (Select materials)

Date: 04-22-09 Time: 13:15

Field Application Rate: 119.45 tons/acre (5.48 psf) (psf = tons/acre*0.0459)

4 tarps Total Tarp Dimensions: ~~45~~ 36 (sq. ft.)

5.48 +10% = 5.94

5.48 -10% = 4.98

Test 1 Material Weight: 96.22 (lbs.) Rate: 2.67 psf

(24.74 + 28.6 + 31.24 + 13.42) - 6.8 tare

Test 2 Material Weight: _____ (lbs.) Rate: _____ psf

2.67 X 2 passes = 5.34

Test 3 Material Weight: _____ (lbs.) Rate: _____ psf

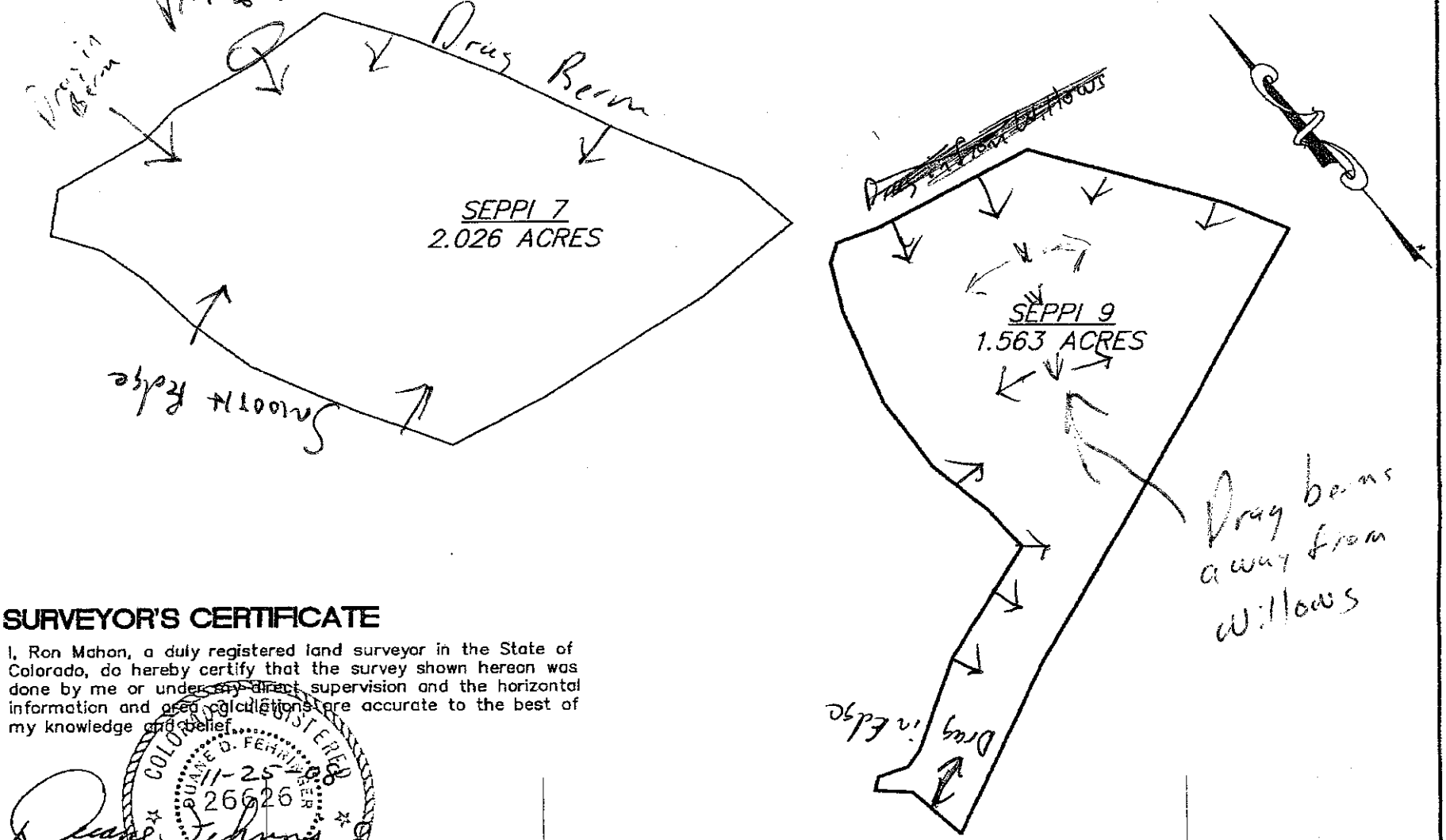
Test 4 Material Weight: _____ (lbs.) Rate: _____ psf

Test 5 Material Weight: _____ (lbs.) Rate: _____ psf

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

Seedbed Prep Punchlist 05-15-09



SURVEYOR'S CERTIFICATE

I, Ron Mahon, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 26626 L. S. AND P. E.

11-25-08

Duane D. Fehringer P.E. & P.L.S. 26626

Inter-Mountain Engineering Ltd.

46591 US HWY 6&24, STE 283 BOX 978 AVON, CO 81620 PH: (970) 949-5872
8391 CONTINENTAL DIVIDE RD. SUITE 107 LITTLETON, CO 80127 PH: (303) 948-6210

CLIENT: FRONTIER ENVIRONMENTAL INC.

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SEPPI 7 AND SEPPI 9

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=100'
DATE ISSUED:	11-25-08
PROJECT NO.	08-0032
SHEET	

Seeder Calibration Form

Calibration Form Instructions

1) Enter the Polygon ID, Polygon acreage, Calibration Date, Target seed rate(s), %PLS in each seed mix, and % seed in each each mix
2) Perform seeder calibration per the manufacturers' instructions 3 times and enter the total weight of bulk seed mix in grams collected for each seed box
3) For each individual calibration run, verify that the achieved rate is within ±20 % of the 1/2 Target Rate
4) After the 3rd calibration run, verify that the 3 Run Average rate is within ±10% of the 1/2 Target Rate

NOTE: The BLUE text shows the "calculated values" based on the entered data

Polygon ID Seppi 7 **Acres:** 2.026 **Date:** 10/1/09

	Seed Mix 1		Seed Mix 2	
Target Rate	7.00	lbs PLS / acre	3.00	lbs PLS / acre
% PLS in seed mix	91%		90%	
Dilution Factor	100%	(% seed)	100%	(% seed)
Target Application Rate	7.69	bulk pounds / acre	3.33	bulk pounds / acre
	15.6	Total bulk pounds	6.8	total bulk pounds
1/2 Target Rate (2 passes)	3.85	bulk pounds / acre	1.67	bulk pounds / acre
	7.8	1/2 of total bulk pounds	3.4	1/2 of total bulk pounds
Test Run 1	8.70	total grams in 3 bags	3.60	total grams in 3 bags
	4.35	bulk lbs/acre	1.80	bulk lbs/acre
Test Run 2	7.80	total grams in 3 bags	3.90	total grams in 3 bags
	3.90	bulk lbs/acre	1.95	bulk lbs/acre
Test Run 3	8.00	total grams in 3 bags	3.50	total grams in 3 bags
	4.00	bulk lbs/acre	1.75	bulk lbs/acre
3 Run Average	8.17	total grams in 3 bags	3.67	total grams in 3 bags
	4.08	bulk lbs/acre	1.83	bulk lbs/acre
For QC Checks:				
+20% of 1/2 Target Rate	4.62	bulk pounds / acre	2.00	bulk pounds / acre
-20% of 1/2 Target Rate	3.08	bulk pounds / acre	1.33	bulk pounds / acre
+10% of 1/2 Target Rate	4.23	lbs seed mix / acre	1.83	lbs seed mix / acre
-10% of 1/2 Target Rate	3.46	lbs seed mix / acre	1.50	lbs seed mix / acre

PWT Signature: _____

Frontier Signature: _____

* Calibrated for Seppi 7; used for seeding Seppi 7, 8, and 9 on 10-01-09

Kind: SPECIAL LARGE MIX
Lot: 2138898

Kind & Variety:	Pure%	Germ%	Origin:
SLENDER W/G, SAN LUIS	56.51	92	WA
WESTERN W/G, ROSANNA	41.04	95	WA

Crop: .12% Inert: 2.25% Weed: .09% Net Wt: 38.61# (35 PLS#) 5/AC

Noxious Weed: None Found Test Date: 6/08

REMARKS: FRONTIER ENVIRONMENTAL
ARKANSAS VALLEY SEED, 4333 HWY 66, LONGMONT CO 80504

Kind: SEPPI RANCH IRR. MIX
Lot: 2139079

Kind & Variety:	Pure%	Germ%	Origin:
SHEEP FESCUE, COVAR	32.28	93	WA
CLOVER, ALSIDE	32.28	93	MT
CLIMAX TIMOTHY	16.68	90	CN
PRAIRIE JUNEGRASS	6.82	88	WA
CANADA BLUEGRASS, REUBENS	6.67	90	WA
REDTOP	3.09	97	WA

Crop: .05% Inert: 1.60% Weed: .54% Net Wt: 30# (27 PLS#) 9 ACRES

Noxious Weed: None Found Test Date: 6/08

REMARKS: FRONTIER ENVIRONMENTAL
ARKANSAS VALLEY SEED, 4333 HWY 66, LONGMONT CO 80504

Seppi 3 16 2008

Seppi 7, 8, 9 2009

Polygon Completion Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: Seepi 8

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
December 2008	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.5. **Comments/Deviations:**
December 2008	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.6. **Comments/Deviations:**
04-23-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Sections 3.6 and 3.7A through 3.7E. **Comments/Deviations:** began lime spread 04-14-09
05-01-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.7F through 3.7I. STARTED CONCRETE 04-23-09 **Comments/Deviations:**
05-19-09	✓	Completed replacement of irrigation ditches in accordance with Specification Section 3.8. **Comments/Deviations:** Across Seepi 8
10-01/02-09	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.9. **Comments/Deviations:** Planar Drag 05-22-09 ; Dozer Track 09-30, 10-01
06-04-09		Completed mulching in accordance with Specification Section 3.10. **Comments/Deviations:** Mulched in muddy conditions - need to address ruts Addressed 09-30, 10-01-09 - Satisfactory
N/A		Completed reinstallation of fencing in accordance with Specification Section 3.11. **Comments/Deviations:**
11-02-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.15. **Comments/Deviations:**

Quantity of Work Estimated in Proposal: N/A - Addressed in Invoice Documents dms

Quantity of Work Performed:

Signature of ~~Subcontractor~~ dms Contractor — Date: 11-04-09

Signature of Contractor SJG — Date: 11/05/09

- Complete -

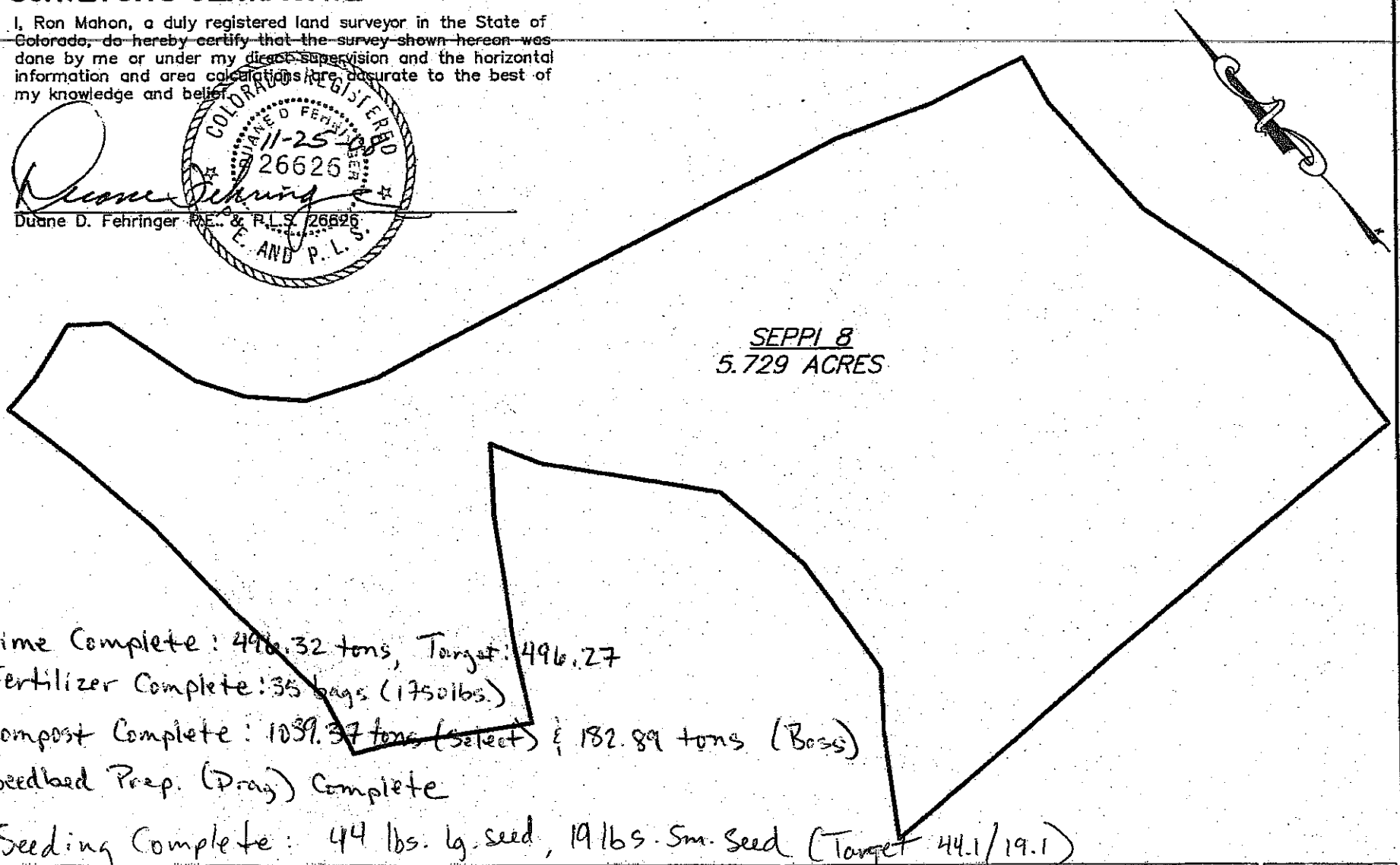
SURVEYOR'S CERTIFICATE

I, Ron Mahon, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

Duane D. Fehringer P.E. & P.L.S. 26626

11-25-08

COLORADO REGISTERED DUANE D. FEHRINGER 26626 P.E. AND P.L.S.



Lime Complete: 496.32 tons, Target: 496.27

Fertilizer Complete: 35 bags (1750lbs.)

Compost Complete: 1039.37 ~~tons (Select)~~ & 182.89 tons (Boss)

Seedbed Prep. (Drag) Complete

Seeding Complete: 44 lbs. lg. seed, 19lbs. Sm. Seed (Target 44.1/19.1)

Inter-Mountain Engineering Ltd.
40581 US HWY 6&24, STE 203 BOX 978 AVON, CO 81620 PH: (970)949-5972
8392 CONTINENTAL DIVIDE RD, SUITE 107 LITTLETON, CO 80127 PH: (303)948-6210

CLIENT: FRONTIER ENVIRONMENTAL INC.

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SEPPI 8

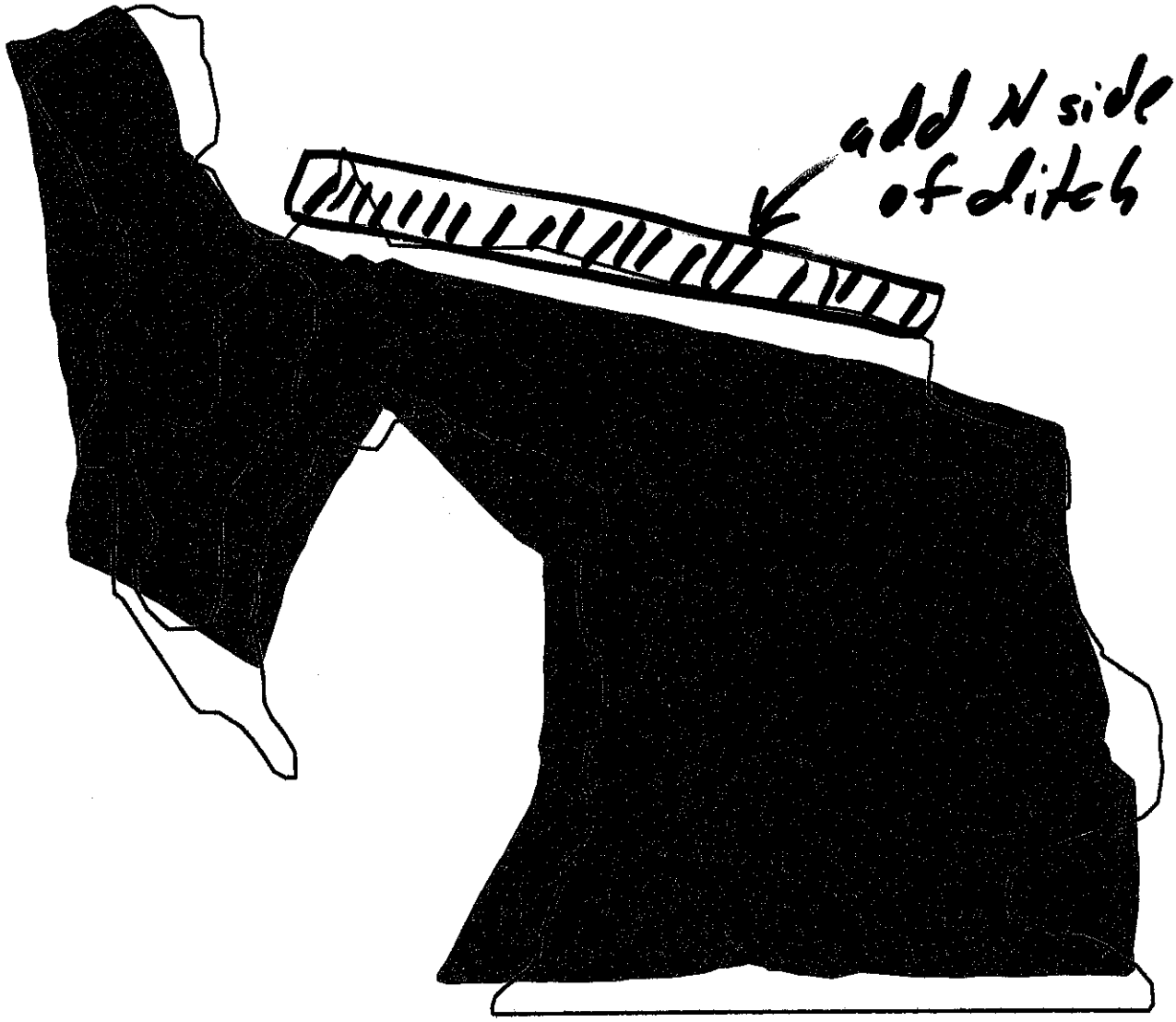
CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=100'
DATE ISSUED:	11-25-08
PROJECT NO.	08-0032
EXHIBIT	

* Pre-Tilled

Original Seppi 8 - 5.35 acres

7/30/08 Seppi 8 - 5.82 acres — See Next Sheet For Final Acreage



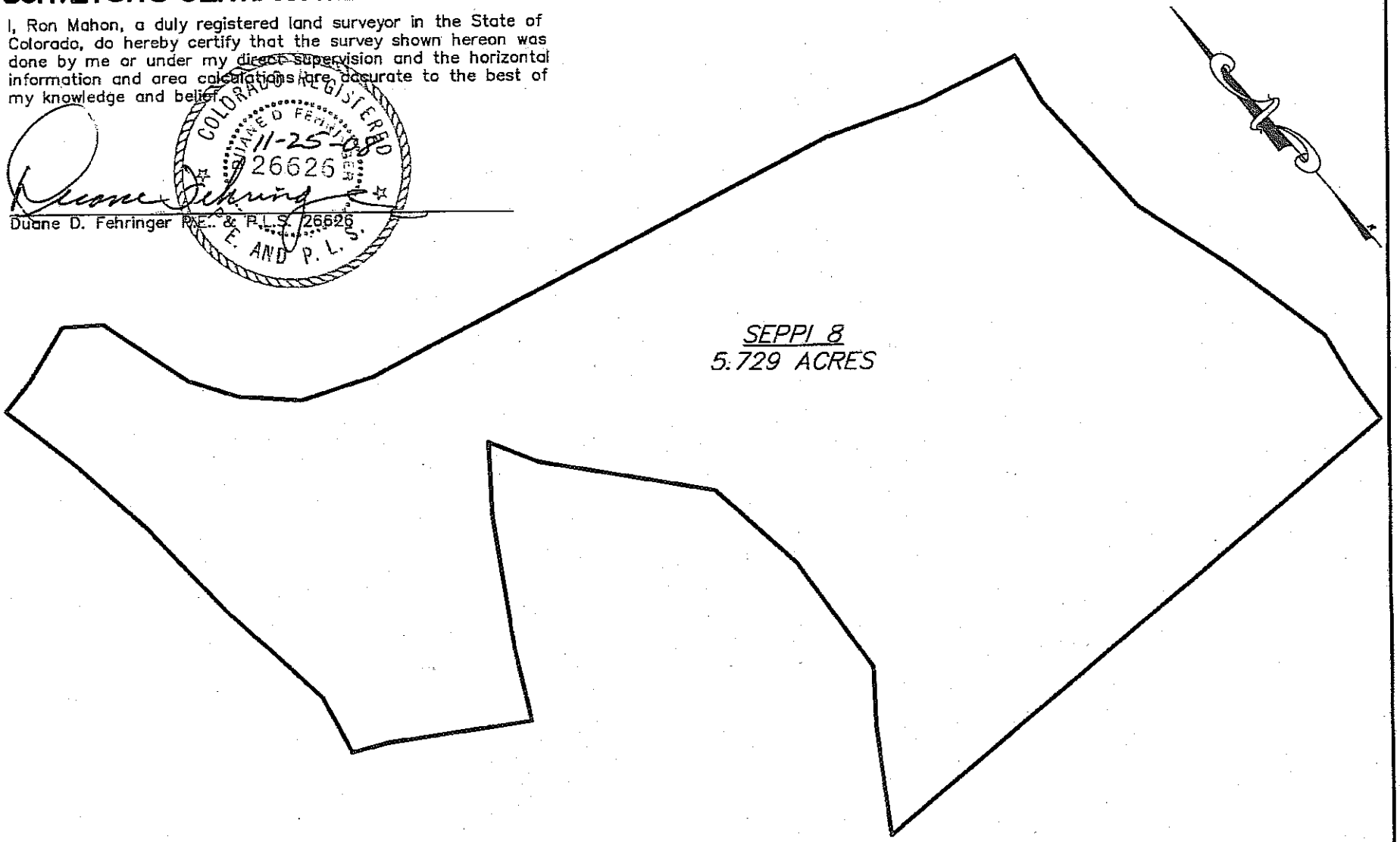
200 100 0 200 Feet

SURVEYOR'S CERTIFICATE

I, Ron Mahon, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED
DUANE D. FEHRINGER
11-25-08
26626
P.E. AND P.L.S.

Duane D. Fehringer P.E. & P.L.S. 26626



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CLIENT: FRONTIER ENVIRONMENTAL INC.

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SEPPI 8

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=100'
DATE ISSUED:	11-25-08
PROJECT NO.	08-0032
CHKD?	

West Line Pile
AG, Sept. 7, 09, Smith 1

MOISTURE CONTENT

- Tare Container
- Weigh sample. Record wet sample weight.
- Dry sample until sample appears dry, minimum of 1 hour on hotplate or in oven
- Weigh sample. Record dry sample weight
- Calculate % Moisture = (Wet weight – Dry weight)/Wet Weight

Moisture Content Record for Lime/Compost (circle one)

Date	Wet Weight (g)	Dry Weight (g)	Water Weight (g)	% Moisture
	Pan 1 Tare = 8.3g			
04-14-09	45.9 - 8.3 = 37.6	36.2 - 8.3g = 27.9	9.7	34.8 %
	Pan 2 = 8.3g			
04-14-09	56.2 - 8.3g = 47.9	43.4 - 8.3g = 35.1	12.8	34.5 %
				= 35.7%

Avg.

Name/Signature: [signature]

Date: 04-15-09

Lime Application Rate Calculation Form

Irrigated Meadows

Irrigated Meadow Polygon Name/ID: **Seppi 8**

POLYGON CHARACTERISTICS

Net Application Rate (22 dry tons/1000 tons soil unless noted otherwise)	22	dry tons/1000 tons soil
Mixing Safety Factor (10% unless noted otherwise)	10.00%	%
% Rock (0 unless noted otherwise)	0.00%	%
Treatment Depth	12	inches
Total Area	5.729	acres

LIME CHARACTERISTICS

Lime Particle Size Distribution					
Percent >10 mesh		X 0.1	=	0.0000	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.0004	(B)
Percent < 60 mesh	99.92%	X 1	=	0.9992	©
Lime Reactivity			=	0.9996	(Sum of A, B, and C)
Calcium Carbonate Equivalence				82.20%	%
Percent Moisture				32.0%	%
Bulk Density	0.75 grams/cc		=	0.632	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * (1000 tons soil/acre/6") * Treatment Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 86.62 tons/acre = 496.27 tons total
= 3.98 lbs/ft2 1.99 (two-pass rate in lbs/ft2)

Lime Rate = 137.05 cubic yards/acre = 785.14 cy total

Signature: [signature]

Date: 4/14/09

Signature: [signature]

Date: 04-14-09

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: Seepi 7 and Seepi 8 (AD)

Date: 04-14-09 Time: 08:50

Field Application Rate: 43.31 tons/acre (1.99 psf)

Tolerance
1.99 + 10% = 2.19
1.99 − 10% = 1.81

Total Tarp Dimensions: 27 (sq. ft.)

Tare wt 3 buckets = 5.1 #

Test 1 Material Weight: 50.96 (lbs.) Rate: 1.89 ✓ psf

(19.16 + 21.72 + 15.18) − 5.1 =
Test 2 Material Weight: 38.81 (lbs.) Rate: 1.44 * psf

(20.46 + 14.09 + 9.30) − 5.1 =
Test 3 Material Weight: 44.28 (lbs.) Rate: 1.64 * psf

(19.10 + 19.92 + 10.36) − 5.1
Test 4 Material Weight: 53.28 (lbs.) Rate: 1.97 ✓ psf

(25.16 + 31.28 + 11.94) − 5.1 =
Test 5 Material Weight: 55.18 (lbs.) Rate: 2.04 ✓ psf

09:23 START TRT Seepi 7

(24.24 + 13.14 + 22.90) − 5.1

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: John A. McArdle / John G. Hughes
PWT / EPA Representative

Note: Started Seepi 8 also today using this calibration, double rate for 12" treatment. (AD)

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: Seep 8

Date: 04-15-09 Time: 07:45 – 08:30

(43.3 X 2) for 12" T/T

Field Application Rate: 86.7 tons/acre (1.99 psf) (psf = tons/acre*0.0459) 2 applications

Total Tarp Dimensions: 27 (sq. ft.)

1.99 + 10% = 2.19

1.99 – 10% = 1.81

Test 1 Material Weight: 54.94 (lbs.) Rate: 2.03 ✓ psf

(21.70 + 13.92 + 24.22) – 5.1

Test 2 Material Weight: 52.83 (lbs.) Rate: 1.96 ✓ psf 08:30 04-15-09 JMD

(26.10 + 12.48 + 19.34) – 5.1

Test 3 Material Weight: _____ (lbs.) Rate: _____ psf

Test 4 Material Weight: _____ (lbs.) Rate: _____ psf

Test 5 Material Weight: _____ (lbs.) Rate: _____ psf

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

FERTILIZER CALIBRATION

- Place a known weight (e.g., one 50-lb bag) into the spreader hopper.
- Follow the operations manual to set the equipment to meet the design field application rate (e.g., spreader opening, travel speed, RPMs, etc.)
- Make one pass dispersing the fertilizer until the contents of the spreader are emptied.
- Measure the area over which the fertilizer was applied
- Divide the weight of material applied by the total area it was applied to, convert to lbs/acre, and compare to the design field application rate.
- An acceptable test will be within 10% of the required rate.

Fertilizer Calibration Record

Date: 04-15-09 Time: ~~Sepp: 8~~ 12:45

(Irrigated Meadow) / Fluvial Deposit Polygon ID: Sepp: 8

Fertilizer Type: 0:45:0 (N:P:K)

Design Field Application Rate: 306 lbs/acre (± 10% range = 139 to 168)

25lb (153 lb rate X2)

153 lbs / 1 acre = 25 lbs / x = 0.163 acres

Calibration Data for one ~~50~~ pound bag of fertilizer:

Dimensions over which bag was spread: 50 feet x 132 feet

Total Calibration Area: 4600 (ft^2) * 1 acre / 43560 ft^2 = 0.152 acres

43,560 X .163 = 7100 sq ft

Calibrated Application Rate: 145 (lbs/acre) X 2 passes

50' spread

(Target) = 142' X 50'

Quality Control Data for Field Application Verification:

Area of Polygon: 5.729 (acres)

Total Weight to be Applied: 1753 (lbs)

# of 50 lb. Bags to be Applied: 35 bags

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Lift 2

Irrigated Meadow / Fluvial Deposit Polygon ID: Seepi8

Tolerance
1.99 + 10% = 2.19
- 10% = 1.81

Date: 04-16-09 Time: 08:00

Field Application Rate: 43.3 tons/acre (1.99 psf) (psf = tons/acre*0.0459)

Total Tarp Dimensions: 27 (sq. ft.)

Test 1 Material Weight: 46.1 (lbs.) Rate: 1.70* psf — Auger Not "Full"
(12.58 + 17.74 + 20.88) - 5.1 Tare

Test 2 Material Weight: 52.1 (lbs.) Rate: 1.93 ✓ psf
(17.18 + 16.74 + 23.32) - 5.1

Test 3 Material Weight: 54.7 (lbs.) Rate: 2.02 ✓ psf
(19.78 + 16.40 + 23.40) - 5.1

08:15
04-16-09

~~Test 4 Material Weight: _____ (lbs.) Rate: _____ psf~~

Test 5 Material Weight: _____ (lbs.) Rate: _____ psf

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: Seep 8 & Seep 9

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	Acid Fizz, Full Depth?
395 Seep 8	7.3	7.0	7.5	NA	Yes
391 "	7.0	7.0	7.0	NA	Yes
390 "	7.5	7.0	~~8.0~~	NA	Yes
389 "	7.0	7.0	7.0	NA	Yes
387 "	7.5	7.5	7.5	NA	Yes
386 "	7.5	7.5	7.8	NA	Yes
419 Seep 9	7.5	7.5	7.5	NA	Yes
422 Seep 9	7.7?	7.5	8.0	NA	Yes

Name/Signature: [signature]

Date: 10-23-09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Fluvial Deposit/Irrigated Meadows Polygon: **Paste pH Record** Seepi 8 & Seepi 9

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH	
395 Sep8 0-6"	0.0 Tare	15.7	14.3	7.3	Retest
395 Sep8 6-12"		15.9	14.6	6.9	→ 6.9 (4hrs)
391 " 0-6"		17.9	16.8	7.4	
391 " 6-12"		17.4	16.6	7.5	
390 " 0-6"		17.7	17.3	7.0	
390 " 6-12		18.5	17.8	7.1	
389 " 0-6		16.7	17.5	6.9	→ 6.9 (4hrs)
389 " 6-12		14.9	15.2	7.0	
387 " 0-6		19.7	19.4	7.3	
387 " 6-12		18.5	17.5	7.2	
386 " 0-6		16.5	17.1	7.2	
386 " 6-12		16.7	17.2	7.2	
Seepi 9					
419 0-6"	Tare 0.0	18.8	17.5	7.6	
419 6-12"		17.6	16.6	7.2	
422 0-6"		16.9	16.6	7.4	
422 6-12"		15.8	14.5	7.4	

Ran 2 point calibration (buffers 7.0 & 10.0) prior to testing. JHS

Name/Signature: [signature] **Date:** 04-23-09

Compost Application Rate Calculation Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: **Seppi 8**

POLYGON CHARACTERISTICS

Target % Organic Carbon (1.5% for T-6, 2.5% for T-12)		1.50% % ✓
Treatment Depth		12 inches
Treatment Area		5.729 acres ✓

COMPOST CHARACTERISTICS

Percent Organic Carbon		15.78% ✓ %
Percent Moisture		22.90% ✓ %
Wet Bulk Density	0.748 grams/cc ✓	= 0.630 ✓ tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre-6"}}{\text{Compost \% OC} * (1 - \text{\% Moisture}/100)}$$

Compost Rate =	246.64 tons/acre	= 1412.98 tons total
Compost Rate =	391.49 cubic yards/acre	= 2242.82 cy total

Signature: [signature]

Date: 04-23-09

Signature: [signature]

Date: 4/23/09

KUHN COMPOST SPREADER RATES

Date	Kuhn Push Ram Feed (percent)	Kuhn Mph	Polygon	Calibration Area sq. ft	Calibration Vol. (CY)	Calibration Acreage	Target App Rate (yd3/acre)	Calibration Trial Rate (yd3/acre)	Compost	Comment
4/29/2009	60	2.0	Seppi 8	689	6.5	0.016	391.5	[redacted]	Select	
4/29/2009	30	2.0	Seppi 8	7,800	6.5	0.179	60	36.3	BOSS	Trial 1, Seppi 8
4/29/2009	35	2.5	Seppi 8	4,680	6.5	0.107	60	[redacted]	BOSS	Trial 4, Seppi 8
4/29/2009	39	2.0	Seppi 8	3,250	6.5	0.075	60	87	BOSS	Trial 3, Seppi 8
4/29/2009	45	2.0	Seppi 8	2,550	6.5	0.058	60	112	BOSS	Trial 2, Seppi 8 (note Seppi 9 target rate)
4/29/2009	45	2.0	Seppi 9	2,533	6.5	0.058	113.8	[redacted]	BOSS	Trial 1, Seppi 9
5/8/09	37	2.0	Sm 1				158	34.2	Select	Trial 1, Smith 1
5/8/09	42	2.0	Sm 1				158	101.0	Select	Trial 2, Smith 1
5/8/09	49	2 - 2.5	Sm 1				158	97.0	Select	Trial 3, Smith 1
5/8/09	45	2 - 2.5	Sm 1				158	94.0	Select	Trial 4, Smith 1
5/8/09	42	3.0	Sm 1				158	61.0	Select	Trial 5, Smith 1
5/8/09	42	2.5	Sm 1				158	[redacted]	Select	Trial 6, Smith 1 (Used for 1/2 rate)
5/8/09	42	2.5	Sm 1				158	[redacted]	Select	Repeat, Smith 1 (Used for 1/2 rate)
5/11/09	42	2.5	Sm 1	3249	4.25	0.07	79	56.98	Select	
5/11/09	42	2.5	Sm 1	2618	4.25	0.06	79	70.71	Select	
5/11/09	42	2.5	Sm 1	2210	4.25	0.05	79	83.77	Select	
5/11/09	42	2.5	Sm 1	2700	4.25	0.06	79	68.57	Select	
5/11/09	42	2.5	Sm 1	3058	4.25	0.07	79	60.54	Select	
5/11/09	42	2.5	Sm 1	2600	4.25	0.06	79	71.20	Select	
5/11/09	42	2.5	Sm 1	2622	4.25	0.06	79	70.61	Select	
5/11/09	42	2	Sm 1	2750	4.25	0.06	79	67.32	Select	
5/11/09	50	2.3	Sm 1	1501	4.25	0.03	79	123.34	Select	
5/11/09	45	2.3	Sm 1	2318	4.25	0.05	79	79.87	Select	
5/11/09	45	2.3	Sm 1	2794	4.25	0.06	79	66.26	Select	
5/11/09	45	2.3	Sm 1	2500	4.25	0.06	79	74.05	Select	
5/11/09	45	2.3	Sm 1	2772	4.25	0.06	79	66.79	Select	
5/11/09	45	2.1	Sm 1	1800	4.25	0.04	79	102.85	Select	
5/11/09	45	2.3	Sm 1	2580	4.25	0.06	79	71.76	Select	
5/11/09	42	2.3	Sm 1	2142	4.25	0.05	79	86.43	Select	
5/11/09	42	2.3	Sm 1	2516	4.25	0.06	79	73.58	Select	
5/11/09	42	2.3	Sm 1	2730	4.25	0.06	79	67.81	Select	
5/11/09	42	2.3	Sm 1	2700	4.25	0.06	79	68.57	Select	
5/11/09	42	2.3	Sm 1	2760	4.25	0.06	79	67.08	Select	
5/11/09	42	2.3	Sm 1	2783	4.25	0.06	80	66.52	Select	

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: Seep. & Compost

Date: 04-23-09 Time: 14:20 - 15:00 *

Field Application Rate: 246.64 tons/acre (11.32 psf) (psf = tons/acre*0.0459)

Tolerance: 11.32 + 10% = 12.45
11.32 - 10% = 10.29

4 Tares Total Tarp Dimensions: 27 (sq. ft.)
↳ (4th Tare Folded Under - Used 3 for test)

Test 1 Material Weight: ~~334.26~~ 325.6 (lbs.) Rate: 12.06 psf
29.42 + 30.30 + 29.72 + 33.36 + 34.08 + 31.34 + 11.48 + 33.8 + 12.24 + 35.16 + 32.96 + 32.14

Test 2 Material Weight: _____ (lbs.) Rate: _____ psf

Test 3 Material Weight: _____ (lbs.) Rate: _____ psf

Test 4 Material Weight: _____ (lbs.) Rate: _____ psf

Test 5 Material Weight: _____ (lbs.) Rate: _____ psf

Buckets
IIII II
+
IIII = 12 x 1.7 tare
= 20.4 lbs

TOTAL: 346.0
- 20.4
Net = ~~334.26~~ 325.6

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

* Note - Spread for 2 hrs and will measure area applied, compare to tonnage spread. Material was being "pushed off" tares by subsequent material. Therefore, will resume compost calibrations via measuring areal coverage on ground.

04-23-09

Seepi 8

Hauled 375.9 tons Compost
25 truckloads

$\bar{X}$ = 15.04 tons / truck

Amount Remaining Stockpiled on Seepi 8 Morning of 04-24-09 estimated @ 11 loads

11 X 15.04 tons/load = 165.44 tons

375.90
− 165.44
210.46 tons spread yesterday ≈ 15% of total

Acreage Measured Yesterday of Spread Compost
26,375 sq ft = 0.605 acres = 10.6%

~~210~~ $\frac{210.46 \text{ tons}}{0.605 \text{ acres}}$ = 347.9 tons/acre

* Tonnage Spread on 04-23-09 was 15% of Total, But was overapplied and only covered 10.6% of Area.

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in yd^3/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.
- Repeat.

Compost Spreader Calibration Record

Adjusted feed to 60% instead of 100% applied for 2 hrs yesterday

Date: 04-24-09 Time: 07:30 - 09:00

Irrigated Meadow / Fluvial Deposit Polygon ID: Seep: 8

Design Application Rate: 391.5 (yd^3/acre)

Calibration Data for one load of compost: 938 Loader 2 buckets, not heaped

	Test Run 1	Test Run 2	Average
Compost Quantity (yd^3)	6.50	6.50	
Compost was spread over (ft^2)	50x13 = 650	53x13 = 689	670
Calibration area (acres)	0.015	0.016	0.015
Calibrated Application Rate (yd^3/acre)	433.3	406.3	433.3 → 420

Quality Control Data for Field Application Verification:

(A) Design Application Rate: 391.5 (yd^3/acre)

~~(B) Average~~ Calibrated Application Rate: 420 (yd^3/acre)

Passes to be Applied: x 1 passes (= A/B)

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in yd^3/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.
- Repeat.

Compost Spreader Calibration Record

Date: 04-27-09 Time: 09:30 - 09:30

Irrigated Meadow / Fluvial Deposit Polygon ID: Seep 8

Design Application Rate: 391.5 (yd^3/acre)

Calibration Data for one load of compost: CAT 938 Front Loader 2 buckets (not heaped) @ 3.25 yd^3/bucket

	Test Run 1	Test Run 2	Average
Compost Quantity (yd^3)	6.50	6.50	
Compost was spread over (ft^2)	46 x 16 = 736	50 x 15 = 750	
Calibration area (acres)	0.017	0.017	
Calibrated Application Rate (yd^3/acre)	382.4	382.4	382.4

Quality Control Data for Field Application Verification:

(A) Design Application Rate: 391.5 (yd^3/acre)

(B) ~~Average~~ Calibrated Application Rate: 382.4 (yd^3/acre)

Passes to be Applied: ~ 1 passes (= A/B)

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

E2 Consulting Engineers, Inc.
1536 Cole Blvd., Suite 220
Golden, Colorado 80401
(303) 232-9800

Title: _____ Date: 4/28/09
Project: _____ By: _____
Project No.: _____ Page _____

Sept 8 Need to determine how much BOSS compost to apply to finish adding compost to polygon when FESI started applying compost from Select Materials.

TOC = 1.5% depth = 12"

Based on Select Analytical values, the calculated tonnage of Select compost was 1412.98 tons. A total of 1039.37 tons was applied before running out of ~~BOSS~~ Select materials.

1412.98 tons of Select was target
1039.37 tons of Select was applied
373.61 tons of Select still needed > wet tons

At 22.9% moisture, Dry tons = Wet tons (1 − % moisture)

Dry tons = 373.61 (1 − 0.229) = 288.05 dry tons

Dry tons OC = (Dry tons) * %OC

= (288.05)(~~15~~ 0.1578)

= 45.45 dry tons OC

At 29.5% OC for BOSS compost, the dry tons of BOSS compost needed is

$$\text{Dry tons BOSS} = \frac{45.45 \text{ dry tons OC}}{0.295}$$

Dry tons Boss = 154.07 dry tons

At 16% moisture, the wet tons of Boss Compost needed is

$$\text{Wet tons} = \frac{154.07 \text{ dry tons}}{(1 - 0.16)} = 183.4 \text{ wet tons of Boss}$$

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in yd^3/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.
- Repeat.

Compost Spreader Calibration Record

Date: 04-29-09 Time: 08:30 – 09:40

Boss Compost
183 Tons
Entire Polygon
5.729 acres

Irrigated Meadow / Fluvial Deposit Polygon ID: Seep: 8

Design Application Rate: 60 (yd^3/acre)

Calibration Data for one load of compost: 4 trials Resulted: 1) 36 yd^3/acre
2) 112 yd^3/acre
3) 87 yd^3/acre

	Test Run 1	~~Test Run 2~~	~~Average~~
Compost Quantity (yd^3)	6.50		
Compost was spread over (ft^2)	12 x 390 = 4680		
Calibration area (acres)	0.107		
Calibrated Application Rate (yd^3/acre)	60.7		

Quality Control Data for Field Application Verification:

(A) Design Application Rate: 60 (yd^3/acre)

(B) Average Calibrated Application Rate: _____ (yd^3/acre)

Passes to be Applied: ≈ 1 passes (= A/B)

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

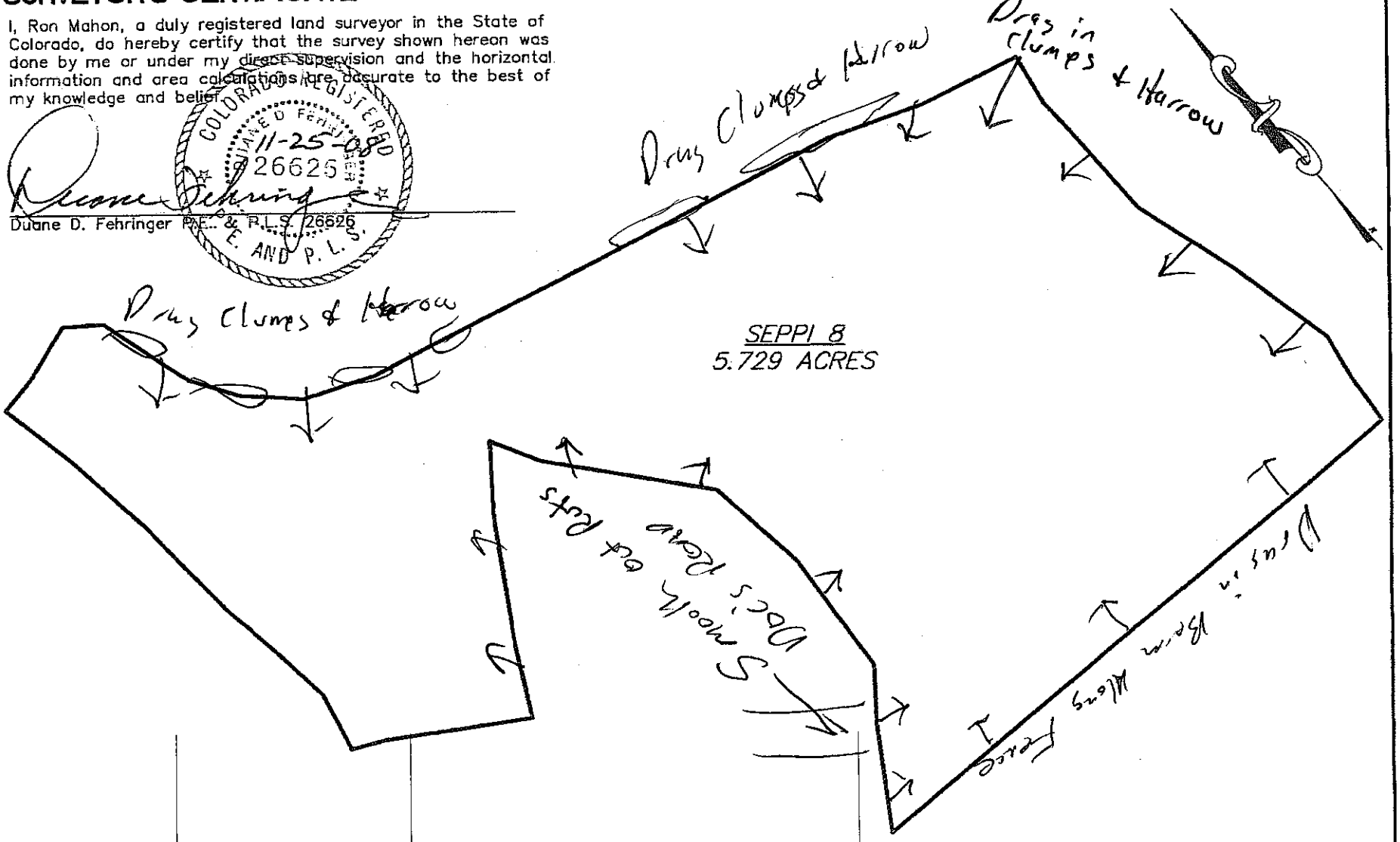
Punchlist 05-15-09

SURVEYOR'S CERTIFICATE

I, Ron Mahon, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 11-25-08 26626 L.S. P.E. AND P.L.S.

Duane D. Fehringer P.E. & R.L.S. 26626



Inter-Mountain Engineering ltd. 40581 US HWY 6&24, STE 200 BOX 978 AVON, CO 81620 PH: (970)949-5772 5291 CONTINENTAL DIVIDE RD, SUITE 197 LITTLETON, CO 80127 PH: (303)948-6210	CLIENT: FRONTIER ENVIRONMENTAL INC.	SEPPI 8	DRAWN BY: SPF
	This document was prepared for the exclusive use of the Client specified hereon. The use of this document or the information contained herein by any other person or entity is not authorized. In the event that any other person or entity desires to use this document or the information contained herein for any purpose they must first obtain written authorization from Inter-Mountain Engineering. This document and any information contained herein is intended to be used within one year of the date hereof. Use after that period is not authorized.	CALIFORNIA GULCH CERCLA SITE OPERABLE UNIT NUMBER 11 LAKE COUNTY, COLORADO	SCALE: 1"=100' DATE ISSUED: 11-25-08 PROJECT NO: 08-0032 CHKD BY:

Seeder Calibration Form

Calibration Form Instructions

1) Enter the Polygon ID, Polygon acreage, Calibration Date, Target seed rate(s), %PLS in each seed mix, and % seed in each each mix
2) Perform seeder calibration per the manufacturers' instructions 3 times and enter the total weight of bulk seed mix in grams collected for each seed box
3) For each individual calibration run, verify that the achieved rate is within ±20 % of the 1/2 Target Rate
4) After the 3rd calibration run, verify that the 3 Run Average rate is within ±10% of the 1/2 Target Rate

NOTE: The BLUE text shows the "calculated values" based on the entered data

Polygon ID Seppi 8 **Acres:** 5.729 **Date:** 10/1/09

	Seed Mix 1		Seed Mix 2	
Target Rate	7.00	lbs PLS / acre	3.00	lbs PLS / acre
% PLS in seed mix	91%		90%	
Dilution Factor	100%	(% seed)	100%	(% seed)
Target Application Rate	7.69	bulk pounds / acre	3.33	bulk pounds / acre
	44.1	Total bulk pounds	19.1	total bulk pounds
1/2 Target Rate (2 passes)	3.85	bulk pounds / acre	1.67	bulk pounds / acre
	22.0	1/2 of total bulk pounds	9.5	1/2 of total bulk pounds
Test Run 1	8.70	total grams in 3 bags	3.60	total grams in 3 bags
	4.35	bulk lbs/acre	1.80	bulk lbs/acre
Test Run 2	7.80	total grams in 3 bags	3.90	total grams in 3 bags
	3.90	bulk lbs/acre	1.95	bulk lbs/acre
Test Run 3	8.00	total grams in 3 bags	3.50	total grams in 3 bags
	4.00	bulk lbs/acre	1.75	bulk lbs/acre
3 Run Average	8.17	total grams in 3 bags	3.67	total grams in 3 bags
	4.08	bulk lbs/acre	1.83	bulk lbs/acre
For QC Checks:				
+20% of 1/2 Target Rate	4.62	bulk pounds / acre	2.00	bulk pounds / acre
-20% of 1/2 Target Rate	3.08	bulk pounds / acre	1.33	bulk pounds / acre
+10% of 1/2 Target Rate	4.23	lbs seed mix / acre	1.83	lbs seed mix / acre
-10% of 1/2 Target Rate	3.46	lbs seed mix / acre	1.50	lbs seed mix / acre

PWT Signature: _____

Frontier Signature: _____

* Calibrated for Seppi 7; used for seeding Seppi 7, 8, and 9 on 10-01-09

Kind: SPECIAL LARGE MIX
Lot: 2138898

Kind & Variety:	Pure%	Germ%	Origin:
SLENDER W/G, SAN LUIS	56.51	92	WA
WESTERN W/G, ROSANNA	41.04	95	WA

Crop: .12% Inert: 2.25% Weed: .09% Net Wt: 38.61# (35 PLS#) 5/AC

Noxious Weed: None Found Test Date: 6/08

REMARKS: FRONTIER ENVIRONMENTAL
ARKANSAS VALLEY SEED, 4333 HWY 66, LONGMONT CO 80504

Kind: SEPPI RANCH IRR. MIX
Lot: 2139079

Kind & Variety:	Pure%	Germ%	Origin:
SHEEP FESCUE, COVAR	32.28	93	WA
CLOVER, ALSIDE	32.28	93	MT
CLIMAX TIMOTHY	16.68	90	CN
PRAIRIE JUNEGRASS	6.82	88	WA
CANADA BLUEGRASS, REUBENS	6.67	90	WA
REDTOP	3.09	97	WA

Crop: .05% Inert: 1.60% Weed: .54% Net Wt: 30# (27 PLS#) 9 ACRES

Noxious Weed: None Found Test Date: 6/08

REMARKS: FRONTIER ENVIRONMENTAL
ARKANSAS VALLEY SEED, 4333 HWY 66, LONGMONT CO 80504

Seppi 3 4 6 - 2008

Seppi 7, 8, 9 2009

Polygon Completion Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: Seepi 9

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
December 2008	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.5. **Comments/Deviations:**
December 2008	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.6. **Comments/Deviations:**
04-23-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Sections 3.6 and 3.7A through 3.7E. **Comments/Deviations:** Began Spread Lime 04-16-09; finished 04-17-09; Spread Fert 04-17-09
05-01-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.7F through 3.7I. Straw Contract 04-29-09 **Comments/Deviations:**
NA	✓	Completed replacement of irrigation ditches in accordance with Specification Section 3.8. **Comments/Deviations:** No ditches
16-01-09	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.9. **Comments/Deviations:** Planar Drag 05-22-09; Doze Tracks 04-30, 16-1-09
06-08-09	✓	Completed mulching in accordance with Specification Section 3.10. **Comments/Deviations:** Start Mulch 06-08-09
NA	NA	Completed reinstallation of fencing in accordance with Specification Section 3.11. **Comments/Deviations:**
11-02-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.15. **Comments/Deviations:**

Quantity of Work Estimated in Proposal: NA Addressed in Invoice Documentation jmm

Quantity of Work Performed:

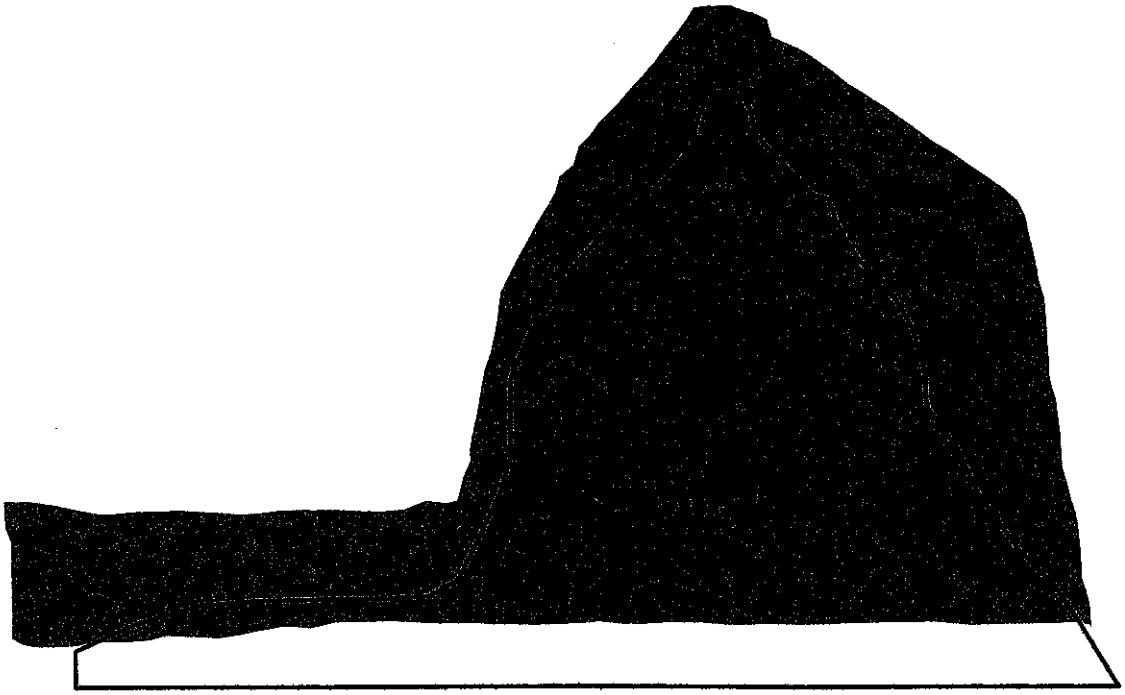
[signature] 11-04-09
Signature of ~~Subcontractor~~ Date
jmm
CONTRACTOR

[signature] 11/05/09
Signature of Contractor Date
Sub

Original Seppi 9 - 1.16 acres

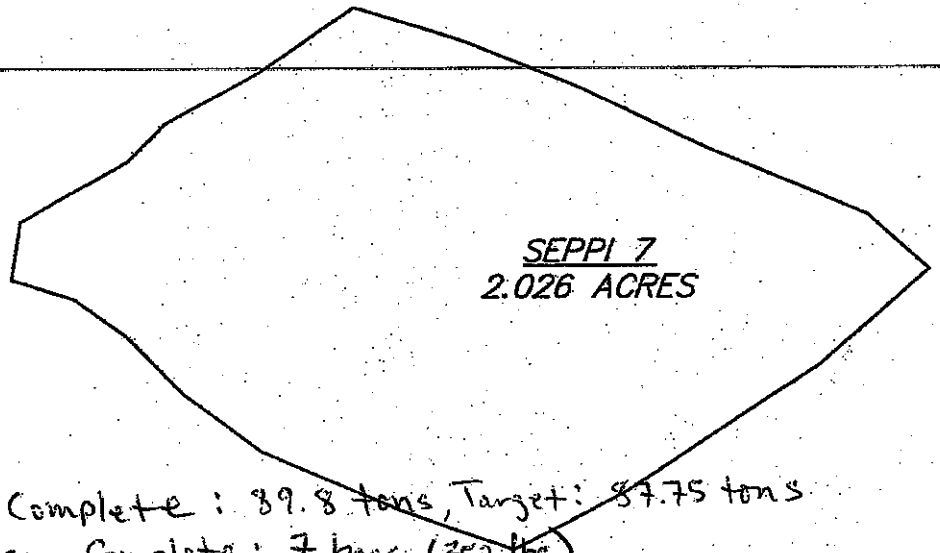
7/30/08 Seppi 9 - 1.55 acres

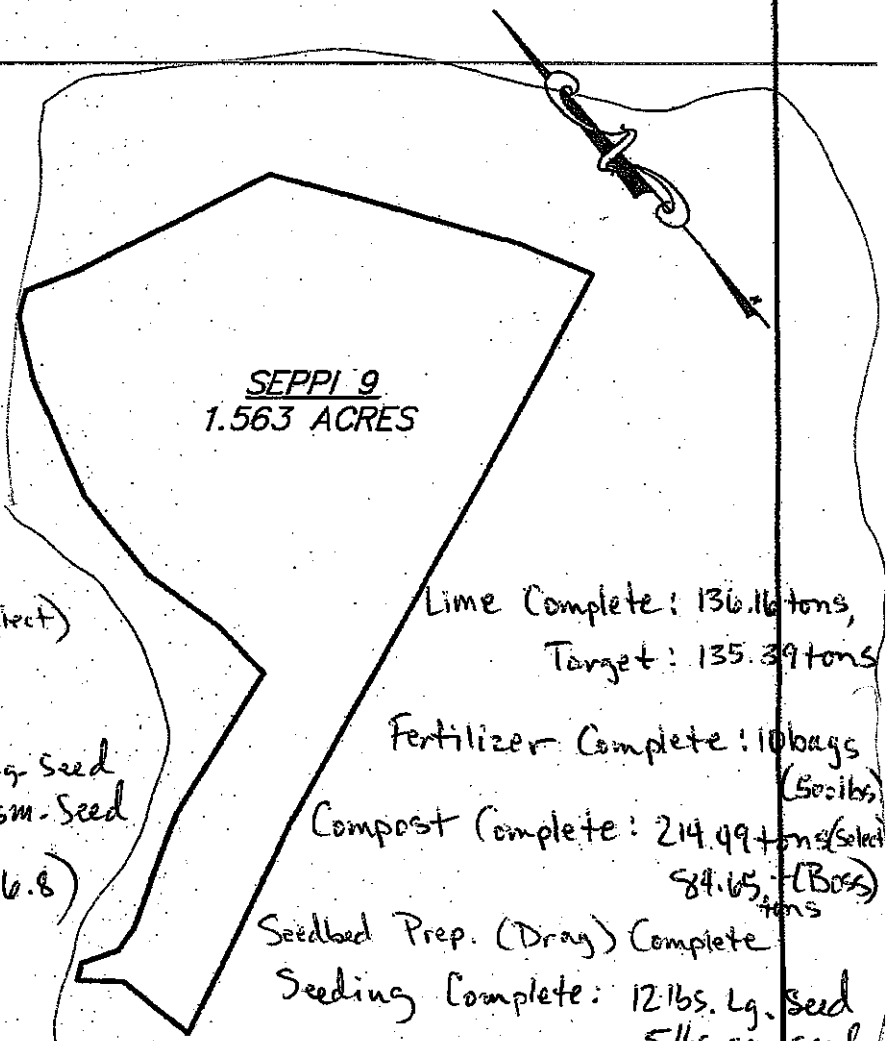
See Final Survey Sheet



150 75 0 150 Feet

-Complete-





Lime Complete: 89.8 ~~tons~~, Target: 87.75 tons
Fertilizer Complete: 7 bags (350 lbs.)
Compost Complete: 244.08 tons, Target: 242.0 tons (Select)
Seedbed Prep. (Drag) Complete
Mulch applied: (4040 lbs.) 101 bales

Lime Complete: 136.16 tons,
Target: 135.39 tons
Fertilizer Complete: 10 bags (500 lbs)
Compost Complete: 214.49 tons (Select)
84.65 tons (Boss)
Seedbed Prep. (Drag) Complete
Seeding Complete: 12 lbs. Lg. Seed
5 lbs. sm. seed
(Target: 12.0/5.2)

SURVEYOR'S CERTIFICATE

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Seeding Complete: 15.5 lbs. Lg Seed
7 lbs. sm-Seed
(Target: 15.6/6.8)

COLORADO REGISTERED DUANE D. FEHRINGER 11-25 26626 L.S. AND P.E.

Duane D. Fehringer P.E. & P.L.S. 26626

Inter-Mountain Engineering Ltd.
Avon: US Hwy 6 & 24, Ste 203 Box 978, Avon, CO 81620 PH: (970)949-5472
Littleton: 8352 Continental Divide Rd, Suite 107 Littleton, CO 80127 PH: (303)948-4220

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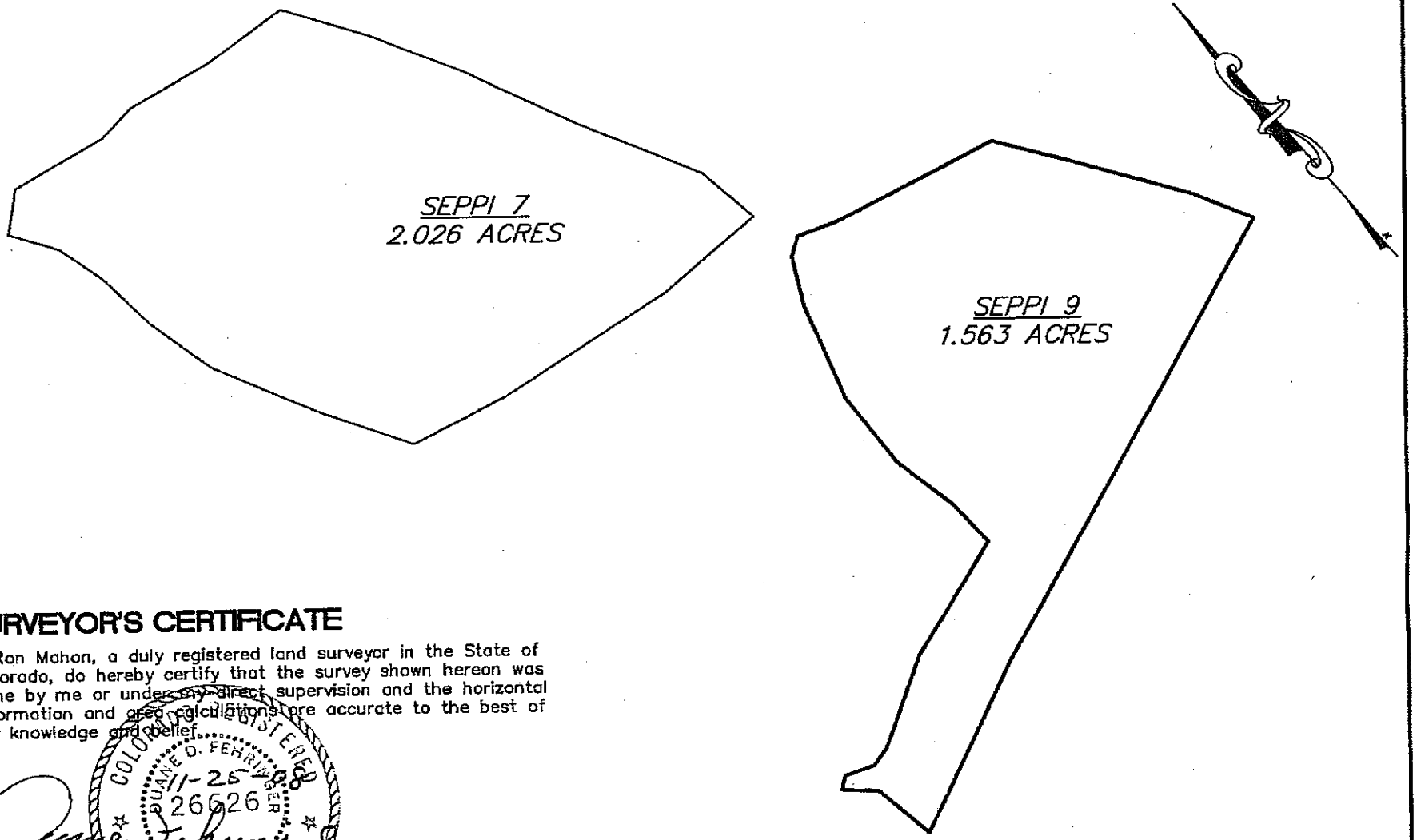
SEPPI 7 AND SEPPI 9
CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=100'
DATE ISSUED:	11-25-08
PROJECT NO.	08-0032
CHKD BY	

* Pre-Tilled



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11-25-08

Duane D. Fehringer P.E. & P.L.S. 26626

Inter-Mountain Engineering Ltd.

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SEPPI 7 AND SEPPI 9

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=100'
DATE ISSUED:	11-25-08
PROJECT NO.	08-0032
SHEET	

West Line Pile
AG, Sept. 7, 8, (9) Smith 1

MOISTURE CONTENT

- Tare Container
- Weigh sample. Record wet sample weight.
- Dry sample until sample appears dry, minimum of 1 hour on hotplate or in oven
- Weigh sample. Record dry sample weight
- Calculate % Moisture = (Wet weight – Dry weight)/Wet Weight

Moisture Content Record for Lime/Compost (circle one)

Date	Wet Weight (g)	Dry Weight (g)	Water Weight (g)	% Moisture
04-14-09	Pan 1 Tare = 8.3g 45.9 - 8.3 = 37.6	37.2 - 8.3g = 27.9	9.7	34.8 %
04-14-09	Pan 2 = 8.3g 36.2 - 8.3g = 27.9	43.4 - 8.3g = 35.1	12.8	36.5 %
				= 35.7%

Name/Signature: [signature]

Date: 04-15-09

Lime Application Rate Calculation Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: **Seppi 9**

POLYGON CHARACTERISTICS

Net Application Rate (22 dry tons/1000 tons soil unless noted otherwise)	22	dry tons/1000 tons soil
Mixing Safety Factor (10% unless noted otherwise)	10.00%	%
% Rock (0 unless noted otherwise)	0.00%	%
Treatment Depth	12	inches
Total Area	1.563	acres

LIME CHARACTERISTICS

Lime Particle Size Distribution

Percent >10 mesh		X 0.1	=	0.0000	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.0004	(B)
Percent < 60 mesh	99.92%	X 1	=	0.9992	©
Lime Reactivity			=	0.9996	(Sum of A, B, and C)

Calcium Carbonate Equivalence		82.20%	%
Percent Moisture		32.0%	%
Bulk Density	0.75 grams/cc	= 0.632	tons/cy

CALCULATE LIME RATE

Lime Rate = $\frac{\text{Net Application Rate *(1+ Mixing Factor/100)* (1 - \% Rock/100) * (1000 tons soil/acre/6") * Treatment Depth}}{\text{(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - \% Moisture/100)}}$

Lime Rate = 86.62 tons/acre = 135.39 tons total

= 3.98 lbs/ft2 1.99 (two-pass rate in lbs/ft2)

Lime Rate = 137.05 cubic yards/acre = 214.20 cy total

Signature: [signature]

Date: 4/14/09

Signature: [signature]

Date: 04-14-09

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: Seep: 9

Date: 04-17-09 Time: 07:00 - 08:30

Field Application Rate: _____ tons/acre (1.99 psf) (psf = tons/acre*0.0459)

1.99+10% = 2.19

1.99-10% = 1.81

Total Tarp Dimensions: 27 (sq. ft.)

Test 1 Material Weight: 41.5 (lbs.) Rate: 1.53* psf Auger Not Filling Full Spread

(14.58 + 11.68 + 20.14) - 5.1

Test 2 Material Weight: 45.98 (lbs.) Rate: 1.70* psf ___ adjust hopper gate (wider)

(16.76 + 12.36 + 21.96) - 5.1

Test 3 Material Weight: 58.4 (lbs.) Rate: 2.16 ✓ psf (close gate back 1 notch)

(20.90 + 14.72 + 28.06) - 5.1

Test 4 Material Weight: 56.8 (lbs.) Rate: 2.10 ✓ psf

~~Test 5 Material Weight: _____ (lbs.) Rate: _____ psf~~ ✓

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: Seep 8 & Seep 9

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	Acid Fizz Full Depth?
395 Sec 8	7.3	7.0	7.5	NA	Yes
391 "	7.0	7.0	7.0	NA	Yes
390 "	7.5	7.0	~~8.0~~	NA	Yes
389 "	7.0	7.0	7.0	NA	Yes
387 "	7.5	7.5	7.5	NA	Yes
386 "	7.5	7.5	7.5	NA	Yes
419 Sec 9	7.5	7.5	7.5	NA	Yes
422 Sec 9	7.7?	7.5	8.0	NA	Yes

Name/Signature: [signature]

Date: 10-23-09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record Seep 8 & Seep 9

Fluvial Deposit/Irrigated Meadows Polygon:

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH	
395 Seep 8 0-6"	0.0 Tare	15.7	14.3	7.3	Retest
395 Seep 8 6-12"		15.9	14.6	6.9	→ 6.9 (4hrs)
391 " 0-6"		17.9	16.8	7.4	
391 " 6-12"		17.4	16.6	7.5	
390 " 0-6"		17.7	17.3	7.0	
390 " 6-12		18.5	17.8	7.1	
389 " 0-6		16.7	17.5	6.9	→ 6.9 (4hrs)
~~389 " 6-12~~		14.9	15.2	7.0	
387 " 0-6		19.7	19.4	7.3	
387 " 6-12		18.5	17.5	7.2	
386 " 0-6		16.5	17.1	7.2	
386 " 6-12		16.7	17.2	7.2	
Seep 9					
419 0-6"	Tare 0.0	18.8	17.5	7.6	
419 6-12"		17.6	16.6	7.2	
422 0-6"		16.9	16.6	7.4	
422 6-12"		15.8	14.5	7.4	

Ran 2 point calibration (buffers 7.0 & 10.0) prior to testing. JPO

Name/Signature: [signature]

Date: 04-23-09

FERTILIZER CALIBRATION

- Place a known weight (e.g., one 50-lb bag) into the spreader hopper.
- Follow the operations manual to set the equipment to meet the design field application rate (e.g., spreader opening, travel speed, RPMs, etc.)
- Make one pass dispersing the fertilizer until the contents of the spreader are emptied.
- Measure the area over which the fertilizer was applied
- Divide the weight of material applied by the total area it was applied to, convert to lbs/acre, and compare to the design field application rate.
- An acceptable test will be within 10% of the required rate.

Fertilizer Calibration Record

Date: 04-17-09 Time: 09:00

Irrigated Meadow / Fluvial Deposit Polygon ID: Seep 9

Fertilizer Type: 0 :45: 0 (N:P:K)

Design Field Application Rate: 1 lbs/acre (± 10% range =)
153 x double rak for 12" trt.

Calibration Data for one 50 pound bag of fertilizer:

Dimensions over which bag was spread: ____ feet x ____ feet

Total Calibration Area: ____ (ft ^{2}) * 1 acre / 43560 ft ^{2} = ____ acres

Calibrated Application Rate: ____ (lbs/acre)

Quality Control Data for Field Application Verification:

Area of Polygon: 1.563 (acres)

Total Weight to be Applied: 473 (lbs)

# of 50 lb. Bags to be Applied: 9.6 ~ bags 10 bags

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

Note:
PWT unavailable for calibration; FESI distributed 10 bags over trt. area using same settings on broadcaster and tractor used for Seep 8 calibration.
04-17-09

Compost Application Rate Calculation Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: **Seppi 9**

POLYGON CHARACTERISTICS

Target % Organic Carbon (1.5% for T-6, 2.5% for T-12)	1.50% % ✓
Treatment Depth	12 inches
Treatment Area	1.563 acres ✓

COMPOST CHARACTERISTICS

Percent Organic Carbon			15.78% ✓	%
Percent Moisture			22.90% ✓	%
Wet Bulk Density	0.748 grams/cc ✓	=	0.630 ✓	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"}}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate =	246.64 tons/acre	=	385.49 tons total
Compost Rate =	391.49 cubic yards/acre	=	611.89 cy total

Signature: [signature]

Date: 04-23-09

Signature: [signature]

Date: 4/23/09

KUHN COMPOST SPREADER RATES

Date	Kuhn Push Ram Feed (percent)	Kuhn Mph	Polygon	Calibration Area sq. ft	Calibration Vol. (CY)	Calibration Acreage	Target App Rate (yd3/acre)	Calibration Trial Rate (yd3/acre)	Compost	Comment
4/29/2009	60	2.0	Seppi 8	689	6.5	0.016	391.5	406	Select	
4/29/2009	30	2.0	Seppi 8	7,800	6.5	0.179	60	36.3	BOSS	Trial 1, Seppi 8
4/29/2009	35	2.5	Seppi 8	4,680	6.5	0.107	60	60.7	BOSS	Trial 4, Seppi 8
4/29/2009	39	2.0	Seppi 8	3,250	6.5	0.075	60	87	BOSS	Trial 3, Seppi 8
4/29/2009	45	2.0	Seppi 8	2,550	6.5	0.058	60	112	BOSS	Trial 2, Seppi 8 (note Seppi 9 target rate)
4/29/2009	45	2.0	Seppi 9	2,533	6.5	0.058	113.8	112.1	BOSS	Trial 1, Seppi 9

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in yd^3/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.
- Repeat.

45% Ram, 2.5 mph Boss Spyker

Compost Spreader Calibration Record

2805
2550
2318

Date: 04-29-09 Time: 13:10 - 13:50

Irrigated Meadow / Fluvial Deposit Polygon ID: Seep 9

Design Application Rate: 113.8 (yd^3/acre)

Calibration Data for one load of compost:

	Test Run 1	Test Run 2	Average
Compost Quantity (yd^3)	6.50	6.50	
Compost was spread over (ft^2)	150 x 17 = 2550	148 x 17 = 2516	2533
Calibration area (acres)			~~0.581~~ 0.058
Calibrated Application Rate (yd^3/acre)			112.1

Quality Control Data for Field Application Verification:

(A) Design Application Rate: 113.8 (yd^3/acre)

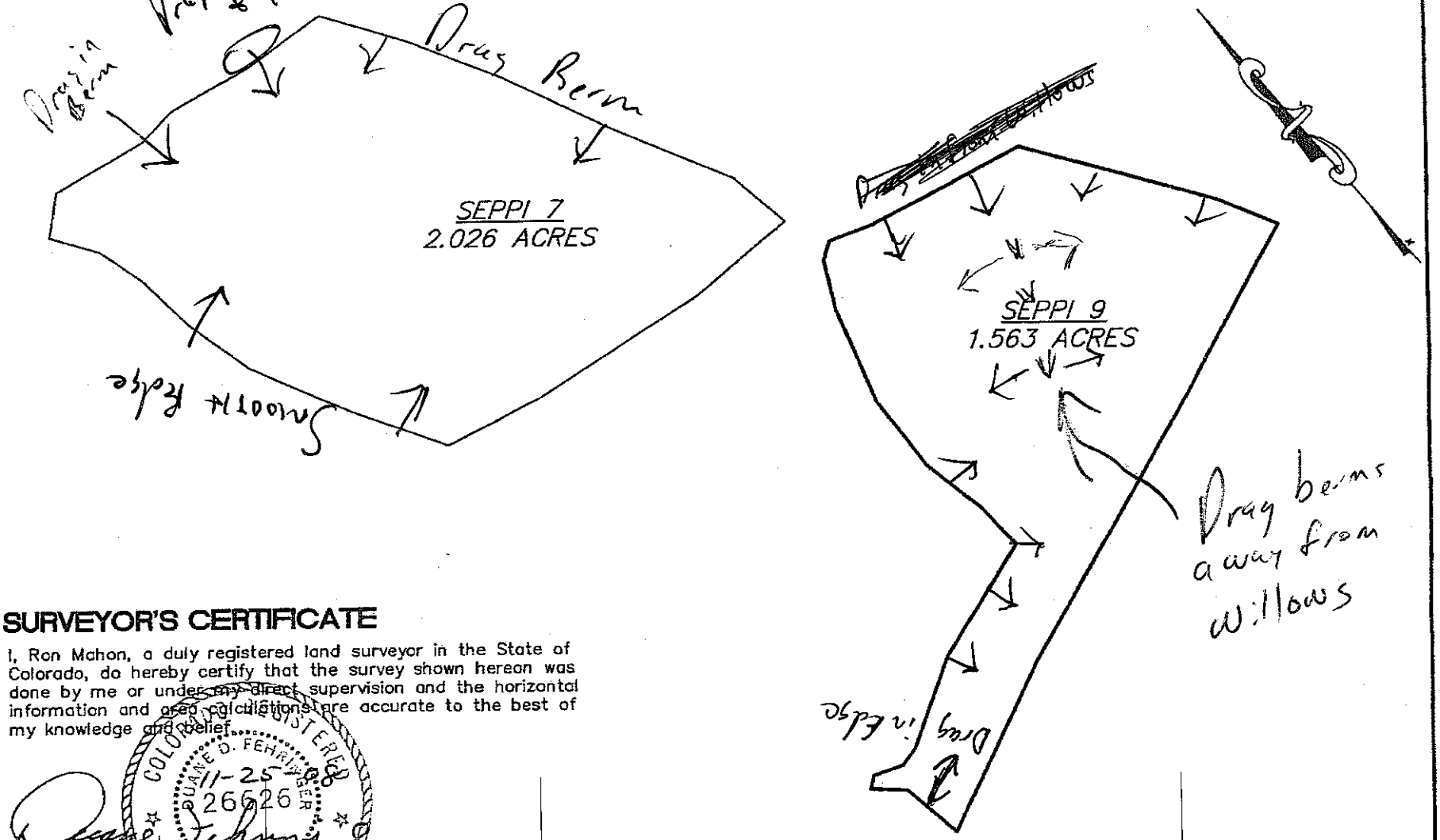
(B) ~~Average~~ Calibrated Application Rate: 112.1 (yd^3/acre)

Passes to be Applied: 1 passes (= A/B)

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

Seebbed Prep - Punchlist 05-15-09



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1) Enter the Polygon ID, Polygon acreage, Calibration Date, Target seed rate(s), %PLS in each seed mix, and % seed in each each mix
2) Perform seeder calibration per the manufacturers' instructions 3 times and enter the total weight of bulk seed mix in grams collected for each seed box
3) For each individual calibration run, verify that the achieved rate is within ±20 % of the 1/2 Target Rate
4) After the 3rd calibration run, verify that the 3 Run Average rate is within ±10% of the 1/2 Target Rate

NOTE: The BLUE text shows the "calculated values" based on the entered data

Polygon ID Seppi 9 **Acres:** 1.563 **Date:** 10/1/09

	Seed Mix 1		Seed Mix 2	
Target Rate	7.00	lbs PLS / acre	3.00	lbs PLS / acre
% PLS in seed mix	91%		90%	
Dilution Factor	100%	(% seed)	100%	(% seed)
Target Application Rate	7.69	bulk pounds / acre	3.33	bulk pounds / acre
	12.0	Total bulk pounds	5.2	total bulk pounds
1/2 Target Rate (2 passes)	3.85	bulk pounds / acre	1.67	bulk pounds / acre
	6.0	1/2 of total bulk pounds	2.6	1/2 of total bulk pounds
Test Run 1	8.70	total grams in 3 bags	3.60	total grams in 3 bags
	4.35	bulk lbs/acre	1.80	bulk lbs/acre
Test Run 2	7.80	total grams in 3 bags	3.90	total grams in 3 bags
	3.90	bulk lbs/acre	1.95	bulk lbs/acre
Test Run 3	8.00	total grams in 3 bags	3.50	total grams in 3 bags
	4.00	bulk lbs/acre	1.75	bulk lbs/acre
3 Run Average	8.17	total grams in 3 bags	3.67	total grams in 3 bags
	4.08	bulk lbs/acre	1.83	bulk lbs/acre
For QC Checks:				
+20% of 1/2 Target Rate	4.62	bulk pounds / acre	2.00	bulk pounds / acre
-20% of 1/2 Target Rate	3.08	bulk pounds / acre	1.33	bulk pounds / acre
+10% of 1/2 Target Rate	4.23	lbs seed mix / acre	1.83	lbs seed mix / acre
-10% of 1/2 Target Rate	3.46	lbs seed mix / acre	1.50	lbs seed mix / acre

PWT Signature: _____

Frontier Signature: _____

* Calibrated for Seppi 7; used for seeding Seppi 7, 8, and 9 on 10-01-09

Kind: SPECIAL LARGE MIX
Lot: 2138898

Kind & Variety:	Pure%	Germ%	Origin:
SLENDER W/G, SAN LUIS	56.51	92	WA
WESTERN W/G, ROSANNA	41.04	95	WA

Crop: .12% Inert: 2.25% Weed: .09% Net Wt: 38.61# (35 PLS#) 5/AC

Noxious Weed: None Found Test Date: 6/08

REMARKS: FRONTIER ENVIRONMENTAL
ARKANSAS VALLEY SEED, 4333 HWY 66, LONGMONT CO 80504

Kind: SEPPI RANCH IRR. MIX
Lot: 2139079

Kind & Variety:	Pure%	Germ%	Origin:
SHEEP FESCUE, COVAR	32.28	93	WA
CLOVER, ALSIDE	32.28	93	MT
CLIMAX TIMOTHY	16.68	90	CN
PRAIRIE JUNEGRASS	6.82	88	WA
CANADA BLUEGRASS, REUBENS	6.67	90	WA
REDTOP	3.09	97	WA

Crop: .05% Inert: 1.60% Weed: .54% Net Wt: 30# (27 PLS#) 9 ACRES

Noxious Weed: None Found Test Date: 6/08

REMARKS: FRONTIER ENVIRONMENTAL
ARKANSAS VALLEY SEED, 4333 HWY 66, LONGMONT CO 80504

Seepi 3 4 6 - 2008

Seepi 7, 8, 9 2009

Polygon Completion Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: SMITH 1

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
03-31-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.5. **Comments/Deviations:**
04-17-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.6. **Comments/Deviations:** Began Pre-Till 04-01-09
05-04-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Sections 3.6 and 3.7A through 3.7E. **Comments/Deviations:** Began Lime Spread on 04-20-09, Finished lime spread 04-30-09
05-22-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.7F through 3.7I. **Comments/Deviations:**
NA	✓	Completed replacement of irrigation ditches in accordance with Specification Section 3.8. **Comments/Deviations:** New ditch alignments staked as per Doc Smith's direction
05-27-09 ✓ 10-14-09	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.9. **Comments/Deviations:** Planar Drag Completed 05-27-09. Begin Mulching 06-09 Seeded WK Fescue 10-18-09
06-10-09	✓	Completed mulching in accordance with Specification Section 3.10. **Comments/Deviations:** Mulched before seeding in October
NA	NA	Completed reinstallation of fencing in accordance with Specification Section 3.11. **Comments/Deviations:** Minor fence work required
11-16-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.15. **Comments/Deviations:**

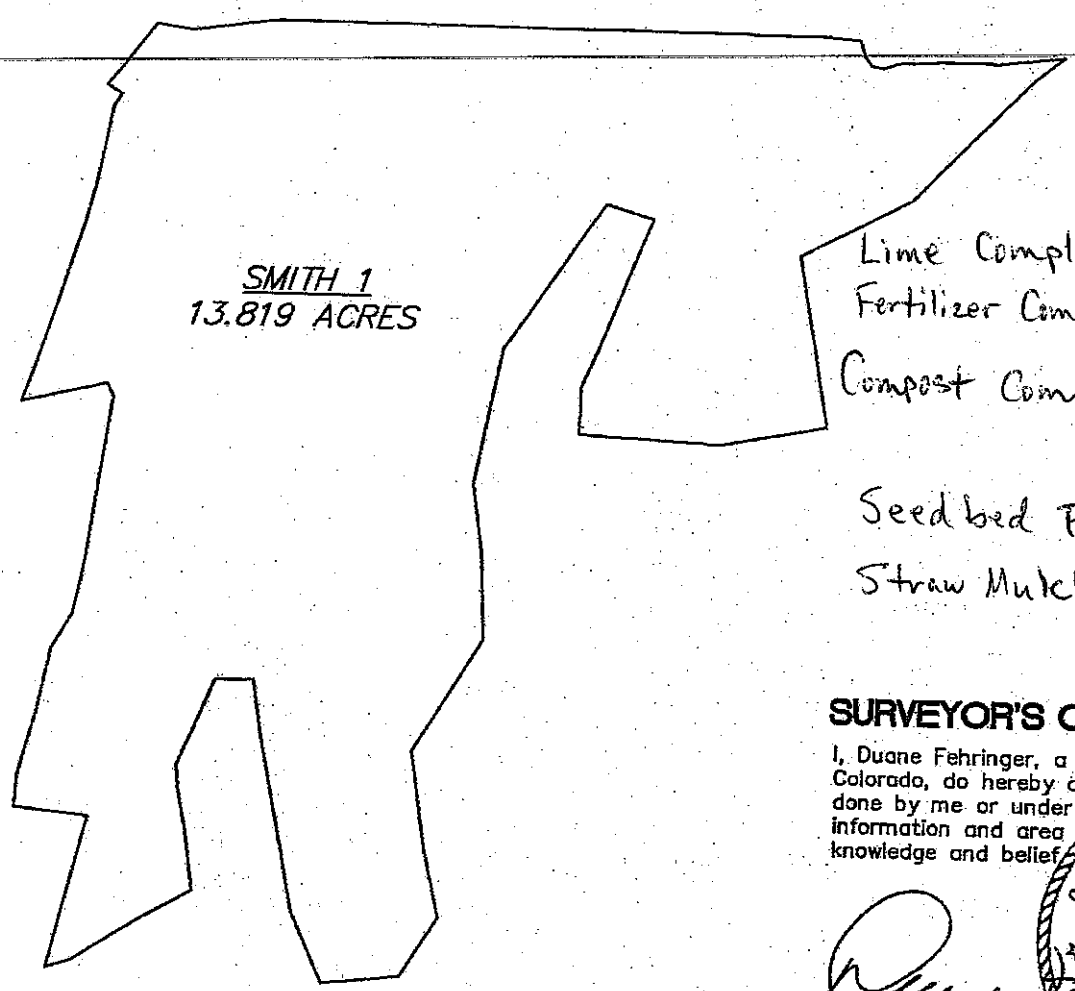
Quantity of Work Estimated in Proposal: NA - Addressed in Invoice Documentation

Quantity of Work Performed:

(Unavailable)
Signature of Subcontractor Date

Signature of Contractor 11-16-09
Date

-Complete-



Lime Complete: 1189.02, Target: 1197.06
1109.99
Fertilizer Complete: 85 bags (4250 lbs.)
Compost Complete: 1060 tons (Boss) - Target: avail.
1377.43 tons (Select) - Target: 1375 tons
Seedbed Prep. (Drag) Complete
Straw Mulching Complete: 691 bales (27,638 lbs.)

SURVEYOR'S CERTIFICATE

I, Duane Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 8-18 26626 L.S. AND P.L.

Duane Fehringer P.E. No. P.L.S. 26626

Seeding Complete: 174.5 lbs. lg. and 19 lbs. sm. seed

Inter-Mountain Engineering Ltd.
40581 US HWY 6&24, STE 383 BOX 978 AVON, CO 81620 PH: (970)949-5872
8393 CONTINENTAL DIVIDE RD, SUITE 107 LITTLETON, CO 80127 PH: (303)948-6210

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SMITH 1
CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=200'
DATE ISSUED:	8-18-08
PROJECT NO.	08-0032
CHART	

DWG FILE: 08003201DWG

* Pre-Tilled

Original Smith 1 - 11.27 acres

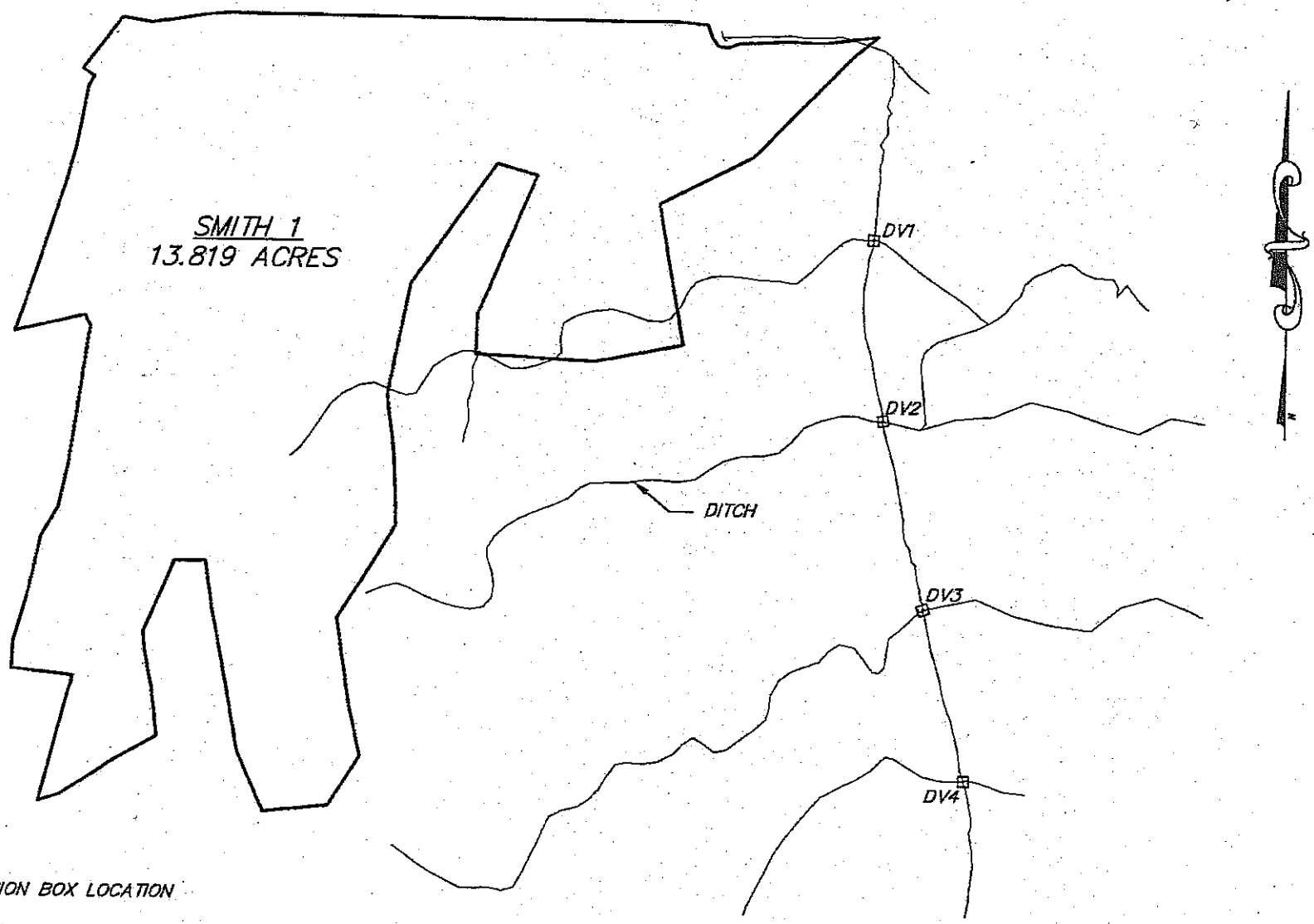
8/15/08 Smith 1 - 13.77 acres

└ See next sheet for final

Draft

μ

400 200 0 400 Feet



Inter-Mountain Engineering Ltd.
40881 US HWY 6&24, STE 203 BOX 978 AVON, CO 81620 PH: (970)949-5072
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SMITH 1 - DITCH LOCATIONS

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=200'
DATE ISSUED:	10-30-08
PROJECT NO.	08-0032
CHECKED	

J:\projects\80032\dwg\ou-11 ditches.dwg, 10/30/2008 2:00:51 PM

West Lime Pile

AG, Sept. 7, 8, 9, Smith 1

MOISTURE CONTENT

- Tare Container
- Weigh sample. Record wet sample weight.
- Dry sample until sample appears dry, minimum of 1 hour on hotplate or in oven
- Weigh sample. Record dry sample weight
- Calculate % Moisture = (Wet weight – Dry weight)/Wet Weight

Moisture Content Record for Lime/Compost (circle one)

Date	Wet Weight (g)	Dry Weight (g)	Water Weight (g)	% Moisture
04-14-09	Pan 1 Tare = 8.3g 45.9 - 8.3 = 37.6	37.2 - 8.3g = 27.9	9.7	34.8 %
04-14-09	Pan 2 = 8.3g 56.2 - 8.3g = 47.9	43.4 - 8.3g = 35.1	12.8	36.5 %
				= 35.7% Avg.

Name/Signature: [signature]

Date: 04-15-09

SMITH 1

BLM 1

MOISTURE CONTENT

- Tare Container
- Weigh sample. Record wet sample weight.
- Dry sample until sample appears dry, minimum of 1 hour on hotplate or in oven
- Weigh sample. Record dry sample weight
- Calculate % Moisture = (Wet weight – Dry weight)/Wet Weight

Moisture Content Record for Lime/Compost (circle one)

Date	Wet Weight (g)	Dry Weight (g)	Water Weight (g)	% Moisture
04-29-09	P3 Pan Tare = 15.7 91.0 - 15.7 = 75.3	70.5 - 15.7 = 54.8	20.5	27.2
04-29-09	Pan Tare = 15.5 96.0 - 15.5 = 80.5	75.1 - 15.5 = 59.6	20.9	26.0
				Avg = 26.6 %

Name/Signature: [signature]

Date: 04-29-09

Lime Application Rate Calculation Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: **Smith 1**

POLYGON CHARACTERISTICS

Net Application Rate (22 dry tons/1000 tons soil unless noted otherwise)	22	dry tons/1000 tons soil
Mixing Safety Factor (10% unless noted otherwise)	10.00%	%
% Rock (0 unless noted otherwise)	0.00%	%
Treatment Depth	12	inches
Total Area	13.819	acres

LIME CHARACTERISTICS

Lime Particle Size Distribution					
Percent >10 mesh		X 0.1	=	0.0000	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.0004	(B)
Percent < 60 mesh	99.92%	X 1	=	0.9992	©
Lime Reactivity			=	0.9996	(Sum of A, B, and C)

Calcium Carbonate Equivalence	82.20%	%	
Percent Moisture	26.6%	%	New Moisture 04-29-09
Bulk Density	0.75 grams/cc	= 0.632	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * (1000 tons soil/acre/6") * Treatment Depth / (Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 80.25 tons/acre = 1108.99 tons total

= 3.68 lbs/ft2 1.84 (two-pass rate in lbs/ft2)

Lime Rate = 126.96 cubic yards/acre = 1754.52 cy total

Signature: [signature]

Date: 04-29-09

Signature: [signature]

Date:

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: Smith 1

Date: 6-20-09 Time: 08:45 - 09:15

Field Application Rate: 43.35 tons/acre (1.99 psf) (psf = tons/acre*0.0459)

Total Tarp Dimensions: 27 (sq. ft.)

Tolerance
+10% = 2.19
-10% = 1.81

Test 1 Material Weight: 58.16 (lbs.) Rate: 2.15 ✓ psf
(26.86 + 12.12 + 22.20) - Soil tare

Test 2 Material Weight: 57.25 (lbs.) Rate: 2.12 ✓ psf
(24.78 + 12.00 + 25.57) - 5.1

Test 3 Material Weight: _____ (lbs.) Rate: _____ psf

Test 4 Material Weight: _____ (lbs.) Rate: _____ psf

Test 5 Material Weight: _____ (lbs.) Rate: _____ psf

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: SMITH 1

Date: 04-21-09 Time: 07:40 - 08:10

Field Application Rate: 43.35 tons/acre (1.99 psf) (psf = tons/acre*0.0459)

Total Tarp Dimensions: 27 (sq. ft.)

Tolerance
1.99 + 10% = 2.19
1.99 − 10% = 1.81

Test 1 Material Weight: 49.19 (lbs.) Rate: 1.82 ✓ psf
(21.50 + 21.54 + 11.25) − 5.1 Tare

Test 2 Material Weight: 49.42 (lbs.) Rate: 1.83 ✓ psf
(16.76 + 12.82 + 24.94) − 5.1

Test 3 Material Weight: _____ (lbs.) Rate: _____ psf

Test 4 Material Weight: _____ (lbs.) Rate: _____ psf

Test 5 Material Weight: _____ (lbs.) Rate: _____ psf

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

(Irrigated Meadow / Fluvial Deposit Polygon ID: SMITH 1 - 1st Lift

Date: 04-22-09 Time: 08:10 - 08:30

Target
2.19 (+10%)
1.81 (-10%)

Field Application Rate: _____ tons/acre (1.99 psf) (psf = tons/acre*0.0459)

Total Tarp Dimensions: 27 (sq. ft.)

Test 1 Material Weight: 54.22 (lbs.) Rate: 2.01 ✓ psf
(22.0 + 12.5 + 24.4) - 5.1 Tare

Test 2 Material Weight: 50.69 (lbs.) Rate: 1.88 ✓ psf
(24.79 + 10.92 + 20.69) - 5.1 Tare

Test 3 Material Weight: _____ (lbs.) Rate: _____ psf

Test 4 Material Weight: _____ (lbs.) Rate: _____ psf

Test 5 Material Weight: _____ (lbs.) Rate: _____ psf

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: SMITH 1

Date: 04-27-09 Time: ~~09:30 am~~ 11:15 - 12:03

Field Application Rate: 43.35 tons/acre (1.99 psf) (psf = tons/acre*0.0459)

Total Tarp Dimensions: 27 (sq. ft.)

+10% (2.19)
-10% (1.81)

Test 1 Material Weight: 47.64 (lbs.) Rate: 1.76* psf
(19.18 + 13.00 + 20.56) - 5.1 Tare wt. (No adjustments made, rock in auger)

Test 2 Material Weight: 58.36 (lbs.) Rate: 2.16 ✓ psf
(22.18 + 14.14 + 27.14) - 5.1

Test 3 Material Weight: 55.24 (lbs.) Rate: 2.05 ✓ psf
(21.86 + 13.04 + 25.44) - 5.1

Test 4 Material Weight: _____ (lbs.) Rate: _____ psf

Test 5 Material Weight: _____ (lbs.) Rate: _____ psf

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: Smith 1 (2nd layer)

Date: 04-29-09 Time: 07:30 – 08:15

Field Application Rate: _____ tons/acre (1.99 psf) (psf = tons/acre*0.0459)

Total Tarp Dimensions: 27 (sq. ft.)

Tolerance
1.99 + 10% = 2.19
1.99 − 10% = 1.79

Test 1 Material Weight: 66.02 (lbs.) Rate: 2.45 ✱ psf
(27.78 + 13.08 + 30.26) − 5.1 Tare

Test 2 Material Weight: 54.78 (lbs.) Rate: 2.03 ✓ psf
(14.26 + 19.22 + 26.40) − 5.1

Test 3 Material Weight: 50.28 (lbs.) Rate: 1.86 ✓ psf
(26.70 + 12.50 + 25.18) − 5.1

Increase speed

Test 4 Material Weight: _____ (lbs.) Rate: _____ psf

Test 5 Material Weight: _____ (lbs.) Rate: _____ psf

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: Smith 1

Date: 04-30-09 Time: 07:30 - 08:30

Field Application Rate: 80.25 tons/acre (1.84 psf) (psf = tons/acre*0.0459) x 2 passes

Total Tarp Dimensions: 27 (sq. ft.)

-10% = 1.67
+10% = 2.02

Test 1 Material Weight: 44.9 (lbs.) Rate: 1.66* psf Adjusted

(16.36 + 11.14 + 22.50) - 5.1

Test 2 Material Weight: 50.2 (lbs.) Rate: 1.86 ✓ psf ~~Adjs~~

(22.56 + 10.62 + 22.16) - 5.1

Test 3 Material Weight: 56.8 (lbs.) Rate: 2.10 ✓ psf

(25.56 + 21.50 + 14.54) - 5.1

Test 4 Material Weight: _____ (lbs.) Rate: _____ psf

Test 5 Material Weight: _____ (lbs.) Rate: _____ psf

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

FERTILIZER CALIBRATION

- Place a known weight (e.g., one 50-lb bag) into the spreader hopper.
- Follow the operations manual to set the equipment to meet the design field application rate (e.g., spreader opening, travel speed, RPMs, etc.)
- Make one pass dispersing the fertilizer until the contents of the spreader are emptied.
- Measure the area over which the fertilizer was applied
- Divide the weight of material applied by the total area it was applied to, convert to lbs/acre, and compare to the design field application rate.
- An acceptable test will be within 10% of the required rate.

Fertilizer Calibration Record

Date: 04-28-09 Time: 11:00 - 11:30

Irrigated Meadow / Fluvial Deposit Polygon ID: Smith 1

Fertilizer Type: 0 : 45 : 0 (N:P:K)

Design Field Application Rate: 306 lbs/acre (± 10% range = 139 to 168)
(153 lb rate x 2)

Calibration Data for one ~~50~~ 25 pound bag of fertilizer:

Dimensions over which bag was spread: 140 feet x 50 feet

Total Calibration Area: 7000 (ft^2) * 1 acre / 43560 ft^2 = 0.161 acres

Calibrated Application Rate: 155.3 (lbs/acre)
X 2 passes = 311 ✓

Quality Control Data for Field Application Verification:

Area of Polygon: 13,819 (acres)

Total Weight to be Applied: 4036 (lbs)

# of 50 lb. Bags to be Applied: ≈ 81 bags

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

153 lbs / 1 acre = 25 / X

= 0.163 acres

43,560 X .163

= 7100 sq ft

50' spread wid

Transect 140' x 50'

Toberne

130' x 50 = 168 lbs/acre

156 x 50 = 140 lbs/acre

Trial 1 170' - *

Trial 2 140' ✓

17 - 18 RPM

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: Smith 1

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	Acid Fize to 5.0?
454	7.5	7.5	7.5	NO	Yes
455	7.0	7.0	7.0	No	Yes
151	7.6	7.0	7.0	No	Yes
450	7.3	7.0	7.5	No	Yes
456	7.5	7.5	7.5	No	Yes
449	7.5	7.5	7.5	No	Yes
448	7.7	7.5	8.0	No	Yes
445	7.5	7.5	7.5	No	Yes
444	7.3	7.0	7.5	No	Yes
443	7.3	7.0	7.5	No	Yes
Note: Points 451 + 452 were not tested today as they require re-drilling / re-testing.					
05-05-09 Retests					
442	7.5	7.0	8.0	No	Yes
441	7.5	7.0	8.0	No	Yes

Name/Signature: John G Shaw

Date: 05-04-09
05-05-09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Fluvial Deposit/Irrigated Meadows Polygon: **Paste pH Record** SMITH 1

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
444 0-6	gmo ~~17.9~~ Tare 0.0	~~16.2~~ 17.9 gmo	18.2	7.5
" 6-12		15.5	15.2	7.7
455 0-6		17.5	16.9	7.1
" 6-12		16.0	16.3	7.1
454 0-6		15.2	15.0	7.5
" 6-12		18.0	18.2	7.5
445 0-6		15.9	15.5	7.3
" 6-12		18.0	17.9	7.5
450 0-6		16.5	17.5	7.6
" 6-12		16.9	16.6	7.4
Dupe (445) 0-6		14.5	14.9	7.2
" 6-12		14.5	14.6	7.2
456 0-6		14.0	15.7	7.4
456 6-12		14.0	13.4	7.5
151 0-6		12.4	11.9	7.5
151 6-12		15.4	14.4	7.4
443 0-6		14.7	14.1	7.5
443 6-12		15.7	15.2	7.5

Name/Signature: _____ **Date:** _____

Run 2-point calibration (buffer 10.0 & buffer 7.0) prior to testing.
gmo 05-04-09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Fluvial Deposit/Irrigated Meadows Polygon: **Paste pH Record** Smith 1

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
449 0-6	Tare (0.0)	14.8	14.3	7.2
" 6-12	"	14.8	13.9	7.2
pH Buffer 7.0				7.0 (05-04-09)
05-5-05-09				
441 0-6	Tare (0.0)	15.3	15.2	7.7
" 6-12		14.8	15.0	7.6
442 0-6		15.1	15.1	7.4
" 6-12		15.6	15.7	7.6

Name/Signature: [signature]

Date: 05-05-05

Compost Application Rate Calculation Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: **Smith 1**

POLYGON CHARACTERISTICS

Target % Organic Carbon (1.5% for T-6, 2.5% for T-12)			1.50%	%
Treatment Depth			12	inches
Treatment Area			13.819	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon			29.50%	%	BOS Compost
Percent Moisture			16.00%	%	
Wet Bulk Density	0.629 grams/cc	=	0.530	tons/cy	

CALCULATE COMPOST APPLICATION RATE

Compost = Target % OC * depth * 1000 tons/acre/6" / Compost % OC * (1- %Moisture/100)

Compost Rate =	121.07 tons/acre	=	1673.00 tons total
Compost Rate =	228.43 cubic yards/acre	=	3156.61 cy total

Signature: Brad Mead

Date: 5/5/09

Signature: John G. Rhodes

Date: 05-07-09

1673.00 tons total

1060 Only 1036 tons available. See attached for addtl Select Compost needed

KUHN COMPOST SPREADER RATES

Date	Kuhn Push Ram Feed (percent)	Kuhn Mph	Polygon	Calibration Area sq. ft	Calibration Vol. (CY)	Calibration Acreage	Target App Rate (yd3/acre)	Calibration Trial Rate (yd3/acre)	Compost	Comment
4/29/2009	60	2.0	Seppi 8	689	6.5	0.016	391.5	[redacted]	Select	
4/29/2009	30	2.0	Seppi 8	7,800	6.5	0.179	60	36.3	BOSS	Trial 1, Seppi 8
4/29/2009	35	2.5	Seppi 8	4,680	6.5	0.107	60	[redacted]	BOSS	Trial 4, Seppi 8
4/29/2009	39	2.0	Seppi 8	3,250	6.5	0.075	60	87	BOSS	Trial 3, Seppi 8
4/29/2009	45	2.0	Seppi 8	2,550	6.5	0.058	60	112	BOSS	Trial 2, Seppi 8 (note Seppi 9 target rate)
4/29/2009	45	2.0	Seppi 9	2,533	6.5	0.058	113.8	[redacted]	BOSS	Trial 1, Seppi 9
5/8/09	37	2.0	Sm 1				158	34.2	Select	Trial 1, Smith 1
5/8/09	42	2.0	Sm 1				158	101.0	Select	Trial 2, Smith 1
5/8/09	49	2 - 2.5	Sm 1				158	97.0	Select	Trial 3, Smith 1
5/8/09	45	2 - 2.5	Sm 1				158	94.0	Select	Trial 4, Smith 1
5/8/09	42	3.0	Sm 1				158	61.0	Select	Trial 5, Smith 1
5/8/09	42	2.5	Sm 1				158	[redacted]	Select	Trial 6, Smith 1 (Used for 1/2 rate)
5/8/09	42	2.5	Sm 1				158	[redacted]	Select	Repeat, Smith 1 (Used for 1/2 rate)
5/11/09	42	2.5	Sm 1	3249	4.25	0.07	79	56.98	Select	
5/11/09	42	2.5	Sm 1	2618	4.25	0.06	79	70.71	Select	
5/11/09	42	2.5	Sm 1	2210	4.25	0.05	79	83.77	Select	
5/11/09	42	2.5	Sm 1	2700	4.25	0.06	79	68.57	Select	
5/11/09	42	2.5	Sm 1	3058	4.25	0.07	79	60.54	Select	
5/11/09	42	2.5	Sm 1	2600	4.25	0.06	79	71.20	Select	
5/11/09	42	2.5	Sm 1	2622	4.25	0.06	79	70.61	Select	
5/11/09	42	2	Sm 1	2750	4.25	0.06	79	67.32	Select	
5/11/09	50	2.3	Sm 1	1501	4.25	0.03	79	123.34	Select	
5/11/09	45	2.3	Sm 1	2318	4.25	0.05	79	79.87	Select	
5/11/09	45	2.3	Sm 1	2794	4.25	0.06	79	66.26	Select	
5/11/09	45	2.3	Sm 1	2500	4.25	0.06	79	74.05	Select	
5/11/09	45	2.3	Sm 1	2772	4.25	0.06	79	66.79	Select	
5/11/09	45	2.1	Sm 1	1800	4.25	0.04	79	102.85	Select	
5/11/09	45	2.3	Sm 1	2580	4.25	0.06	79	71.76	Select	
5/11/09	42	2.3	Sm 1	2142	4.25	0.05	79	86.43	Select	
5/11/09	42	2.3	Sm 1	2516	4.25	0.06	79	73.58	Select	
5/11/09	42	2.3	Sm 1	2730	4.25	0.06	79	67.81	Select	
5/11/09	42	2.3	Sm 1	2700	4.25	0.06	79	68.57	Select	
5/11/09	42	2.3	Sm 1	2760	4.25	0.06	79	67.08	Select	
5/11/09	42	2.3	Sm 1	2783	4.25	0.06	80	66.52	Select	

E2 Consulting Engineers, Inc.
1536 Cole Blvd., Suite 220
Golden, Colorado 80401
(303) 232-9800

Title: California Gulch
Project: OU-1
Project No.: CO-PWT-1522
Date: 5/6/09
By: Roger Merrick
Page

Smith 1 Compost

Based on 1060 lb/cy (wet) + 16% moisture (field value) + a lab % organic carbon of 29.5%, the total mass of BOSS Compost needed on Smith 1 is 1673 tons. Only 1060 tons of BOSS remains, so we need to determine the equivalent mass of Select Materials Compost for the remainder of Smith 1.

$$\frac{\text{1673 tons BOSS needed}}{\text{1060 tons BOSS supplied}} \Big\rangle \text{wet tons}$$

$$\text{613 tons of BOSS short}$$

At 16% moisture, the dry tons equivalent is:

$$\text{Dry tons Boss} = 613 \text{ wet tons}(1-0.16) = 514.9$$

$$\text{Dry tons OC} = 514.9(0.295) = 151.90$$

$$\text{Dry tons Select compost} = \frac{151.90}{0.1578}$$

$$= 962.6$$

30% moisture on 5/6/09

$$\text{Wet tons Select} = \frac{962.6}{(1-0.3)}$$

$$= \boxed{1375.2 \text{ tons}}$$

$$\text{Application rate} = \frac{1375.2 \text{ tons}}{13.819 \text{ acres}}$$

$$= \boxed{99.5 \text{ tons/acre}}$$

Colorado Analytical Wet Density from 5/5/09 = 1260 lb/cy

$$= \frac{99.5 \text{ tons/acre}}{0.63 \text{ tons/cy}} = \boxed{157.9 \text{ cy/acre}}$$

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in yd^3/acre. 4.25
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.
- Repeat.

Compost Spreader Calibration Record

Boss Compost

Date: 05-05-09 Time: 08:20 - 08:45

Irrigated Meadow / Fluvial Deposit Polygon ID: Smith 1

Design Application Rate: ~~112~~ 121.07 (MD) (yd^3/acre)

Note: Adjusted after calibration to 121.07 by R. Merrick

950 lauds - One Bucket

Calibration Data for one load of compost:

	Test Run 1	Test Run 2	Average
Compost Quantity (yd^3)	4.25	4.25	
Compost was spread over (ft^2)	108 x 16 = 1728	112 x 16 = 1792	
Calibration area (acres)	.0397	0.041	
Calibrated Application Rate (yd^3/acre)	107	103.7	105.4

45% Feed
2.0 mph

Quality Control Data for Field Application Verification:

(A) Design Application Rate: ~~121~~ 121.1 (MD) (yd^3/acre)

(B) Average Calibrated Application Rate: 105.4 (yd^3/acre)

Passes to be Applied: ~~1.3~~ 1.1 (MD) passes (= A/B)

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in yd^3/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.
- Repeat.

Compost Spreader Calibration Record

Boss Compost
45% Feed
2.0 mph

Date: 05-06-09 Time: 07:45

Irrigated Meadow / Fluvial Deposit Polygon ID: Smith 1

Design Application Rate: 121.1 (yd^3/acre)

Calibration Data for one load of compost:

	Test Run 1	Test Run 2	Average
Compost Quantity (yd^3)	4.25	4.25	
Compost was spread over (ft^2)	115 x 13 = 1495	92 x 15 = 1380	1438
Calibration area (acres)			0.033
Calibrated Application Rate (yd^3/acre)			129

Quality Control Data for Field Application Verification:

(A) Design Application Rate: 121.1 (yd^3/acre)

(B) ~~Average~~ Calibrated Application Rate: 129 (yd^3/acre)

Passes to be Applied: ≈ 1 passes (= A/B)

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in yd^3/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.
- Repeat.

Compost Spreader Calibration Record

Select Mtrls.

Date: 05-03-09 Time: 10:30

Irrigated Meadow / Fluvial Deposit Polygon ID: South 1

Design Application Rate: 158 (yd^3/acre)

Runs 1 and 2 were preceded by 5 trials @ various settings (37 to 49% feed)

Calibration Data for one load of compost:

	Test Run 1	Test Run 2	Average
Compost Quantity (yd^3)	4.25	4.25	
Compost was spread over (ft^2)	148x18 = 2664	140x20 = 2800	2,733
Calibration area (acres)			0.063
Calibrated Application Rate (yd^3/acre)			67.5

42% feed, 2.5 mph

Quality Control Data for Field Application Verification:

(A) Design Application Rate: 158 (yd^3/acre)

(B) Average Calibrated Application Rate: 67.5 (yd^3/acre) x 2 = 135

Passes to be Applied: ≈ 2 passes (= A/B)

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in yd^3/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.
- Repeat.

Compost Spreader Calibration Record

Date: 05-07-09 Time: _____

Irrigated Meadow / Fluvial Deposit Polygon ID: Smith 1 Boss Compost

Design Application Rate: 121.1 (yd^3/acre) 45% Setting Push Run 2.0 mph Travel Sp.

Calibration Data for one load of compost:

	Test Run 1	Test Run 2	Average
Compost Quantity (yd^3)	4.25	4.25	
Compost was spread over (ft^2)	120 X 13 = 1560	114 X 12 = 1368	1464
Calibration area (acres)			0.034
Calibrated Application Rate (yd^3/acre)			125.0

Quality Control Data for Field Application Verification:

(A) Design Application Rate: 121.1 (yd^3/acre)

(B) Average Calibrated Application Rate: 125 (yd^3/acre)

Passes to be Applied: ≈ 1 passes (= A/B)

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in yd^3/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.
- Repeat.

Compost Spreader Calibration Record

4.25
~~2.2 to 2.5~~
2.2 to 2.4 mds

Date: 05-12-05 Time: 09:10 - 09:50

Irrigated Meadow / Fluvial Deposit Polygon ID: Smith 1

Design Application Rate: 158 (yd^3/acre)
1/2 rate = 79 to 80 yd^3/acre

Calibration Data for one load of compost:

	Test Run 1	Test Run 2	Average
Compost Quantity (yd^3)	4.25	4.25	
Compost was spread over (ft^2)	135 x 18 = 2430	130 x 20 = 2600	
Calibration area (acres)	0.056	0.060	
Calibrated Application Rate (yd^3/acre)	75.9	71	73.5

Quality Control Data for Field Application Verification:

(A) Design Application Rate: 79 (yd^3/acre) x2

(B) Average Calibrated Application Rate: ≈ 74 (yd^3/acre)

Passes to be Applied: ≈ 2 passes (= A/B)

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in yd^3/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.
- Repeat.

Compost Spreader Calibration Record

Date: 05-15-09 Time: 12:45

Irrigated Meadow / Fluvial Deposit Polygon ID: Smith 1

Design Application Rate: 158 (yd^3/acre)
(79 x 2 passes)

Calibration Data for one load of compost:

	Test Run 1	Test Run 2	Average
Compost Quantity (yd^3)	4.25	4.25	
Compost was spread over (ft^2)	125 x 18 = 2252	138 x 16 = 2213	
Calibration area (acres)	0.052	0.051	
Calibrated Application Rate (yd^3/acre)	82	83	82.5

Quality Control Data for Field Application Verification:

42% Ram Feed
2-2.5 mph
1000 rpm Augers

(A) Design Application Rate: 79 (yd^3/acre)

(B) Average Calibrated Application Rate: 82.5 (yd^3/acre)

Passes to be Applied: 2 passes (= A/B)

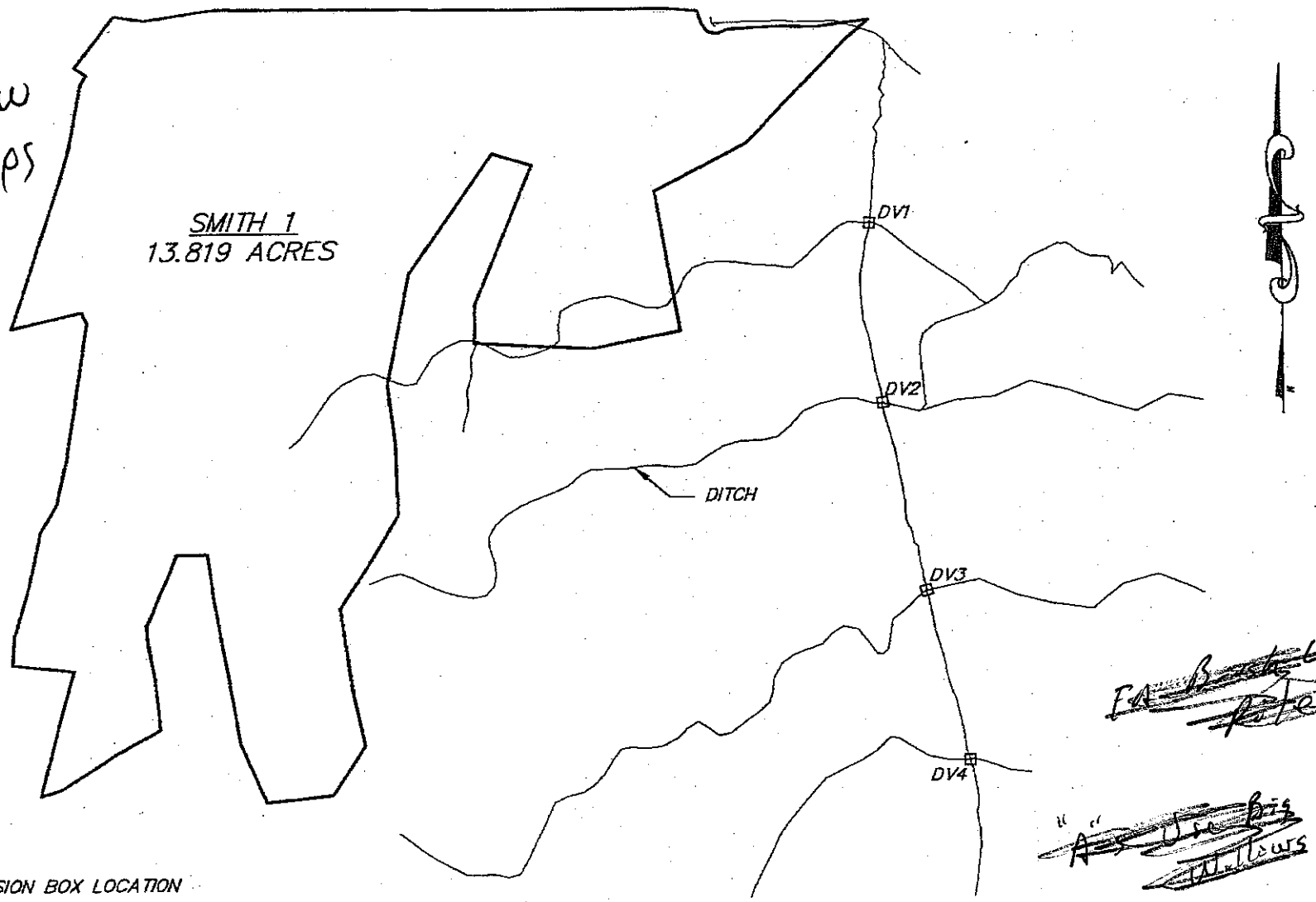
Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

① Pull All Perimeter Stakes Punchlist 05-15-09

② Drag in Edges

③ Harrow Clumps After Dragging In.



EA Beats Harrow Rate

A-S Use Bits Williams

Inter-Mountain Engineering Ltd.
40801 US HWY 6&24, STE 203 BOX 978 AVON, CO 81620 PH: (970)949-5072
8392 CONTINENTAL DIVIDE RD. SUITE 107 LITTLETON, CO 80127 PH: (303)948-4220

CLIENT: FRONTIER ENVIRONMENTAL INC.

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SMITH 1 - DITCH LOCATIONS

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=200'
DATE ISSUED:	10-30-08
PROJECT NO.	08-0032
CHECKED	

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Seeder Calibration Form

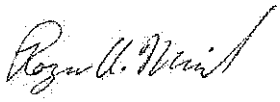
Calibration Form Instructions

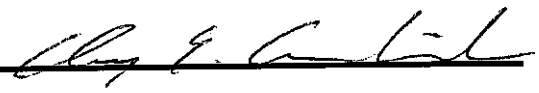
1) Enter the Polygon ID, Polygon acreage, Calibration Date, Target seed rate(s), %PLS in each seed mix, and % seed in each each mix
2) Perform seeder calibration per the manufacturers' instructions 3 times and enter the total weight of bulk seed mix in grams collected for each seed box
3) For each individual calibration run, verify that the achieved rate is within ±20 % of the 1/2 Target Rate
4) After the 3rd calibration run, verify that the 3 Run Average rate is within ±10% of the 1/2 Target Rate

NOTE: The BLUE text shows the "calculated values" based on the entered data

Polygon ID Smith 1 **Acres:** 13.819 **Date:** 10/14/09

	Seed Mix 1		Seed Mix 2	
Target Rate	11.50	lbs PLS / acre	1.25	lbs PLS / acre
% PLS in seed mix	91%		91%	
Dilution Factor	100%	(% seed)	100%	(% seed)
Target Application Rate	12.63	bulk pounds / acre	1.37	bulk pounds / acre
	174.5	Total bulk pounds	19.0	total bulk pounds
1/2 Target Rate (2 passes)	6.31	bulk pounds / acre	0.69	bulk pounds / acre
	87.3	1/2 of total bulk pounds	9.5	1/2 of total bulk pounds
Test Run 1	11.80	total grams in 3 bags	1.50	total grams in 3 bags
	5.90	bulk lbs/acre	0.75	bulk lbs/acre
Test Run 2	11.80	total grams in 3 bags	1.40	total grams in 3 bags
	5.90	bulk lbs/acre	0.70	bulk lbs/acre
Test Run 3	12.70	total grams in 3 bags	1.20	total grams in 3 bags
	6.35	bulk lbs/acre	0.60	bulk lbs/acre
3 Run Average	12.10	total grams in 3 bags	1.37	total grams in 3 bags
	6.05	bulk lbs/acre	0.68	bulk lbs/acre
For QC Checks:				
+20% of 1/2 Target Rate	7.58	bulk pounds / acre	0.82	bulk pounds / acre
-20% of 1/2 Target Rate	5.05	bulk pounds / acre	0.55	bulk pounds / acre
+10% of 1/2 Target Rate	6.95	lbs seed mix / acre	0.76	lbs seed mix / acre
-10% of 1/2 Target Rate	5.68	lbs seed mix / acre	0.62	lbs seed mix / acre

PWT Signature: 

Frontier Signature: 

Kind: SMITH SEED MIX LARGE
Lot: 2148521

Smith Reseed 3,4,5

Kind & Variety:	Pure%	Germ%	Origin:
MEADOW BROME, FLEET	33.17	91	CAN
BLENDER W/G, SAND LUIS	20.94	95	WA
WESTERN W/G, ROSANNA	17.69	90	SD
SMOOTH BROMEGRASS, MANCHAR	17.50	91	WA
RED FESCUE	8.47	94	MT

Smith 1

Also Reseed Smith 2 & 6

Crop: .12% Inert: 2.05 % Weed: .07% Net Wt: 39.5 #(35.9375PLS#/AC) 3.125AC

Noxious Weed: None Found Test Date: 5/09

Remarks: FRONTIER ENVIRONMENTAL

Winfield Solutions PO Box 64589 St Paul, MN 55164

Kind: SMITH SEED MIX SMALL
Lot: 2148517

Reseed Smith 3,4,5 Smith 2 & 6

Kind & Variety:	Pure%	Germ%	Origin:
CLIMAX TIMOTHY	38.16	95	CAN
ALSIKE CLOVER	23.35	93	MT
PRAIRIE JUNEGRASS	15.74	92	WA
CANADA BLUEGRASS, REUBENS	11.80	92	WA
REDTOP	7.94	91	CAN

Smith 1

Crop: .30% Inert: 2.54% Weed: .18% Net Wt: 18 #(15.625PLS#)12.5AC

Noxious Weed: None Found Test Date: 5/09

Remarks: FRONTIER ENVIRONMENTAL

Winfield Solutions PO Box 64589 St Paul, MN 55164

Activity Tracking Form
Irrigated Meadows
Clear, Grub, Grade, Pre-Till

Irrigated Meadow Polygon Name/ID: Smith 2 (West Side of N-S Ditch)

Activity Start Date: 9-2-08

Activity End Date: 9-9-08

Activities Verified As Completed (indicate NA if appropriate)

✓ Completed pre-remediation site walk and final delineation of remediation boundaries.

✓ Survey points for post-treatment depth verification were identified and elevations documented by survey crew before any ground disturbance. Rates will vary from 4 per acre down to 1 per 5 acres depending on Subcontractor's demonstration of compliance with QC requirements for tillage depth. **(Attach or reference survey data)**

✓ EPA collected pre-remediation full remediation depth composite samples at a rate of ~ 1 per 5 acres and the sample locations were surveyed

✓ Removed and disposed of existing trash or debris in accordance with Specification Section 01 74 16.

NA Cleared dead or decadent large woody vegetation if present and placed outside the remediation area in locations identified by the Contractor. Remaining grass and small woody vegetation tilled in place.

✓ Locations, extent and width of secondary irrigation ditches to be removed have been surveyed.

NA Graded the remediation areas as necessary for effective remediation.

✓ Pre-tilled the remediation areas to a minimum depth of 6 inches.

NA If rocks were removed from the remediation area, they were staged or disposed of as directed by the Contractor.

Quantity of Work Estimated in Proposal: 31.05

Quantity of Work Performed: 32.63 (← represents ALL of Smith 2; Only west side pre-tilled

Survey Data/Date: Great Divide Consulting on site 8-29-08 for pre-remediation depth surveys

Note: Attach copies of the survey data to this form or reference location of supporting survey data

Signature of Contractor — Date: 9-10-08

Signature of Subcontractor — Date: 9-10-08

Activity Tracking Form

Irrigated Meadows

Clear, Grub, Grade, Pre-Till

Irrigated Meadow Polygon Name/ID: Smith 2 (East Side)

Activity Start Date: 9/18/08

Activity End Date: 9/19/08

Activities Verified As Completed (indicate NA if appropriate)

✓ Completed pre-remediation site walk and final delineation of remediation boundaries.

✓ Survey points for post-treatment depth verification were identified and elevations documented by survey crew before any ground disturbance. Rates will vary from 4 per acre down to 1 per 5 acres depending on Subcontractor's demonstration of compliance with QC requirements for tillage depth. **(Attach or reference survey data)**

✓ EPA collected pre-remediation full remediation depth composite samples at a rate of ~ 1 per 5 acres and the sample locations were surveyed

✓ Removed and disposed of existing trash or debris in accordance with Specification Section 01 74 16.

✓ Cleared dead or decadent large woody vegetation if present and placed outside the remediation area in locations identified by the Contractor. Remaining grass and small woody vegetation tilled in place.

✓ Locations, extent and width of secondary irrigation ditches to be removed have been surveyed.

NA Graded the remediation areas as necessary for effective remediation.

✓ Pre-tilled the remediation areas to a minimum depth of 6 inches.

NA If rocks were removed from the remediation area, they were staged or disposed of as directed by the Contractor.

Quantity of Work Estimated in Proposal: 31.05

Quantity of Work Performed: 32.545 (Entire Polygon)

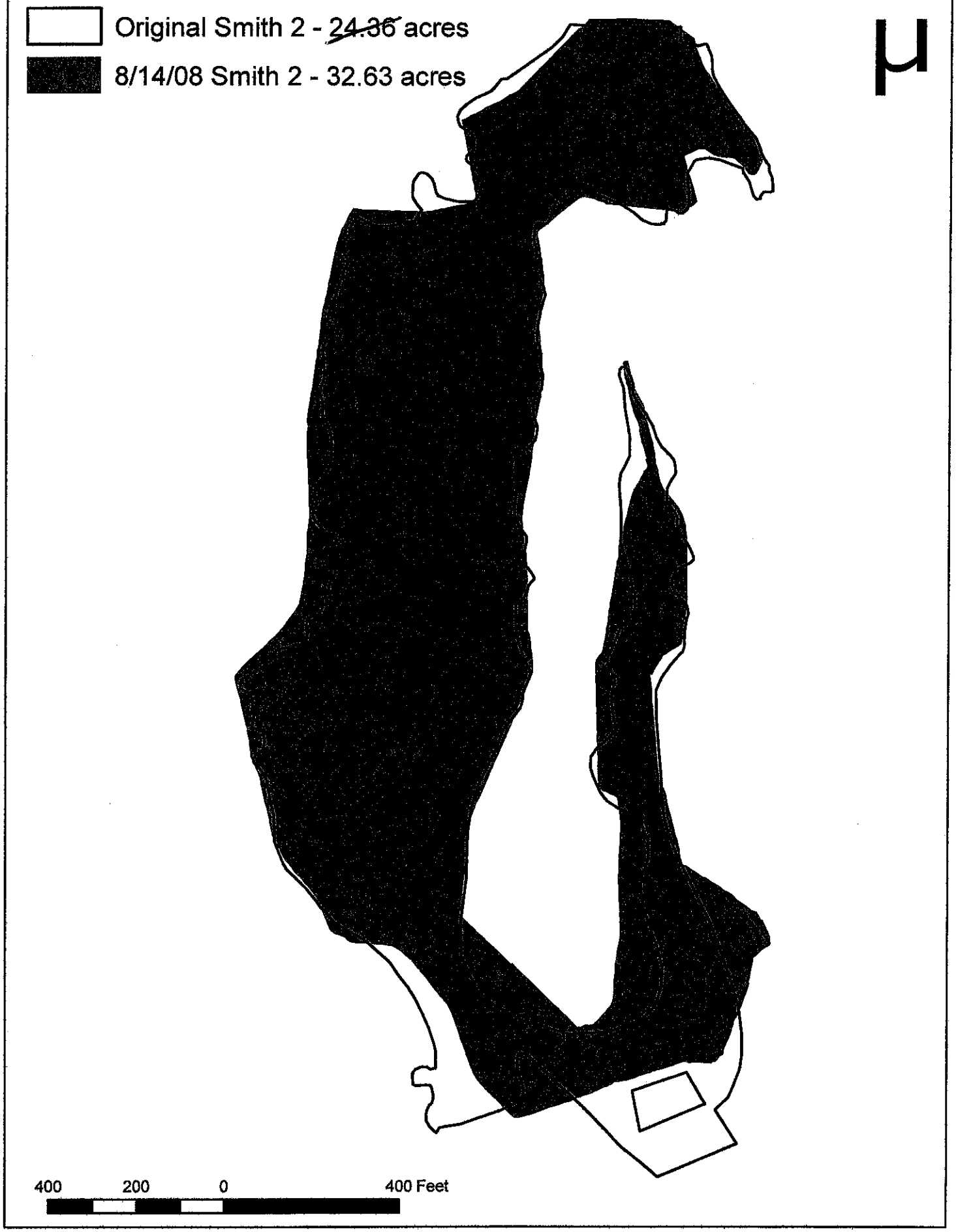
Survey Data/Date: 05-16-08

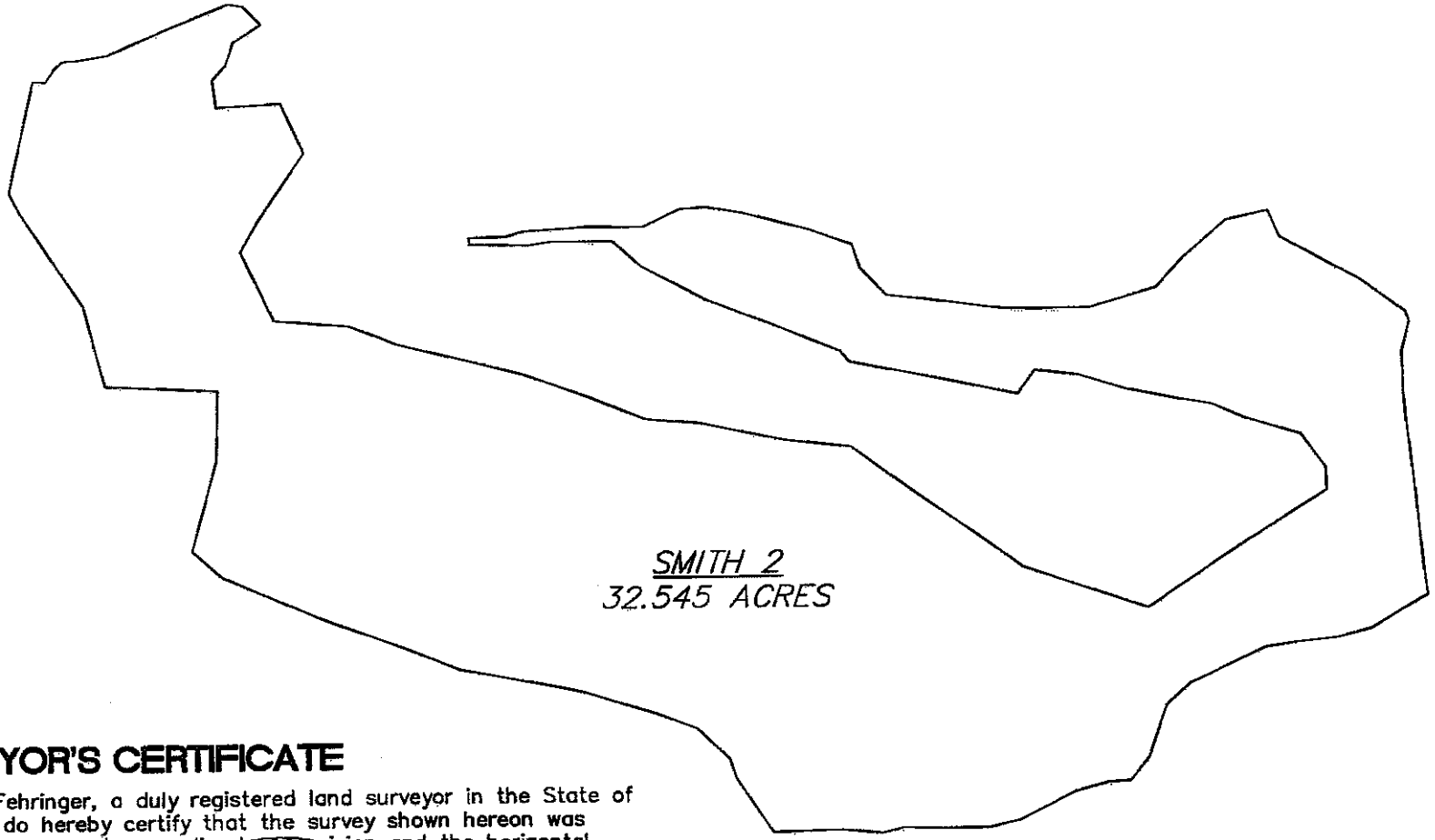
Note: Attach copies of the survey data to this form or reference location of supporting survey data

Signature of Contractor — Date: 10-08-08

Signature of Subcontractor — Date: 10-08-08

31.05


Original Smith 2 - 24.36 acres
8/14/08 Smith 2 - 32.63 acres
μ
400
200
0
400 Feet



SURVEYOR'S CERTIFICATE

I, Duane Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 8-18-08 26626 P.E. AND P.L.S.

Duane Fehringer P.E. & P.L.S. 26626

Inter-Mountain Engineering Ltd.
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CLIENT: FRONTIER ENVIRONMENTAL INC.

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SMITH 2

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=300'
DATE ISSUED:	8-18-08
PROJECT NO.	08-0032
EXHIBIT	

Lime Application Rate Calculation Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: **Smith 2**

POLYGON CHARACTERISTICS

Net Application Rate (22 dry tons/1000 tons soil unless noted otherwise)	22	dry tons/1000 tons soil
Mixing Safety Factor (10% unless noted otherwise)	10.00%	%
% Rock (0 unless noted otherwise)	0.00%	%
Treatment Depth	6	inches
Total Area	32.63	acres

LIME CHARACTERISTICS

Lime Particle Size Distribution

Percent >10 mesh		X 0.1	=	0.0000	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.0004	(B)
Percent < 60 mesh	99.92%	X 1	=	0.9992	©
Lime Reactivity			=	0.9996	(Sum of A, B, and C)

Calcium Carbonate Equivalence		82.20%	%
Percent Moisture		28.4%	% (from 9-9-08)
Bulk Density	0.75 grams/cc	= 0.632	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * (1000 tons soil/acre/6") * Treatment Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 41.13 tons/acre = 1342.21 tons total
= 1.89 lbs/ft2

Lime Rate = 65.08 cubic yards/acre = 2123.49 cy total

Signature: Roger Merrick/JS on file

Date: 9-10-08

Signature: [signature]

Date: 9/10/08

MOISTURE CONTENT

- Tare Container
- Weigh sample. Record wet sample weight.
- Dry sample until sample appears dry, minimum of 1 hour on hotplate or in oven
- Weigh sample. Record dry sample weight
- Calculate % Moisture = (Wet weight – Dry weight)/Wet Weight

09-23-08

Screened Lime

Moisture Content Record for Lime/Compost (circle one)

	Date	Wet Weight (g)	Dry Weight (g)	Water Weight (g)	% Moisture	
1	9-23-08 Tare 2.3	17.4-2.3 = 15.1	~~13.0-2.3 = 10.7~~	4.4	29.1	ST-8
2	9-23-08 2.3	18.3-2.3 = 16g	14.0-2.3 = 11.7	4.3	26.9	ST-8
3	9-23-08 2.3	16.7-2.3 = 14.4g	12.4-2.3 = 10.1	4.3	29.9	ST-8
					Avg. =	28.6
					Copied to	
					Sm 2, 3, 4, & 5	

Name/Signature: [signature]

Date: 09-23-08

MOISTURE CONTENT

- Tare Container
- Weigh sample. Record wet sample weight.
- Dry sample until sample appears dry, minimum of 1 hour on hotplate or in oven
- Weigh sample. Record dry sample weight
- Calculate % Moisture = (Wet weight – Dry weight)/Wet Weight

Both - Indicated Below

Moisture Content Record for Lime/Compost (circle one)

	Date	Wet Weight (g)	Dry Weight (g)	Water Weight (g)	% Moisture	
⊗	09-09	(16.3 - 2.3 Tare) 14.0	(12.3 - 2.3) 10.0	4.0	28.6	Lime ST-8
*	"	(17.3 - 2.2 Tare) 15.1	(12.8 - 2.2) 10.6	4.5	29.8	Lime ST-8
Z	"	(20.9 - 2.2 Tare) 18.7	(15.9 - 2.2) 13.7	5.0	24.7	Lime ST-8
P1	"	(100.8 - 15.5T) 85.3	(83.0 - 15.5T) 67.5	17.8	20.9	Compost ST-2
P2	"	(109.1 - 15.6T) 93.5	(88.2 - 15.6T) 72.6	20.9	22.3	Compost ST-2
P3	"	(118.7 - 15.7T) 103.0	(95.0 - 15.7T) 79.3	23.7	23.0	Compost ST-2

Avg. = 28.4 Lime ST-8

$\bar{X}$ = 22.1% Compost ST-2

Note: Lime is For Upcoming Smith 2

Compost is For Smith 7

Name/Signature: [signature] **Date:** 09-09-08

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: Smith 2 & 3 (Start)

Date: 09-10-08 Time: 08:20

Field Application Rate: 41.13 tons/acre (1.89 psf) (psf = tons/acre*0.0459)
1.89 per R Merrick

Total Tarp Dimensions: 27 (sq. ft.)

2.08
+10% (~~1.89~~)
-10% (1.72)

Test 1 Material Weight: 65.5 (lbs.) Rate: 2.42* psf
(31.0 + 13.0 + 29.0) - 7.5

Test 2 Material Weight: 55.5 (lbs.) Rate: 2.06 psf
(22.0 + 11.0 + 30.0) - 7.5

Test 3 Material Weight: 52.5 (lbs.) Rate: 1.94 psf
(25.0 + 11.0 + 24.0) - 7.5

~~Test 4 Material Weight: _____ (lbs.) Rate: _____ psf~~

~~Test 5 Material Weight: _____ (lbs.) Rate: _____ psf~~

09-10-08 MV

After trial, determined that spreader gap was not set (too wide).

Print / Sign Name: Amy E. Combrink
Frontier Representative

Print / Sign Name: John ADeAngelis
PWT / EPA Representative

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: Smith 2

Date: 09-11-08 Time: 07:40

Field Application Rate: 41.13 tons/acre (1.89 psf) (psf = tons/acre*0.0459)

Total Tarp Dimensions: 27 (sq. ft.)

+10% (2.08)

−10% (1.72)

Test 1 Material Weight: 47.5 (lbs.) Rate: 1.76 psf

(21.0 + 10.0 + 24.0) − 7.5

Test 2 Material Weight: 50.5 (lbs.) Rate: 1.87 psf

(21.0 + 8.0 + 29.0) − 7.5

Test 3 Material Weight: _____ (lbs.) Rate: _____ psf

Test 4 Material Weight: _____ (lbs.) Rate: _____ psf

09-11-08

Test 5 Material Weight: _____ (lbs.) Rate: _____ psf

Print / Sign Name: Clay E. Combrink / Clay E. Combrink
Frontier Representative

Print / Sign Name: [illegible]
PWT / EPA Representative

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: Smith 2

Date: 09-12-08 Time: 08:30 (completed)

Field Application Rate: 4.13 tons/acre (1.89 psf) (psf = tons/acre*0.0459)

Total Tarp Dimensions: 27 (sq. ft.)

Tarp Drag - Muddy Conditions
(+10%) 2.08
(-10%) 1.72

Test 1 Material Weight: 49.5 (lbs.) Rate: ~~1.55~~ psf
(20.5) + 21.0 + 8.0 - 7.5

Test 2 Material Weight: 51.5 (lbs.) Rate: 1.91 ✓ psf
(24.0) + 23.0 + 12.0 - 7.5

Test 3 Material Weight: 46.5 (lbs.) Rate: 1.72 ✓ psf (Additional material stuck to tarps - met minimum wt.)
(19.0 + 11.0 + 24.0 - 7.5

Test ~~4 Material~~ Weight: _____ (lbs.) Rate: _____ psf

AD 09-12-08

Test 5 Material Weight: _____ (lbs.) Rate: _____ psf

Print / Sign Name: Clay E. Combrink / Clay E. Combrink
Frontier Representative

Print / Sign Name: John A. DeAngelis / John A. DeAngelis
PWT / EPA Representative

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: SMITH 2

Date: 09-15-08 Time: 0825

Field Application Rate: 41.13 tons/acre (1.89 psf) (psf = tons/acre*0.0459)

Total Tarp Dimensions: 27 (sq. ft.)

Test 1 Material Weight: 56.5 (lbs.) Rate: 2.09 * psf

28.0 + 11.0 + 25.0 − (7.5)

Test 2 Material Weight: 51.5 (lbs.) Rate: 1.91 ✓ psf

25.0 + 16.0 + 23.0 − 7.5

Test 3 Material Weight: 50.5 (lbs.) Rate: 1.87 ✓ psf

23.0 + 25.0 + 10.0 − 7.5

Test 4 Material Weight: _____ (lbs.) Rate: _____ psf

09-15-08

Test 5 Material Weight: _____ (lbs.) Rate: _____ psf

Tolerance

1.89 + 10% (2.08)

1.89 − 10% (1.72)

Frozen lime caked on spreader tires may have fallen on tarps.

Print / Sign Name: Clay E. Combrink / Clay E. Combrink
Frontier Representative

Print / Sign Name: John A. DeMarchi / John A. DeMarchi
PWT / EPA Representative

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: Smith 2

Date: 09-16-08 Time: 07:40

Field Application Rate: 41.13 tons/acre (1.89 psf) (psf = tons/acre*0.0459)

Total Tarp Dimensions: 27 (sq. ft.) Tolerance

Test 1 Material Weight: 46.5 (lbs.) Rate: 1.72 ✓ psf + 10% (2.08)
(25.0 + 19.0 + 10.0) - 7.5 tare − 10% (1.72)

Test 2 Material Weight: 49.5 (lbs.) Rate: 1.83 ✓ psf
(23.0 + 10.0 + 24.0) - 7.5 tare

Test 3 Material Weight: _____ (lbs.) Rate: _____ psf

Test 4 Material Weight: _____ (lbs.) Rate: _____ psf
09-16-08

Test 5 Material Weight: _____ (lbs.) Rate: _____ psf

Print / Sign Name: Clay Cambrink
Frontier Representative

Print / Sign Name: Tom Adelsbach
PWT / EPA Representative

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: SMITH 2

Date: 09-17-08 Time: 07:56 Finish

Field Application Rate: 41.13 tons/acre (1.89 psf) (psf = tons/acre*0.0459)

Total Tarp Dimensions: 27 (sq. ft.)

+ 10% (2.08)
- 10% (1.72)

Test 1 Material Weight: 53.5 (lbs.) Rate: 1.98 ✓ psf

25.0 + 26.0 + 10.0 (-7.5 lbs)

Test 2 Material Weight: 53.5 (lbs.) Rate: 1.98 ✓ psf

26.0 + 22.0 + 13.0 (-7.5 lbs)

Test 3 Material Weight: ~~53.5~~ (lbs.) Rate: _____ psf

Test 4 Material Weight: _____ (lbs.) Rate: _____ psf

09-17-08

Test 5 Material Weight: _____ (lbs.) Rate: _____ psf

Print / Sign Name: Clay E. Combrink / Clay E. Combrink
Frontier Representative

Print / Sign Name: John A. McAuslis / John A. McAuslis
PWT / EPA Representative

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: Swale 2

Date: 09-22-08 Time: 08:30

Field Application Rate: 41.13 tons/acre (1.89 psf) (psf = tons/acre*0.0459)

Total Tarp Dimensions: 27 (sq. ft.)

Tolerance
1.89 + 10% → 2.08
1.89 − 10% → 1.72

Test 1 Material Weight: 52.5 (lbs.) Rate: 1.94 psf
24.0 + 11.0 + 5.0 − 7.5 tare

Test 2 Material Weight: 55.5 (lbs.) Rate: 2.06 psf
26.0 + 24.0 + 13.0 − 7.5 tare

Test 3 Material Weight: _____ (lbs.) Rate: _____ psf

Test 4 Material Weight: _____ (lbs.) Rate: _____ psf

09-22-08

Test 5 Material Weight: _____ (lbs.) Rate: _____ psf

Print / Sign Name: C. Combrink / [signature]
Frontier Representative

Print / Sign Name: Josh A Pollock / [signature]
PWT / EPA Representative

FERTILIZER CALIBRATION

- Place a known weight (e.g., one 50-lb bag) into the spreader hopper.
- Follow the operations manual to set the equipment to meet the design field application rate (e.g., spreader opening, travel speed, RPMs, etc.)
- Make one pass dispersing the fertilizer until the contents of the spreader are emptied.
- Measure the area over which the fertilizer was applied
- Divide the weight of material applied by the total area it was applied to, convert to lbs/acre, and compare to the design field application rate.
- An acceptable test will be within 10% of the required rate.

Fertilizer Calibration Record

Date: 09-24-08 Time: 12:15 – 12:40

Irrigated Meadow / Fluvial Deposit Polygon ID: Smith 2

Fertilizer Type: 0 : 45 : 0 (N:P:K)

Design Field Application Rate: 153 / ~~153~~ 140 lbs/acre (± 10% range = 139 – 168)

Calibration Data for one 50 pound bag of fertilizer:

Dimensions over which bag was spread: 60 feet x 244 feet

Total Calibration Area: 14,640 (ft^2) * 1 acre / 43560 ft^2 = 0,34 acres

Calibrated Application Rate: 147 (lbs/acre)

Quality Control Data for Field Application Verification:

Area of Polygon: 32.545 (acres)

Total Weight to be Applied: 4980 (lbs)

# of 50 lb. Bags to be Applied: 99.6 bags

Print / Sign Name: Clay E. Combrink / Clay E. Combrink
Frontier Representative

Print / Sign Name: John A. McAndis / John A. McAndis
PWT / EPA Representative

FERTILIZER CALIBRATION

- Place a known weight (e.g., one 50-lb bag) into the spreader hopper.
- Follow the operations manual to set the equipment to meet the design field application rate (e.g., spreader opening, travel speed, RPMs, etc.)
- Make one pass dispersing the fertilizer until the contents of the spreader are emptied.
- Measure the area over which the fertilizer was applied
- Divide the weight of material applied by the total area it was applied to, convert to lbs/acre, and compare to the design field application rate.
- An acceptable test will be within 10% of the required rate.

Fertilizer Calibration Record

Date: 09-25-08 Time: 10:50

Irrigated Meadow / Fluvial Deposit Polygon ID: Smith 2 (Day 2)

Fertilizer Type: 0 : 45 : 0 (N:P:K)

Design Field Application Rate: 153 lbs/acre (± 10% range = 139 – 168)

Calibration Data for one 50 pound bag of fertilizer:

Dimensions over which bag was spread: 60 feet x 245 feet

Total Calibration Area: 14700 (ft^2) * 1 acre / 43560 ft^2 = 0.337 acres

Calibrated Application Rate: 148 (lbs/acre)

Quality Control Data for Field Application Verification:

Area of Polygon: 32.45 (acres)

Total Weight to be Applied: 4980 (lbs)

# of 50 lb. Bags to be Applied: 99.6 bags Actual usage: 103 bags

Print / Sign Name: Clay E. Combrink / Clay E. Combrink
Frontier Representative

Print / Sign Name: John Abdalla / John Abdalla
PWT / EPA Representative

SUPER-CROP

50 LBS. (22.7 kg) NET WT.

fertilizer

super phosphate

GUARANTEED ANALYSIS	
NITROGEN (N)	0%
AVAIL. PHOSPHORIC ACID (P_2O_5)	45%
SOLUBLE POTASH (K_2O)	0%
SULFUR (Combined) (S)	%
IRON (Fe)	%

AMERICAN PRIDE CO-OP

HENDERSON, COLORADO 80640

DIRECTIONS FOR USE:

GENERAL - Phosphate is one of the 3 major plant nutrients. Phosphate base fertilizers are used as a root and shoot stimulant for new lawn sites. Phosphates are generally highly water insoluble and therefore do not move very much through the soil. For best results, phosphates should be applied at the rate of 10-15 lbs. per 1000 square feet and mixed well in the top 6-8 inches of soil with a roto-tiller, disc, harrow, etc. This rate can be used for new lawn sites, in vegetable and flower gardens.

- High rates can be applied without injuring the plant.

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record 09-30-08

Fluvial Deposit/Irrigated Meadows Polygon: SMITH 2

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	
221	7.5	7.00	8.00	0	
219	7.5	7.0	8.0	0	
208	7.5	7.0	8.0	0	
272	7.0	7.0	7.0	0	
266	8.3	8.0	8.5	0	Lime stockpile
255	7.5	7.0	8.0	0	
260	7.3	7.0	7.5	0	
278	7.3	7.0	7.5	0	
252	8.3	8.0	8.5	0	
284	8.0	7.0	7.5	0	

Name/Signature: John G. Mehl

Date: 09-30-08

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: Smith 2

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	Full Depth Acid Fizz
276	7.3	7.0	7.5	0	Y
281	7.5	7.0	8.0	0	Y
292	7.5	7.0	8.0	0	Y
294	7.5	7.0	8.0	0	Y
304	8.0	8.0	8.0	0	Y
302	7.5	7.0	8.0	0	Y
298	8.0	8.0	8.0	0	Y
296	~~8.0~~ 8.3	5.0	8.5	0	Y
259	8.0	8.0	8.0	0	Y
268	7.3	7.0	7.5	0	Y
206	8.3	8.0	8.5	0	Y
232	8.0	8.0	8.0	0	Y
236	8.0	8.0	8.0	0	Y
215	8.0	8.0	8.0	0	Y

Name/Signature: John G. Murphy

Date: 10-01-08

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

10-02-05

Fluvial Deposit/Irrigated Meadows Polygon: **Paste pH Record** Smith 2

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
236	0.0 (T)	19.8	21.2	7.2
259		19.9	20.2	7.3
276		21.8	20.5	7.5
215		19.2	19.7	7.5
232		22.4	21.9	7.4
304		17.5	17.6	7.5
268		20.9	19.1	7.2
204		19.2	20.6	7.7
294		18.0	18.9	7.7
296		18.1	18.8	7.6
302		19.1	19.1	7.4
298		20.8	19.8	7.6
281		17.6	17.4	7.6
292		20.4	19.6	7.9

Notes: 3 point calibration of pH meter before tests & verified with a pH 7 buffer after completing tests

Name/Signature: R. Merrick / [signature] **Date:** 10-2-05

Sample prep by John DeAngelis.

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: Smith 2

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	Full Depth Acid Fizz
218	7.3	7.0	7.5	0	Y
212	7.3	7.0	7.5	0	Y
208	7.0	7.0	7.0	0	Y
309	7.3	7.0	7.5	0	Y
313	7.2	7.5	8.0	0	Y
310	7.5	7.5	7.5	0	Y
317	7.5	7.5	7.5	0	Y
PWT-1	7.5	7.5	7.5	0	Y
PWT-2	7.3	7.0	7.5	0	Y

Name/Signature: John G. Hughes **Date:** 10-03-08

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: SM 2

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	Fizz?
309	8.0	8.0	8.0		Y
310	8.0	8.0	8.0		Y
~~313~~	~~8.0 7.7~~	~~8.0 7.5~~	8.0		W
313	7.7	7.5	8.0		Y
317	8.0	8.0	8.0		Y

Name/Signature: John A. Dyli & L. Colly **Date:**

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

After Re-tillage

Fluvial Deposit/Irrigated Meadows Polygon: **Paste pH Record** Smith 2 NE

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
313	0.0	14.5	15.0	7.3
317	↓	16.1	16.2	7.1
309	↓	19.4	19.1	7.1
310	↓	16.2	16.5	7.1

Name/Signature: [signature] + C. Lilly **Date:** 10-03-05

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

10-02-08

Paste pH Record

Fluvial Deposit/Irrigated Meadows Polygon: SMM 2

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
313	0.0 (Tare)	17.1	17.7	6.9
310	↓	17.6	20.0	6.9
208		17.1	17.1	7.0
212		19.5	19.1	6.9
309		18.5	18.1	7.0
218		20.6	19.7	6.9
317		21.2	20.0	7.1
PWT-1		17.2	17.5	7.2
PWT-2	✓	15.8	15.3	7.2

Note: 3pt calibration performed before testing. pH buffer 7 used as QC after testing (7.1), buffer 4 (4.0), & buffer 10 (10.0)

Name/Signature: Roger Merrick Bruce Merrick **Date:** 10-3-08

Samples prepared by J. DeAngelis on 10/2/08 in afternoon. pHs done on morning of 10/3/08.

PASTE PH (mixed 9/30/08)

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

allowed to sit overnight

Paste pH Record

Fluvial Deposit/Irrigated Meadows Polygon: Smith - 2

10/1/08 GBJ

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH *
221				6.7 7.0
219				7.0 7.2
228			FLAG →	6.3 (7.6) Duplicate
272				7.1
266				7.2
278	0.0	17.1	17.8	7.2
260	0.0	17.4	17.8	6.8 (6.9) Duplicate
255	0.0	19.5	19.4	7.3
284	0.0	19.9	20.6	7.5
252	0.0	17.5	19.0	7.2
228D	0.0 tare	19.8	19.8	7.6

* note that several samples had pH values ~ 6.3 - 6.9 after mixing and allowing to sit for 0.5 hr. The pH meter was carefully calibrated. Suspicion was elevated when samples with good field pH exhibited depressed paste pH. Addition of 10% HCl to dry subsamples showed strong effervescence plus visible lime particles. Resolved to let samples sit overnight to equilibrate

Name/Signature: Jennings - pH meter
DeAngelis - sample mtx

Date: 10/1/08

ending pH meter calibration verification
pH 7.0 buffer = 7.1
pH 10.0 buffer = 10.0
pH 4.0 buffer = 3.9
] good SBJ

review specs & QAPP on paste pH requirements — non-restrictive
Recommend:
target 7.0 - 8.5
allowable 6.5 - 7.0
cautionary 6.0 - 6.5
reject 6.0

Activity Tracking Form

Irrigated Meadows

Spread & Incorporate Lime and Fertilizer in 6" areas

Irrigated Meadow Polygon Name/ID: SMITH 2

Activity Start Date: 9/11/08

Activity End Date: 9/26/08

Activities Verified As Completed (indicate NA if appropriate)

Lime and Fertilizer Application

✓ EPA calculated field application rate based on material quality, rock content & depth

Lime rate = 41.13 tons/acre (1339 tons target)

Fertilizer rate = 153 pounds/acres (4980 lbs target)

✓ EPA and/or PWT was present for lime and fertilizer spreader calibrations.

✓ Lime was spread across the remediation area at the calculated field lime application rate using a calibrated spreader (unadjusted application rate is 22 tons lime/ acre) in 6 inch remediation areas.

✓ Fertilizer applied had a nitrogen:phosphorous:potassium (N:P:K) ratio of 0:45:0. **(Attach copy of fertilizer certification)**

✓ Fertilizer was spread across the remediation area at the specified field fertilizer application rate using a calibrated spreader. Unadjusted rate is 70 pounds of P_2O_5 per 1,000 tons of soil or 153 lbs of 0:45:0 fertilizer/acre in 6" till areas

✓ Lime and fertilizer were not applied to any areas with standing water, that was cemented, consolidated, caked, or frozen.

✓ Lime and fertilizer were not applied just before or during significant rain events.

✓ Lime and fertilizer were not spread under windy conditions where wind is sufficient to blow lime and fertilizer off the ground surface before they can be tilled.

Tilling of Lime and Fertilizer

✓ Lime and fertilizer were incorporated into the soil by tilling as soon as possible after spreading, and always by the end of the same day that the lime or fertilizer was spread.

✓ Lime and fertilizer were tilled into the soil using a minimum of 3 passes unless the Subcontractor demonstrated that the proposed equipment was able to meet the mixing standards in fewer passes. Successive passes crossed the previous pass at a 90 degree angle.

Activity Tracking Form
Irrigated Meadows
Spread & Incorporate Lime and Fertilizer in 6" areas

Irrigated Meadow Polygon Name/ID: SMITH 2

✓ Lime and fertilizer were spread and thoroughly incorporated to the full design depth with an acceptable remediation depth tolerance for 6-inch till areas of 5 inches to 8 inches. To verify this, test pits were excavated and locations surveyed at a rate of: **(check one)**

_____ 4 / acre (at beginning of project)

✓ 1 / acre (after effectiveness proven & with EPA approval)

_____ 1 / 5 acres (with EPA approval)

✓ PWT and/or EPA were present during all Subcontractor remediation depth surveys and conducted visual and field pH testing to evaluate effectiveness of mixing **(Attach pH test results)**

Quantity of Lime Applied: 1347 tons

Quantity of Fertilizer Applied: 5150 lbs

Quantity of Work Estimated in Proposal: 31.05

Quantity of Work Performed: 32.545

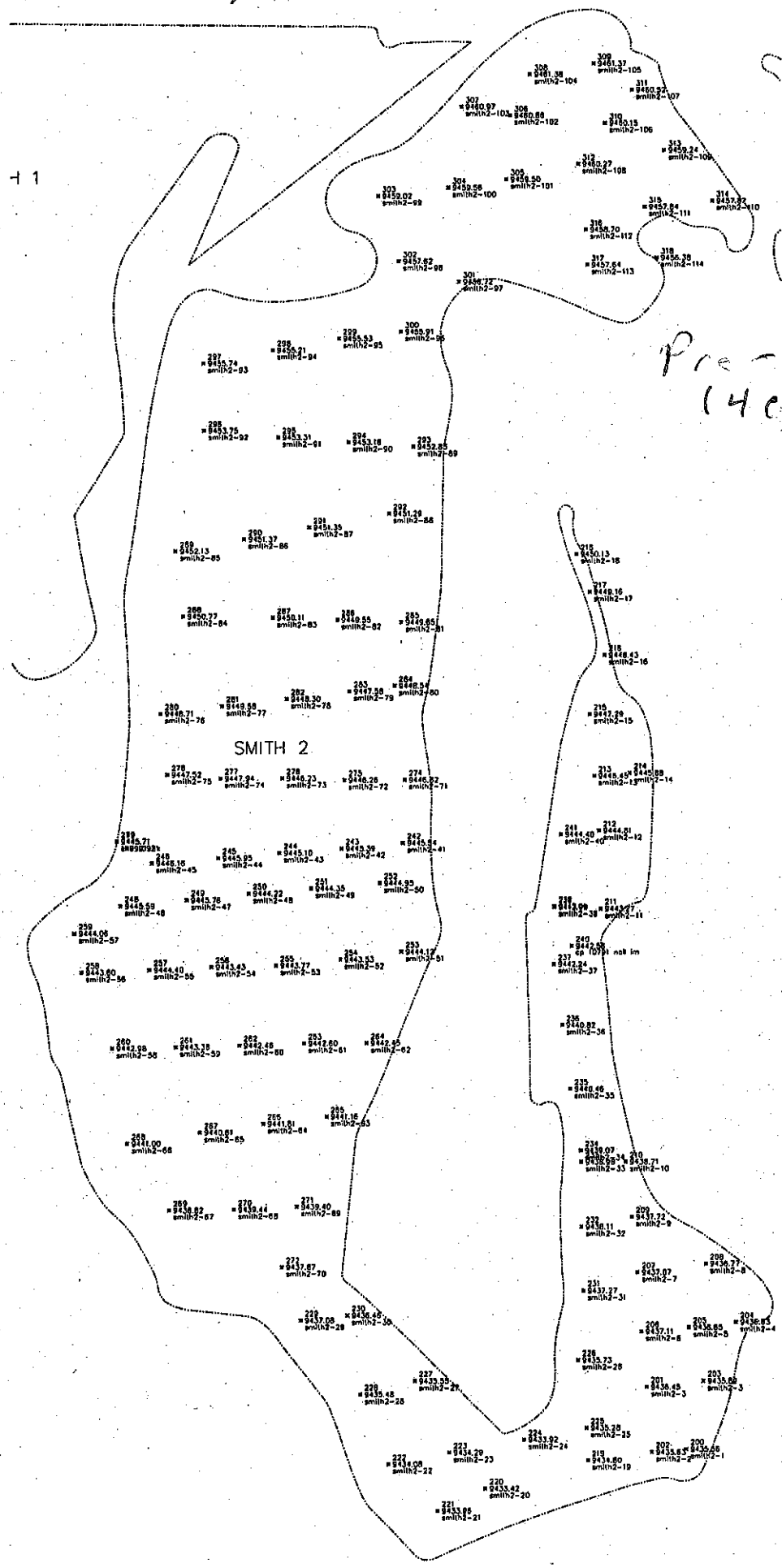
Survey Data/Date: _____

Note: Attach copies of daily calibration records, fertilizer certs, pH test results and survey data

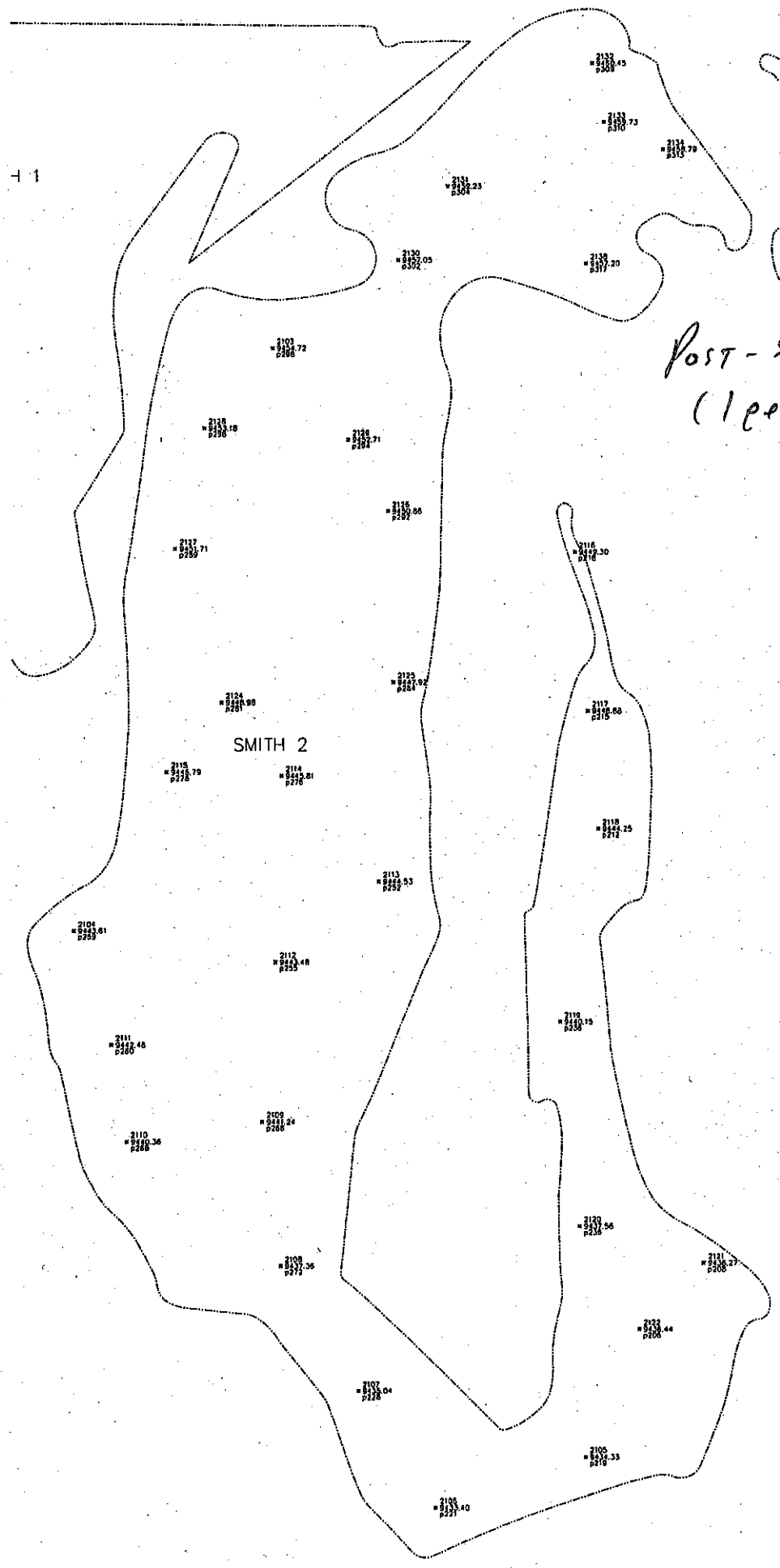
Signature of Contractor — Date: 10-08-08

Signature of Subcontractor — Date: 10-08-08

SM 2 Survey Depth Verification



Pre-Shots (4 per acre)



Post-shots
(1 per acre)

Pre-Existing Grade Shots

206	1498335	2759845	9437.106	smith2-6
208	1498446	2759952	9436.77	smith2-8
212	1499160	2759777	9444.81	smith2-12
215	1499354	2759762	9447.286	smith2-15
218	1499619	2759740	9450.129	smith2-18
219	1498125	2759755	9434.8	smith2-19
221	1498042	2759505	9433.963	smith2-21
228	1498234	2759378	9435.476	smith2-28
236	1498841	2759714	9440.815	smith2-36
232	1498507	2759746	9438.113	smith2-32
252	1499075	2759413	9444.949	smith2-50
255	1498942	2759240	9443.772	smith2-53
259	1498996	2758909	9444.058	smith2-57
260	1498806	2758970	9442.982	smith2-58
266	1498679	2759218	9441.814	smith2-64
268	1498648	2758994	9441	smith2-66
272	1498443	2759248	9437.873	smith2-70
276	1499250	2759251	9446.234	smith2-73
278	1499256	2759062	9447.521	smith2-75
281	1499370	2759152	9449.577	smith2-77
284	1499402	2759439	9448.542	smith2-80
289	1499626	2759077	9452.132	smith2-85
292	1499688	2759430	9451.294	smith2-88
294	1499808	2759363	9453.16	smith2-90
296	1499828	2759124	9453.747	smith2-92
298	1499962	2759238	9455.206	smith2-94
302	1500109	2759448	9457.616	smith2-98
304	1500233	2759530	9459.558	smith2-100
309	1500440	2759771	9461.373	smith2-105
310	1500340	2759790	9460.151	smith2-106
313	1500294	2759887	9459.245	smith2-109
317	1500102	2759760	9457.638	smith2-113

Bottom of Post-Tillage Shots

2122	1498336	2759845
2121	1498445	2759953
2118	1499161	2759778
2117	1499354	2759761
2116	1499619	2759740
2105	1498125	2759755
2106	1498042	2759505
2107	1498234	2759377
2119	1498841	2759714
2120	1498507	2759746
2113	1499075	2759413
2112	1498942	2759240
2104	1498996	2758909
2111	1498806	2758970
2109	1498679	2759217
2110	1498648	2758995
2108	1498443	2759247
2114	1499250	2759251
2115	1499256	2759062
2124	1499370	2759152
2125	1499403	2759438
2127	1499626	2759077
2126	1499688	2759430
2129	1499808	2759364
2128	1499828	2759125
2103	1499962	2759238
2130	1500109	2759448
2131	1500233	2759530
2132	1500440	2759770
2133	1500340	2759790
2134	1500294	2759887
2138	1500102	2759760

	Delta Range		Acceptable Range (0.4-0.7)
9436.44 p206	0.666		
9436.266 p208	0.504		
9444.245 p212	0.5647		
9446.885 p215	0.4012		
9449.303 p218	0.8259	x	0.8259
9434.328 p219	0.4718		
9433.402 p221	0.561		
9435.037 p228	0.4385		
9440.155 p236	0.6602		
9437.556 p232	0.5571		
9444.531 p252	0.4179		
9443.481 p255	0.2905	x	0.2905
9443.607 p259	0.4512		
9442.477 p260	0.5053		
9441.244 p266	0.5708		
9440.361 p268	0.6392		
9437.362 p272	0.5116		
9445.806 p276	0.4282		
9446.792 p278	0.7294	x	0.7294
9448.981 p281	0.5964		
9447.922 p284	0.6196		
9451.708 p289	0.4236		
9450.865 p292	0.4291		
9452.711 p294	0.4492		
9453.176 p296	0.5708		
9454.721 p298	0.4853		
9457.052 p302	0.5638		
9459.226 p304	0.3325	x	0.3325
9460.452 p309	0.9214	x	0.9214
9459.726 p310	0.4256		
9458.794 p313	0.4507		
9457.198 p317	0.4398		

Bulk Density Compost
Lane Field Pile
Near Staging

10-03-08

MOISTURE CONTENT

- Tare Container
- Weigh sample. Record wet sample weight.
- Dry sample until sample appears dry, minimum of 1 hour on hotplate or in oven
- Weigh sample. Record dry sample weight
- Calculate % Moisture = (Wet weight – Dry weight)/Wet Weight

Moisture Content Record for Lime/Compost (circle one)

	Date	Wet Weight (g)	Dry Weight (g)	Water Weight (g)	% Moisture
P1	10-03	(124.1 - 15.5) 108.6	(101.2 - 15.5) 85.7	22.9	21.0
P2	10-03	(128.7 - 15.5) 113.2	(97.6 - 15.5) 82.1	31.1	27.5
					24.25%

Name/Signature: R. Morrocle / Burk. Mc

Date: 10-3-08

PACIFIC WESTERN TECHNOLOGIES, LTD.

10-03-08

Compost Bulk Density
Field Pile Mar Staging

Trial 1

Compost + Bucket 36.0 lbs

Tare Wt. Bucket 2.5 lbs

Net Wt. Compost: 33.5 lbs

Trial 2

Compost + Bucket 36.0 lbs

Tare Wt Bucket 2.5 lbs

Net wt. Compost 33.5 lbs

Avg. 33.5 lbs

$$\frac{33.5\ \text{lbs}}{1\ \text{bucket}} \times \frac{40\ \text{buckets}}{\text{yd}^3} = 1340\ \text{lbs}/\text{yd}^3$$

New 10-03-08.

10-02-08 JMD

MOISTURE CONTENT

- Tare Container
- Weigh sample. Record wet sample weight.
- Dry sample until sample appears dry, minimum of 1 hour on hotplate or in oven
- Weigh sample. Record dry sample weight
- Calculate % Moisture = (Wet weight – Dry weight)/Wet Weight

Silage Trench #4

Moisture Content Record for Lime/Compost (circle one)

	Date	Wet Weight (g)	Dry Weight (g)	Water Weight (g)	% Moisture	
P1	10-1-08	(123.2 − 15.3) 107.9	(85.8 − 15.3) 70.5	37.4	34.7	Avg = 31.0
P2	10-1-08	(123.6 − 15.5) 108.1	(86.3 − 15.5) 70.8	37.3	34.5	
P3	10-1-08	(138.6 − 15.6) 123.0	(101.5 − 15.6) 88.9	34.1	27.7	
P4	10-1-08	(102.2 − 10.6) 91.6	(77.4 − 10.6) 66.8	24.8	27.1	

Copied to SM2 File JMD

Also Sm 3, 4, 5 JMD 10-08-08

Name/Signature: M. C. Mitchell **Date:** 10-02-08

Compost Application Rate Calculation Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: **Smith 2**

POLYGON CHARACTERISTICS

Target % Organic Carbon (1.5% for T-6, 2.5% for T-12)	1.50%	%
Treatment Depth	6	inches
Treatment Area	32.63	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon			29.50%	%
Percent Moisture	(from 10-2-08 test on ST 4)		31.00%	%
Wet Bulk Density	0.707 grams/cc	=	0.596	tons/cy

CALCULATE COMPOST APPLICATION RATE

Compost = Target % OC * depth * 1000 tons/acre/6" / Compost % OC * (1- %Moisture/100) = 1.5 x 6 x 1000/6 = 1500 / 29.5 x (1 - 31/100) = 20.355 = 73.69

Compost Rate =	73.69 tons/acre	=	2404.57 tons total
Compost Rate =	123.64 cubic yards/acre	=	4034.51 cy total

See Adjusted Rate 10/06/08

Signature: [signature]

Date: 10-06-08

Signature: [signature]

Date: 10/3/08

Pending Bulk Density

Compost Application Rate Calculation Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: **Smith 2**

POLYGON CHARACTERISTICS

Target % Organic Carbon (1.5% for T-6, 2.5% for T-12)	1.50% %
Treatment Depth	6 inches
Treatment Area	32.63 acres

COMPOST CHARACTERISTICS

Percent Organic Carbon		29.50%	%
Percent Moisture	(from 10-3-08 test on Field Pile)	24.25%	%
Wet Bulk Density	0.795 grams/cc	= 0.670	tons/cy
		(from 10-3-08 test on Field Pile)	

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"}}{\text{Compost \% OC} * (1 - \text{\%Moisture}/100)} = \frac{1.5 * 6 * \frac{1000}{6}}{29.5 \times \left(1 - \frac{24.25}{100}\right)} = \frac{1500}{22.35} = 67.13$$

Compost Rate = 67.13 tons/acre ✓ = 2190.30 tons total

Compost Rate = 100.19 cubic yards/acre = 3269.11 cy total

Revised 10-03-08

Signature: [signature]

Date: 10-06-08

Signature: [signature]

Date: 10-3-08

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in yd^3/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.
- Repeat.

Compost Spreader Calibration Record

Date: 10/1/08 Time: 10:04

Irrigated Meadow / Fluvial Deposit Polygon ID: Smith-2

Design Application Rate: 110 (yd^3/acre)

Calibration Data for one load of compost:

15' x 246' 14' x 258'

	Test Run 1	Test Run 2	Average
Compost Quantity (yd^3)	3.25	3.25-0.5=2.75	
Compost was spread over (ft^2)	3690	3612	
Calibration area (acres)	0.0847	0.0829	
Calibrated Application Rate (yd^3/acre)	~~0.275~~ 38.3	33.17	35.73

Quality Control Data for Field Application Verification:

(A) Design Application Rate: 110 (yd^3/acre)

(B) Average Calibrated Application Rate: 35.7 (yd^3/acre)

Passes to be Applied: 3.08 passes (= A/B)

Print / Sign Name: Clay E. Cambrink / Clay E. Cambrink
Frontier Representative

Print / Sign Name: Stuart Jennings / Stuart Jennings
PWT / EPA Representative

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in yd^3/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.
- Repeat.

Compost Spreader Calibration Record 565 Tractor / Stoltefus Spreader Joe's Field Pile

Date: 10-02-08 Time: 08:40

Irrigated Meadow / Fluvial Deposit Polygon ID: Smith 2 North Silt fence

Design Application Rate: 110 (yd^3/acre)

Calibration Data for one load of compost:

	Test Run 1	Test Run 2	Average
Compost Quantity (yd^3)	(4.25-0.5) 3.75	4.25	
Compost was spread over (ft^2) (8'X325')	2600	(8'x450') 3600	
Calibration area (acres)	0.06	0.083	
Calibrated Application Rate (yd^3/acre)	62.5	51.2	56.9

Quality Control Data for Field Application Verification:

(A) Design Application Rate: 110 (yd^3/acre)

(B) Average Calibrated Application Rate: 56.9 (yd^3/acre)

Passes to be Applied: 1.9 passes (= A/B)

Print / Sign Name: Clay Combrink / Clay E. Combrink
Frontier Representative

Print / Sign Name: John A DeMarchis
PWT / EPA Representative

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in yd^3/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.
- Repeat.

Compost Spreader Calibration Record

Date: 10-03-08 Time: 08:00

Irrigated Meadow / Fluvial Deposit Polygon ID: Smith 2 NE

Design Application Rate: 110 (yd^3/acre)

Calibration Data for one load of compost:

	Test Run 1	Test Run 2	Average
Compost Quantity (yd^3)	4.25	4.25	
Compost was spread over (ft^2)	(350'x8') 2800	(398'x8') 3184	
Calibration area (acres)	0.064	0.073	
Calibrated Application Rate (yd^3/acre)	66.3	57.9	62.1

Quality Control Data for Field Application Verification:

(A) Design Application Rate: 110 (yd^3/acre)

(B) Average Calibrated Application Rate: 62.1 (yd^3/acre)

Passes to be Applied: 1.8 passes (= A/B)

Print / Sign Name: Clay E. Combrink / Clay E. Combrink
Frontier Representative

Print / Sign Name: M Gulli
PWT / EPA Representative

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in yd^3/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.
- Repeat.

New Kohy

Compost Spreader Calibration Record

Date: 10-06-08 Time: 09:00 – 10:00

Irrigated Meadow / Fluvial Deposit Polygon ID: SMITH 2

Design Application Rate: 99.2 (yd^3/acre)

Calibration Data for one load of compost:

	Test Run 1	Test Run 2	Average
Compost Quantity (yd^3)	6.50	6.50	
Compost was spread over (ft^2) 10'x 315'	3150	10x 240' 2400	
Calibration area (acres)	0.072	0.055	
Calibrated Application Rate (yd^3/acre)	90.3	118	104

Quality Control Data for Field Application Verification:

(A) Design Application Rate: 99.2 (yd^3/acre)

(B) Average Calibrated Application Rate: 104 (yd^3/acre)

Passes to be Applied: _____ passes (= A/B)

Print / Sign Name: Clay E. Combrink / Clay E. Combrink
Frontier Representative

Print / Sign Name: John A. DeAndrea / John A. DeAndrea
PWT / EPA Representative

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in yd^3/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.
- Repeat.

Compost Spreader Calibration Record

5 to 12 ton

Date: 10-06-08 Time: 11:40

Irrigated Meadow / Fluvial Deposit Polygon ID: Sm IW2

Design Application Rate: 99.2 (yd^3/acre)

Calibration Data for one load of compost:

950 lb bucket

	Test Run 1	Test Run 2	Average
Compost Quantity (yd^3)	3.25	4.25	
Compost was spread over (ft^2) 8'X288'	2304	8'X266' 2128	
Calibration area (acres)	0.052	0.049	
Calibrated Application Rate (yd^3/acre)	81.7	86.7	84.2

Quality Control Data for Field Application Verification:

(A) Design Application Rate: 99.2 (yd^3/acre)

(B) Average Calibrated Application Rate: 84.2 (yd^3/acre)

Passes to be Applied: ~~1~~ 1.2 passes (= A/B)

Print / Sign Name: Clay E. Combrink / [signature]
Frontier Representative

Print / Sign Name: John A. DeAngelis / [signature]
PWT / EPA Representative

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in yd^3/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.
- Repeat.

Compost Spreader Calibration Record

Sto/Hz Plus

Date: 10-07-08 Time: 0F:05

Irrigated Meadow / Fluvial Deposit Polygon ID: Sm1 TW 2 NE

Design Application Rate: 99.2 (yd^3/acre)

Calibration Data for one load of compost:

	Test Run 1	Test Run 2	Average
Compost Quantity (yd^3)	4.25	4.25	
Compost was spread over (ft^2) 298 X8	2384	310 X8 2480	
Calibration area (acres)	0.055	0.057	
Calibrated Application Rate (yd^3/acre)	77.3	74.6	76

Quality Control Data for Field Application Verification:

(A) Design Application Rate: 99.2 (yd^3/acre)

(B) Average Calibrated Application Rate: 76 (yd^3/acre)

Passes to be Applied: 1.3 passes (= A/B)

Print / Sign Name: Clay E. Combrink / Clay E. Combrink
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in yd^3/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.
- Repeat.

Compost Spreader Calibration Record

New Kuhn Spreader

Date: 16-07-08 Time: 08:35

Irrigated Meadow / Fluvial Deposit Polygon ID: Smith 2 South

Design Application Rate: 99.2 (yd^3/acre)

Calibration Data for one load of compost:

	Test Run 1	Test Run 2	Average
Compost Quantity (yd^3)	6.56	6.56	
Compost was spread over (ft^2) 11' x 295	~~5415~~ 3245	11 x 301 3384	
Calibration area (acres)	~~0.145~~ 0.074	0.078	
Calibrated Application Rate (yd^3/acre)	~~56.5~~ 87.8	83.3	85.6

Quality Control Data for Field Application Verification:

(A) Design Application Rate: 99.2 (yd^3/acre)

(B) Average Calibrated Application Rate: 85.6 (yd^3/acre)

Passes to be Applied: 1.2 passes (= A/B)

Print / Sign Name: Clay E. Combrink / Clay E. Combrink
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in yd^3/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.
- Repeat.

Compost Spreader Calibration Record Kuhn 2044

Date: 10-6-08 Time: 08:10

Irrigated Meadow / Fluvial Deposit Polygon ID: Smith 2 East of Primary Ditch

Design Application Rate: 99.2 (yd^3/acre)

Calibration Data for one load of compost:

	Test Run 1	Test Run 2	Average
Compost Quantity (yd^3)	6.50	6.56	
Compost was spread over (ft^2) 11 x 305	3355	11 x 360 3300	
Calibration area (acres)	0.077	0.0175	
Calibrated Application Rate (yd^3/acre)	84.4	84.7	85.6

Quality Control Data for Field Application Verification:

(A) Design Application Rate: 99.2 (yd^3/acre)

(B) Average Calibrated Application Rate: 85.6 (yd^3/acre)

Passes to be Applied: 1.2 passes (= A/B)

Print / Sign Name: Clay E. Combrink / Clay E. Combrink
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in yd^3/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.
- Repeat.

Compost Spreader Calibration Record

Date: 10-09 Time: 08:35

Irrigated Meadow / Fluvial Deposit Polygon ID: SMITH 2 West

Design Application Rate: 99.2 (yd^3/acre)

Calibration Data for one load of compost:

	Test Run 1	Test Run 2	Average
Compost Quantity (yd^3)	6.50	6.50	
Compost was spread over (ft^2) 12'x 310'	3720	12'x 300' 3600	
Calibration area (acres)	0.085	0.083	
Calibrated Application Rate (yd^3/acre)	76.5	78.3	77.4

Quality Control Data for Field Application Verification:

(A) Design Application Rate: 99.2 (yd^3/acre)

(B) Average Calibrated Application Rate: 77.4 (yd^3/acre)

Passes to be Applied: 1.3 passes (= A/B)

Print / Sign Name: Clay E. Combrink / Clay E. Combrink
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in yd^3/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.
- Repeat.

Compost Spreader Calibration Record

Date: 10-10-08 Time: 07:45

~~Irrigated~~ Meadow / Fluvial Deposit Polygon ID: Smith 2

Design Application Rate: 99.2 (yd^3/acre)

Calibration Data for one load of compost:

	Test Run 1	Test Run 2	Average
Compost Quantity (yd^3)	6.50	6.50	
Compost was spread over (ft^2) 12'x305	3666	12'x308' 3696	
Calibration area (acres)	.084	.085	
Calibrated Application Rate (yd^3/acre)	77.3	76.5	153.8/2 = 76.9

Quality Control Data for Field Application Verification:

(A) Design Application Rate: 99.2 (yd^3/acre)

(B) Average Calibrated Application Rate: 76.9 (yd^3/acre)

Passes to be Applied: 1.3 passes (= A/B)

Print / Sign Name: Clay E. Combrink / Clay E. Combrink
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in yd^3/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.
- Repeat.

Compost Spreader Calibration Record

Date: 10-13-08 Time: 09:45

Irrigated Meadow / Fluvial Deposit Polygon ID: SMITH 2 NE

Design Application Rate: 99.2 (yd^3/acre)

Calibration Data for one load of compost:

	Test Run 1	Test Run 2	Average
Compost Quantity (yd^3)	6.50	6.50	
Compost was spread over (ft^2)	280' x 12' 3360	290' x 12' 3480	
Calibration area (acres)	0.077	0.080	
Calibrated Application Rate (yd^3/acre)	84.4	81.3	82.9

Quality Control Data for Field Application Verification:

(A) Design Application Rate: 99.2 (yd^3/acre)

(B) Average Calibrated Application Rate: 82.9 (yd^3/acre)

Passes to be Applied: 1.2 passes (= A/B)

Print / Sign Name: Clay E. Combs / Clay E. Combs
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

Activity Tracking Form

Irrigated Meadows

Spread & Incorporate Organic Material in 6" areas

Irrigated Meadow Polygon Name/ID: SMITH 2

Activity Start Date: 10-01-08

Activity End Date: 10-15-08

Activities Verified As Completed (indicate NA if appropriate)

✓ Amendments have been applied at a field application rate calculated by EPA and as directed by PWT. Calculated application rate was 67.13 tons/acre or 100 yd³/acre.

✓ Organic amendment was spread evenly across the remediation area using a calibrated agricultural manure spreader or other accepted equipment. **(Attach calibration records)**

✓ Organic amendment was applied uniformly. Rutting and compaction of the surface was minimized during application of organic amendment.

✓ Organic material was not applied to any area with standing water or areas that were frozen. Organic material was not applied before or during any significant rain events.

✓ Organic material was not spread under windy conditions where wind was sufficient to blow organic material off the ground surface before it can be tilled.

✓ Organic matter was tilled to the full remediation depth using a minimum of 2 passes unless the Subcontractor demonstrated that the proposed equipment has met the mixing standards in fewer passes and received approval of the EPA. The second tillage pass crosses the initial pass at a 90 degree angle. (90° in areas of sufficient width; tillage was sufficient)

✓ Organic material was tilled to a tolerance for 6-inch till areas of 5 inches to 8 inches. To verify this, test pits were surveyed at a rate of: **(check one)** PWT hand-dug random pits to verify uniform thickness

_____ 4 / acre (at beginning of project)

_____ 1 / acre (after effectiveness proven & with EPA approval)

_____ 1 / 5 acres (with EPA approval)

✓ PWT and/or EPA was present during all Subcontractor surveys to verify remediation depth.

✓ PWT and/or EPA conducted field testing, monitored and verified remediation depth, and has evaluated the effectiveness of mixing. Areas with large unremediated clumps of soil or large areas of unmixed soil amendments, if identified, were re-tilled.

Quantity of Organic Material Applied: 3245 CY

Quantity of Work Estimated in Proposal: 31.05 acres

Quantity of Work Performed: 32.54F

Survey Data/Date: 08-18-08

Activity Tracking Form

Irrigated Meadows

Spread & Incorporate Organic Material in 6" areas

Irrigated Meadow Polygon Name/ID: SMITH 2

Note: Attach copies of the daily calibration records and survey data to this form

Signature of Contractor — Date: 10-16-08

Signature of Subcontractor — Date: 10-16-08

COLORADO DEPARTMENT OF AGRICULTURE
DIVISION OF PLANT INDUSTRY
700 Kipling Street, Suite 4000
Lakewood, Colorado 80215-8000
(303) 239-4149

TRANSIT CERTIFICATE
WEED FREE FORAGE CROP CERTIFICATION ACT 35-27.5

TO WHO IT MAY CONCERN:

The forage crop, to which this Transit Certificate relates, has been officially certified according to the Colorado Weed Free Forage Crop Certification Act 35-27.5. Pursuant to those standards, the information below has been included in this Transit Certificate concerning said certification. The Certificate of Inspection relating to said forage crop is on file at the:

Colorado Department of Agriculture
Division of Plant Industry
700 Kipling Street, Suite 4000
Lakewood, Colorado 80215-8000
Telephone: (303) 239-4149
FAX: (303) 239-4177

PLEASE PRINT IN INK

Murray Farms — LB Murray
Grower's Name — Grower's Signature

Adams
County of Origin

Identify Forage Crop Type wheat

635 — 10/27/08
Bales Sold — Date of Sale

IDENTIFICATION
INSPECTOR'S INITIALS DHF
GROWER'S INITIALS LBM.
FIELD NUMBER F-8
DATE _____

(Identification found in upper right corner of Certificate of Inspection: Form DPI-WF-05)

FORAGE CERTIFIED ACCORDING TO THE REGIONAL WEED FREE FORAGE STANDARDS

NOTE: Forage certified under the Colorado Weed Free Forage Crop Certification Act shall be baled with at least one strand of **blue and orange** colored twine or **galvanized** wire.

GROWER MUST ISSUE WHITE COPY TO PURCHASER; MAIL PINK COPY TO DEPARTMENT OF AGRICULTURE; KEEP GREEN COPY FOR FILE FOR EACH SALE.

COLORADO DEPARTMENT OF AGRICULTURE
DIVISION OF PLANT INDUSTRY
700 Kipling Street, Suite 4000
Lakewood, Colorado 80215-8000
(303) 239-4149

TRANSIT CERTIFICATE
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Colorado Department of Agriculture
Division of Plant Industry
700 Kipling Street, Suite 4000
Lakewood, Colorado 80215-8000
Telephone: (303) 239-4149
FAX: (303) 239-4177

Smith
2, 3, 4, 5

PLEASE PRINT IN INK

Murray Farms — LBM
Grower's Name — Grower's Signature

Adams
County of Origin

Identify Forage Crop Type wheat

635
Bales Sold

10/27/08
Date of Sale

IDENTIFICATION
INSPECTOR'S INITIALS DHF
GROWER'S INITIALS LBM,
FIELD NUMBER F-8
DATE _____

(Identification found in upper right corner of Certificate of Inspection: Form DPI-WF-05)

FORAGE CERTIFIED ACCORDING TO THE REGIONAL WEED FREE FORAGE STANDARDS

NOTE: Forage certified under the Colorado Weed Free Forage Crop Certification Act shall be baled with at least one strand of **blue and orange** colored twine or **galvanized** wire.

GROWER MUST ISSUE WHITE COPY TO PURCHASER; MAIL PINK COPY TO DEPARTMENT OF AGRICULTURE; KEEP GREEN COPY FOR FILE FOR EACH SALE.

Activity Tracking Form
Irrigated Meadows
Mulch Application

Irrigated Meadow Polygon Name/ID: SMITH 2

Activity Start Date: 10-22-08

Activity End Date: 10-28-08

Activities Verified As Completed (indicate NA if appropriate)

✓ Mulch certified as weed free **(attached Certification documentation)**

✓ Mulch was stored properly and not degraded by water or other contaminants before use.

✓ Mulch has been applied immediately after seeding unless the nature of the mulch required that it must be incorporated into the soil; in that case the mulch has been applied before seeding. Mulch applied prior to seeding after seedbed prep as per S. Jennings 10/28

NA If wood mulch was applied, the application rate was 10 to 12 tons per acre, or 50 to 60 cubic yards per acre using a blower, flail spreader, or other means that provided even distribution across the remediated area. Depending on the nature of the wood mulch, it may have been left as a surface application or may have been crimped or lightly disked into the top 2 inches to prevent dispersion **(Circle method used)**.

✓ If straw or native hay mulch was applied, the application rate was 2,000 pounds per acre using equipment specifically designed for application of mulch at a uniform rate to produce a mat covering the seed. Straw or native hay mulch was crimped using crimping equipment with round, notched blades approximately ¼-inch thick by 18 inches in diameter spaced 8 inches apart. The crimper was equipped with disc scrapers and had sufficient weight to force the vegetative mulch to a minimum depth of 3-inches into the soil. Mulch was crimped within 24 hours of application.

✓ Stormwater, sediment, and erosion control measures remained in place throughout implementation of the remedy and has been maintained in good condition during and after mulch placement to prevent surface water run-on and run-off that may damage the remediated area.

Quantity of Mulch Applied: 1301 Bales ≈ 65,090 lbs.

Quantity of Work Estimated in Proposal: 31.05

Quantity of Work Performed: 32.545

Survey Data/Date: 08-16-08

Note: Attach copies of the daily calibration records, weed free certification and survey data to this form

Signature of Contractor — Date: 10-31-08

Signature of Subcontractor — Date: 10-31-08

Seeder Calibration Form

Calibration Form Instructions

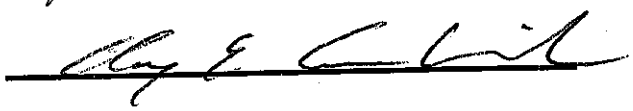
1) Enter the Polygon ID, Polygon acreage, Calibration Date, Target seed rate(s), %PLS in each seed mix, and % seed in each each mix
2) Perform seeder calibration per the manufacturers' instructions 3 times and enter the total weight of bulk seed mix in grams collected for each seed box
3) For each individual calibration run, verify that the achieved rate is within ±20 % of the 1/2 Target Rate
4) After the 3rd calibration run, verify that the 3 Run Average rate is within ±10% of the 1/2 Target Rate

NOTE: The BLUE text shows the "calculated values" based on the entered data

Polygon ID Smith 2 **Acres:** 32.545 **Date:** 11/10/08

	Seed Mix 1		Seed Mix 2	
Target Rate	11.50	lbs PLS / acre	1.25	lbs PLS / acre
% PLS in seed mix	86%		88%	
Dilution Factor	100%	(% seed)	100%	(% seed)
Target Application Rate	13.37	bulk pounds / acre	1.42	bulk pounds / acre
	435.2	Total bulk pounds	46.2	total bulk pounds
1/2 Target Rate (2 passes)	6.69	bulk pounds / acre	0.71	bulk pounds / acre
	217.6	1/2 of total bulk pounds	23.1	1/2 of total bulk pounds
Test Run 1	11.10	total grams in 3 bags	1.60	total grams in 3 bags
	5.55	bulk lbs/acre	0.80	bulk lbs/acre
Test Run 2	14.20	total grams in 3 bags	1.40	total grams in 3 bags
	7.10	bulk lbs/acre	0.70	bulk lbs/acre
Test Run 3	14.40	total grams in 3 bags	1.30	total grams in 3 bags
	7.20	bulk lbs/acre	0.65	bulk lbs/acre
3 Run Average	13.23	total grams in 3 bags	1.43	total grams in 3 bags
	6.62	bulk lbs/acre	0.72	bulk lbs/acre
For QC Checks:				
+20% of 1/2 Target Rate	8.02	bulk pounds / acre	0.85	bulk pounds / acre
-20% of 1/2 Target Rate	5.35	bulk pounds / acre	0.57	bulk pounds / acre
+10% of 1/2 Target Rate	7.35	lbs seed mix / acre	0.78	lbs seed mix / acre
-10% of 1/2 Target Rate	6.02	lbs seed mix / acre	0.64	lbs seed mix / acre

PWT Signature:

Frontier Signature: 

Activity Tracking Form
Irrigated Meadows
Seedbed Preparation and Seeding

Irrigated Meadow Polygon Name/ID: Sm 18 N 2

Activity Start Date: 11-10-08

Activity End Date: 11-11-08

Activities Verified As Completed (indicate NA if appropriate)

✓ EPA and/or PWT has collected ~~and analyzed~~ GND soil samples to verify performance standards have been met. Frequency is 1 per 5 acres.

Preparation of the Seedbed

✓ Seedbed has been smoothed to the extent practical for effective seeding.

✓ Removed or disaggregated clods greater than 4 inches in diameter from the top 6 inches of soil.

✓ Removed rocks and cobbles greater than 4 inches in diameter from the surface.

✓ The surface has been compacted by equipment that produces a uniform rough textured surface. The seedbed for the Irrigated Meadows is firm allowing the heel of a boot to penetrate approximately 0.5 to 1 inch.

✓ Plowed or disked areas compacted by vehicle traffic to reduce compaction.

✓ There were no erosional features present prior to seeding.

✓ Loosened areas compacted by weather or colonized by weeds resulting from time gaps between remediation and seeding, as necessary.

Seed Application

NA Lab samples show acid-base account and TOC test results in acceptable ranges before seeding. Samples to be analyzed

✓ Seeding done outside the month of October was approved by EPA.

✓ The seedbed was evaluated by EPA and/or PWT immediately prior to seeding to ensure seedbed requirements were achieved and that the seedbed has not degraded since amendments were applied and tilled.

✓ Used the appropriate seed mixes for the Smith, Seppi, and BLM Irrigated Meadow sites identified in Tables IM-2, IM-3, and IM-4. Deviations approved by EPA.

✓ Applied seed using calibrated equipment at rates shown in Tables IM-2, IM-3, or IM-4. Rates are in lbs PLS / acre. The seed has been applied within 10 percent (by weight) of the rate specified.

Seed mix used: Attached Application Rate: Attached (# PLS / acre)

✓ Seed was stored properly and not degraded by water or other contaminants before use.

Activity Tracking Form
Irrigated Meadows
Seedbed Preparation and Seeding

Irrigated Meadow Polygon Name/ID: SMITH 2

✓ Seed was not applied to any area with standing water or areas that are frozen. Seed was not applied before or during any significant rain events or during wet conditions when seed equipment could cause ruts in the ground or prevent good seed placement.

✓ Seed was not spread under windy conditions where wind was sufficient to blow seed off the ground surface.

✓ Wherever possible, areas were drill seeded. Seed was applied to the appropriate depth of 0.25 to 0.5 inches. Drill seeding was applied in 2 applications, each at half the seeding rate specified in Tables IM-2, IM-3, and IM-4. The direction of the second application was perpendicular to the first application. ~~Seed mix may have been diluted with rice hulls or other Contractor-accepted material, if necessary to achieve the lower seeding rate.~~ AND

✓ For each acre seeded, the hopper and applicator tubes were checked for clogged tubes and to verify even application rates. Checked periodically during application

Quantity of Seed Applied: 435 Lg. / 42 Sm.

Quantity of Work Estimated in Proposal:

Quantity of Work Performed: 32.545 acres

Survey Data/Date: 08-18-08

Note: Attach copies of the daily calibration records, seed certification forms, and survey data to this form. Also, note sample numbers for acid-base account and TOC lab tests.

Signature of Contractor — Date: 11-21-08

Signature of Subcontractor — Date: 11-25-08

Note: Re-Seeded in October 2009
(Approx 1.8 acres graded, re-seeded)

PWT
PACIFIC WESTERN TECHNOLOGIES, LTD.

11-12-08 Seeding Smith 2 Completed: Estimated % Seed Remaining in Drill Seeder.

Weighed Amount Remaining Small Seed in 3 Compartments (16 Total)

3 Compartments: $\frac{475g}{3}$ = Avg. 158g per compartment

158g x 16 compartments = $\frac{2528g}{453.6}$ = 5.57 lbs

Total Bulk Pounds Target Smith 2 (32.545 acres): 46.2 Bulk lbs

$\frac{5.57}{46.2}$ = 12% seed remaining (small)

Large Seed: Weighed amount remaining in $\frac{1 \text{ and } 2}{3}$ compartments

Filled 1 5 gal bucket 15 lbs - 2.5 tare = 12.5 lbs large seed

4 Compartments Total

12.5 x 4 = 50 lbs

Total Bulk Pounds Target Smith 2 (32.545) acres: 435 lbs

$\frac{50}{435}$ = 11.5%

Kind: SMITH SEED MIX SMALL Reseed Smith 3,4,5 Smith 246
Lot: 2148517

Kind & Variety:	Pure%	Germ%	Origin:
CLIMAX TIMOTHY	38.16	95	CAN
ALSIKE CLOVER	23.35	93	MT
PRAIRIE JUNEGRASS	15.74	92	WA
CANADA BLUEGRASS, REUBENS	11.80	92	WA
REDTOP	7.94	91	CAN

Crop: .30% Inert: 2.54% Weed: .18% Net Wt: 18 #(15.625PLS#)12.5AC

Noxious Weed: None Found Test Date: 5/09

Remarks: FRONTIER ENVIRONMENTAL

Winfield Solutions PO Box 64589 St Paul, MN 55164

Kind: SMITH SEED MIX LARGE Smith Reseed 3,4,5
Lot: 2148521

Kind & Variety:	Pure%	Germ%	Origin:
MEADOW BROME, FLEET	33.17	91	CAN
SLENDER W/G, SAND LUIS	20.94	95	WA
WESTERN W/G, ROSANNA	17.69	90	SD
SMOOTH BROMEGRASS, MANCHAR	17.50	91	WA
RED FESCUE	8.47	94	MT

Also Reseed Smith 246

Crop: .12% Inert: 2.05 % Weed: .07% Net Wt: 39.5 #(35.9375PLS#/AC) 3.125AC

Noxious Weed: None Found Test Date: 5/09

Remarks: FRONTIER ENVIRONMENTAL

Winfield Solutions PO Box 64589 St Paul, MN 55164

Seeder Calibration Form

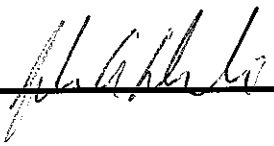
Calibration Form Instructions

1) Enter the Polygon ID, Polygon acreage, Calibration Date, Target seed rate(s), %PLS in each seed mix, and % seed in each each mix
2) Perform seeder calibration per the manufacturers' instructions 3 times and enter the total weight of bulk seed mix in grams collected for each seed box
3) For each individual calibration run, verify that the achieved rate is within ±20 % of the 1/2 Target Rate
4) After the 3rd calibration run, verify that the 3 Run Average rate is within ±10% of the 1/2 Target Rate

NOTE: The BLUE text shows the "calculated values" based on the entered data

Polygon ID Smith 2 (reseed) **Acres:** 1.8 (Approx.) **Date:** 10/22/09

	Seed Mix 1		Seed Mix 2	
Target Rate	10.50	lbs PLS / acre	2.25	lbs PLS / acre
% PLS in seed mix	91%		87%	
Dilution Factor	100%	(% seed)	100%	(% seed)
Target Application Rate	11.54	bulk pounds / acre	2.59	bulk pounds / acre
	20.8	Total bulk pounds	4.7	total bulk pounds
1/2 Target Rate (2 passes)	5.77	bulk pounds / acre	1.29	bulk pounds / acre
	10.4	1/2 of total bulk pounds	2.3	1/2 of total bulk pounds
Test Run 1	10.90	total grams in 3 bags	2.70	total grams in 3 bags
	5.45	bulk lbs/acre	1.35	bulk lbs/acre
Test Run 2	12.50	total grams in 3 bags	2.80	total grams in 3 bags
	6.25	bulk lbs/acre	1.40	bulk lbs/acre
Test Run 3	11.30	total grams in 3 bags	2.60	total grams in 3 bags
	5.65	bulk lbs/acre	1.30	bulk lbs/acre
3 Run Average	11.57	total grams in 3 bags	2.70	total grams in 3 bags
	5.78	bulk lbs/acre	1.35	bulk lbs/acre
For QC Checks:				
+20% of 1/2 Target Rate	6.92	bulk pounds / acre	1.55	bulk pounds / acre
-20% of 1/2 Target Rate	4.62	bulk pounds / acre	1.03	bulk pounds / acre
+10% of 1/2 Target Rate	6.35	lbs seed mix / acre	1.42	lbs seed mix / acre
-10% of 1/2 Target Rate	5.19	lbs seed mix / acre	1.16	lbs seed mix / acre

PWT Signature: 

Frontier Signature:

Activity Tracking Form
Irrigated Meadows
Clear, Grub, Grade, Pre-Till

Irrigated Meadow Polygon Name/ID: Smith 3

Activity Start Date: 9/22/08

Activity End Date: 9/23/08

Activities Verified As Completed (indicate NA if appropriate)

✓ Completed pre-remediation site walk and final delineation of remediation boundaries.

✓ Survey points for post-treatment depth verification were identified and elevations documented by survey crew before any ground disturbance. Rates will vary from 4 per acre down to 1 per 5 acres depending on Subcontractor's demonstration of compliance with QC requirements for tillage depth. **(Attach or reference survey data)** 2/acre

✓ EPA collected pre-remediation full remediation depth composite samples at a rate of ~ 1 per 5 acres and the sample locations were surveyed

NA Removed and disposed of existing trash or debris in accordance with Specification Section 01 74 16.

NA Cleared dead or decadent large woody vegetation if present and placed outside the remediation area in locations identified by the Contractor. Remaining grass and small woody vegetation tilled in place.

NA Locations, extent and width of secondary irrigation ditches to be removed have been surveyed.

NA Graded the remediation areas as necessary for effective remediation.

✓ Pre-tilled the remediation areas to a minimum depth of 6 inches.

NA If rocks were removed from the remediation area, they were staged or disposed of as directed by the Contractor.

Quantity of Work Estimated in Proposal: 0,44 acres

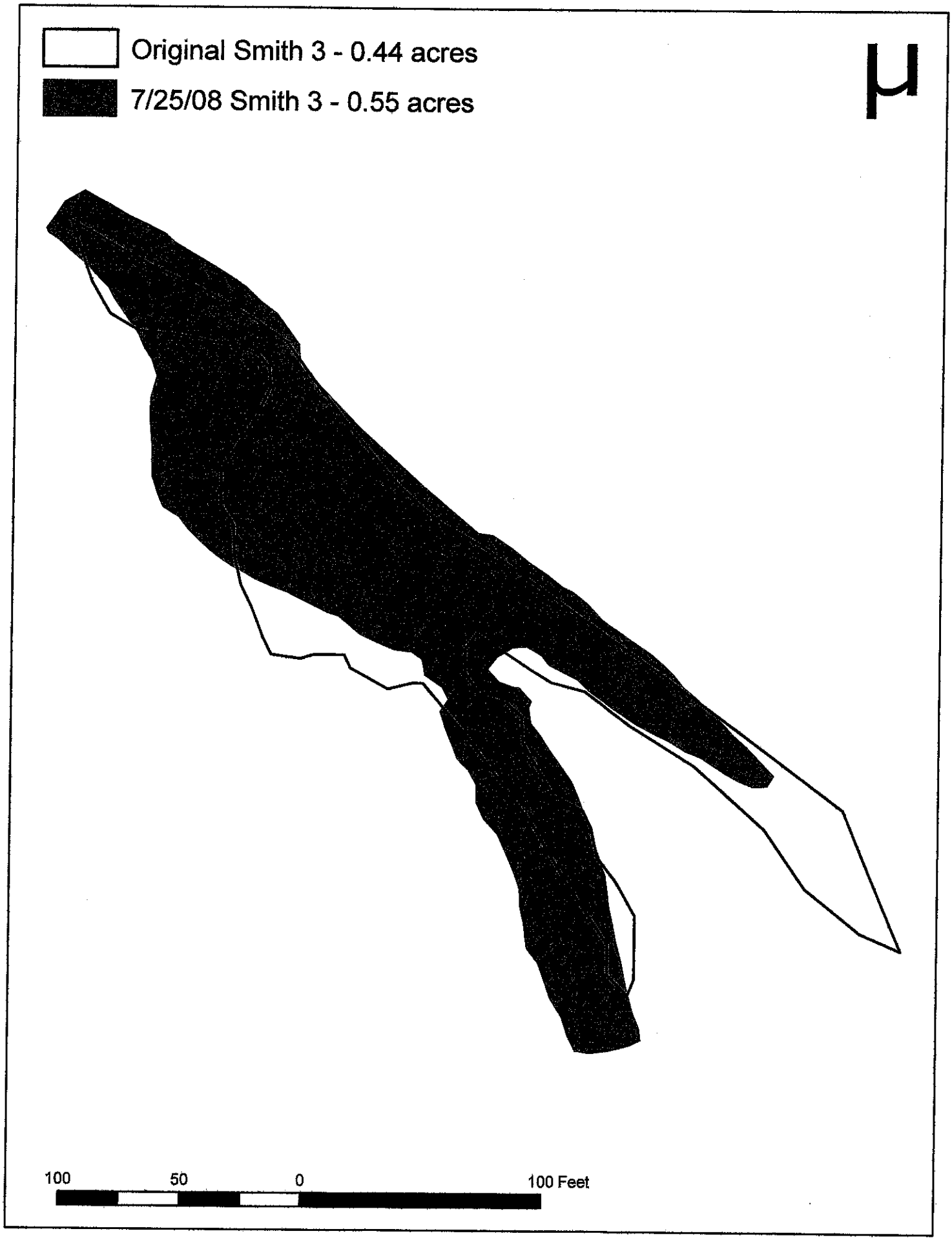
Quantity of Work Performed: 0,55 acres

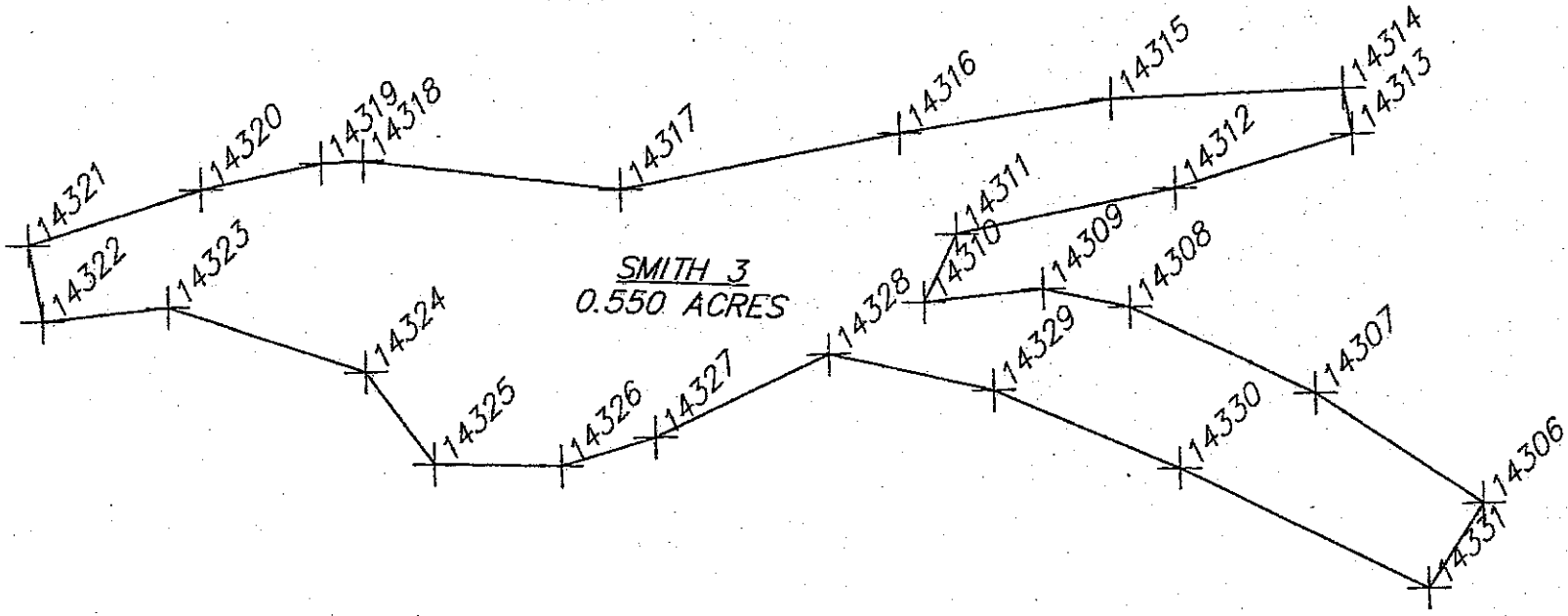
Survey Data/Date: 9/15/08 (Survey Issue date)

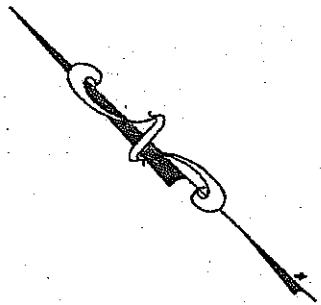
Note: Attach copies of the survey data to this form or reference location of supporting survey data

Signature of Contractor — Date: 10-08-08

Signature of Subcontractor — Date: 10-08-08


Original Smith 3 - 0.44 acres
7/25/08 Smith 3 - 0.55 acres
μ
100
50
0
100 Feet





Inter-Mountain Engineering Ltd.
40801 US HWY 6&24, STE 203 BOX 978 AVON, CO 81620 PH: (970)949-5072
8393 CONTINENTAL DIVIDE RD, SUITE 107 LITTLETON, CO 80127 PH: (303)948-4220

CLIENT: FRONTIER ENVIRONMENTAL INC.

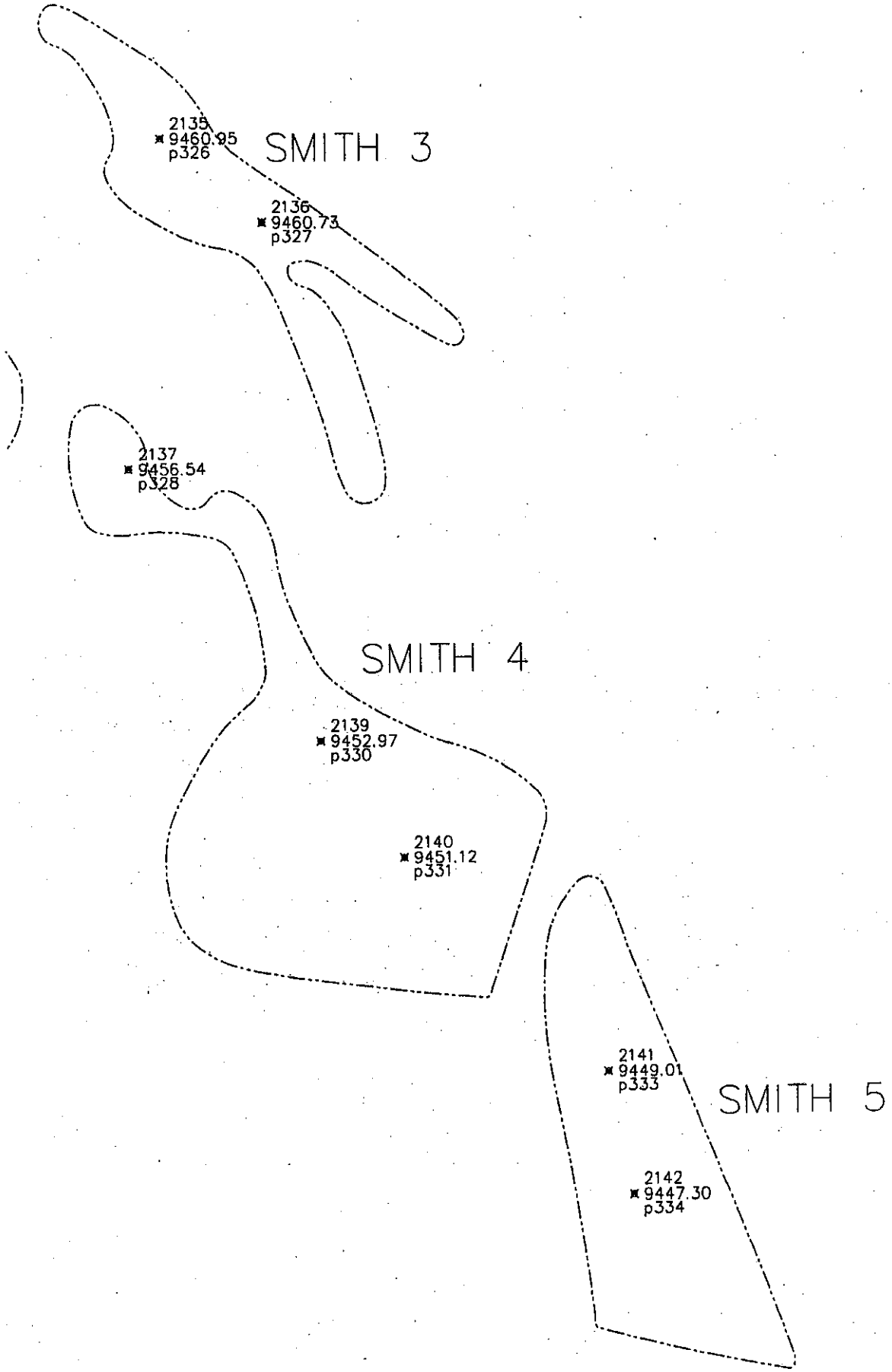
This document was prepared for the exclusive use of the Client specified herein. The use of this document or the information contained herein by any other person or entity is not authorized. In the event that any other person or entity desires to use this document or the information contained herein for any purpose they must first obtain written authorization from Inter-Mountain Engineering. This document and any information contained herein is intended to be used within one year of the date hereof. Use after that period is not authorized.

SMITH 3

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=50'
DATE ISSUED:	8-18-08
PROJECT NO.	08-0032
CHKD?	

J:\projects\08032\dwg\01-11.dwg


2135
9460.95
p326
SMITH 3
2136
9460.73
p327
2137
9456.54
p328
SMITH 4
2139
9452.97
p330
2140
9451.12
p331
2141
9449.01
p333
SMITH 5
2142
9447.30
p334

MOISTURE CONTENT

- Tare Container
- Weigh sample. Record wet sample weight.
- Dry sample until sample appears dry, minimum of 1 hour on hotplate or in oven
- Weigh sample. Record dry sample weight
- Calculate % Moisture = (Wet weight – Dry weight)/Wet Weight

09-23-08

Screened Lime

Moisture Content Record for Lime/Compost (circle one)

	Date	Wet Weight (g)	Dry Weight (g)	Water Weight (g)	% Moisture	
1	9-23-08 Tare 2.3	17.4-2.3 = 15.1	~~13.0-2.3 = 10.7~~ 13.0-2.3 = 10.7	4.4	29.1	ST-8
2	9-23-08 2.3	18.3-2.3 = 16g	14.0-2.3 = 11.7	4.3	26.9	ST-8
3	9-23-08 2.3	16.7-2.3 = 14.4g	12.4-2.3 = 10.1	4.3	29.9	ST-8
					Avg. =	28.6
					Copied to Sm 2, 3, 4, & 5	

Name/Signature: [signature]

Date: 09-23-08

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: Smith 2

Date: 09-22-08 Time: 08:30

Field Application Rate: 41.13 tons/acre (1.89 psf) (psf = tons/acre*0.0459)

Total Tarp Dimensions: 27 (sq. ft.)

Tolerance
1.89 + 10% → 2.08
1.89 - 10% → 1.72

Test 1 Material Weight: 52.5 (lbs.) Rate: 1.94 psf
24.0 + 11.0 + 5.0 - 7.5 tare

Test 2 Material Weight: 55.5 (lbs.) Rate: 2.06 psf
26.0 + 24.0 + 13.0 - 7.5 tare

Test 3 Material Weight: _____ (lbs.) Rate: _____ psf

Test 4 Material Weight: ~~_____~~ (lbs.) Rate: _____ psf
09-22-08

Test 5 Material Weight: _____ (lbs.) Rate: _____ psf

Print / Sign Name: C. Combrink / [signature]
Frontier Representative

Print / Sign Name: Josh A Dobbelis / [signature]
PWT / EPA Representative

Note: Calibrations changed to 1x/week on 9/18/08. Used this for Smith 5 & did 2 passes with line spreader to double application rate.

3, 4, and 5 ~~N/A~~ 0

SUPER-CROP

50 LBS. (22.7 kg) NET WT.

fertilizer

super phosphate

GUARANTEED ANALYSIS	
NITROGEN (N)	0%
AVAIL. PHOSPHORIC ACID (P_2O_5)	45%
SOLUBLE POTASH (K_2O)	0%
SULFUR (Combined) (S)	%
IRON (Fe)	%

AMERICAN PRIDE CO-OP

HENDERSON, COLORADO 80640

DIRECTIONS FOR USE:

GENERAL - Phosphate is one of the 3 major plant nutrients. Phosphate base fertilizers are used as a root and shoot stimulant for new lawn sites. Phosphates are generally highly water insoluble and therefore do not move very much through the soil. For best results, phosphates should be applied at the rate of 10-15 lbs. per 1000 square feet and mixed well in the top 6-8 inches of soil with a roto-tiller, disc, harrow, etc. This rate can be used for new lawn sites, in vegetable and flower gardens.

- High rates can be applied without injuring the plant.

FERTILIZER CALIBRATION

- Place a known weight (e.g., one 50-lb bag) into the spreader hopper.
- Follow the operations manual to set the equipment to meet the design field application rate (e.g., spreader opening, travel speed, RPMs, etc.)
- Make one pass dispersing the fertilizer until the contents of the spreader are emptied.
- Measure the area over which the fertilizer was applied
- Divide the weight of material applied by the total area it was applied to, convert to lbs/acre, and compare to the design field application rate.
- An acceptable test will be within 10% of the required rate.

Fertilizer Calibration Record

Date: 09-29-08 Time: 10:30

Irrigated Meadow / Fluvial Deposit Polygon ID: Smith 3

Fertilizer Type: 0 : 45 : 0 (N:P:K)

Design Field Application Rate: 306 lbs/acre (± 10% range = 278 - 337)

Calibration Data for one 50 pound bag of fertilizer:

Dimensions over which bag was spread: 60 feet x 255 feet (For Smith 5)

Total Calibration Area: 15,300 (ft ^{2}) * 1 acre / 43560 ft ^{2} = 0.35 acres

Calibrated Application Rate: ~~0.155~~ 142.8 (lbs/acre) Double app. rate (make 2nd Pass) for Smith 3

Quality Control Data for Field Application Verification:

Area of Polygon: ~~168.3~~ 0.1550 (acres)

Total Weight to be Applied: ~~1683~~ (lbs)

# of 50 lb. Bags to be Applied: ~3.5 bags

Print / Sign Name: Clay E. Combrink / Clay E. Combrink
Frontier Representative

Print / Sign Name: John Reynolds / John Reynolds
PWT / EPA Representative

Activity Tracking Form
Irrigated Meadows
Spread & Incorporate Lime and Fertilizer in 12" areas

Irrigated Meadow Polygon Name/ID: SMITH 3

Activity Start Date: 09-27-08

Activity End Date: 09-29-08

Activities Verified As Completed (indicate NA if appropriate)

Lime and Fertilizer Application

✓ EPA calculated field application rate based on material quality, rock content & depth

Lime rate = 41.13 tons/acre 2 applications (12")

Fertilizer rate = 306 pounds/acres

✓ EPA and/or PWT was present for lime and fertilizer spreader calibrations.

✓ Lime was spread across the remediation area at the calculated field lime application rate using a calibrated spreader (unadjusted application rate of 44 tons lime / acre) in 12 inch remediation areas.

✓ Fertilizer applied had a nitrogen:phosphorous:potassium (N:P:K) ratio of 0:45:0. **(Attach copy of fertilizer certification)**

✓ Fertilizer was spread across the remediation area at the specified field fertilizer application rate using a calibrated spreader. Unadjusted rate is 70 pounds of P2O5 per 1,000 tons of soil or 306 lbs of 0:45:0 fertilizer / acre in 12" till areas.

✓ Lime and fertilizer were not applied to any areas with standing water, that was cemented, consolidated, caked, or frozen.

✓ Lime and fertilizer were not applied just before or during significant rain events.

✓ Lime and fertilizer were not spread under windy conditions where wind is sufficient to blow lime and fertilizer off the ground surface before they can be tilled.

Tilling of Lime and Fertilizer

✓ Lime and fertilizer were incorporated into the soil by tilling as soon as possible after spreading, and always by the end of the same day that the lime or fertilizer was spread.

✓ Lime and fertilizer were tilled into the soil using a minimum of 3 passes unless the Subcontractor demonstrated that the proposed equipment was able to meet the mixing standards in fewer passes. Successive passes crossed the previous pass at a 90 degree angle.

Activity Tracking Form
Irrigated Meadows
Spread & Incorporate Lime and Fertilizer in 12" areas

Irrigated Meadow Polygon Name/ID: SW / TA 3

✓ Lime and fertilizer were spread and thoroughly incorporated to the full design depth with an acceptable remediation depth tolerance for 12-inch till areas of 10 inches to 14 inches. To verify this, test pits were excavated and locations surveyed at a rate of: **(check one)**

_____ 4 / acre (at beginning of project)

✓ 1 / acre (after effectiveness proven & with EPA approval)

_____ 1 / 5 acres (with EPA approval)

✓ PWT and/or EPA were present during all Subcontractor remediation depth surveys and conducted visual and field pH testing to evaluate effectiveness of mixing **(Attach pH test results)**

Quantity of Lime Applied: 47.7 tons

Quantity of Fertilizer Applied: 200 lbs.

Quantity of Work Estimated in Proposal: _____

Quantity of Work Performed: _____

Survey Data/Date: _____

Note: Attach copies of daily calibration records, fertilizer certs, pH test results and survey data

[signature] 10-01-08
Signature of Contractor Date

[signature] 10-08-08
Signature of Subcontractor Date

Pre-Existing Grade Shots

Smith 3				
326	1500356	2760137	9461.841	smith3-1
327	1500295	2760210	9461.563	smith3-2
Smith 4				
328	1500115	2760112	9456.973	smith4-1
330	1499916	2760250	9453.957	smith4-2
331	1499832	2760309	9452.083	smith4-3
Smith 5				
333	1499674	2760457	9449.462	smith5-1
334	1499586	2760475	9447.96	smith5-2

Bottom of Post-Tillage Shots

2135	1500356	2760137
2136	1500294	2760210
2137	1500115	2760112
2139	1499916	2760249
2140	1499832	2760309
2141	1499674	2760457
2142	1499585	2760475

	Delta Range		Acceptable Range (0.8-1.2)
9460.953 p326	0.888		
9460.733 p327	0.83		
			(0.8-1.2)
9456.539 p328	0.4342	x	0.4342
9452.975 p330	0.9823		
9451.117 p331	0.9663		
			(0.4-0.7)
9449.012 p333	0.4498		
9447.299 p334	0.6608		

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: SMITH 3

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	Acid Free Full Profile?
327	8.0	8.0	8.0	0%	Y
326	8.0	8.0	8.0	0%	Y

Name/Signature: [signature]

Date: 10/6/08

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Fluvial Deposit/Irrigated Meadows Polygon:

Paste pH Record Smith 3

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
333	–	10.0	10.8	7.4
334	–	10.1	10.1	7.5
331	–	10.0	10.2	7.3
Smith 3 326	–	10.1	10.0	7.4
Smith 3 327	–	10.2	10.2	7.5
330	–	10.5	10.8	7.3

Name/Signature: [signature]

Date: 6-03-08

MOISTURE CONTENT

- Tare Container
- Weigh sample. Record wet sample weight.
- Dry sample until sample appears dry, minimum of 1 hour on hotplate or in oven
- Weigh sample. Record dry sample weight
- Calculate % Moisture = (Wet weight – Dry weight)/Wet Weight

Moisture Content Record for Lime/Compost (circle one)

Date	Wet Weight (g)	Dry Weight (g)	Water Weight (g)	% Moisture
	107.9	70.5	37.4	34.7
	108.1	70.8	37.3	34.5
	123.0	88.9	34.1	27.7
	91.6	66.8	24.8	27.1

Name/Signature: _____ **Date:** _____

PACIFIC WESTERN TECHNOLOGIES, LTD.

10-03-08

Compost Bulk Density
Field Pile Max Stacing

Trial 1

Compost & Bucket 36.0 lbs

Tare Wt. Bucket 2.5 lbs

Net Wt. Compost: 33.5 lbs

Trial 2

Compost + Bucket 36.0 lbs

Tare Wt-Bucket 2.5 lbs

Net wt. Compost 33.5 lbs

Avg. 33.5 lbs

$$\frac{33.5\ \text{lbs}}{1\ \text{bucket}} \times \frac{40\ \text{buckets}}{40^3} = \frac{1340\ \text{lbs}}{40^3}$$

10-03-08

Compost Application Rate Calculation Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: **Smith 3**

POLYGON CHARACTERISTICS

Target % Organic Carbon (1.5% for T-6, 2.5% for T-12)		2.50% %
Treatment Depth		12 inches
Treatment Area		0.55 acres

COMPOST CHARACTERISTICS

Percent Organic Carbon		29.50%	%
Percent Moisture	(from 10-3-08 test on Field Pile)	24.25%	%
Wet Bulk Density	0.795 grams/cc =	0.670	tons/cy
		(from 10-3-08 test on Field Pile)	

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"}}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

$= \frac{2.5 * 12 * \frac{1000}{6}}{29.5 * (1 - \frac{24.25}{100})} = \frac{5000}{22.35} = 223.75$

Compost Rate =	223.75 tons/acre ✓	=	123.06 tons total
Compost Rate =	333.96 cubic yards/acre	=	183.68 cy total

Signature: John A. Muhs

Date: 10-06-08

Signature: Brent Mast

Date: 10-3-08

CC'd to Clay Conklin

Compost Application Rate Calculation Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: **Smith 3**

POLYGON CHARACTERISTICS

Target % Organic Carbon (1.5% for T-6, 2.5% for T-12)	2.50%	%
Treatment Depth	12	inches
Treatment Area	0.55	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon			29.50%	%
Percent Moisture	(from 10-3-08 test on Field Pile)		24.25%	%
Wet Bulk Density	0.795 grams/cc	=	0.670	tons/cy
			(from 10-3-08 test on Field Pile)	

CALCULATE COMPOST APPLICATION RATE

Compost = $\frac{\text{Target \% OC * depth * 1000 tons/acre/6"}}{\text{Compost \% OC * (1- \%Moisture/100)}}$ $= \frac{2.5 * 12 * \frac{1000}{6}}{29.5 * (1 - \frac{24.25}{100})} = \frac{5000}{22.35} = 223.75$

Compost Rate =	223.75 tons/acre ✓	=	123.06 tons total
Compost Rate =	333.96 cubic yards/acre	=	183.68 cy total

Signature: John Clark

Date: 10-08-08

Signature: Ben Ward

Date: 10/7/08

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in yd^3/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.
- Repeat.

Compost Spreader Calibration Record

Date: 10-15-08 Time: Smith 4 and Smith 3

Irrigated Meadow / Fluvial Deposit Polygon ID: 09:10

Design Application Rate: 334 (yd^3/acre)

Calibration Data for one load of compost:

	Test Run 1	Test Run 2	Average
Compost Quantity (yd^3)	6.50	6.50	
Compost was spread over (ft^2) 18' x 100	1800	17' x 110' 1870	
Calibration area (acres)	0.041	0.043	
Calibrated Application Rate (yd^3/acre)	158.5	151.2	309.7/2 = 154.9

Quality Control Data for Field Application Verification:

(A) Design Application Rate: 334 (yd^3/acre)

(B) Average Calibrated Application Rate: 309.7 (yd^3/acre)

Passes to be Applied: ~ 2 passes (= A/B)

Print / Sign Name: Clay E. Cornbrink / Clay E. Cornbrink
Frontier Representative

Print / Sign Name: M.A. Hyli
PWT / EPA Representative

Activity Tracking Form
Irrigated Meadows
Spread & Incorporate Organic Material in 12" areas

Irrigated Meadow Polygon Name/ID: Smith 3

Activity Start Date: 10-14-08

Activity End Date: 10-15-08

Activities Verified As Completed (indicate NA if appropriate)

✓ Amendments have been applied at a field application rate calculated by EPA and as directed by the PWT. Calculated application rate was 223.75 tons/acre. or 33440 #/acre

✓ Organic amendment has been spread evenly across the remediation area using a calibrated agricultural manure spreader or other accepted equipment. **(Attach calibration records)**

✓ Organic amendment has been applied uniformly. Rutting and compaction of the surface was minimized during application of organic amendment.

✓ Organic material was not applied to any area with standing water or areas that were frozen. Organic material was not applied before or during any significant rain events.

✓ Organic material was not spread under windy conditions where wind was sufficient to blow organic material off the ground surface before it can be tilled.

✓ Organic matter has been tilled to the full remediation depth using a minimum of 2 passes unless the Subcontractor demonstrated that the proposed equipment has met the mixing standards in fewer passes and received approval of the EPA. The second tillage pass crosses the initial pass at a 90 degree angle. — Narrow polygon (not 90°, however sufficient tillage)

✓ Organic material has been tilled to a tolerance for 12-inch till areas of 10 inches to 14 inches. To verify this, test pits were surveyed at a rate of: **(check one)**

PWT hand-excavated random test pits to verify uniform thickness after spreading

_____ 4 / acre (at beginning of project)

_____ 1 / acre (after effectiveness proven & with EPA approval)

_____ 1 / 5 acres (with EPA approval)

✓ PWT and/or EPA was present during all Subcontractor surveys to verify remediation depth.

✓ Contractor \ EPA has conducted field testing, monitored and verified remediation depth, and has evaluated the effectiveness of mixing. Areas with large unremediated clumps of soil or large areas of unmixed soil amendments have been re-tilled.

Quantity of Organic Material Applied: 180 CY

Quantity of Work Estimated in Proposal: 0.44 acres

Quantity of Work Performed: 0.55 acres

Survey Data/Date: 09-18-08

Activity Tracking Form
Irrigated Meadows
Spread & Incorporate Organic Material in 12" areas

Irrigated Meadow Polygon Name/ID: Smith 3

Note: Attach copies of the daily calibration records and survey data to this form

Signature of Contractor

Date 10-16-08

Signature of Subcontractor

Date 10-16-08

COLORADO DEPARTMENT OF AGRICULTURE
DIVISION OF PLANT INDUSTRY
700 Kipling Street, Suite 4000
Lakewood, Colorado 80215-8000
(303) 239-4149

TRANSIT CERTIFICATE
WEED FREE FORAGE CROP CERTIFICATION ACT 35-27.5

TO WHO IT MAY CONCERN:

The forage crop, to which this Transit Certificate relates, has been officially certified according to the Colorado Weed Free Forage Crop Certification Act 35-27.5. Pursuant to those standards, the information below has been included in this Transit Certificate concerning said certification. The Certificate of Inspection relating to said forage crop is on file at the:

Colorado Department of Agriculture
Division of Plant Industry
700 Kipling Street, Suite 4000
Lakewood, Colorado 80215-8000
Telephone: (303) 239-4149
FAX: (303) 239-4177

Smith
2, 3, 4, 5

PLEASE PRINT IN INK

Murray Farms — J B Murray
Grower's Name — Grower's Signature

Adams
County of Origin

Identify Forage Crop Type Wheat

635 — 10/27/08
Bales Sold — Date of Sale

IDENTIFICATION
INSPECTOR'S INITIALS DHF
GROWER'S INITIALS JBM.
FIELD NUMBER F-8
DATE _____

(Identification found in upper right corner of Certificate of Inspection: Form DPI-WF-05)

FORAGE CERTIFIED ACCORDING TO THE REGIONAL WEED FREE FORAGE STANDARDS

NOTE: Forage certified under the Colorado Weed Free Forage Crop Certification Act shall be baled with at least one strand of **blue and orange** colored twine or **galvanized** wire.

GROWER MUST ISSUE WHITE COPY TO PURCHASER; MAIL PINK COPY TO DEPARTMENT OF AGRICULTURE; KEEP GREEN COPY FOR FILE FOR EACH SALE.

DPI-WF-07
XX/XX

White - Purchaser

Distribution:
Pink - DPI

COLORADO DEPARTMENT OF AGRICULTURE
DIVISION OF PLANT INDUSTRY
700 Kipling Street, Suite 4000
Lakewood, Colorado 80215-8000
(303) 239-4149

TRANSIT CERTIFICATE
WEED FREE FORAGE CROP CERTIFICATION ACT 35-27.5

TO WHO IT MAY CONCERN:

The forage crop, to which this Transit Certificate relates, has been officially certified according to the Colorado Weed Free Forage Crop Certification Act 35-27.5. Pursuant to those standards, the information below has been included in this Transit Certificate concerning said certification. The Certificate of Inspection relating to said forage crop is on file at the:

Colorado Department of Agriculture
Division of Plant Industry
700 Kipling Street, Suite 4000
Lakewood, Colorado 80215-8000
Telephone: (303) 239-4149
FAX: (303) 239-4177

PLEASE PRINT IN INK

Murray Farms — L.B. Murray
Grower's Name — Grower's Signature

Adams
County of Origin

Identify Forage Crop Type Wheat Straw

634 — 10/28/08
Bales Sold — Date of Sale

IDENTIFICATION
INSPECTOR'S INITIALS DHF
GROWER'S INITIALS LBM.
FIELD NUMBER F-8
DATE 7/05/07

(Identification found in upper right corner of Certificate of Inspection: Form DPI-WF-05)

FORAGE CERTIFIED ACCORDING TO THE REGIONAL WEED FREE FORAGE STANDARDS

NOTE: Forage certified under the Colorado Weed Free Forage Crop Certification Act shall be baled with at least one strand of **blue and orange** colored twine or **galvanized** wire.

GROWER MUST ISSUE WHITE COPY TO PURCHASER; MAIL PINK COPY TO DEPARTMENT OF AGRICULTURE; KEEP GREEN COPY FOR FILE FOR EACH SALE.

Activity Tracking Form
Irrigated Meadows
Mulch Application

Irrigated Meadow Polygon Name/ID: Smith 3

Activity Start Date: 10-29-08

Activity End Date: 10-29-08

Activities Verified As Completed (indicate NA if appropriate)

✓ Mulch certified as weed free **(attached Certification documentation)**

✓ Mulch was stored properly and not degraded by water or other contaminants before use.

✓ Mulch has been applied immediately after seeding unless the nature of the mulch required that it must be incorporated into the soil; in that case the mulch has been applied before seeding. Applied before seeding after seedbed prep as per S. Jennings AMD

NA If wood mulch was applied, the application rate was 10 to 12 tons per acre, or 50 to 60 cubic yards per acre using a blower, flail spreader, or other means that provided even distribution across the remediated area. Depending on the nature of the wood mulch, it may have been left as a surface application or may have been crimped or lightly disked into the top 2 inches to prevent dispersion **(Circle method used)**.

✓ If straw or native hay mulch was applied, the application rate was 2,000 pounds per acre using equipment specifically designed for application of mulch at a uniform rate to produce a mat covering the seed. Straw or native hay mulch was crimped using crimping equipment with round, notched blades approximately ¼-inch thick by 18 inches in diameter spaced 8 inches apart. The crimper was equipped with disc scrapers and had sufficient weight to force the vegetative mulch to a minimum depth of 3-inches into the soil. Mulch was crimped within 24 hours of application.

✓ Stormwater, sediment, and erosion control measures remained in place throughout implementation of the remedy and has been maintained in good condition during and after mulch placement to prevent surface water run-on and run-off that may damage the remediated area.

Quantity of Mulch Applied: 23 Bales ≈ 1,150 lbs.

Quantity of Work Estimated in Proposal: .55

Quantity of Work Performed: 0.550 acres

Survey Data/Date: 08-15-08

Note: Attach copies of the daily/calibration records, weed free certification and survey data to this form

Signature of Contractor — Date: 10-31-08

Signature of Subcontractor — Date: 10-31-08

Seeder Calibration Form

Calibration Form Instructions

1) Enter the Polygon ID, Polygon acreage, Calibration Date, Target seed rate(s), %PLS in each seed mix, and % seed in each each mix
2) Perform seeder calibration per the manufacturers' instructions 3 times and enter the total weight of bulk seed mix in grams collected for each seed box
3) For each individual calibration run, verify that the achieved rate is within ±20 % of the 1/2 Target Rate
4) After the 3rd calibration run, verify that the 3 Run Average rate is within ±10% of the 1/2 Target Rate

NOTE: The BLUE text shows the "calculated values" based on the entered data

Also seeded Smith 3 Today Also 11-04-08

Polygon ID Smith 6 **Acres:** 15.511 **Date:** 11/4/08

NA Seed Mix 2 Was Not used in Drill Seeder for this application JAD 11-04-08

	Seed Mix 1		Seed Mix 2	
Target Rate	11.50	lbs PLS / acre	1.25	lbs PLS / acre
% PLS in seed mix	86%		88%	
Dilution Factor	100%	(% seed)	33%	(% seed)
Target Application Rate	13.37	bulk pounds / acre	4.26	bulk pounds / acre
	207.4	Total bulk pounds	66.1	total bulk pounds
1/2 Target Rate (2 passes)	[illegible]	bulk pounds / acre	[illegible]	bulk pounds / acre
	103.7	1/2 of total bulk pounds	33.0	1/2 of total bulk pounds
Test Run 1	10.70	total grams in 3 bags	0.00	total grams in 3 bags
	5.35	bulk lbs/acre	0.00	bulk lbs/acre
Test Run 2	14.30	total grams in 3 bags		total grams in 3 bags
	7.15	bulk lbs/acre	0.00	bulk lbs/acre
Test Run 3	13.30	total grams in 3 bags		total grams in 3 bags
	6.65	bulk lbs/acre	0.00	bulk lbs/acre
3 Run Average	12.77	total grams in 3 bags	0.00	total grams in 3 bags
	6.38	bulk lbs/acre	0.00	bulk lbs/acre
For QC Checks:				
+20% of 1/2 Target Rate	8.02	bulk pounds / acre	2.56	bulk pounds / acre
-20% of 1/2 Target Rate	5.35	bulk pounds / acre	1.70	bulk pounds / acre
+10% of 1/2 Target Rate	7.35	lbs seed mix / acre	2.34	lbs seed mix / acre
-10% of 1/2 Target Rate	6.02	lbs seed mix / acre	1.92	lbs seed mix / acre

PWT Signature: [signature]

Frontier Signature: [signature]

Kind: TABLE IM-3/LARGE SEED MIX
Lot: 2137474

Kind & Variety:	Pure%	Germ%	Origin:
MEADOW BROME, FLEET	31.74	94	CAN
SLENDER W/G, SAN LUIS	21.68	86	CAN
BROMEGRASS, MANCHAR	19.38	77	ID
WESTERN W/G, ROSANNA	16.58	90	WA
RED FESCUE, VNS	7.69	97	MT

Crop: .27% Inert: 2.63% Weed: .03% Net Wt: 50# (42.9 PLS#) 3.73 ACRES

Noxious Weed: None Found Test Date: 6/08

REMARKS: FRONTIER ENVIRONMENTAL
JOB: SMITH RANCH
ARKANSAS VALLEY SEED, 4333 HWY 66, LONGMONT CO 80504

Kind: TABLE IM-3/LARGE SEED MIX
Lot: 2137474

Kind & Variety:	Pure%	Germ%	Origin:
MEADOW BROME, FLEET	31.74	94	CAN
SLENDER W/G, SAN LUIS	21.68	86	CAN
BROMEGRASS, MANCHAR	19.38	77	ID
WESTERN W/G, ROSANNA	16.58	90	WA
RED FESCUE, VNS	7.69	97	MT

Crop: .27% Inert: 2.63% Weed: .03% Net Wt: 50# (42.9 PLS#) 3.73 ACRES

Noxious Weed: None Found Test Date: 6/08

REMARKS: FRONTIER ENVIRONMENTAL
JOB: SMITH RANCH
ARKANSAS VALLEY SEED, 4333 HWY 66, LONGMONT CO 80504

Kind: TABLE IM-3/SMALL SEED MIX
Lot: 2137593

Kind & Variety:	Pure%	Germ%	Origin:
TIMOTHY, CLIMAX	39.55	90	CN
ALSIKE CLOVER	22.96	93	MT
PRAIRIE JUNEGRASS	16.18	88	WA
CANADA BLUEGRASS, REUBENS	11.85	90	WA
REDTOP	7.66	93	WA

Crop: .10% Inert: 1.70% Weed: .01% Net Wt: 5# (4.44 PLS#) 3.5 ACRES

Noxious Weed: None Found Test Date: 6/08

REMARKS: FRONTIER ENVIRONMENTAL
JOB: SMITH RANCH

ARKANSAS VALLEY SEED, 4333 HWY 66, LONGMONT CO 80504

BROADCAST SEEDED CALIBRATION

- Place a known weight into the spreader hopper.
- Follow the operations manual to set the equipment to meet the design field application rate (e.g., spreader opening, travel speed, RPMs, etc.)
- Make one pass dispersing the seed until the contents of the spreader are emptied.
- Measure the area over which the seed was applied
- Divide the weight of material applied by the total area it was applied to, convert to lbs/acre, and compare to the design field application rate.
- An acceptable test will be within 10% of the required rate.

Broadcast Seeder Calibration Record

Small Seed w/ Rice Hulls
Same settings as Smith 6 11-03-08

Date: 11-04-08 Time: 15:00

Irrigated Meadow / Fluvial Deposit Polygon ID: Smith 3, 4, 5

Seed Type (Circle One): Smith / Seppi / BLM / FD / Wetlands / Other: _____

Design Field Application Rate: 4.26 lbs/acre (± 10% range = _____)

160 grams = .354 lbs

Field Calibration Data:

Dimensions over which seed was spread: 8 feet x 460 feet

Total Calibration Area: 3680 (ft^2) * 1 acre / 43560 ft^2 = 0.084 acres

Calibrated Application Rate: 4.21 (lbs/acre)

* Note: Applied 4 times design application as per Stevens

Second Quality Control Check for Field Application Rate Verification:

Area of Polygon: 0.55 (acres) Smith 3

Total Weight to be Applied: 10 (lbs)

Print / Sign Name: Clay E. Cornbrink / Clay E. Cornbrink
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

Arkansas Valley Seed

Supplying QUALITY Seed with INTEGRITY Since 1945

PRELIMINARY INVOICE

Limitation of Warranty and Finance Charge Agreement are part of the terms and conditions of this sale. See back of this invoice.

www.avseeds.com
rabbitears@seedsolutions.com

Invoice Number:
Date:
Customer #:
Terms:
Delivery Date:
Invoiced:

Sold To: FRONTIER ENVIRONMENTAL
5171 WARD ROAD UNIT 1
WHEAT RIDGE CO 80033

Ship To: FRONTIER ENVIRONMENTAL
5171 WARD ROAD UNIT 1
WHEAT RIDGE CO 80033

Tax ID:
Tax Cert:

Request Date	Customer P.O.	F.O.B.	Ship : CLAY 303-893-7581
10/03/08			Inst : BRENT 303-241-4854

Description	Lot Number	Quantity Shipped	UM	Price	Extended Price	Tax
[illegible] SEED MIX	2137474	750.0000	LB	2.5950	[illegible]	T
[illegible] Grass Mix-Bulk						
[illegible] LBS/ACRE @ $35.00/ACRE X 56.3 ACRES						
[illegible] RANCH						
[illegible] SEED MIX	2137593	240.0000	LB	1.5000	[illegible]	T
[illegible] Grass Mix-Bulk						
[illegible] LBS/ACRE @ $5.00/ACRE X 56.3 ACRES						
[illegible] RANCH						

998 lbs

delivered 10-7-08

Small Seeds:
Smith 7, 6, 3, 4, 5

Large: All (also on) Smith 2, 3, 4, 5, 6, 7

Sales Rep: [illegible] Grass

Net Due Date: 10/31/08

Tax Rt: 7.630

Total: [illegible]

Arkansas Valley Seed
1333 Hwy. 66
Longmont, CO 80504
(877) 907-3337
(970) 535-4522 Fax

Arkansas Valley Seed
4625 Colorado Blvd.
Denver, CO 80216
(877) 957-3337
(303) 320-7516 Fax

Arkansas Valley Seed
12th & Santa Fe Tracks
Rocky Ford, CO 81067
(719) 254-7469
(719) 254-4115 Fax

Colorado Seed
195 N. Washington
Monte Vista, CO 81144
(719) 852-3505
(719) 852-4942 Fax

Wilbers Seed
809 N. Broadway
Miller, SD 57362
(800) 952-2233
(605) 853-2620 Fax

Activity Tracking Form
Irrigated Meadows
Seedbed Preparation and Seeding

Irrigated Meadow Polygon Name/ID: SMITH 3

Activity Start Date: 11-04-08

Activity End Date: 11-04-08

Activities Verified As Completed (indicate NA if appropriate)

✓ EPA and/or PWT has collected ~~and analyzed~~ QAQC soil samples to verify performance standards have been met. Frequency is 1 per 5 acres.

Preparation of the Seedbed

✓ Seedbed has been smoothed to the extent practical for effective seeding.

✓ Removed or disaggregated clods greater than 4 inches in diameter from the top 6 inches of soil.

✓ Removed rocks and cobbles greater than 4 inches in diameter from the surface.

✓ The surface has been compacted by equipment that produces a uniform rough textured surface. The seedbed for the Irrigated Meadows is firm allowing the heel of a boot to penetrate approximately 0.5 to 1 inch.

✓ Plowed or disked areas compacted by vehicle traffic to reduce compaction.

✓ There were no erosional features present prior to seeding.

NA Loosened areas compacted by weather or colonized by weeds resulting from time gaps between remediation and seeding, as necessary.

Seed Application

NA Lab samples show acid-base account and TOC test results in acceptable ranges before seeding.
Post-Remediation sample has not been analyzed before seeding

✓ Seeding done outside the month of October was approved by EPA.

✓ The seedbed was evaluated by EPA and/or PWT immediately prior to seeding to ensure seedbed requirements were achieved and that the seedbed has not degraded since amendments were applied and tilled.

✓ Used the appropriate seed mixes for the Smith, Seppi, and BLM Irrigated Meadow sites identified in Tables IM-2, IM-3, and IM-4. Deviations approved by EPA.

✓ Applied seed using calibrated equipment at rates shown in Tables IM-2, IM-3, or IM-4. Rates are in lbs PLS / acre. The seed has been applied within 10 percent (by weight) of the rate specified.
Large Seed: 11.50 # PLS/Acre

Seed mix used: Small Seed: 4 X 1.25 # PLS/Acre Application Rate: _____ (# PLS / acre)

✓ Seed was stored properly and not degraded by water or other contaminants before use.

Activity Tracking Form
Irrigated Meadows
Seedbed Preparation and Seeding

Irrigated Meadow Polygon Name/ID: Smith 3

✓ Seed was not applied to any area with standing water or areas that are frozen. Seed was not applied before or during any significant rain events or during wet conditions when seed equipment could cause ruts in the ground or prevent good seed placement.

✓ Seed was not spread under windy conditions where wind was sufficient to blow seed off the ground surface.

✓ Wherever possible, areas were drill seeded. Seed was applied to the appropriate depth of 0.25 to 0.5 inches. Drill seeding was applied in 2 applications, each at half the seeding rate specified in Tables IM-2, IM-3, and IM-4. The direction of the second application was perpendicular to the first application. Seed mix may have been diluted with rice hulls or other Contractor-accepted material, if necessary to achieve the lower seeding rate.

Large Seed was Drilled in 2 separate applications.

Small seed was broadcasted prior to drill seeding @ 4 times design rate per S. Jennings, Ames

✓ For each acre seeded, the hopper and applicator tubes were checked for clogged tubes and to verify even application rates. checked periodically and used all seed and amount of seed designed.

Quantity of Seed Applied: Large: 7.5 lbs. total Small: 10 lbs total

Quantity of Work Estimated in Proposal: _____

Quantity of Work Performed: 0.550 acres

Survey Data/Date: 08-18-08

Note: Attach copies of the daily calibration records, seed certification forms, and survey data to this form. Also, note sample numbers for acid-base account and TOC lab tests.

[signature] 11-05-08
Signature of Contractor Date

[signature] 11-05-08
Signature of Subcontractor Date

Note: Re-Seeded Entire Treatment Area October 2009

Reseed Smith 3,4,5 Smith 246

Kind: SMITH SEED MIX SMALL
Lot: 2148517

Kind & Variety:	Pure%	Germ%	Origin:
CLIMAX TIMOTHY	38.16	95	CAN
ALSIKE CLOVER	23.35	93	MT
PRAIRIE JUNEGRASS	15.74	92	WA
CANADA BLUEGRASS, REUBENS	11.80	92	WA
REDTOP	7.94	91	CAN

October 2009 Re-Seed

Crop: .30% Inert: 2.54% Weed: .18% Net Wt: 18 #(15.625PLS#)12.5AC

Noxious Weed: None Found Test Date: 5/09

Remarks: FRONTIER ENVIRONMENTAL

Winfield Solutions PO Box 64589 St Paul, MN 55164

Smith Reseed 3,4,5

Kind: SMITH SEED MIX LARGE
Lot: 2148521

Kind & Variety:	Pure%	Germ%	Origin:
MEADOW BROME, FLEET	33.17	91	CAN
SLENDER W/G, SAND LUIS	20.94	95	WA
WESTERN W/G, ROSANNA	17.69	90	SD
SMOOTH BROMEGRASS, MANCHAR	17.50	91	WA
RED FESCUE	8.47	94	MT

Also Reseed Smith 246

Crop: .12% Inert: 2.05 % Weed: .07% Net Wt: 39.5 #(35.9375PLS#/AC) 3.125AC

Noxious Weed: None Found Test Date: 5/09

Remarks: FRONTIER ENVIRONMENTAL

Winfield Solutions PO Box 64589 St Paul, MN 55164

Seeder Calibration Form

Calibration Form Instructions

1) Enter the Polygon ID, Polygon acreage, Calibration Date, Target seed rate(s), %PLS in each seed mix, and % seed in each each mix
2) Perform seeder calibration per the manufacturers' instructions 3 times and enter the total weight of bulk seed mix in grams collected for each seed box
3) For each individual calibration run, verify that the achieved rate is within ±20 % of the 1/2 Target Rate
4) After the 3rd calibration run, verify that the 3 Run Average rate is within ±10% of the 1/2 Target Rate

NOTE: The BLUE text shows the "calculated values" based on the entered data

Polygon ID Smith 3~~, 4, 5 (reseed)~~ **Acres:** 0.55 **Date:** 10/21/09

	Seed Mix 1		Seed Mix 2	
Target Rate	10.50	lbs PLS / acre	2.25	lbs PLS / acre
% PLS in seed mix	91%		87%	
Dilution Factor	100%	(% seed)	100%	(% seed)
Target Application Rate	11.54	bulk pounds / acre	2.59	bulk pounds / acre
	6.3	Total bulk pounds	1.4	total bulk pounds
1/2 Target Rate (2 passes)	5.77	bulk pounds / acre	1.29	bulk pounds / acre
	3.2	1/2 of total bulk pounds	0.7	1/2 of total bulk pounds
Test Run 1	11.50	total grams in 3 bags	2.50	total grams in 3 bags
	5.75	bulk lbs/acre	1.25	bulk lbs/acre
Test Run 2	11.50	total grams in 3 bags	2.40	total grams in 3 bags
	5.75	bulk lbs/acre	1.20	bulk lbs/acre
Test Run 3	11.40	total grams in 3 bags	2.50	total grams in 3 bags
	5.70	bulk lbs/acre	1.25	bulk lbs/acre
3 Run Average	11.47	total grams in 3 bags	2.47	total grams in 3 bags
	5.73	bulk lbs/acre	1.23	bulk lbs/acre
For QC Checks:				
+20% of 1/2 Target Rate	6.92	bulk pounds / acre	1.55	bulk pounds / acre
-20% of 1/2 Target Rate	4.62	bulk pounds / acre	1.03	bulk pounds / acre
+10% of 1/2 Target Rate	6.35	lbs seed mix / acre	1.42	lbs seed mix / acre
-10% of 1/2 Target Rate	5.19	lbs seed mix / acre	1.16	lbs seed mix / acre

PWT Signature: _____

Frontier Signature: _____

Activity Tracking Form
Irrigated Meadows
Clear, Grub, Grade, Pre-Till

Irrigated Meadow Polygon Name/ID: Smith 4

Activity Start Date: 9/22/08

Activity End Date: 9/23/08

Activities Verified As Completed (indicate NA if appropriate)

✓ Completed pre-remediation site walk and final delineation of remediation boundaries.

✓ Survey points for post-treatment depth verification were identified and elevations documented by survey crew before any ground disturbance. Rates will vary from 4 per acre down to 1 per 5 acres depending on Subcontractor's demonstration of compliance with QC requirements for tillage depth. **(Attach or reference survey data)**

✓ EPA collected pre-remediation full remediation depth composite samples at a rate of ~ 1 per 5 acres and the sample locations were surveyed

NA Removed and disposed of existing trash or debris in accordance with Specification Section 01 74 16.

NA Cleared dead or decadent large woody vegetation if present and placed outside the remediation area in locations identified by the Contractor. Remaining grass and small woody vegetation tilled in place.

NA Locations, extent and width of secondary irrigation ditches to be removed have been surveyed.

NA Graded the remediation areas as necessary for effective remediation.

✓ Pre-tilled the remediation areas to a minimum depth of 6 inches.

NA If rocks were removed from the remediation area, they were staged or disposed of as directed by the Contractor.

Quantity of Work Estimated in Proposal: 1.17 acres

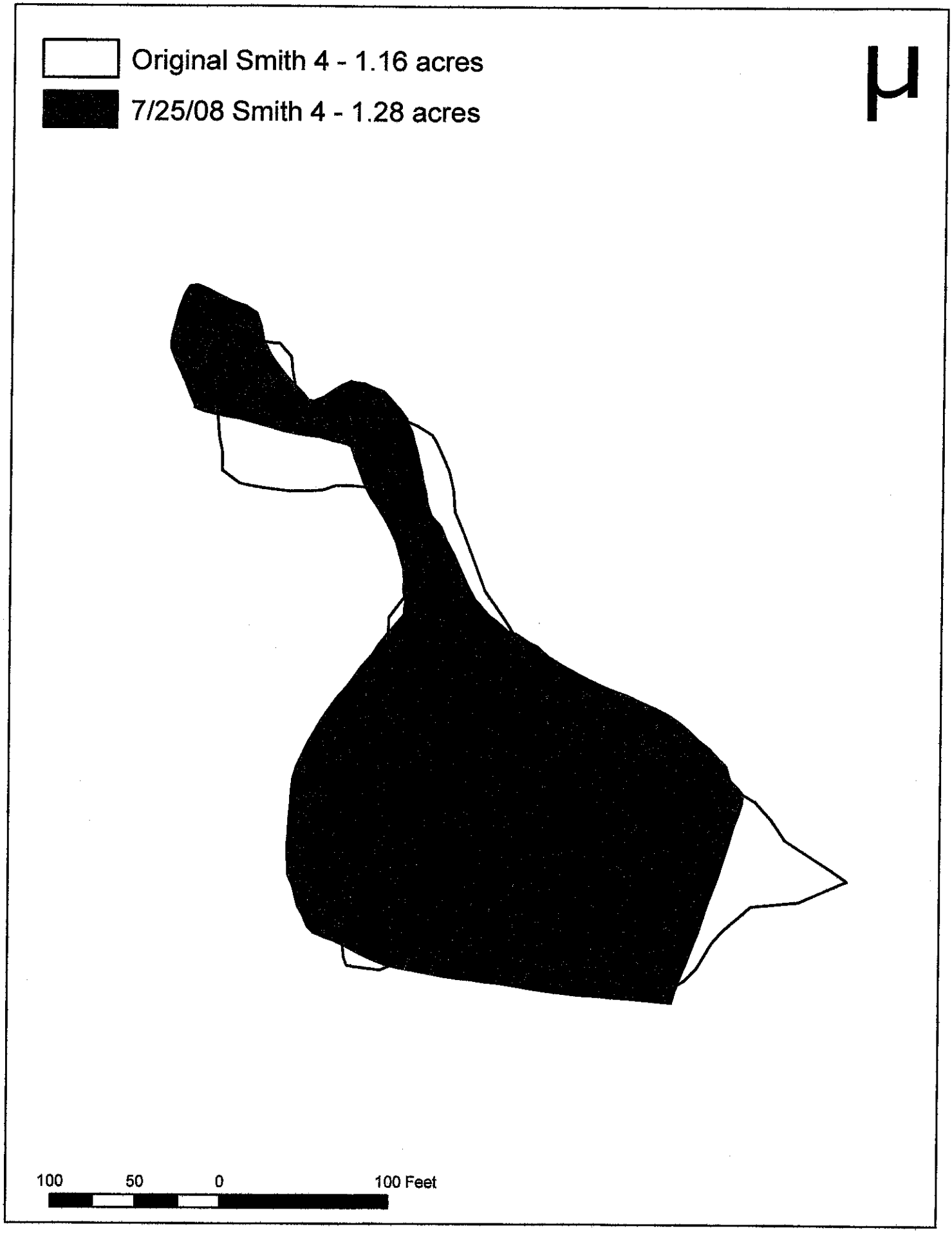
Quantity of Work Performed: 1.29 acres

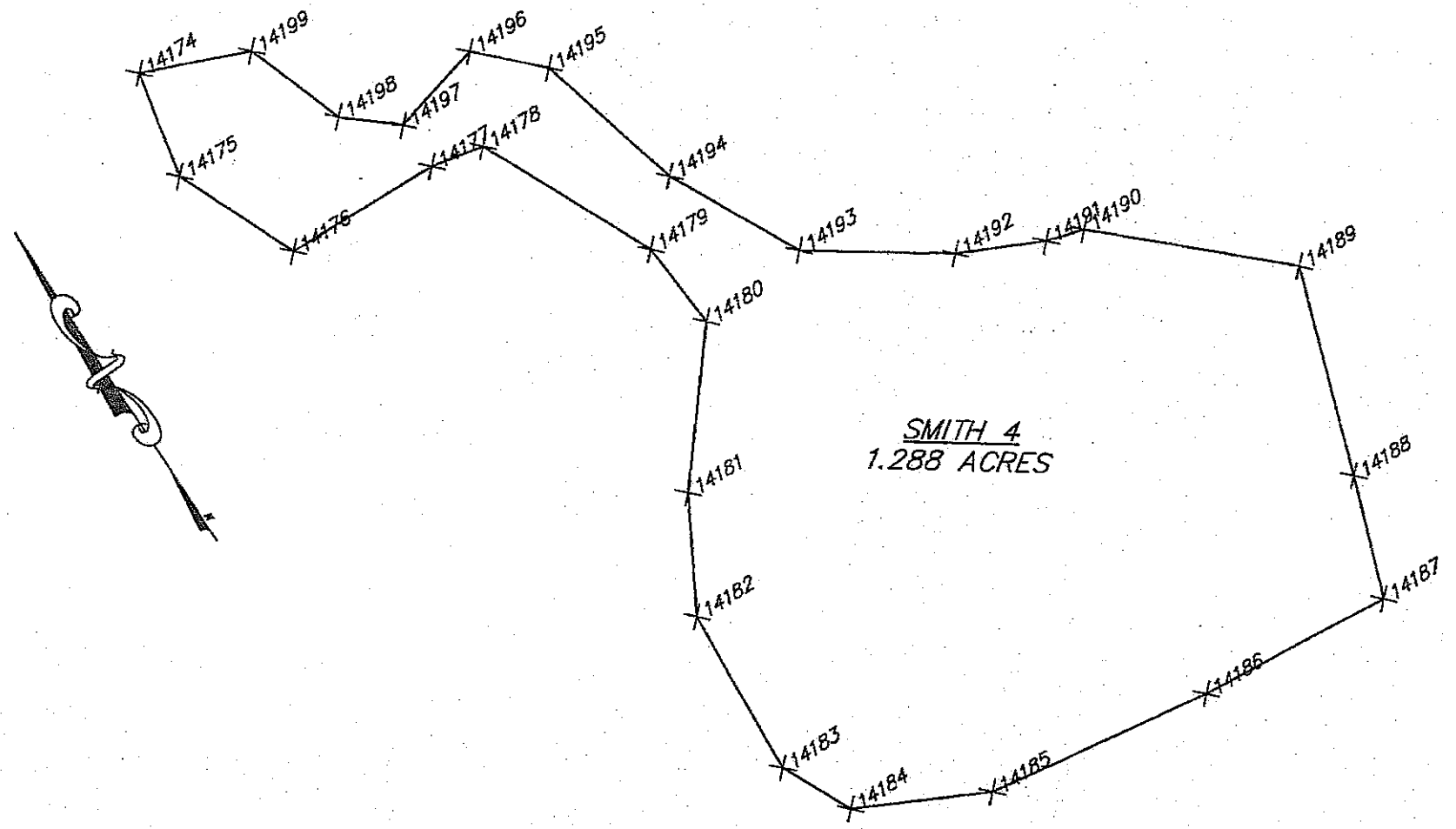
Survey Data/Date: 9/18/08 (Survey issue date)

Note: Attach copies of the survey data to this form or reference location of supporting survey data

Signature of Contractor — Date: 10-08-08

Signature of Subcontractor — Date: 10-08-08


Original Smith 4 - 1.16 acres
7/25/08 Smith 4 - 1.28 acres
μ
100
50
0
100 Feet



J:\projects\08032\dwg\08-11.dwg

Inter-Mountain Engineering Ltd.

40081 US HWY 6&24, STE 203 BOX 978 AVON, CO 81620 PH: (970)949-5072
8392 CONTINENTAL DIVIDE RD, SUITE 107 LITTLETON, CO 80127 PH: (303)948-6218

CLIENT: FRONTIER ENVIRONMENTAL INC.

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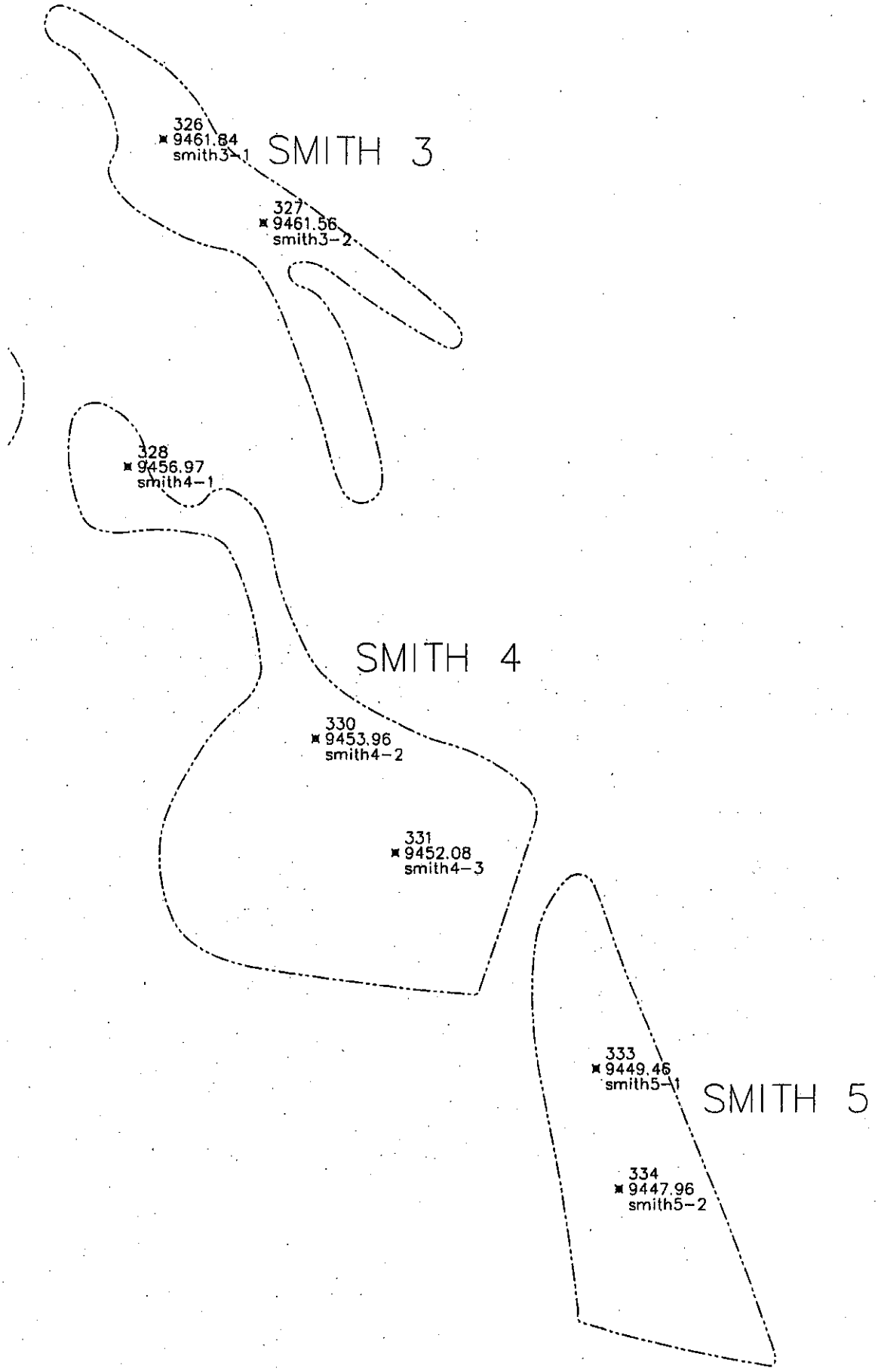
SMITH 4

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=60'
DATE ISSUED:	8-18-08
PROJECT NO.	08-0032
DWGNT	


326
9461.84
smith3-1
SMITH 3
327
9461.56
smith3-2
328
9456.97
smith4-1
SMITH 4
330
9453.96
smith4-2
331
9452.08
smith4-3
333
9449.46
smith5-1
SMITH 5
334
9447.96
smith5-2

MOISTURE CONTENT

- Tare Container
- Weigh sample. Record wet sample weight.
- Dry sample until sample appears dry, minimum of 1 hour on hotplate or in oven
- Weigh sample. Record dry sample weight
- Calculate % Moisture = (Wet weight – Dry weight)/Wet Weight

09-23-08

Screened Lime

Moisture Content Record for Lime/Compost (circle one)

	Date	Wet Weight (g)	Dry Weight (g)	Water Weight (g)	% Moisture	
1	9-23-08 Tare 2.3	17.4-2.3 = 15.1	~~13.0-2.3 = 10.7~~	4.4	29.1	ST-8
2	9-23-08 2.3	18.3-2.3 = 16g	14.0-2.3 = 11.7	4.3	26.9	ST-8
3	9-23-08 2.3	16.7-2.3 = 14.4g	12.4-2.3 = 10.1	4.3	29.9	ST-8
					Avg. =	28.6
					Copied to Sm 2, 3, (4) & 5	

Name/Signature: [signature]

Date: 09-23-08

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: Smith 2

Date: 09-22-08 Time: 08:30

Field Application Rate: 41.13 tons/acre (1.89 psf) (psf = tons/acre*0.0459)

Total Tarp Dimensions: 27 (sq. ft.)

Tolerance
1.89 + 10% → 2.08
1.89 − 10% → 1.72

Test 1 Material Weight: 52.5 (lbs.) Rate: 1.94 psf
24.0 + 11.0 + 5.0 − 7.5 tare

Test 2 Material Weight: 55.5 (lbs.) Rate: 2.06 psf
26.0 + 24.0 + 13.0 − 7.5 tare

Test 3 Material Weight: _____ (lbs.) Rate: _____ psf

Test 4 Material Weight: ~~_____~~ (lbs.) Rate: _____ psf
09-22-08

Test 5 Material Weight: _____ (lbs.) Rate: _____ psf

Print / Sign Name: C. Combrink
Frontier Representative

Print / Sign Name: Josh A Dollarhide
PWT / EPA Representative

Note: Calibrations changed to 1x/week on 9/18/08. Used this for Smith 4 at 2 passes to get 12" application rate.

SUPER - CROP

50 LBS. (22.7 kg) NET WT.

fertilizer

super phosphate

GUARANTEED ANALYSIS	
NITROGEN (N)	0%
AVAIL. PHOSPHORIC ACID (P_2O_5)	45%
SOLUBLE POTASH (K_2O)	0%
SULFUR (Combined) (S)	%
IRON (Fe)	%

AMERICAN PRIDE CO-OP

HENDERSON, COLORADO 80640

DIRECTIONS FOR USE:

GENERAL - Phosphate is one of the 3 major plant nutrients. Phosphate base fertilizers are used as a root and shoot stimulant for new lawn sites. Phosphates are generally highly water insoluble and therefore do not move very much through the soil. For best results, phosphates should be applied at the rate of 10-15 lbs. per 1000 square feet and mixed well in the top 6-8 inches of soil with a roto-tiller, disc, harrow, etc. This rate can be used for new lawn sites, in vegetable and flower gardens.

- High rates can be applied without injuring the plant.

FERTILIZER CALIBRATION

- Place a known weight (e.g., one 50-lb bag) into the spreader hopper.
- Follow the operations manual to set the equipment to meet the design field application rate (e.g., spreader opening, travel speed, RPMs, etc.)
- Make one pass dispersing the fertilizer until the contents of the spreader are emptied.
- Measure the area over which the fertilizer was applied
- Divide the weight of material applied by the total area it was applied to, convert to lbs/acre, and compare to the design field application rate.
- An acceptable test will be within 10% of the required rate.

Fertilizer Calibration Record

Date: 09-29-08 Time: 10:30

Irrigated Meadow / Fluvial Deposit Polygon ID: Smith 4

Fertilizer Type: 0 : 45 : 0 (N:P:K)

Design Field Application Rate: 306 lbs/acre (± 10% range = 278 - 337)

Calibration Data for one 50 pound bag of fertilizer:

Dimensions over which bag was spread: 60 feet x 255 feet (For Smith 5)

Total Calibration Area: 15,300 (ft^2) * 1 acre / 43560 ft^2 = 0.35 acres

Calibrated Application Rate: 1428 (lbs/acre) Double application (make 2nd pass) for Smith 4

143 x 2 ~ 286 lbs ✓ 4UR

Quality Control Data for Field Application Verification:

Area of Polygon: 1.288 (acres)

Total Weight to be Applied: 394 (lbs)

# of 50 lb. Bags to be Applied: ~8 bags

Print / Sign Name: Clay E. Combrink / [signature]
Frontier Representative

Print / Sign Name: [illegible] / [signature]
PWT / EPA Representative

Pre-Existing Grade Shots

Smith 3				
326	1500356	2760137	9461.841	smith3-1
327	1500295	2760210	9461.563	smith3-2
Smith 4				
328	1500115	2760112	9456.973	smith4-1
330	1499916	2760250	9453.957	smith4-2
331	1499832	2760309	9452.083	smith4-3
Smith 5				
333	1499674	2760457	9449.462	smith5-1
334	1499586	2760475	9447.96	smith5-2

Bottom of Post-Tillage Shots

2135	1500356	2760137
2136	1500294	2760210
2137	1500115	2760112
2139	1499916	2760249
2140	1499832	2760309
2141	1499674	2760457
2142	1499585	2760475

	Delta Range		Acceptable Range (0.8-1.2)
9460.953 p326	0.888		
9460.733 p327	0.83		
9456.539 p328	0.4342	x	(0.8-1.2) 0.4342
9452.975 p330	0.9823		
9451.117 p331	0.9663		
9449.012 p333	0.4498		(0.4-0.7)
9447.299 p334	0.6608		

Activity Tracking Form
Irrigated Meadows
Spread & Incorporate Lime and Fertilizer in 12" areas

Irrigated Meadow Polygon Name/ID: Smith 4

Activity Start Date: 09-24-08

Activity End Date: 09-24-08

Activities Verified As Completed (indicate NA if appropriate)

Lime and Fertilizer Application

_____ EPA calculated field application rate based on material quality, rock content & depth

Lime rate = 41.13 tons/acre

Fertilizer rate = 306 pounds/acres

✓ EPA and/or PWT was present for lime and fertilizer spreader calibrations.

✓ Lime was spread across the remediation area at the calculated field lime application rate using a calibrated spreader (unadjusted application rate of 44 tons lime / acre) in 12 inch remediation areas.

✓ Fertilizer applied had a nitrogen:phosphorous:potassium (N:P:K) ratio of 0:45:0. **(Attach copy of fertilizer certification)**

✓ Fertilizer was spread across the remediation area at the specified field fertilizer application rate using a calibrated spreader. Unadjusted rate is 70 pounds of P2O5 per 1,000 tons of soil or 306 lbs of 0:45:0 fertilizer / acre in 12" till areas.

✓ Lime and fertilizer were not applied to any areas with standing water, that was cemented, consolidated, caked, or frozen.

✓ Lime and fertilizer were not applied just before or during significant rain events.

✓ Lime and fertilizer were not spread under windy conditions where wind is sufficient to blow lime and fertilizer off the ground surface before they can be tilled.

Tilling of Lime and Fertilizer

✓ Lime and fertilizer were incorporated into the soil by tilling as soon as possible after spreading, and always by the end of the same day that the lime or fertilizer was spread.

✓ Lime and fertilizer were tilled into the soil using a minimum of 3 passes unless the Subcontractor demonstrated that the proposed equipment was able to meet the mixing standards in fewer passes. Successive passes crossed the previous pass at a 90 degree angle.

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: Smith 4

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	Acid Fizz Full Depth?
331	8.0	8.0	8.0	0%	Y
336	8.0	8.0	8.0	0%	Y

Name/Signature: [signature]

Date: 10-03-08

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Fluvial Deposit/Irrigated Meadows Polygon: **Paste pH Record** SMITH 4

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
333	-	10.0	10.8	7.4
334	-	10.1	10.1	7.5
SMITH 4 331	-	10.0	10.2	7.3 *
326	-	10.1	10.0	7.4
327	-	10.2	10.2	7.5
SMITH 4 330	-	10.5	10.8	7.3 *

Name/Signature: [signature] **Date:** 10-03-08

Activity Tracking Form
Irrigated Meadows
Spread & Incorporate Lime and Fertilizer in 12" areas

Irrigated Meadow Polygon Name/ID: SMITH 4

✓ Lime and fertilizer were spread and thoroughly incorporated to the full design depth with an acceptable remediation depth tolerance for 12-inch till areas of 10 inches to 14 inches. To verify this, test pits were excavated and locations surveyed at a rate of: **(check one)**

_____ 4 / acre (at beginning of project)

✓ 1 / acre (after effectiveness proven & with EPA approval)

_____ 1 / 5 acres (with EPA approval)

✓ PWT and/or EPA were present during all Subcontractor remediation depth surveys and conducted visual and field pH testing to evaluate effectiveness of mixing **(Attach pH test results)**

Quantity of Lime Applied: 41.7 tons + 78.7 = 120.4 tons

Quantity of Fertilizer Applied: 400 lbs

Quantity of Work Estimated in Proposal: _____

Quantity of Work Performed: 1.25 acres

Survey Data/Date: 08-15-08

Note: Attach copies of daily calibration records, fertilizer certs, pH test results and survey data

Signature of Contractor _____ Date 10-08-08

Signature of Subcontractor _____ Date 10-08-08

MOISTURE CONTENT

- Tare Container
- Weigh sample. Record wet sample weight.
- Dry sample until sample appears dry, minimum of 1 hour on hotplate or in oven
- Weigh sample. Record dry sample weight
- Calculate % Moisture = (Wet weight – Dry weight)/Wet Weight

Moisture Content Record for Lime/Compost (circle one)

Date	Wet Weight (g)	Dry Weight (g)	Water Weight (g)	% Moisture
	107.9	70.5	37.4	34.7
	105.1	70.8	34.3	34.5
	123.0	88.9	34.1	27.7
	91.6	66.8	24.8	27.1

Name/Signature: _____ **Date:** _____

PACIFIC WESTERN TECHNOLOGIES, LTD.

10-03-08

Compost Bulk Density
Field Pile Near Staging

Trial 1

Compost + Bucket 36.0 lbs

Tare Wt. Bucket 2.5 lbs

Net Wt. Compost: 33.5 lbs

Trial 2

Compost + Bucket 36.0 lbs

Tare Wt Bucket 2.5 lbs

Net wt. Compost 33.5 lbs

Avg. 33.5 lbs

$$\frac{33.5 \text{ lbs}}{1 \text{ bucket}} \times \frac{40 \text{ buckets}}{\text{yd}^3} = 1340 \text{ lbs}/\text{yd}^3$$

AMD
10-03-08

Compost Application Rate Calculation Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: **Smith 4**

POLYGON CHARACTERISTICS

Target % Organic Carbon (1.5% for T-6, 2.5% for T-12)	2.50%	%
Treatment Depth	12	inches
Treatment Area	1.288	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon			29.50%	%
Percent Moisture	(from 10-3-08 test on Field Pile)		24.25%	%
Wet Bulk Density	0.795 grams/cc	=	0.670	tons/cy
			(from 10-3-08 test on Field Pile)	

CALCULATE COMPOST APPLICATION RATE

Compost = $\frac{\text{Target \% OC * depth * 1000 tons/acre/6"}}{\text{Compost \% OC * (1- \%Moisture/100)}}$ $= \frac{2.5 * 12 * \frac{1000}{6}}{29.5 * (1 - \frac{24.25}{100})} = \frac{5000}{22.35} = 223.75$

Compost Rate =	223.75 tons/acre ✓	=	288.19 tons total
Compost Rate =	333.96 cubic yards/acre	=	430.14 cy total

Signature: _____

Date: 10-06-08

Signature: _____

Date: 10-3-08

Compost Application Rate Calculation Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: **Smith 4**

POLYGON CHARACTERISTICS

Target % Organic Carbon (1.5% for T-6, 2.5% for T-12)	2.50% %
Treatment Depth	12 inches
Treatment Area	1.288 acres

COMPOST CHARACTERISTICS

Percent Organic Carbon			29.50%	%
Percent Moisture	(from 10-3-08 test on Field Pile)		24.25%	%
Wet Bulk Density	0.795 grams/cc	=	0.670	tons/cy
			(from 10-3-08 test on Field Pile)	

CALCULATE COMPOST APPLICATION RATE

Compost = Target % OC * depth * 1000 tons/acre/6" = 2.5 × 12 × 1000/6 = 5000
Compost % OC * (1- %Moisture/100) = 29.5 × (1 − 24.25/100) = 22.35
= 223.175

Compost Rate =	223.75 tons/acre ✓	=	288.19 tons total
Compost Rate =	333.96 cubic yards/acre	=	430.14 cy total

Signature: _____

Date: 10-08-08

Signature: _____

Date: 10/7/08

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in yd^3/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.
- Repeat.

Compost Spreader Calibration Record

Date: 10-14-08 Time: 14:35

Irrigated Meadow / Fluvial Deposit Polygon ID: SMITH 4

Design Application Rate: 344 (yd^3/acre)

Calibration Data for one load of compost:

	Test Run 1	Test Run 2	Test 3 Average	Test 4
Compost Quantity (yd^3)	6.50	6.50	6.50	6.50
Compost was spread over (ft^2) 14'x72	1008	17'x70' 1190	17'x105 1785	17'x102' 1734
Calibration area (acres)	0.023	0.027	0.041	0.040
Calibrated Application Rate (yd^3/acre)	282	241	158.5	162.5
			x 2 passes = 317 yd/acre	x 2 passes = 325 yd³/acre

160.5 Avg
x 2 = 321

Quality Control Data for Field Application Verification:

(A) Design Application Rate: 334 (yd^3/acre)

(B) Average Calibrated Application Rate: ~~321~~ 160.5 (yd^3/acre)

Passes to be Applied: ≈2 passes (= A/B)

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in yd^3/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.
- Repeat.

Compost Spreader Calibration Record

Date: 10-15-08 Time: Smith (4) and Smith 3

Irrigated Meadow / Fluvial Deposit Polygon ID: 09:10

Design Application Rate: 334 (yd^3/acre)

Calibration Data for one load of compost:

	Test Run 1	Test Run 2	Average
Compost Quantity (yd^3)	6.50	6.50	
Compost was spread over (ft^2) 18' x 100	1800	17' x 110' 1870	
Calibration area (acres)	0.041	0.043	
Calibrated Application Rate (yd^3/acre)	158.5	151.2	309.7/2 = 154.9

Quality Control Data for Field Application Verification:

(A) Design Application Rate: 334 (yd^3/acre)

(B) Average Calibrated Application Rate: 309.7 (yd^3/acre)

Passes to be Applied: ~ 2 passes (= A/B)

Print / Sign Name: Clay E. Cornbrink / Clay E. Cornbrink
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

BROADCAST SEEDED CALIBRATION

- Place a known weight into the spreader hopper.
- Follow the operations manual to set the equipment to meet the design field application rate (e.g., spreader opening, travel speed, RPMs, etc.)
- Make one pass dispersing the seed until the contents of the spreader are emptied.
- Measure the area over which the seed was applied
- Divide the weight of material applied by the total area it was applied to, convert to lbs/acre, and compare to the design field application rate.
- An acceptable test will be within 10% of the required rate.

Broadcast Seeder Calibration Record

Small Seed w/ Rice Hulls
same settings as Smith 6 11-03-08

Date: 11-04-08 Time: 15:00

Irrigated Meadow / Fluvial Deposit Polygon ID: Smith 3, 4, 5

Seed Type (Circle One): (Smith) / Seppi / BLM / FD / Wetlands / Other: _____

Design Field Application Rate: 4.26 lbs/acre (± 10% range = _____)

160 grams = .354 lbs

Field Calibration Data:

Dimensions over which seed was spread: 8 feet x 460 feet

Total Calibration Area: 3680 (ft^2) * 1 acre / 43560 ft^2 = 0.084 acres

Calibrated Application Rate: 4.21 (lbs/acre)

* Note: Applied 4 times design application as per S. Jennings

Second Quality Control Check for Field Application Rate Verification:

Area of Polygon: 1.29 (acres) Smith 3 (4) and

Total Weight to be Applied: 18 and 22 (lbs)

Print / Sign Name: Clay E. Comstock / Clay E. Comstock
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

Arkansas Valley Seed

Supplying QUALITY Seed With INTEGRITY Since 1945

PRELIMINARY INVOICE

Limitation of Warranty and Finance Charge Agreement are part of the terms and conditions of this sale. See back of this invoice.

www.avseeds.com
rabbitears@seedsolutions.com

Sale Number
Date 10/7/08
Customer
Terms
Salesman #0
Order #0
Invoice #

Sold To: FRONTIER ENVIRONMENTAL
5171 WARD ROAD UNIT 1
WHEAT RIDGE CO 80033

Ship To: FRONTIER ENVIRONMENTAL
5171 WARD ROAD UNIT 1
WHEAT RIDGE CO 80033

Tax ID:
Tax Code:

Request Date	Customer P.O.	F.O.B.	Ship : CLAY 303-423-7941
10/07/08			Inst : BRENT 303-210-3030

Description	Lot Number	Quantity Shipped	UM	Price	Extended Price	Tax
FRONTIER LOW-ELEVATION SEED MIX	2137474	750.0000	LB	2.5800	1,935.00	N
Native Grass Mix-Bulk						
13.50 #LS#/ACRE @ $35.00/ACRE X 56.3 ACRES						
TAG, DITCH RANCH						
FRONTIER MID-ELEVATION SEED MIX	2137593	240.0000	LB	1.5063	361.50	N
Native Grass Mix-Bulk						
4.26 #LS#/ACRE @ $5.00/ACRE X 56.3 ACRES						
TAG 21, DITCH RANCH						
"SOIL AMEND" RANCH						

998 lbs

delivered 10-7-08

Small Seeds:
Smith 7, 6, 3, 4, 5

Large: ~~All collected~~ And
Smith 2, 3, 4, 5,
6, 7

Sales Tax Total $

Net Due Date 10/31/08 Tax Rate 5.630% Net $

Arkansas Valley Seed
1333 Hwy. 66
Longmont, CO 80504
877).907-3337
(303) 535-4522 Fax

Arkansas Valley Seed
4625 Colorado Blvd.
Denver, CO 80216
(877) 957-3337
(303) 320-7516 Fax

Arkansas Valley Seed
12th & Santa Fe Tracks
Rocky Ford, CO 81067
(719) 254-7469
(719) 254-4115 Fax

Colorado Seed
195 N. Washington
Monte Vista, CO 81144
(719) 852-3505
(719) 852-4942 Fax

Wilbers Seed
809 N. Broadway
Miller, SD 57362
(800) 952-2233
(605) 853-2620 Fax

Seeder Calibration Form

Calibration Form Instructions

1) Enter the Polygon ID, Polygon acreage, Calibration Date, Target seed rate(s), %PLS in each seed mix, and % seed in each each mix
2) Perform seeder calibration per the manufacturers' instructions 3 times and enter the total weight of bulk seed mix in grams collected for each seed box
3) For each individual calibration run, verify that the achieved rate is within ±20 % of the 1/2 Target Rate
4) After the 3rd calibration run, verify that the 3 Run Average rate is within ±10% of the 1/2 Target Rate

NOTE: The BLUE text shows the "calculated values" based on the entered data

Also used for Smith 4 11-04-08 MD

Polygon ID Smith 6 **Acres:** 15.511 **Date:** 11/4/08

NA Seed Mix 2 was not used in Drill Seeder for this application MD 11-04-08

	Seed Mix 1		Seed Mix 2	
Target Rate	11.50	lbs PLS / acre	1.25	lbs PLS / acre
% PLS in seed mix	86%		88%	
Dilution Factor	100%	(% seed)	33%	(% seed)
Target Application Rate	13.37	bulk pounds / acre	4.26	bulk pounds / acre
	207.4	Total bulk pounds	66.1	total bulk pounds
1/2 Target Rate (2 passes)	6.69	bulk pounds / acre	2.13	bulk pounds / acre
	103.7	1/2 of total bulk pounds	33.0	1/2 of total bulk pounds
Test Run 1	10.70	total grams in 3 bags	0.00	total grams in 3 bags
	5.35	bulk lbs/acre	0.00	bulk lbs/acre
Test Run 2	14.30	total grams in 3 bags		total grams in 3 bags
	7.15	bulk lbs/acre	0.00	bulk lbs/acre
Test Run 3	13.30	total grams in 3 bags		total grams in 3 bags
	6.65	bulk lbs/acre	0.00	bulk lbs/acre
3 Run Average	12.77	total grams in 3 bags	0.00	total grams in 3 bags
	6.38	bulk lbs/acre	0.00	bulk lbs/acre
For QC Checks:				
+20% of 1/2 Target Rate	8.02	bulk pounds / acre	2.56	bulk pounds / acre
-20% of 1/2 Target Rate	5.35	bulk pounds / acre	1.70	bulk pounds / acre
+10% of 1/2 Target Rate	7.35	lbs seed mix / acre	2.34	lbs seed mix / acre
-10% of 1/2 Target Rate	6.02	lbs seed mix / acre	1.92	lbs seed mix / acre

PWT Signature: _____

Frontier Signature: _____

Activity Tracking Form
Irrigated Meadows
Spread & Incorporate Organic Material in 12" areas

Irrigated Meadow Polygon Name/ID: SMITH 4

Activity Start Date: 10-14-08

Activity End Date: 10-15-08

Activities Verified As Completed (indicate NA if appropriate)

✓ Amendments have been applied at a field application rate calculated by EPA and as directed by the PWT. Calculated application rate was 223.75 tons/acre. or 334 yd³/acre

✓ Organic amendment has been spread evenly across the remediation area using a calibrated agricultural manure spreader or other accepted equipment. **(Attach calibration records)**

✓ Organic amendment has been applied uniformly. Rutting and compaction of the surface was minimized during application of organic amendment.

✓ Organic material was not applied to any area with standing water or areas that were frozen. Organic material was not applied before or during any significant rain events.

✓ Organic material was not spread under windy conditions where wind was sufficient to blow organic material off the ground surface before it can be tilled.

✓ Organic matter has been tilled to the full remediation depth using a minimum of 2 passes unless the Subcontractor demonstrated that the proposed equipment has met the mixing standards in fewer passes and received approval of the EPA. The second tillage pass crosses the initial pass at a 90 degree angle. (Narrow polygon, not 90°, however tillage was sufficient)

✓ Organic material has been tilled to a tolerance for 12-inch till areas of 10 inches to 14 inches. To verify this, test pits were surveyed at a rate of: **(check one)** PWT hand-excavated test pits randomly after spreading to verify uniform thickness.

_____ 4 / acre (at beginning of project)

_____ 1 / acre (after effectiveness proven & with EPA approval)

_____ 1 / 5 acres (with EPA approval)

✓ PWT and/or EPA was present during all Subcontractor surveys to verify remediation depth.

✓ Contractor \ EPA has conducted field testing, monitored and verified remediation depth, and has evaluated the effectiveness of mixing. Areas with large unremediated clumps of soil or large areas of unmixed soil amendments have been re-tilled.

Quantity of Organic Material Applied: 446 CY

Quantity of Work Estimated in Proposal: 1,17 acres

Quantity of Work Performed: 1,29 acres

Survey Data/Date: 09-16-08

Activity Tracking Form

Irrigated Meadows

Spread & Incorporate Organic Material in 12" areas

Irrigated Meadow Polygon Name/ID: SMITH 4

Note: Attach copies of the daily calibration records and survey data to this form

Signature of Contractor — Date: 10-16-08

Signature of Subcontractor — Date: 10-16-08

COLORADO DEPARTMENT OF AGRICULTURE
DIVISION OF PLANT INDUSTRY
700 Kipling Street, Suite 4000
Lakewood, Colorado 80215-8000
(303) 239-4149

TRANSIT CERTIFICATE
WEED FREE FORAGE CROP CERTIFICATION ACT 35-27.5

TO WHO IT MAY CONCERN:

The forage crop, to which this Transit Certificate relates, has been officially certified according to the Colorado Weed Free Forage Crop Certification Act 35-27.5. Pursuant to those standards, the information below has been included in this Transit Certificate concerning said certification. The Certificate of Inspection relating to said forage crop is on file at the:

Colorado Department of Agriculture
Division of Plant Industry
700 Kipling Street, Suite 4000
Lakewood, Colorado 80215-8000
Telephone: (303) 239-4149
FAX: (303) 239-4177

Smith 2,3,(4) 5

PLEASE PRINT IN INK

Murray Farms — J B Murray
Grower's Name — Grower's Signature

Adams
County of Origin

Identify Forage Crop Type Wheat

635 — 10/27/08
Bales Sold — Date of Sale

IDENTIFICATION
INSPECTOR'S INITIALS DHF
GROWER'S INITIALS JBMm.
FIELD NUMBER F-8
DATE _____

(Identification found in upper right corner of Certificate of Inspection: Form DPI-WF-05)

FORAGE CERTIFIED ACCORDING TO THE REGIONAL WEED FREE FORAGE STANDARDS

NOTE: Forage certified under the Colorado Weed Free Forage Crop Certification Act shall be baled with at least one strand of **blue and orange** colored twine or **galvanized** wire.

GROWER MUST ISSUE WHITE COPY TO PURCHASER; MAIL PINK COPY TO DEPARTMENT OF AGRICULTURE; KEEP GREEN COPY FOR FILE FOR EACH SALE.

Activity Tracking Form
Irrigated Meadows
Seedbed Preparation and Seeding

Irrigated Meadow Polygon Name/ID: Smith 4

Activity Start Date: 11-04-08

Activity End Date: 11-04-08

Activities Verified As Completed (indicate NA if appropriate)

✓ EPA and/or PWT has collected ~~and analyzed~~ soil samples to verify performance standards have been met. Frequency is 1 per 5 acres.

Preparation of the Seedbed

✓ Seedbed has been smoothed to the extent practical for effective seeding.

✓ Removed or disaggregated clods greater than 4 inches in diameter from the top 6 inches of soil.

✓ Removed rocks and cobbles greater than 4 inches in diameter from the surface.

✓ The surface has been compacted by equipment that produces a uniform rough textured surface. The seedbed for the Irrigated Meadows is firm allowing the heel of a boot to penetrate approximately 0.5 to 1 inch.

✓ Plowed or disked areas compacted by vehicle traffic to reduce compaction.

✓ There were no erosional features present prior to seeding.

NA Loosened areas compacted by weather or colonized by weeds resulting from time gaps between remediation and seeding, as necessary.

Seed Application

NA Lab samples show acid-base account and TOC test results in acceptable ranges before seeding.
Post-Remediation Sample not analyzed prior to seeding.

✓ Seeding done outside the month of October was approved by EPA.

✓ The seedbed was evaluated by EPA and/or PWT immediately prior to seeding to ensure seedbed requirements were achieved and that the seedbed has not degraded since amendments were applied and tilled.

✓ Used the appropriate seed mixes for the Smith, Seppi, and BLM Irrigated Meadow sites identified in Tables IM-2, IM-3, and IM-4. Deviations approved by EPA.

✓ Applied seed using calibrated equipment at rates shown in Tables IM-2, IM-3, or IM-4. Rates are in lbs PLS / acre. The seed has been applied within 10 percent (by weight) of the rate specified.

Seed mix used: Small: 4 X 1.25 #PLS/ACRE Large: 11.50 #PLS/ACRE Application Rate: _____ (# PLS / acre)

✓ Seed was stored properly and not degraded by water or other contaminants before use.

Activity Tracking Form
Irrigated Meadows
Seedbed Preparation and Seeding

Irrigated Meadow Polygon Name/ID: Smith 4

✓ Seed was not applied to any area with standing water or areas that are frozen. Seed was not applied before or during any significant rain events or during wet conditions when seed equipment could cause ruts in the ground or prevent good seed placement.

✓ Seed was not spread under windy conditions where wind was sufficient to blow seed off the ground surface.

✓ Wherever possible, areas were drill seeded. Seed was applied to the appropriate depth of 0.25 to 0.5 inches. Drill seeding was applied in 2 applications, each at half the seeding rate specified in Tables IM-2, IM-3, and IM-4. The direction of the second application was perpendicular to the first application. Seed mix may have been diluted with rice hulls or other Contractor-accepted material, if necessary to achieve the lower seeding rate.

Large seed was drilled in 2 Separate Applications. Small seed was broadcast prior to drilling. Small seed applied @ 4 times design rate as per J. Dennings. JMW

✓ For each acre seeded, the hopper and applicator tubes were checked for clogged tubes and to verify even application rates. checked periodically and applied full amount designed.

Quantity of Seed Applied: Large: 17.2 lbs. total Small: 22 lbs. Total

Quantity of Work Estimated in Proposal: _____

Quantity of Work Performed: 1.28 acres

Survey Data/Date: _____

Note: Attach copies of the daily calibration records, seed certification forms, and survey data to this form. Also, note sample numbers for acid-base account and TOC lab tests.

[signature] — Signature of Contractor — Date: 11-05-08

[signature] — Signature of Subcontractor — Date: 11-05-08

Note: Entire Treatment Area Re-Seeded Using Drill Seeder October 2009

Activity Tracking Form
Irrigated Meadows
Mulch Application

Irrigated Meadow Polygon Name/ID: Smith 4

Activity Start Date: 10-29-08

Activity End Date: 10-29-08

Activities Verified As Completed (indicate NA if appropriate)

✓ Mulch certified as weed free **(attached Certification documentation)**

✓ Mulch was stored properly and not degraded by water or other contaminants before use.

✓ Mulch has been applied immediately after seeding unless the nature of the mulch required that it must be incorporated into the soil; in that case the mulch has been applied before seeding. Mulch applied before seeding and after seedbed prep as per S. Jennings AMD

N/A If wood mulch was applied, the application rate was 10 to 12 tons per acre, or 50 to 60 cubic yards per acre using a blower, flail spreader, or other means that provided even distribution across the remediated area. Depending on the nature of the wood mulch, it may have been left as a surface application or may have been crimped or lightly disked into the top 2 inches to prevent dispersion **(Circle method used)**.

✓ If straw or native hay mulch was applied, the application rate was 2,000 pounds per acre using equipment specifically designed for application of mulch at a uniform rate to produce a mat covering the seed. Straw or native hay mulch was crimped using crimping equipment with round, notched blades approximately ¼-inch thick by 18 inches in diameter spaced 8 inches apart. The crimper was equipped with disc scrapers and had sufficient weight to force the vegetative mulch to a minimum depth of 3-inches into the soil. Mulch was crimped within 24 hours of application.

✓ Stormwater, sediment, and erosion control measures remained in place throughout implementation of the remedy and has been maintained in good condition during and after mulch placement to prevent surface water run-on and run-off that may damage the remediated area.

Quantity of Mulch Applied: ~~1.29 acres~~ AMD 65 Bales ~~2~~ 3,205 Bales

Quantity of Work Estimated in Proposal:

Quantity of Work Performed: 1.29 acres

Survey Data/Date: 09-18-08

Note: Attach copies of the daily calibration records, weed free certification and survey data to this form

Signature of Contractor — Date: 10-31-08

Signature of Subcontractor — Date: 10-31-08

2008

Kind: TABLE IM-3/SMALL SEED MIX
Lot: 2137593

Kind & Variety:	Pure%	Germ%	Origin:
TIMOTHY, CLIMAX	39.55	90	CN
ALSIKE CLOVER	22.96	93	MT
PRAIRIE JUNEGRASS	16.18	88	WA
CANADA BLUEGRASS, REUBENS	11.85	90	WA
REDTOP	7.66	93	WA

Crop: .10% Inert: 1.70% Weed: .01% Net Wt: 5# (4.44 PLS#) 3.5 ACRES

Noxious Weed: None Found Test Date: 6/08

REMARKS: FRONTIER ENVIRONMENTAL
JOB: SMITH RANCH
ARKANSAS VALLEY SEED, 4333 HWY 66, LONGMONT CO 80504

Kind: TABLE IM-3/LARGE SEED MIX
Lot: 2137474

Kind & Variety:	Pure%	Germ%	Origin:
MEADOW BROME, FLEET	31.74	94	CAN
SLENDER W/G, SAN LUIS	21.68	86	CAN
BROMEGRASS, MANCHAR	19.38	77	ID
WESTERN W/G, ROSANNA	16.58	90	WA
RED FESCUE, VNS	7.69	97	MT

Crop: .27% Inert: 2.63% Weed: .03% Net Wt: 50# (42.9 PLS#) 3.73 ACRES

Noxious Weed: None Found Test Date: 6/08

REMARKS: FRONTIER ENVIRONMENTAL
JOB: SMITH RANCH
ARKANSAS VALLEY SEED, 4333 HWY 66, LONGMONT CO 80504

Kind: SMITH SEED MIX SMALL
Lot: 2148517

Reseed Smith 3,4,5 Smith 246

Kind & Variety:	Pure%	Germ%	Origin:
CLIMAX TIMOTHY	38.16	95	CAN
ALSIKE CLOVER	23.35	93	MT
PRAIRIE JUNEGRASS	15.74	92	WA
CANADA BLUEGRASS, REUBENS	11.80	92	WA
REDTOP	7.94	91	CAN

Crop: .30% Inert: 2.54% Weed: .18% Net Wt: 18 #(15.625PLS#)12.5AC

Noxious Weed: None Found Test Date: 5/09

Remarks: FRONTIER ENVIRONMENTAL

Winfield Solutions PO Box 64589 St Paul, MN 55164

Re-Seeded Entire Treatment Area October 2009

Kind: SMITH SEED MIX LARGE
Lot: 2148521

Smith Reseed 3,4,5

Kind & Variety:	Pure%	Germ%	Origin:
MEADOW BROME, FLEET	33.17	91	CAN
SLENDER W/G, SAND LUIS	20.94	95	WA
WESTERN W/G, ROSANNA	17.69	90	SD
SMOOTH BROMEGRASS, MANCHAR	17.50	91	WA
RED FESCUE	8.47	94	MT

Also Reseed Smith 246

Crop: .12% Inert: 2.05 % Weed: .07% Net Wt: 39.5 #(35.9375PLS#/AC) 3.125AC

Noxious Weed: None Found Test Date: 5/09

Remarks: FRONTIER ENVIRONMENTAL

Winfield Solutions PO Box 64589 St Paul, MN 55164

Seeder Calibration Form

Calibration Form Instructions

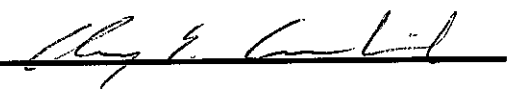
1) Enter the Polygon ID, Polygon acreage, Calibration Date, Target seed rate(s), %PLS in each seed mix, and % seed in each each mix
2) Perform seeder calibration per the manufacturers' instructions 3 times and enter the total weight of bulk seed mix in grams collected for each seed box
3) For each individual calibration run, verify that the achieved rate is within ±20 % of the 1/2 Target Rate
4) After the 3rd calibration run, verify that the 3 Run Average rate is within ±10% of the 1/2 Target Rate

NOTE: The BLUE text shows the "calculated values" based on the entered data

Polygon ID Smith 4 reseed **Acres:** 1.288 **Date:** 10/21/09

	Seed Mix 1		Seed Mix 2	
Target Rate	10.50	lbs PLS / acre	2.25	lbs PLS / acre
% PLS in seed mix	91%		87%	
Dilution Factor	100%	(% seed)	100%	(% seed)
Target Application Rate	11.54	bulk pounds / acre	2.59	bulk pounds / acre
	14.9	Total bulk pounds	3.3	total bulk pounds
1/2 Target Rate (2 passes)	5.77	bulk pounds / acre	1.29	bulk pounds / acre
	7.4	1/2 of total bulk pounds	1.7	1/2 of total bulk pounds
Test Run 1	11.50	total grams in 3 bags	2.50	total grams in 3 bags
	5.75	bulk lbs/acre	1.25	bulk lbs/acre
Test Run 2	11.50	total grams in 3 bags		total grams in 3 bags
	5.75	bulk lbs/acre	0.00	bulk lbs/acre
Test Run 3	11.40	total grams in 3 bags		total grams in 3 bags
	5.70	bulk lbs/acre	0.00	bulk lbs/acre
3 Run Average	11.47	total grams in 3 bags	0.83	total grams in 3 bags
	5.73	bulk lbs/acre	0.42	bulk lbs/acre
For QC Checks:				
+20% of 1/2 Target Rate	6.92	bulk pounds / acre	1.55	bulk pounds / acre
-20% of 1/2 Target Rate	4.62	bulk pounds / acre	1.03	bulk pounds / acre
+10% of 1/2 Target Rate	6.35	lbs seed mix / acre	1.42	lbs seed mix / acre
-10% of 1/2 Target Rate	5.19	lbs seed mix / acre	1.16	lbs seed mix / acre

PWT Signature:

Frontier Signature: 

Activity Tracking Form
Irrigated Meadows
Clear, Grub, Grade, Pre-Till

Irrigated Meadow Polygon Name/ID: Smith 5

Activity Start Date: 9/22/08

Activity End Date: 9/23/08

Activities Verified As Completed (indicate NA if appropriate)

✓ Completed pre-remediation site walk and final delineation of remediation boundaries.

✓ Survey points for post-treatment depth verification were identified and elevations documented by survey crew before any ground disturbance. Rates will vary from 4 per acre down to 1 per 5 acres depending on Subcontractor's demonstration of compliance with QC requirements for tillage depth. **(Attach or reference survey data)**

✓ EPA collected pre-remediation full remediation depth composite samples at a rate of ~ 1 per 5 acres and the sample locations were surveyed

NA Removed and disposed of existing trash or debris in accordance with Specification Section 01 74 16.

NA Cleared dead or decadent large woody vegetation if present and placed outside the remediation area in locations identified by the Contractor. Remaining grass and small woody vegetation tilled in place.

NA Locations, extent and width of secondary irrigation ditches to be removed have been surveyed.

NA Graded the remediation areas as necessary for effective remediation.

✓ Pre-tilled the remediation areas to a minimum depth of 6 inches.

✓ If rocks were removed from the remediation area, they were staged or disposed of as directed by the Contractor.

Quantity of Work Estimated in Proposal: 1.30 acres

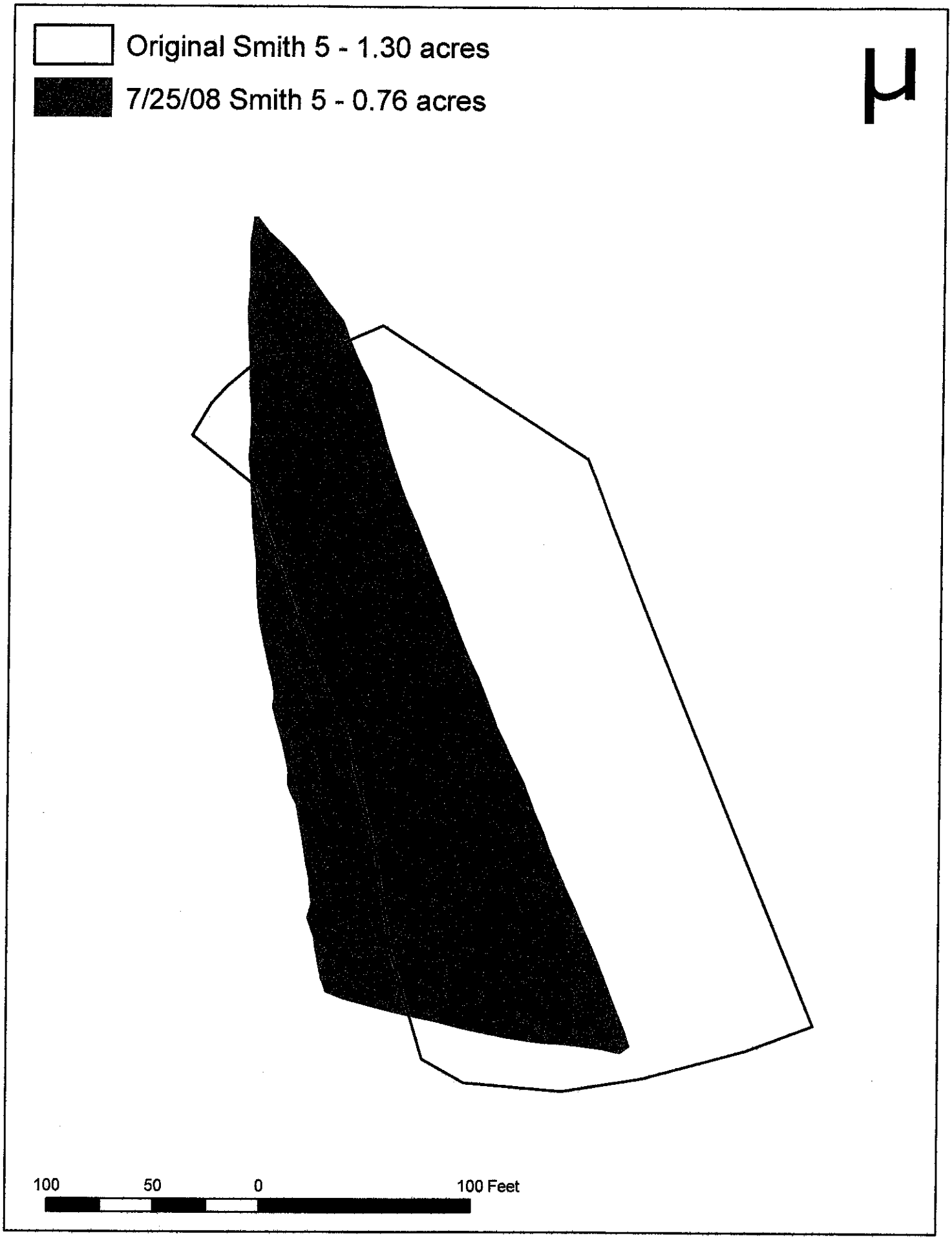
Quantity of Work Performed: 0.77 acres

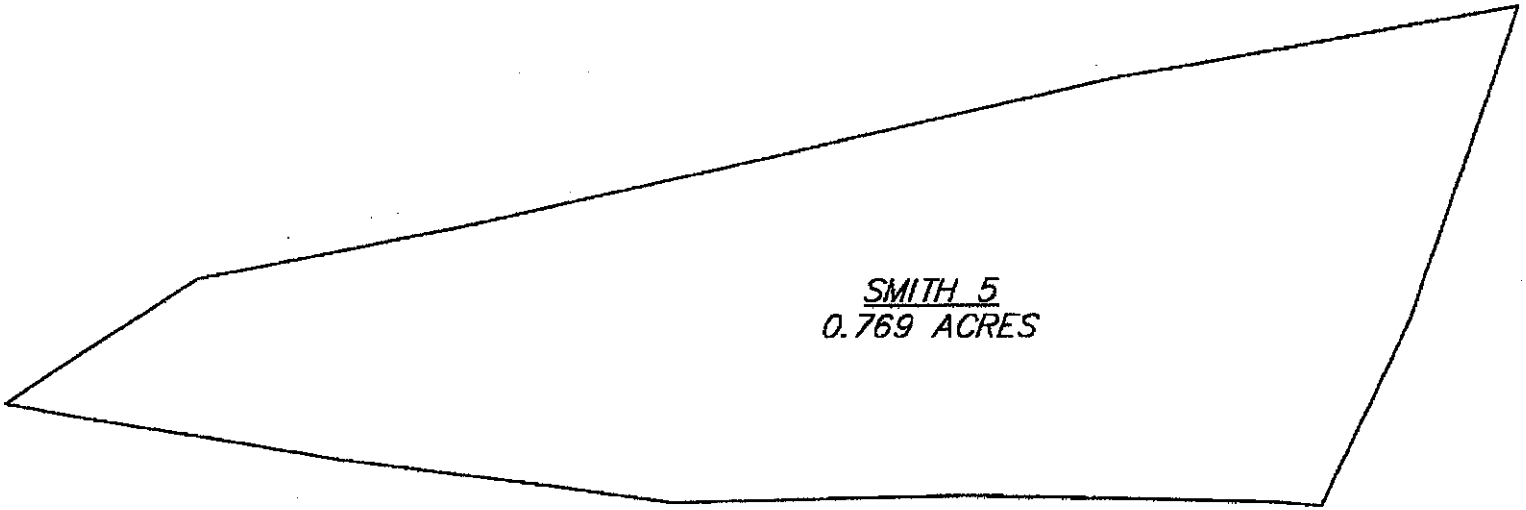
Survey Data/Date: 8/29/08 (Survey issue date)

Note: Attach copies of the survey data to this form or reference location of supporting survey data

Signature of Contractor [signature] Date 10-08-08

Signature of Subcontractor [signature] Date 10-08-08


Original Smith 5 - 1.30 acres
7/25/08 Smith 5 - 0.76 acres
μ
100
50
0
100 Feet



SURVEYOR'S CERTIFICATE

I, Duane Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 9-2-06 26526 L.S. AND P.L.S.

Duane Fehringer P.E. & P.L.S. 26526

Inter-Mountain Engineering Ltd.

40601 US HWY 6&24, STE 203 BOX 978 AVON, CO 81620 PH: (970)949-5972
6181 CONTINENTAL DIVIDE RD, SUITE 107 LITTLETON, CO 80127 PH: (303)948-4220

CLIENT: FRONTIER ENVIRONMENTAL INC.

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SMITH 5

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=60'
DATE DRAWN:	8-29-06
PROJECT NO.	06-0032
REVISIONS:	

J:\projects\06032\Dwg\OU-11 Area.dgn

MOISTURE CONTENT

- Tare Container
- Weigh sample. Record wet sample weight.
- Dry sample until sample appears dry, minimum of 1 hour on hotplate or in oven
- Weigh sample. Record dry sample weight
- Calculate % Moisture = (Wet weight – Dry weight)/Wet Weight

09-23-08

Screened Lime

Moisture Content Record for Lime/Compost (circle one)

	Date	Wet Weight (g)	Dry Weight (g)	Water Weight (g)	% Moisture	
1	9-23-08	Tare 2.3 17.4-2.3 = 15.1	13.0-2.3 = 10.7	4.4	29.1	ST-8
2	9-23-08	2.3 18.3-2.3 = 16g	14.0-2.3 = 11.7	4.3	26.9	ST-8
3	9-23-08	2.3 16.7-2.3 = 14.4g	12.4-2.3 = 10.1	4.3	29.9	ST-8
					Avg. =	28.6
					Copied to Sm 2, 3, 4, & 5	

Name/Signature: [signature]

Date: 09-23-08

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: Smith 2 & Smith 5

Date: 09-22-08 Time: 08:30

Field Application Rate: 41.13 tons/acre (1.89 psf) (psf = tons/acre*0.0459)

Total Tarp Dimensions: 27 (sq. ft.)

Tolerance
1.84 + 10% → 2.08
1.89 − 10% → 1.72

Test 1 Material Weight: 52.5 (lbs.) Rate: 1.94 psf
24.0 + 11.0 + 5.0 − 7.5 tare

Test 2 Material Weight: 55.5 (lbs.) Rate: 2.06 psf
26.0 + 24.0 + 13.0 − 7.5 tare

Test 3 Material Weight: _____ (lbs.) Rate: _____ psf

Test 4 Material Weight: ~~_____~~ (lbs.) Rate: _____ psf
09-22-08

Test 5 Material Weight: _____ (lbs.) Rate: _____ psf

Print / Sign Name: C. Combrink / [signature]
Frontier Representative

Print / Sign Name: Josh A Dalbello / [signature]
PWT / EPA Representative

Note: Calibration frequency changed to 1x/week on 9/15/08.
Used this for Smith 5 also.

FERTILIZER CALIBRATION

- Place a known weight (e.g., one 50-lb bag) into the spreader hopper.
- Follow the operations manual to set the equipment to meet the design field application rate (e.g., spreader opening, travel speed, RPMs, etc.)
- Make one pass dispersing the fertilizer until the contents of the spreader are emptied.
- Measure the area over which the fertilizer was applied
- Divide the weight of material applied by the total area it was applied to, convert to lbs/acre, and compare to the design field application rate.
- An acceptable test will be within 10% of the required rate.

Fertilizer Calibration Record

Date: 09-29-08 Time: 10:30

Irrigated Meadow / Fluvial Deposit Polygon ID: Smith 5

Fertilizer Type: 0 : 45 : 0 (N:P:K)

Design Field Application Rate: 153 lbs/acre (± 10% range = 139 to 168)

Tract 60 x 240

Calibration Data for one 50 pound bag of fertilizer:

Dimensions over which bag was spread: 60 feet x 255 feet

Total Calibration Area: 15,300 (ft^2) * 1 acre / 43560 ft^2 = 0.35 acres

Calibrated Application Rate: 142.8 (lbs/acre)

Quality Control Data for Field Application Verification:

Area of Polygon: 0.769 (acres)

Total Weight to be Applied: 117.6 (lbs)

# of 50 lb. Bags to be Applied: ~2.5 bags

Print / Sign Name: Chris Hofer
Frontier Representative

Print / Sign Name: John A. Rothwell
PWT / EPA Representative

SUPER - CROP

50 LBS. (22.7 kg) NET WT.

fertilizer

super phosphate

GUARANTEED ANALYSIS	
NITROGEN (N)	0%
AVAIL. PHOSPHORIC ACID (P_2O_5)	45%
SOLUBLE POTASH (K_2O)	0%
SULFUR (Combined) (S)	%
IRON (Fe)	%

AMERICAN PRIDE CO-OP

HENDERSON, COLORADO 80640

DIRECTIONS FOR USE:

GENERAL - Phosphate is one of the 3 major plant nutrients. Phosphate base fertilizers are used as a root and shoot stimulant for new lawn sites. Phosphates are generally highly water insoluble and therefore do not move very much through the soil. For best results, phosphates should be applied at the rate of 10-15 lbs. per 1000 square feet and mixed well in the top 6-8 inches of soil with a roto-tiller, disc, harrow, etc. This rate can be used for new lawn sites, in vegetable and flower gardens.

- High rates can be applied without injuring the plant.

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: SMITH 5

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	Acid Fizz Fuel Boom?
334	7.3	7.0	7.5	0%	Y
333	8.0	8.0	8.0	0%	Y

Name/Signature: [signature]

Date: 10-03-06

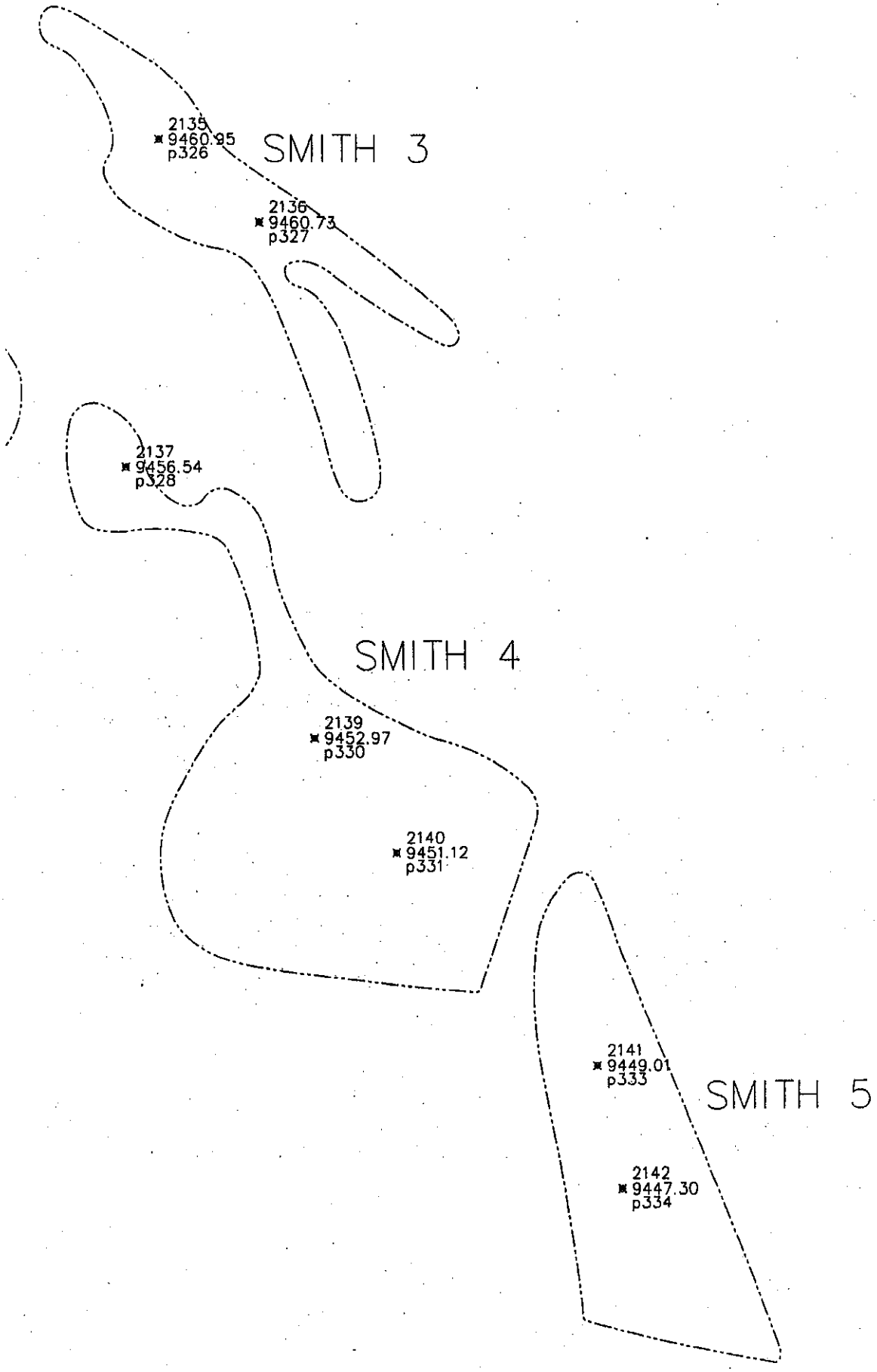
PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Fluvial Deposit/Irrigated Meadows Polygon: **Paste pH Record** SMITH 5

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
333	—	10.0	10.8	7.4
334	-	10.1	10.1	7.5
331	-	10.0	10.2	7.3
326	-	10.1	10.0	7.4
327	-	10.2	10.2	7.5
330	-	10.5	10.8	7.3

Name/Signature: [signature] **Date:** 10-04-18


2135
9460.95
p326
SMITH 3
2136
9460.73
p327
2137
9456.54
p328
SMITH 4
2139
9452.97
p330
2140
9451.12
p331
2141
9449.01
p333
SMITH 5
2142
9447.30
p334

Pre-Existing Grade Shots					Bottom of Post-Tillage Shots		
Smith 3							
326	1500356	2760137	9461.841	smith3-1	2135	1500356	2760137
327	1500295	2760210	9461.563	smith3-2	2136	1500294	2760210
Smith 4							
328	1500115	2760112	9456.973	smith4-1	2137	1500115	2760112
330	1499916	2760250	9453.957	smith4-2	2139	1499916	2760249
331	1499832	2760309	9452.083	smith4-3	2140	1499832	2760309
Smith 5							
333	1499674	2760457	9449.462	smith5-1	2141	1499674	2760457
334	1499586	2760475	9447.96	smith5-2	2142	1499585	2760475

	Delta Range		Acceptable Range (0.8-1.2)
9460.953 p326	0.888		
9460.733 p327	0.83		
			(0.8-1.2)
9456.539 p328	0.4342	x	0.4342
9452.975 p330	0.9823		
9451.117 p331	0.9663		
			(0.4-0.7)
9449.012 p333	0.4498		
9447.299 p334	0.6608		

Activity Tracking Form
Irrigated Meadows
Spread & Incorporate Lime and Fertilizer in 6" areas

Irrigated Meadow Polygon Name/ID: SM 1TH 5

Activity Start Date: 9/22/08

Activity End Date: 09-29-08

Activities Verified As Completed (indicate NA if appropriate)

Lime and Fertilizer Application

✓ EPA calculated field application rate based on material quality, rock content & depth

Lime rate = 41.3 tons/acre

Fertilizer rate = 153 pounds/acres

✓ EPA and/or PWT was present for lime and fertilizer spreader calibrations.

✓ Lime was spread across the remediation area at the calculated field lime application rate using a calibrated spreader (unadjusted application rate is 22 tons lime/ acre) in 6 inch remediation areas.

✓ Fertilizer applied had a nitrogen:phosphorous:potassium (N:P:K) ratio of 0:45:0. **(Attach copy of fertilizer certification)**

✓ Fertilizer was spread across the remediation area at the specified field fertilizer application rate using a calibrated spreader. Unadjusted rate is 70 pounds of P_2O_5 per 1,000 tons of soil or 153 lbs of 0:45:0 fertilizer/acre in 6" till areas

✓ Lime and fertilizer were not applied to any areas with standing water, that was cemented, consolidated, caked, or frozen.

✓ Lime and fertilizer were not applied just before or during significant rain events.

✓ Lime and fertilizer were not spread under windy conditions where wind is sufficient to blow lime and fertilizer off the ground surface before they can be tilled.

Tilling of Lime and Fertilizer

✓ Lime and fertilizer were incorporated into the soil by tilling as soon as possible after spreading, and always by the end of the same day that the lime or fertilizer was spread.

✓ Lime and fertilizer were tilled into the soil using a minimum of 3 passes unless the Subcontractor demonstrated that the proposed equipment was able to meet the mixing standards in fewer passes. Successive passes crossed the previous pass at a 90 degree angle.

Activity Tracking Form
Irrigated Meadows
Spread & Incorporate Lime and Fertilizer in 6" areas

Irrigated Meadow Polygon Name/ID: Smith 5

✓ Lime and fertilizer were spread and thoroughly incorporated to the full design depth with an acceptable remediation depth tolerance for 6-inch till areas of 5 inches to 8 inches. To verify this, test pits were excavated and locations surveyed at a rate of: **(check one)**

_____ 4 / acre (at beginning of project)

✓ 1 / acre (after effectiveness proven & with EPA approval) (minimum of 2)

_____ 1 / 5 acres (with EPA approval)

✓ PWT and/or EPA were present during all Subcontractor remediation depth surveys and conducted visual and field pH testing to evaluate effectiveness of mixing **(Attach pH test results)**

Quantity of Lime Applied: 32 tons

Quantity of Fertilizer Applied: 150 lbs.

Quantity of Work Estimated in Proposal: 1.30 acres

Quantity of Work Performed: 01769 acres (31.8 tons lime)

Survey Data/Date: 8-29-08

Note: Attach copies of daily calibration records, fertilizer certs, pH test results and survey data

John C. Hyde — 10-08-08
Signature of Contractor — Date

Clay E. Cole — 10-08-08
Signature of Subcontractor — Date

PACIFIC WESTERN TECHNOLOGIES, LTD.

10-03-08

Compost Bulk Density

Field Pile Max Stacking

Trial 1

Compost & Bucket 36.0 lbs

Tare Wt. Bucket 2.5 lbs

Net Wt. Compost: 33.5 lbs

Trial 2

Compost + Bucket [illegible]

Tare Wt Bucket [illegible]

Net wt. Compost 33.5 lbs

Avg. 33.5 lbs

$$\frac{33.5\ \text{lbs}}{1\ \text{bucket}} \times \frac{40\ \text{buckets}}{\text{YD}^3} = 1340\ \text{lbs}/\text{YD}^3$$

10-03-08

MOISTURE CONTENT

- Tare Container
- Weigh sample. Record wet sample weight.
- Dry sample until sample appears dry, minimum of 1 hour on hotplate or in oven
- Weigh sample. Record dry sample weight
- Calculate % Moisture = (Wet weight – Dry weight)/Wet Weight

Moisture Content Record for Lime/Compost (circle one)

Date	Wet Weight (g)	Dry Weight (g)	Water Weight (g)	% Moisture
	107.9	70.5	37.4	34.7
	108.1	70.8	37.3	34.5
	133.5	88.4	34.1	27.7
	91.6	66.8	24.8	27.1

Name/Signature: _____ **Date:** _____

Compost Application Rate Calculation Form

Irrigated Meadows

Applies to Smith 5

Irrigated Meadow Polygon Name/ID: **Smith 2**

POLYGON CHARACTERISTICS

Target % Organic Carbon (1.5% for T-6, 2.5% for T-12)	1.50% %
Treatment Depth	6 inches
Treatment Area	32.63 acres

COMPOST CHARACTERISTICS

Percent Organic Carbon			29.50%	%
Percent Moisture	(from 10-3-08 test on Field Pile)		24.25%	%
Wet Bulk Density	0.795 grams/cc	=	0.670	tons/cy
			(from 10-3-08 test on Field Pile)	

CALCULATE COMPOST APPLICATION RATE

Compost = Target % OC * depth * 1000 tons/acre/6" / Compost % OC * (1- %Moisture/100)

$= \frac{1.5 \times 6 \times \frac{1000}{6}}{29.5 \times (1 - \frac{24.25}{100})} = \frac{1500}{22.35} = 67.13$

Compost Rate =	67.13 tons/acre	=	2190.30 tons total
Compost Rate =	100.19 cubic yards/acre	=	3269.11 cy total

Signature: Mark G. Neufeld

Date: 10-06-08

Signature: Jim Collins

Date: 10-3-08

Bulk Density Compost
Lane Field Pile
Near Staging

MOISTURE CONTENT

10-03-08

- Tare Container
- Weigh sample. Record wet sample weight.
- Dry sample until sample appears dry, minimum of 1 hour on hotplate or in oven
- Weigh sample. Record dry sample weight
- Calculate % Moisture = (Wet weight – Dry weight)/Wet Weight

Moisture Content Record for Lime/Compost (circle one)

	Date	Wet Weight (g)	Dry Weight (g)	Water Weight (g)	% Moisture
P1	10-03	(124.1 - 15.5) 108.6	(101.2 - 15.5) 85.7	22.9	21.0
P2	10-03	(128.7 - 15.5) 113.2	(97.6 - 15.5) 82.1	31.1	27.5
					24.25%

Name/Signature: R. Morrick / Bud. Mor

Date: 10-3-08

Compost Application Rate Calculation Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: **Smith 5**

POLYGON CHARACTERISTICS

Target % Organic Carbon (1.5% for T-6, 2.5% for T-12)	1.50% %
Treatment Depth	6 inches
Treatment Area	0.769 acres

COMPOST CHARACTERISTICS

Percent Organic Carbon		29.50%	%
Percent Moisture	(from 10-3-08 test on Field Pile)	24.25%	%
Wet Bulk Density	0.795 grams/cc	= 0.670	tons/cy
		(from 10-3-08 test on Field Pile)	

CALCULATE COMPOST APPLICATION RATE

Compost = Target % OC * depth * 1000 tons/acre/6" $= 1.5 \times 6 \times \frac{1000}{6} = 1500$

Compost % OC * (1- %Moisture/100) $= 29.5 \times (1 - \frac{24.25}{100}) = 22.53$

$\frac{1500}{22.53} = 67.13$

Compost Rate = 67.13 tons/acre ✓ = 51.62 tons total

Compost Rate = 100.19 cubic yards/acre = 77.04 cy total

Signature: John A. Ulrich

Date: 10-08-08

Signature: Lynn A. Merrill

Date: 10/7/08

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in yd^3/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.
- Repeat.

Compost Spreader Calibration Record

Date: 10-14-08 Time: 11:15

Irrigated Meadow / Fluvial Deposit Polygon ID: Smith 5

Design Application Rate: 100 (yd^3/acre)

Calibration Data for one load of compost:

Adjust Run — Readjust — Test 4

	Test Run 1	Test Run 2	~~Test 3~~ ~~Average~~	
Compost Quantity (yd^3)	6.50	6.50	6.50	6.50
Compost was spread over (ft^2) 162X12'	3144	161X12' 1932	12X220 2640	12X240 2880
Calibration area (acres)	0.072	0.044	6.061	0.066
Calibrated Application Rate (yd^3/acre)	90.3	147.7	104.6	98.5

Avg. 102.6 AND

Quality Control Data for Field Application Verification:

(A) Design Application Rate: 100 (yd^3/acre)

(B) Average Calibrated Application Rate: 102.6 (yd^3/acre)

Passes to be Applied: 1 passes (= A/B)

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

Activity Tracking Form
Irrigated Meadows
Spread & Incorporate Organic Material in 6" areas

Irrigated Meadow Polygon Name/ID: SMITH 5

Activity Start Date: 10-14-08

Activity End Date: 10-15-08

Activities Verified As Completed (indicate NA if appropriate)

✓ Amendments have been applied at a field application rate calculated by EPA and as directed by PWT. Calculated application rate was 67.13 tons/acre or 100 yd^3/acre

✓ Organic amendment was spread evenly across the remediation area using a calibrated agricultural manure spreader or other accepted equipment. **(Attach calibration records)**

✓ Organic amendment was applied uniformly. Rutting and compaction of the surface was minimized during application of organic amendment.

✓ Organic material was not applied to any area with standing water or areas that were frozen. Organic material was not applied before or during any significant rain events.

✓ Organic material was not spread under windy conditions where wind was sufficient to blow organic material off the ground surface before it can be tilled.

✓ Organic matter was tilled to the full remediation depth using a minimum of 2 passes unless the Subcontractor demonstrated that the proposed equipment has met the mixing standards in fewer passes and received approval of the EPA. The second tillage pass crosses the initial pass at a 90 degree angle. (Narrow polygon, not 90°, in all areas; however tillage was sufficient).

✓ Organic material was tilled to a tolerance for 6-inch till areas of 5 inches to 8 inches. To verify this, test pits were surveyed at a rate of: **(check one)** After spreading, PWT digs random pits to verify uniform thickness

____ 4 / acre (at beginning of project)

____ 1 / acre (after effectiveness proven & with EPA approval)

____ 1 / 5 acres (with EPA approval)

✓ PWT and/or EPA was present during all Subcontractor surveys to verify remediation depth.

✓ PWT and/or EPA conducted field testing, monitored and verified remediation depth, and has evaluated the effectiveness of mixing. Areas with large unremediated clumps of soil or ~~large areas of unmixed~~ soil amendments, if identified, were re-tilled.

Quantity of Organic Material Applied: 76.5 CY

Quantity of Work Estimated in Proposal: 1.30 acres

Quantity of Work Performed: 0.7689 acres

Survey Data/Date: 05-29-08

Activity Tracking Form
Irrigated Meadows
Spread & Incorporate Organic Material in 6" areas

Irrigated Meadow Polygon Name/ID: SMITH 5

Note: Attach copies of the daily calibration records and survey data to this form

Signature of Contractor — Date: 10-16-08

Signature of Subcontractor — Date: 10-16-08

PACIFIC WESTERN TECHNOLOGIES, LTD.

10-03-08

Compost Bulk Density
Field Pile Max Staging

Trial 1

Compost + Bucket 36.0 lbs

Tare Wt. Bucket 2.5 lbs

Net Wt. Compost: 33.5 lbs

Trial 2

Compost + Bucket 36.0 lbs

Tare Wt Bucket 2.5 lbs

Net wt. Compost 33.5 lbs

Avg. 33.5 lbs

$$\frac{33.5\ \text{lbs}}{1\ \text{bucket}} \times \frac{40\ \text{buckets}}{40^3} = 1340\ \text{lbs}/40^3$$

10-03-08

COLORADO DEPARTMENT OF AGRICULTURE
DIVISION OF PLANT INDUSTRY
700 Kipling Street, Suite 4000
Lakewood, Colorado 80215-8000
(303) 239-4149

TRANSIT CERTIFICATE
WEED FREE FORAGE CROP CERTIFICATION ACT 35-27.5

TO WHO IT MAY CONCERN:

The forage crop, to which this Transit Certificate relates, has been officially certified according to the Colorado Weed Free Forage Crop Certification Act 35-27.5. Pursuant to those standards, the information below has been included in this Transit Certificate concerning said certification. The Certificate of Inspection relating to said forage crop is on file at the:

Colorado Department of Agriculture
Division of Plant Industry
700 Kipling Street, Suite 4000
Lakewood, Colorado 80215-8000
Telephone: (303) 239-4149
FAX: (303) 239-4177

Smith 2, 3, 4, 5

PLEASE PRINT IN INK

Murray Farms — LBM
Grower's Name — Grower's Signature

Adams
County of Origin

Identify Forage Crop Type Wheat

635 — 10/27/08
Bales Sold — Date of Sale

IDENTIFICATION
INSPECTOR'S INITIALS DHF
GROWER'S INITIALS LBM.
FIELD NUMBER F-8
DATE _____

(Identification found in upper right corner of Certificate of Inspection: Form DPI-WF-05)

FORAGE CERTIFIED ACCORDING TO THE REGIONAL WEED FREE FORAGE STANDARDS

NOTE: Forage certified under the Colorado Weed Free Forage Crop Certification Act shall be baled with at least one strand of **blue and orange** colored twine or **galvanized** wire.

GROWER MUST ISSUE WHITE COPY TO PURCHASER; MAIL PINK COPY TO DEPARTMENT OF AGRICULTURE; KEEP GREEN COPY FOR FILE FOR EACH SALE.

Activity Tracking Form
Irrigated Meadows
Mulch Application

Irrigated Meadow Polygon Name/ID: SMITH 5

Activity Start Date: 10-29-08

Activity End Date: 10-29-08

Activities Verified As Completed (indicate NA if appropriate)

✓ Mulch certified as weed free **(attached Certification documentation)**

✓ Mulch was stored properly and not degraded by water or other contaminants before use.

✓ Mulch has been applied immediately after seeding unless the nature of the mulch required that it must be incorporated into the soil; in that case the mulch has been applied before seeding. Mulch applied before seeding and after seedbed prep as per S. Jennings GMD

NA If wood mulch was applied, the application rate was 10 to 12 tons per acre, or 50 to 60 cubic yards per acre using a blower, flail spreader, or other means that provided even distribution across the remediated area. Depending on the nature of the wood mulch, it may have been left as a surface application or may have been crimped or lightly disked into the top 2 inches to prevent dispersion **(Circle method used)**.

✓ If straw or native hay mulch was applied, the application rate was 2,000 pounds per acre using equipment specifically designed for application of mulch at a uniform rate to produce a mat covering the seed. Straw or native hay mulch was crimped using crimping equipment with round, notched blades approximately ¼-inch thick by 18 inches in diameter spaced 8 inches apart. The crimper was equipped with disc scrapers and had sufficient weight to force the vegetative mulch to a minimum depth of 3-inches into the soil. Mulch was crimped within 24 hours of application.

✓ Stormwater, sediment, and erosion control measures remained in place throughout implementation of the remedy and has been maintained in good condition during and after mulch placement to prevent surface water run-on and run-off that may damage the remediated area.

Quantity of Mulch Applied: 31 Bales ≈ 1,550 lbs.

Quantity of Work Estimated in Proposal:

Quantity of Work Performed: 0.77 acres

Survey Data/Date: 08-29-08

Note: Attach copies of the daily calibration records, weed free certification and survey data to this form

Signature of Contractor — Date: 10-31-08

Signature of Subcontractor — Date: 10-31-08

BROADCAST SEEDED CALIBRATION

- Place a known weight into the spreader hopper.
- Follow the operations manual to set the equipment to meet the design field application rate (e.g., spreader opening, travel speed, RPMs, etc.)
- Make one pass dispersing the seed until the contents of the spreader are emptied.
- Measure the area over which the seed was applied
- Divide the weight of material applied by the total area it was applied to, convert to lbs/acre, and compare to the design field application rate.
- An acceptable test will be within 10% of the required rate.

Broadcast Seeder Calibration Record

Small Seed w/ Rice Hulls
Same settings as Smith 6 11-03-08

Date: 11-04-08 Time: 15:00

Irrigated Meadow / Fluvial Deposit Polygon ID: Smith 3, 4, (5)

Seed Type (Circle One): (Smith) / Seppi / BLM / FD / Wetlands / Other: _____

Design Field Application Rate: 4.26 lbs/acre (± 10% range = _____)

160 grams = .354 lbs

Field Calibration Data:

Dimensions over which seed was spread: 8 feet x 460 feet

Total Calibration Area: 3680 (ft^2) * 1 acre / 43560 ft^2 = 0.084 acres

Calibrated Application Rate: 4.21 (lbs/acre)

* Note: Applied 4 times design application as per S. Jennings

Second Quality Control Check for Field Application Rate Verification:

Area of Polygon: 0.77 (acres) Smith 35 and 40

Total Weight to be Applied: ~~40~~ 13 (lbs)

Print / Sign Name: Clay E. Cornbrook / Clay E. Cornbrook
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

Arkansas Valley Seed

Supplying QUALITY Seed With INTEGRITY Since 1945

PRELIMINARY INVOICE

Limitation of Warranty and Finance Charge Agreement are part of the terms and conditions of this sale. See back of this invoice.

www.avseeds.com
rabbitears@seedsolutions.com

Invoice Number: 1
Date: 10/31/08
Customer: 4003754
Terms: NET
Delivery Date:
Order No: 10-2008
Invoice #:

Sold To: FRONTIER ENVIRONMENTAL
5171 WARD ROAD UNIT 1
WHEAT RIDGE CO 80033

Ship To: FRONTIER ENVIRONMENTAL
5171 WARD ROAD UNIT 1
WHEAT RIDGE CO 80033

Tax ID:
Tax Form:

Request Date	Customer P.O.	F.O.B.	Ship : CLAY 303-499-7541
10/31/08			Inst : BRENT 303-214-4750

Description	Lot Number	Quantity Shipped	UM	Price	Extended Price	Tax
[illegible] SEED MIX	2127474	758.0000	LB	2.5890	[illegible]	T
Native Grass Mix-Bulk						
13.50 PLS#/ACRE @ 335.00/ACRE X 56.3 ACRES						
DEL WITH RANCH						
[illegible] SEED MIX	2137593	240.0000	LB	1.5063	[illegible]	T
Native Grass Mix-Bulk						
4.26 PLS#/ACRE @ $85.00/ACRE X 56.3 ACRES						
DEL W/ RANCH HANDS						
[illegible]						

998 lbs

delivered 10-7-08

Small Seeds:
Smith 7, 6, 3, 4, 5

Large: ~~All~~ Arkansas
Smith 2, 3, 4, 5, 6, 7

Sales Tax [illegible]

Net Due Date 10/31/08 Tax Rt 4.620 [illegible]

Arkansas Valley Seed
1333 Hwy. 66
Longmont, CO 80504
(877) 907-3337
(970) 535-4522 Fax

Arkansas Valley Seed
4625 Colorado Blvd.
Denver, CO 80216
(877) 957-3337
(303) 320-7516 Fax

Arkansas Valley Seed
12th & Santa Fe Tracks
Rocky Ford, CO 81067
(719) 254-7469
(719) 254-4115 Fax

Colorado Seed
195 N. Washington
Monte Vista, CO 81144
(719) 852-3505
(719) 852-4942 Fax

Wilbers Seed
809 N. Broadway
Miller, SD 57362
(800) 952-2233
(605) 853-2630 Fax

Seeder Calibration Form

Calibration Form Instructions

1) Enter the Polygon ID, Polygon acreage, Calibration Date, Target seed rate(s), %PLS in each seed mix, and % seed in each each mix
2) Perform seeder calibration per the manufacturers' instructions 3 times and enter the total weight of bulk seed mix in grams collected for each seed box
3) For each individual calibration run, verify that the achieved rate is within ±20 % of the 1/2 Target Rate
4) After the 3rd calibration run, verify that the 3 Run Average rate is within ±10% of the 1/2 Target Rate

NOTE: The BLUE text shows the "calculated values" based on the entered data

Polygon ID Smith 6 5 MM **Acres:** 15.511 **Date:** 11/4/08

NA Seed Mix 2 Was Not used in Drill Seeder for this application MAD 11-04-08

	Seed Mix 1		Seed Mix 2	
Target Rate	11.50	lbs PLS / acre	1.25	lbs PLS / acre
% PLS in seed mix	86%		88%	
Dilution Factor	100%	(% seed)	33%	(% seed)
Target Application Rate	13.37	bulk pounds / acre	4.26	bulk pounds / acre
	207.4	Total bulk pounds	66.1	total bulk pounds
1/2 Target Rate (2 passes)	6.69	bulk pounds / acre	2.13	bulk pounds / acre
	103.7	1/2 of total bulk pounds	33.0	1/2 of total bulk pounds
Test Run 1	10.70	total grams in 3 bags	0.00	total grams in 3 bags
	5.35	bulk lbs/acre	0.00	bulk lbs/acre
Test Run 2	14.30	total grams in 3 bags		total grams in 3 bags
	7.15	bulk lbs/acre	0.00	bulk lbs/acre
Test Run 3	13.30	total grams in 3 bags		total grams in 3 bags
	6.65	bulk lbs/acre	0.00	bulk lbs/acre
3 Run Average	12.77	total grams in 3 bags	0.00	total grams in 3 bags
	6.38	bulk lbs/acre	0.00	bulk lbs/acre
For QC Checks:				
+20% of 1/2 Target Rate	8.02	bulk pounds / acre	2.56	bulk pounds / acre
-20% of 1/2 Target Rate	5.35	bulk pounds / acre	1.70	bulk pounds / acre
+10% of 1/2 Target Rate	7.35	lbs seed mix / acre	2.34	lbs seed mix / acre
-10% of 1/2 Target Rate	6.02	lbs seed mix / acre	1.92	lbs seed mix / acre

PWT Signature: _____

Frontier Signature: _____

Activity Tracking Form
Irrigated Meadows
Seedbed Preparation and Seeding

Irrigated Meadow Polygon Name/ID: SMITH 5

Activity Start Date: 11-04-08

Activity End Date: 11-04-08

Activities Verified As Completed (indicate NA if appropriate)

✓ EPA and/or PWT has collected ~~and analyzed~~ and soil samples to verify performance standards have been met. Frequency is 1 per 5 acres.

Preparation of the Seedbed

✓ Seedbed has been smoothed to the extent practical for effective seeding.

✓ Removed or disaggregated clods greater than 4 inches in diameter from the top 6 inches of soil.

✓ Removed rocks and cobbles greater than 4 inches in diameter from the surface.

✓ The surface has been compacted by equipment that produces a uniform rough textured surface. The seedbed for the Irrigated Meadows is firm allowing the heel of a boot to penetrate approximately 0.5 to 1 inch.

✓ Plowed or disked areas compacted by vehicle traffic to reduce compaction.

✓ There were no erosional features present prior to seeding.

NA Loosened areas compacted by weather or colonized by weeds resulting from time gaps between remediation and seeding, as necessary.

Seed Application

NA Lab samples show acid-base account and TOC test results in acceptable ranges before seeding.
Post-Remediation samples not analyzed prior to seeding

✓ Seeding done outside the month of October was approved by EPA.

✓ The seedbed was evaluated by EPA and/or PWT immediately prior to seeding to ensure seedbed requirements were achieved and that the seedbed has not degraded since amendments were applied and tilled.

✓ Used the appropriate seed mixes for the Smith, Seppi, and BLM Irrigated Meadow sites identified in Tables IM-2, IM-3, and IM-4. Deviations approved by EPA.

✓ Applied seed using calibrated equipment at rates shown in Tables IM-2, IM-3, or IM-4. Rates are in lbs PLS / acre. The seed has been applied within 10 percent (by weight) of the rate specified.

Seed mix used: Large: 11.5 #PLS/ACRE Small: 4 x 1.25 #PLS/ACRE Application Rate: _____(# PLS / acre)

✓ Seed was stored properly and not degraded by water or other contaminants before use.

Activity Tracking Form
Irrigated Meadows
Seedbed Preparation and Seeding

Irrigated Meadow Polygon Name/ID: SMITH 5

✓ Seed was not applied to any area with standing water or areas that are frozen. Seed was not applied before or during any significant rain events or during wet conditions when seed equipment could cause ruts in the ground or prevent good seed placement.

✓ Seed was not spread under windy conditions where wind was sufficient to blow seed off the ground surface.

✓ Wherever possible, areas were drill seeded. Seed was applied to the appropriate depth of 0.25 to 0.5 inches. Drill seeding was applied in 2 applications, each at half the seeding rate specified in Tables IM-2, IM-3, and IM-4. The direction of the second application was perpendicular to the first application. Seed mix may have been diluted with rice hulls or other Contractor-accepted material, if necessary to achieve the lower seeding rate.

Large seed was drilled in 2 applications

Small seed was broadcast @ 4 times design application prior to drill seeding

✓ For each acre seeded, the hopper and applicator tubes were checked for clogged tubes and to verify even application rates. Checked periodically and applied full amount of seed designed.

Quantity of Seed Applied: Large: 10.28 lbs. total & Small: 13 lbs. total

Quantity of Work Estimated in Proposal: _____

Quantity of Work Performed: 0.769 acres

Survey Data/Date: 08-29-08

Note: Attach copies of the daily calibration records, seed certification forms, and survey data to this form. Also, note sample numbers for acid-base account and TOC lab tests.

[signature] — Signature of Contractor — 11-05-08 — Date

[signature] — Signature of Subcontractor — 11-05-08 — Date

Note: Re-Seeded Entire Treatment Area w/Drill Seeder, October 21, 2009

2008

Kind: TABLE IM-3/SMALL SEED MIX
Lot: 2137593

Kind & Variety:	Pure%	Germ%	Origin:
TIMOTHY, CLIMAX	39.55	90	CN
ALSIKE CLOVER	22.96	93	MT
PRAIRIE JUNEGRASS	16.18	88	WA
CANADA BLUEGRASS, REUBENS	11.85	90	WA
REDTOP	7.66	93	WA

Crop: .10% Inert: 1.70% Weed: .01% Net Wt: 5# (4.44 PLS#) 3.5 ACRES

Noxious Weed: None Found Test Date: 6/08

REMARKS: FRONTIER ENVIRONMENTAL
JOB: SMITH RANCH
ARKANSAS VALLEY SEED, 4333 HWY 66, LONGMONT CO 80504

Kind: TABLE IM-3/LARGE SEED MIX
Lot: 2137474

Kind & Variety:	Pure%	Germ%	Origin:
MEADOW BROME, FLEET	31.74	94	CAN
SLENDER W/G, SAN LUIS	21.68	86	CAN
BROMEGRASS, MANCHAR	19.38	77	ID
WESTERN W/G, ROSANNA	16.58	90	WA
RED FESCUE, VNS	7.69	97	MT

Crop: .27% Inert: 2.63% Weed: .03% Net Wt: 50# (42.9 PLS#) 3.73 ACRES

Noxious Weed: None Found Test Date: 6/08

REMARKS: FRONTIER ENVIRONMENTAL
JOB: SMITH RANCH
ARKANSAS VALLEY SEED, 4333 HWY 66, LONGMONT CO 80504

Kind: SMITH SEED MIX SMALL
Lot: 2148517

Reseed Smith 3,4,6
Smith 246

Kind & Variety:	Pure%	Germ%	Origin:
CLIMAX TIMOTHY	38.16	95	CAN
ALSIKE CLOVER	23.35	93	MT
PRAIRIE JUNEGRASS	15.74	92	WA
CANADA BLUEGRASS, REUBENS	11.80	92	WA
REDTOP	7.94	91	CAN

Crop: .30% Inert: 2.54% Weed: .18% Net Wt: 18 #(15.625PLS#)12.5AC

Noxious Weed: None Found Test Date: 5/09

Remarks: FRONTIER ENVIRONMENTAL

Winfield Solutions PO Box 64589 St Paul, MN 55164

Re-Seed Native Treatment Area October 21, 2009

Kind: SMITH SEED MIX LARGE
Lot: 2148521

Smith Reseed 3,4,6

Kind & Variety:	Pure%	Germ%	Origin:
MEADOW BROME, FLEET	33.17	91	CAN
SLENDER W/G, SAND LUIS	20.94	95	WA
WESTERN W/G, ROSANNA	17.69	90	SD
SMOOTH BROMEGRASS, MANCHAR	17.50	91	WA
RED FESCUE	8.47	94	MT

Also Reseed Smith 246

Crop: .12% Inert: 2.05 % Weed: .07% Net Wt: 39.5 #(35.9375PLS#/AC) 3.125AC

Noxious Weed: None Found Test Date: 5/09

Remarks: FRONTIER ENVIRONMENTAL

Winfield Solutions PO Box 64589 St Paul, MN 55164

Seeder Calibration Form

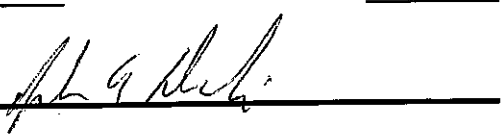
Calibration Form Instructions

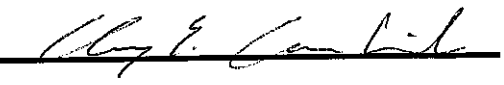
1) Enter the Polygon ID, Polygon acreage, Calibration Date, Target seed rate(s), %PLS in each seed mix, and % seed in each each mix
2) Perform seeder calibration per the manufacturers' instructions 3 times and enter the total weight of bulk seed mix in grams collected for each seed box
3) For each individual calibration run, verify that the achieved rate is within ±20 % of the 1/2 Target Rate
4) After the 3rd calibration run, verify that the 3 Run Average rate is within ±10% of the 1/2 Target Rate

NOTE: The BLUE text shows the "calculated values" based on the entered data

Polygon ID Smith 5 reseed **Acres:** 0.723 **Date:** 10/21/09

	Seed Mix 1		Seed Mix 2	
Target Rate	10.50	lbs PLS / acre	2.25	lbs PLS / acre
% PLS in seed mix	91%		87%	
Dilution Factor	100%	(% seed)	100%	(% seed)
Target Application Rate	11.54	bulk pounds / acre	2.59	bulk pounds / acre
	8.3	Total bulk pounds	1.9	total bulk pounds
1/2 Target Rate (2 passes)	5.77	bulk pounds / acre	1.29	bulk pounds / acre
	4.2	1/2 of total bulk pounds	0.9	1/2 of total bulk pounds
Test Run 1	11.50	total grams in 3 bags	2.50	total grams in 3 bags
	5.75	bulk lbs/acre	1.25	bulk lbs/acre
Test Run 2	11.50	total grams in 3 bags		total grams in 3 bags
	5.75	bulk lbs/acre	0.00	bulk lbs/acre
Test Run 3	11.40	total grams in 3 bags		total grams in 3 bags
	5.70	bulk lbs/acre	0.00	bulk lbs/acre
3 Run Average	11.47	total grams in 3 bags	0.83	total grams in 3 bags
	5.73	bulk lbs/acre	0.42	bulk lbs/acre
For QC Checks:				
+20% of 1/2 Target Rate	6.92	bulk pounds / acre	1.55	bulk pounds / acre
-20% of 1/2 Target Rate	4.62	bulk pounds / acre	1.03	bulk pounds / acre
+10% of 1/2 Target Rate	6.35	lbs seed mix / acre	1.42	lbs seed mix / acre
-10% of 1/2 Target Rate	5.19	lbs seed mix / acre	1.16	lbs seed mix / acre

PWT Signature: 

Frontier Signature: 

Activity Tracking Form
Irrigated Meadows
Clear, Grub, Grade, Pre-Till

Irrigated Meadow Polygon Name/ID: Smith 6

Activity Start Date: 08-11-08

Activity End Date: 08-15-08

Activities Verified As Completed (indicate NA if appropriate)

✓ Completed pre-remediation site walk and final delineation of remediation boundaries. 8/6/08

✓ Survey points for post-treatment depth verification were identified and elevations documented by survey crew before any ground disturbance. Rates will vary from 4 per acre down to 1 per 5 acres depending on Subcontractor's demonstration of compliance with QC requirements for tillage depth. **(Attach or reference survey data)**

✓ EPA collected pre-remediation full remediation depth composite samples at a rate of ~ 1 per 5 acres and the sample locations were surveyed

✓ Removed and disposed of existing trash or debris in accordance with Specification Section 01 74 16.

NA Cleared dead or decadent large woody vegetation if present and placed outside the remediation area in locations identified by the Contractor. Remaining grass and small woody vegetation tilled in place.

✓ Locations, extent and width of secondary irrigation ditches to be removed have been surveyed.

NA Graded the remediation areas as necessary for effective remediation.

✓ Pre-tilled the remediation areas to a minimum depth of 6 inches.

NA If rocks were removed from the remediation area, they were staged or disposed of as directed by the Contractor.

Quantity of Work Estimated in Proposal: 14.21 Acres

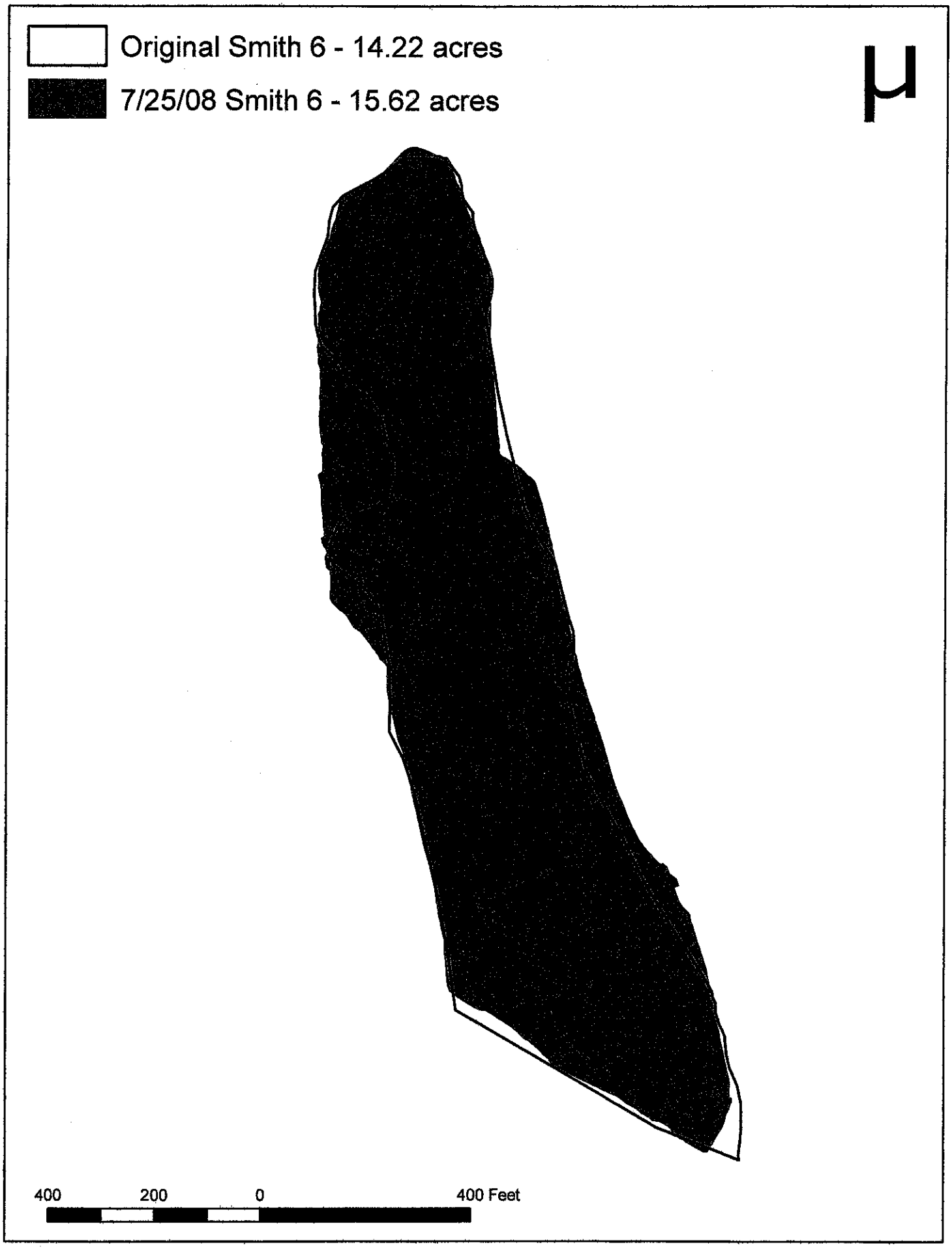
Quantity of Work Performed: 15.52 ac.

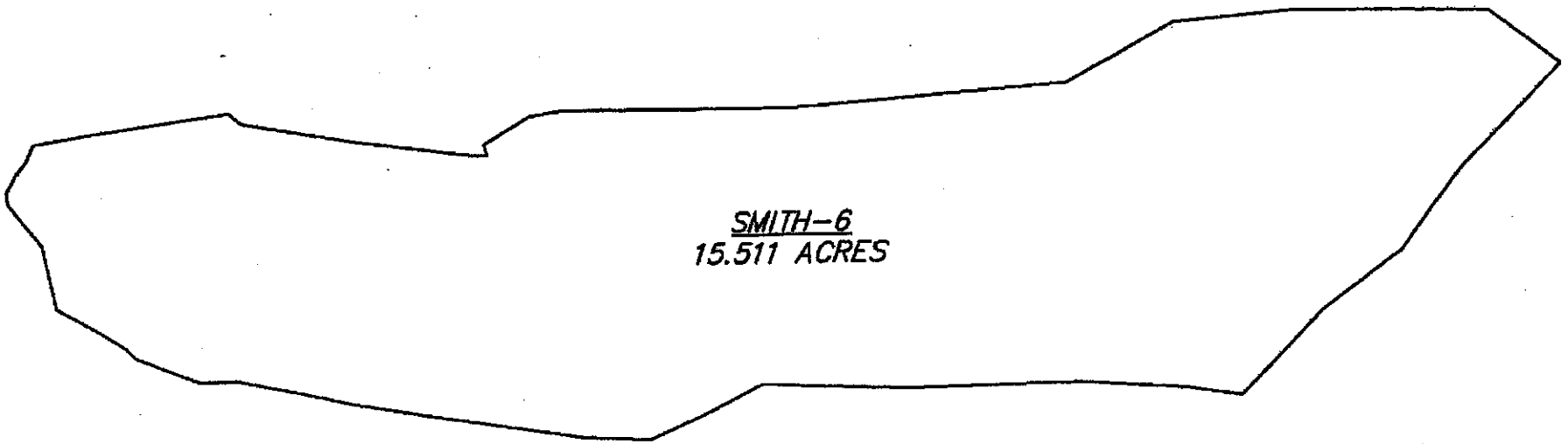
Survey Data/Date: Depth verif Pts. & TMP Data / 8-14-08

Note: Attach copies of the survey data to this form or reference location of supporting survey data

Signature of Contractor — Date: 08-26-08

Signature of Subcontractor — Date: 08-26-08


Original Smith 6 - 14.22 acres
7/25/08 Smith 6 - 15.62 acres
μ
400
200
0
400 Feet



SURVEYOR'S CERTIFICATE

I, Duane Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 8-7-06 26626

Duane Fehringer P.E. & P.L.S. 26626

4/19 P.L.S.

Inter-Mountain Engineering ltd.

48001 US HWY 6&24, STE 203 BOX 978 AVON, CO 81620 PH: (970)949-5012
8362 CONTINENTAL DIVIDE RD, SUITE 107 LITTLETON, CO 80127 PH: (303)948-4126

CLIENT: FRONTIER ENVIRONMENTAL INC.

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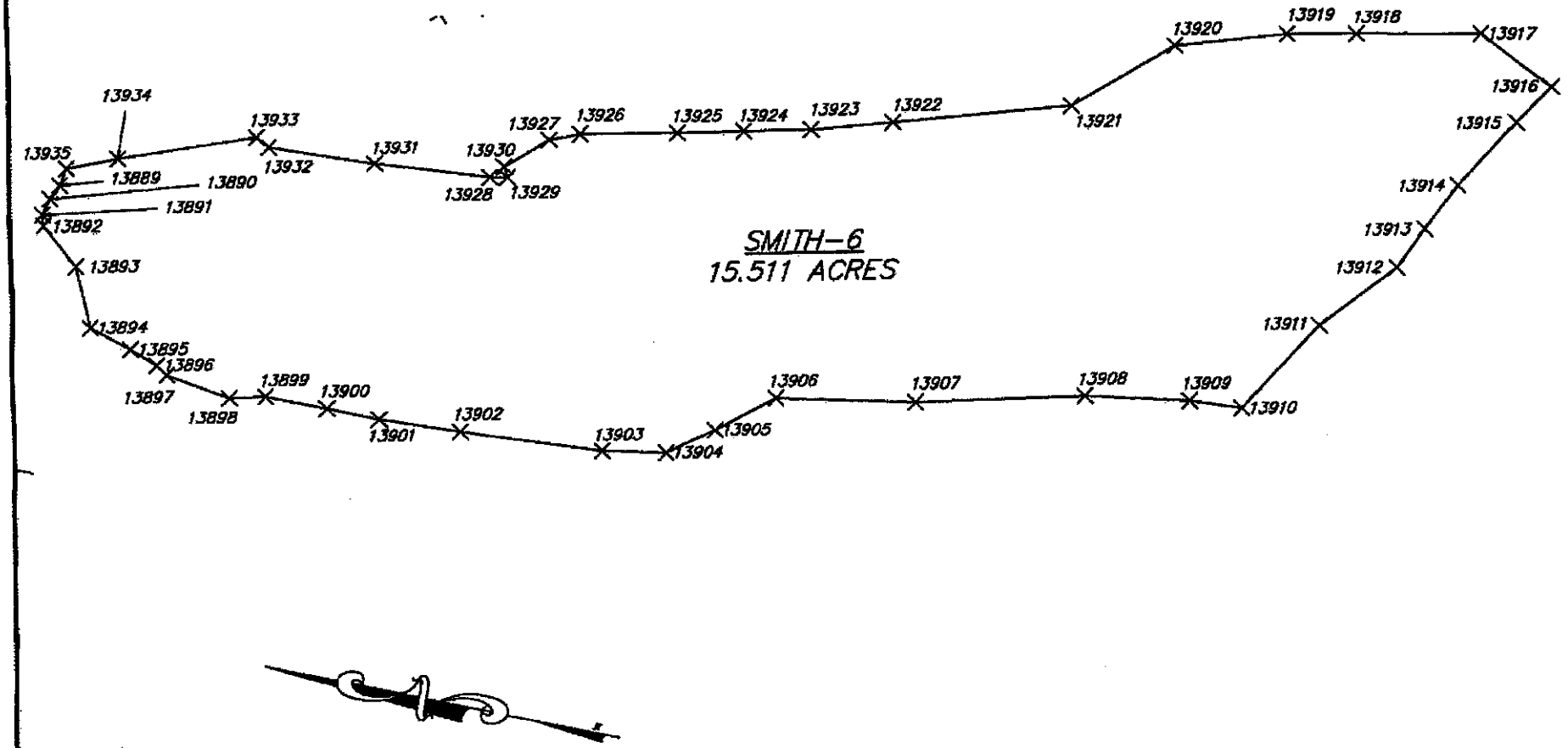
OU-11 POLYGON

SMITH-6

LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=200'
DATE ISSUED:	8-7-06
PROJECT NO:	08-0032
SHEET	

S:\eng\11-610\Landscape\Smith-6.dwg



Inter-Mountain Engineering Ltd.
40081 US HWY 6&24, STE 261 BOX 978 AVON, CO 81620 PH: (970)949-5072
8372 CONTINENTAL DIVIDE RD, SUITE 107 LITTLETON, CO 80127 PH: (303)948-4126

CLIENT: FRONTIER ENVIRONMENTAL INC.

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OU-11 POLYGON

SMITH-6

LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=200'
DATE ISSUED:	5-7-08
PROJECT NO.	08-0032
EXHIBIT	

J:\projects\08032\dwg\OU-11.dwg

Lime Application Rate Calculation Form

Irrigated Meadows

Irrigated Meadow Polygon Name/ID: **Smith 6**

POLYGON CHARACTERISTICS

Net Application Rate (22 dry tons/1000 tons soil unless noted otherwise)	22	dry tons/1000 tons soil
Mixing Safety Factor (10% unless noted otherwise)	10.00%	%
% Rock (0 unless noted otherwise)	2.00%	%
Treatment Depth	6	inches
Total Area	15.62	acres

LIME CHARACTERISTICS

Lime Particle Size Distribution

Percent >10 mesh		X 0.1	=	0.0000	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.0004	(B)
Percent < 60 mesh	99.92%	X 1	=	0.9992	©
Lime Reactivity			=	0.9996	(Sum of A, B, and C)

Calcium Carbonate Equivalence		82.20%	%
Percent Moisture		29.5%	%
Bulk Density	0.75 grams/cc	0.632	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * (1000 tons soil/acre/6") * Treatment Depth / (Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 40.94 tons/acre = 639.49 tons total

= 1.88 lbs/ft2

Lime Rate = 64.77 cubic yards/acre = 1011.73 cy total

Signature: [signature]

Date: 8/27/2008

Signature: [signature] / Roger Merrick

Date: 8/27/2008

$$\frac{22(1.1)(0.98)}{(0.9996)(0.822)(0.705)} = 40.94$$

$$40.94 \frac{\text{ton}}{\text{acre}} \left(\frac{2000\text{lb}}{\text{ton}}\right)\left(\frac{\text{acre}}{43560\text{ft}^2}\right) = 1.88 \text{ psf}$$

Lime Application Rate Calculation Form

Irrigated Meadows

Irrigated Meadow Polygon Name/ID: **Smith 6**

POLYGON CHARACTERISTICS

Net Application Rate (22 dry tons/1000 tons soil unless noted otherwise)	22	dry tons/1000 tons soil
Mixing Safety Factor (10% unless noted otherwise)	10.00%	%
% Rock (0 unless noted otherwise)	2.00%	%
Treatment Depth	6	inches
Total Area	15.62	acres

LIME CHARACTERISTICS

Lime Particle Size Distribution					
Percent >10 mesh		X 0.1	=	0.0000	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.0004	(B)
Percent < 60 mesh	99.92%	X 1	=	0.9992	©
Lime Reactivity			=	0.9996	(Sum of A, B, and C)

Calcium Carbonate Equivalence		82.20%	%
Percent Moisture		29.5%	%
Bulk Density	0.75 grams/cc	= 0.632	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * (1000 tons soil/acre/6") * Treatment Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 40.94 tons/acre = 639.49 tons total
= 1.88 lbs/ft2

Lime Rate = 64.77 cubic yards/acre = 1011.73 cy total

Signature: [signature]

Date: 8/27/2008

Signature: [signature] / Roger Merrick

Date: 8/27/2008

$$\frac{22(1.1)(0.98)}{(0.9996)(0.822)(0.705)} = 40.94$$

$$40.94 \frac{\text{ton}}{\text{acre}}\left(\frac{2000\text{lb}}{\text{ton}}\right)\left(\frac{\text{acre}}{43560\text{ft}^2}\right) = 1.88\text{psf}$$

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: Sm. Mb 6

Date: 08-27-08 Time: 08:10

Field Application Rate: 78.45 tons/acre (1.80 psf) (psf = tons/acre*0.0459)

Target 1.80 psf for 6" product

Total Tarp Dimensions: 27 (sq. ft.)

-10% (1.64)

+10% (1.98)

Test 1 Material Weight: 48.5 (lbs.) Rate: 1.80 psf

21.0 + 11.5 + 23.5 - 7.5 tare

Test 2 Material Weight: 45.0 (lbs.) Rate: 1.67 psf

21.0 + 10.0 + 21.5 - 7.5 tare

Test 3 Material Weight: _____ (lbs.) Rate: _____ psf

Test 4 Material Weight: N/A (lbs.) Rate: _____ psf

08-27-08

Test 5 Material Weight: _____ (lbs.) Rate: _____ psf

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: John A. Nethercott
PWT / EPA Representative

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: Smith6

Date: 08-28-08 Time: 08:05

Field Application Rate: 40.94 (64.77 lbs/acre) tons/acre (1.88 psf) (psf = tons/acre*0.0459)

Total Tarp Dimensions: 27 (sq. ft.)

Tolerance

1.88 (+10%) = 2.07

1.88 (-10%) = 1.71

Test 1 Material Weight: 47.5 (lbs.) Rate: 1.76 psf

13.0 + 22.0 + 20.0 - 7.5

Test 2 Material Weight: 51.5 (lbs.) Rate: 1.91 psf

24.0 + 10.0 + 25.0 - 7.5

Test 3 Material Weight: _____ (lbs.) Rate: _____ psf

Test 4 Material Weight: _____ (lbs.) Rate: _____ psf

08-28-08

Test 5 Material Weight: _____ (lbs.) Rate: _____ psf

Print / Sign Name: Clay E. Combrink / Clay E. Combrink
Frontier Representative

Print / Sign Name: John A. DeAngelis / John A. DeAngelis
PWT / EPA Representative

168	1497004	2761439	9415.558	smith6-58
170	1496894	2761409	9416.055	smith6-60
171	1496866	2761324	9417.127	smith6-61
172	1496846	2761229	9417.108	smith6-62
173	1496825	2761138	9416.087	smith6-63
174	1496756	2761215	9415.376	smith6-64
175	1496782	2761294	9416.048	smith6-65
176	1496805	2761380	9415.777	smith6-66
177	1496832	2761471	9413.81	smith6-67
178	1496746	2761512	9412.69	smith6-68
179	1496724	2761438	9414.591	smith6-69
181	1496683	2761317	9414.51	smith6-71
183	1496628	2761422	9412.484	smith6-72
184			9411.66	smith6-73

2086	1497004	2761438	9415.139	p168	0.4189		
2093	1496895	2761409	9415.425	p170	0.6301		
2092	1496866	2761324	9416.466	p171	0.6601		
2091	1496847	2761229	9416.283	p172	0.825	x	0.825 ✓
2090	1496825	2761138	9415.767	p173	0.3195	x	0.3195 ✓
2096	1496756	2761216	9414.771	p174	0.6055		
2102	1496782	2761294	9415.264	p175	0.7844	x	0.7844 ✓
2095	1496805	2761380	9415.296	p176	0.4811		
2094	1496832	2761470	9413.387	p177	0.4232		
2099	1496746	2761512	9411.786	p178	0.9034	x	0.9034 ✓
2098	1496725	2761438	9413.923	p179	0.668		
2097	1496683	2761317	9413.838	p181	0.6717		
2100	1496629	2761422	9411.909	p183	0.575		
2101	1496648	2761510	9411.012	p184	0.6479		

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: Smith 6

Date: 08-29-08 Time: 09:30

Field Application Rate: 40.94 (64.77 yd³/acre) tons/acre (1.88 psf) (psf = tons/acre*0.0459)

Total Tarp Dimensions: 27 (sq. ft.)

Tolerance:
1.88 (+10%) = 2.07
1.88 (-10%) = 1.71

Test 1 Material Weight: 49.5 (lbs.) Rate: 1.83 psf
21.0 + 14.5 + 21.5 - 7.5

Test 2 Material Weight: 42.5 (lbs.) Rate: 1.76 psf
22.0 + 9.0 + 24.0 - 7.5

Test 3 Material Weight: _____ (lbs.) Rate: _____ psf

Test 4 Material Weight: _____ (lbs.) Rate: _____ psf
08-29-08

Test 5 Material Weight: _____ (lbs.) Rate: _____ psf

Print / Sign Name: Clay E. Combrink
Frontier Representative

Print / Sign Name: John A. DeAngelis
PWT / EPA Representative

SUPER - CROP

50 LBS. (22.7 kg) NET WT.

fertilizer

super phosphate

GUARANTEED ANALYSIS	
NITROGEN (N)	0%
AVAIL. PHOSPHORIC ACID (P_2O_5)	45%
SOLUBLE POTASH (K_2O)	0%
SULFUR (Combined) (S)	%
IRON (Fe)	%

AMERICAN PRIDE CO-OP

HENDERSON, COLORADO 80640

DIRECTIONS FOR USE:

GENERAL - Phosphate is one of the 3 major plant nutrients. Phosphate base fertilizers are used as a root and shoot stimulant for new lawn sites. Phosphates are generally highly water insoluble and therefore do not move very much through the soil. For best results, phosphates should be applied at the rate of 10-15 lbs. per 1000 square feet and mixed well in the top 6-8 inches of soil with a roto-tiller, disc, harrow, etc. This rate can be used for new lawn sites, in vegetable and flower gardens.

- High rates can be applied without injuring the plant.

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site. Coordinate
calls w/
w/ C.
day's activities
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on-farm
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or delivery
08-26 & 08-27
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? Also
illy Sampling
to spread
th 6 and
taging area.

08-28-08

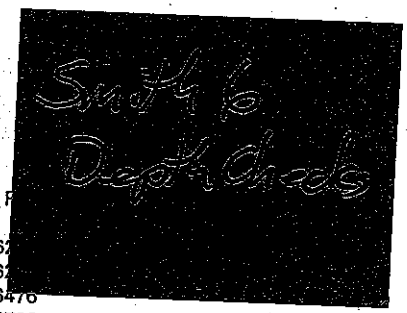
09:40 Completed partial annotation of scale tickets for 08-26 & 08-27 because Frontier needs to correct and obtain tare weights from 3 trucks.

09:40 Received word that Frontier intends to perform fertilizer cal. & spreading on Smith 6.

09:50 Fertilizer calibration for Smith 6 conducted on same ~250 x 60' test (1/3 acre) plot on Smith 1 used by S. Jennings & R. Merrick last week, where 1-50lb bag covered 1/3 acre (on 12" TA setting), which applied at rate of 306 lbs/acre. Today Frontier tested 1/2 bag at 1/2 rate and covered same 250' distance as Hopper ran out. Calculated rate for Smith 6 = 153 lbs/acre x 15.52 acres = 2375 lbs / 50 lbs per bag. = Target usage of 48 bags 0:45:0 to cover entire polygon.

10:46 Began packing Smith 6.

JD assisted L. Tilly packaging samples for today's shipment (see Sampling



Pre-Existing Grade Shots

104	1498378	2760996	9432.585	smith6-1
106	1498239	2760961	9430.873	smith6-3
107	1498296	2761042	9432.077	smith6-4
108	1498201	2761080	9430.878	smith6-5
109	1498156	2760982	9429.88	smith6-6
110	1498059	2761031	9428.831	smith6-7
115	1497948	2761050	9427.942	smith6-10
116	1497907	2760958	9428.017	smith6-11
117	1497879	2760856	9427.756	smith6-12
118	1497972	2760821	9428.316	smith6-13
120	1498102	2760899	9430.165	smith6-15
121	1498074	2760810	9429.059	smith6-16
122	1498145	2760801	9429.595	smith6-17
123	1498168	2760878	9430.564	smith6-18
125	1498299	2760850	9432.685	smith6-20
128	1497802	2761034	9427.03	smith6-22
129	1497779	2760937	9426.628	smith6-23
130	1497758	2760841	9426.727	smith6-24
131	1497662	2760861	9425.44	smith6-25
132	1497687	2760953	9425.123	smith6-26
133	1497714	2761043	9425.972	smith6-27
134	1497737	2761134	9425.866	smith6-28
137	1497648	2761189	9424.29	smith6-30
138	1497621	2761097	9425.2	smith6-31
139	1497593	2761004	9423.821	smith6-32
140	1497566	2760912	9423.279	smith6-33
141	1497473	2760940	9422.167	smith6-34
143	1497497	2761019	9422.532	smith6-35
144	1497522	2761109	9424.515	smith6-36
145	1497550	2761202	9423.405	smith6-37
147	1497322	2760997	9420.434	smith6-38
148	1497351	2761088	9421.986	smith6-39
149	1497379	2761182	9422.081	smith6-40
150	1497399	2761250	9420.946	smith6-41
151	1497306	2761298	9418.822	smith6-42
152	1497271	2761209	9421.112	smith6-43
153	1497240	2761121	9421.13	smith6-44
154	1497219	2761030	9419.853	smith6-45
155	1497122	2761042	9418.889	smith6-46
156	1497134	2761144	9419.953	smith6-47
157	1497152	2761237	9420.422	smith6-48
158	1497169	2761318	9418.216	smith6-49
161	1497054	2761278	9419.464	smith6-51
162	1497023	2761188	9419.01	smith6-52
163	1497001	2761083	9418.127	smith6-53
164	1496903	2761086	9416.665	smith6-54
165	1496926	2761180	9418.115	smith6-55
167	1496972	2761368	9417.529	smith6-57

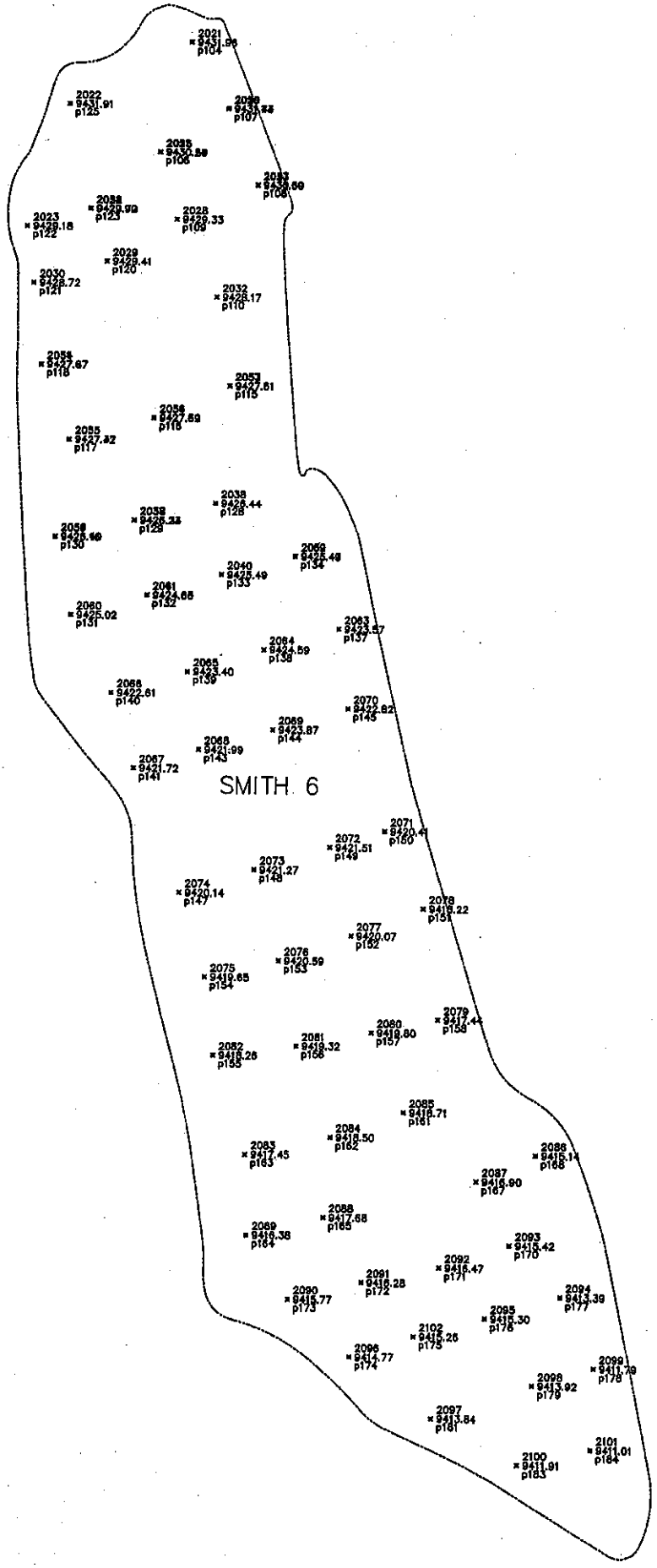
Bottom of Post-Tillage Shots

2021	1498379	2760996	9431.963	p104
2051	1498240	2760960	9430.245	p106
2050	1498296	2761042	9431.429	p107
2053	1498200	2761080	9430.298	p108
2028	1498156	2760982	9429.333	p109
2032	1498059	2761032	9428.171	p110
2057	1497948	2761050	9427.508	p115
2056	1497907	2760958	9427.523	p116
2055	1497879	2760856	9427.37	p117
2054	1497972	2760821	9427.872	p118
2029	1498102	2760898	9429.408	p120
2030	1498074	2760810	9428.721	p121
2023	1498145	2760801	9429.182	p122
2052	1498168	2760878	9429.696	p123
2022	1498299	2760850	9431.91	p125
2038	1497802	2761034	9426.445	p128
2058	1497779	2760937	9426.336	p129
2059	1497758	2760841	9426.162	p130
2060	1497661	2760861	9425.017	p131
2061	1497687	2760953	9424.65	p132
2040	1497714	2761043	9425.494	p133
2062	1497738	2761134	9425.429	p134
2063	1497648	2761189	9423.573	p137
2064	1497622	2761097	9424.595	p138
2065	1497593	2761004	9423.403	p139
2066	1497566	2760912	9422.612	p140
2067	1497473	2760940	9421.725	p141
2068	1497497	2761019	9421.986	p143
2069	1497522	2761109	9423.871	p144
2070	1497550	2761202	9422.817	p145
2074	1497322	2760997	9420.141	p147
2073	1497351	2761089	9421.271	p148
2072	1497379	2761182	9421.506	p149
2071	1497400	2761249	9420.413	p150
2078	1497306	2761298	9418.22	p151
2077	1497271	2761209	9420.067	p152
2076	1497240	2761120	9420.594	p153
2075	1497219	2761030	9419.647	p154
2082	1497122	2761042	9418.264	p155
2081	1497134	2761144	9419.32	p156
2080	1497152	2761237	9419.8	p157
2079	1497169	2761318	9417.439	p158
2085	1497054	2761278	9418.709	p161
2084	1497023	2761188	9418.504	p162
2083	1497001	2761083	9417.454	p163
2089	1496903	2761086	9416.381	p164
2088	1496926	2761181	9417.68	p165
2087	1496972	2761368	9416.899	p167

Delta P

0.6		
0.6		
0.6476		
0.5796		
0.5471		
0.6602		
0.4343		
0.4945		
0.3867	x	0.3867
0.4447		
0.7572	x	0.7572
0.3377	x	0.3377 ✓
0.4133		
0.8685	x	0.8685 ✓
0.7753	x	0.7753
0.5855		
0.2916	x	0.2916 ✓
0.5653		
0.4225		
0.4731		
0.4772		
0.4365		
0.7168		
0.6046		
0.4174		
0.667		
0.4425		
0.5454		
0.6436		
0.5876		
0.293	x	0.293 ✓
0.7154		
0.5749		
0.5335		
0.6026		
1.0447	x	1.0447 ✓
0.5355		
0.2057	x	0.2057 ✓
0.6248		
0.6329		
0.6226		
0.7768	x	0.7768
0.7543	x	0.7543
0.5059		
0.6732	~~x~~	~~0.6732~~
0.2834	x	0.2834 ✓
0.4348		
0.6297		

Post



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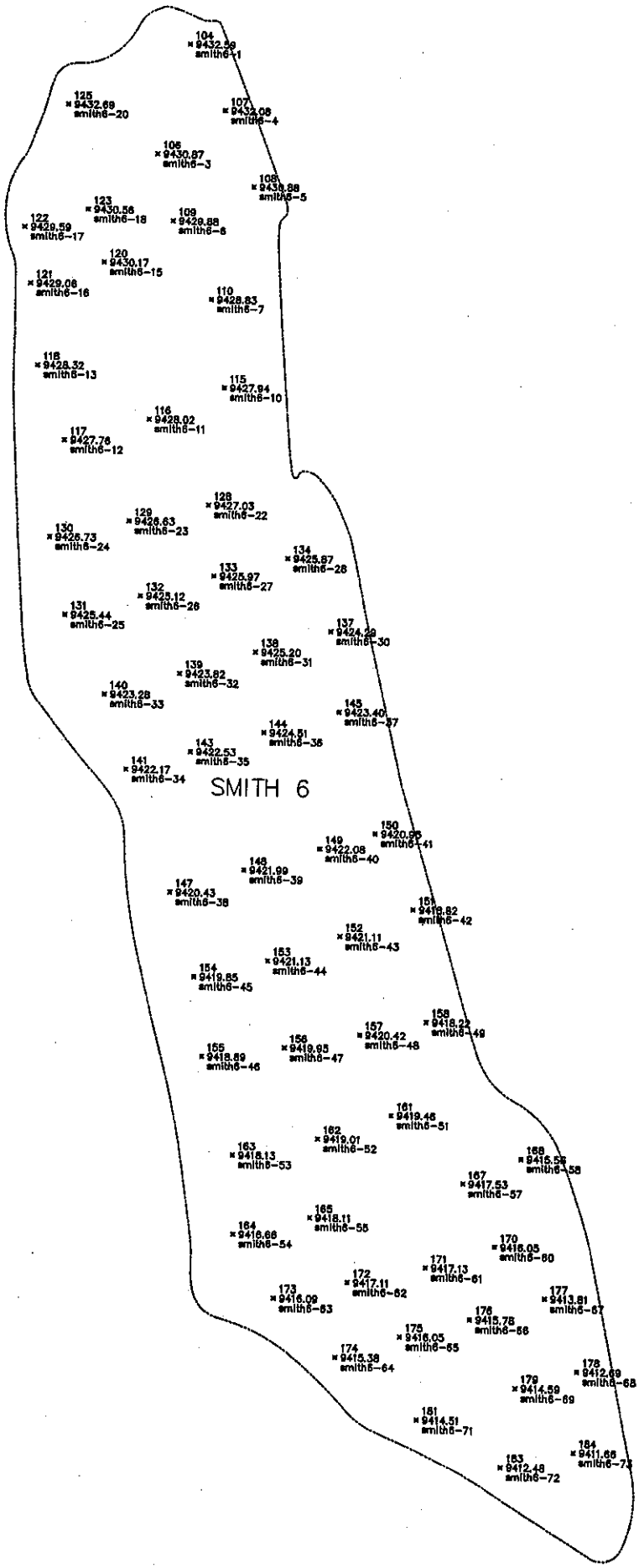
104
9432.59
smith6-1
125
9432.69
smith6-20
107
9432.08
smith6-4
106
9430.87
smith6-3
108
9430.88
smith6-5
123
9430.56
smith6-18
109
9429.88
smith6-6
122
9429.59
smith6-17
120
9430.17
smith6-15
121
9429.06
smith6-16
110
9428.83
smith6-7
118
9428.32
smith6-13
115
9427.94
smith6-10
116
9428.02
smith6-11
117
9427.76
smith6-12
128
9427.03
smith6-22
129
9426.63
smith6-23
130
9426.73
smith6-24
134
9425.87
smith6-28
133
9425.97
smith6-27
132
9425.12
smith6-26
131
9425.44
smith6-25
137
9424.29
smith6-30
139
9425.20
smith6-31
139
9423.82
smith6-32
140
9423.28
smith6-33
145
9423.40
smith6-37
144
9424.51
smith6-36
143
9422.53
smith6-35
141
9422.17
smith6-34
SMITH 6
150
9420.95
smith6-41
149
9422.08
smith6-40
148
9421.99
smith6-39
147
9420.43
smith6-38
151
9419.82
smith6-42
152
9421.11
smith6-43
153
9421.13
smith6-44
154
9419.85
smith6-45
158
9418.23
smith6-49
157
9420.42
smith6-48
156
9419.95
smith6-47
155
9418.89
smith6-46
161
9419.46
smith6-51
162
9419.01
smith6-52
163
9418.13
smith6-53
168
9416.58
smith6-58
167
9417.53
smith6-57
165
9418.11
smith6-55
164
9416.66
smith6-54
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9416.05
smith6-60
171
9417.13
smith6-61
172
9417.11
smith6-62
173
9416.09
smith6-63
177
9413.81
smith6-67
176
9415.78
smith6-56
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9416.05
smith6-65
174
9415.38
smith6-64
178
9412.69
smith6-68
179
9414.59
smith6-69
181
9414.51
smith6-71
184
9411.66
smith6-73
183
9412.48
smith6-72

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: Smith 6

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0
✓125	8.0	8.0	8.0	Ø
✓104	8.0	8.0	8.0	Ø
✓107	7.5	7.0	8.0	Ø
✓106	8.0	8.0	8.0	Ø
✓123	7.8	7.5	8.0	Ø
✓122	7.5	~~8.5~~ 7.0	8.0	Ø
✓120	7.8	7.0	8.0	Ø
✓108	7.6	7.0	8.0	Ø
✓115	8.0	8.0	8.0	Ø
✓116	8.0	8.0	8.0	Ø
✓118	8.0	8.0	8.0	Ø
✓117	8.0	8.0	8.0	Ø
✓130	8.0	8.0	8.0	Ø
✓129	7.8	7.5	8.0	Ø
✓128	8.0	8.0	8.0	Ø
✓134	8.0	8.0	8.0	Ø
✓137	8.0	8.0	8.0	Ø

Name/Signature: R. Merrick/[signature] **Date:** 9/5/08

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: Smith 2

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0
✓138	8.0	8.0	8.0	Ø
✓139	8.0	8.0	8.0	Ø
✓140	8.0	8.0	8.0	Ø
✓141	7.5	7.0	8.0	Ø
✓143	8.0	8.0	8.0	Ø
✓144	7.6	7.0	8.0	Ø
✓145	8.0	8.0	8.0	Ø
✓150	8.0	8.0	8.0	Ø
✓149	8.0	8.0	8.0	Ø
✓148	8.0	8.0	8.0	Ø
✓147	8.0	8.0	8.0	~~8.0~~ Ø
✓154	8.0	8.0	8.0	Ø
✓153	8.0	8.0	8.0	Ø
✓152	8.0	8.0	8.0	Ø
✓151	7.0	7.0	7.0	Ø
✓158	8.0	8.0	8.0	Ø
✓157	8.0	8.0	8.0	Ø

Name/Signature: R. Merrick Bedgood **Date:** 9/5/08

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: Smith 6

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0
150	8.0	8.0	8.0	Ø
155	8.0	8.0	8.0	Ø
163	8.0	8.0	8.0	Ø
162	8.0	8.0	80	Ø
161	8.0	8.0	8.0	Ø
168	8.0	8.0	8.0	Ø
167	8.0	8.0	8.0	Ø
165	8.0	8.0	8.0	Ø
164	7.6	7.0	8.0	Ø
173	7.5	7.0	8.0	Ø
172	8.0	8.0	8.0	Ø
171	8.0	8.0	8.0	Ø
170	8.0	8.0	8.0	Ø
177	7.8	7.0	8.0	Ø
176	7.6	7.0	8.0	Ø
175	8.0	8.0	8.0	Ø
174	7.5	7.0	8.0	Ø

Name/Signature: R. Merrick / Requested **Date:** 9/5/06

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

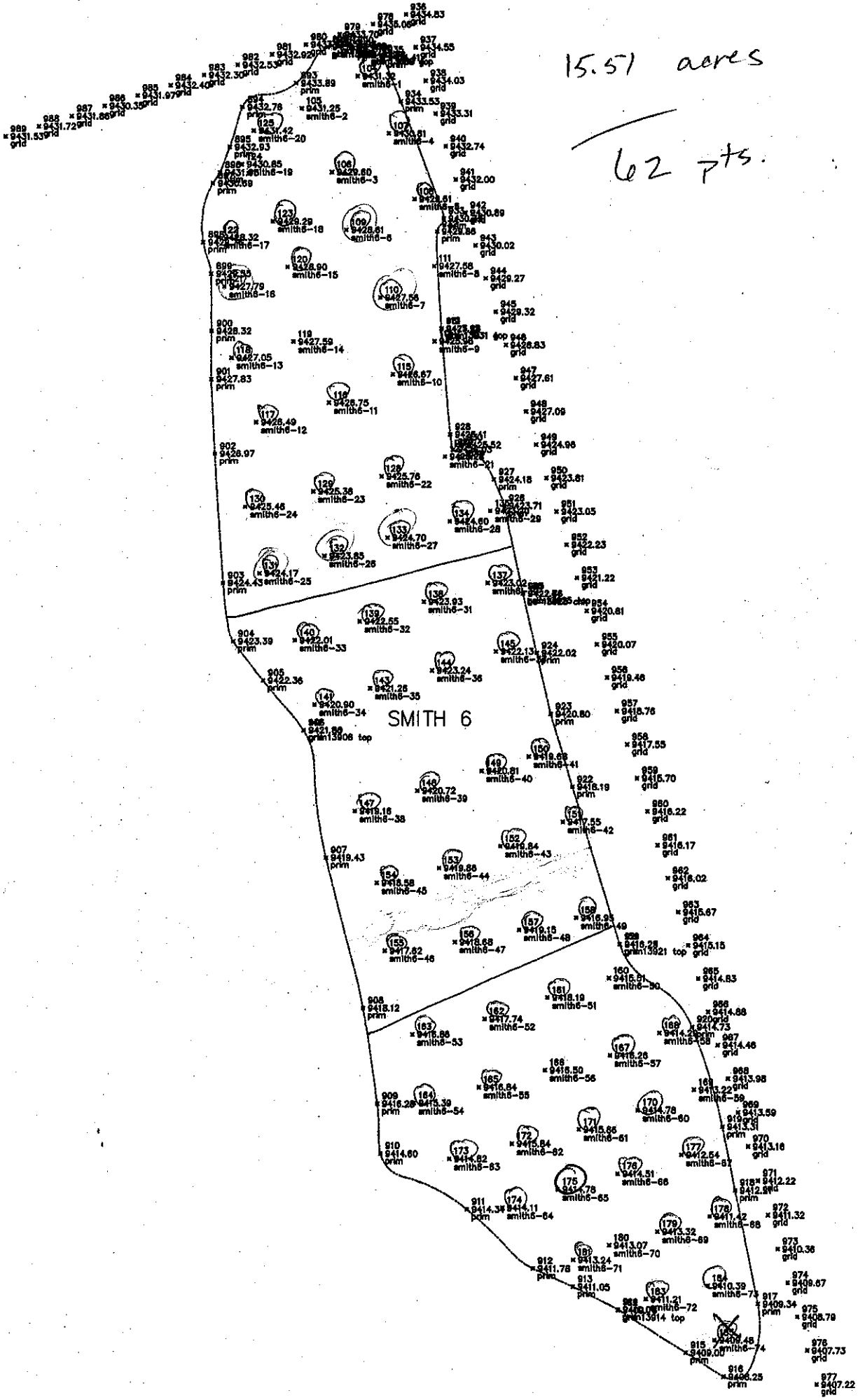
In Situ pH Record

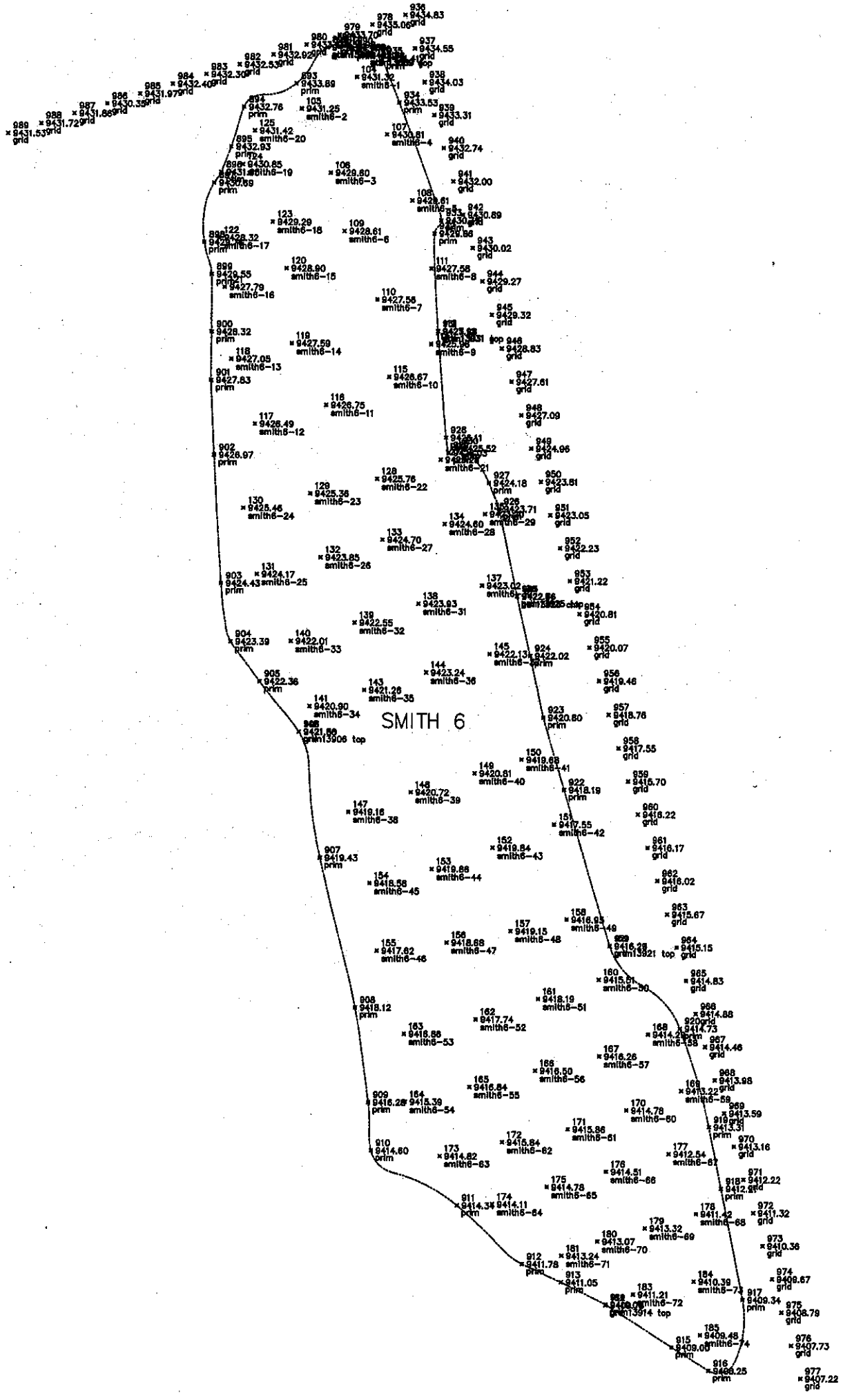
Fluvial Deposit/Irrigated Meadows Polygon: Smith 6

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0
✓181	8.0	8.0	8.0	Ø
✓179	8.0	8.0	8.0	Ø
✓178	8.0	8.0	8.0	Ø
✓184	8.0	8.0	8.0	Ø
✓183	7.0	7.0	7.0	Ø

Name/Signature: R. Marrick

Date: 9/5/08


15.51 acres
62 pts.
SMITH 6


SMITH 6

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record

Fluvial Deposit/Irrigated Meadows Polygon: Smith 6

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	Mini pH	OAKTON
174	2.5	10.1	10.1	7.9	7.85
176	2.7	10.1	10.0	7.3	7.46
171	2.7	10.1	10.4	7.6	7.71
179	2.5	10.1	10.0	7.5	7.68
177	2.7	10.0	10.1	7.4	7.51
183	2.7	10.1	10.0	7.5	7.53
184	2.6	10.1	10.1	7.6	7.77
181	2.3	10.1	10.1	8.1	7.68
123	2.4	10.0	10.0	8.7	8.15
122	2.2	10.1	10.1	8.6	8.21
106	2.3	10.1	10.0	8.1	7.70
105	2.3	10.0	10.0	8.1	7.92
107	2.3	10.1	10.1	8.0	7.83
175	2.2	10.1	10.1	7.8	7.64
150	2.7	10.0	10.0	8.5	8.10
154	2.6	10.1	10.1	8.4	8.10
157	2.7	10.1	10.1	8.1	7.95

Name/Signature: [signature]

Date: 9-9-08

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record

Fluvial Deposit/Irrigated Meadows Polygon: Smith 6

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	Mini Lab pH	Oakton
164	2.3	10.0	10.0	7.5	7.50
162	2.3	10.0	10.1	7.4	7.50
161	2.2	10.0	10.1	7.5	7.50
170	2.2	10.0	10.1	7.6	7.60
118	2.0	10.0	10.0	7.6	7.70
155	2.3	10.0	10.0	7.1	7.22
167	2.5	10.0	10.2	7.6	7.60
173	2.3	10.1	10.1	7.6	7.61
178	2.1	10.0	10.2	7.6	7.79
108	2.3	10.0	10.5	7.3	7.56
168	2.3	10.0	10.0	7.5	7.61
172	2.3	10.0	10.1	7.8	7.86
115	2.5	10.0	10.0	7.8	7.76
120	2.5	10.0	10.0	7.8	7.8
104 (lots of pine needles)	2.3	10.0	10.0	8.6	8.35
117	2.3	10.1	10.1	7.8	8.18
116	2.6	10.0	10.0	8.1	8.02

Name/Signature: [signature] **Date:** 9-9-08

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record Smith 6

Fluvial Deposit/Irrigated Meadows Polygon:

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH	MINI OAKTON
147	2.2	10.0	10.1	8.1	7.96
125	2.3	10.0	10.1	8.2	8.20
150	2.3	10.0	10.0	8.2	8.13
151	2.4	10.0	10.2	8.7	8.40

Name/Signature: [signature]

Date: 9-7-05

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record

Fluvial Deposit/Irrigated Meadows Polygon: Smith 6

3pt. calibration @ start

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
134	3.6	11.5	~~23~~ 11.8	8.3
145	3.4	13.2	13.4	8.3
128	3.7	11.7	11.8	8.1
152	3.4	11.9	11.9	8.3
129	3.2	13.7	13.7	8.1
144	4.9	12.1	12.1	8.0
153	5.0	12.3	12.4	8.0
137	5.0	12.9	12.9	8.1
130	4.3	13.0	13.0	7.9
141	5.0	11.8	12.0	8.2
139	4.3	13.1	13.0	8.4
163	4.1	11.4	11.3	8.1
148	4.3	13.9	13.9	7.9
143	4.9	12.8	12.8	8.0
140	4.8	13.9	14.0	8.3
149	4.6	13.1	13.2	8.0
138	4.4	15.4	15.3	7.9

Dupes 7.7

Name/Signature: R. Merrick / [signature] **Date:** 9/8/08

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record

Fluvial Deposit/Irrigated Meadows Polygon: Smith 6

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
134	–	23.9	24.1	5.7
145	–	26.0	~~25~~ 26.8	6.0
128	–	15.0	15.0	6.1
137	–	12.2	12.3	6.2
129	–	15.0	15.0	6.2
139	–	10.0	10.2	6.6
153	–	15.0	15.0	6.2
138	–	15.1	15.2	6.2
148	–	10.0	10.2	6.3
130	–	11.0	11.2	6.5
149	–	10.0	10.0	6.7
141	–	10.0	10.1	6.7
140	–	11.0	11.0	7.1
143	–	12.1	12.5	6.7
144	–	11.1	11.1	6.5
103	–	11.0	11.2 ~~22.2~~	6.8
152	–	10.1	~~28~~ 10.1	6.9

Name/Signature: Lisa Lilly **Date:** 9-5-08

Note: pHs did not align with insitu field pH results, so these were re-run on 9/8/08 by Roger Merrick. The 9/8 results were all in the pH 8 range. Per Jan Christner, accept the 9/8 results but do not discard these.

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record

Fluvial Deposit/Irrigated Meadows Polygon: Smith 6

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH	
125	#6	11.1	11.1	7.2	Dupe
147	—	10.1	10.2	7.0	
157	—	10.0	10.0	7.0	
156	—	8.0	8.1	7.0	
158	—	13.0	26.4	7.1	7.5
151	—	14.0	14.0	7.3	
150	—	20.0	20.2	7.0	
154	—	16.1	16.4	7.0	

Name/Signature: Lisa Lilly Date: 9-5-08

Activity Tracking Form
Irrigated Meadows
Spread & Incorporate Lime and Fertilizer in 6" areas

Irrigated Meadow Polygon Name/ID: Smith 6

Activity Start Date: 08-26-08

Activity End Date: 08-29-08

Activities Verified As Completed (indicate NA if appropriate)

Lime and Fertilizer Application

✓ EPA calculated field application rate based on material quality, rock content & depth

Lime rate = 40.94 tons/acre

Fertilizer rate = 153 pounds/acres

✓ EPA and/or PWT was present for lime and fertilizer spreader calibrations.

✓ Lime was spread across the remediation area at the calculated field lime application rate using a calibrated spreader (unadjusted application rate is 22 tons lime/ acre) in 6 inch remediation areas. See Above

✓ Fertilizer applied had a nitrogen:phosphorous:potassium (N:P:K) ratio of 0:45:0. **(Attach copy of fertilizer certification)**

✓ Fertilizer was spread across the remediation area at the specified field fertilizer application rate using a calibrated spreader. Unadjusted rate is 70 pounds of P_2O_5 per 1,000 tons of soil or 153 lbs of 0:45:0 fertilizer/acre in 6" till areas Above

✓ Lime and fertilizer were not applied to any areas with standing water, that was cemented, consolidated, caked, or frozen.

✓ Lime and fertilizer were not applied just before or during significant rain events.

✓ Lime and fertilizer were not spread under windy conditions where wind is sufficient to blow lime and fertilizer off the ground surface before they can be tilled.

Tilling of Lime and Fertilizer

✓ Lime and fertilizer were incorporated into the soil by tilling as soon as possible after spreading, and always by the end of the same day that the lime or fertilizer was spread.

✓ Lime and fertilizer were tilled into the soil using a minimum of 3 passes unless the Subcontractor demonstrated that the proposed equipment was able to meet the mixing standards in fewer passes. Successive passes crossed the previous pass at a 90 degree angle.

Activity Tracking Form
Irrigated Meadows
Spread & Incorporate Lime and Fertilizer in 6" areas

Irrigated Meadow Polygon Name/ID: Smith 6

✓ Lime and fertilizer were spread and thoroughly incorporated to the full design depth with an acceptable remediation depth tolerance for 6-inch till areas of 5 inches to 8 inches. To verify this, test pits were excavated and locations surveyed at a rate of: **(check one)**

✓ 4 / acre (at beginning of project)

_____ 1 / acre (after effectiveness proven & with EPA approval)

_____ 1 / 5 acres (with EPA approval)

✓ PWT and/or EPA were present during all Subcontractor remediation depth surveys and conducted visual and field pH testing to evaluate effectiveness of mixing **(Attach pH test results)**

Quantity of Lime Applied: 675 tons

Quantity of Fertilizer Applied: 46 bags @ 50 lbs = ~~2300~~ 2373 lbs

Quantity of Work Estimated in Proposal: 14.21 acres

Quantity of Work Performed: 15.511 acres

Survey Data/Date: 08-07-08

Note: Attach copies of daily calibration records, fertilizer certs, pH test results and survey data

Signature of Contractor — Date: 09-17-08

Signature of Subcontractor — Date: 9-17-08

MOISTURE CONTENT

- Tare Container
- Weigh sample. Record wet sample weight.
- Dry sample until sample appears dry, minimum of 1 hour on hotplate or in oven
- Weigh sample. Record dry sample weight
- Calculate % Moisture = (Wet weight – Dry weight)/Wet Weight

Moisture Content Record for Lime/Compost (circle one)

Pan #	Date	Tare	Wet Weight (g)	Dry Weight (g)	Water Weight (g)	% Moisture
P1	7/17/08	15.5	50.6-15.5 = 35.1	42.8 - 15.5 = 27.3	7.8	22.2
P2	↓	15.5	51.1-15.5=35.6	43.3 - 15.5 = 27.8	7.8	21.9
P3	↓	15.0	50.3-15.6=34.7	42.1 - 15.6=26.5	8.2	23.6
	Silage Trench 3 → Sm. M6					22.6% Avg
	Start time = 9:30 am					
	End time 11:40 am					

Name/Signature: [signature] **Date:** [illegible]

Compost Application Rate Calculation Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: **Smith 6**

POLYGON CHARACTERISTICS

Target % Organic Carbon (1.5% for T-6, 2.5% for T-12)	1.50%	%
Treatment Depth	6	inches
Treatment Area (per IME survey)	15.511	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon (from source sampling average)			29.5%	%
Percent Moisture (from 9-17-08 lab moisture)			22.6%	%
Wet Bulk Density (source avg)	0.707 grams/cc	=	0.596	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"}}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate =	65.7 tons/acre	=	1019.0 tons total
Compost Rate =	110.2 cubic yards/acre	=	1709.7 cy total

Signature: [signature]

Date: 09-17-08

Signature: [signature]

Date: 9-17-08

$$= \frac{1.5(6")\left(\frac{1000}{6"}\right)}{29.5\%\left(1 - \frac{22.6}{100}\right)}$$

$$= 65.09 \frac{\text{tons}}{\text{acre}} \checkmark$$

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in CY/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.

All Trials 1500 RPM

Compost Spreader Calibration Record

Date: 9/17/08 Time: 1200

Irrigated Meadow / Fluvial Deposit Polygon ID: Smith6

Design Application Rate: 110.2 CY/acre

2nd Gear
Trial 3

Calibration Data for one pass of compost:

4th Gear
Trial #2

Compost Quantity Added to Spreader: 3.25 (CY)

Dimensions over which compost was spread: 245 feet x 15 feet with 4th

285 x 15 = 4,275

Total Calibration Area: 3675 (ft^2) * 1 acre / 43560 ft^2 = 0.084 acres

43560

= 0.098

Calibrated Application Rate: 38.7 (CY/acre)

3.25 / 0.098 = 33.16

Quality Control Data for Field Application Verification:

3.3 passes
4th Gear, Thimer Lift
Longer Pass

(A) Design Application Rate: 110.2 CY/acre

(B) Calibrated Application Rate: 38.7 (CY/acre)

Passes to be Applied: 2.8 passes (= A/B)

Trial #1 3rd Gear

210' x 15' = 3150

43,560

0.072

3.25 / 0.072

45.13

110.2 / 45.13

2.4 passes
1500 rpm
2nd Gear

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in CY/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.

Compost Spreader Calibration Record

Date: 09-19-08 Time: 0955

Irrigated Meadow / Fluvial Deposit Polygon ID: Smith 6

Design Application Rate: 110 CY/acre

Calibration Data for one pass of compost: Trial #2

Compost Quantity Added to Spreader: 3.25 (CY) 3.25

Dimensions over which compost was spread: 14 feet x 260 feet 285' x 17' 4845

Total Calibration Area: 3640 (ft^2) * 1 acre / 43560 ft^2 = 0.08 acres 0.11 acres

Calibrated Application Rate: 40.6 (CY/acre) 29.5 cy/acre

Quality Control Data for Field Application Verification: 110/29.5

(A) Design Application Rate: 110 CY/acre = 3.7 passes

(B) Calibrated Application Rate: 40.6 (CY/acre)

Passes to be Applied: 2.7 passes (= A/B)

Trial #1

Print / Sign Name: Clay E. Cambrink / Clay E. Cambrink
Frontier Representative

Print / Sign Name: John Nortrup / John Nortrup
PWT / EPA Representative

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in CY/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.

Compost Spreader Calibration Record

Date: 09-22-08 Time: 1435

Irrigated Meadow / Fluvial Deposit Polygon ID: SmiTA6 Trial #2

Design Application Rate: 110 CY/acre 325 x 12 =

Calibration Data for one pass of compost: 4380

Compost Quantity Added to Spreader: 3.25 (CY)

Dimensions over which compost was spread: 195 feet x 15 feet 0.10

Total Calibration Area: 2925 (ft^2) * 1 acre / 43560 ft^2 = 0.067 acres 325 yd^3/acre

Calibrated Application Rate: 48.5 (CY/acre)

Quality Control Data for Field Application Verification:

(A) Design Application Rate: 110 CY/acre

(B) Calibrated Application Rate: 48.5 (CY/acre)

Passes to be Applied: 2.3 passes (= A/B) 3.4 passes Trial #2

Trial 1

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in CY/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.

Compost Spreader Calibration Record

Date: 09-23-08 Time: ~~08:15~~ grab 08:30

Irrigated Meadow / Fluvial Deposit Polygon ID: SnIITW6

Design Application Rate: 110 CY/acre

Trial #2

Calibration Data for one pass of compost:

Compost Quantity Added to Spreader: 3.25 (CY)

Dimensions over which compost was spread: 15.5 feet x 240 feet 18.5 X 265

Total Calibration Area: 3,720 (ft^2) * 1 acre / 43560 ft^2 = 0.085 acres 4,902 / 43,560

Calibrated Application Rate: 38.23 (CY/acre) = 0.11 acre

Quality Control Data for Field Application Verification:

(A) Design Application Rate: 110 CY/acre 29.5 yd/acre

(B) Calibrated Application Rate: 38.23 (CY/acre) 110/29.5

Passes to be Applied: 2.9 passes (= A/B) = 3.7 passes

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: John A. Potts / John Gulch
PWT / EPA Representative

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in CY/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.

---

* First Time w/565 Tractor

Compost Spreader Calibration Record

Date: 09-24-08 Time: 08:00

Irrigated Meadow / Fluvial Deposit Polygon ID: Smith 6

Design Application Rate: 110 CY/acre

Calibration Data for one pass of compost: Trial #2

Compost Quantity Added to Spreader: 3.25 (CY)

Dimensions over which compost was spread: 225 feet x 19.5' feet 25' x 19.0'

Total Calibration Area: 4387 (ft²) * 1 acre / 43560 ft² = 0.10 acres 4769 / 43560

Calibrated Application Rate: 32.5 (CY/acre) = 0.11

Quality Control Data for Field Application Verification:

(A) Design Application Rate: 110 CY/acre

(B) Calibrated Application Rate: 32.5 (CY/acre) 3.25/0.11

Passes to be Applied: 3.4 passes (= A/B) 110/29.5

Trial #1 = 3.7 passes

Trial #2

Print / Sign Name: [signature]
Frontier Representative

Print / Sign Name: [signature]
PWT / EPA Representative

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in yd^3/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.
- Repeat.

Compost Spreader Calibration Record

Date: 09-25-08 Time: 07:50

Irrigated Meadow / Fluvial Deposit Polygon ID: Smith 6

Design Application Rate: 110 (yd^3/acre)

Calibration Data for one load of compost:

	Test Run 1	Test Run 2	Average
Compost Quantity (yd^3)	3.25	3.25	
Compost was spread over (ft^2)	4320	4080	
Calibration area (acres)	0.099	0.094	
Calibrated Application Rate (yd^3/acre)	32.8	34.6	33.7

Quality Control Data for Field Application Verification:

(A) Design Application Rate: 110 (yd^3/acre)

(B) Average Calibrated Application Rate: 33.7 (yd^3/acre)

Passes to be Applied: 3.3 passes (= A/B)

Print / Sign Name: Clay E. Combrink / Clay E. Combrink
Frontier Representative

Print / Sign Name: John A. DeMeo III / John A. DeMeo III
PWT / EPA Representative

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in yd^3/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.
- Repeat.

Compost Spreader Calibration Record

Date: 09-26-08 Time: 08:00

Irrigated Meadow / Fluvial Deposit Polygon ID: SMITH 6

Design Application Rate: 110 (yd^3/acre)

Calibration Data for one load of compost:

255 X 15'

240 X16'

	Test Run 1	Test Run 2	Average
Compost Quantity (yd^3)	3.25	3.25	
Compost was spread over (ft^2)	3825	3840	
Calibration area (acres)	0.09	0.09	
Calibrated Application Rate (yd^3/acre)	36.11	36.11	36.11

Quality Control Data for Field Application Verification:

(A) Design Application Rate: 110 (yd^3/acre)

(B) Average Calibrated Application Rate: 36.11 (yd^3/acre)

Passes to be Applied: 3.05 passes (= A/B) 3.05

Print / Sign Name: Clay E. Combrink / Clay E. Combrink
Frontier Representative

Print / Sign Name: John Pothast / John Pothast
PWT / EPA Representative

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in yd^3/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.
- Repeat.

Compost Spreader Calibration Record

Date: 9/29/08 Time: 09:52

Irrigated Meadow / Fluvial Deposit Polygon ID: Gmith-6

Design Application Rate: 110 (yd^3/acre)

equipment = CAT Challenger (tives) w/ Kuhn spreader
D241+16-fall
241-319-taper 260+16'

Calibration Data for one load of compost:

	Test Run 1	Test Run 2	Average
Compost Quantity (yd^3)	3.25	3.25	
Compost was spread over (ft^2)	3876	4160	
Calibration area (acres)	0.088	0.095	
Calibrated Application Rate (yd^3/acre)	36.93	34.03	35.48

Quality Control Data for Field Application Verification:

(A) Design Application Rate: 110 (yd^3/acre)

(B) Average Calibrated Application Rate: 35.48 (yd^3/acre)

Passes to be Applied: 3.10 passes (= A/B)

Print / Sign Name: Clay E. Combrink / Clay E. Combrink
Frontier Representative

Print / Sign Name: Stuart Jennings / Stuart Jennings
PWT / EPA Representative

Activity Tracking Form
Irrigated Meadows
Spread & Incorporate Organic Material in 6" areas

Irrigated Meadow Polygon Name/ID: Smith 6

Activity Start Date: 9/15/08

Activity End Date: 10/3/08

Activities Verified As Completed (indicate NA if appropriate)

✓ Amendments have been applied at a field application rate calculated by EPA and as directed by PWT. Calculated application rate was 65.7 tons/acre

✓ Organic amendment was spread evenly across the remediation area using a calibrated agricultural manure spreader or other accepted equipment. **(Attach calibration records)**

✓ Organic amendment was applied uniformly. Rutting and compaction of the surface was minimized during application of organic amendment.

✓ Organic material was not applied to any area with standing water or areas that were frozen. Organic material was not applied before or during any significant rain events.

✓ Organic material was not spread under windy conditions where wind was sufficient to blow organic material off the ground surface before it can be tilled.

✓ Organic matter was tilled to the full remediation depth using a minimum of 2 passes unless the Subcontractor demonstrated that the proposed equipment has met the mixing standards in fewer passes and received approval of the EPA. The second tillage pass crosses the initial pass at a 90 degree angle.

✓ Organic material was tilled to a tolerance for 6-inch till areas of 5 inches to 8 inches. To verify this, test pits were surveyed at a rate of: **(check one)**

_____ 4 / acre (at beginning of project)

✓ 1 / acre (after effectiveness proven & with EPA approval)

_____ 1 / 5 acres (with EPA approval)

Verified excavating cost-remediation composite samples prep

NA PWT and/or EPA was present during all Subcontractor surveys to verify remediation depth.

_____ PWT and/or EPA conducted field testing, monitored and verified remediation depth, and has evaluated the effectiveness of mixing. Areas with large unremediated clumps of soil or large areas of unmixed soil amendments, if identified, were re-tilled.

Quantity of Organic Material Applied: 1705 CY

Quantity of Work Estimated in Proposal: 14.21 acres

Quantity of Work Performed: 15.5± acres

Survey Data/Date: NA

Activity Tracking Form
Irrigated Meadows
Spread & Incorporate Organic Material in 6" areas

Irrigated Meadow Polygon Name/ID: Smith 6

Note: Attach copies of the daily calibration records and survey data to this form

Signature of Contractor — Date: 10-08-08

Signature of Subcontractor — Date: 10-08-08

COLORADO DEPARTMENT OF AGRICULTURE
DIVISION OF PLANT INDUSTRY
700 Kipling Street, Suite 4000
Lakewood, Colorado 80215-8000
(303) 239-4149

TRANSIT CERTIFICATE
WEED FREE FORAGE CROP CERTIFICATION ACT 35-27.5

TO WHO IT MAY CONCERN:

The forage crop, to which this Transit Certificate relates, has been officially certified according to the Colorado Weed Free Forage Crop Certification Act 35-27.5. Pursuant to those standards, the information below has been included in this Transit Certificate concerning said certification. The Certificate of Inspection relating to said forage crop is on file at the:

Colorado Department of Agriculture
Division of Plant Industry
700 Kipling Street, Suite 4000
Lakewood, Colorado 80215-8000
Telephone: (303) 239-4149
FAX: (303) 239-4177

PLEASE PRINT IN INK

Murry Farms — Grower's Name

L B. Murry — Grower's Signature

Adams — County of Origin

Identify Forage Crop Type _____

634 — Bales Sold

8/8/08 — Date of Sale

IDENTIFICATION

INSPECTOR'S INITIALS DHF

GROWER'S INITIALS LBM.

FIELD NUMBER F-1

DATE 7/07

(Identification found in upper right corner of Certificate of Inspection: Form DPI-WF-05)

FORAGE CERTIFIED ACCORDING TO THE REGIONAL WEED FREE FORAGE STANDARDS

NOTE: Forage certified under the Colorado Weed Free Forage Crop Certification Act shall be baled with at least one strand of **blue and orange** colored twine or **galvanized** wire.

GROWER MUST ISSUE WHITE COPY TO PURCHASER; MAIL PINK COPY TO DEPARTMENT OF AGRICULTURE; KEEP GREEN COPY FOR FILE FOR EACH SALE.

Activity Tracking Form
Irrigated Meadows
Mulch Application

Irrigated Meadow Polygon Name/ID: Smith 6

Activity Start Date: 10-08-08

Activity End Date: 10-09-08

Activities Verified As Completed (indicate NA if appropriate)

✓ Mulch certified as weed free **(attached Certification documentation)**

✓ Mulch was stored properly and not degraded by water or other contaminants before use.

✓ Mulch has been applied immediately after seeding unless the nature of the mulch required that it must be incorporated into the soil; in that case the mulch has been applied before seeding. Mulch applied before seeding as approved by S. Jennings MD

NA If wood mulch was applied, the application rate was 10 to 12 tons per acre, or 50 to 60 cubic yards per acre using a blower, flail spreader, or other means that provided even distribution across the remediated area. Depending on the nature of the wood mulch, it may have been left as a surface application or may have been crimped or lightly disked into the top 2 inches to prevent dispersion **(Circle method used)**.

✓ If straw or native hay mulch was applied, the application rate was 2,000 pounds per acre using equipment specifically designed for application of mulch at a uniform rate to produce a mat covering the seed. Straw or native hay mulch was crimped using crimping equipment with round, notched blades approximately ¼-inch thick by 18 inches in diameter spaced 8 inches apart. The crimper was equipped with disc scrapers and had sufficient weight to force the vegetative mulch to a minimum depth of 3-inches into the soil. Mulch was crimped within 24 hours of application. Application rate & crimping as approved by S. Jennings MD

✓ Stormwater, sediment, and erosion control measures remained in place throughout implementation of the remedy and has been maintained in good condition during and after mulch placement to prevent surface water run-on and run-off that may damage the remediated area.

Quantity of Mulch Applied: 31,250 lbs. = 625 Bales

Quantity of Work Estimated in Proposal: 14.21 acres

Quantity of Work Performed: 15.51 acres

Survey Data/Date: 08-07-08

Note: Attach copies of the daily calibration records, weed free certification and survey data to this form

Signature of Contractor — Date: 10-09-08

Signature of Subcontractor — Date: 10-09-08

Seeder Calibration Form

Calibration Form Instructions

1) Enter the Polygon ID, Polygon acreage, Calibration Date, Target seed rate(s), %PLS in each seed mix, and % seed in each each mix
2) Perform seeder calibration per the manufacturers' instructions 3 times and enter the total weight of bulk seed mix in grams collected for each seed box
3) For each individual calibration run, verify that the achieved rate is within ±20 % of the 1/2 Target Rate
4) After the 3rd calibration run, verify that the 3 Run Average rate is within ±10% of the 1/2 Target Rate

NOTE: The BLUE text shows the "calculated values" based on the entered data

NA
Seed Mix 2 was Not used in Drill Seeder for this application MD 11-04-08

Polygon ID Smith 6 **Acres:** 15.511 **Date:** 11/4/08

	Seed Mix 1		Seed Mix 2	
Target Rate	11.50	lbs PLS / acre	1.25	lbs PLS / acre
% PLS in seed mix	86%		88%	
Dilution Factor	100%	(% seed)	33%	(% seed)
Target Application Rate	13.37	bulk pounds / acre	4.26	bulk pounds / acre
	207.4	Total bulk pounds	66.1	total bulk pounds
1/2 Target Rate (2 passes)	6.69	bulk pounds / acre	2.13	bulk pounds / acre
	103.7	1/2 of total bulk pounds	33.0	1/2 of total bulk pounds
Test Run 1	10.70	total grams in 3 bags	0.00	total grams in 3 bags
	5.35	bulk lbs/acre	0.00	bulk lbs/acre
Test Run 2	14.30	total grams in 3 bags		total grams in 3 bags
	7.15	bulk lbs/acre	0.00	bulk lbs/acre
Test Run 3	13.30	total grams in 3 bags		total grams in 3 bags
	6.65	bulk lbs/acre	0.00	bulk lbs/acre
3 Run Average	12.77	total grams in 3 bags	0.00	total grams in 3 bags
	6.38	bulk lbs/acre	0.00	bulk lbs/acre
For QC Checks:				
+20% of 1/2 Target Rate	8.02	bulk pounds / acre	2.56	bulk pounds / acre
-20% of 1/2 Target Rate	5.35	bulk pounds / acre	1.70	bulk pounds / acre
+10% of 1/2 Target Rate	7.35	lbs seed mix / acre	2.34	lbs seed mix / acre
-10% of 1/2 Target Rate	6.02	lbs seed mix / acre	1.92	lbs seed mix / acre

PWT Signature: _____

Frontier Signature: _____

Arkansas Valley Seed

RELIABLE RABBIT EARS SERVICE BRAND

Supplying QUALITY Seed With INTEGRITY Since 1945

PRELIMINARY INVOICE

Limitation of Warranty and Finance Charge Agreement are part of the terms and conditions of this sale. See back of this invoice.

www.avseeds.com
rabbitears@seedsolutions.com

Invoice Number
Date 10/[illegible]/08
Customer [illegible]
Salesman [illegible]
Reference PO
Order No [illegible]
Invoice

Sold To: FRONTIER ENVIRONMENTAL
5171 WARD ROAD UNIT 1
WHEAT RIDGE CO 80033

Ship To: FRONTIER ENVIRONMENTAL
5171 WARD ROAD UNIT 1
WHEAT RIDGE CO 80033

Tax ID:
Tax Cert:

Request Date	Customer P.O.	F.O.B.	Ship : CLAY 303-[illegible] Inst : BRENT 30[illegible]
10/01/08			

Description	Lot Number	Quantity Shipped	UM	Price	Extended Price	Tax
[illegible] SEED MIX	2107474	750.0000	LB	2.5990	[illegible]	T
Native Grass Mix-Bulk						
13.32 LBS/ACRE @ 235.00/ACRE X 56.3 ACRES						
[illegible] RANCH						
[illegible] SEED MIX	2107503	240.0000	LB	1.5000	[illegible]	T
Native Grass Mix-Bulk						
4.26 LBS/ACRE @ $5.00/ACRE X 56.3 ACRES						
[illegible]						
[illegible] RANCH						

998 lbs

delivered 10-7-08

Small Seeds:
Smith 7, 6, 3, 4, 5

Large: ~~All polysac~~ Smith 2, 3, 4, 5, 6, 7

Sales Tax [illegible] Total [illegible]

Terms: Net 30 Days Net Due Date 10/31/08 Tax Rt 3.660 [illegible]

Arkansas Valley Seed
1333 Hwy. 66
Longmont, CO 80504
(877) 907-3337
(720) 535-4533 Fax

Arkansas Valley Seed
4625 Colorado Blvd.
Denver, CO 80216
(877) 957-3337
(303) 320-7516 Fax

Arkansas Valley Seed
12th & Santa Fe Tracks
Rocky Ford, CO 81067
(719) 254-7469
(719) 254-4115 Fax

Colorado Seed
195 N. Washington
Monte Vista, CO 81144
(719) 852-3505
(719) 852-4942 Fax

Wilbers Seed
809 N. Broadway
Miller, SD 57362
(800) 952-2233
(605) 853-2620 Fax

Activity Tracking Form
Irrigated Meadows
Seedbed Preparation and Seeding

Irrigated Meadow Polygon Name/ID: SMITH 6

Activity Start Date: 11-03-08

Activity End Date: 11-04-08

Activities Verified As Completed (indicate NA if appropriate)

✓ EPA and/or PWT has collected ~~and analyzed~~ 2nd soil samples to verify performance standards have been met. Frequency is 1 per 5 acres.

Preparation of the Seedbed

✓ Seedbed has been smoothed to the extent practical for effective seeding.

✓ Removed or disaggregated clods greater than 4 inches in diameter from the top 6 inches of soil.

✓ Removed rocks and cobbles greater than 4 inches in diameter from the surface.

✓ The surface has been compacted by equipment that produces a uniform rough textured surface. The seedbed for the Irrigated Meadows is firm allowing the heel of a boot to penetrate approximately 0.5 to 1 inch.

✓ Plowed or disked areas compacted by vehicle traffic to reduce compaction.

✓ There were no erosional features present prior to seeding.

NA Loosened areas compacted by weather or colonized by weeds resulting from time gaps between remediation and seeding, as necessary.

Seed Application

NA Lab samples show acid-base account and TOC test results in acceptable ranges before seeding.
Post-Remediation samples were not analyzed prior to seeding.

✓ Seeding done outside the month of October was approved by EPA.

✓ The seedbed was evaluated by EPA and/or PWT immediately prior to seeding to ensure seedbed requirements were achieved and that the seedbed has not degraded since amendments were applied and tilled.

✓ Used the appropriate seed mixes for the Smith, Seppi, and BLM Irrigated Meadow sites identified in Tables IM-2, IM-3, and IM-4. Deviations approved by EPA.

✓ Applied seed using calibrated equipment at rates shown in Tables IM-2, IM-3, or IM-4. Rates are in lbs PLS / acre. The seed has been applied within 10 percent (by weight) of the rate specified.

Seed mix used: Small: 1.25 #PLS/ACRE X 2 Large: 11.5 #PLS/ACRE Application Rate: _____(# PLS / acre)

✓ Seed was stored properly and not degraded by water or other contaminants before use.

Activity Tracking Form
Irrigated Meadows
Seedbed Preparation and Seeding

Irrigated Meadow Polygon Name/ID: Smith 6

✓ Seed was not applied to any area with standing water or areas that are frozen. Seed was not applied before or during any significant rain events or during wet conditions when seed equipment could cause ruts in the ground or prevent good seed placement.

✓ Seed was not spread under windy conditions where wind was sufficient to blow seed off the ground surface.

✓ Wherever possible, areas were drill seeded. Seed was applied to the appropriate depth of 0.25 to 0.5 inches. Drill seeding was applied in 2 applications, each at half the seeding rate specified in Tables IM-2, IM-3, and IM-4. The direction of the second application was perpendicular to the first application. Seed mix may have been diluted with rice hulls or other Contractor-accepted material, if necessary to achieve the lower seeding rate.

Large Seed was drilled in 2 applications. Small Seed was Broadcast @ double design rate prior to drill seeding as per S. Jennings. jms

✓ For each acre seeded, the hopper and applicator tubes were checked for clogged tubes and to verify even application rates. checked Periodically; used full design amount of seed.

Quantity of Seed Applied: Large: 207 lbs. total, Small: 132 lbs. total

Quantity of Work Estimated in Proposal:

Quantity of Work Performed: 15.511 acres

Survey Data/Date: 08-07-08

Note: Attach copies of the daily calibration records, seed certification forms, and survey data to this form. Also, note sample numbers for acid-base account and TOC lab tests.

Signature of Contractor — Date: 11-05-08

Signature of Subcontractor — Date: 11-05-08

Note: Several Areas Re-graded, Re-Seeded, Re-Mulched in October 2009

BROADCAST SEEDED CALIBRATION

- Place a known weight into the spreader hopper.
- Follow the operations manual to set the equipment to meet the design field application rate (e.g., spreader opening, travel speed, RPMs, etc.)
- Make one pass dispersing the seed until the contents of the spreader are emptied.
- Measure the area over which the seed was applied
- Divide the weight of material applied by the total area it was applied to, convert to lbs/acre, and compare to the design field application rate.
- An acceptable test will be within 10% of the required rate.

Broadcast Seeder Calibration Record

Date: 11-03-05 Time: Smith 11:00

Irrigated Meadow / Fluvial Deposit Polygon ID: Smith Small seed w/Mica Hills

Seed Type (Circle One): Smith / Seppi / BLM / FD / Wetlands / Other: _____

Design Field Application Rate: 4.26 lbs/acre (± 10% range = _____)

Field Calibration Data:

Dimensions over which seed was spread: 8 feet x 420 feet

Total Calibration Area: 3360 (ft^2) * 1 acre / 43560 ft^2 = 0.077 acres

Calibrated Application Rate: 4.80 (lbs/acre) 1 Bag = 0.33 lbs

Second Quality Control Check for Field Application Rate Verification:

Area of Polygon: 15.51 (acres)

Total Weight to be Applied: 66 (lbs) x 2 appl. broadcast = 132 lbs

Print / Sign Name: Clay E. Combrink / Clay E. Combrink
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

2008

Kind: TABLE IM-3/SMALL SEED MIX
Lot: 2137593

Kind & Variety:	Pure%	Germ%	Origin:
TIMOTHY, CLIMAX	39.55	90	CN
ALSIKE CLOVER	22.96	93	MT
PRAIRIE JUNEGRASS	16.18	88	WA
CANADA BLUEGRASS, REUBENS	11.85	90	WA
REDTOP	7.66	93	WA

Crop: .10% Inert: 1.70% Weed: .01% Net Wt: 5# (4.44 PLS#) 3.5 ACRES

Noxious Weed: None Found Test Date: 6/08

REMARKS: FRONTIER ENVIRONMENTAL
JOB: SMITH RANCH

ARKANSAS VALLEY SEED, 4333 HWY 66, LONGMONT CO 80504

Kind: TABLE IM-3/LARGE SEED MIX
Lot: 2137474

Kind & Variety:	Pure%	Germ%	Origin:
MEADOW BROME, FLEET	31.74	94	CAN
SLENDER W/G, SAN LUIS	21.68	86	CAN
BROMEGRASS, MANCHAR	19.38	77	ID
WESTERN W/G, ROSANNA	16.58	90	WA
RED FESCUE, VNS	7.69	97	MT

Crop: .27% Inert: 2.63% Weed: .03% Net Wt: 50# (42.9 PLS#) 3.73 ACRES

Noxious Weed: None Found Test Date: 6/08

REMARKS: FRONTIER ENVIRONMENTAL
JOB: SMITH RANCH

ARKANSAS VALLEY SEED, 4333 HWY 66, LONGMONT CO 80504

2008

J:\projects\80032\dwg\OU-11.dwg

Inter-Mountain Engineering Ltd.

CLIENT: FRONTIER ENVIRONMENTAL INC.

OU-11 POLYGON

SMITH-6

LAKE COUNTY, COLORADO

Note: Sketched Ditches Are NOT To Scale. Lengths of Ditches were hand-measured in the field. Locations sketched are approximate.

1" = MILE

LATERALS Measured Length: 2188 Linear Feet

Primary Measured Length: 1460 Linear Feet

Total 3648'

SMITH-6
15.51 ACRES

124'
186'
174'
250'
102'
170'
218'
175'
250'
185'
354'

SURVEYOR'S CERTIFICATE

I, Duane Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO DUANE D. FEHRINGER 26626 REGISTERED LAND SURVEYOR

Duane Fehringer P.E. & P.L.S. 26626

Note: Ditches were Backfilled & Re-Seeded Per Request of Doc Smith, October, 2009

DRAWN BY	SF
SCALE	1"=800'
DATE ISSUED	8-7-08
PROJECT NO	08-0032
SHEET	

Kind: SMITH SEED MIX SMALL
Lot: 2148517

Reseed Smith 3,4,5 Smith 2 (6)

Kind & Variety:	Pure%	Germ%	Origin:
CLIMAX TIMOTHY	38.16	95	CAN
ALSIKE CLOVER	23.35	93	MT
PRAIRIE JUNEGRASS	15.74	92	WA
CANADA BLUEGRASS, REUBENS	11.80	92	WA
REDTOP	7.94	91	CAN

Crop: .30% Inert: 2.54% Weed: .18% Net Wt: 18 #(15.625PLS#)12.5AC

Noxious Weed: None Found Test Date: 5/09

Remarks: FRONTIER ENVIRONMENTAL

Winfield Solutions PO Box 64589 St Paul, MN 55164

Pre-Seeding October 2009

Kind: SMITH SEED MIX LARGE
Lot: 2148521

Smith Reseed 3,4,5

Kind & Variety:	Pure%	Germ%	Origin:
MEADOW BROME, FLEET	33.17	91	CAN
SLENDER W/G, SAND LUIS	20.94	95	WA
WESTERN W/G, ROSANNA	17.69	90	SD
SMOOTH BROMEGRASS, MANCHAR	17.50	91	WA
RED FESCUE	8.47	94	MT

Also Reseed Smith 2 (6)

Crop: .12% Inert: 2.05 % Weed: .07% Net Wt: 39.5 #(35.9375PLS#/AC) 3.125AC

Noxious Weed: None Found Test Date: 5/09

Remarks: FRONTIER ENVIRONMENTAL

Winfield Solutions PO Box 64589 St Paul, MN 55164

Seeder Calibration Form

Calibration Form Instructions

1) Enter the Polygon ID, Polygon acreage, Calibration Date, Target seed rate(s), %PLS in each seed mix, and % seed in each each mix
2) Perform seeder calibration per the manufacturers' instructions 3 times and enter the total weight of bulk seed mix in grams collected for each seed box
3) For each individual calibration run, verify that the achieved rate is within ±20 % of the 1/2 Target Rate
4) After the 3rd calibration run, verify that the 3 Run Average rate is within ±10% of the 1/2 Target Rate

NOTE: The BLUE text shows the "calculated values" based on the entered data

50% Original Treated Area

Polygon ID Smith 6 (reseed) **Acres:** 7.76 (Approx.) **Date:** 10/22/09

	Seed Mix 1		Seed Mix 2	
Target Rate	10.50	lbs PLS / acre	2.25	lbs PLS / acre
% PLS in seed mix	91%		87%	
Dilution Factor	100%	(% seed)	100%	(% seed)
Target Application Rate	11.54	bulk pounds / acre	2.59	bulk pounds / acre
	89.5	Total bulk pounds	20.1	total bulk pounds
1/2 Target Rate (2 passes)	5.77	bulk pounds / acre	1.29	bulk pounds / acre
	44.8	1/2 of total bulk pounds	10.0	1/2 of total bulk pounds
Test Run 1	10.90	total grams in 3 bags	2.70	total grams in 3 bags
	5.45	bulk lbs/acre	1.35	bulk lbs/acre
Test Run 2	12.50	total grams in 3 bags	2.80	total grams in 3 bags
	6.25	bulk lbs/acre	1.40	bulk lbs/acre
Test Run 3	11.30	total grams in 3 bags	2.60	total grams in 3 bags
	5.65	bulk lbs/acre	1.30	bulk lbs/acre
3 Run Average	11.57	total grams in 3 bags	2.70	total grams in 3 bags
	5.78	bulk lbs/acre	1.35	bulk lbs/acre
For QC Checks:				
+20% of 1/2 Target Rate	6.92	bulk pounds / acre	1.55	bulk pounds / acre
-20% of 1/2 Target Rate	4.62	bulk pounds / acre	1.03	bulk pounds / acre
+10% of 1/2 Target Rate	6.35	lbs seed mix / acre	1.42	lbs seed mix / acre
-10% of 1/2 Target Rate	5.19	lbs seed mix / acre	1.16	lbs seed mix / acre

PWT Signature: _____

Frontier Signature: _____

Activity Tracking Form
Irrigated Meadows
Clear, Grub, Grade, Pre-Till

Irrigated Meadow Polygon Name/ID: Smith 7

Activity Start Date: 08-11-08

Activity End Date: 08-11-08

Activities Verified As Completed (indicate NA if appropriate)

✓ Completed pre-remediation site walk and final delineation of remediation boundaries. 8/6/08 (RAW)

✓ Survey points for post-treatment depth verification were identified and elevations documented by survey crew before any ground disturbance. Rates will vary from 4 per acre down to 1 per 5 acres depending on Subcontractor's demonstration of compliance with QC requirements for tillage depth. **(Attach or reference survey data)** Frontier only shot 20 pts. instead of 16 22 required.

✓ EPA collected pre-remediation full remediation depth composite samples at a rate of ~ 1 per 5 acres and the sample locations were surveyed (All IMs except Seppi 5 are complete + lab data back) 8/7/08 (RAW)

✓ Removed and disposed of existing trash or debris in accordance with Specification Section 01 74 16. 08-08-08

NA Cleared dead or decadent large woody vegetation if present and placed outside the remediation area in locations identified by the Contractor. Remaining grass and small woody vegetation tilled in place.

✓ Locations, extent and width of secondary irrigation ditches to be removed have been surveyed.

✓ ~~N/A~~ (RAW) Graded the remediation areas as necessary for effective remediation. Smoothed out single dirt pile

✓ Pre-tilled the remediation areas to a minimum depth of 6 inches.

✓ ~~N/A~~ (RAW) If rocks were removed from the remediation area, they were staged or disposed of as directed by the Contractor. 2 bucket loads of rock from near RR grade

Quantity of Work Estimated in Proposal: 8.09 acres

Quantity of Work Performed: 5.388+0.227 = 5.615 acres

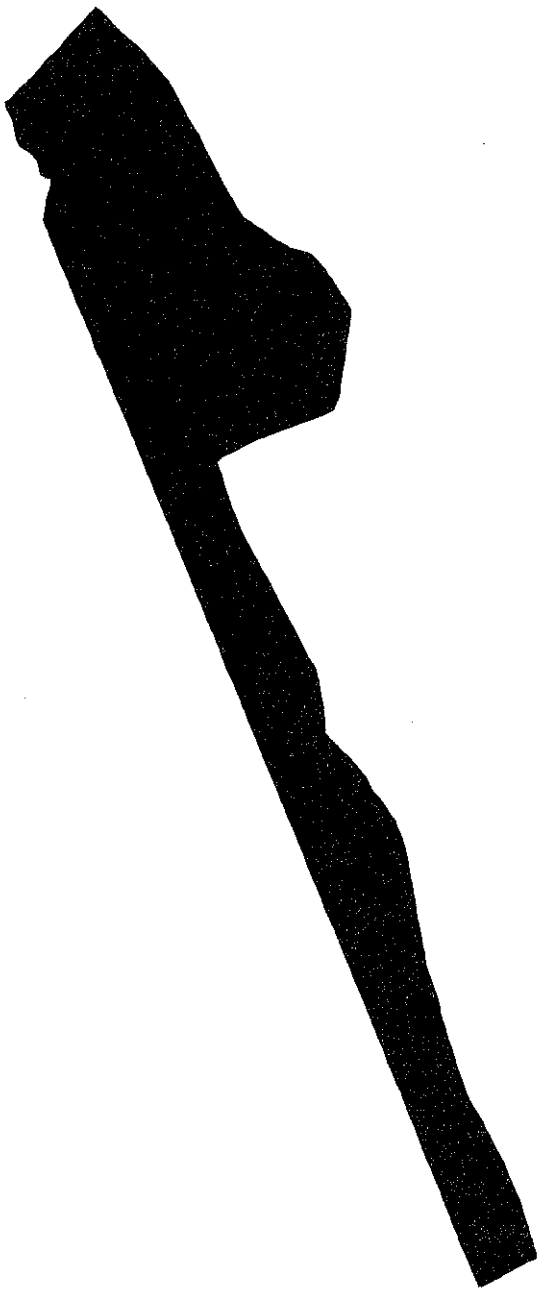
Survey Data/Date: 8-7-08

Note: Attach copies of the survey data to this form or reference location of supporting survey data

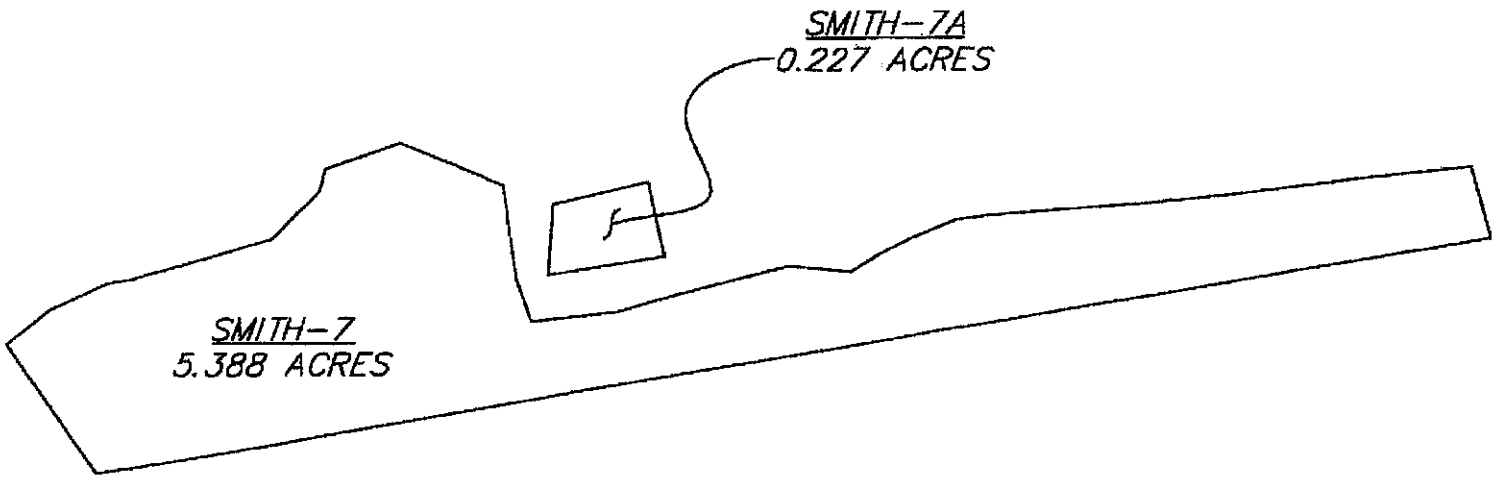
Signature of Contractor — Date: 8/15/08

Signature of Subcontractor — Date: 8/15/08

7/30/08 Smith 7 - 5.23 acres



400 200 0 400 Feet



SURVEYOR'S CERTIFICATE

I, Duane Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 8-7-06 26626 L.S. AND P.E.

Duane Fehringer P.E. & P.L.S. 26626

Inter-Mountain Engineering Ltd.
40881 US HWY 6&24, STE 2&3 POX 979 AVON, CO 81620 PH: (970)949-1973
8301 CONTINENTAL DIVIDE RD, SUITE 197 LITTLETON, CO 80127 PH: (303)948-6126

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OU-11 POLYGON AREA

SMITH–7 AND SMITH–7A

LAKE COUNTY, COLORADO

DRAWN BY	SFF
SCALE	1"=200'
DATE ISSUED	8-7-06
PROJECT NO.	08-0032
SHEET	

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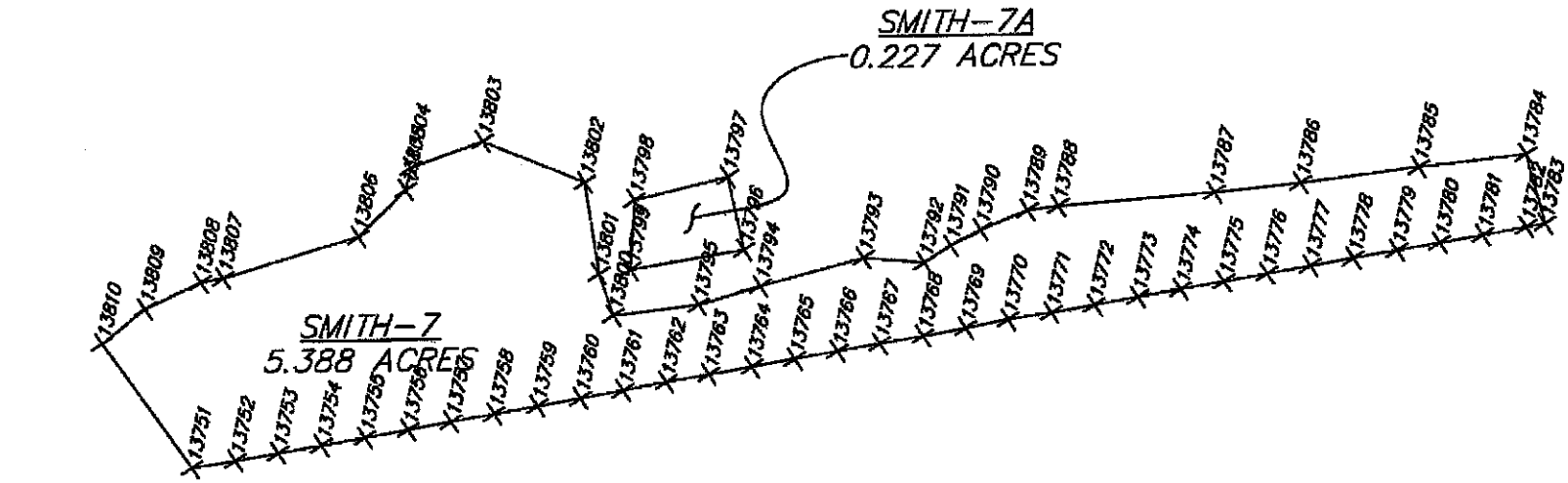

Inter-Mountain Engineering Ltd.

0301 US HWY 6&24, STE 283 BOX 975 AVON, CO 81620 PH: (970)949-5972
6301 CONTINENTAL DIVIDE RD, SUITE 107 LITTLETON, CO 80127 PH: (303)948-4329

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OU-11 POLYGON AREA

SMITH-7 AND SMITH-7A

LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=200'
DATE ISSUED:	6-7-08
PROJECT NO.	08-0032
SHEET	

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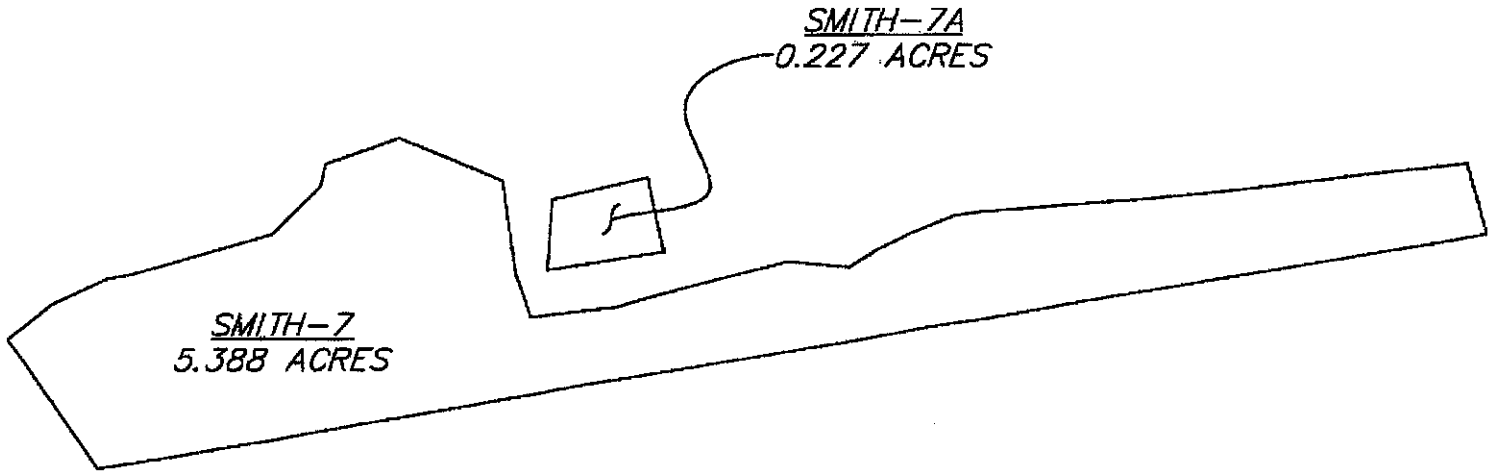

SURVEYOR'S CERTIFICATE

I, Duane Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

Duane Fehringer P.E. & P.L.S. 26626

COLORADO REGISTERED DUANE D. FEHRINGER 8-7-08 26626 P.E. AND P.L.S.

Inter-Mountain Engineering Ltd.
40600 US HWY 6&24, STE 285 BOX 978 AVON, CO 81620 PH (970)949-5973
6312 CONTINENTAL DIVIDE RD, SUITE 107 LITTLETON, CO 80127 PH (303)949-6230

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OU-11 POLYGON AREA

SMITH–7 AND SMITH–7A

LAKE COUNTY, COLORADO

DRAWN BY	RFF
SCALE	1"=200'
DATE ISSUED	8-7-08
PROJECT NO.	08-0032
CHKD	

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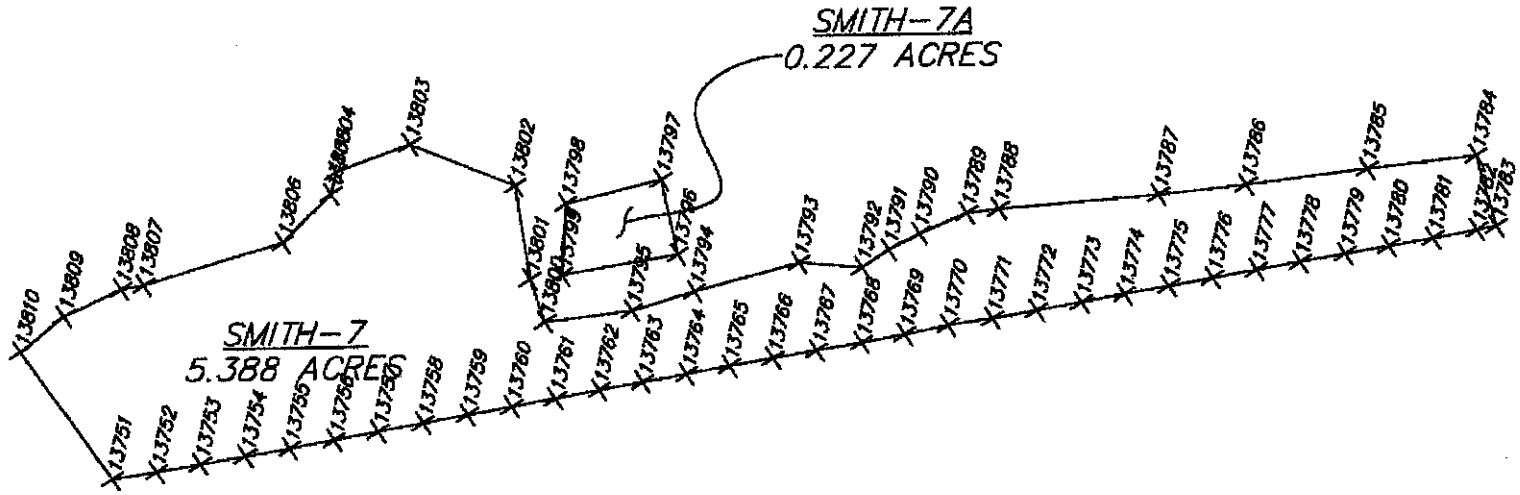

Inter-Mountain Engineering Ltd.

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6311 CONTINENTAL DIVIDE RD, SUITE 107 LITTLETON, CO 80127 PH: (303)948-4220

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OU-11 POLYGON AREA

SMITH-7 AND SMITH-7A

LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=200'
DATE ISSUED:	8-7-08
PROJECT NO:	08-0032
CHKD BY:	

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Lime Application Rate Calculation Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: **Smith 7**

POLYGON CHARACTERISTICS

Net Application Rate (22 dry tons/1000 tons soil unless noted otherwise)	22	dry tons/1000 tons soil
Mixing Safety Factor (10% unless noted otherwise)	10.00%	
% Rock (0 unless noted otherwise)	2.00%	Per S. Jennings
Treatment Depth	12	inches
Total Area	5.565	acres

LIME CHARACTERISTICS

Lime Particle Size Distribution					
Percent >10 mesh		X 0.1	=	0.0000	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.0004	(B)
Percent < 60 mesh	99.92%	X 1	=	0.9992	(C)
Lime Reactivity			=	0.9996	(Sum of A, B, and C)

Calcium Carbonate Equivalence	82.18%	%	
Percent Moisture	25.70%	%	From 3/10/08 lab tests
Bulk Density	0.75 grams/cc	=	0.6321 tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * (1000 tons soil/acre/6") * Treatment Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 77.71 tons/acre = 432.47 tons total

Lime Rate = 122.95 cubic yards/acre = 684.20 cy total

Signature: [signature]

Date: 8/13/08

Signature: [signature] (PWT Team)

Date: 8/13/08

Lime Application Rate Calculation Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: **Smith 7**

POLYGON CHARACTERISTICS

Net Application Rate (22 dry tons/1000 tons soil unless noted otherwise)	22	dry tons/1000 tons soil
Mixing Safety Factor (10% unless noted otherwise)	10.00%	
% Rock (0 unless noted otherwise)	2.00%	Per S. Jennings
Treatment Depth	12	inches
Total Area	5.565	acres

LIME CHARACTERISTICS

Lime Particle Size Distribution					
Percent >10 mesh		X 0.1	=	0.0000	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.0004	(B)
Percent < 60 mesh	99.92%	X 1	=	0.9992	(C)
			=	0.9996	(Sum of A, B, and C)
Lime Reactivity				82.18%	%
Calcium Carbonate Equivalence				25.70%	% From 8/19/08 lab tests
Percent Moisture					
Bulk Density	0.75 grams/cc		=	0.6321	tons/cy

CALCULATE LIME RATE

Lime Rate = $\frac{\text{Net Application Rate *(1+ Mixing Factor/100)* (1 - \% Rock/100) * (1000 tons soil/acre/6") * Treatment Depth}}{\text{(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - \% Moisture/100)}}$

Lime Rate = 77.71 tons/acre = 432.47 tons total

Lime Rate = 122.95 cubic yards/acre = 684.20 cy total

Signature: [signature]

Date: 8/13/08

Signature: [signature] (NRT Team)

Date: 8/13/08

Lime Application Rate Calculation Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: **Smith 7**

POLYGON CHARACTERISTICS

Net Application Rate (22 dry tons/1000 tons soil unless noted otherwise)				22	dry tons/1000 tons soil
Mixing Safety Factor (10% unless noted otherwise)				10.00%	
% Rock (0 unless noted otherwise)				2.00%	
Treatment Depth				12	inches
Total Area				5.565	acres

LIME CHARACTERISTICS

Lime Particle Size Distribution					
Percent >10 mesh		X 0.1	=	0.0000	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.0004	(B)
Percent < 60 mesh	99.92%	X 1	=	0.9992	(C)
Lime Reactivity			=	0.9996	(Sum of A, B, and C)
Calcium Carbonate Equivalence				82.18%	%
Percent Moisture				26.4%	%
Bulk Density	0.75 grams/cc		=	0.632	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * (1000 tons soil/acre/6") * Treatment Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 78.45 tons/acre = 436.58 tons total
= 3.60 lbs/ft2 1.80 (two-pass rate in psf)

Lime Rate = 124.12 cubic yards/acre = 690.71 cy total

Signature: Roger A. Merrick
Digitally signed by Roger A. Merrick
DN: cn=Roger A. Merrick, c=US, o=E2 Consulting Engineers, Inc., email=roger.merrick@e2.com
Reason: I am approving this document
Location: Golden, CO
Date: 2008.08.25 08:21:38 -06'00'

Date:

Signature:

Date: 08-26-08

Note: Revised moisture content for Silage Trench #5

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: Sm.47

Date: 8/14/08 Time: 255 pm

Field Application Rate: 77.71 tons/acre (3.57 psf) Doing it in two spreader passes 1.785 psf/pass

Total Tarp Dimensions: 27 (sq. ft.)

Test 1 Material Weight: 43.5 (lbs.) Rate: 1.61 psf Δ.175 ✓

Test 2 Material Weight: 46 (lbs.) Rate: 1.70 psf Δ 0.085

Test 3 Material Weight: _____ (lbs.) Rate: _____ psf

Test 4 Material Weight: _____ (lbs.) Rate: _____ psf

Test 5 Material Weight: _____ (lbs.) Rate: _____ psf

Print / Sign Name: Clay E. Combrink / Clay E. Combrink
Frontier Representative

Print / Sign Name: Roger Merrick / Roger Merrick
PWT / EPA Representative

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: Smith 7

Date: 8/15/08 Time: 9:00 am

Field Application Rate: 77.71 tons/acre (3.57 psf) ½ rate for 2 passes = 1.785 psf

Total Tarp Dimensions: 27 (sq. ft.)

8 + 16.5 + 18.5 = 43 - 7.5 =

Test 1 Material Weight: 35.5 (lbs.) Rate: 1.31 psf X auger initially empty

24 + 8 + 22.5 = ~~54.5~~ 47 - 7.5 =

Test 2 Material Weight: ~~47~~ 39.5 (lbs.) Rate: ~~2.148~~ 1.74 psf ✓

18 + 10.5 + 20 = ~~48.5~~ 41 - 7.5 =

Test 3 Material Weight: 41 (lbs.) Rate: ~~1.89~~ 1.51 psf ~~X~~ 15.48 wrong geo!

23 + 9.5 + 22 = 54.5 - 7.5

Test 4 Material Weight: 47 (lbs.) Rate: 1.74 psf ✓

20 + 20.5 + 11 = 51.5 = 44

Test 5 Material Weight: 44 (lbs.) Rate: 1.629 psf ✓ Δ 0.156

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: Smith 7

Date: 3/20/08 Time: 10:50 am

Field Application Rate: 77.71 tons/acre (3.57 psf) (psf = tons/acre*0.0459) ½ rate = 1.785 psf

Total Tarp Dimensions: 27 (sq. ft.)
22 + 22 + 10 = 54 - 7.5 =

Test 1 Material Weight: 46.5 (lbs.) Rate: 1.72 psf ✓ < 1.96
25 + 10 + 22 = 57 - 7.5 =

Test 2 Material Weight: 49.5 (lbs.) Rate: 1.83 psf ✓ > 1.62

~~Test 3 Material Weight: _____ (lbs.) Rate: _____ psf~~

~~Test 4 Material Weight: _____ (lbs.) Rate: _____ psf~~

~~Test 5 Material Weight: _____ (lbs.) Rate: _____ psf~~

Print / Sign Name: C. Cowbrick / [signature]
Frontier Representative

Print / Sign Name: Roger Merrick / [signature]
PWT / EPA Representative

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: Smith 7

Date: 8/20/08 Time: 10:50 am

Field Application Rate: 77.71 tons/acre (3.57 psf) (psf = tons/acre*0.0459) ½ rate = 1.785 psf

Total Tarp Dimensions: 27 (sq. ft.)
22+22+10 = 54-7.5=

Test 1 Material Weight: 46.5 (lbs.) Rate: 1.72 psf ✓
25+10+22 = 57-7.5=

Test 2 Material Weight: 49.5 (lbs.) Rate: 1.83 psf ✓

Test 3 Material Weight: _____ (lbs.) Rate: _____ psf

Test 4 Material Weight: _____ (lbs.) Rate: _____ psf

Test 5 Material Weight: _____ (lbs.) Rate: _____ psf

Print / Sign Name: C. Combrink / [signature]
Frontier Representative

Print / Sign Name: Roger Merrick / [signature]
PWT / EPA Representative

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: Smith-7

Date: 8/21/08 Time: 08:45

Field Application Rate: 77.71 tons/acre (3.57 psf) (psf = tons/acre*0.0459)

Total Tarp Dimensions: 27 (sq. ft.) 1/2 rate

±10% tolerance = 1.62 – 1.96

Test 1 Material Weight: 45.5 (lbs.) Rate: 1.685 psf
22+21+10 = 53-7.5

Test 2 Material Weight: 49.5 (lbs.) Rate: 1.83 psf
23+9+25 = ~~49.5~~ 57-7.5

Test 3 Material Weight: _____ (lbs.) Rate: _____ psf

Test 4 Material Weight: _____ (lbs.) Rate: _____ psf

Test 5 Material Weight: _____ (lbs.) Rate: _____ psf

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: Stuart Jennings | Stuart Jennings
PWT / EPA Representative

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: Smith 7 (Lift 1 and start Lift 2)

Date: 08-22-08 Time: 0830

Field Application Rate: 77.71 tons/acre (3.57 psf) (psf = tons/acre*0.0459)
VaRate = 1.78

Total Tarp Dimensions: 27 (sq. ft.)

(-10%) ≈ 1.62
(+10%) ≈ 1.96

Test 1 Material Weight: 51 (lbs.) Rate: 1.88 psf
24.5 + 11.0 + 23 − 7.5 (tare 3 buckets)

Test 2 Material Weight: 50.5 (lbs.) Rate: 1.87 psf
25.0 + 24.0 + 9.0 − 7.5

Test 3 Material Weight: _____ (lbs.) Rate: _____ psf

Test 4 Material Weight: _____ (lbs.) Rate: _____ psf

Test 5 Material Weight: _____ (lbs.) Rate: _____ psf

OK 08-22-08

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: John A. DeMarchis / _____
PWT / EPA Representative

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: Smith 7 Lift 2

Date: 08-25-08 Time: 09:35

Field Application Rate: ~~77.71~~ 78.45 tons/acre (3.60 psf) (psf = tons/acre*0.0459)

Total Tarp Dimensions: 27 (sq. ft.)

1/2 Rate = 1.80

-10% (1.64)

+10% (1.98)

Test 1 Material Weight: 47.5 (lbs.) Rate: 1.76 psf

21.5 + 8.0 + 25.5 - 7.5

Test 2 Material Weight: 53.5 (lbs.) Rate: 1.98 psf

11.0 + 27.5 + 22.5 - 7.5

Test 3 Material Weight: _____ (lbs.) Rate: _____ psf

Test 4 Material Weight: ~~_____ (lbs.)~~ Rate: _____ psf

08-25-08

Test 5 Material Weight: _____ (lbs.) Rate: _____ psf

Print / Sign Name: Clay E. Combrink / Clay E. Combrink
Frontier Representative

Print / Sign Name: John A. DeAngelis
PWT / EPA Representative

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: Smith 7 Lift 2 and Begin Smith 6

Date: 06-26-08 Time: 08:00 - 08:35

Field Application Rate: 78.45 tons/acre (3.60 psf) (psf = tons/acre*0.0459)

Total Tarp Dimensions: 27 (sq. ft.) ½ RATE = 1.80

Test 1 Material Weight: 49 (lbs.) Rate: 1.81 psf
23.0 + 11.5 + 22.0 - 7.5 tare

Test 2 Material Weight: 96.5 (lbs.) Rate: 3.57 psf Fail - (Box Loaded Due to PTO Running with Auger not Running)
48.0 + 11.0 + 50.0 - 7.5

Test 3 Material Weight: 45.5 (lbs.) Rate: 1.69 psf
22.0 + 8.0 + 23.0 - 7.5

Test 4 Material Weight: 47.5 (lbs.) Rate: 1.76 psf
19.0 + 11.0 + 27.0 - 7.5

~~Test 5 Material Weight: _____ (lbs.) Rate: _____ psf~~

-10% (1.64)
+10% (1.98)

Print / Sign Name: Clay E. Cambrink / [signature]
Frontier Representative

Print / Sign Name: John A. DeMeyers / [signature]
PWT / EPA Representative

8-29-08

[SMITH - 7] – DEPTH VERIFICATION POINTS –

Point	Laser +/–	Elev.	= Pre	– Post	= △	in.
1.1	+.49 > # 13809	9435.82	9436.31	9435.73	.58	7
	–1.51 < # 13811			9435.73		
1.2	–1.12 < # 13814			9435.37		
	–.34 < # 13752			9435.37		
1.3	–.11 < # 13808	9434.65	9434.54	9434.17	.37	4.5
	+.74 > # 13807	9433.86	9434.60	9434.17	.43	5
1.4	–1.63 < # 13755			9433.31		
	+1.33 > # 13806	9436.90	9434.23	9433.31	.92	11
2.1	–1.98 < # 13755			9433.04		
	–.11 < # 13756			9433.04		
2.2	+.68 > # 13805	9432.65	9433.33	9432.64	.69	8.25
	+1.16 > # 13804	9432.17	9433.33	9432.64	.69	8.25
2.3	–.15 < # 13804	9432.17	9432.02	9431.08	.94	11.25
	+.47 > # 13803	9431.53	9432.00	9431.08	.92	11
2.4	–1.09 < # 13756			9432.91		
	–.66 < # 13758	9433.92	9433.26	9432.91	.35	4.25
3.1	–1.82 < # 13758	9433.92	9432.10	9431.58	.52	6.25
	–1.16 < # 13759	9433.19	9432.03	9431.58	.45	5.5
3.2	+1.18 > # 13801	9429.91	9431.09	9430.82	.27	3.25
	+.89 > # 13802	9430.19	9431.08	9430.82	.26	3.25
3.3	–.74 < # 13800	9430.57	9429.83	9431.02	–1.19	
	–2.96 < # 13760	9432.85	9429.89	9431.02	–1.13	
3.4	–1.17 < # 13761	9431.68	9430.51	9429.85	.66	7.75
	+.23 > # 13762	9430.09	9430.32	9429.85	.47	5.5
4.1	+.36 > # 13796	9427.32	9427.68	9427.09	.59	7
	+.50 > # 13797	9427.19	9427.69	9427.09	.60	7

Point	Laser +/-	Elev. = Pre	- Post	= Δ	in.
4.2	-.97 < #13763	9430.13	9429.16	9428.47	.69	8.25
	+.67 > #13795	9428.62	9429.29	9428.47	.82	9.75
4.3	-2.03 < #13765	9428.67	9426.64	9425.78	.86	10.25
	-1.74 < #13766	9428.35	9426.61	9425.78	.83	9.75
4.4	-2.06 < #13769	9425.50	9423.44	9422.95	.49	6
	+.18 > #13790	9423.38	9423.56	9422.95	.61	7.25
5.1	-1.58 < #13771	9424.67	9423.09	9422.34	.75	9
	-2.03 < #13772	9425.04	9423.01	9422.34	.67	8
5.2	-1.3 < #13773	9423.50	9422.20	9421.35	.85	10.25
	-.68 < #13774	9422.78	9422.10	9421.35	.75	9
5.3	-1.15 < #13777	9419.81	9418.66	9418.07	.59	7
	-.49 < #13786	9419.38	9418.89	9418.07	.82	9.75
5.4	-.97 < #13780	9418.50	9417.53	9416.77	.76	9
	+.36 > #13785	9417.21	9417.57	9416.77	.80	9.5

Smith - 7 depth verification pts @ 4/ac.

Acre 1

#1 — #13809 HI 5.32 Δ = 2.0'
#13811 HI 3.32
30' X = 4.83 +.49 fr. #13809
56' +1.51 fr. #13811

#2 — #13814 HI 3.95 Δ = 0.78
#13752 HI 4.73
76' X = 5.07 -1.12 fr. #13814
76' +.34 fr. #13752

#3 — #13808 HI 6.47 Δ = 0.85
#13807 HI 7.32
42' X = 6.58 -.11 fr. #13808
38' +.74 fr #13807

#4 — #13755 HI 5.33 Δ = 2.96
#13806 HI 8.29
128.5' X = 6.96 -1.63 fr. #13755
108.2' +1.33 fr. #13806

Acre 2

#1 #13755 HI 2.19 Δ = 1.87

#13756 HI 4.06

86' X = 4.17 -1.98 fr. #13755

66' -.11 fr. #13756

#2 #13805 HI 5.92 Δ = 0.48

#13804 HI 5.90

55.4' X = 4.74 +0.68 fr. #13805

70.8' +1.16 fr. #13804

#3 #13804 HI 5.90 Δ = 0.62

#13803 HI 6.52

100' X = 6.05 -0.15 fr. #13804

59.0' +0.47 fr. #13803

#4 #13756 HI 3.55 Δ = 043

#13758 HI 3.98

100' X = 4.64 -1.09 fr. #13756

96.0' -0.66 fr. #13758

Acre 3

#1 — #13758 HI 3.98 Δ = 0.66

#13759 HI 4.64

75′ X = 5.80 −1.82 fr. #13758

60′ −1.16 fr. #13759

#2 — #13801 HI 8.12 Δ = 0.29

#13802 HI 7.83

70′ X = 6.94 +1.18 fr. #13801

100′ +0.89 fr. #13802

#3 — #13800 HI 7.41 Δ = 2.22

#13760 HI 5.19

75′ X = 8.15 −.74 fr. #13800

80′ −2.96 fr. #13760

#4 — #13761 HI 6.22 Δ = 1.4

#13762 HI 7.62

55′ X = 7.39 −1.17 fr. #13761

50′ +0.23 fr. #13762

(Isolated island)

Acre #4

#1 13796 HI 6.67 Δ = 0.14
13797 HI 6.81
40'
77'
X = 6.31 + 0.36 fr. 13796
+ 0.50 fr. 13797

#2 13763 HI 3.74 Δ = 1.64
13795 HI 5.38
32'
50'
X = 4.71 -0.97 fr. 13763
+0.67 fr. 13795

#3 13765 HI 5.21 Δ = 0.29
13766 HI 5.50
68'
63'
X = 7.24 - 2.03 fr. 13765
- 1.74 fr. 13766

#4 13769 HI 3.63 Δ = 2.24
13790 HI 5.87
85'
51'
X = 5.69 - 2.06 fr. 13769
+0.18 fr. 13790

Acre #5

#1 13771 HI 4.51 Δ = 0.45

13772 HI 4.06

50'

44'

X = 6.09 −1.58 fr. 13771

−2.03 fr. 13772

#2 13773 HI 5.73 Δ = 0.62

13774 HI 6.35

42'

33.8'

X = 7.03 − 1.3 fr. 13773

−0.68 fr. 13774

#3 13777 HI 5.08 Δ = 0.66

13786 HI 5.74"

73'

39'

X = 6.23 −1.15 fr. 13777

−0.49 fr. 13786

#4 13780 HI 6.45 Δ = 1.33

13785 HI 7.78

54'

43.5'

−0.97 fr. 13780

X = 7.42 +0.36 fr. 13785

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: Smith 7

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0
1.4	7.5	7	8	—
1.3	7.5	7	7.5	—
1.1	7+	7	7.5	—
1.2	7	7	7.5	—
2.1	7.5	7	8	
2.4	7	7	7.5	
3.1	8	8 ~~7.5~~	8.5	
3.3	7	7	7.5	
3.2	7	7.5	8	
4.1	7.5	7	8	
4.2	8	7	8	
4.3	7	7	7.5	
4.4	7.5	7	8	
5.1	7.5	7	8	
5.2	8	8	8	
5.3	7.5	7	7.5	
5.4	8	7.5	8.5	

Name/Signature: Jan M. Thrasher **Date:** 9/3/2008

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

started with 3pt. Calibration - 1:45pm

Paste pH Record

Fluvial Deposit/Irrigated Meadows Polygon: Smith 7

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
1.1-0-6"	3.5	10g	10.1g	6.8
1.1 6-12	3.4	10g	10.1g	7.1
1.2 0-6	3.5	10g	10.1g	7.1
1.2 6-12	3.4	10g	10g	7.2
1.3 06	3.5	10g	10g	7.8
1.3 6-12	3.6	10.1g	10.2g	7.7
1.4 0-6	3.3	10g	10.2g	7.8
1.4 6-12	3.3	10g	10g	7.8
2.1 0-6	3.7	10.1	10g	7.5
2.1 6-12	3.7	10	10g	7.4
2.2 0-6	3.6	10	10.1	7.5
2.2 6-12	3.4	10.1	9.9	7.6
2.3 0-6	3.7	10	10.1	7.1
2.3 6-12	3.7	10.1	10	7.3

Name/Signature: Roger Merrick/[signature] **Date:** 9/3/08

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record

Fluvial Deposit/Irrigated Meadows Polygon: SM7

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
SM7 3.1 6-12		10.7	21.4 total / 10.7	7.7
3.1 0-6		10.3	10.5	7.6
3.2 0-6		8.8	8.7	7.7
3.2 6-12		8.2	8.6	7.7
3.3 0-6		10.9	10.8	7.7
3.3 6-12		10.7	10.6	7.8
3.4 0-6		16.7	16.7	7.7
4.2 0-6		19.4	19.5	7.5
5.3 0-6		12.3	12.3	7.5
4.4 0-6		13.7	13.7	7.4
4.4 0-6 Dup		11.9	11.9	7.3
3.4 6-9		14.6	14.6	8.0
5.2 6-12		15.2	15.1	7.0
4.3 0-6		12.8	12.9	7.2
4.4 6-12		12.3	12.3	7.4
4.1 6-12		15.6	15.7	7.4
4.1 0-6		14.4	14.4	7.5

Name/Signature: Jan M Christ

Date: 9 pm 8/13/08

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record

Fluvial Deposit/Irrigated Meadows Polygon: SM 7

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
4.2 6-12		14.2	14.1	7.3
4.3 6-12		14.2	14.2	7.2
5.2 0-6		10.7	10.7	7.1
5.1 0-6		13.1	13.1	7.4
5.1 6-12		12.1	12.2	7.2
5.4 0-6		12.4	13.8	7.2
5.4 6-12		12.6	12.7	7.4
5.3 6-12		10.8	10.8	7.4
2.3 6-12	Already completed.			
5.1 0-6 Dup		13.2	13.2	7.3

Name/Signature: Jan M Christian **Date:** 8/3/2008

SUPER - CROP

50 LBS. (22.7 kg) NET WT.

fertilizer

super phosphate

GUARANTEED ANALYSIS	
NITROGEN (N)	0%
AVAIL. PHOSPHORIC ACID (P_2O_5)	45%
SOLUBLE POTASH (K_2O)	0%
SULFUR (Combined) (S)	%
IRON (Fe)	%

AMERICAN PRIDE CO-OP

HENDERSON, COLORADO 80640

DIRECTIONS FOR USE:

GENERAL - Phosphate is one of the 3 major plant nutrients. Phosphate base fertilizers are used as a root and shoot stimulant for new lawn sites. Phosphates are generally highly water insoluble and therefore do not move very much through the soil. For best results, phosphates should be applied at the rate of 10-15 lbs. per 1000 square feet and mixed well in the top 6-8 inches of soil with a roto-tiller, disc, harrow, etc. This rate can be used for new lawn sites, in vegetable and flower gardens.

- High rates can be applied without injuring the plant.

05-18-05 Monday

9:00 Obtained six Samples of Compost from ST-3 for moisture content.

9:30 JD & R. Merrick to Hayden Lake office to begin drying back compost samples. L. Lilly @ Smith Ranch scaping incoming compost deliveries. S. Jennings observing lime slurry calibration, preparation for fertilizer and compost calibrations.

15:00 R. Merrick, L. Lilly, S. Jennings observing fert. calibration & performing bulk density compost tests @ Smith Ranch. JD @ Hayden Lake running moisture on compost samples.

17:30 Return Smith Ranch conf. call w/ T. Christner, Reg. Field Visit for Compost Ammonia, Compost Nutrients.

17:45 Left Site

Tonny's Tonnage: Tonny's Lime: 23.31
Cumulative Lime: 2045.00

Tonny's Compost: 490 Cumulative Comp: 9311

L. Lilly 8.5 Hrs, T. Harmon 0.0 Hrs

8-19-08 Tues

06:50 2 Compost Trucks on Site Unloading. Daily amendment totals to CMC Intern for sampling frequency.

07:20 R. Merrick to Hayden Lake office. Frontier loading bags of 0:45:0 fertilizer into fert spreader tractor. JD obtaining additional samples of compost for moisture content tests. L. Lilly sampling incoming truckloads and preparing to perform additional bulk density tests on compost.

07:50 JD to Hayden Lake Office to run moisture on compost. Also reviewed all Im polygon boundaries submitted by A. Wright for confirmation w/ GPS.

R. Merrick, S. Jennings, & L. Lilly (CMC) @ Smith Ranch working with Frontier on fertilizer and compost. (Smith 7)

JT getting permanent electrical hookup this morning at Hayden Lake Office trailer.

11:50 JD return to Smith Ranch Frontier has set up Screener for lime on site incoming compost Lilly takes sample in Leadville (and

14:00 JD & L. Lilly Footage of Install Strand Electric Fence removal of existing Smith 6. Linear removed existing fence measured Linear footage of temp. Single Strand 2,021 feet.

16:10 L. Lilly off site R. Merrick & S. Jen trial runs @ co JD back to Hayden Smith moisture co

17:00 Return Smith totaling copies of

See following page.

Activity Tracking Form
Irrigated Meadows
Spread & Incorporate Lime and Fertilizer in 12" areas

Irrigated Meadow Polygon Name/ID: Smith 7 and 7A

Activity Start Date: 08-14-08

Activity End Date: 08-26-08

Activities Verified As Completed (indicate NA if appropriate)

Lime and Fertilizer Application

_____ EPA calculated field application rate based on material quality, rock content & depth

Lime rate = 77.71 – 78.75 tons/acre

Fertilizer rate = _____ pounds/acres See R. Merrick

✓ EPA and/or PWT was present for lime and fertilizer spreader calibrations.

✓ Lime was spread across the remediation area at the calculated field lime application rate using a calibrated spreader (unadjusted application rate of 44 tons lime / acre) in 12 inch remediation areas. — Adjusted rates on file (yes)

✓ Fertilizer applied had a nitrogen:phosphorous:potassium (N:P:K) ratio of 0:45:0. **(Attach copy of fertilizer certification)**

✓ Fertilizer was spread across the remediation area at the specified field fertilizer application rate using a calibrated spreader. Unadjusted rate is 70 pounds of P2O5 per 1,000 tons of soil or 306 lbs of 0:45:0 fertilizer / acre in 12" till areas. — See R. Merrick for documentation

✓ Lime and fertilizer were not applied to any areas with standing water, that was cemented, consolidated, caked, or frozen.

✓ Lime and fertilizer were not applied just before or during significant rain events.

✓ Lime and fertilizer were not spread under windy conditions where wind is sufficient to blow lime and fertilizer off the ground surface before they can be tilled.

Tilling of Lime and Fertilizer

✓ Lime and fertilizer were incorporated into the soil by tilling as soon as possible after spreading, and always by the end of the same day that the lime or fertilizer was spread.

✓ Lime and fertilizer were tilled into the soil using a minimum of 3 passes unless the Subcontractor demonstrated that the proposed equipment was able to meet the mixing standards in fewer passes. Successive passes crossed the previous pass at a 90 degree angle.

Activity Tracking Form

Irrigated Meadows

Spread & Incorporate Lime and Fertilizer in 12" areas

Irrigated Meadow Polygon Name/ID: Smith 7

✓ Lime and fertilizer were spread and thoroughly incorporated to the full design depth with an acceptable remediation depth tolerance for 12-inch till areas of 10 inches to 14 inches. To verify this, test pits were excavated and locations surveyed at a rate of: **(check one)**

✓ 4 / acre (at beginning of project)

____ 1 / acre (after effectiveness proven & with EPA approval)

____ 1 / 5 acres (with EPA approval)

✓ PWT and/or EPA were present during all Subcontractor remediation depth surveys and conducted visual and field pH testing to evaluate effectiveness of mixing **(Attach pH test results)**

Quantity of Lime Applied: 480.25 tons

Quantity of Fertilizer Applied: 1720 lbs.

Quantity of Work Estimated in Proposal: 8.09

Quantity of Work Performed: 5.615 (7 and 7A)

Survey Data/Date: 08-07-08

Note: Attach copies of daily calibration records, fertilizer certs, pH test results and survey data

Signature of Contractor — Date: 09-17-08

Signature of Subcontractor — Date: 9-17-08

MOISTURE CONTENT

- Tare Container
- Weigh sample. Record wet sample weight.
- Dry sample until sample appears dry, minimum of 1 hour on hotplate or in oven
- Weigh sample. Record dry sample weight
- Calculate % Moisture = (Wet weight – Dry weight)/Wet Weight

Moisture Content Record for Lime/Compost (circle one)

Date	Wet Weight (g)	Dry Weight (g)	Water Weight (g)	% Moisture	
8-11-08	10g	6.8	3.2	32%	ST66 +0'
8-11-08	10g	8.2	1.8	18%	ST66 +10'
8-11-08	10	7.5	2.5	25%	ST66 +20'
8-11-08	10	7.8	2.2	22%	ST66 +30'
8-11-08	10	7.4	2.6	26%	ST66 +40'
8-11-08	10	6.9	3.1	31%	ST66 +50'
6 samples were run to get an average moisture for Silage Trench #6 (1st on right going in to staging area from the south)				25.7%	moisture average

Signature: [signature] **Date:** 8/11/08

Compost Application Rate Calculation Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: **Smith 7**

POLYGON CHARACTERISTICS

Target % Organic Carbon (1.5% for T-6, 2.5% for T-12)	2.50%	%
Treatment Depth	12	inches
Treatment Area	5.565	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon			29.50%	%
Percent Moisture			22.10%	%
Wet Bulk Density	0.712 grams/cc	=	0.600	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"}}{\text{Compost \% OC} * (1 - \text{\%Moisture}/100)} = \frac{2.5\%\,(12")\left(\frac{1000 \text{ ton/acre}}{6"}\right)}{(29.5\%)\left(1 - \frac{22.1}{100}\right)} = 217.58$$

Compost Rate =	217.58 tons/acre	=	1210.81 tons total
Compost Rate =	362.63 cubic yards/acre	=	2018.02 cy total

Signature: Brian Merrick / Roger Merrick

Date: 9/4/08

Signature:

Date: 9/4/08

MOISTURE CONTENT

- Tare Container
- Weigh sample. Record wet sample weight.
- Dry sample until sample appears dry, minimum of 1 hour on hotplate or in oven
- Weigh sample. Record dry sample weight
- Calculate % Moisture = (Wet weight – Dry weight)/Wet Weight

Both – Indicated Below

Moisture Content Record for Lime/Compost (circle one)

	Date	Wet Weight (g)	Dry Weight (g)	Water Weight (g)	% Moisture	
20	09-09	(16.3 - 2.3 Tare) 14.0	(12.3 - 2.3) 10.0	4.0	28.6	Lime ST-8
*	"	(17.3 - 2.2 Tare) 15.1	(12.8 - 2.2) 10.6	4.5	29.8	Lime ST-8
Z	"	(20.9 - 2.2 Tare) 18.7	(15.9 - 2.2) 13.7	5.0	24.7	Lime ST-8
P1	"	(100.8 - 15.5T) 85.3	(63.0 - 15.5T) 67.5	17.8	20.9	Compost ST-2
P2	"	(109.1 - 15.6T) 93.5	(88.2 - 15.6T) 72.6	20.9	22.3	Compost ST-2
P3	"	(118.7 - 15.7T) 103.0	(95.0 - 15.7T) 79.3	23.7	23.0	Compost ST-2

Avg. = 28.4

$\bar{X}$ = 22.1%

Note: Lime is For Upcoming Smith 2

Compost is For Smith 7

Name/Signature: [signature] **Date:** 09-09-08

Activity Tracking Form
Irrigated Meadows
Spread & Incorporate Organic Material in 12" areas

Irrigated Meadow Polygon Name/ID: Smith 7, 7A

Activity Start Date: 9/3/08

Activity End Date: 10/1/08

Activities Verified As Completed (indicate NA if appropriate)

✓ Amendments have been applied at a field application rate calculated by EPA and as directed by the PWT. Calculated application rate was 235.4 tons/acre.

✓ Organic amendment has been spread evenly across the remediation area using a calibrated agricultural manure spreader or other accepted equipment. **(Attach calibration records)**

✓ Organic amendment has been applied uniformly. Rutting and compaction of the surface was minimized during application of organic amendment.

Note: known quantities of compost applied in 40'x40' grids & spread evenly as test method, Approved & observed by S. Jennings.

✓ Organic material was not applied to any area with standing water or areas that were frozen. Organic material was not applied before or during any significant rain events.

✓ Organic material was not spread under windy conditions where wind was sufficient to blow organic material off the ground surface before it can be tilled.

✓ Organic matter has been tilled to the full remediation depth using a minimum of 2 passes unless the Subcontractor demonstrated that the proposed equipment has met the mixing standards in fewer passes and received approval of the EPA. The second tillage pass crosses the initial pass at a 90 degree angle.

✓ Organic material has been tilled to a tolerance for 12-inch till areas of 10 inches to 14 inches. To verify this, ~~test pits were surveyed at a rate of: (check one)~~ RAW visual verification of thorough mixing into the soil column done by S. Jennings & R. Merrick

_____ 4 / acre (at beginning of project)

_____ 1 / acre (after effectiveness proven & with EPA approval)

_____ 1 / 5 acres (with EPA approval)

NA PWT and/or EPA was present during all Subcontractor surveys to verify remediation depth.

✓ Contractor \ EPA has conducted field testing, monitored and verified remediation depth, and has evaluated the effectiveness of mixing. Areas with large unremediated clumps of soil or large areas of unmixed soil amendments have been re-tilled.

Quantity of Organic Material Applied: 2039.65 CY

Quantity of Work Estimated in Proposal: 8.09 acres

Quantity of Work Performed: 5.565 acres

Survey Data/Date: 8-11-08 (Survey issue date)

Activity Tracking Form
Irrigated Meadows
Spread & Incorporate Organic Material in 12" areas

Irrigated Meadow Polygon Name/ID: Smith 7, 7A

Note: Attach copies of the daily calibration records and survey data to this form

Signature of Contractor

10-08-08
Date

Signature of Subcontractor

10-08-08
Date

COLORADO DEPARTMENT OF AGRICULTURE
DIVISION OF PLANT INDUSTRY
700 Kipling Street, Suite 4000
Lakewood, Colorado 80215-8000
(303) 239-4149

TRANSIT CERTIFICATE
WEED FREE FORAGE CROP CERTIFICATION ACT 35-27.5

TO WHO IT MAY CONCERN:

The forage crop, to which this Transit Certificate relates, has been officially certified according to the Colorado Weed Free Forage Crop Certification Act 35-27.5. Pursuant to those standards, the information below has been included in this Transit Certificate concerning said certification. The Certificate of Inspection relating to said forage crop is on file at the:

Colorado Department of Agriculture
Division of Plant Industry
700 Kipling Street, Suite 4000
Lakewood, Colorado 80215-8000
Telephone: (303) 239-4149
FAX: (303) 239-4177

PLEASE PRINT IN INK

Murray Farms — Grower's Name
J&B Murray — Grower's Signature

Adams — County of Origin

Identify Forage Crop Type: Wheat Straw

700 — Bales Sold
8/5/08 — Date of Sale

IDENTIFICATION
INSPECTOR'S INITIALS: DHF
GROWER'S INITIALS: L.B.M.
FIELD NUMBER: F-1
DATE: 7/07

(Identification found in upper right corner of Certificate of Inspection: Form DPI-WF-05)

FORAGE CERTIFIED ACCORDING TO THE REGIONAL WEED FREE FORAGE STANDARDS

NOTE: Forage certified under the Colorado Weed Free Forage Crop Certification Act shall be baled with at least one strand of **blue and orange** colored twine or **galvanized** wire.

GROWER MUST ISSUE WHITE COPY TO PURCHASER; MAIL PINK COPY TO DEPARTMENT OF AGRICULTURE; KEEP GREEN COPY FOR FILE FOR EACH SALE.

DPI-WF-07
04/00

Distribution:
White - Purchaser
Pink - DPI
Green - Grower

Activity Tracking Form
Irrigated Meadows
Mulch Application

Irrigated Meadow Polygon Name/ID: SMITH 7, 7A

Activity Start Date: 09-30-08 (7A); 10-03 (7)

Activity End Date: 09-30-08 (7A); 10-03 (7)

Activities Verified As Completed (indicate NA if appropriate)

✓ Mulch certified as weed free **(attached Certification documentation)**

✓ Mulch was stored properly and not degraded by water or other contaminants before use.

* Mulch has been applied immediately after seeding unless the nature of the mulch required that it must be incorporated into the soil; in that case the mulch has been applied before seeding. Applied before seeding as approved by S. Jennings JMD

NA If wood mulch was applied, the application rate was 10 to 12 tons per acre, or 50 to 60 cubic yards per acre using a blower, flail spreader, or other means that provided even distribution across the remediated area. Depending on the nature of the wood mulch, it may have been left as a surface application or may have been crimped or lightly disked into the top 2 inches to prevent dispersion **(Circle method used)**.

✓ If straw or native hay mulch was applied, the application rate was 2,000 pounds per acre using equipment specifically designed for application of mulch at a uniform rate to produce a mat covering the seed. Straw or native hay mulch was crimped using crimping equipment with round, notched blades approximately ¼-inch thick by 18 inches in diameter spaced 8 inches apart. The crimper was equipped with disc scrapers and had sufficient weight to force the vegetative mulch to a minimum depth of 3-inches into the soil. Mulch was ~~crimped within 24~~ hours of application. Applied & Crimped as approved by S. Jennings JMD

✓ Stormwater, sediment, and erosion control measures remained in place throughout implementation of the remedy and has been maintained in good condition during and after mulch placement to prevent surface water run-on and run-off that may damage the remediated area.

Quantity of Mulch Applied: 2039.65

Quantity of Work Estimated in Proposal: 8.09 acres

Quantity of Work Performed: 5.388 + 0.227 = 5.615 acres

Survey Data/Date: 08-07-08

Note: Attach copies of the daily calibration records, weed free certification and survey data to this form

Signature of Contractor — Date: 10-08-08

Signature of Subcontractor — Date: 10-08-08

Broadcast Seeder ~~FERTILIZER~~ CALIBRATION

- Place a known weight (e.g., one 50-lb bag) into the spreader hopper.
- Follow the operations manual to set the equipment to meet the design field application rate (e.g., spreader opening, travel speed, RPMs, etc.)
- Make one pass dispersing the fertilizer until the contents of the spreader are emptied.
- Measure the area over which the fertilizer was applied
- Divide the weight of material applied by the total area it was applied to, convert to lbs/acre, and compare to the design field application rate.
- An acceptable test will be within 10% of the required rate.

---

23 lbs Total

Seed Fertilizer Calibration Record

Small Seed w/ Rice Hulls Broadcast Spreader

Date: 10-28-08 Time: 1530

Irrigated Meadow / Fluvial Deposit Polygon ID: Smith 7

~~Fertilizer Type: ___:___:___ (N:P:K)~~ Small Seed

Design Field Application Rate: 4.26 lbs/acre (± 10% range = _____)

Calibration Data for one 50 pound bag of fertilizer:

Dimensions over which bag was spread: _____ feet x _____ feet

Total Calibration Area: _____ (ft^2) * 1 acre / 43560 ft^2 = _____ acres

Calibrated Application Rate: _____ (lbs/acre)

8' wide Pass

1/3 acre = 43,560 / 3 = 14,520 / 8' width = 1815 / length

Quality Control Data for Field Application Verification:

Area of Polygon: 5.565 (acres) x 4.26

Total Weight to be Applied: 23.7 (lbs)

1/3 (4.26 lbs) = 1.4 lbs

# of 50 lb. ~~Bags to be~~ Applied: _____ bags

Spread 1.4 lbs 1800' length * 8' wide

Print / Sign Name: Clay E. Combrink / Clay E. Combrink
Frontier Representative

Print / Sign Name: John G. Dutcher
~~PWT~~ / EPA Representative

BROADCAST SEEDED CALIBRATION

- Place a known weight into the spreader hopper.
- Follow the operations manual to set the equipment to meet the design field application rate (e.g., spreader opening, travel speed, RPMs, etc.)
- Make one pass dispersing the seed until the contents of the spreader are emptied.
- Measure the area over which the seed was applied
- Divide the weight of material applied by the total area it was applied to, convert to lbs/acre, and compare to the design field application rate.
- An acceptable test will be within 10% of the required rate.

Broadcast Seeder Calibration Record

Date: 11-03-08 Time: 11:00

Irrigated Meadow / Fluvial Deposit Polygon ID: Smith 7

Seed Type (Circle One): Smith / Seppi / BLM / FD / Wetlands / Other: Small w/Rice Hulls

Design Field Application Rate: 4.26 lbs/acre (± 10% range = 3.67 to 4.70)

Field Calibration Data:

Dimensions over which seed was spread: 8 feet x 420 feet

Total Calibration Area: 3366 (ft^2) * 1 acre / 43560 ft^2 = 0.077 acres

Calibrated Application Rate: 4.80 (lbs/acre) 170 grams: 0.37 lbs

Second Quality Control Check for Field Application Rate Verification:

Area of Polygon: 5.565 (acres)

Total Weight to be Applied: 23.7 (lbs) 2nd Application by broadcast method

Print / Sign Name: Clay E. Combrink / Clay E. Combrink
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

Arkansas Valley Seed

Supplying QUALITY Seed With INTEGRITY Since 1945

PRELIMINARY INVOICE

Limitation of Warranty and Finance Charge Agreement are part of the terms and conditions of this sale. See back of this invoice.

www.avseeds.com
rabbitears@seedsolutions.com

Invoice Number:
Date: 10/[illegible]/08
Customer #
Terms
Salesman #
Order #

Sold To: FRONTIER ENVIRONMENTAL
5171 WARD ROAD UNIT 1
WHEAT RIDGE CO 80033

Ship To: FRONTIER ENVIRONMENTAL
5171 WARD ROAD UNIT 1
WHEAT RIDGE CO 80033

Tax ID:
Exempt:

Shipment Date	Customer P.O.	F.O.B.	Ship : CLAY 303-[illegible]
10/03/08			Inst : BRENT 303-[illegible]

Description	Lot Number	Quantity Shipped	UM	Price	Extended Price	Tax
[illegible] GENERAL PURPOSE SEED MIX	2137474	750.0000	LB	2.5950	[illegible]	T
[illegible] Grass Mix-Bulk						
13.50 PLS#/ACRE @ 235.00/ACRE X 56.3 ACRES						
[illegible] SMITH RANCH						
[illegible] DRY-LAND SEED MIX	2137593	240.0000	LB	1.5063	[illegible]	T
[illegible] Grass Mix-Bulk						
[illegible] PLS#/ACRE @ $5.00/ACRE X 56.3 ACRES						
[illegible] SMITH RANCH						

998 lbs

delivered 10-7-08

Small Seeds:
Smith 1, 6, 3, 4, 5

Large: ~~All polysan~~ Smith 2, 3, 4, 5, 6, 1

Sales Tax [illegible] Total [illegible]

[illegible] Net Due Date 10/31/08 Tax Rate 3.620 [illegible]

Arkansas Valley Seed
1333 Hwy. 66
Longmont, CO 80504
(877) 907-3337
(970) 535-4522 Fax

Arkansas Valley Seed
4625 Colorado Blvd.
Denver, CO 80216
(877) 957-3337
(303) 320-7516 Fax

Arkansas Valley Seed
12th & Santa Fe Tracks
Rocky Ford, CO 81067
(719) 254-7469
(719) 254-4115 Fax

Colorado Seed
195 N. Washington
Monte Vista, CO 81144
(719) 852-3505
(719) 852-4942 Fax

Wilbers Seed
809 N. Broadway
Miller, SD 57362
(800) 952-2233
(605) 853-2629 Fax

Activity Tracking Form
Irrigated Meadows
Seedbed Preparation and Seeding

Irrigated Meadow Polygon Name/ID: Smith 3, 7A

Activity Start Date: 10-24-08

Activity End Date: 11-03-08

Activities Verified As Completed (indicate NA if appropriate)

✓ EPA and/or PWT has collected and ~~analyzed~~ grab soil samples to verify performance standards have been met. Frequency is 1 per 5 acres.

Preparation of the Seedbed

✓ Seedbed has been smoothed to the extent practical for effective seeding.

✓ Removed or disaggregated clods greater than 4 inches in diameter from the top 6 inches of soil.

✓ Removed rocks and cobbles greater than 4 inches in diameter from the surface.

✓ The surface has been compacted by equipment that produces a uniform rough textured surface. The seedbed for the Irrigated Meadows is firm allowing the heel of a boot to penetrate approximately 0.5 to 1 inch.

✓ Plowed or disked areas compacted by vehicle traffic to reduce compaction.

✓ There were no erosional features present prior to seeding.

NA Loosened areas compacted by weather or colonized by weeds resulting from time gaps between remediation and seeding, as necessary.

Seed Application

NA Lab samples show acid-base account and TOC test results in acceptable ranges before seeding.
Post-Remediation results not available before seeding

✓ Seeding done outside the month of October was approved by EPA.

✓ The seedbed was evaluated by EPA and/or PWT immediately prior to seeding to ensure seedbed requirements were achieved and that the seedbed has not degraded since amendments were applied and tilled.

✓ Used the appropriate seed mixes for the ~~Smith~~, Seppi, and BLM Irrigated Meadow sites identified in Tables IM-2, IM-3, and IM-4. Deviations approved by EPA.

✓ Applied seed using calibrated equipment at rates shown in Tables IM-2, IM-3, or IM-4. Rates are in lbs PLS / acre. The seed has been applied within 10 percent (by weight) of the rate specified.

Seed mix used: Large 11.50 # PLS/Acre Small 1.25 # PLS/Acre X 2 Application Rate: _____ (# PLS / acre)

✓ Seed was stored properly and not degraded by water or other contaminants before use.

Activity Tracking Form
Irrigated Meadows
Seedbed Preparation and Seeding

Irrigated Meadow Polygon Name/ID: Smith 7, 7A

✓ Seed was not applied to any area with standing water or areas that are frozen. Seed was not applied before or during any significant rain events or during wet conditions when seed equipment could cause ruts in the ground or prevent good seed placement.

✓ Seed was not spread under windy conditions where wind was sufficient to blow seed off the ground surface.

✓ Wherever possible, areas were drill seeded. Seed was applied to the appropriate depth of 0.25 to 0.5 inches. Drill seeding was applied in 2 applications, each at half the seeding rate specified in Tables IM-2, IM-3, and IM-4. The direction of the second application was perpendicular to the first application. Seed mix may have been diluted with rice hulls or other Contractor-accepted material, if necessary to achieve the lower seeding rate.

Small Seed w/Rice Hull Mix was Broadcasted as per S. Jennings @ Double Design Appr. JMH

✓ For each acre seeded, the hopper and applicator tubes were checked for clogged tubes and to verify even application rates. Checked periodically; amount of seed designed was used.

Large Seed was Drilled ~~in a Separate~~ Start Applications JMH

Quantity of Seed Applied: Large: 75 lbs. total Small: 47.4 lbs. total

Quantity of Work Estimated in Proposal: _____

Quantity of Work Performed: 5.545

Survey Data/Date: 08-07-08

Note: Attach copies of the daily calibration records, seed certification forms, and survey data to this form. Also, note sample numbers for acid-base account and TOC lab tests.

Signature of Contractor _____ Date 11-05-08

Signature of Subcontractor _____ Date 11-05-08

Note: Re-Seeded Entire Treatment Area with Drill Seeder 10-10-09

Seeder Calibration Form

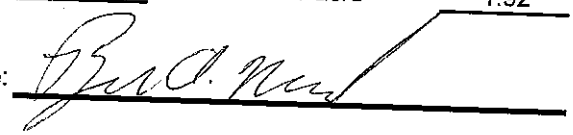
Calibration Form Instructions

1) Enter the Polygon ID, Polygon acreage, Calibration Date, Target seed rate(s), %PLS in each seed mix, and % seed in each each mix
2) Perform seeder calibration per the manufacturers' instructions 3 times and enter the total weight of bulk seed mix in grams collected for each seed box
3) For each individual calibration run, verify that the achieved rate is within ±20 % of the 1/2 Target Rate
4) After the 3rd calibration run, verify that the 3 Run Average rate is within ±10% of the 1/2 Target Rate

NOTE: The BLUE text shows the "calculated values" based on the entered data

Polygon ID Smith 7 **Acres:** 5.565 **Date:** 10/24/08

	Seed Mix 1	Seed Mix 2
Target Rate	11.50 lbs PLS / acre	1.25 lbs PLS / acre
% PLS in seed mix	86%	88%
Dilution Factor	100% (% seed)	33% (% seed)
Target Application Rate	13.37 bulk pounds / acre	4.26 bulk pounds / acre
	74.4 Total bulk pounds	23.7 total bulk pounds
1/2 Target Rate (2 passes)	6.69 bulk pounds / acre	2.13 bulk pounds / acre
	37.2 1/2 of total bulk pounds	11.9 1/2 of total bulk pounds
Test Run 1	12.50 total grams in 3 bags	4.70 total grams in 3 bags
	6.25 ✓ bulk lbs/acre	2.35 ✓ bulk lbs/acre
Test Run 2	12.10 total grams in 3 bags	3.60 total grams in 3 bags
	6.05 ✓ bulk lbs/acre	1.80 ✓ bulk lbs/acre
Test Run 3	12.50 total grams in 3 bags	4.90 total grams in 3 bags
	6.25 ✓ bulk lbs/acre	2.45 ✓ bulk lbs/acre
3 Run Average	12.37 total grams in 3 bags	4.40 total grams in 3 bags
	6.18 ✓ bulk lbs/acre	2.20 ✓ bulk lbs/acre
For QC Checks:		
+20% of 1/2 Target Rate	8.02 bulk pounds / acre	2.56 bulk pounds / acre
-20% of 1/2 Target Rate	5.35 bulk pounds / acre	1.70 bulk pounds / acre
+10% of 1/2 Target Rate	7.35 lbs seed mix / acre	2.34 lbs seed mix / acre
-10% of 1/2 Target Rate	6.02 lbs seed mix / acre	1.92 lbs seed mix / acre

PWT Signature: 

Frontier Signature:

Kind: TABLE IM-3/LARGE SEED MIX
Lot: 2137474

Kind & Variety:	Pure%	Germ%	Origin:
MEADOW BROME, FLEET	31.74	94	CAN
SLENDER W/G, SAN LUIS	21.68	86	CAN
BROMEGRASS, MANCHAR	19.38	77	ID
WESTERN W/G, ROSANNA	16.58	90	WA
RED FESCUE, VNS	7.69	97	MT

Crop: .27% Inert: 2.63% Weed: .03% Net Wt: 50# (42.9 PLS#) 3.73 ACRES

Noxious Weed: None Found Test Date: 6/08

REMARKS: FRONTIER ENVIRONMENTAL
JOB: SMITH RANCH
ARKANSAS VALLEY SEED, 4333 HWY 66, LONGMONT CO 80504

Kind: TABLE IM-3/SMALL SEED MIX
Lot: 2137593

Kind & Variety:	Pure%	Germ%	Origin:
TIMOTHY, CLIMAX	39.55	90	CN
ALSIKE CLOVER	22.96	93	MT
PRAIRIE JUNEGRASS	16.18	88	WA
CANADA BLUEGRASS, REUBENS	11.85	90	WA
REDTOP	7.66	93	WA

Crop: .10% Inert: 1.70% Weed: .01% Net Wt: 5# (4.44 PLS#) 3.5 ACRES

Noxious Weed: None Found Test Date: 6/08

REMARKS: FRONTIER ENVIRONMENTAL
JOB: SMITH RANCH
ARKANSAS VALLEY SEED, 4333 HWY 66, LONGMONT CO 80504

Kind: TABLE IM-3/LARGE SEED MIX
Lot: 2137474

Kind & Variety: Pure% Germ% Origin:
MEADOW BROME, FLEET 31.74 94 CAN
SLENDER W/G, SAN LUIS 21.68 86 CAN
BROMEGRASS, MANCHAR 19.38 77 ID
WESTERN W/G, ROSANNA 16.58 90 WA
RED FESCUE, VNS 7.69 97 MT

Crop: .27% Inert: 2.63% Weed: .03% Net Wt: 50# (42.9 PLS#) 3.73 ACRES

Noxious Weed: None Found Test Date: 6/08

REMARKS: FRONTIER ENVIRONMENTAL
JOB: SMITH RANCH
ARKANSAS VALLEY SEED, 4333 HWY 66, LONGMONT CO 80504

2008

Seeder Calibration Form

Calibration Form Instructions

1) Enter the Polygon ID, Polygon acreage, Calibration Date, Target seed rate(s), %PLS in each seed mix, and % seed in each each mix
2) Perform seeder calibration per the manufacturers' instructions 3 times and enter the total weight of bulk seed mix in grams collected for each seed box
3) For each individual calibration run, verify that the achieved rate is within ±20 % of the 1/2 Target Rate
4) After the 3rd calibration run, verify that the 3 Run Average rate is within ±10% of the 1/2 Target Rate

NOTE: The BLUE text shows the "calculated values" based on the entered data

Polygon ID Smith 7 2nd Pass **Acres:** 5.565 **Date:** 10/28/08

Seed Mix 2 Not Used in Drill Seeder for this application JMS 10-28-08

	Seed Mix 1		Seed Mix 2	
Target Rate	11.50	lbs PLS / acre	1.25	lbs PLS / acre
% PLS in seed mix	86%		88%	
Dilution Factor	100%	(% seed)	33%	(% seed)
Target Application Rate	13.37	bulk pounds / acre	4.26	bulk pounds / acre
	74.4	Total bulk pounds	23.7	total bulk pounds
1/2 Target Rate (2 passes)	6.69	bulk pounds / acre	2.13	bulk pounds / acre
	37.2	1/2 of total bulk pounds	11.9	1/2 of total bulk pounds
Test Run 1	14.10	total grams in 3 bags	0.00	total grams in 3 bags
	7.05	bulk lbs/acre	0.00	bulk lbs/acre
Test Run 2	13.90	total grams in 3 bags		total grams in 3 bags
	6.95	bulk lbs/acre	0.00	bulk lbs/acre
Test Run 3	13.60	total grams in 3 bags		total grams in 3 bags
	6.80	bulk lbs/acre	0.00	bulk lbs/acre
3 Run Average	13.87	total grams in 3 bags	0.00	total grams in 3 bags
✓	6.93	bulk lbs/acre	0.00	bulk lbs/acre
For QC Checks:				
+20% of 1/2 Target Rate	8.02	bulk pounds / acre	2.56	bulk pounds / acre
-20% of 1/2 Target Rate	5.35	bulk pounds / acre	1.70	bulk pounds / acre
+10% of 1/2 Target Rate	7.35	lbs seed mix / acre	2.34	lbs seed mix / acre
-10% of 1/2 Target Rate	6.02	lbs seed mix / acre	1.92	lbs seed mix / acre

PWT Signature: [signature] 10-28-08

Frontier Signature: [signature]

Smith 7 Lume

Kind: SMITH MIX
Lot: 2148038

Kind & Variety:	Pure%	Germ%	Origin:
MEADOW BROME, FLEET	31.62	91	CAN
SLENDER W/G, SAN LUIS	19.97	95	WA
WESTERN W/G, ROSANNA	16.86	90	SD
SMOOTH BROME, MANCHAR	16.67	91	WA
CREEPING RED FESCUE	8.08	94	MT
PRAIRIE JUNEGRASS	1.65	92	WA
CANADA BLUEGRASS, REUBENS	1.24	92	WA
RED TOP	.84	91	CAN
CLIMAX TIMOTHY	.40	95	CAN
ALSIKE CLOVER	.23	98	CAN

Crop: .14% Inert: 2.22% Weed: .08% Net Wt: 13.212 (12.03 PLS)1 ACRE
Noxious Weed: None Found Test Date: 5/09
Remarks: FRONTIER ENVIRONMENTAL
JOB: EPA OU-11 LEADVILLE
LARGE SEED - 12.634#

2009
Re-Seed
12.75

Winfield Solutions PO Box 64589 St Paul, MN 55164

Smith 7 Small Seed

Kind: SMITH MIX
Lot: 2148038

Kind & Variety:	Pure%	Germ%	Origin:
MEADOW BROME, FLEET	31.62	91	CAN
SLENDER W/G, SAN LUIS	19.97	95	WA
WESTERN W/G, ROSANNA	16.86	90	SD
SMOOTH BROME, MANCHAR	16.67	91	WA
CREEPING RED FESCUE	8.08	94	MT
PRAIRIE JUNEGRASS	1.65	92	WA
CANADA BLUEGRASS, REUBENS	1.24	92	WA
RED TOP	.84	91	CAN
CLIMAX TIMOTHY	.40	95	CAN
ALSIKE CLOVER	.23	98	CAN

Crop: .14% Inert: 2.22% Weed: .08% Net Wt: 13.212 (12.03 PLS)1 ACRE
Noxious Weed: None Found Test Date: 5/09
Remarks: FRONTIER ENVIRONMENTAL
JOB: EPA OU-11 LEADVILLE
SMALL SEED - 11#

Winfield Solutions PO Box 64589 St Paul, MN 55164

Seeder Calibration Form

Calibration Form Instructions

1) Enter the Polygon ID, Polygon acreage, Calibration Date, Target seed rate(s), %PLS in each seed mix, and % seed in each each mix
2) Perform seeder calibration per the manufacturers' instructions 3 times and enter the total weight of bulk seed mix in grams collected for each seed box
3) For each individual calibration run, verify that the achieved rate is within ±20 % of the 1/2 Target Rate
4) After the 3rd calibration run, verify that the 3 Run Average rate is within ±10% of the 1/2 Target Rate

NOTE: The BLUE text shows the "calculated values" based on the entered data

Polygon ID Smith 7, 7a (reseed) **Acres:** 5.615 **Date:** 10/12/09

	Seed Mix 1		Seed Mix 2	
Target Rate	11.50	lbs PLS / acre	1.25	lbs PLS / acre
% PLS in seed mix	~~96%~~ 91%		~~96%~~ 91%	← Error discovered on 10/13 after Smith 7 seeding completed using rates & quantities provided on 10/13 Sheet.
Dilution Factor	100%	(% seed)	100%	(% seed)
Target Application Rate	11.98	bulk pounds / acre	1.30	bulk pounds / acre
	67.3	Total bulk pounds	7.3	total bulk pounds
1/2 Target Rate (2 passes)	5.99	bulk pounds / acre	0.65	bulk pounds / acre
	33.6	1/2 of total bulk pounds	3.7	1/2 of total bulk pounds
Test Run 1	11.60	total grams in 3 bags	1.40	total grams in 3 bags
	5.80	bulk lbs/acre	0.70	bulk lbs/acre
Test Run 2	12.20	total grams in 3 bags	1.20	total grams in 3 bags
	6.10	bulk lbs/acre	0.60	bulk lbs/acre
Test Run 3	10.90	total grams in 3 bags	1.40	total grams in 3 bags
	5.45	bulk lbs/acre	0.70	bulk lbs/acre
3 Run Average	11.57	total grams in 3 bags	1.33	total grams in 3 bags
	5.78	bulk lbs/acre	0.67	bulk lbs/acre
For QC Checks:				
+20% of 1/2 Target Rate	7.19	bulk pounds / acre	0.78	bulk pounds / acre
-20% of 1/2 Target Rate	4.79	bulk pounds / acre	0.52	bulk pounds / acre
+10% of 1/2 Target Rate	6.59	lbs seed mix / acre	0.72	lbs seed mix / acre
-10% of 1/2 Target Rate	5.39	lbs seed mix / acre	0.59	lbs seed mix / acre

PWT Signature: for John De Angelis

Frontier Signature:

APPENDIX B2

BLM Construction Documents

Polygon Completion Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: BLM 1

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
03-24-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.5. **Comments/Deviations:**
04-06-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.6. **Comments/Deviations:** Began Pre-Till 04-03-09.
05-08-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Sections 3.6 and 3.7A through 3.7E. Start lime app 04-28-09 but not continuous **Comments/Deviations:**
06-05-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.7F through 3.7I. Begin stockpiling Compost 05-13-09 **Comments/Deviations:** Begin spreading compost 05-18-09, finish 05-22 Start Compost Inc to 6" 05-27-09
NA	NA	Completed replacement of irrigation ditches in accordance with Specification Section 3.8. **Comments/Deviations:** No ditch work required
06-09-09	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.9. **Comments/Deviations:** Not seeded, Mulched First.
06-11-09	✓	Completed mulching in accordance with Specification Section 3.10. **Comments/Deviations:** Started Mulching 06-09-09, Completed 06-11-09
NA	NA	Completed reinstallation of fencing in accordance with Specification Section 3.11. **Comments/Deviations:**
11-04-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.15. **Comments/Deviations:**

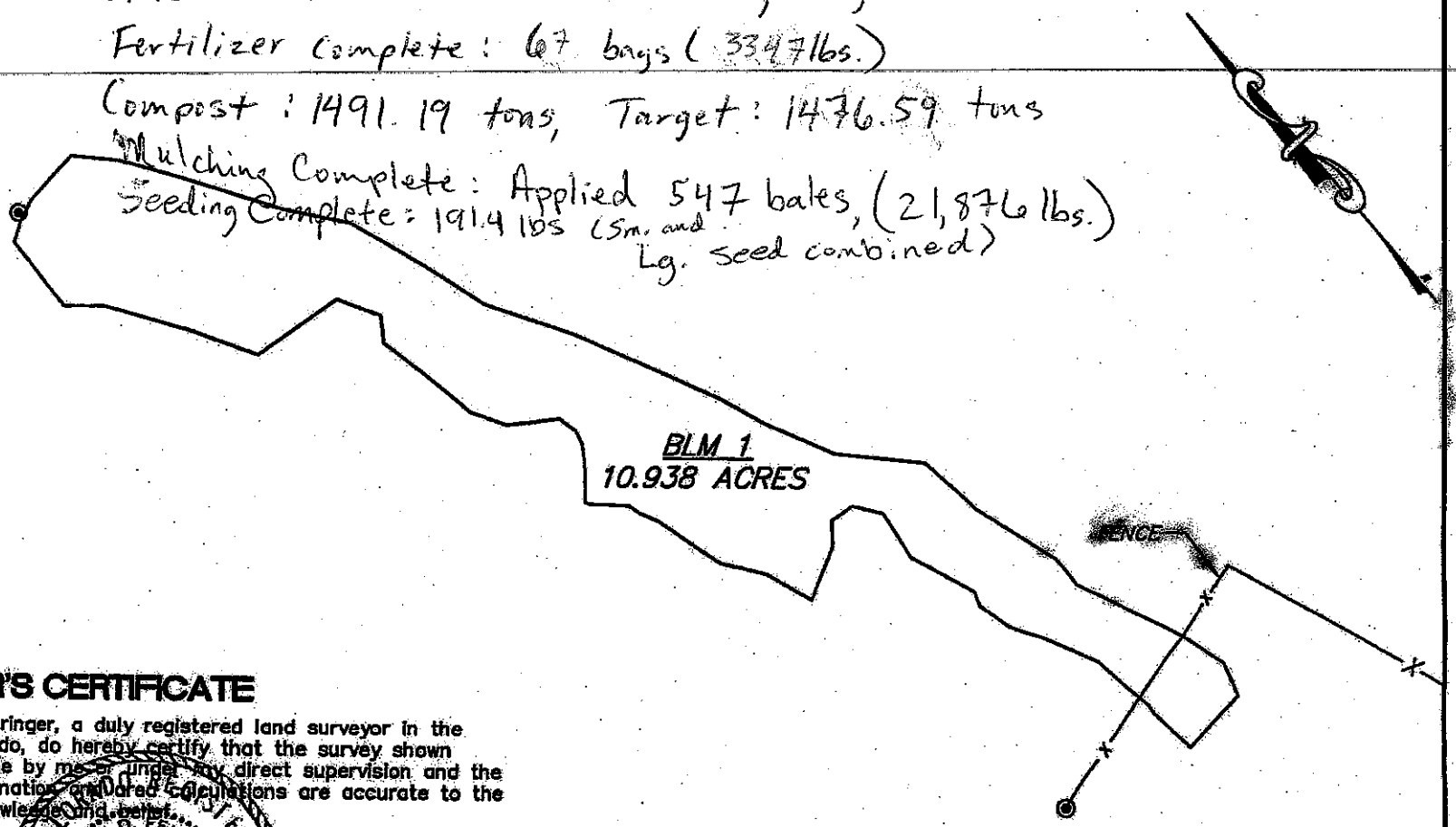
Quantity of Work Estimated in Proposal: NA - Addressed separately in line items for Invoicing
Quantity of Work Performed:

[signature] 11-04-09
Signature of ~~Subcontractor~~ Contractor Date

[signature] 11/05/09
Signature of Contractor Date

-Complete-

Lime Complete : 507.31 tons, Target: 473.75 tons
Fertilizer Complete: 67 bags (33,497lbs.)
Compost : 1491.19 tons, Target: 1476.59 tons
Mulching Complete: Applied 547 bales, (21,876 lbs.)
Seeding Complete: 191.4 lbs (Sm. and Lg. seed combined)



SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and bared calculations are accurate to the best of my knowledge and belief.

COLORADO DUANE D. FEHRINGER 26626 L.S. AND P.E.
4-1-06

Duane D. Fehringer, P.E. & P.L.S. 26626

GAS MARKER

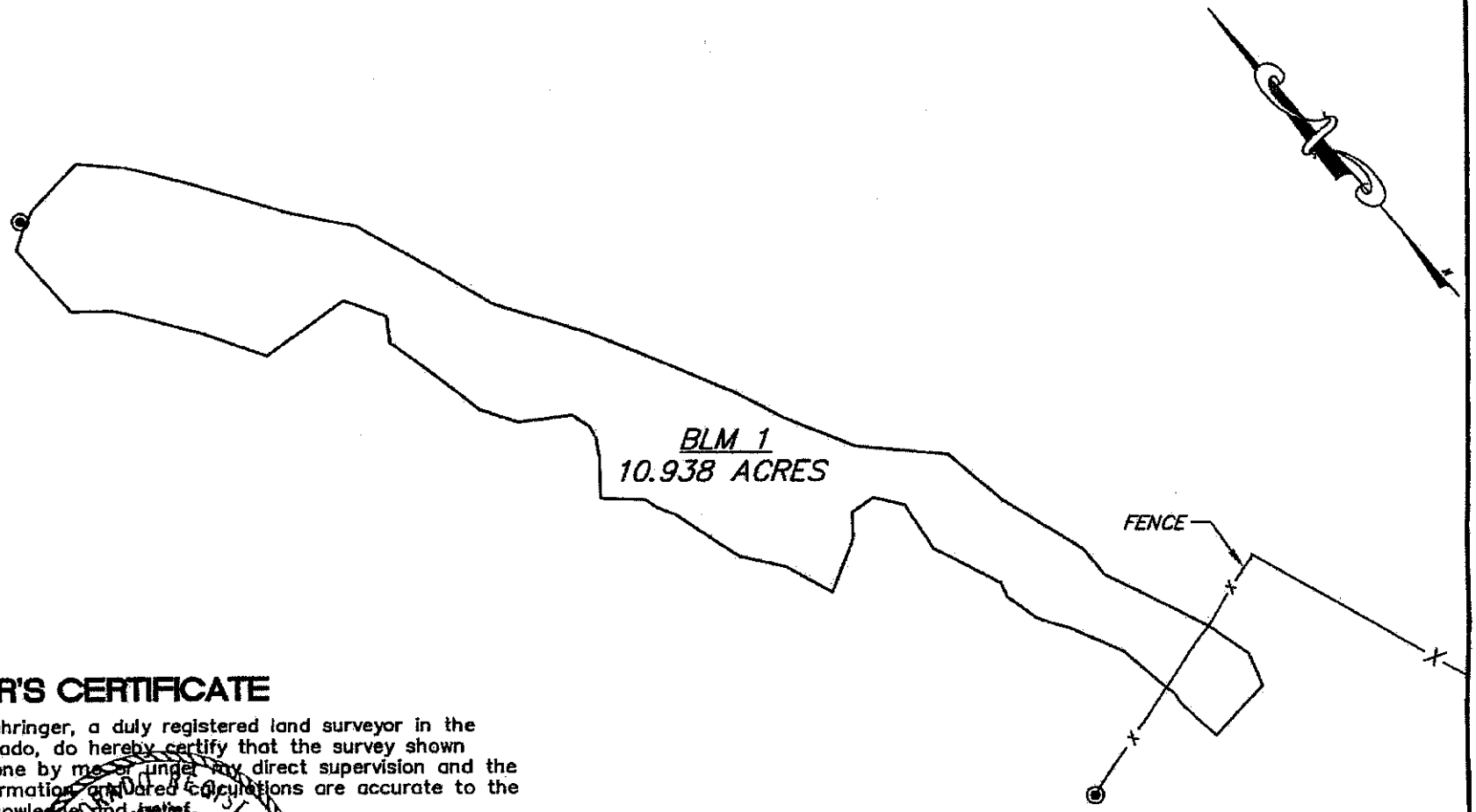
Inter-Mountain ENGINEERING
Civil Engineers & Surveyors

CLIENT: FRONTIER ENVIRONMENTAL INC.

BLM 1
CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

J:\projects\80033a\dwg\04-11 Areas.dwg

* Pre-Tilled



SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and/or calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 4-1-09 26626 L.S. AND P.E.

Duane D. Fehringer P.E. & P.L.S. 26626

◉ GAS MARKER

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
0891 US HWY 6&24, SUITE 203 BOX 978 AVON, CO 81620 PH: (970)949-8872
6353 S. REVERE PARKWAY, SUITE 106 CENTENNIAL, CO 80111 PH: (303)948-6220

CLIENT: FRONTIER ENVIRONMENTAL INC.

This document was prepared for the exclusive use of the Client specified hereon. The use of this document or the information contained herein by any other person or entity is not authorized. In the event that any other person or entity desires to use this document or the information contained herein for any purpose they must first obtain written authorization from Inter-Mountain Engineering. This document and any information contained herein is intended to be used within one year of the date hereof. Use after that period is not authorized.

BLM 1

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=300'
DATE ISSUED:	3-27-09
PROJECT NO.	08-0032
EXHIBIT	

J:\projects\08032\dwg\OU-11 Areas.dwg

Lime Application Rate Calculation Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: **BLM-1**

POLYGON CHARACTERISTICS

Net Application Rate (22 dry tons/1000 tons soil unless noted otherwise)	11	dry tons/1000 tons soil
Mixing Safety Factor (10% unless noted otherwise)	10.00%	%
% Rock (0 unless noted otherwise)	0.00%	%
Treatment Depth	12	inches
Total Area	10.938	acres

LIME CHARACTERISTICS

Lime Particle Size Distribution					
Percent >10 mesh		X 0.1	=	0.0000	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.0004	(B)
Percent < 60 mesh	99.92%	X 1	=	0.9992	©
Lime Reactivity			=	0.9996	(Sum of A, B, and C)

Calcium Carbonate Equivalence		82.20%	%
Percent Moisture		26.6%	%
Bulk Density	0.75 grams/cc	= 0.632	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * (1000 tons soil/acre/6") * Treatment Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 40.13 tons/acre = 438.89 tons total
= 1.84 lbs/ft2 0.92 (two-pass rate in lbs/ft2)

Lime Rate = 63.48 cubic yards/acre = 694.37 cy total

Signature: [signature]

Date: 04-30-09

Signature: [signature]

Date: 5-6-09

Lime Application Rate Calculation Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: **BLM-1**

POLYGON CHARACTERISTICS

Net Application Rate (22 dry tons/1000 tons soil unless noted otherwise)	11	dry tons/1000 tons soil
Mixing Safety Factor (10% unless noted otherwise)	10.00%	%
% Rock (0 unless noted otherwise)	0.00%	%
Treatment Depth	12	inches
Total Area	10.938	acres

LIME CHARACTERISTICS

Lime Particle Size Distribution

Percent >10 mesh		X 0.1	=	0.0000	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.0004	(B)
Percent < 60 mesh	99.92%	X 1	=	0.9992	©
Lime Reactivity			=	0.9996	(Sum of A, B, and C)

Calcium Carbonate Equivalence		82.20%	%
Percent Moisture		32.0%	%
Bulk Density	0.75 grams/cc	0.632	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * (1000 tons soil/acre/6") * Treatment Depth / (Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 43.31 tons/acre = 473.75 tons total

= 1.99 lbs/ft2 0.99 (two-pass rate in lbs/ft2)

Lime Rate = 68.52 cubic yards/acre = 749.51 cy total

Signature: [signature]

Date: 04-28-09

Signature: [signature]

Date: 4-28-09

Smith 1

BLM 1

MOISTURE CONTENT

- Tare Container
- Weigh sample. Record wet sample weight.
- Dry sample until sample appears dry, minimum of 1 hour on hotplate or in oven
- Weigh sample. Record dry sample weight
- Calculate % Moisture = (Wet weight – Dry weight)/Wet Weight

Moisture Content Record for Lime/Compost (circle one)

Date	Wet Weight (g)	Dry Weight (g)	Water Weight (g)	% Moisture
04-29-09	P3 Pan Tare = 15.7 91.0 - 15.7 = 75.3	70.5 - 15.7 = 54.8	20.5	27.2
04-29-09	Pan Tare = 15.5 96.0 - 15.5 = 80.5	75.1 - 15.5 = 59.6	20.9	26.0
				Avg = 26.6 %

Name/Signature: [signature]

Date: 04-29-09

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: BLM-1

Date: 04-28-09 Time: 07:00

Field Application Rate: 43.31 tons/acre (1.99 psf) (psf = tons/acre*0.0459)

Total Tarp Dimensions: 27 (sq. ft.)

1.99 + 10% = 2.19

1.99 - 10% = 1.89

Test 1 Material Weight: 52.68 (lbs.) Rate: 2.13 ✓ psf

(25.36 + 13.24 + 24.18) - 5.1

Test 2 Material Weight: 51.44 (lbs.) Rate: 1.91 ✓ psf

(24.96 + 15.56 + 16.8) - 5.1

Test 3 Material Weight: _____ (lbs.) Rate: _____ psf

Test 4 Material Weight: N/R (lbs.) Rate: _____ psf

Test 5 Material Weight: _____ (lbs.) Rate: _____ psf

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Pg 1 of 2

26.4 % Moist

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: BCM-1

Date: 05-01-09 Time: 09:30 – 10:45

Field Application Rate: ~~40~~ 40.04 tons/acre (1.84 psf) (psf = tons/acre*0.0459) 1 @ 955

Total Tarp Dimensions: 87 (sq. ft.)

1.84 + 10% : 2.02

1.84 - 10% : 1.67

Test 1 Material Weight: 50.74 (lbs.) Rate: 1.85 ✓ psf

(18.58 + 13.94 + 23.32) - 5.1 Tare

Test 2 Material Weight: 58.16 (lbs.) Rate: 2.15* psf Increase Seed

(28.30 + 16.04 + 16.96) - 5.1

Test 3 Material Weight: 54.88 (lbs.) Rate: 2.03* psf

(24.02 + 15.06 + 18.9) - 5.1

Test 4 Material Weight: 46.4 (lbs.) Rate: 1.72 ✓ psf

(23.70 + 15.68 + 12.12) - 5.1

Test 5 Material Weight: 46.9 (lbs.) Rate: 1.55* psf

(18.58 + 16.40 + 12.01) - 5.1

See Pg 2

Decrease Seed

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Pg 2 of 2

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: Bem-1

Date: 05-01-09 Time: 10:13 – 10:45

Field Application Rate: 40.69 tons/acre (1.84 psf) (psf = tons/acre*0.0459)

Total Tarp Dimensions: 27 (sq. ft.)

1.84 + 10% = 2.02
1.84 – 10% = 1.67

Test 1 Material Weight: 41.28 (lbs.) Rate: 1.52* psf
(21.06 + 11.76 + 18.52) – 5.1 *Speed Adjust

Test 2 Material Weight: 58.4 (lbs.) Rate: 2.16 psf
(27.60 + 15.44 + 20.62) – 5.1

Test 3 Material Weight: 50.2 (lbs.) Rate: 1.86 ✓ psf
(24.24 + 16.52 + 14.56) – 5.1

Test 4 Material Weight: 52.26 (lbs.) Rate: 1.93 ✓ psf
(23.58 + 13.04 + 20.84) – 5.1

Test 5 Material Weight: _____ (lbs.) Rate: _____ psf

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: BCM-1

Date: 05-04-09 Time: 10:40 – 11:40

Field Application Rate: 40.09 tons/acre (1.84 psf) (psf = tons/acre*0.0459)

Total Tarp Dimensions: 1.84 (sq. ft.)

1.84 + 10% 2.02

1.84 − 10% 1.67

Test 1 Material Weight: 54.5 (lbs.) Rate: 2.02 ✓ psf

(26.62 + 11.62 + 21.34) − 5.1

Test 2 Material Weight: 55.68 (lbs.) Rate: 2.06 ✗ psf Adjust gap width

(26.60 + 10.00 + 24.18) − 5.1

Test 3 Material Weight: 43.9 (lbs.) Rate: 1.63 ✗ psf Re-Adjust gap

(17.40 + 9.40 + 22.20) − 5.1

Test 4 Material Weight: 48.4 (lbs.) Rate: 1.79 ✓ psf

(20.52 + 12.34 + 20.62) − 5.1

Test 5 Material Weight: 46.3 (lbs.) Rate: 1.72 ✓ psf

(20.58 + 9.45 + 21.46) − 5.1

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: BLM-01

Date: 05-05-09 Time: 07:30

Field Application Rate: 40.09 tons/acre (1.84 psf) (psf = tons/acre*0.0459)

Total Tarp Dimensions: 27 (sq. ft.)

1.84 + 10% = 2.02

1.84 − 10% = 1.67

Test 1 Material Weight: 47.58 (lbs.) Rate: 1.77 ✓ psf

(20.02 + 11.42 + 21.54) − 5.1 tare

Test 2 Material Weight: 46.72 (lbs.) Rate: 1.73 ✓ psf

(17.56 + 12.54 + 21.72) − 5.1

Test 3 Material Weight: _____ (lbs.) Rate: _____ psf

Test 4 Material Weight: _____ (lbs.) Rate: _____ psf

Test 5 Material Weight: _____ (lbs.) Rate: _____ psf

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

FERTILIZER CALIBRATION

- Place a known weight (e.g., one 50-lb bag) into the spreader hopper.
- Follow the operations manual to set the equipment to meet the design field application rate (e.g., spreader opening, travel speed, RPMs, etc.)
- Make one pass dispersing the fertilizer until the contents of the spreader are emptied.
- Measure the area over which the fertilizer was applied
- Divide the weight of material applied by the total area it was applied to, convert to lbs/acre, and compare to the design field application rate.
- An acceptable test will be within 10% of the required rate.

Fertilizer Calibration Record

17-18 rpm

Date: 05-05-09 Time: 10:45 - 11:00

Irrigated Meadow / Fluvial Deposit Polygon ID: BLM-1

Fertilizer Type: 0 : 45 : 0 (N:P:K)

Design Field Application Rate: 306 lbs/acre (± 10% range = 139 to 168)
(153 rate x2)

153 lbs / 1 acre = 25 / x

= 0.163 acres

Calibration Data for one ~~50~~ 25 pound bag of fertilizer:

Dimensions over which bag was spread: 132 feet x 50 feet

43,560 x 0.163

= 7100 sq ft

Total Calibration Area: 6600 (ft^2) * 1 acre / 43560 ft^2 = 0.152 acres

Calibrated Application Rate: 165 (lbs/acre)
x 2 ≈ 330

Target ≈ 142 x 50'

Quality Control Data for Field Application Verification:

Area of Polygon: 10.938 (acres)

Total Weight to be Applied: 3347 (lbs)

Tolerance

# of 50 lb. Bags to be Applied: 67 bags

130' x 50

154' x 50

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: BLM-1

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	HCl Reaction to full depth? (Y/N)
~~46~~	7.5	7.0	8.0	0	y
462	7.0	7.0	7.0	0	y
463	7.0	6.5	8	0	y
465	7.0	7.0	7.0	0	y
466	7.0	7.0	7.0	0	y
468	7.0	7.0	7.5	0	y
469	7.5	7.0	8.0	0	y
471	7.0	7.0	7.0	0	y
472	7.0 (.25)	7.0	7.5	0	y
473	7.25	7.0	7.5	0	y
474	7.5	7.0	8.0	0	y

Name/Signature: Amy Shaffer **Date:** 05/08/09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Fluvial Deposit/Irrigated Meadows Polygon: **Paste pH Record** SLM-1

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
474 0-6	Tare (0.0)	17.4	17.5	7.5
474 6-12		16.8	15.9	7.5
472 0-6		16.8	16.8	7.6
472 6-12		17.0	17.0	7.6
473 0-6		17.1	17.3	7.6
473 6-12		17.0	17.4	7.6
471 0-6		17.5	17.5	7.6
471 6-12		17.2	17.3	7.4
469 0-6		18.0	18.2	7.6
469 6-12		18.0	18.2	7.5
468 0-6		17.1	17.3	7.4
468 6-12		15.5	15.5	7.4
462 0-6		15.8	15.6	7.6
462 6-12		16.5	15.6	7.5
466 0-6		15.4	14.6	7.5
466 6-12		18.9	17.9	7.6

Next Page

Name/Signature: GARY SUFKA / [signature] Date: 5-11-09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Fluvial Deposit/Irrigated Meadows Polygon:

Paste pH Record BLM-1

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
461 0-6	Tare (0.0)	16.7	15.5	7.5
461 6-12		15.4	15.5	7.5
463 0-6		17.3	17.8	7.5
463 6-12		15.8	15.8	7.5
465 0-6		15.6	14.9	7.4
465 6-12		16.6	15.4	7.3
Dupe (469 6-12)		17.1	16.9	7.4

Name/Signature: GARY SLIFKA / [signature]

Date: 5-11-09

Compost Application Rate Calculation Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: **BLM-1**

POLYGON CHARACTERISTICS

Target % Organic Carbon (1.5% for T-6, 2.5% for T-12)	1.50%	%
Treatment Depth	6	inches
Treatment Area	10.938	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"}}{\text{Compost \% OC} * (1 - \text{\%Moisture}/100)}$$

Compost Rate = 135.00 tons/acre = 1476.59 tons total

Compost Rate = 196.50 cubic yards/acre = 2149.33 cy total

Signature: [signature]

Date: 5/14/09

Signature: [signature]

Date: 05-14-09

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in yd^3/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.
- Repeat.

Compost Spreader Calibration Record

Date: 5/18/09 Time: 1300

Irrigated Meadow / Fluvial Deposit Polygon ID: BLM-1

Design Application Rate: 197 (yd^3/acre)

÷2 ≈ 98.5

Calibration Data for one load of compost:

	Test Run 1	Test Run 2	Average
Compost Quantity (yd^3)	4.25	4.25	4.25
Compost was spread over (ft^2)	1725 AD	1755 AD	1740
Calibration area (acres)	~~10.938~~ .0396	~~10.938~~ .040	~~10.938~~ .0398
Calibrated Application Rate (yd^3/acre)	101	99	~~100~~ 107 AD

Quality Control Data for Field Application Verification:

(A) Design Application Rate: ~~98.5~~ 197 AD (yd^3/acre)

(B) Average Calibrated Application Rate: ~~100~~ 107 AD (yd^3/acre) x 2 passes

Passes to be Applied: 2 passes (= A/B)

45 % Feed
2.1 mph

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: Gary Sikkila / Mary Sikkila
PWT / EPA Representative

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in yd^3/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.
- Repeat.

Compost Spreader Calibration Record

Date: 05-20-09 Time: 10:00

Irrigated Meadow / Fluvial Deposit Polygon ID: BCM-1

Design Application Rate: 197 (yd^3/acre)
÷ 2 applications ≈ 98

Calibration Data for one load of compost:

	Test Run 1	Test Run 2	Average
Compost Quantity (yd^3)	4.25	4.25	
Compost was spread over (ft^2)	110x16 = 1760	100x18 = 1800	1780
Calibration area (acres)	0.040	0.041	~~1780~~ 0.041
Calibrated Application Rate (yd^3/acre)			104

x 2 passes

Quality Control Data for Field Application Verification:

(A) Design Application Rate: 197 (yd^3/acre)

(B) Average Calibrated Application Rate: 208 (yd^3/acre)

Passes to be Applied: ≈ 2 passes (= A/B)

45% feed
2 - 2.3 mph

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

Seeder Calibration Form

Calibration Form Instructions

1) Enter the Polygon ID, Polygon acreage, Calibration Date, Target seed rate(s), %PLS in each seed mix, and % seed in each each mix
2) Perform seeder calibration per the manufacturers' instructions 3 times and enter the total weight of bulk seed mix in grams collected for each seed box
3) For each individual calibration run, verify that the achieved rate is within ±20 % of the 1/2 Target Rate
4) After the 3rd calibration run, verify that the 3 Run Average rate is within ±10% of the 1/2 Target Rate

NOTE: The BLUE text shows the "calculated values" based on the entered data

Polygon ID BLM-1 **Acres:** 10.938 **Date:** 10-2009

	Seed Mix 1			
Target Rate	17.50	lbs PLS / acre	1st Application	Remaining
% PLS in seed mix	74%		100%	
Dilution Factor	100%	(% seed)	100%	
Target Application Rate	23.60	bulk pounds / acre	17.50	6.1
	258.1	Total bulk pounds	191.4	66.7
1/2 Target Rate (2 passes)	11.80	bulk pounds / acre	**8.75**	
	129.0	1/2 of total bulk pounds	95.7	
Test Run 1	11.60	total grams in 3 bags		**6.1 Target gra**
	5.80	bulk lbs/acre		
Test Run 2	12.40	total grams in 3 bags		
	6.20	bulk lbs/acre		
Test Run 3	11.80	total grams in 3 bags		
	5.90	bulk lbs/acre		
3 Run Average	11.93	total grams in 3 bags		
	5.97	bulk lbs/acre		

For QC Checks:

+20% of 1/2 Target Rate	14.16	bulk pounds / acre
-20% of 1/2 Target Rate	9.44	bulk pounds / acre
+10% of 1/2 Target Rate	12.98	lbs seed mix / acre
-10% of 1/2 Target Rate	10.62	lbs seed mix / acre

PWT Signature: _____

Frontier Signature: _____

Kind: SPECIAL MIX Note: Large + Small Seed Mixed Together
Lot: 2145209

Kind & Variety:	Pure%	Germ%	Origin:
MOUNTAIN BROME	25.25	84	WY
SLENDER W/G, SAN LUIS	22.32	95	WA
WESTERN W/G, ROSANNA	13.83	92	WY
CANADA WILDRYE	13.11	97	SD
MOUNTAIN BIG SAGE	1.85	46	WY
BLUE FLAX	6.70	38	WA
PRAIRIE JUNEGRASS	6.24	34	WA
ROCKY MTN PENSTEMON	.59	71	OR
FRINGE SAGE	.49	87	WY

Crop: .05% Inert: 9.55% Weed: .04% Net Wt: 47.19#(35pls#)2ac

Noxious Weed: None Found Test Date: 2/09

Remarks: FRONTIER ENVIRONMENTAL

~~SE~~ BLM 1 10-02-09

Polygon Completion Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: Blm 2 North

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
03-24-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.5. **Comments/Deviations:**
04-10-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.6. **Comments/Deviations:** Started Pre-Till 04-06-09; on 05-06-09 start Lime Spread 05-12-09 Complete lime spread Blm 2 North; Start spread Blm 2 South Finish Blm 2 Lime Spread 05-14-09
05-18-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Sections 3.6 and 3.7A through 3.7E. **Comments/Deviations:** Continue (resume) fert Spread on 05-15-09 & Complete Blm 2 North; Fertilize Blm 2 South 05-26 Start Fncng Blm 2 South 05-28.
06-05-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.7F through 3.7I. Start Spread Compost Blm 2 North 05-26-09 **Comments/Deviations:** Finish Spreading 06-05-09; Harrow incorporating Concurrently with spreading
NA	NA	Completed replacement of irrigation ditches in accordance with Specification Section 3.8. **Comments/Deviations:** No ditch work required.
10-05-09	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.9. **Comments/Deviations:** Start Drassing Surface 06-05-09; No Seeding until Fall Seeded 10-05-09
10-26-09	✓	Completed mulching in accordance with Specification Section 3.10. **Comments/Deviations:** Start Mulching 06-11-09; finish 06-12-09 Additional Mulching on 2 North per punchlist 10-26-09
NA	NA	Completed reinstallation of fencing in accordance with Specification Section 3.11. **Comments/Deviations:**
11-04-09		Completed final inspection and Acceptance of Work in accordance with Specification Section 3.15. **Comments/Deviations:**

Quantity of Work Estimated in Proposal: N/A Addressed separately and in line items for Invoice

Quantity of Work Performed:

11-04-09
Signature of Subcontractor Date
Jmj Contractor

11/05/09
Signature of Contractor Date
Sub

Polygon Completion Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: BLM 2 Middle

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
03-24-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.5. **Comments/Deviations:**
04-10-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.6. Started Pre-Till 04-06-09 **Comments/Deviations:**
06-08-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Sections 3.6 and 3.7A through 3.7E. 05-12-09 Start Lime Spread; Fertilize 05-26-09 **Comments/Deviations:**
06-16-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.7F through 3.7I. **Comments/Deviations:** Start Compost Spread 06-08-09; Completed on -06-11-09 Start Compost Incorp on 06-12-09 06-15-09, Finish 06-16-09
NA	NA	Completed replacement of irrigation ditches in accordance with Specification Section 3.8. **Comments/Deviations:** No Ditch Work
10-01-09	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.9. **Comments/Deviations:** Drag Surface 06-16-09; Mulch 06-18-09 Start Seeding 10-06-09
06-19-09	✓	Completed mulching in accordance with Specification Section 3.10. **Comments/Deviations:**
NA	NA	Completed reinstallation of fencing in accordance with Specification Section 3.11. **Comments/Deviations:**
11-04-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.15. **Comments/Deviations:**

Quantity of Work Estimated in Proposal: NA - Addressed Separately in Invoice

Quantity of Work Performed:

[signature] 11-04-09
Signature of ~~Subcontractor~~ Contractor Date

[signature] 11/05/09
Signature of Contractor SUB Date

Polygon Completion Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: BLM 2 South

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
03-24-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.5. **Comments/Deviations:**
04-10-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.6. **Comments/Deviations:** One Minor Non-Treat Area Tilled (one Harrow Width)
06-10-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Sections 3.6 and 3.7A through 3.7E. **Comments/Deviations:** Coveted Lime Spread 05-14-09
06-24-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.7F through 3.7I. **Comments/Deviations:** Compost Stockpiling Started 06-10-09; Spreading started 06-11-09 Incore tillage on 06-23, 06-24
NA	NA	Completed replacement of irrigation ditches in accordance with Specification Section 3.8. **Comments/Deviations:** No ditch work required
10-08-09	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.9. **Comments/Deviations:** Begin dragging surface 06-24-09 START Seeding 10-07-09
07-01-09	✓	Completed mulching in accordance with Specification Section 3.10. **Comments/Deviations:** Begin Mulch 06-30-09; finish 07-01-09
NA	NA	Completed reinstallation of fencing in accordance with Specification Section 3.11. **Comments/Deviations:**
11-04-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.15. **Comments/Deviations:**

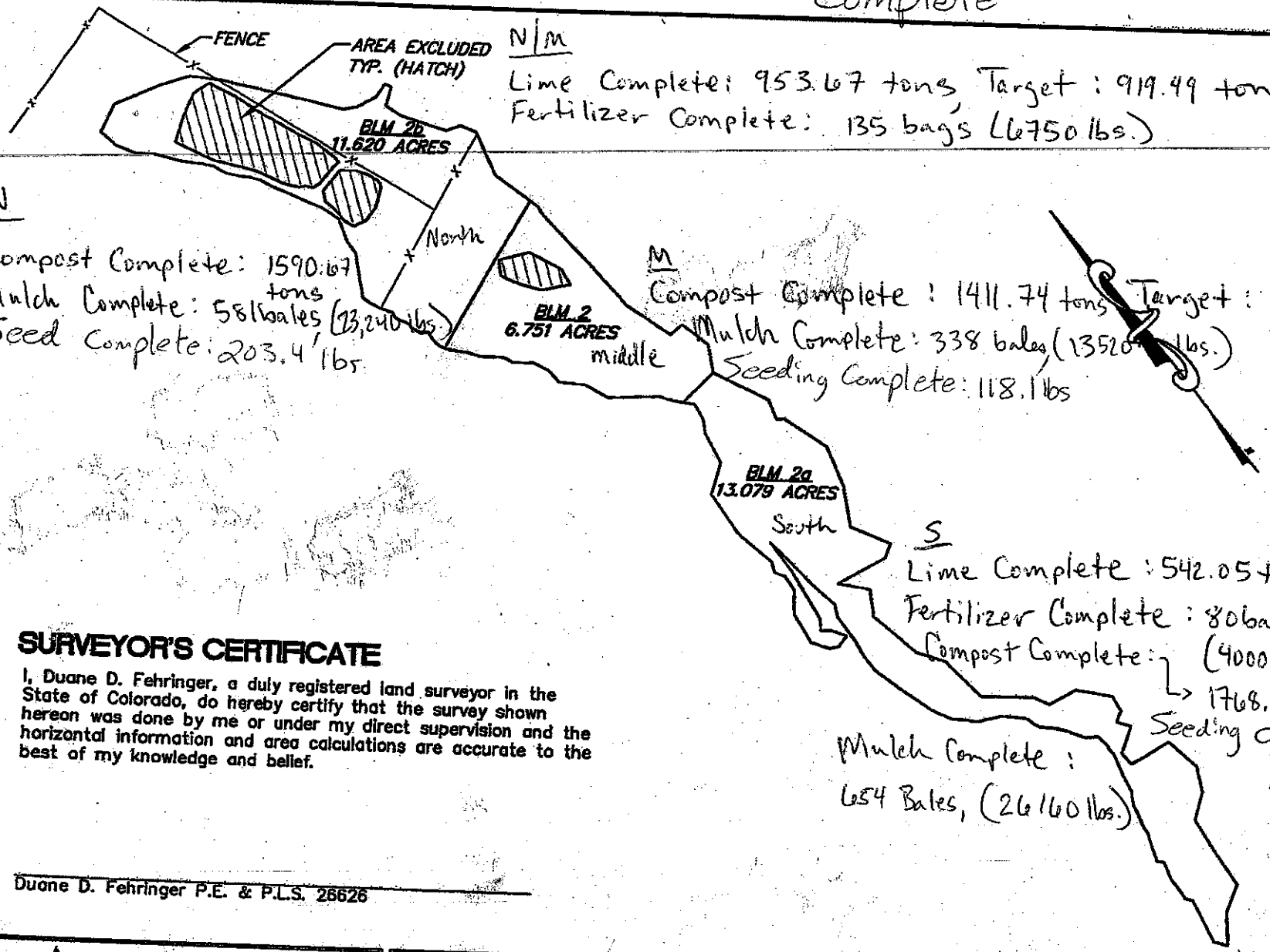
Quantity of Work Estimated in Proposal: NA - Addressed Separately in Invoice Amt

Quantity of Work Performed:

[signature] 11-04-09
Signature of ~~Subcontractor~~ Date
Sub Contractor

[signature] 11-6-09
Signature of Contractor Date
Sub

-Complete-



N/M

Lime Complete: 953.67 tons, Target: 919.49 tons
Fertilizer Complete: 135 bags (6750 lbs.)

N

Compost Complete: 1590.67 tons
Mulch Complete: 581 bales (23,240 lbs.)
Seed Complete: 203.4 lbs

M

Compost Complete: 1411.74 tons, Target: 1427.67 tons
Mulch Complete: 338 bales (13520 lbs.)
Seeding Complete: 118.1 lbs

S

Lime Complete: 542.05 tons, Target: 541.92 tons
Fertilizer Complete: 80 bags, (4000 lbs.)
Compost Complete: → 1768.05, Target: 1763.59 tons
Seeding Complete: 2 228.9 lbs

Mulch Complete: 654 Bales, (26160 lbs.)

SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

Duane D. Fehringer P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors

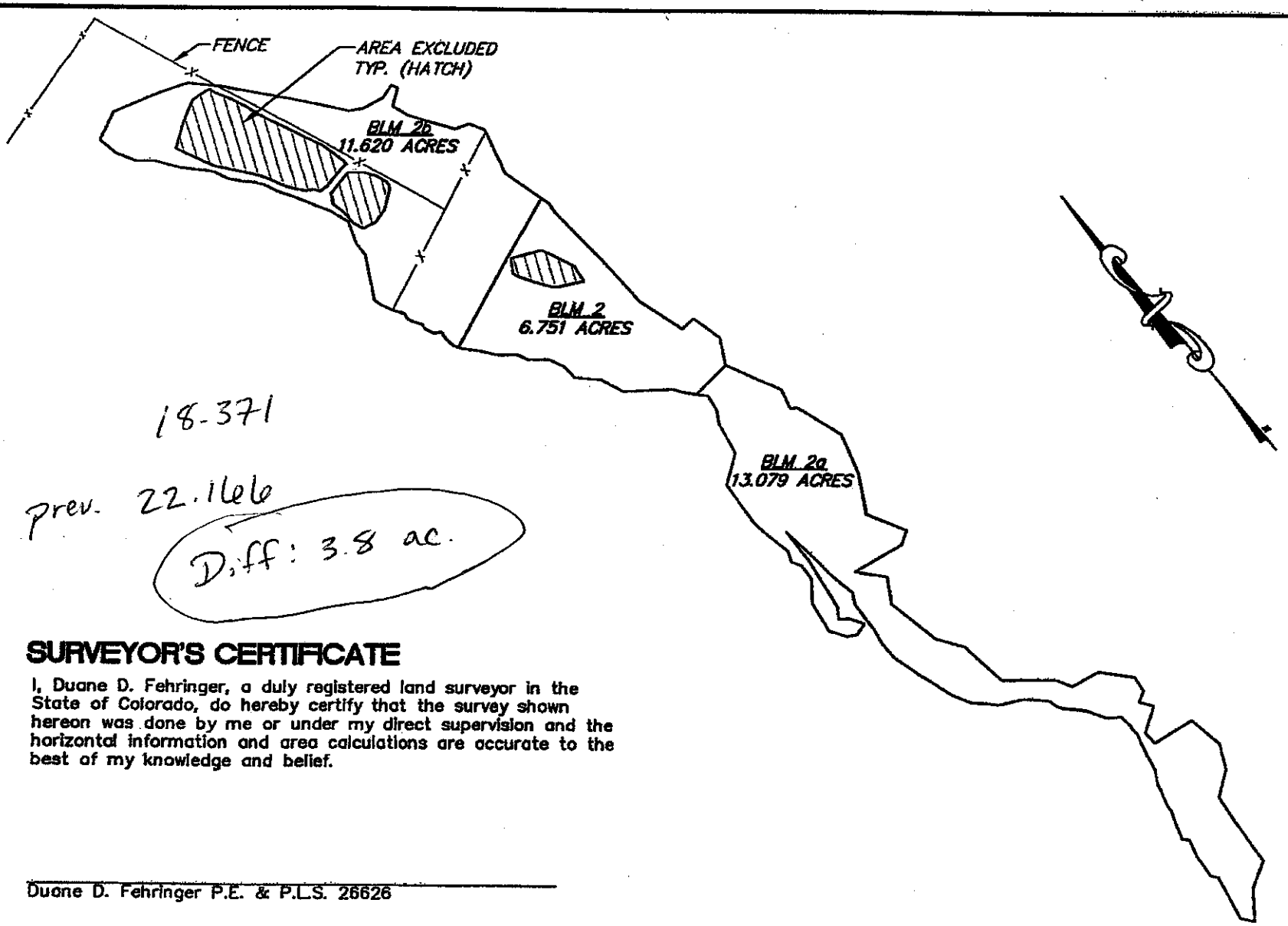
CLIENT: FRONTIER ENVIRONMENTAL INC.

BLM 2
CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY: BFF
SCALE: 1"=500'
DATE ISSUED: 8-19-08
PROJECT NO.: 08-0032
SHEET

J:\projects\80032\dwg\OU-11 Acres.dwg

* Pre-Tilled



18-371

Prev. 22.1616

Diff: 3.8 ac.

SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

Duane D. Fehringer P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
AVON, CO
CENTENNIAL, CO

CLIENT: FRONTIER ENVIRONMENTAL INC.

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BLM 2

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	BPF
SCALE:	1"=500'
DATE ISSUED:	5-18-09
PROJECT NO.	08-0032
EXHIBIT	

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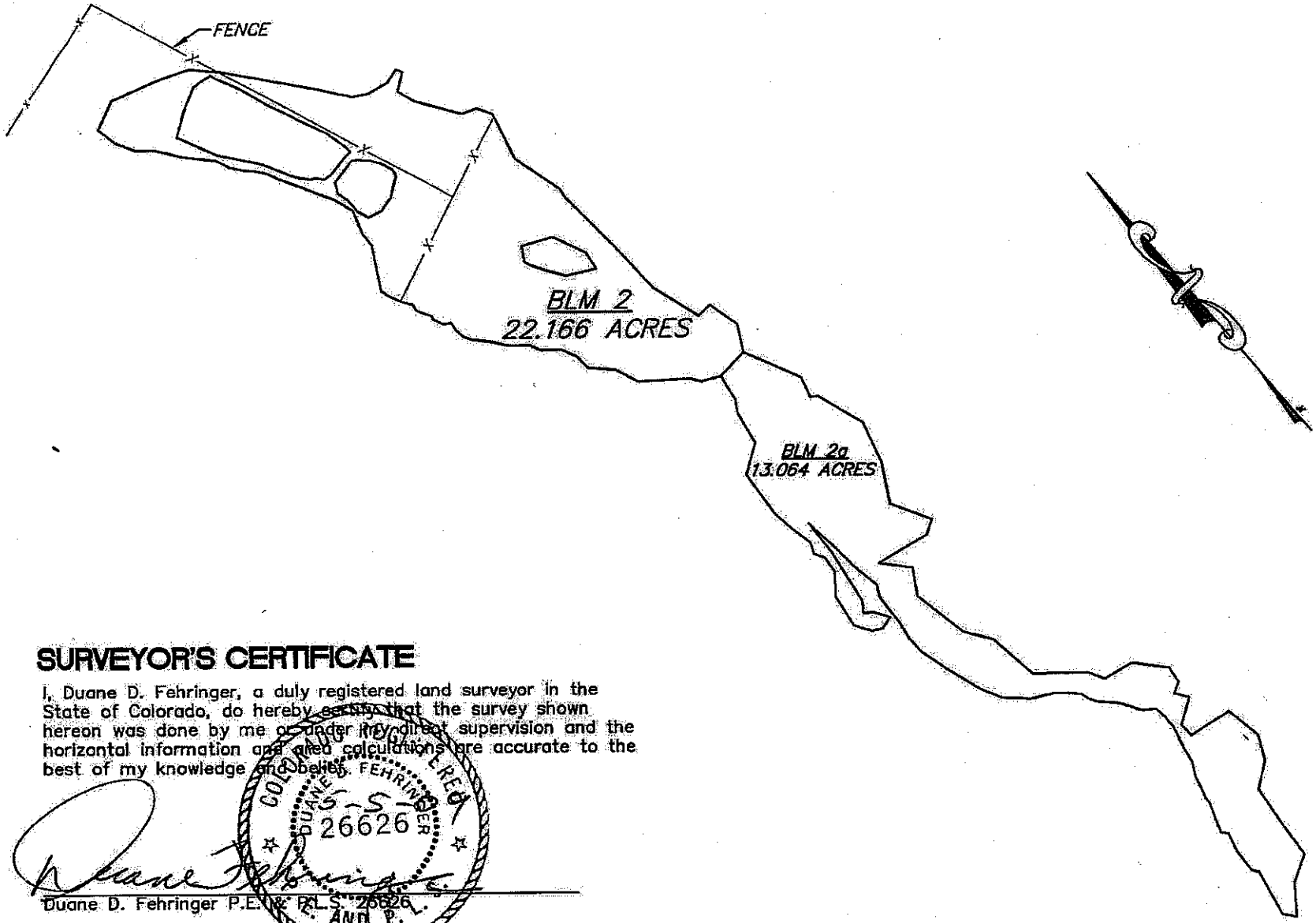

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I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 26626 L.S. AND P.L.

Duane D. Fehringer P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
45801 US HWY 6&24, SUITE 203 BOX 978 AVON, CO 81620 PH: (970)949-5073
8351 E. HEVERE PARKWAY, SUITE 106 CENTENNIAL, CO 80111 PH: (303)843-6220

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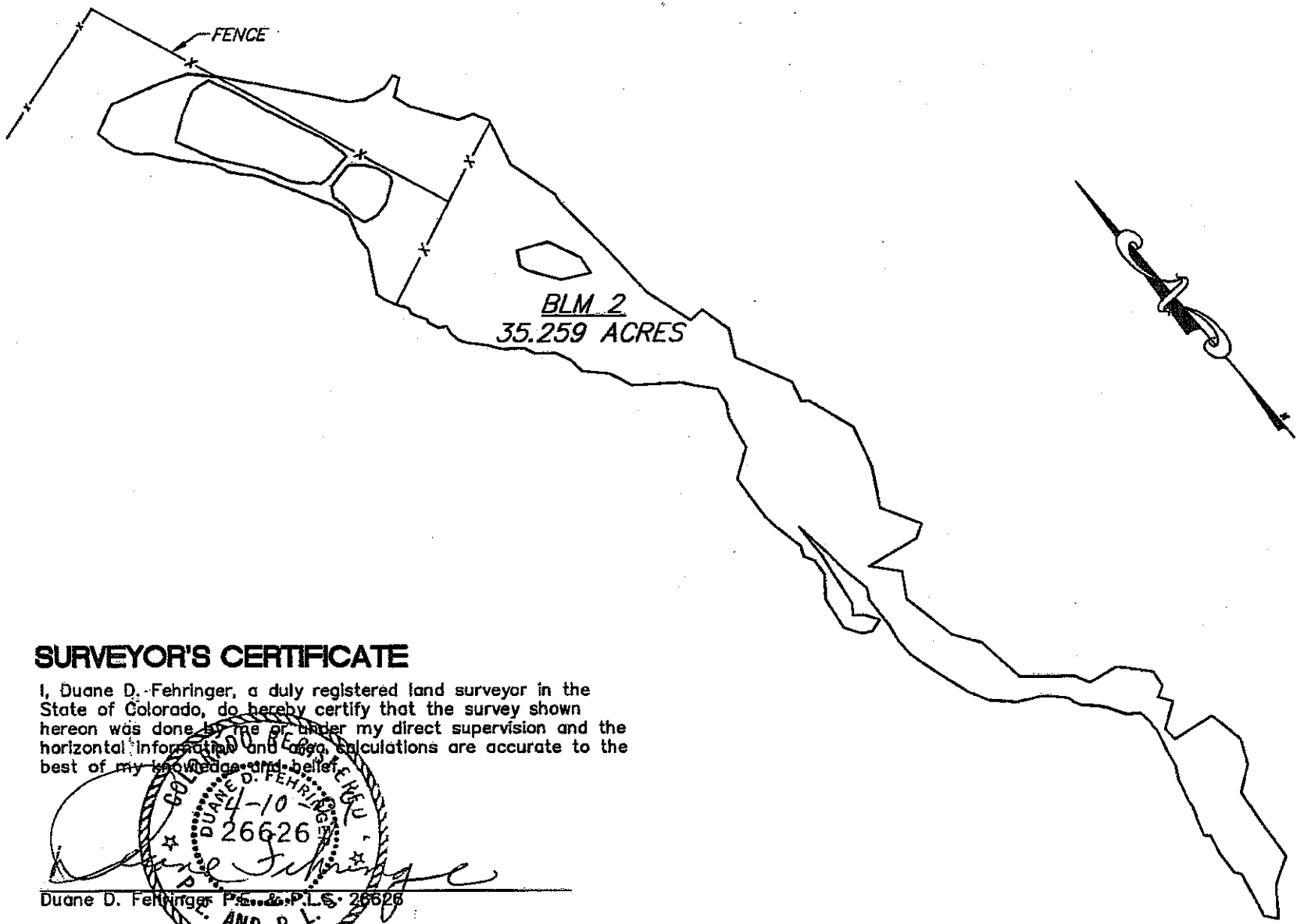
BLM 2 AND BLM 2a

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=500'
DATE ISSUED:	6-4-09
PROJECT NO.	08-0032
SHEET	

J:\projects\08\032\dwg\OU-11 Areas.dwg



SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO REG. 4-10 26626 P.E. AND P.L.S.

Duane D. Fehringer P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
48001 US HWY 6&24, SUITE 203 BOX 978 AVON, CO 81620 PH: (970)949-8873
6551 S. REVERE PARKWAY, SUITE 186 CENTENNIAL, CO 80111 PH: (303)948-6220

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BLM 2

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=500'
DATE ISSUED:	4-9-09
PROJECT NO.	08-0032
EXHIBIT	

J:\Projects\08\0032\dwg\011-11 Areas.dwg

Lime Application Rate Calculation Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: **BLM-2 (North)** "Blm 2"

POLYGON CHARACTERISTICS

Net Application Rate (22 dry tons/1000 tons soil unless noted otherwise)	11	dry tons/1000 tons soil
Mixing Safety Factor (10% unless noted otherwise)	10.00%	%
% Rock (0 unless noted otherwise)	0.00%	%
Treatment Depth	12	inches
Total Area	22.166	acres

LIME CHARACTERISTICS

Lime Particle Size Distribution					
Percent >10 mesh		X 0.1	=	0.0000	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.0004	(B)
Percent < 60 mesh	99.92%	X 1	=	0.9992	©
Lime Reactivity			=	0.9996	(Sum of A, B, and C)

Calcium Carbonate Equivalence		82.20%	%
Percent Moisture		29.0%	%
Bulk Density	0.75 grams/cc	= 0.632	tons/cy

~~CALCULATE LIME RATE~~

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * (1000 tons soil/acre/6") * Treatment Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 41.48 tons/acre = 919.49 tons total
= 1.90 lbs/ft2 0.95 (two-pass rate in lbs/ft2)

Lime Rate = 65.63 cubic yards/acre = 1454.71 cy total

Signature: [signature]

Date: 5-6-09

Signature: [signature]

Date: 05-06-09

Lime Application Rate Calculation Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: **BLM-2 (South)** "BLM 2A"

POLYGON CHARACTERISTICS

Net Application Rate (22 dry tons/1000 tons soil unless noted otherwise)	11 dry tons/1000 tons soil
Mixing Safety Factor (10% unless noted otherwise)	10.00% %
% Rock (0 unless noted otherwise)	0.00% %
Treatment Depth	12 inches
Total Area	13.064 acres

LIME CHARACTERISTICS

Lime Particle Size Distribution					
Percent >10 mesh		X 0.1	=	0.0000	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.0004	(B)
Percent < 60 mesh	99.92%	X 1	=	0.9992	©
			=	0.9996	(Sum of A, B, and C)
Lime Reactivity				82.20%	%
Calcium Carbonate Equivalence				29.0%	%
Percent Moisture					
Bulk Density	0.75 grams/cc		=	0.632	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * (1000 tons soil/acre/6") * Treatment Depth / (Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 41.48 tons/acre = 541.92 tons total

= 1.90 lbs/ft2 0.95 (two-pass rate in lbs/ft2)

Lime Rate = 65.63 cubic yards/acre = 857.36 cy total

Signature: [signature]

Date: 5-6-09

Signature: [signature]

Date: 05-06-09

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: BZM-2

Date: 05-06-09 Time: 09:58

Field Application Rate: 41.39 tons/acre (1.90 psf) (psf = tons/acre*0.0459)

Total Tarp Dimensions: 27 (sq. ft.)

Tolerance
1.90 + 10% = 2.09
1.90 − 10% = 1.73

Test 1 Material Weight: 47.94 (lbs.) Rate: 1.78 ✓ psf
(20.00 + 12.64 + 20.4) − 5.1 Tare

Test 2 Material Weight: 55.78 (lbs.) Rate: 2.07 ✓ psf
(26.08 + 14.94 + 19.66) − 5.1 Tare

Test 3 Material Weight: _____ (lbs.) Rate: _____ psf

Test 4 Material Weight: _____ (lbs.) Rate: _____ psf

Test 5 Material Weight: _____ (lbs.) Rate: _____ psf

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: 3cm-2

Date: 05-07-09 Time: 08:15

Field Application Rate: 41.39 tons/acre (1.90 psf) (psf = tons/acre*0.0459)

Total Tarp Dimensions: 27 (sq. ft.)

Tolerance

1.90 +10% = 2.09

1.90 - 10% = 1.73

Test 1 Material Weight: 50.74 (lbs.) Rate: 1.85 psf ✓

(-5.1) = 50.74 ✓

Test 2 Material Weight: 49.3 (lbs.) Rate: 1.81 psf

Test 3 Material Weight: _____ (lbs.) Rate: _____ psf

Test 4 Material Weight: _____ (lbs.) Rate: _____ psf

Test 5 Material Weight: _____ (lbs.) Rate: _____ psf

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: GARY SLIFK / _____
PWT / EPA Representative

#1
21.18
13.26
21.20
55.64
- 5.10
50.74 / 27 = 1.85 ✓

#2
22.30
19.20
12.90
54.40
5.16
49.30 = 1.81 ✓

Tractor settings:
PTO
= 1,000
RPM = 1300
1.35 mph

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: BLM-2

Date: 5-8-09 Time: 07:40

Field Application Rate: 41.39 tons/acre (1.90 psf) (psf = tons/acre*0.0459)

Total Tarp Dimensions: — (sq. ft.)

Test 1 Material Weight: _____ (lbs.) Rate: 1.66 psf (Fail)
22.15 + 11.74 + 16.24 = 50.13 - 5.1 = 45.03 =

Test 2 Material Weight: _____ (lbs.) Rate: 1.63 psf (Fail)
18.14 + 10.58 + 20.54 = 49.26 - 5.1 = 44.16

Test 3 Material Weight: _____ (lbs.) Rate: 1.81 psf ✓
14.86 + 16.94 + 22.24 - 5.1 = 48.94 / 27 =

Test 4 Material Weight: _____ (lbs.) Rate: 1.75 psf ✓
17.29 + 13.47 + 21.70 = 52.46 / 27

~~Test 5 Material Weight: _____ (lbs.) Rate: _____ psf~~ NS

Print / Sign Name: GARY SLIFKA
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

BLM-2 North

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: BLM-2

Date: 5-11-09 Time: 08:30

Field Application Rate: 41.39 tons/acre (1.90 psf) (psf = tons/acre*0.0459)

Target +10% = 2.09
-10% = 1.71

Total Tarp Dimensions: 27 (sq. ft.)

Test 1 Material Weight: 42.38 (lbs.) Rate: 1.56 psf (FAIL)

(17.86+11.96+17.66 -5.1) = 42.38 =

Test 2 Material Weight: 49.24 (lbs.) Rate: 1.82 psf ✓ OKAY

(19.88 + 10.94 + 23.52 -5.1

Test 3 Material Weight: 49.80 (lbs.) Rate: 1.84 psf ✓

(16.28 + 14.14 + 24.48 -5.1

~~Test 4 Material Weight:~~ _____ (lbs.) Rate: _____ psf

~~Test 5 Material Weight:~~ _____ (lbs.) Rate: _____ psf NS

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: GARY SLIFKA / _____
PWT / EPA Representative

#1 #2 #3

17.86 19.88 16.28

11.96 10.94 1414

17.66 23.52 2448 = 49.8 = 1.84 ✓

- 5.1 -5.1

= 42.38 49.24 = 1.82 ✓

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: BLM-2 Mid

Date: ~~41.39~~ 5/12/09 Time: 07:40

Field Application Rate: 41.39 tons/acre (1.90 psf) (psf = tons/acre*0.0459)

+10% = 2.09
- 10% = 1.73

Total Tarp Dimensions: 27 (sq. ft.)

Test 1 Material Weight: 58.06 (lbs.) Rate: 2.15 psf Fail

Test 2 Material Weight: 55.38 (lbs.) Rate: 2.05 psf ✓

Test 3 Material Weight: _____ (lbs.) Rate: 2.28 psf Fail

Test 4 Material Weight: 54.0 (lbs.) Rate: 2.00 psf ok

Test 5 Material Weight: 50.9 (lbs.) Rate: 1.88 psf ok

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: GARY SLIFKA / _____
PWT / EPA Representative

#1
20.96
16.60
25.60
63.16-

#2
19.82
13.86
26.80
60.48-5.1
= ok

#3
18.60
17.28
30.80
= 2.28 Fail

#4
23.06
14.72
21.32
59.1

#5
24.48
12.86
18.66
56

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: BLM-2 (South)

Date: 5/13/09 Time: 745

Field Application Rate: 41.35 tons/acre (2.09 psf) (psf = tons/acre*0.0459)

Total Tarp Dimensions: 27 (sq. ft.)

Test 1 Material Weight: ~~53.44~~ 42.9 (lbs.) Rate: ~~1.9766~~ 1.58 psf Fa.1

Test 2 Material Weight: ~~50.6~~ 53.44 (lbs.) Rate: 1.97 psf ok

Test 3 Material Weight: 50.62 (lbs.) Rate: 1.87 psf ok

Test 4 Material Weight: _____ (lbs.) Rate: _____ psf

Test 5 Material Weight: _____ (lbs.) Rate: _____ psf

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: GARY SLIFKA / [signature]
PWT / EPA Representative

13.64 25.08 15.82
13.16 12.28 16.40
21.20 21.18 23.50
1.58 Fa.1 58.54 55.72
-5.1 = 187 ✓
= 53.44 ✓ 50.62

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: BLM 2-South

Date: 5-14-09 Time: 08:00

Field Application Rate: 41.39 tons/acre (1.89 psf) (psf = tons/acre*0.0459)

Total Tarp Dimensions: 27 (sq. ft.)

Test 1 Material Weight: 43.68 (lbs.) Rate: 1.61 psf FM

Test 2 Material Weight: 54.02 (lbs.) Rate: 2.00 psf JH

Test 3 Material Weight: 48.94 (lbs.) Rate: 1.81 psf JH

Test 4 Material Weight: _____ (lbs.) Rate: _____ psf

Test 5 Material Weight: _____ (lbs.) Rate: _____ psf MS

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: GARY SLIKKA / _____
PWT / EPA Representative

Desired Range
1.89 + 10% = 2.08
1.89 - 10% = 1.70

#1
17.14
11.24
20.40
48.78 - 5.1
43.68 = 1.61

#2
24.62
20.42
14.08
59.12 - 5.1
= 54.02
= 2.00

#3
15.56
14.56
23.90
48.94

FERTILIZER CALIBRATION

- Place a known weight (e.g., one 50-lb bag) into the spreader hopper.
- Follow the operations manual to set the equipment to meet the design field application rate (e.g., spreader opening, travel speed, RPMs, etc.)
- Make one pass dispersing the fertilizer until the contents of the spreader are emptied.
- Measure the area over which the fertilizer was applied
- Divide the weight of material applied by the total area it was applied to, convert to lbs/acre, and compare to the design field application rate.
- An acceptable test will be within 10% of the required rate.

Fertilizer Calibration Record

Settings:
17-18 rpm
4 holes

Date: 05-08-09 Time: 08:15

Irrigated Meadow / Fluvial Deposit Polygon ID: BLM 2 North

Fertilizer Type: 0 : 45 : 0 (N:P:K)

~~Design Field Application Rate~~: 306 lbs/acre (± 10% range = 278 to 337)

4 mph 25 153 H2 rate = 2 passes

Calibration Data for one 50 pound bag of fertilizer:

Dimensions over which bag was spread: 132 feet x 50 feet

Total Calibration Area: 6600 (ft^2) * 1 acre / 43560 ft^2 = .152 acres

Calibrated Application Rate: 169 (lbs/acre)
x 2 passes = 329

50' Spread Width

Quality Control Data for Field Application Verification:

153 lbs / 1 acre = 25 / x
= 0.163 acres
x 43,560
= 7100 sq ft / 50' width
= 142' Target Length
-10% = 129'
+10% = 156'

Area of Polygon: 22.166 (acres)

Total Weight to be Applied: 6783 (lbs)

~~# of 50 lb. Bags to be Applied~~: 135 bags (* 1/2 applied before Spreader fork ↓)

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

FERTILIZER CALIBRATION

- Place a known weight (e.g., one 50-lb bag) into the spreader hopper.
- Follow the operations manual to set the equipment to meet the design field application rate (e.g., spreader opening, travel speed, RPMs, etc.)
- Make one pass dispersing the fertilizer until the contents of the spreader are emptied.
- Measure the area over which the fertilizer was applied
- Divide the weight of material applied by the total area it was applied to, convert to lbs/acre, and compare to the design field application rate.
- An acceptable test will be within 10% of the required rate.

Fertilizer Calibration Record

Date: 05-15-09 Time: 08:30 - 09:15

Irrigated Meadow / Fluvial Deposit Polygon ID: BLM 2 North

Fertilizer Type: 0 : 46 : 0 (N:P:K)

Design Field Application Rate: 306 lbs/acre (± 10% range = 278 to 337)

Calibration Data for one ~~50~~ 25 pound bag of fertilizer:

Dimensions over which bag was spread: 110 feet x 30 feet

Total Calibration Area: 3300 (ft^2) * 1 acre / 43560 ft^2 = 0.075 acres

Calibrated Application Rate: 333 (lbs/acre)

Hopper Height Setting "5"

3 holes showing on gate

Quality Control Data for Field Application Verification:

Area of Polygon: 22.166 (acres)

Total Weight to be Applied: 6750 (lbs)

# of 50 lb. Bags to be Applied: 74 bags (135 total)

61 bags applied last week before broadcaster broke down

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

FERTILIZER CALIBRATION

- Place a known weight (e.g., one 50-lb bag) into the spreader hopper.
- Follow the operations manual to set the equipment to meet the design field application rate (e.g., spreader opening, travel speed, RPMs, etc.)
- Make one pass dispersing the fertilizer until the contents of the spreader are emptied.
- Measure the area over which the fertilizer was applied
- Divide the weight of material applied by the total area it was applied to, convert to lbs/acre, and compare to the design field application rate.
- An acceptable test will be within 10% of the required rate.

Fertilizer Calibration Record

Date: 05-26-09 Time: 08:30

Irrigated Meadow / Fluvial Deposit Polygon ID: Bcm 2-South

Fertilizer Type: 0 : 45 : 0 (N:P:K)

Design Field Application Rate: 306 lbs/acre (± 10% range = 278 to 337)

Calibration Data for one ~~50~~ 25 pound bag of fertilizer:

Dimensions over which bag was spread: 90 feet x 37 feet

Total Calibration Area: 3330 (ft^2) * 1 acre / 43560 ft^2 = 0.076 acres 25 lbs

Calibrated Application Rate: 329 (lbs/acre)

~~Trial #~~	Trial 1	Trial 2	Trial 3	Trial 4
25 lbs	25 lbs	25 lbs	25 lbs	25 lbs
Meas. Area	2400 sq ft	4280 sq ft	4000	3330
Acreage	0.055	0.098	.092	0.076
Trial Rate	455	255	278	329 ✓

Quality Control Data for Field Application Verification:

Area of Polygon: 13.064 (acres)

Total Weight to be Applied: ≈ 4,000 (lbs)

# of 50 lb. Bags to be Applied: 80 bags

Gate : 0.7
3rd Gear
Med Range

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

1st Time Using New Herd Model 750 Broadcaster

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

5/18/09

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: BLM-2 North

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	% HCl Reaction
479-06	7.5	7.0	8.0	0	100
479-612	7.5	7.0	8.0	0	"
480 06	8.0	7.5	8.5	0	"
480 6-12	8.0	7.5	8.5	0	"
481 0-6	8.0	8.0	8.0	0	"
481 6-12	8.0	8.0	8.0	0	"
482 0-6	8.0	8.0	8.0	0	"
482 6-12	8.0	8.0	8.0	0	"
483 0-6	8.25	8.0	8.5	0	"
483 6-12	8.25 65	8.0 65	8.5	0	"
494 06	~~6.5~~ 7.0	~~7.5~~ 6.5	8.5	0	"
494 6-12	8.25	8.0	8.5	0	"
493 0-6	8.0	8.0	8.0	0	"
493 6-12	8.0	8.0	8.0	0	"
495 0-6	7.5	7.0	8.0	0	"
495 6-12	7.5	7.0	8.0	0	"
501 0-6	8.0	8.0	8.0	0	"
501 6-12	8.0	8.0	8.0	0	"

Name/Signature: GARY SUTTON **Date:** 5/18/09

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: BLM-2 North

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	% HCl Reactive
500 0-6	8.0	8.0	8.0	0	100
500 6-12	8.25	8.0	8.5	0	100
496 0-6	8.0	8.0	8.0	0	100
496 6-12	8.0	8.0	8.0	0	100
492 0-6	7.7	7.5	8.0	0	100
492 6-12	7.7	7.5	8.0	0	100
491 0-12	7.5	7.5	7.5	0	100
488 0-12	7.5	7.5	7.5	0	100
485 0-12	7.7	7.5	8.0	0	100
497 0-12	8.0	8.0	8.0	0	100
499 0-12	8.0	8.0	8.0	0	100
504 0-12	7.7	7.5	8.0	0	100
507 0-12	8.0	8.0	8.0	0	100
503 0-12	7.5	7.5	7.5	0	100

Name/Signature: [signature]

Date: 05-19-09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record

Fluvial Deposit/Irrigated Meadows Polygon: BLM-2 North

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
497 0-6	tare 0.0	15.1	15.2	7.3
497 6-12		15.3	15.3	7.3
497 6-12 DUP		15.3	15.7	7.4
499 0-6		15.2	15.2	6.5
499 6-12		15.4	15.5	6.7
492 0-6		~~15.6~~ 15.9	15.9	7.1
492 6-12		15.7	15.9	7.0
491 0-6		15.4	15.4	8.0
491 6-12		16.0	~~32.0~~ 16.0	7.8
488 0-6		16.0	~~32.0~~ 16.0	~~7.6~~ 7.5
488 6-12		16.2	16.2	7.4
488 0-6 DUP		16.0	16.3	7.5
503 0-6		15.0	30.0	7.0
503 6-12		15.0	30.0	7.2
504 0-6		15.5	31.0	7.0
504 6-12		15.5	31.0	7.0
507 0-6		15.9	~~2~~ 15.9	7.4

Name/Signature: GARY SLIFKA/[signature] Date: 5/19/09

* 2pt pH Calibration

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record BLM-2 North cont.

Fluvial Deposit/Irrigated Meadows Polygon:

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
494 0-6	Tare@0.0	15.0	~~0~~ 15.0	7.6
494 6-12		15.2	15.2	7.5
495 0-6		15.3	15.3	7.5
495 6-12		15.0	15.0	7.4
496 0-6		15.3	15.5	7.3
496 0-6 DUP		15.1	16.2	7.3
496 6-12		15.3	15.5	7.7
500 0-6		15.1	15.4	7.6
500 6-12		15.2	15.3	7.7
501 0-6		15.4	17.5	7.5
501 6-12		15.3	15.3	7.6

Name/Signature: GARY SLIFKA

Date: 5/19/09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record BLM-2 North Cont

Fluvial Deposit/Irrigated Meadows Polygon:

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
507 6-12	Tare @ 0.0	15.9	16.0	7.4
479 0-6		15.5	31.0	7.5
479 6-12		16.1	~~32.8~~ 32.2	7.6
480 0-6		15.2	16.2	8.0
480 6-12		15.4	15.4	8.0
481 0-6		16.1	16.2	7.9
481 6-12		15.3	~~15.5~~ 15.3	7.9
481 6-12 Dup		16.1	16.1	7.9
482 0-6		15.1	16.3	7.4
~~486~~ 482 6-12		15.8	15.9	7.3
483 0-6		16.2	~~15.2~~ 16.2	7.5
~~480~~ 6-12		15.4	15.5	7.6
485 0-6		15.0	15.4	7.5
485 6-12		15.1	15.2	7.6
493 0-6		15.5	15.5	7.3
493 6-12		15.6	15.6	7.6
493 6-12 Dup		15.1	15.1	7.7

Name/Signature: GARY SLIFKA / [signature] **Date:** 5/19/09

Compost Application Rate Calculation Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: **BLM-2 North**

POLYGON CHARACTERISTICS

Target % Organic Carbon (1.5% for T-6, 2.5% for T-12)	1.50%	%
Treatment Depth	6	inches
Treatment Area	11.62	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	0.687	=	tons/cy

CALCULATE COMPOST APPLICATION RATE

Compost = $\dfrac{\text{Target \% OC * depth * 1000 tons/acre/6"}}{\text{Compost \% OC * (1- \%Moisture/100)}}$

Compost Rate = 135.00 tons/acre = 1568.66 tons total

Compost Rate = 196.50 cubic yards/acre = 2283.34 cy total

Signature: [signature]

Date: 5/14/09

Signature: [signature]

Date: 05-14-09

FILE MEMO

Regarding: Lime (Compost) Fertilizer Mulch Seed Other

Fluvial Deposit ID: ~~_____~~ **Irrigated Meadow ID:** BLM 2 North

Acreage: 11.62

Target Application: _____

Amount Applied: _____

Comments: Ran Bulk Density test on Select Compost that was stockpiled in Pit, then moved via 730 Articul truck and re-stockpiled on treatment area.

Bulk Density Re-Stockpiled Material: 1340 lbs/yd^3

_____ _____

Signature **Date**

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in yd^3/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.
- Repeat.

Compost Spreader Calibration Record

Date: 5/26/09 Time: 13:30

Irrigated Meadow / Fluvial Deposit Polygon ID: BLM 2 North

Design Application Rate: 196.5 (yd^3/acre)
CY2 Rate ≈ 98 yd^3/AC

Calibration Data for one load of compost:

	Test Run 1	Test Run 2	Average
Compost Quantity (yd^3)	4.25	4.25	
Compost was spread over (ft^2)	1760	1764	
Calibration area (acres)	0.040	0.040	0.040
Calibrated Application Rate (yd^3/acre)		98	98

Quality Control Data for Field Application Verification:

(A) Design Application Rate: 196.5 (yd^3/acre)

(B) Average Calibrated Application Rate: 98 (yd^3/acre) x 2 pass

Passes to be Applied: 2 passes (= A/B)

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: GARY SLIFKA / _____
PWT / EPA Representative

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in yd^3/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.
- Repeat.

Compost Spreader Calibration Record

Date: 6-3-09 Time: 0830

Irrigated Meadow / Fluvial Deposit Polygon ID: BLM 2 North mid-Application

Design Application Rate: 196.5 (yd^3/acre)
C ½ Rate ≈ 96 yd^3/Ac

Calibration Data for one load of compost:

	Test Run 1	Test Run 2	Average
Compost Quantity (yd^3)	4.25	4.25	4.25
Compost was spread over (ft^2)	1785	1680	1733
Calibration area (acres)	0.040	0.038	0.039
Calibrated Application Rate (yd^3/acre)			~~98~~ 106 JMS

Quality Control Data for Field Application Verification:

(A) Design Application Rate: 196.5 (yd^3/acre) JMS

(B) Average Calibrated Application Rate: ~~98~~ 106 (yd^3/acre) JMS

Passes to be Applied: 2 passes (= A/B) x 2 = 212

#2-17 X105

#1-14 X120

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: GARY SLIFKA / Gary Slifka
PWT / EPA Representative

Compost Application Rate Calculation Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: **BLM-2 Middle**

POLYGON CHARACTERISTICS

Target % Organic Carbon (1.5% for T-6, 2.5% for T-12)	1.50%	%
Treatment Depth	6	inches
Treatment Area	10.546	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy
Dry Bulk Density			

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC * depth * 1000 tons/acre/6"}}{\text{Compost \% OC * (1- \%Moisture/100)}}$$

Compost Rate = 135.00 tons/acre = 1423.67 tons total

Compost Rate = 196.50 cubic yards/acre = 2072.30 cy total

Signature: Brad Mink

Date: 5/14/09

Signature: Mark A Mink

Date: 05-14-09

Compost Application Rate Calculation Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: **BLM-2 Middle**

POLYGON CHARACTERISTICS

Target % Organic Carbon (1.5% for T-6, 2.5% for T-12)	1.50%	%
Treatment Depth	6	inches
Treatment Area	6.751	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	0.687	=	tons/cy
Dry Bulk Density			

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC * depth * 1000 tons/acre/6"}}{\text{Compost \% OC * (1- \%Moisture/100)}}$$

Compost Rate = 135.00 tons/acre = 911.36 tons total

Compost Rate = 196.50 cubic yards/acre = 1326.58 cy total

Signature: Brett Mead

Date: 5/21/09

Signature: John G Klatt

Date: 05-21-09

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in yd^3/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.
- Repeat.

Compost Spreader Calibration Record

Date: 06-09-07 Time: 13:40

Irrigated Meadow / Fluvial Deposit Polygon ID: Bm 2 Middle START

Design Application Rate: 196.5 (yd^3/acre)
98.40^3/ac = ½ Mark

Calibration Data for one load of compost:

	Test Run 1	Test Run 2	Average
Compost Quantity (yd^3)	4.25	4.25	4.25
Compost was spread over (ft^2)	115 x 15 = 1725	110 x 16 = 1760	1742
Calibration area (acres)			0.04
Calibrated Application Rate (yd^3/acre)			106.3

Quality Control Data for Field Application Verification:

(A) Design Application Rate: 196.5 (yd^3/acre)

(B) Average Calibrated Application Rate: 212.5 (yd^3/acre) /2 = 106.3

Passes to be Applied: ≈ 2 passes (= A/B)

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: Berm 2 South

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	HCL Reaction
521	7.3	7.0	7.5	None	Yes
523	7.0	7.0	7.0	None	Yes
525	7.3	7.0	7.5	None	Yes
531	7.3	7.0	7.5	None	Yes

Name/Signature: [signature]

Date: 06-08-09

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: BLM 2 South

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	% HCl Reaction
509		7.0	8	0	yes
510		7.0	7.5		yes
514		7.0	7.5		yes
515	7.0	7.0	7.0		yes
516		5.5	7.0		yes
517		5.5	7.0		yes
518		6.5	7.0		NO
519		7.5	8.5		yes
527		7.5	8.5		yes
528		5.5	6.5		yes

Name/Signature: GARY SLIFKA / Gary Slifka **Date:** 6-8-09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record BLM 2 South

Fluvial Deposit/Irrigated Meadows Polygon:

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
527 0-6	Tare @ 0.0	15.6	31.2	7.7
527 6-12		15.3	15.3	7.4
527 06 Dup		15.6	31.2	7.7
527 6-12 Dup		15.6	15.6	7.3
528 0-6		15.1	15.4	7.4
528 6-12		16.0	16.0	7.1
521 0-6		15.63	15.3	7.5
521 6-12		15.6	15.6	7.3
523 0-6		15.2	15.2	7.1
523 6-12		15.4	15.4	7.4
523 6-12 Dup		15.4	15.4	7.4
525 0-6		16.1	16.1	7.4
525 6-12		15.0	15.0	7.4
531 0-6		15.3	15.3	7.3
531 6-12		15.5	15.5	7.5

Name/Signature: GARY SLIFKA

Date: 6-8-09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record BLM 2 South

Fluvial Deposit/Irrigated Meadows Polygon:

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH	
509 0-6	Tare @ 0.0	15.2	15.2	8.5	
509 6-12		16.0	16.0	8.1	
510 0-6		16.2	16.2	7.8	
510 6-12		15.0	15.0	7.9	
514 0-6		15.1	15.4	7.1	
514 6-12		15.1	15.1	6.7	
515 0-6		15.0	15.0	7.3	
515 6-12		16.0	16.0	7.1	
516 0-6		16.1	16.3	6.9	
516 6-12		~~16.0~~ 15.6	15.6	7.3	
517 0-6		15.3	15.3	7.3	See Retests
517 6-12		15.3	15.4	6.0	
518 0-6		15.2	15.2	5.9	See Retests 06-10-09 AM
518 6-12		15.1	15.1	5.9	
519 0-6		15.6	15.6	7.3	
519 6-12		15.0	15.0	7.5	

Name/Signature: GARY SLIFKA

Date: 6-8-09

2pt Cal.

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Fluvial Deposit/Irrigated Meadows Polygon: **Paste pH Record** BLM 2 South Retests

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
517 0-6	TARE @ 0.0	16.6	16.6	7.7
517 6-12	↓	16.5	16.6	7.7
518 0-6		16.0	16.0	7.2
518 6-12		15.1	15.1	7.2

Note: Areas were re-filled, re-sampled on 06-10-09

Name/Signature: [signature] **Date:** 06-10-09

Compost Application Rate Calculation Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: **BLM-2 South**

POLYGON CHARACTERISTICS

Target % Organic Carbon (1.5% for T-6, 2.5% for T-12)	1.50%	%
Treatment Depth	6	inches
Treatment Area	13.064	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	0.687	=	tons/cy
Dry Bulk Density			

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC * depth * 1000 tons/acre/6"}}{\text{Compost \% OC * (1- \%Moisture/100)}}$$

Compost Rate = 135.00 tons/acre = 1763.59 tons total

Compost Rate = 196.50 cubic yards/acre = 2567.09 cy total

Signature: [signature]

Date: 5/14/09

Signature: [signature]

Date: 05-14-09

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in yd^3/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.
- Repeat.

Compost Spreader Calibration Record

Date: 06-11-09 Time: 12:30

Irrigated Meadow / Fluvial Deposit Polygon ID: Bin 2 South

Design Application Rate: 196 (yd^3/acre)

½ RATE = 98 yd^3/acre

Calibration Data for one load of compost:

	Test Run 1	Test Run 2	Average
Compost Quantity (yd^3)	4.25	4.25	
Compost was spread over (ft^2)	125 x 15 = 1875	115 x 15 = 1725	1800
Calibration area (acres)			0.041
Calibrated Application Rate (yd^3/acre)			104

Quality Control Data for Field Application Verification:

(A) Design Application Rate: 196 (yd^3/acre) ÷ 2 = 98 yd^3/acre

(B) Average Calibrated Application Rate: 104 (yd^3/acre)

Passes to be Applied: ≈ 2 passes (= A/B)

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in yd^3/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.
- Repeat.

Compost Spreader Calibration Record

Date: 06-16-09 Time: 13:55

Irrigated Meadow / Fluvial Deposit Polygon ID: Berm 2 South ~~Middle~~ AND

Design Application Rate: 196 (yd^3/acre)
9840 3/Acre Y2 RATE

Calibration Data for one load of compost:

	Test Run 1	Test Run 2	Average
Compost Quantity (yd^3)	4.25	4.25	4.25
Compost was spread over (ft^2)	105 X 16 = 1680	112 X 14 = 1792	1736
Calibration area (acres)			0.040
Calibrated Application Rate (yd^3/acre)			1063

Quality Control Data for Field Application Verification:

(A) Design Application Rate: 98 (yd^3/acre) (Y2 Rate)

(B) Average Calibrated Application Rate: 106 (yd^3/acre)

Passes to be Applied: ~2 passes (= A/B)

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: John G Smyth
PWT / EPA Representative

Seeder Calibration Form

Calibration Form Instructions

1) Enter the Polygon ID, Polygon acreage, Calibration Date, Target seed rate(s), %PLS in each seed mix, and % seed in each each mix
2) Perform seeder calibration per the manufacturers' instructions 3 times and enter the total weight of bulk seed mix in grams collected for each seed box
3) For each individual calibration run, verify that the achieved rate is within ±20 % of the 1/2 Target Rate
4) After the 3rd calibration run, verify that the 3 Run Average rate is within ±10% of the 1/2 Target Rate

NOTE: The BLUE text shows the "calculated values" based on the entered data

Polygon ID BLM 2 North **Acres:** 11.62 **Date:** 10/5/09

	Seed Mix 1		* Seed Mix 2	
Target Rate	17.50	lbs PLS / acre	NA	lbs PLS / acre
% PLS in seed mix	100%		NA	
Dilution Factor	100%	(% seed)	NA	(% seed)
Target Application Rate	17.50	bulk pounds / acre	#VALUE!	bulk pounds / acre
	203.4	Total bulk pounds	#VALUE!	total bulk pounds
1/2 Target Rate (2 passes)	8.75	bulk pounds / acre	#VALUE!	bulk pounds / acre
	101.7	1/2 of total bulk pounds	#VALUE!	1/2 of total bulk pounds
Test Run 1	19.10	total grams in 3 bags		total grams in 3 bags
	9.55	bulk lbs/acre	0.00	bulk lbs/acre
Test Run 2	19.00	total grams in 3 bags		total grams in 3 bags
	9.50	bulk lbs/acre	0.00	bulk lbs/acre
Test Run 3	17.90	total grams in 3 bags		total grams in 3 bags
	8.95	bulk lbs/acre	0.00	bulk lbs/acre
3 Run Average	18.67	total grams in 3 bags	0.00	total grams in 3 bags
	9.33	bulk lbs/acre	0.00	bulk lbs/acre
For QC Checks:				
+20% of 1/2 Target Rate	10.50	bulk pounds / acre	#VALUE!	bulk pounds / acre
-20% of 1/2 Target Rate	7.00	bulk pounds / acre	#VALUE!	bulk pounds / acre
+10% of 1/2 Target Rate	9.63	lbs seed mix / acre	#VALUE!	lbs seed mix / acre
-10% of 1/2 Target Rate	7.88	lbs seed mix / acre	#VALUE!	lbs seed mix / acre

* Supplier mixed small seed with large seed

PWT Signature: _____

Frontier Signature: _____

Seeder Calibration Form

Calibration Form Instructions

1) Enter the Polygon ID, Polygon acreage, Calibration Date, Target seed rate(s), %PLS in each seed mix, and % seed in each each mix
2) Perform seeder calibration per the manufacturers' instructions 3 times and enter the total weight of bulk seed mix in grams collected for each seed box
3) For each individual calibration run, verify that the achieved rate is within ±20 % of the 1/2 Target Rate
4) After the 3rd calibration run, verify that the 3 Run Average rate is within ±10% of the 1/2 Target Rate

NOTE: The BLUE text shows the "calculated values" based on the entered data

Polygon ID BLM 2 Middle **Acres:** 6.751 **Date:** 10/7/09

	Seed Mix 1		* Seed Mix 2	
Target Rate	17.50	lbs PLS / acre	NA	lbs PLS / acre
% PLS in seed mix	100%		NA	
Dilution Factor	100%	(% seed)	NA	(% seed)
Target Application Rate	17.50	bulk pounds / acre	#VALUE!	bulk pounds / acre
	118.1	Total bulk pounds	#VALUE!	total bulk pounds
1/2 Target Rate (2 passes)	8.75	bulk pounds / acre	#VALUE!	bulk pounds / acre
	59.1	1/2 of total bulk pounds	#VALUE!	1/2 of total bulk pounds
Test Run 1	15.70	total grams in 3 bags		total grams in 3 bags
	7.85	bulk lbs/acre	0.00	bulk lbs/acre
Test Run 2	16.50	total grams in 3 bags		total grams in 3 bags
	8.25	bulk lbs/acre	0.00	bulk lbs/acre
Test Run 3	16.40	total grams in 3 bags		total grams in 3 bags
	8.20	bulk lbs/acre	0.00	bulk lbs/acre
3 Run Average	16.20	total grams in 3 bags	0.00	total grams in 3 bags
	8.10	bulk lbs/acre	0.00	bulk lbs/acre

For QC Checks:

+20% of 1/2 Target Rate	10.50	bulk pounds / acre	#VALUE!	bulk pounds / acre
-20% of 1/2 Target Rate	7.00	bulk pounds / acre	#VALUE!	bulk pounds / acre
+10% of 1/2 Target Rate	9.63	lbs seed mix / acre	#VALUE!	lbs seed mix / acre
-10% of 1/2 Target Rate	7.88	lbs seed mix / acre	#VALUE!	lbs seed mix / acre

* Supplier mixed small seed with large seed

PWT Signature: _____

Frontier Signature: _____

Seeder Calibration Form

Calibration Form Instructions

1) Enter the Polygon ID, Polygon acreage, Calibration Date, Target seed rate(s), %PLS in each seed mix, and % seed in each each mix
2) Perform seeder calibration per the manufacturers' instructions 3 times and enter the total weight of bulk seed mix in grams collected for each seed box
3) For each individual calibration run, verify that the achieved rate is within ±20 % of the 1/2 Target Rate
4) After the 3rd calibration run, verify that the 3 Run Average rate is within ±10% of the 1/2 Target Rate

NOTE: The BLUE text shows the "calculated values" based on the entered data

Polygon ID BLM-2 South **Acres:** 13.064 **Date:** _____

	Seed Mix 1		1st Application	Remaining
Target Rate	17.50	lbs PLS / acre		
% PLS in seed mix	74%		100%	
Dilution Factor	100%	(% seed)	100%	
Target Application Rate	23.60	bulk pounds / acre	17.50	6.1
	308.2	Total bulk pounds	228.6	79.6
1/2 Target Rate (2 passes)	[redacted]	bulk pounds / acre	**8.75**	**3.05**
	154.1	1/2 of total bulk pounds	**114.3**	**39.8**
Test Run 1	11.60	total grams in 3 bags		**6.1 Target gra**
	5.80	bulk lbs/acre		
Test Run 2	12.40	total grams in 3 bags		
	6.20	bulk lbs/acre		
Test Run 3	11.80	total grams in 3 bags		
	5.90	bulk lbs/acre		
3 Run Average	11.93	total grams in 3 bags		
	5.97	bulk lbs/acre		

For QC Checks:

+20% of 1/2 Target Rate	14.16	bulk pounds / acre
-20% of 1/2 Target Rate	9.44	bulk pounds / acre
+10% of 1/2 Target Rate	12.98	lbs seed mix / acre
-10% of 1/2 Target Rate	10.62	lbs seed mix / acre

PWT Signature: _____

Frontier Signature: _____

Kind: SPECIAL MIX
Lot: 2145209

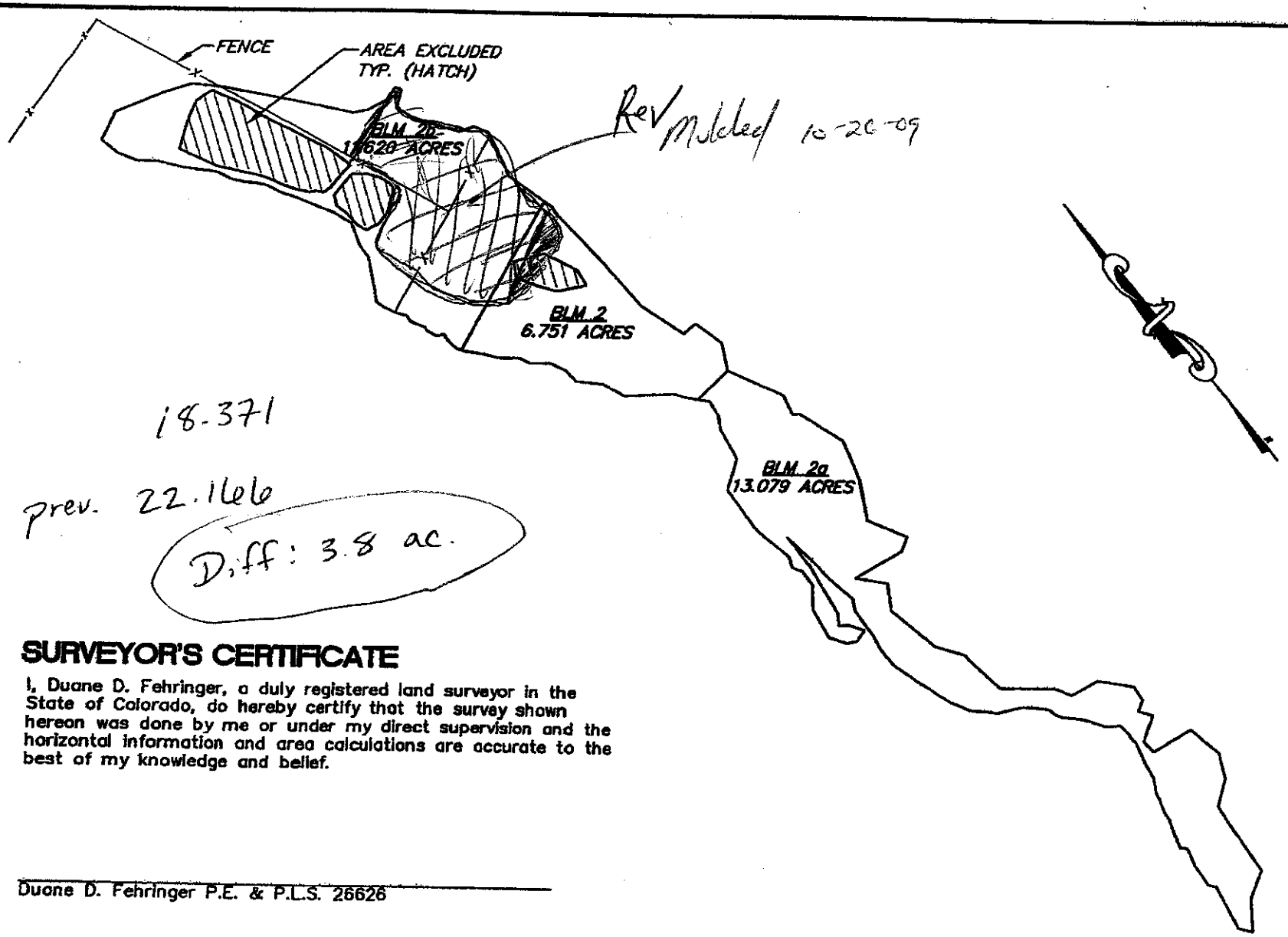
Kind & Variety:	Pure%	Germ%	Origin:
MOUNTAIN BROME	25.25	84	WY
SLENDER W/G, SAN LUIS	22.32	95	WA
WESTERN W/G, ROSANNA	13.83	92	WY
CANADA WILDRYE	13.11	97	SD
MOUNTAIN BIG SAGE	1.85	46	WY
BLUE FLAX	6.70	38	WA
PRAIRIE JUNEGRASS	6.24	34	WA
ROCKY MTN PENSTEMON	.59	71	OR
FRINGE SAGE	.49	87	WY

Crop: .05% Inert: 9.55% Weed: .04% Net Wt: 47.19#(35pls#)2ac

Noxious Weed: None Found Test Date: 2/09

Remarks: FRONTIER ENVIRONMENTAL

BLM-2 North & Mid & South



Rev Modified 10-20-09

18.371

prev. 22.1666

Diff: 3.8 ac.

SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

Duane D. Fehringer P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
AVON, CO
CENTENNIAL, CO

CLIENT: FRONTIER ENVIRONMENTAL INC.

This document was prepared for the exclusive use of the Client specified herein. The use of this document or the information contained herein by any other person or entity is not authorized. In the event that any other person or entity chooses to use this document or the information contained herein for any purpose they must first obtain written authorization from Inter-Mountain Engineering. This document and any information contained herein is intended to be used solely one year of the date hereof. Use after that period is not authorized.

BLM 2

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=500'
DATE ISSUED:	5-19-09
PROJECT NO.	08-0032
SHEET	

J:\projects\80032\dwg\OU-11 Areas.dwg

Polygon Completion Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: BLM-3

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
04-09-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.5. **Comments/Deviations:**
04-10-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.6. Started Pre-Till 04-10-09 **Comments/Deviations:**
06-03-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Sections 3.6 and 3.7A through 3.7E. Spread Lime on 05-19-09; Spread Fert 05-27-09 **Comments/Deviations:**
06-25-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.7F through 3.7I. Begin Compost Spreading 06-22-09 **Comments/Deviations:** Finish Spread 06-24; Begin Tracer 06-24
NA	NA	Completed replacement of irrigation ditches in accordance with Specification Section 3.8. **Comments/Deviations:** No ditch work required
10-08-09	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.9. **Comments/Deviations:** Seeded 10-08-09
06-29-09	✓	Completed mulching in accordance with Specification Section 3.10. **Comments/Deviations:** Mulched Prior to Seeding; Fall Seeding
NA	NA	Completed reinstallation of fencing in accordance with Specification Section 3.11. **Comments/Deviations:** No fencing
11-04-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.15. **Comments/Deviations:**

Quantity of Work Estimated in Proposal: NA - Addressed Separately in Invoice Docs.
Quantity of Work Performed:

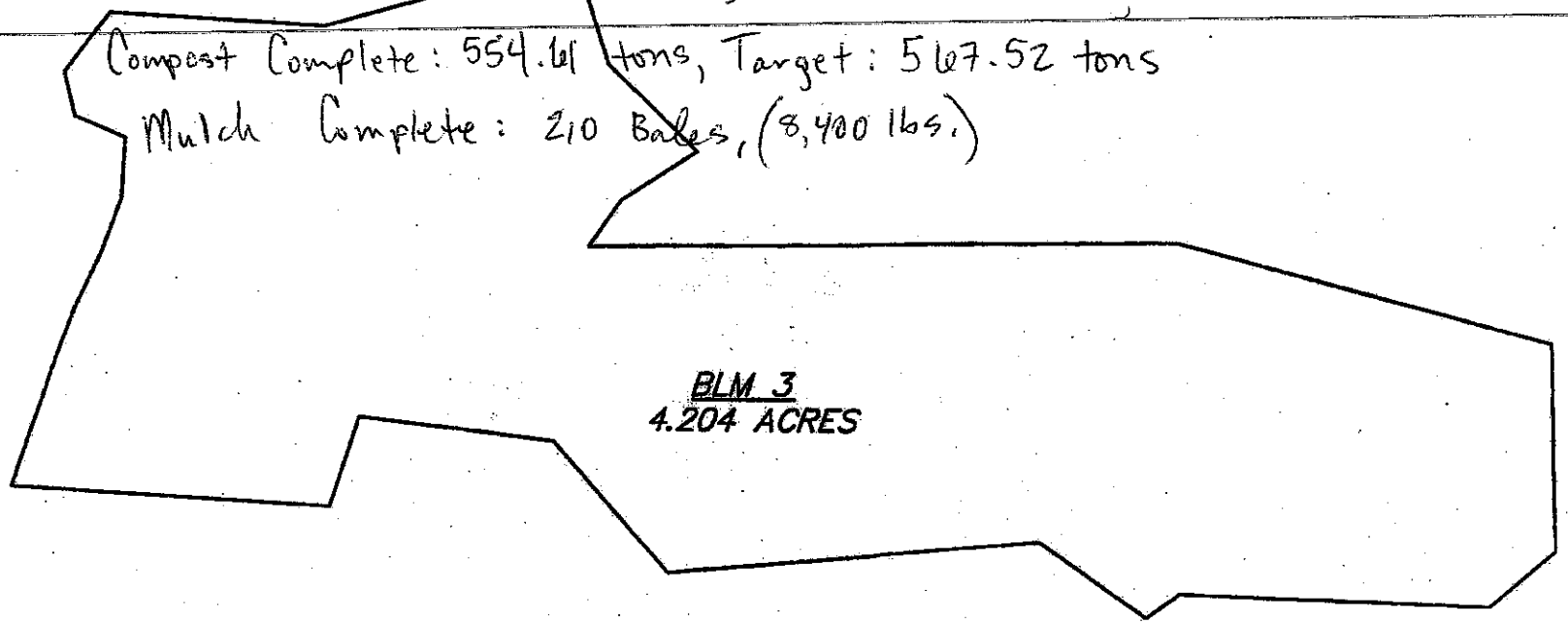
Signature of Subcontractor Date: 11-04-09

Signature of Contractor Date: 11-06-09

- Complete -

Lime Complete: 88.04 tons, Target: 86.5 tons Lime
Fertilizer Complete: 13 bags (650 lbs.)

Compost Complete: 554.61 tons, Target: 567.52 tons
Mulch Complete: 210 Bales, (8,400 lbs.)



SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 1-1-08 26626 P.E. AND P.L.S.

Duane D. Fehringer, P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors

CLIENT: FRONTIER ENVIRONMENTAL INC.

BLM 3
CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

SCALE: 1"=100'
DATE ISSUED: 3-22-08
PROJECT NO: 08-0032

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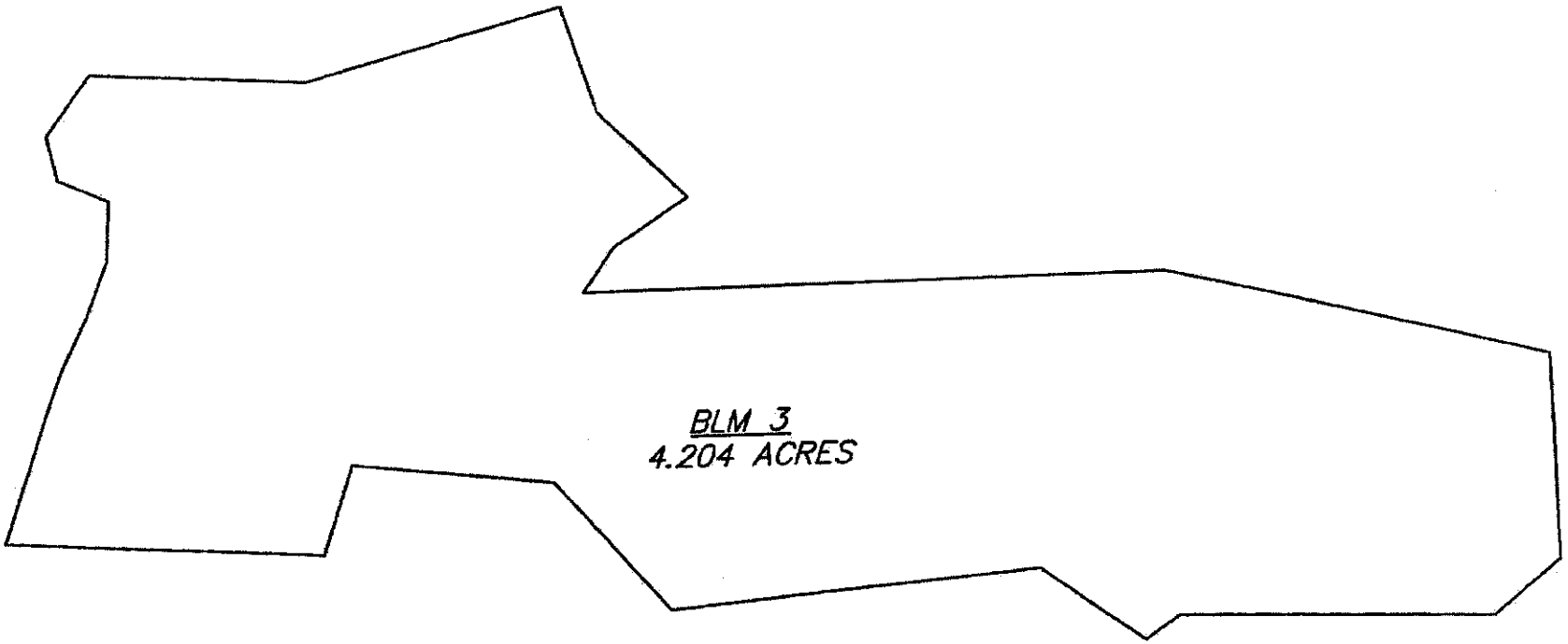
* Pre-Tilled



SURVEYOR'S CERTIFICATE

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COLORADO REGISTERED DUANE D. FEHRINGER 1-1-08 26626 P.E. AND P.L.S.

Duane D. Fehringer P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
40881 US HWY 6&24, SUITE 205 BOX 978 AVON, CO 81620 PH: (970)949-5972
6101 S. REVERE PARKWAY, SUITE 104 CENTENNIAL, CO 80111 PH: (303)968-4220

CLIENT: FRONTIER ENVIRONMENTAL INC.

This document was prepared for the exclusive use of the Client specified herein. The use of this document or the information contained herein by any other person or entity is not authorized. In the event that any other person or entity desires to use this document or the information contained herein for any purpose they must first obtain written authorization from Inter-Mountain Engineering. This document and any information contained herein is intended to be used within one year of the date hereof. Use after that period is not authorized.

BLM 3

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=100'
DATE ISSUED:	3-27-08
PROJECT NO.	08-0032
EXHIBIT	

J:\projects\800325\dwg\OU-11 Areas.dwg

Lime Application Rate Calculation Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: **BLM-3**

POLYGON CHARACTERISTICS

Net Application Rate (22 dry tons/1000 tons soil unless noted otherwise)	11 dry tons/1000 tons soil
Mixing Safety Factor (10% unless noted otherwise)	10.00% %
% Rock (0 unless noted otherwise)	0.00% %
Treatment Depth	6 inches
Total Area	4.204 acres

LIME CHARACTERISTICS

Lime Particle Size Distribution					
Percent >10 mesh		X 0.1	=	0.0000	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.0004	(B)
Percent < 60 mesh	99.92%	X 1	=	0.9992	©
Lime Reactivity			=	0.9996	(Sum of A, B, and C)

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		28.5% %	
Bulk Density	0.75 grams/cc	=	0.632 tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * (1000 tons soil/acre/6") * Treatment Depth / (Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 20.60 tons/acre = 86.59 tons total

= 0.95 lbs/ft2 0.47 (two-pass rate in lbs/ft2)

Lime Rate = 32.58 cubic yards/acre = 136.99 cy total

Signature: [signature]

Date: 5/14/09

Signature: [signature]

Date: 05-14-09

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: BLM 3

Date: 5-19-09 Time: 11:00

Field Application Rate: 20.6 tons/acre (0.95 psf) (psf = tons/acre*0.0459)

Total Tarp Dimensions: 27 (sq. ft.)

Test 1 Material Weight: 25.54 (lbs.) Rate: 0.94 psf
10.46+7.44+12.74-5.1 =

Test 2 Material Weight: 27.36 (lbs.) Rate: 1.01 psf
11.36+6.46+14.64-5.1 =

Test 3 Material Weight: _____ (lbs.) Rate: _____ psf

Test 4 Material Weight: _____ (lbs.) Rate: _____ psf

Test 5 Material Weight: _____ (lbs.) Rate: _____ psf

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: GARY SLIFER / _____
PWT / EPA Representative

FERTILIZER CALIBRATION

- Place a known weight (e.g., one 50-lb bag) into the spreader hopper.
- Follow the operations manual to set the equipment to meet the design field application rate (e.g., spreader opening, travel speed, RPMs, etc.)
- Make one pass dispersing the fertilizer until the contents of the spreader are emptied.
- Measure the area over which the fertilizer was applied
- Divide the weight of material applied by the total area it was applied to, convert to lbs/acre, and compare to the design field application rate.
- An acceptable test will be within 10% of the required rate.

Fertilizer Calibration Record

Date: 05-27-09 Time: 11:00

Irrigated Meadow / Fluvial Deposit Polygon ID: BLM 3, S6 JPW

Fertilizer Type: 0 : 45 : 0 (N:P:K)

Design Field Application Rate: 153 lbs/acre (± 10% range = 139 to 168)

Calibration Data for one ~~50~~ 25 pound bag of fertilizer:

Dimensions over which bag was spread: 120 feet x 40 feet

Total Calibration Area: 6800 (ft^2) * 1 acre / 43560 ft^2 = .156 acres

Calibrated Application Rate: 160 (lbs/acre)

Quality Control Data for Field Application Verification:

Area of Polygon: ~~1.285~~ PWW 4.204 (acres)

Total Weight to be Applied: ~~196~~ 643.21 (lbs)

# of 50 lb. Bags to be Applied: ~~24~~ ≈ 13 bags

Herd Spreader
Gate @ "4.0"
3rd Gear
M.O Range

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWW / EPA Representative

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

***In Situ* pH Record**

Fluvial Deposit/Irrigated Meadows Polygon: BCM-3 BCM 4

BCM 3

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	after Reaction 3
536	7.0	7.0	7.0	None	yes
535	7.3	7.0	7.5	None	yes
534	7.5	7.5	7.5	None	yes
533	7.3	7.0	7.5	None	yes
532	7.0	7.0	7.0	None	yes
531 BCM 4 0-42	7.3	7.0	7.5	None	yes
AM [redacted]					
530	7.5	7.5	7.5	None	yes

Name/Signature: [signature] Date: 8-10-07

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Fluvial Deposit/Irrigated Meadows Polygon:

Paste pH Record BLM 3 & BLM 4

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
BLM 3 536 0-6	Tare (0.0)	14.9	+1 15.6	7.2
535 0-6		17.1	16.9	7.2
534 0-6		15.0	14.8	7.3
533 0-6		17.8	17.1	7.3
532 0-6		14.7	15.2	7.2
BLM 4				
531 0-6		14.8	14.4	7.2
531 6-12		16.2	15.8	7.4
530 0-6		17.4	17.4	7.3
530 6-12		15.4	14.5	7.6
530 0-6 Dupe		15.7	16.2	7.3

Name/Signature: [signature]

Date: 06-10-09

2 Point pH Cal 7.0 & 10.0 Buffers

Compost Application Rate Calculation Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: **BLM-3**

POLYGON CHARACTERISTICS

Target % Organic Carbon (1.5% for T-6, 2.5% for T-12)	1.50%	%
Treatment Depth	6	inches
Treatment Area	4.204	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	0.687	=	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"}}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 135.00 tons/acre = 567.52 tons total

Compost Rate = 196.50 cubic yards/acre = 826.09 cy total

Signature: [signature]

Date: 5/14/09

Signature: [signature]

Date: 05-14-09

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in yd^3/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.
- Repeat.

Compost Spreader Calibration Record

Date: 06-22-09 Time: 15:56

Irrigated Meadow / Fluvial Deposit Polygon ID: ~~45,050~~ BLM-3

Design Application Rate: 196.5 (yd^3/acre)
98 yd3/Acre = ½ Rate

Calibration Data for one load of compost:

	Test Run 1	Test Run 2	Average
Compost Quantity (yd^3)	4.25	4.25	4.25
Compost was spread over (ft^2)	115 x 18 = 2070	105 x 18 = 1890	
Calibration area (acres)	0.048	0.043	0.046
Calibrated Application Rate (yd^3/acre)			92.4

Quality Control Data for Field Application Verification:

(A) Design Application Rate: 196.5 (yd^3/acre) ÷ 2 = 98 yd3/Acre

(B) Average Calibrated Application Rate: 92.4 (yd^3/acre)

Passes to be Applied: ≈ 2 passes (= A/B)

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

Seeder Calibration Form

Calibration Form Instructions

1) Enter the Polygon ID, Polygon acreage, Calibration Date, Target seed rate(s), %PLS in each seed mix, and % seed in each each mix
2) Perform seeder calibration per the manufacturers' instructions 3 times and enter the total weight of bulk seed mix in grams collected for each seed box
3) For each individual calibration run, verify that the achieved rate is within ±20 % of the 1/2 Target Rate
4) After the 3rd calibration run, verify that the 3 Run Average rate is within ±10% of the 1/2 Target Rate

NOTE: The BLUE text shows the "calculated values" based on the entered data

Polygon ID BLM-3 **Acres:** 4.204 **Date:** 10-2009

	Seed Mix 1		1st Application	Remaining
Target Rate	17.50	lbs PLS / acre		
% PLS in seed mix	74%		100%	
Dilution Factor	100%	(% seed)	100%	
Target Application Rate	23.60	bulk pounds / acre	17.50	6.1
	99.2	Total bulk pounds	73.6	25.6
1/2 Target Rate (2 passes)	[redacted]	bulk pounds / acre	**8.75**	**3.05**
	49.6	1/2 of total bulk pounds	**36.8**	**12.8**
Test Run 1	11.60	total grams in 3 bags		**6.1 Target gra**
	5.80	bulk lbs/acre		
Test Run 2	12.40	total grams in 3 bags		
	6.20	bulk lbs/acre		
Test Run 3	11.80	total grams in 3 bags		
	5.90	bulk lbs/acre		
3 Run Average	11.93	total grams in 3 bags		
	5.97	bulk lbs/acre		

For QC Checks:

+20% of 1/2 Target Rate	14.16	bulk pounds / acre
-20% of 1/2 Target Rate	9.44	bulk pounds / acre
+10% of 1/2 Target Rate	12.98	lbs seed mix / acre
-10% of 1/2 Target Rate	10.62	lbs seed mix / acre

PWT Signature: _____

Frontier Signature: _____

Kind: SPECIAL MIX
Lot: 2145209

Kind & Variety:	Pure%	Germ%	Origin:
MOUNTAIN BROME	25.25	84	WY
SLENDER W/G, SAN LUIS	22.32	95	WA
WESTERN W/G, ROSANNA	13.83	92	WY
CANADA WILDRYE	13.11	97	SD
MOUNTAIN BIG SAGE	1.85	46	WY
BLUE FLAX	6.70	38	WA
PRAIRIE JUNEGRASS	6.24	34	WA
ROCKY MTN PENSTEMON	.59	71	OR
FRINGE SAGE	.49	87	WY

Crop: .05% Inert: 9.55% Weed: .04% Net Wt: 47.19#(35pls#)2ac

Noxious Weed: None Found Test Date: 2/09

Remarks: FRONTIER ENVIRONMENTAL

BLM 2 North & BLM 3

Polygon Completion Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: BCM-4

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
03-24-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.5. **Comments/Deviations:**
04-14-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.6. **Comments/Deviations:**
06-03-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Sections 3.6 and 3.7A through 3.7E. **Comments/Deviations:** Start Lime Spread 05-15-09 + completed Fertilized on 05-18-09
06-25-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.7F through 3.7I. **Comments/Deviations:** 5-Mar Compost Spread on 06-24-09
N/A	N/A	Completed replacement of irrigation ditches in accordance with Specification Section 3.8. **Comments/Deviations:** No Ditch Work
10-07-09	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.9. **Comments/Deviations:**
06-26-09	✓	Completed mulching in accordance with Specification Section 3.10. **Comments/Deviations:** Completed Mulch in Spring prior to Fall Seeding
N/A	N/A	Completed reinstallation of fencing in accordance with Specification Section 3.11. **Comments/Deviations:** No fencing
11-04-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.15. **Comments/Deviations:**

Quantity of Work Estimated in Proposal: N/A - Addressed Separately in Invoice Log

Quantity of Work Performed:

[signature] 11-04-09
Signature of ~~Subcontractor~~ Date
JM
Contractor

[signature] 11-06-09
Signature of Contractor Date
JM

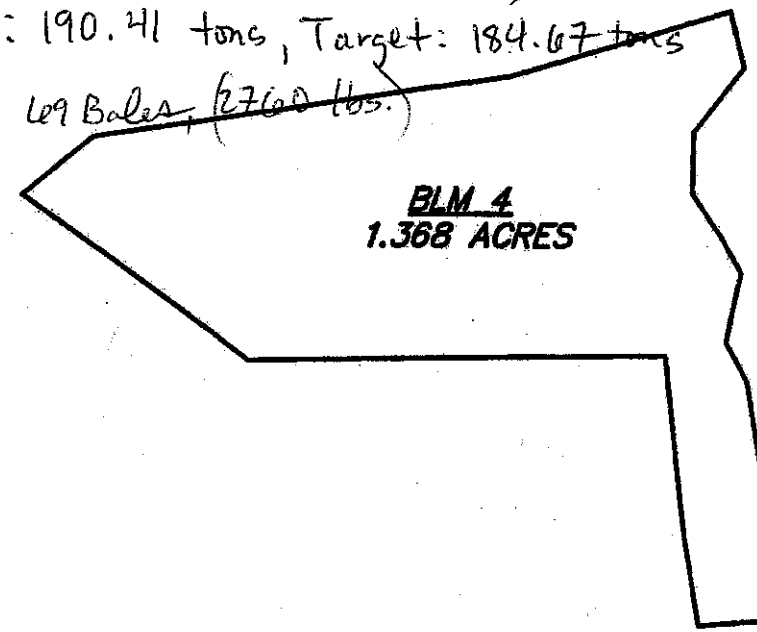
-Complete-

Lime Complete: 56 tons, Target: 56.27 tons

Fertilizer Complete: 418.60 lbs. (8.37 bags) - Hand Broadcast

Compost Complete: 190.41 tons, Target: 184.67 tons

Mulch Complete: 69 Bales, (2760 lbs.)



SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and/or calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 26626 P.E. AND P.L.S.

Duane D. Fehringer P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors

CLIENT: FRONTIER ENVIRONMENTAL INC.

BLM 4
CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY: SFF
SCALE: 1"=100'
DATE DRAWN: 3-27-08
PROJECT NO.: 08-0032

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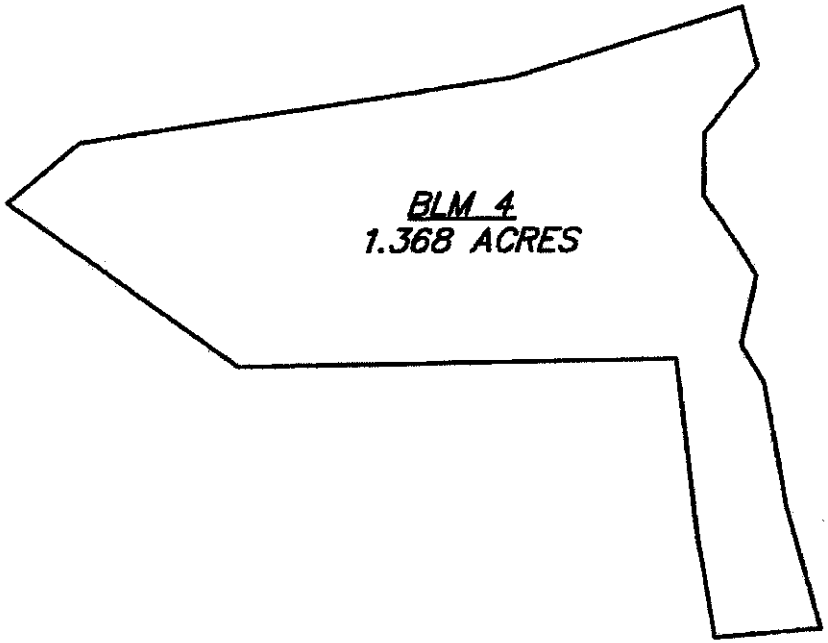
* Pre-Tilled



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COLORADO REGISTERED DUANE D. FEHRINGER 4-1-09 26626 P.E. AND P.L.S.

Duane D. Fehringer P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
40881 US HWY 6&50, SUITE 203 BOX 978 AVON, CO 81620 PH: (970)949-0872
6551 S. REVERE PARKWAY, SUITE 186 CENTENNIAL, CO 80111 PH: (303)948-5266

CLIENT: FRONTIER ENVIRONMENTAL INC.

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BLM 4

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=100'
DATE ISSUED:	3-27-09
PROJECT NO.	08-0032
COGNET	

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Lime Application Rate Calculation Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: **BLM-4**

POLYGON CHARACTERISTICS

Net Application Rate (22 dry tons/1000 tons soil unless noted otherwise)	11	dry tons/1000 tons soil
Mixing Safety Factor (10% unless noted otherwise)	10.00%	%
% Rock (0 unless noted otherwise)	0.00%	%
Treatment Depth	12	inches
Total Area	1.368	acres

LIME CHARACTERISTICS

Lime Particle Size Distribution					
Percent >10 mesh		X 0.1	=	0.0000	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.0004	(B)
Percent < 60 mesh	99.92%	X 1	=	0.9992	©
Lime Reactivity			=	0.9996	(Sum of A, B, and C)

Calcium Carbonate Equivalence		82.20%	%
Percent Moisture		28.4%	%
Bulk Density	0.75 grams/cc	= 0.632	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * (1000 tons soil/acre/6") * Treatment Depth
/ (Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 41.13 tons/acre = 56.27 tons total

= 1.89 lbs/ft2 0.94 (two-pass rate in lbs/ft2)

Lime Rate = 65.08 cubic yards/acre = 89.03 cy total

Signature: Ben G. Neal

Date: 5/14/09

Signature: John G Kelly

Date: 05-14-09

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: ~~BLM-4~~ BLM-4 @ BLM 2 South Screen Area

Date: 5/15/09 Time: 07:30

Field Application Rate: 41.39 tons/acre (1.89 psf) (psf = tons/acre*0.0459) 209 = +10% 188 170 = -10%

Total Tarp Dimensions: 27 (sq. ft.)

Test 1 Material Weight: 5026 (lbs.) Rate: 186 psf ✓

Test 2 Material Weight: 4826 (lbs.) Rate: 178 psf ✓

Test 3 Material Weight: _____ (lbs.) Rate: _____ psf

Test 4 Material Weight: _____ (lbs.) Rate: _____ psf

Test 5 Material Weight: _____ (lbs.) Rate: _____ psf

AWD

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: GARY SLIFKA / _____
PWT / EPA Representative

24.48
11.12
19.76
55.36 - 5.1
=

14.66
14.44
24.24
5 - 3.36
48.26

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: BCM-3, BCM 4

BCM3

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	Acid Reaction?
536	7.0	7.0	7.0	None	Yes
535	7.3	7.0	7.5	None	Yes
534	7.5	7.5	7.5	None	Yes
533	7.3	7.0	7.5	None	Yes
532	7.0	7.0	7.0	None	Yes
531 BCM4 0-12	7.3	7.0	7.5	None	Yes
530	7.5	7.5	7.5	None	Yes

Gray

Name/Signature: [signature]

Date: 6-10-09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Fluvial Deposit/Irrigated Meadows Polygon: **Paste pH Record** BLM3 & BLM4

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
BLM3 536 0-6	Tare (0.0)	14.9	15.6	7.2
535 0-6		17.1	16.9	7.2
534 0-6		15.0	14.8	7.3
533 0-6		17.8	17.1	7.3
532 0-6		14.7	15.2	7.2
BLM4				
531 0-6		14.8	14.4	7.2
531 6-12		16.2	15.8	7.4
530 0-6		17.4	17.4	7.3
530 6-12		15.4	14.5	7.6
530 0-6 Dupe		15.7	16.2	7.3

Name/Signature: [signature] **Date:** 06-10-09

2 Point pH Cal 7.0 & 10.0 Buffers

FILE MEMO

Regarding: Lime Compost Fertilizer Mulch Seed Other

Fluvial Deposit ID: _____ **Irrigated Meadow ID:** BLM-4

Acreage: 1.368

Target Application: 418.5 lbs (0:45:0) ≈ 8.4 bags

1.368 acres x 306 lbs/acre

Amount Applied: 8 bags

Comments: Applied via hand Broadcast

Note: Specifications for meadows require that "fertilizer be spread uniformly"

_____ 05-18-09

Signature **Date**

Compost Application Rate Calculation Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: **BLM-4**

POLYGON CHARACTERISTICS

Target % Organic Carbon (1.5% for T-6, 2.5% for T-12)	1.50%	%
Treatment Depth	6	inches
Treatment Area	1.368	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"}}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 135.00 tons/acre = 184.67 tons total

Compost Rate = 196.50 cubic yards/acre = 268.81 cy total

Signature: [signature]

Date: 5/14/09

Signature: [signature]

Date: 05-14-09

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in yd^3/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.
- Repeat.

Compost Spreader Calibration Record

Date: 06-24-09 Time: 12:30

Irrigated Meadow / Fluvial Deposit Polygon ID: BCM-3 (4) and BCM-5

Design Application Rate: 196 (yd^3/acre) Y2 RATE: 98 yd^3/acre

Calibration Data for one load of compost:

	Test Run 1	Test Run 2	Average
Compost Quantity (yd^3)	4.25	4.25	4.25
Compost was spread over (ft^2)	118 x 17 = 2006	104 x 18 = 1872	~~2289~~ 1939
Calibration area (acres)	.046	043	~~.052~~ .045
Calibrated Application Rate (yd^3/acre)			94.4

Quality Control Data for Field Application Verification:

(A) Design Application Rate: 196 (yd^3/acre)

(B) ~~Average~~ Calibrated Application Rate: 94.4 (yd^3/acre)

Passes to be Applied: ≈ 2 passes (= A/B)

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

Seeder Calibration Form

Calibration Form Instructions

1) Enter the Polygon ID, Polygon acreage, Calibration Date, Target seed rate(s), %PLS in each seed mix, and % seed in each each mix
2) Perform seeder calibration per the manufacturers' instructions 3 times and enter the total weight of bulk seed mix in grams collected for each seed box
3) For each individual calibration run, verify that the achieved rate is within ±20 % of the 1/2 Target Rate
4) After the 3rd calibration run, verify that the 3 Run Average rate is within ±10% of the 1/2 Target Rate

NOTE: The BLUE text shows the "calculated values" based on the entered data

Polygon ID BLM-4 **Acres:** 1.368 **Date:** 10-2009

	Seed Mix 1		1st Application	Remaining
Target Rate	17.50	lbs PLS / acre		
% PLS in seed mix	74%		100%	
Dilution Factor	100%	(% seed)	100%	
Target Application Rate	23.60	bulk pounds / acre	17.50	6.1
	32.3	Total bulk pounds	23.9	8.3
1/2 Target Rate (2 passes)		bulk pounds / acre	**8.75**	**3.05**
	16.1	1/2 of total bulk pounds	**12.0**	**4.2**
Test Run 1	11.60	total grams in 3 bags		**6.1 Target gra**
	5.80	bulk lbs/acre		
Test Run 2	12.40	total grams in 3 bags		
	6.20	bulk lbs/acre		
Test Run 3	11.80	total grams in 3 bags		
	5.90	bulk lbs/acre		
3 Run Average	11.93	total grams in 3 bags		
	5.97	bulk lbs/acre		

For QC Checks:

+20% of 1/2 Target Rate	14.16	bulk pounds / acre
-20% of 1/2 Target Rate	9.44	bulk pounds / acre
+10% of 1/2 Target Rate	12.98	lbs seed mix / acre
-10% of 1/2 Target Rate	10.62	lbs seed mix / acre

PWT Signature: _____

Frontier Signature: _____

Kind: SPECIAL MIX
Lot: 2145209

Kind & Variety:	Pure%	Germ%	Origin:
MOUNTAIN BROME	25.25	84	WY
SLENDER W/G, SAN LUIS	22.32	95	WA
WESTERN W/G, ROSANNA	13.83	92	WY
CANADA WILDRYE	13.11	97	SD
MOUNTAIN BIG SAGE	1.85	46	WY
BLUE FLAX	6.70	38	WA
PRAIRIE JUNEGRASS	6.24	34	WA
ROCKY MTN PENSTEMON	.59	71	OR
FRINGE SAGE	.49	87	WY

Crop: .05% Inert: 9.55% Weed: .04% Net Wt: 47.19#(35pls#)2ac

Noxious Weed: None Found Test Date: 2/09

Remarks: FRONTIER ENVIRONMENTAL

BLM-2 North & BLM 4

Polygon Completion Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: BLM-5

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
03-24-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.5. **Comments/Deviations:**
05-07-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.6. **Comments/Deviations:**
06-3/4-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Sections 3.6 and 3.7A through 3.7E. 05-20-09 Spread + Completed Lime App. **Comments/Deviations:** Fertilization 05-27-09
06-25-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.7F through 3.7I. **Comments/Deviations:** Spread compost 06-24-25-09
NA	NA	Completed replacement of irrigation ditches in accordance with Specification Section 3.8. **Comments/Deviations:** No ditches applicable
10-07-09	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.9. **Comments/Deviations:**
06-26-09	✓	Completed mulching in accordance with Specification Section 3.10. **Comments/Deviations:** Completed mulching in Spring prior to Fall Seeding
NA	NA	Completed reinstallation of fencing in accordance with Specification Section 3.11. **Comments/Deviations:**
11-04-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.15. **Comments/Deviations:**

Quantity of Work Estimated in Proposal: N/A - Addressed Separately in Invoice Documents AMD

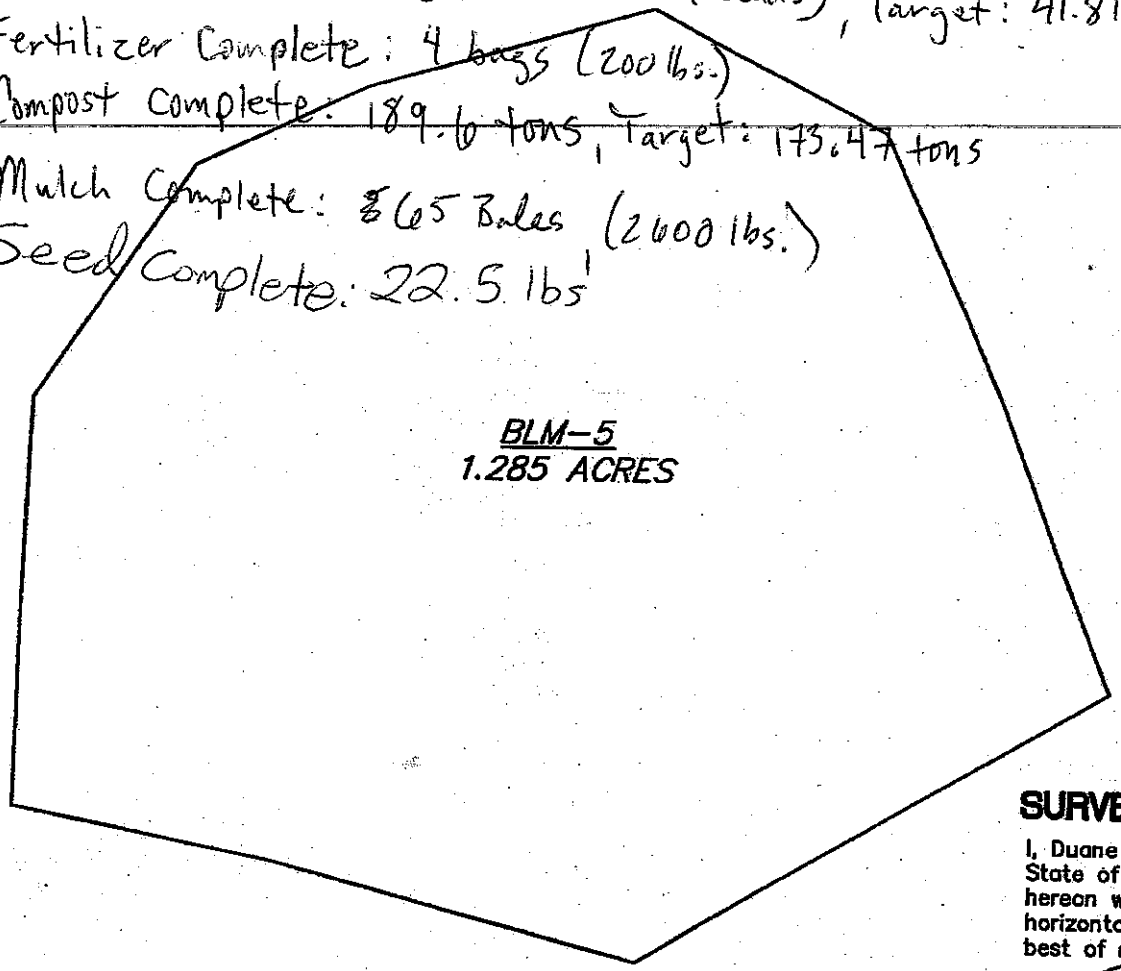
Quantity of Work Performed:

11-04-09
Signature of ~~Subcontractor~~ Contractor Date

11-06-09
Signature of Contractor Date
Asub

-Complete-

Lime Complete: 41 CY (~ 13-938 bucket Loads), Target: 41.81 CY
Fertilizer Complete: 4 ~~bags~~ (200 lbs.)
Compost Complete: 189.6 tons, Target: 173.47 tons
Mulch Complete: 365 Bales (2600 lbs.)
Seed Complete: 22.5 lbs*



SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

4-14

Duane D. Fehringer P.E. & P.L.S. 26626

COLORADO REGISTERED DUANE D. FEHRINGER 26626 AND P. E.

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
[illegible] AVON, CO [illegible]
[illegible] CENTENNIAL, CO [illegible]

CLIENT: FRONTIER ENVIRONMENTAL INC.

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BLM 5
CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=50'
DATE ISSUED:	4-14-09
PROJECT NO.	08-0032
SHEET	

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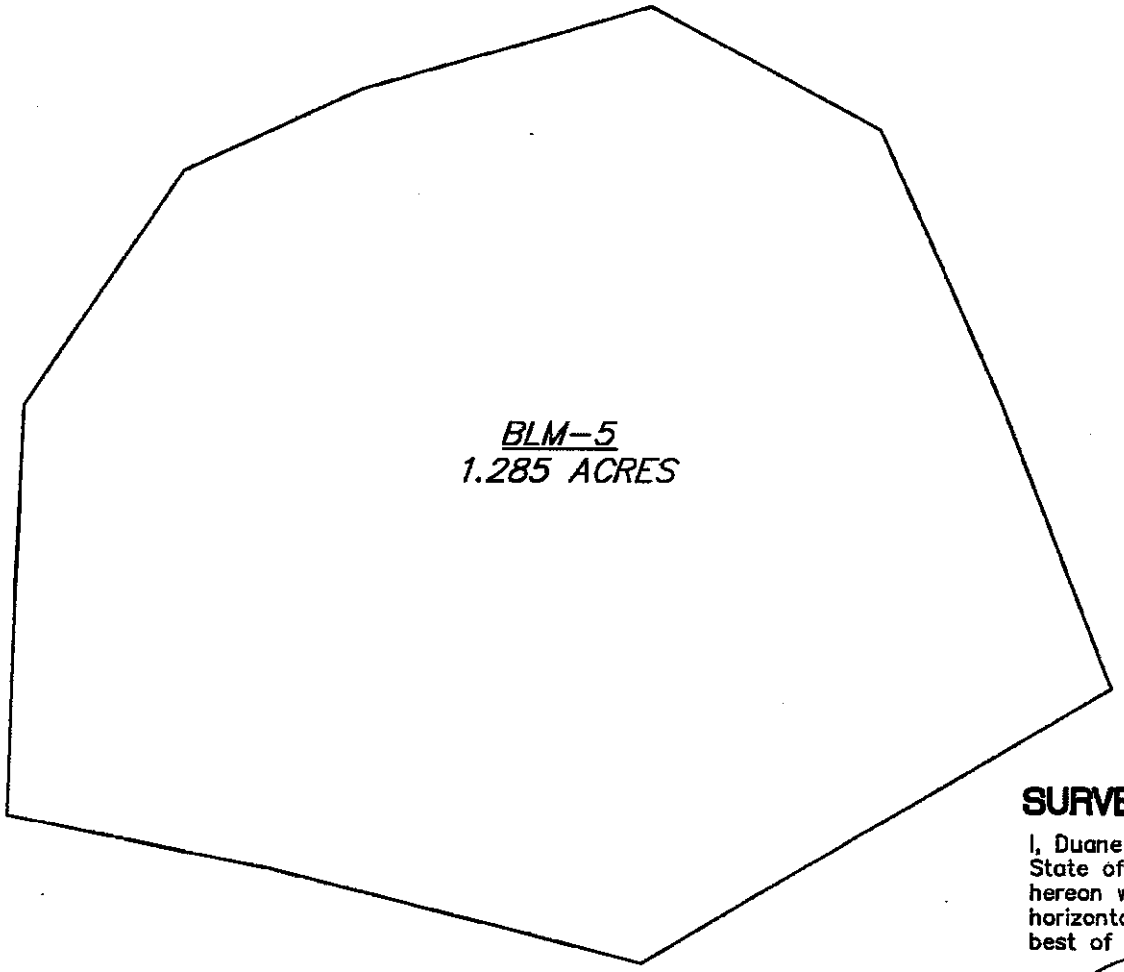
* Pre-Tilled



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COLORADO REGISTERED DUANE D. FEHRINGER 4-14-09 26626 AND P.L.S.

Duane D. Fehringer P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
40351 US HWY 6&24, SUITE 203 BOX 978 AVON, CO 81620 PH: (970)949-8878
9031 E. KEVEDIS PARKWAY, SUITE 106 CENTENNIAL, CO 80111 PH: (303)949-6220

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BLM 5

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=50'
DATE ISSUED:	4-14-09
PROJECT NO.	08-0032
EXHIBIT	

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Lime Application Rate Calculation Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: **BLM-5**

POLYGON CHARACTERISTICS

Net Application Rate (22 dry tons/1000 tons soil unless noted otherwise)	11	dry tons/1000 tons soil
Mixing Safety Factor (10% unless noted otherwise)	10.00%	%
% Rock (0 unless noted otherwise)	0.00%	%
Treatment Depth	6	inches
Total Area	1.285	acres

LIME CHARACTERISTICS

Lime Particle Size Distribution					
Percent >10 mesh		X 0.1	=	0.0000	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.0004	(B)
Percent < 60 mesh	99.92%	X 1	=	0.9992	©
Lime Reactivity			=	0.9996	(Sum of A, B, and C)

Calcium Carbonate Equivalence			82.20%	%
Percent Moisture			28.4%	%
Bulk Density	0.75 grams/cc	=	0.632	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * (1000 tons soil/acre/6") * Treatment Depth
/ (Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 20.57 tons/acre = 26.43 tons total
= 0.94 lbs/ft2 0.47 (two-pass rate in lbs/ft2)

Lime Rate = 32.54 cubic yards/acre = 41.81 cy total

Signature: [signature]

Date: 5/14/09

Signature: [signature]

Date: 05-14-09

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: BLM-2 Screen Area for (BLM-5) & BLM-6

Date: 5-20-09 Time: 08:00

Field Application Rate: 20.69 tons/acre (0.95 psf) (psf = tons/acre*0.0459) +/- 10%

Total Tarp Dimensions: 27 (sq. ft.)

Test 1 Material Weight: 27.14 (lbs.) Rate: 1.00 psf OK
12.56+8.52+11.16-5.1 =

Test 2 Material Weight: 32.32 (lbs.) Rate: 1.19 psf Fail
12.6+9.56+15.16-5.1

Test 3 Material Weight: 32.46 (lbs.) Rate: 1.20 psf Fail
8.12+13.5+15.94-5.1 =

Test 4 Material Weight: =24.28 (lbs.) Rate: 0.85 psf OK
7.98+8.5+12.9-5.1

Test 5 Material Weight: =25.66 (lbs.) Rate: 0.95 psf OK
8.2+8.86+13.70-5.1

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: GARY SLIFKA / Gary Slifka
PWT / EPA Representative

FERTILIZER CALIBRATION

- Place a known weight (e.g., one 50-lb bag) into the spreader hopper.
- Follow the operations manual to set the equipment to meet the design field application rate (e.g., spreader opening, travel speed, RPMs, etc.)
- Make one pass dispersing the fertilizer until the contents of the spreader are emptied.
- Measure the area over which the fertilizer was applied
- Divide the weight of material applied by the total area it was applied to, convert to lbs/acre, and compare to the design field application rate.
- An acceptable test will be within 10% of the required rate.

Fertilizer Calibration Record

Date: 05-27-09 Time: 11:00

Irrigated Meadow / Fluvial Deposit Polygon ID: BLM 3, 5, 6

Fertilizer Type: 0 : 45 : 0 (N:P:K)

Design Field Application Rate: 153 lbs/acre (± 10% range = 139 to 168)

Calibration Data for one ~~50~~ 25 pound bag of fertilizer:

Dimensions over which bag was spread: 170 feet x 40 feet

Total Calibration Area: 6800 (ft^2) * 1 acre / 43560 ft^2 = .156 acres

Calibrated Application Rate: 160 (lbs/acre)

Quality Control Data for Field Application Verification:

Area of Polygon: 1.285 (acres)

Total Weight to be Applied: 196.6 (lbs)

# of 50 lb. Bags to be Applied: ≈ 4 bags

Herd Spreader
Gate @ "4.0"
3rd Gear
Mid Range

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWR / EPA Representative

FILE MEMO

Regarding: Lime Compost Fertilizer Mulch Seed Other Depth Verification

Fluvial Deposit ID: _____ **Irrigated Meadow ID:** BLM-5

Acreage: ~~NA~~ 1.285 acres

Target Application: NA

Amount Applied: NA

Comments: FESI did not obtain any pre-remediation elevation data for BLM-5 before pre-tilling. Therefore, no post-~~#~~ treatment depth verification data could be obtained. (A minimum of 2 points were required for this 1.285 acre area). PWT hand excavated three test pits and observed visual evidence of lime and compost to minimum 6-inch depth.

_____ 06-08-09

Signature **Date**

Also, adjacent polygons with 6-inch treatment requirement (BLM-3 and BLM-6) met the depth verification survey requirements.

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: BCM-5 0-6"

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	HCl Reaction?
BCM 5-01	7.5	7.5	7.5	None	Yes
BCM 5-02	7.5	7.5	7.5	None	Yes

NAD

Name/Signature: [signature]

Date: 06-12-09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

1 point cal pH 7.0 6"

Paste pH Record BLM 5

Fluvial Deposit/Irrigated Meadows Polygon:

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
BLM 5-01	0.0	15.6	15.4	7.4
BLM 5-02	0.0	15.5	15.7	7.6

Name/Signature: [signature]

Date: 06-12-09

Compost Application Rate Calculation Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: **BLM-5**

POLYGON CHARACTERISTICS

Target % Organic Carbon (1.5% for T-6, 2.5% for T-12)	1.50%	%
Treatment Depth	6	inches
Treatment Area	1.285	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"}}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 135.00 tons/acre = 173.47 tons total

Compost Rate = 196.50 cubic yards/acre = 252.50 cy total

Signature: [signature]

Date: 5/14/09

Signature: [signature]

Date: 05-14-09

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in yd^3/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.
- Repeat.

Compost Spreader Calibration Record

Date: 06-24-09 Time: 12:30

Irrigated Meadow / Fluvial Deposit Polygon ID: VBCM-3 4 and d [redacted]

Design Application Rate: 196 (yd^3/acre) Y2 RATE = 98 yd^3/acre

Calibration Data for one load of compost:

	Test Run 1	Test Run 2	Average
Compost Quantity (yd^3)	4.25	4.25	4.25
Compost was spread over (ft^2)	118 X 17 = 2006	104 X 18 = 1872	~~2289~~
Calibration area (acres)	.046	043	~~.052~~ .045
Calibrated Application Rate (yd^3/acre)			94.4

Quality Control Data for Field Application Verification:

(A) Design Application Rate: 196 (yd^3/acre)

~~(B) Average~~ Calibrated Application Rate: 94.4 (yd^3/acre)

Passes to be Applied: ≈ 2 passes (= A/B)

Print / Sign Name: [signature]
Frontier Representative

Print / Sign Name: [signature]
PWT / EPA Representative

Seeder Calibration Form

Calibration Form Instructions

1) Enter the Polygon ID, Polygon acreage, Calibration Date, Target seed rate(s), %PLS in each seed mix, and % seed in each each mix
2) Perform seeder calibration per the manufacturers' instructions 3 times and enter the total weight of bulk seed mix in grams collected for each seed box
3) For each individual calibration run, verify that the achieved rate is within ±20 % of the 1/2 Target Rate
4) After the 3rd calibration run, verify that the 3 Run Average rate is within ±10% of the 1/2 Target Rate

NOTE: The BLUE text shows the "calculated values" based on the entered data

Polygon ID BLM-5 **Acres:** 1.285 **Date:** 10-2009

	Seed Mix 1		1st Application	Remaining
Target Rate	17.50	lbs PLS / acre		
% PLS in seed mix	74%		100%	
Dilution Factor	100%	(% seed)	100%	
Target Application Rate	23.60	bulk pounds / acre	17.50	6.1
	30.3	Total bulk pounds	22.5	7.8
1/2 Target Rate (2 passes)	[redacted]	bulk pounds / acre	**8.75**	**3.05**
	15.2	1/2 of total bulk pounds	**11.2**	**3.9**
Test Run 1	11.60	total grams in 3 bags		**6.1 Target gra**
	5.80	bulk lbs/acre		
Test Run 2	12.40	total grams in 3 bags		
	6.20	bulk lbs/acre		
Test Run 3	11.80	total grams in 3 bags		
	5.90	bulk lbs/acre		
3 Run Average	11.93	total grams in 3 bags		
	5.97	bulk lbs/acre		

For QC Checks:

+20% of 1/2 Target Rate	14.16	bulk pounds / acre
-20% of 1/2 Target Rate	9.44	bulk pounds / acre
+10% of 1/2 Target Rate	12.98	lbs seed mix / acre
-10% of 1/2 Target Rate	10.62	lbs seed mix / acre

PWT Signature: _____

Frontier Signature: _____

Kind: SPECIAL MIX
Lot: 2145209

Kind & Variety:	Pure%	Germ%	Origin:
MOUNTAIN BROME	25.25	84	WY
SLENDER W/G, SAN LUIS	22.32	95	WA
WESTERN W/G, ROSANNA	13.83	92	WY
CANADA WILDRYE	13.11	97	SD
MOUNTAIN BIG SAGE	1.85	46	WY
BLUE FLAX	6.70	38	WA
PRAIRIE JUNEGRASS	6.24	34	WA
ROCKY MTN PENSTEMON	.59	71	OR
FRINGE SAGE	.49	87	WY

Crop: .05% Inert: 9.55% Weed: .04% Net Wt: 47.19#(35pls#)2ac

Noxious Weed: None Found Test Date: 2/09

Remarks: FRONTIER ENVIRONMENTAL

BLM-2 North
& BLM 5

Polygon Completion Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: BLM-6

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
03-24-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.5. **Comments/Deviations:**
05-07-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.6. **Comments/Deviations:**
06-02-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Sections 3.6 and 3.7A through 3.7E. Spread Lime on 05-20-09; Fertilized 05-27-09 **Comments/Deviations:** Incorr 06-02-09
06-29-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.7F through 3.7I. **Comments/Deviations:** Spread Concept 06-29-09; Incorp 06-29-09
NA	NA	Completed replacement of irrigation ditches in accordance with Specification Section 3.8. **Comments/Deviations:** No ditch work required
06-30-09	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.9. **Comments/Deviations:** Drag Surface 06-30;
07-06-09	✓	Completed mulching in accordance with Specification Section 3.10. **Comments/Deviations:** Mulched 07-06-09 Prior to Fall Seeding Seeded 10-16-09
NA	NA	Completed reinstallation of fencing in accordance with Specification Section 3.11. **Comments/Deviations:**
11-04-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.15. **Comments/Deviations:**

Quantity of Work Estimated in Proposal: NA - Addressed Separately in Invoice Documents

Quantity of Work Performed:

[signature] 11-04-09
Signature of ~~Subcontractor~~ Date
Ann Common

[signature] 11-06-09
Signature of Contractor Date
ASCS

-Complete-

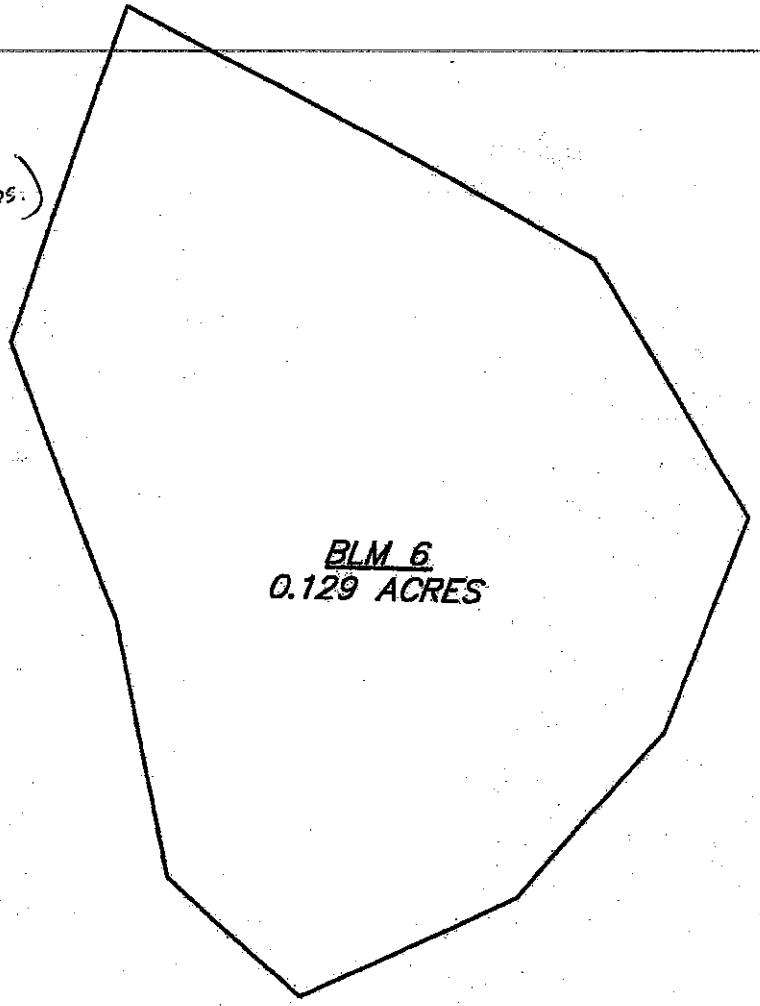
Lime Complete: 4.5 CY applied w/ Backhoe, Target: 4.2 CY

Fertilizer Complete: (20lbs.) ~ 4 bag

Compost Complete: See BLM-7

Mulch Complete: ~~280 Bales~~ 7 Bales, (280 lbs.)

Seed Complete: 2.5 lbs



SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and traverse calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 4-1-08 26626 L.S. AND P.L.S.

Duane D. Fehringer P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors

FRONTIER ENVIRONMENTAL INC.

BLM 6
CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY: DDF
SCALE: 1"=20'
DATE ISSUED: 3-27-08
PROJECT NO.: 08-0032

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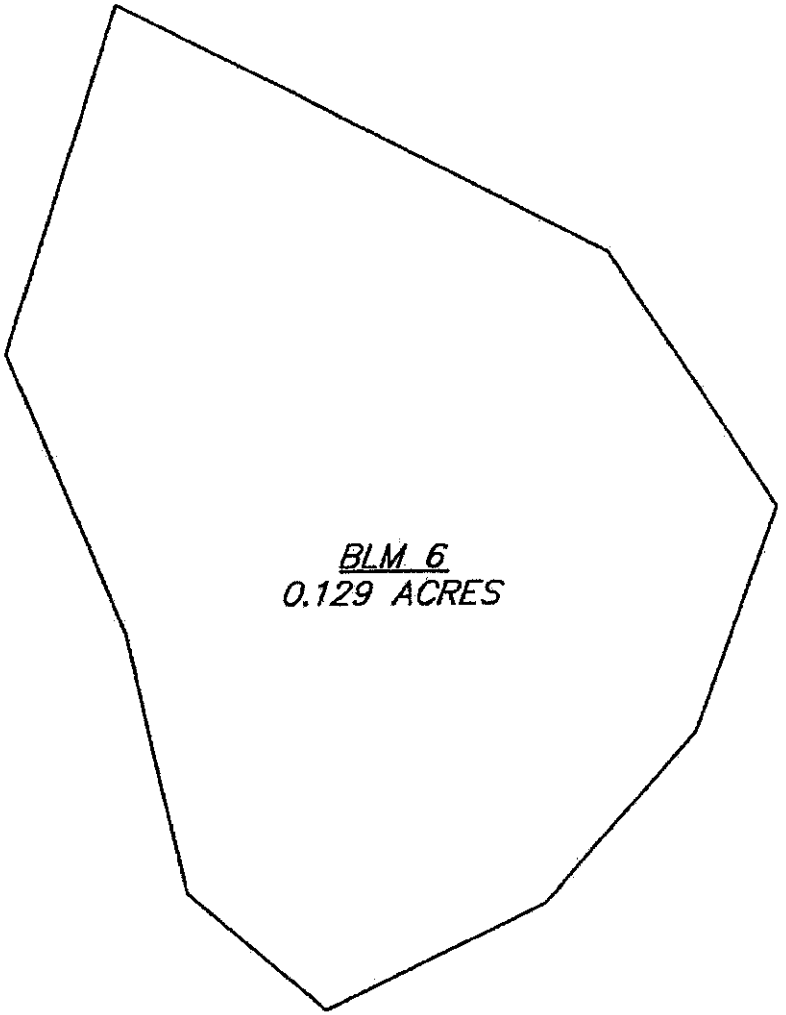
* Pre-Tilled



SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 4-1-09 26626 L.S. AND P.L.S.

Duane D. Fehringer P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
40881 US HWY 6&24, SUITE 203 BOX 978 AVON, CO 81620 PH: (970)949-5172
6181 S. REVERE PARKWAY, SUITE 186 CENTENNIAL, CO 80111 PH: (303)946-8228

CLIENT: FRONTIER ENVIRONMENTAL INC.

This document was prepared for the exclusive use of the Client specified hereon. The use of this document or the information contained herein by any other person or entity is not authorized. In the event that any other person or entity desires to use this document or the information contained herein for any purpose they must first obtain written authorization from Inter-Mountain Engineering. This document and any information contained herein is intended to be used within one year of the date hereof. Use after that period is not authorized.

BLM 6

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=20'
DATE ISSUED:	3-27-09
PROJECT NO.	08-0032
EXHIBIT	

J:\projects\80032\dwg\OU-11 Areas.dwg

Lime Application Rate Calculation Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: **BLM-6**

POLYGON CHARACTERISTICS

Net Application Rate (22 dry tons/1000 tons soil unless noted otherwise)	11	dry tons/1000 tons soil
Mixing Safety Factor (10% unless noted otherwise)	10.00%	%
% Rock (0 unless noted otherwise)	0.00%	%
Treatment Depth	6	inches
Total Area	0.129	acres

LIME CHARACTERISTICS

Lime Particle Size Distribution

Percent >10 mesh		X 0.1	=	0.0000	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.0004	(B)
Percent < 60 mesh	99.92%	X 1	=	0.9992	©
Lime Reactivity			=	0.9996	(Sum of A, B, and C)

Calcium Carbonate Equivalence		82.20%	%
Percent Moisture		28.4%	%
Bulk Density	0.75 grams/cc	= 0.632	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * (1000 tons soil/acre/6") * Treatment Depth
/ (Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 20.57 tons/acre = 2.65 tons total

= 0.94 lbs/ft2 0.47 (two-pass rate in lbs/ft2)

Lime Rate = 32.54 cubic yards/acre = 4.20 cy total

Signature: [signature]

Date: 5/14/09

Signature: [signature]

Date: 05-14-09

Lime Application Rate Calculation Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: **BLM-6**

POLYGON CHARACTERISTICS

Net Application Rate (22 dry tons/1000 tons soil unless noted otherwise)				11	dry tons/1000 tons soil
Mixing Safety Factor (10% unless noted otherwise)				10.00%	%
% Rock (0 unless noted otherwise)				0.00%	%
Treatment Depth				6	inches
Total Area				0.129	acres

LIME CHARACTERISTICS

Lime Particle Size Distribution					
Percent >10 mesh		X 0.1	=	0.0000	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.0004	(B)
Percent < 60 mesh	99.92%	X 1	=	0.9992	(C)
Lime Reactivity			=	0.9996	(Sum of A, B, and C)

Calcium Carbonate Equivalence			82.20%	%
Percent Moisture			28.4%	%
Bulk Density	0.75 grams/cc	=	0.632	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * (1000 tons soil/acre/6") * Treatment Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 20.57 tons/acre = 2.65 tons total
= 0.94 lbs/ft2 0.47 (two-pass rate in lbs/ft2)

Lime Rate = 32.54 cubic yards/acre = 4.20 cy total
Depth of Lime to be Applied = 0.24 inches

Signature: Ben A. Neal

Date: 5/19/09

Signature: _____

Date: _____

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: BLM-2 Screen Area for BLM-5 & BLM-6

Date: 5-2009 Time: 0810

Field Application Rate: 20.69 tons/acre (0.95 psf) (psf = tons/acre*0.0459) +/- 10%

Total Tarp Dimensions: 27 (sq. ft.)

Test 1 Material Weight: 27.14 (lbs.) Rate: 1.00 psf OK
12.56+8.52+11.16-5.1 =

Test 2 Material Weight: 32.32 (lbs.) Rate: 1.19 psf Fail
12.6+9.56+15.16-5.1

Test 3 Material Weight: 32.46 (lbs.) Rate: 1.20 psf Fail
8.12+13.5+15.94-5.1 =

Test 4 Material Weight: =24.28 (lbs.) Rate: 0.85 psf OK
7.98+8.57+12.9-5.1

Test 5 Material Weight: =25.66 (lbs.) Rate: 0.95 psf OK
8.2+8.86+13.70-5.1

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: GARY SLIKKA / _____
PWT / EPA Representative

FERTILIZER CALIBRATION

- Place a known weight (e.g., one 50-lb bag) into the spreader hopper.
- Follow the operations manual to set the equipment to meet the design field application rate (e.g., spreader opening, travel speed, RPMs, etc.)
- Make one pass dispersing the fertilizer until the contents of the spreader are emptied.
- Measure the area over which the fertilizer was applied
- Divide the weight of material applied by the total area it was applied to, convert to lbs/acre, and compare to the design field application rate.
- An acceptable test will be within 10% of the required rate.

Fertilizer Calibration Record

Date: 05-27-09 Time: 11:00 AM

Irrigated Meadow / Fluvial Deposit Polygon ID: BLM 3, 5, 6.

Fertilizer Type: 0 : 45 : 0 (N:P:K)

Design Field Application Rate: 153 lbs/acre (± 10% range = 139 to 168)

Calibration Data for one ~~50~~ 25 pound bag of fertilizer:

Dimensions over which bag was spread: 170 feet x 40 feet

Total Calibration Area: 6800 (ft^2) * 1 acre / 43560 ft^2 = .156 acres

Calibrated Application Rate: 160 (lbs/acre)

Quality Control Data for Field Application Verification:

Area of Polygon: ~~1.285~~ AND 0.129 (acres)

Total Weight to be Applied: ~~196~~ 19.7 (lbs)

# of 50 lb. Bags to be Applied: ~~24~~ 0.4 bags

Herd Spreader
Gate @ "4.0"
3rd Gear
M.O Range

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PW / EPA Representative

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: BLM 0-7

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	HCl Reactivity
10017 0-6"	7.5	7.0	8.0	0	yes
10017 6-12"	6.75	6.5	7.0	0	yes
10018 0-6"	7.5	7.5	7.5	0	yes
10018 6-12"	7.75	7.5	8.0	0	yes
~~10014 0-6"~~	7.0	7.0	7.0	0	yes
BLM 6					

Name/Signature: GARY SUFKA / Gary Sufka **Date:** 6-12-09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record

Fluvial Deposit/Irrigated Meadows Polygon: BLM #7

Location		Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
10014	0-6	TARE 200	16.0	16.0	7.8 ; BLM 6
10017	0-6		15.2	15.2	7.8
	6-12		15.4	15.6	7.3
10018	0-6		15.1	15.2	7.2
	6-12		15.2	15.3	7.1
10020	0-6		15.4	15.4	7.2
	6-12		15.3	15.3	7.5
10022	0-6		15.6	16.0	7.5
	6-12		16.1	16.1	7.5

Name/Signature: CASEY SCHEIDA / [signature] **Date:** 6-12-09

Compost Application Rate Calculation Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: **BLM-6**

POLYGON CHARACTERISTICS

Target % Organic Carbon (1.5% for T-6, 2.5% for T-12)	1.50%	%
Treatment Depth	6	inches
Treatment Area	0.129	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	0.687	=	tons/cy

CALCULATE COMPOST APPLICATION RATE

Compost = $\dfrac{\text{Target \% OC * depth * 1000 tons/acre/6"}}{\text{Compost \% OC * (1- \%Moisture/100)}}$

Compost Rate =	135.00 tons/acre	=	17.41 tons total
Compost Rate =	196.50 cubic yards/acre	=	25.35 cy total

Signature: [signature]

Date: 5/14/09

Signature: [signature]

Date: 05-14-09

Note - PWT suggested compost application with ~~tool~~ loader rather than compost spreader, as a result of extremely small treatment area. MW

Seeder Calibration Form

Calibration Form Instructions

1) Enter the Polygon ID, Polygon acreage, Calibration Date, Target seed rate(s), %PLS in each seed mix, and % seed in each each mix
2) Perform seeder calibration per the manufacturers' instructions 3 times and enter the total weight of bulk seed mix in grams collected for each seed box
3) For each individual calibration run, verify that the achieved rate is within ±20 % of the 1/2 Target Rate
4) After the 3rd calibration run, verify that the 3 Run Average rate is within ±10% of the 1/2 Target Rate

NOTE: The BLUE text shows the "calculated values" based on the entered data

Polygon ID BLM-6 **Acres:** 0.129 **Date:** 10-2009

	Seed Mix 1		1st Application	Remaining
Target Rate	17.50	lbs PLS / acre		
% PLS in seed mix	74%		100%	
Dilution Factor	100%	(% seed)	100%	
Target Application Rate	23.60	bulk pounds / acre	17.50	6.1
	3.0	Total bulk pounds	2.3	0.8
1/2 Target Rate (2 passes)	[redacted]	bulk pounds / acre	**8.75**	**3.05**
	1.5	1/2 of total bulk pounds	**1.1**	**0.4**
Test Run 1	11.60	total grams in 3 bags		**6.1 Target gra**
	5.80	bulk lbs/acre		
Test Run 2	12.40	total grams in 3 bags		
	6.20	bulk lbs/acre		
Test Run 3	11.80	total grams in 3 bags		
	5.90	bulk lbs/acre		
3 Run Average	11.93	total grams in 3 bags		
	5.97	bulk lbs/acre		

For QC Checks:

+20% of 1/2 Target Rate	14.16	bulk pounds / acre
-20% of 1/2 Target Rate	9.44	bulk pounds / acre
+10% of 1/2 Target Rate	12.98	lbs seed mix / acre
-10% of 1/2 Target Rate	10.62	lbs seed mix / acre

PWT Signature: _____

Frontier Signature: _____

Kind: SPECIAL MIX
Lot: 2145209

Kind & Variety:	Pure%	Germ%	Origin:
MOUNTAIN BROME	25.25	84	WY
SLENDER W/G, SAN LUIS	22.32	95	WA
WESTERN W/G, ROSANNA	13.83	92	WY
CANADA WILDRYE	13.11	97	SD
MOUNTAIN BIG SAGE	1.85	46	WY
BLUE FLAX	6.70	38	WA
PRAIRIE JUNEGRASS	6.24	34	WA
ROCKY MTN PENSTEMON	.59	71	OR
FRINGE SAGE	.49	87	WY

Crop: .05% Inert: 9.55% Weed: .04% Net Wt: 47.19#(35pls#)2ac

Noxious Weed: None Found Test Date: 2/09

Remarks: FRONTIER ENVIRONMENTAL

BLM-2 North & BLM 6

Polygon Completion Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: BLM-7

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
03-24-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.5. **Comments/Deviations:**
05-07-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.6. **Comments/Deviations:**
06-02-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Sections 3.6 and 3.7A through 3.7E. Spread Lime 05-18,19-09. Spread Fert 05-26-09 **Comments/Deviations:** Incorp 06-02-09
07-01-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.7F through 3.7I. **Comments/Deviations:** Spread Locost 06-29-09; Finish 06-30-09 Start Incorp 06-30-09
NA	NA	Completed replacement of irrigation ditches in accordance with Specification Section 3.8. **Comments/Deviations:** No ditches
10-12-09	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.9. **Comments/Deviations:** Seeded 10-12-09
07-06-09	✓	Completed mulching in accordance with Specification Section 3.10. **Comments/Deviations:** Mulched prior to fall seeding
NA	NA	Completed reinstallation of fencing in accordance with Specification Section 3.11. **Comments/Deviations:**
11-04-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.15. **Comments/Deviations:**

Quantity of Work Estimated in Proposal: NA - Addressed Separately in Invoice Documents
Quantity of Work Performed:

[signature] 11-04-09
Signature of ~~Subcontractor~~ Date
MM
Contractor

[signature] 11-06-09
Signature of Contractor Date
MSub

- COMPLETE -

Lime Complete: 156 tons, Target: 156.02 tons

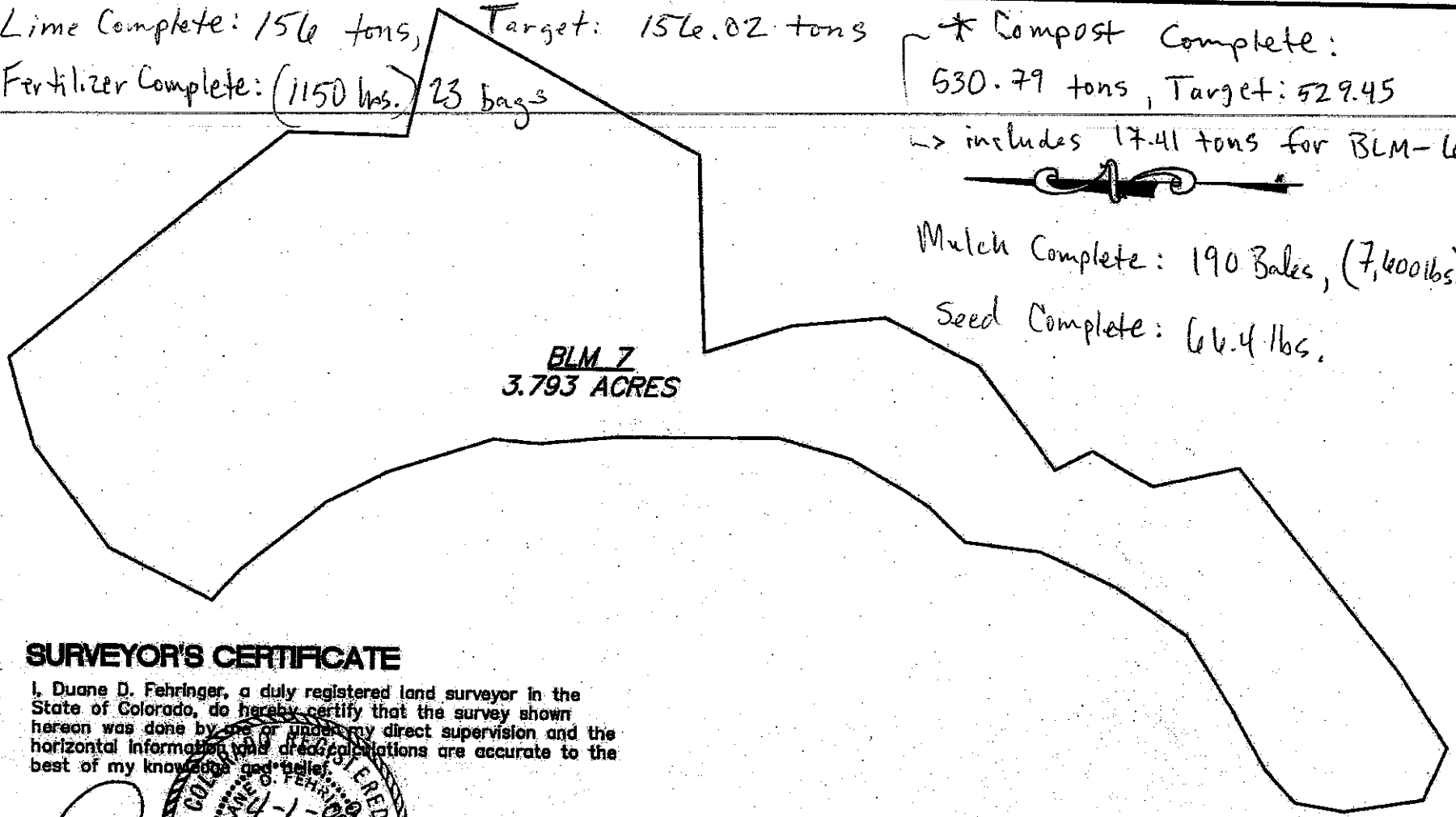
Fertilizer Complete: (1150 lbs.) 23 bags

* Compost Complete: 530.79 tons, Target: 529.45

→ includes 17.41 tons for BLM-6

Mulch Complete: 190 Bales, (7,600 lbs.)

Seed Complete: 66.4 lbs.



SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and dredging calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 4-1-08 26626 L.S. AND P.L.

Duane D. Fehringer, P.E. & R.L.S. 26626

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors

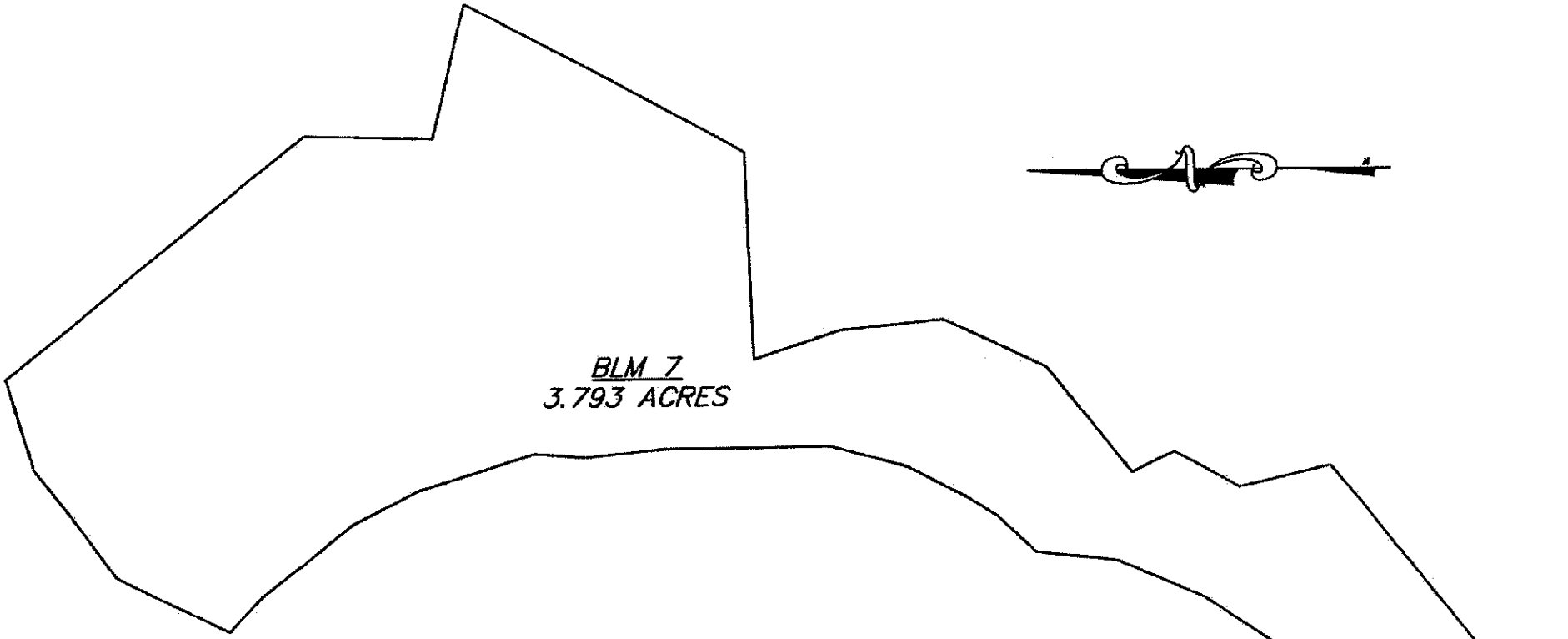
CLIENT: FRONTIER ENVIRONMENTAL INC.

BLM 7
CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY: SEF
SCALE: 1"=100'
DATE REVISED: 3-27-08
PROJECT NO.: 08-0032
COMMENT:

J:\projects\60032\dwg\OU-11 Areas.dwg

* Pre-Tilled



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I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 4-1-09 26626 P.E. AND P.L.S.

Duane D. Fehringer P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING

Civil Engineers & Surveyors

0000 US HWY 6&24, SUITE 202 BOX 978 AVON, CO 81620 PH: (970)949-0772
6551 S. REVERE PARKWAY, SUITE 166 CENTENNIAL, CO 80111 PH: (303)740-6220

CLIENT: FRONTIER ENVIRONMENTAL INC.

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BLM 7

CALIFORNIA GULCH CERCLA SITE

OPERABLE UNIT NUMBER 11

LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=100'
DATE ISSUED:	3-27-09
PROJECT NO.	08-0032
CHKD BY	

J:\projects\80032\dwg\OU-11 Areas.dwg

Lime Application Rate Calculation Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: **BLM-7**

POLYGON CHARACTERISTICS

Net Application Rate (22 dry tons/1000 tons soil unless noted otherwise)	11 dry tons/1000 tons soil
Mixing Safety Factor (10% unless noted otherwise)	10.00% %
% Rock (0 unless noted otherwise)	0.00% %
Treatment Depth	12 inches
Total Area	3.793 acres

LIME CHARACTERISTICS

Lime Particle Size Distribution					
Percent >10 mesh		X 0.1	=	0.0000	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.0004	(B)
Percent < 60 mesh	99.92%	X 1	=	0.9992	©
Lime Reactivity			=	0.9996	(Sum of A, B, and C)
Calcium Carbonate Equivalence				82.20% %	
Percent Moisture				28.4% %	
Bulk Density	0.75 grams/cc		=	0.632	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * (1000 tons soil/acre/6") * Treatment Depth / (Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 41.13 tons/acre = 156.02 tons total

= 1.89 lbs/ft2 0.94 (two-pass rate in lbs/ft2)

Lime Rate = 65.08 cubic yards/acre = 246.84 cy total

Signature: [signature]

Date: 5/14/09

Signature: [signature]

Date: 05-14-09

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: BLM-2 Screen Area for ~~4~~ BLM-7 Range

Date: 5-18-09 Time: 08:30-1030

Field Application Rate: 41.39 tons/acre (1.899 psf) (psf = tons/acre*0.0459) +10% = 2.09 -10% = 1.70

Total Tarp Dimensions: 27 (sq. ft.)

Test 1 Material Weight: 902+1968+18.14 = 2888.14 (lbs.) Rate: _____ psf Fail Light

Test 2 Material Weight: 1716+11.72+19.26 = 1746.98 (lbs.) Rate: _____ psf Fail Light

Test 3 Material Weight: = 47.42 (lbs.) Rate: 1.56 psf Fail

1644.11.72+1946

Test 4 Material Weight: 49.60 (lbs.) Rate: 1.83 psf ✓ OKay

1946+11.74+23.50-5.1=

Test 5 Material Weight: 55.06 (lbs.) Rate: 2.03 psf ✓ OKay

2630+1208+218=60.16 - 5.1 = 55.06

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: GARY SUFKA / _____
PWT / EPA Representative

TARP CALIBRATIONS

- Place 3 tarps of known dimension on the ground perpendicular to the path of travel such that they will collect material from the full width of the spreader's application path.
- Make one pass over tarps and collect material spread on tarp.
- Weigh the amendment material collected on the 3 tarps.
- Divide by the total area of the tarps and compare to the required field application rate.
- Repeat until two consecutive applications are obtained within 10% of the required rate.

Tarp Calibration Record

Irrigated Meadow / Fluvial Deposit Polygon ID: BLM-7

Date: 5-19-09 Time: 08:00

Field Application Rate: 41.39 tons/acre (1.85 psf) (psf = tons/acre*0.0459) 170-209

Total Tarp Dimensions: _____ (sq. ft.)

Test 1 Material Weight: 47.14 (lbs.) Rate: ~~1.74~~ AS psf

21.30+18.88+12.06 - 5.1 ÷ 27 =

Test 2 Material Weight: 50.58 (lbs.) Rate: 1.87 psf

20.02+14.58+21.08 - 5.1 ÷ 27 =

Test 3 Material Weight: _____ (lbs.) Rate: _____ psf

Test 4 Material Weight: _____ (lbs.) Rate: _____ psf

Test 5 Material Weight: _____ (lbs.) Rate: _____ psf AS

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: GARY SLATER / [signature]
PWT / EPA Representative

FILE MEMO

Regarding: Lime Compost (Fertilizer) Mulch Seed Other

Fluvial Deposit ID: ~~FM3~~ _____ **Irrigated Meadow ID:** BLM 7

Acreage: 3,793

Target Application: 3,793 acres × 2 (6-inch) × 153 lbs/acre = 1160 lbs ~ 23 bags

Amount Applied: 23 bags

Comments:

Herd Broadcaster Spreader Calibrated this am for BLM 2 South @ 329 lbs/acre

_____ 05-26-09

Signature **Date**

FERTILIZER CALIBRATION

- Place a known weight (e.g., one 50-lb bag) into the spreader hopper.
- Follow the operations manual to set the equipment to meet the design field application rate (e.g., spreader opening, travel speed, RPMs, etc.)
- Make one pass dispersing the fertilizer until the contents of the spreader are emptied.
- Measure the area over which the fertilizer was applied
- Divide the weight of material applied by the total area it was applied to, convert to lbs/acre, and compare to the design field application rate.
- An acceptable test will be within 10% of the required rate.

Fertilizer Calibration Record

Date: 05-26-09 Time: 08:30

Irrigated Meadow / Fluvial Deposit Polygon ID: Bcm 2-South + BCM 7

Fertilizer Type: 0 : 45 : 0 (N:P:K)

Design Field Application Rate: 306 lbs/acre (± 10% range = 278 to 337)

Calibration Data for one ~~50~~ 25 pound bag of fertilizer:

Dimensions over which bag was spread: 90 feet x 37 feet

Total Calibration Area: 3330 (ft^2) * 1 acre / 43560 ft^2 = 0.076 acres 25 lbs

Calibrated Application Rate: 329 (lbs/acre)

~~Trial #~~ 25lbs	Trial 1	Trial 2	Trial 3	Trial 4
Meas. Area	25 lbs	25 lbs	25 lbs	25 lbs
Acreage	2400 sq ft	4280 sq ft	4000	3330
Trial Rate	0.055	0.098	.092	0.076
	455	255	278	329

Quality Control Data for Field Application Verification:

Area of Polygon: 13.064 (acres)

Total Weight to be Applied: ≈ 4,000 (lbs)

# of 50 lb. Bags to be Applied: 80 bags

Gate : 0.7
3rd Gear
Med Range

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

Hero Model 750 Broadcast Spreader

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: BLM 6 of [redacted]

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	HCl Reactive
10017 0-6"	7.5	7.0	8.0	0	yes
10017 6-12"	6.75	6.5	7.0	0	yes
10018 0-6"	7.5	7.5	7.5	0	yes
10018 6-12"	7.75	7.5	8.0	0	yes
10014 0-6"	7.0	7.0	7.0	0	yes
BLM 6					

Name/Signature: GARY SUEKA / [signature] **Date:** 6-12-09

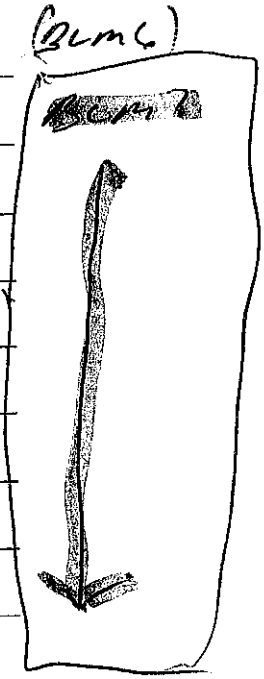
PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record

Fluvial Deposit/Irrigated Meadows Polygon: BLM 6 (#9)

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
10014 0-6	TARE 20.0	16.0	16.0	7.8
10017 0-6		15.2	15.2	7.8
6-12		15.4	15.6	7.3
10018 0-6		15.1	15.2	7.2
6-12		15.2	15.3	7.1
10020 0-6		15.4	15.4	7.2
6-12		15.3	15.3	7.5
10022 0-6		15.6	16.0	7.5
6-12		16.1	16.1	7.5



Name/Signature: GARY SCHIRA / [signature]

Date: 6-12-09

Compost Application Rate Calculation Form
Irrigated Meadows

Irrigated Meadow Polygon Name/ID: **BLM-7**

POLYGON CHARACTERISTICS

Target % Organic Carbon (1.5% for T-6, 2.5% for T-12)	1.50%	%
Treatment Depth	6	inches
Treatment Area	3.793	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	0.687	=	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"}}{\text{Compost \% OC} * (1 - \text{\%Moisture}/100)}$$

Compost Rate = 135.00 tons/acre = 512.04 tons total

Compost Rate = 196.50 cubic yards/acre = 745.33 cy total

Signature: _____

Date: 5/14/09

Signature: _____

Date: 05-14-09

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in yd^3/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.
- Repeat.

Compost Spreader Calibration Record

Date: 06-29-09 Time: 13:20

Irrigated Meadow / Fluvial Deposit Polygon ID: BLM-7

Design Application Rate: 196 (yd^3/acre) ½ Rate = 98 yd^3/acre

Calibration Data for one load of compost:

	Test Run 1	Test Run 2	Average
Compost Quantity (yd^3)			4.25
Compost was spread over (ft^2)	120x16 = 1920	123x17 = 2091	2005
Calibration area (acres)			0.046
Calibrated Application Rate (yd^3/acre)			92.4

Quality Control Data for Field Application Verification:

(A) Design Application Rate: 196 (yd^3/acre)

(B) Average Calibrated Application Rate: 92.4 (yd^3/acre)

Passes to be Applied: ~2 passes (= A/B)

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

Seeder Calibration Form

Calibration Form Instructions

1) Enter the Polygon ID, Polygon acreage, Calibration Date, Target seed rate(s), %PLS in each seed mix, and % seed in each each mix
2) Perform seeder calibration per the manufacturers' instructions 3 times and enter the total weight of bulk seed mix in grams collected for each seed box
3) For each individual calibration run, verify that the achieved rate is within ±20 % of the 1/2 Target Rate
4) After the 3rd calibration run, verify that the 3 Run Average rate is within ±10% of the 1/2 Target Rate

NOTE: The BLUE text shows the "calculated values" based on the entered data

Polygon ID BLM-7 **Acres:** 3.793 **Date:** 10-2009

	Seed Mix 1		1st Application	Remaining
Target Rate	17.50	lbs PLS / acre		
% PLS in seed mix	74%		100%	
Dilution Factor	100%	(% seed)	100%	
Target Application Rate	23.60	bulk pounds / acre	17.50	6.1
	89.5	Total bulk pounds	66.4	23.1
1/2 Target Rate (2 passes)	[redacted]	bulk pounds / acre	**8.75**	**3.05**
	44.7	1/2 of total bulk pounds	**33.2**	**11.6**
Test Run 1	11.60	total grams in 3 bags		**6.1 Target gra**
	5.80	bulk lbs/acre		
Test Run 2	12.40	total grams in 3 bags		
	6.20	bulk lbs/acre		
Test Run 3	11.80	total grams in 3 bags		
	5.90	bulk lbs/acre		
3 Run Average	11.93	total grams in 3 bags		
	5.97	bulk lbs/acre		

For QC Checks:

+20% of 1/2 Target Rate	14.16	bulk pounds / acre
-20% of 1/2 Target Rate	9.44	bulk pounds / acre
+10% of 1/2 Target Rate	12.98	lbs seed mix / acre
-10% of 1/2 Target Rate	10.62	lbs seed mix / acre

PWT Signature: _____

Frontier Signature: _____

Kind: SPECIAL MIX
Lot: 2145209

Kind & Variety:	Pure%	Germ%	Origin:
MOUNTAIN BROME	25.25	84	WY
SLENDER W/G, SAN LUIS	22.32	95	WA
WESTERN W/G, ROSANNA	13.83	92	WY
CANADA WILDRYE	13.11	97	SD
MOUNTAIN BIG SAGE	1.85	46	WY
BLUE FLAX	6.70	38	WA
PRAIRIE JUNEGRASS	6.24	34	WA
ROCKY MTN PENSTEMON	.59	71	OR
FRINGE SAGE	.49	87	WY

Crop: .05% Inert: 9.55% Weed: .04% Net Wt: 47.19#(35pls#)2ac

Noxious Weed: None Found Test Date: 2/09

Remarks: FRONTIER ENVIRONMENTAL

BLM-2 North & BLM 7

APPENDIX B3

Fluvial Deposits Construction Documents

Polygon Completion Form
Fluvial Deposits

Fluvial Deposit Polygon Name/ID: AG

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
04-10-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.3. **Comments/Deviations:**
04-13-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.4. **Comments/Deviations:**
04-20-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Section 3.6A through 3.6E. Start Lime App 04-14-09; Completed pH tests 04-22 **Comments/Deviations:**
04-23-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.6F through 3.6I. Compost App Started 04-22; **Comments/Deviations:**
NA	NA	Completed replacement of erosion channels in accordance with Specification Section 3.7. **Comments/Deviations:** No applicable channels
06-01-09	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.8. **Comments/Deviations:**
06-02-09	✓	Completed mulching in accordance with Specification Section 3.9. **Comments/Deviations:** Started Mulch 06-01-09
Weeks 08-6 to 08-23	✓	Completed reinstallation of fencing in accordance with Specification Section 3.10. **Comments/Deviations:**
11-03-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.14. **Comments/Deviations:**

Quantity of Work Estimated in Proposal: NA - Addressed in Invoice Documentation /MD

Quantity of Work Performed:

Signature of ~~Subcontractor~~ Commercon — 11-03-09 (Date)

Signature of Contractor (Sub) — 11/05/09 (Date)

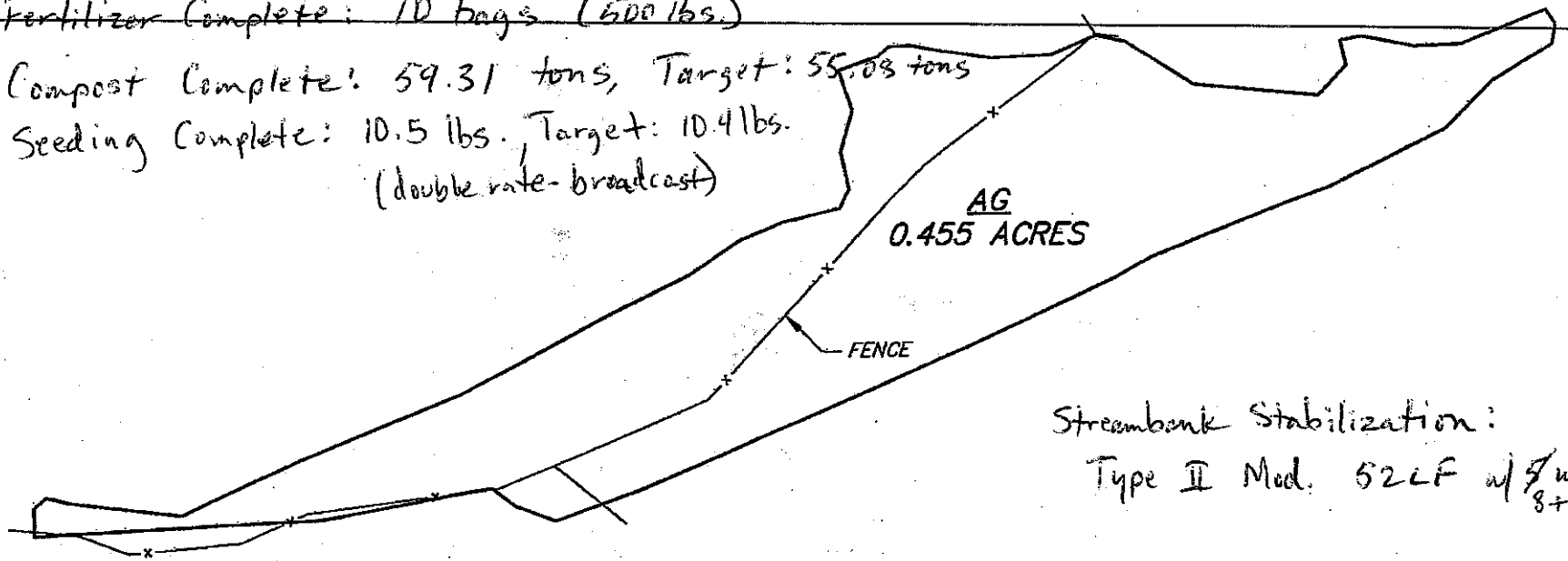
- Complete -

Lime Complete: 391.27 tons, Target: 385.20 tons

~~Fertilizer Complete: 10 bags (500 lbs.)~~

(Bags) Compost Complete: 59.31 tons, Target: 55.08 tons

Seeding Complete: 10.5 lbs., Target: 10.41 lbs.
(double rate - broadcast)



Streambank Stabilization:
Type II Mod. 52 LF w/ 5 willow plants

SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 4-14 26626 AND P.L.S.

Duane D. Fehringer P.E. & P.L.S. 26626

* Straw Mulch Complete: 23 bales (920 lbs.)

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
[illegible]

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AG
CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=50'
DATE ISSUED:	4-14-08
PROJECT NO.	08-0032
EXHIBIT	

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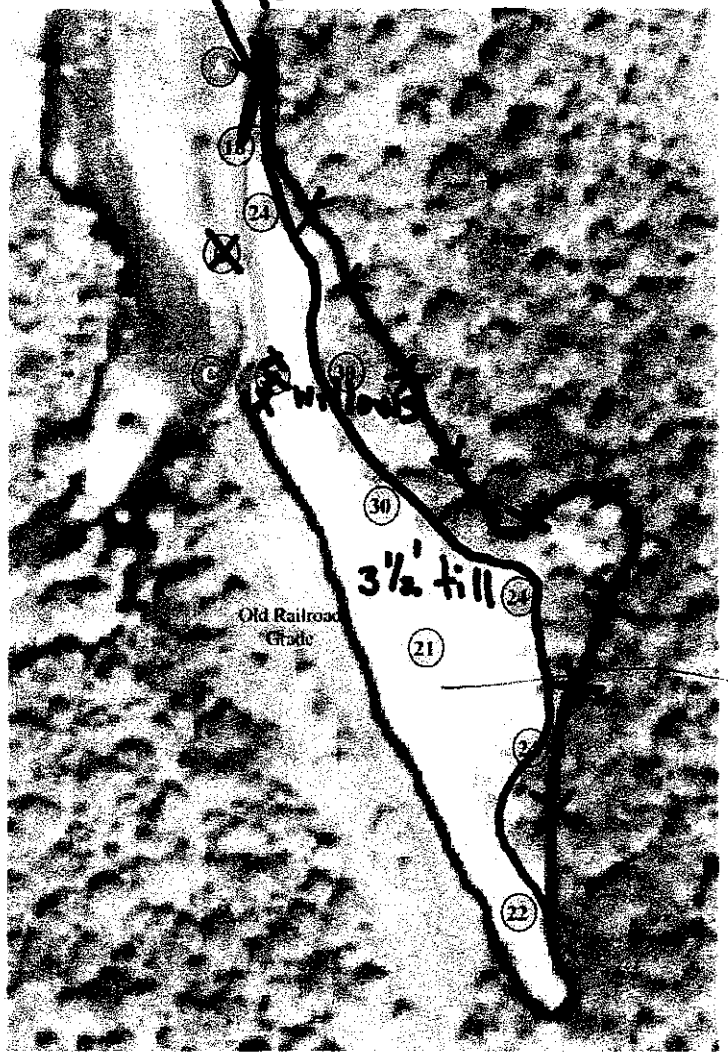
* Done - Filled



FLUVIAL DEPOSIT A.

Bank Stabilization

Bank A: 50' Type 2 stabilization along a tributary channel at the north end of the deposit. The tailings should be removed and placed on the deposit prior to soil amendment/revegetation treatment. Fill may be used to stabilize the bank, and a Type 2 biolog/carex/willow treatment zone should be placed and tied into Bank B. The bank is 7' high.

Bank B: 110' Type 3 stabilization. A 110-foot constructed cobble wall containing up to 14" diameter rock is located along the Arkansas River at the northeast end of the deposit. The cobble wall should be left in place and willows should be planted in the treated soils behind the wall (Type 3 stabilization). Save willows at base of cobble wall.

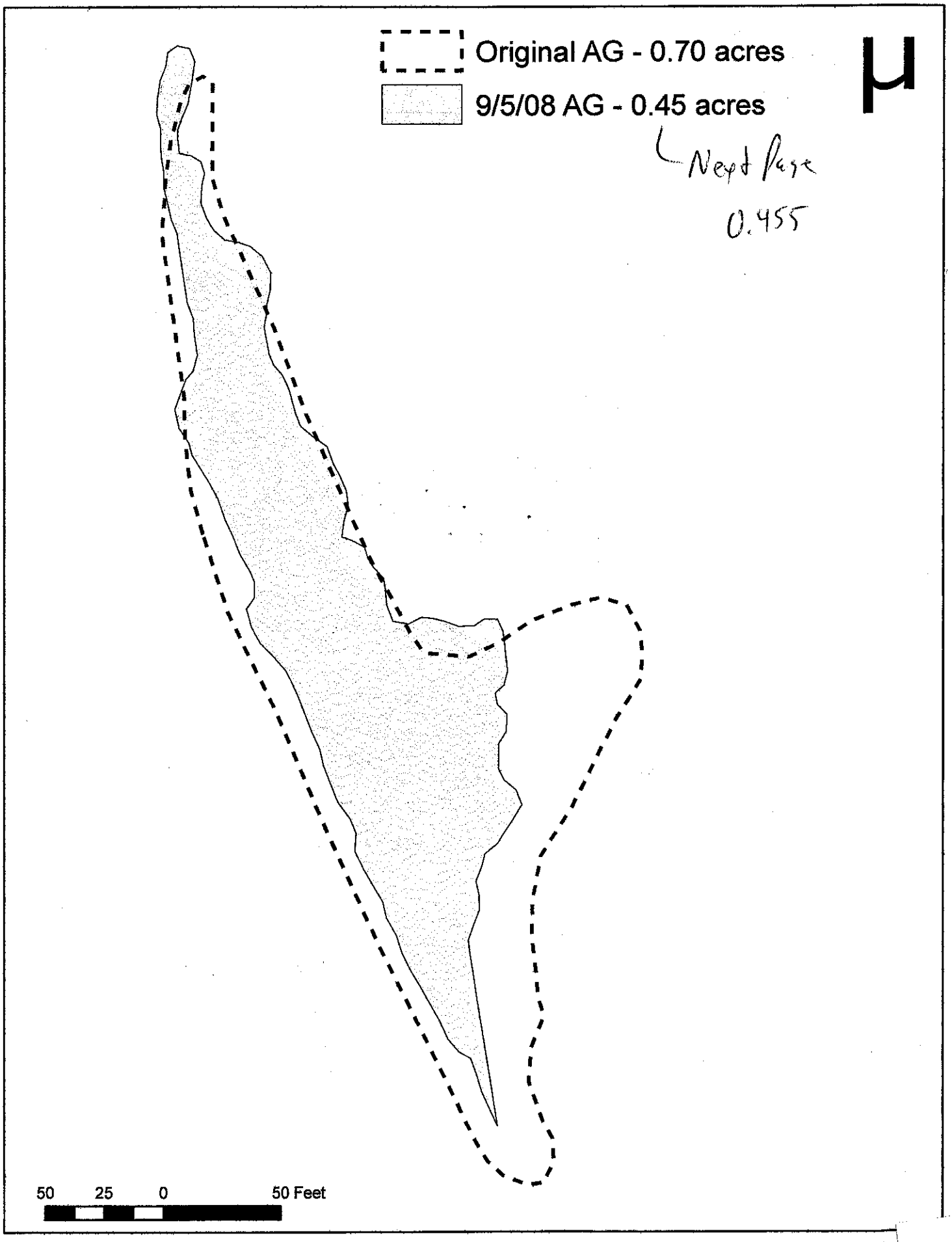
Bank C: 15' Type 3 stabilization. Stormwater controls are needed during construction. - mark for 3 willows w/blue paint

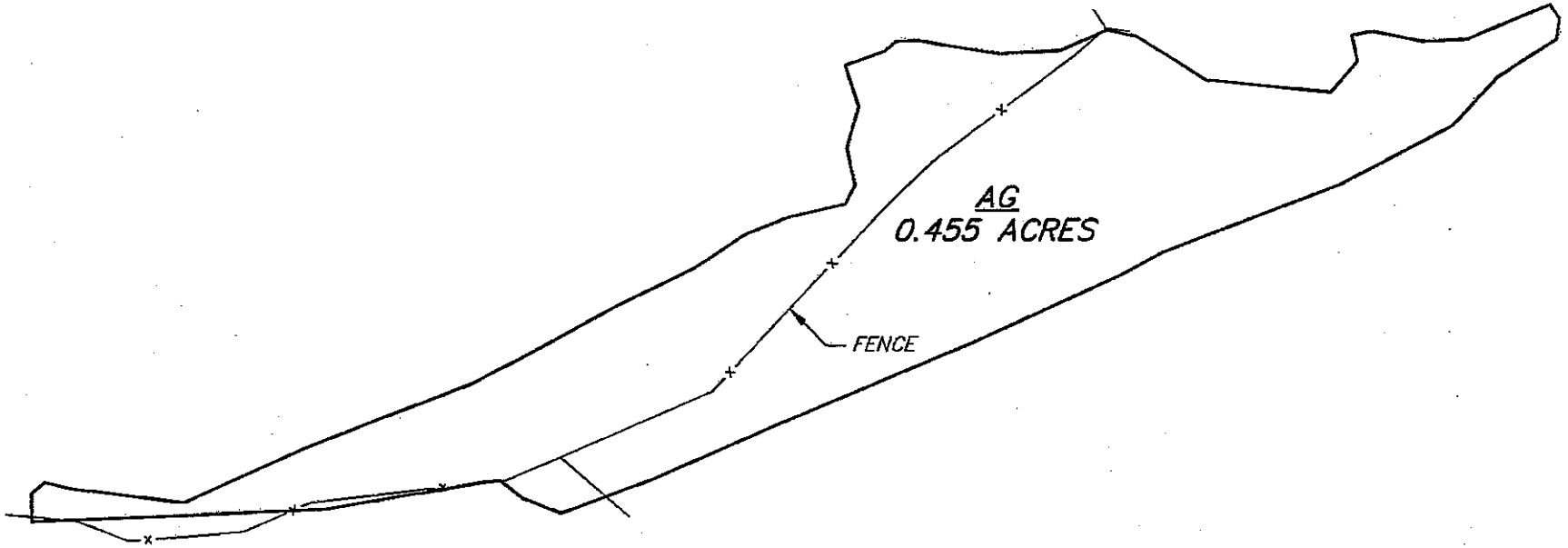
Clay/Rojer/Stuart 5/12/09

Gravity W/crimper to broadcast seed prior

Bank A: Continue cobble bank north to top of deposit.

Till depth = 42" throughout
10% Rock


Original AG - 0.70 acres
9/5/08 AG - 0.45 acres
Next Page
0.455
50 25 0 50 Feet



SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 4-14 26626 AND P.L.S.

Duane D. Fehringer P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
40981 US HWY 6&24, SUITE 203 BOX 978 AVON, CO 81620 PH: (970)949-5872
4451 E. REVERE PARKWAY, SUITE 104 CENTENNIAL, CO 80111 PH: (303)948-4220

CLIENT: FRONTIER ENVIRONMENTAL INC.

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AG

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=50'
DATE ISSUED:	4-14-09
PROJECT NO.	08-0032
EXHIBIT	

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West Lime Pile

MOISTURE CONTENT

AG, Seeps 7, 8, 9, Smith 1

- Tare Container
- Weigh sample. Record wet sample weight.
- Dry sample until sample appears dry, minimum of 1 hour on hotplate or in oven
- Weigh sample. Record dry sample weight
- Calculate % Moisture = (Wet weight – Dry weight)/Wet Weight

Moisture Content Record for Lime/Compost (circle one)

Date	Wet Weight (g)	Dry Weight (g)	Water Weight (g)	% Moisture
04-14-09	Pan 1 Tare = 8.3g 45.9 - 8.3 = 37.6	37.2 - 8.3g = 27.9	9.7	34.8 %
04-14-09	Pan 2 = 8.3g 56.2 - 8.3g = 47.9	43.4 - 8.3g = 35.1	12.8	36.5 %

Avg. = 35.7 %

Name/Signature: _____ **Date:** 04-15-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **AG**

POLYGON CHARACTERISTICS

Net Application Rate	60 tons/1000 tons
Mixing Safety Factor (25% unless noted otherwise)	25.00% %
% Rock	10.00% %
Total Area	0.46 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
42	X	100.00%	=	42
	X		=	
	X		=	
	X		=	
		Average Depth		42 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.0000%	X 0.1	=	0.0000%	(A)
Percent 10 - 60 mesh	0.0800%	X 0.5	=	0.0400%	(B)
Percent < 60 mesh	99.9200%	X 1	=	99.9200%	(C)
Lime Reactivity			=	99.9600%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		32.00% %	
Bulk Density	0.75 grams/cc	= 0.6320775	tons/cy

CALCULATE LIME RATE

$$\text{Lime Rate} = \frac{\text{Net Application Rate} * (1 + \text{Mixing Factor}/100) * (1 - \%\ \text{Rock}/100) * \text{Depth}}{(\text{Lime Reactivity}) * (\text{Calcium Carbonate Equivalence}/100) * (1 - \%\ \text{Moisture}/100)}$$

Lime Rate = 845.66 tons/acre = 385.20 tons total

Lime Rate = 1337.90 cy/acre = 609.41 cy total

Signature: [signature] 4/14/09

Date:

Signature: [signature]

Date: 04-14-09

FERTILIZER CALIBRATION

- Place a known weight (e.g., one 50-lb bag) into the spreader hopper.
- Follow the operations manual to set the equipment to meet the design field application rate (e.g., spreader opening, travel speed, RPMs, etc.)
- Make one pass dispersing the fertilizer until the contents of the spreader are emptied.
- Measure the area over which the fertilizer was applied
- Divide the weight of material applied by the total area it was applied to, convert to lbs/acre, and compare to the design field application rate.
- An acceptable test will be within 10% of the required rate.

Fertilizer Calibration Record

Date: 04-15-09 Time: 10:00

Irrigated Meadow / Fluvial Deposit Polygon ID: AG

Fertilizer Type: 0 : 45 : 0 (N:P:K)

Design Field Application Rate: 153 lbs/acre (± 10% range = _____)
153 lbs/acre per 6 inch @ 42 inches

Calibration Data for one 50 pound bag of fertilizer:

Dimensions over which bag was spread: _____ feet x _____ feet

Total Calibration Area: _____ (ft^2) * 1 acre / 43560 ft^2 = _____ acres

Calibrated Application Rate: _____ (lbs/acre)

Quality Control Data for Field Application Verification:

Note: Spread with hand broadcaster using 10 bags spread evenly across trt. area.

Area of Polygon: 0.455 (acres)

Total Weight to be Applied: 487.50 (lbs)

# of 50 lb. Bags to be Applied: 9.75 ≈ 10 bags 10 bags

04-15-09

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: AG

Add Fizz to Full Depth?

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	
TP 1 0-12"	6.7	6.5	7.0	0%	Yes
TP 1 12-24"	7.5	7.0	8.0	0%	Yes
TP 1 24-36"	7.5	7.0	8.0	0%	Yes
TP 1 36-42"	7.5	7.0	8.0	0%	Yes

04-20-09

Name/Signature: [signature]

Date: 04-20-09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Fluvial Deposit/Irrigated Meadows Polygon:

Paste pH Record AG

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
TP1 0-12"	~~7.0~~ Tare	17.0	16.3	7.0
" 12-24"	"	20.1	19.7	7.0
" 24-36"	"	19.2	19.1	7.0
" 36-42"	"	17.8	16.8	7.2

Name/Signature: [signature]

Date: 04-20-09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Fluvial Deposit/Irrigated Meadows Polygon: **Paste pH Record** AG

TP2 04-21-09

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
0-6"	TARE (0.0)	19.1	20.7	7.1
6-12"	↓	15.1	14.5	7.0
12-18"		17.6	16.6	7.0
18-24"		18.9	17.7	6.9
24-30"		18.0	18.3	7.0
30-36"		18.1	18.8	6.9

Performed 1 point calibration pH 7.0 Buffer prior to test. JMO

Name/Signature: [signature]

Date: 04-22-09

MOISTURE CONTENT

For AG Deposit

- Tare Container
- Weigh sample. Record wet sample weight.
- Dry sample until sample appears dry, minimum of 1 hour on hotplate or in oven
- Weigh sample. Record dry sample weight
- Calculate % Moisture = (Wet weight – Dry weight)/Wet Weight

Moisture Content Record for Lime/Compost (circle one)

Date	Wet Weight (g)	Dry Weight (g)	Water Weight (g)	% Moisture
04-20-09	Tare pan #1 = 8.4 81.3 - 8.4 = 73.1 g	70.3 - 8.4 = 62.0 g	11.1	15.0%
04-20-09	Tare Pan #2 = 8.3 69.8 - 8.3 = 61.5 g	59.5 - 8.4 = 51.1 g	10.4	17.0%

Avg = 16.0%

Used Bulk density, Avg. 1187 lbs/yd^3

Name/Signature: [signature]

Date: 04-20-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **AG**

POLYGON CHARACTERISTICS

Target % Organic Carbon (2.5% unless otherwise noted)					1.50%	%
Treatment Depth (Full treatment depth up to 12")					12	inches
(enter number directly or enter average calculated below)						
Depth (inches)		% of Total Area				
12	X	100.00%	=	12		
	X		=	0		
	X		=	0		
	X		=	0		
		Average Depth			12	inches
Treatment Area					0.455	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon			29.50%	%
Percent Moisture			16.00%	%
Wet Bulk Density	0.705 grams/cc	=	0.5935	tons/cy

(density of 1187 lbs/cy used - average from mutiple bucket tests)

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"}}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate =	121.07 tons/acre	=	55.08 tons
Compost Rate =	203.99 cy/acre	=	92.81 cy

Signature: [signature]

Date: 4/20/09

Signature: [signature]

Date: 04-20-09

FILE MEMO

Regarding: Lime Compost Fertilizer Mulch (Seed) Other

Fluvial Deposit ID: AG **Irrigated Meadow ID:** _____

Acreage: 0.455 acres

Target Application: 22.88 PLS (2 acres) Double Rate
X .455 acres = 10.4

Amount Applied: 10.5 lbs

Comments:
Hand Broadcast Double Rate

_____ 06-01-09

Signature **Date**

Kind: TABLE FD-2 MIX
Lot: 2144725

Kind & Variety:	Pure%	Germ%	Origin:
WESTERN W/G, ROSANNA	48.83	92	WY
SLENDER W/G, SAN LUIS	31.53	95	WA
CANADA BLUEGRASS	3.25	92	WA
BLUEJOINT REEDGRASS	2.88	78	ID
TUFTED HAIRGRASS	1.76	85	CAN
PRAIRIE JUNEGRASS	3.51	32	WA
REDTOP	1.16	97	WA
BALTIC RUSH	.86	87	CO
YARROW	.77	97	OR
ROCKY MOUNTAIN PENSTEMON	.30	98	CO

Crop: .17% Inert: 4.81% Weed: .18% Net Wt: 26.7 7# (22.88 PLS#) 2 ACRES

Noxious Weed: None Found Test Date: 2/09

Remarks: FRONTIER ENVIRONMENTAL
JOB: OU 11 FLUVIAL DEPOSITS

AG
AH
AI

10.5 lbs
Applied
Target 10.4 lbs

Kind: TABL
Lot: 21

Kind & Variety:	rm%	Origin:
WESTERN W/G, ROSANNA	92	WY
SLENDER W/G, SAN LUIS	95	WA
CANADA BLUEGRASS	92	WA
BLUEJOINT REEDGRASS	78	ID
TUFTED HAIRGRASS	85	CAN
PRAIRIE JUNEGRASS	32	WA
REDTOP	97	WA
BALTIC RUSH	87	CO
YARROW	97	OR
ROCKY MOUNTAIN PENSTEMON	98	CO

Crop: .17% Inert: 4.81% Weed: .18% Net Wt: CRES

Noxious Weed: None Fou te: 2/09

Remarks: FRONT MENTAL
JOB: OU 11 FL ITS

Kind: FLUVIAL DEPOSITS MIX Re-seed FA/FB & A's

Lot: 2148042

Kind & Variety:	Pure%	Germ%	Origin:
Lg WESTERN W/G, ROSANNA	51.88	90	SD
Lg SLENDER W/G, SAN LUIS	32.77	95	WA
CANADA BLUEGRASS, REUBENS Sm	3.39	92	WA
RED TOP Sm	2.57	91	CAN
TUFTED HAIRGRASS Sm	1.84	85	CAN
PRAIRIE JUNEGRASS Sm	1.26	92	WA
BALTIC RUSH Sm	.90	87	CO
YARROW Sm	.86	90	OR
ROCKY MTN PENSTEMON Sm	.35	89	CO

Crop: .10% Inert: 3.92% Weed: .16% Net Wt: 12.875#(11.29 PLS) 1 ACRE

Noxious Weed: None Found Test Date: 5/09 87%

Remarks: FRONTIER ENVIRONMENTAL

JOB: EPA OU-11 LEADVILLE

LARGE SEED - 11.50#

Winfield Solutions PO Box 64589 St Paul, MN 55164

Polygon Completion Form
Fluvial Deposits

Fluvial Deposit Polygon Name/ID: AH

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
04-15-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.3. **Comments/Deviations:**
04-28-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.4. **Comments/Deviations:**
04-29-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Section 3.6A through 3.6E. 04-27-09 start Lime **Comments/Deviations:** * Over-applied fertilizer by 40 lbs on AH
05-5-6-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.6F through 3.6I. **Comments/Deviations:**
NA	NA	Completed replacement of erosion channels in accordance with Specification Section 3.7. **Comments/Deviations:** Channels adjacent treatment were fortified with cobble during treatment
06-01-09	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.8. **Comments/Deviations:**
06-02-09	✓	Completed mulching in accordance with Specification Section 3.9. **Comments/Deviations:** Mulched 06-01-09
Week of 11-01	✓	Completed reinstallation of fencing in accordance with Specification Section 3.10. **Comments/Deviations:**
11-03-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.14. **Comments/Deviations:**

Quantity of Work Estimated in Proposal: NA - Addressed in Invoice Documentation

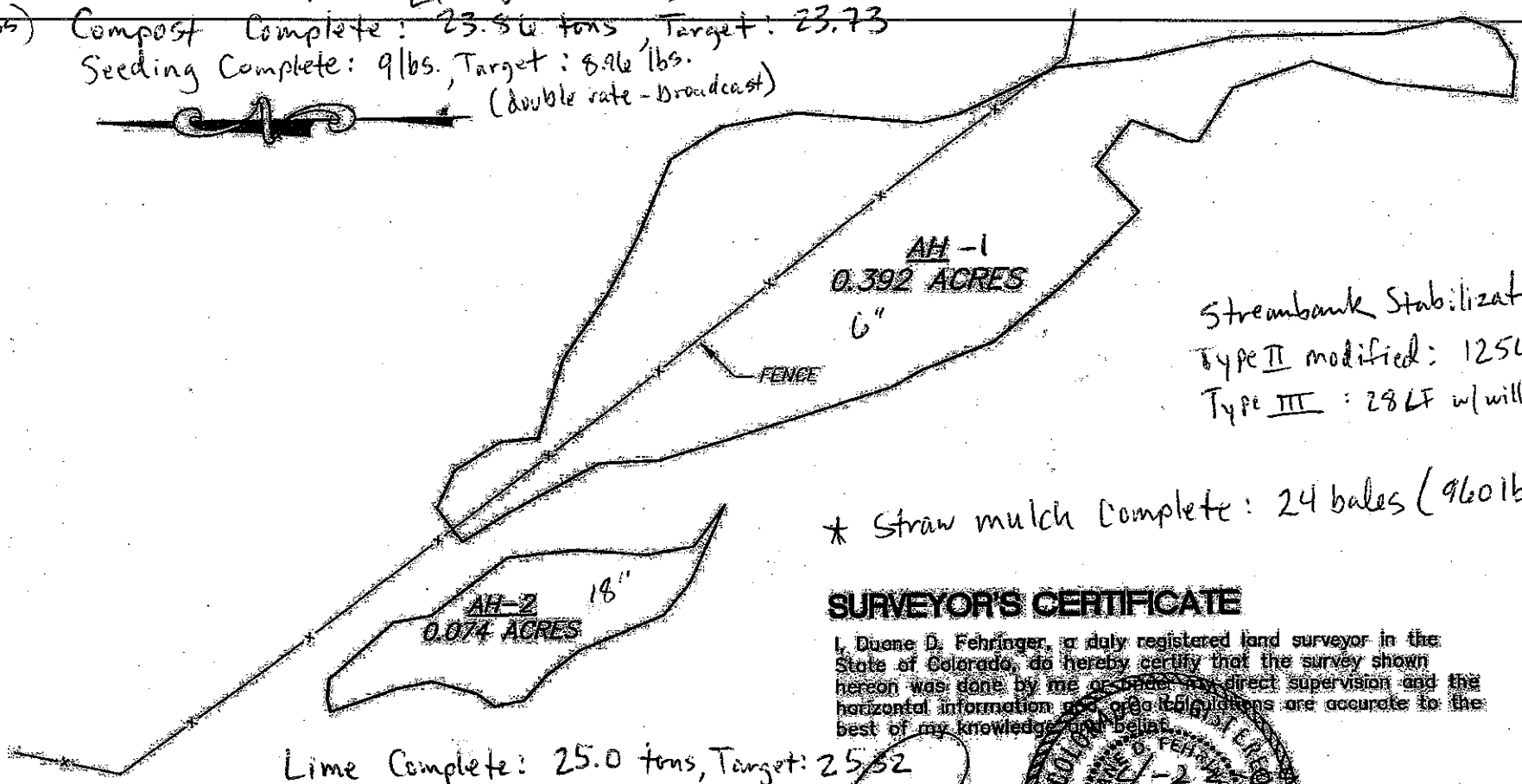
Quantity of Work Performed:

Signature of ~~Subcontractor~~ Contractor 11-03-09 Date

Signature of Contractor 11/05/09 Date

- Complete -

Lime Complete : 41 tons, Target : 39.46 tons
Fertilizer Complete in 2 bags (100 lbs.)
(Boss) Compost Complete : 23.56 tons, Target : 23.73
Seeding Complete : 9 lbs., Target : 8.96 lbs.
(double rate - Broadcast)



Streambank Stabilization:
Type II modified : 125 LF w/ willows
Type III : 28 LF w/ willows

* Straw mulch Complete : 24 bales (960 lbs.)

SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

Duane D. Fehringer P.E. & P.L.S. 26626

Lime Complete : 25.0 tons, Target : 25.52
Fertilizer Complete : 1 bag (50 lbs.)
Compost Complete : 10.81 tons, Target : 8.96 tons
Seeding Complete : 1.7 lbs., Target : 1.69 lbs.
(double rate - broadcast)

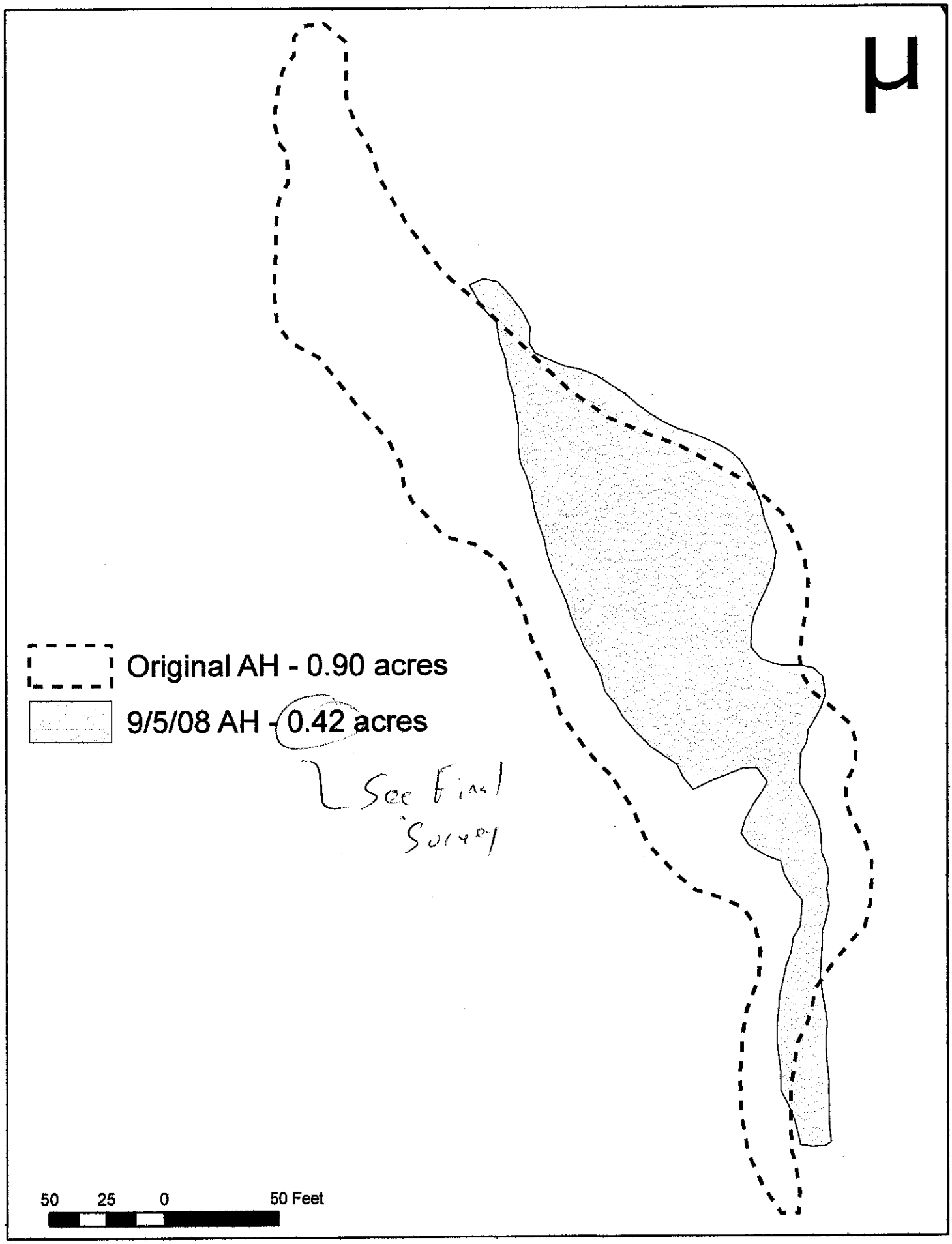
Inter-Mountain ENGINEERING
Civil Engineers & Surveyors

CLIENT: FRONTIER ENVIRONMENTAL INC.

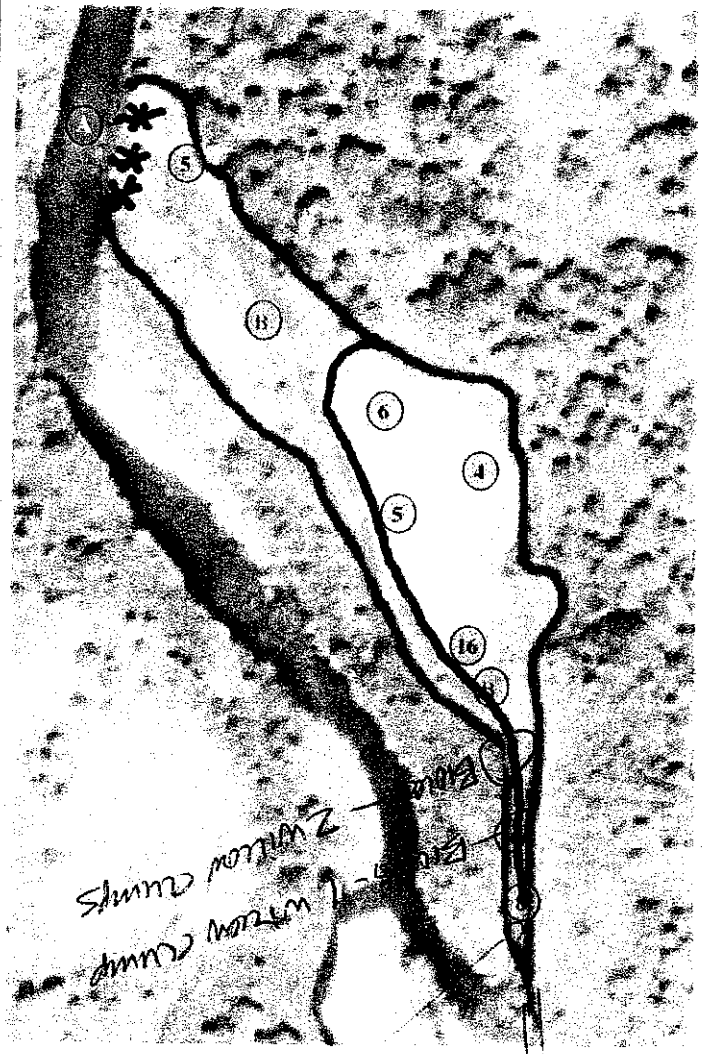
AH AND AH-2
CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY: SPF
SCALE: 1"=50'
DATE: 4-22-20
PROJECT NO.: 08-0032

* Pre-Tilled


Original AH - 0.90 acres
9/5/08 AH - 0.42 acres
See Final Survey
50 25 0 50 Feet

* Plant willows



FLUVIAL DEPOSIT #1

Bank Stabilization

Bank A: 50 feet Type 3. Plant 4 mature willows along bank. No other stabilization required.

Bank B: 225' Type 2 (discontinuous) within low rock-lined channel. No excavation of existing materials. Treat mine waste then add biolog and transplants along bank of channel. Hand-seed completed bank. Include seep channel at south end of deposit.

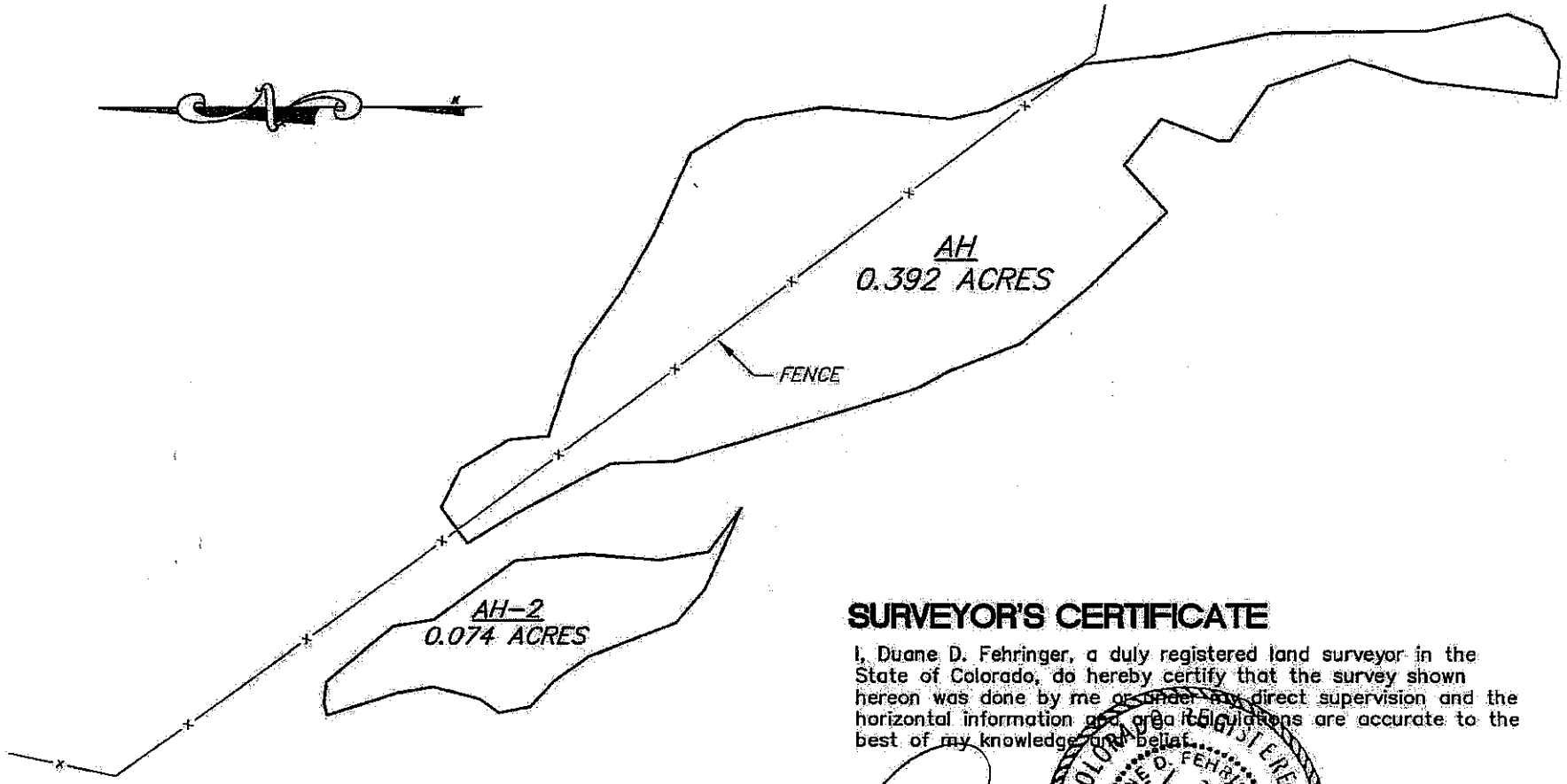
5/12/09
- install 6 mature willows - blue paint by Roger.
- seed w/ flood mix
- wait for after high water
  - seed w/ wetland mix in low wet areas
- mulch not necessary in rock gardens

Fluvial Deposit #1

Bank stabilization locations

Bank stabilization practices

Note: Final bank locations, lengths and practices to be determined by Landowner and Technical Service Provider.



SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 26626 P.E. AND P.L.S.

Duane D. Fehringer P.E. & P.L.S. 26626

J:\projects\80032\dwg\OU-11 Areas.dwg

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
40551 US HWY 6&24, SUITE 223 BOX 971 AVON, CO 81620 PH: (970)949-5071
6181 S. REVERE PARKWAY, SUITE 186 CENTENNIAL, CO 80111 PH: (303)948-4229

CLIENT: FRONTIER ENVIRONMENTAL INC.

This document was prepared for the exclusive use of the Client specified hereon. The use of this document or the information contained herein by any other person or entity is not authorized. In the event that any other person or entity desires to use this document or the information contained herein for any purpose they must first obtain written authorization from Inter-Mountain Engineering. This document and any information contained herein is intended to be used within one year of the date hereof. Use after that period is not authorized.

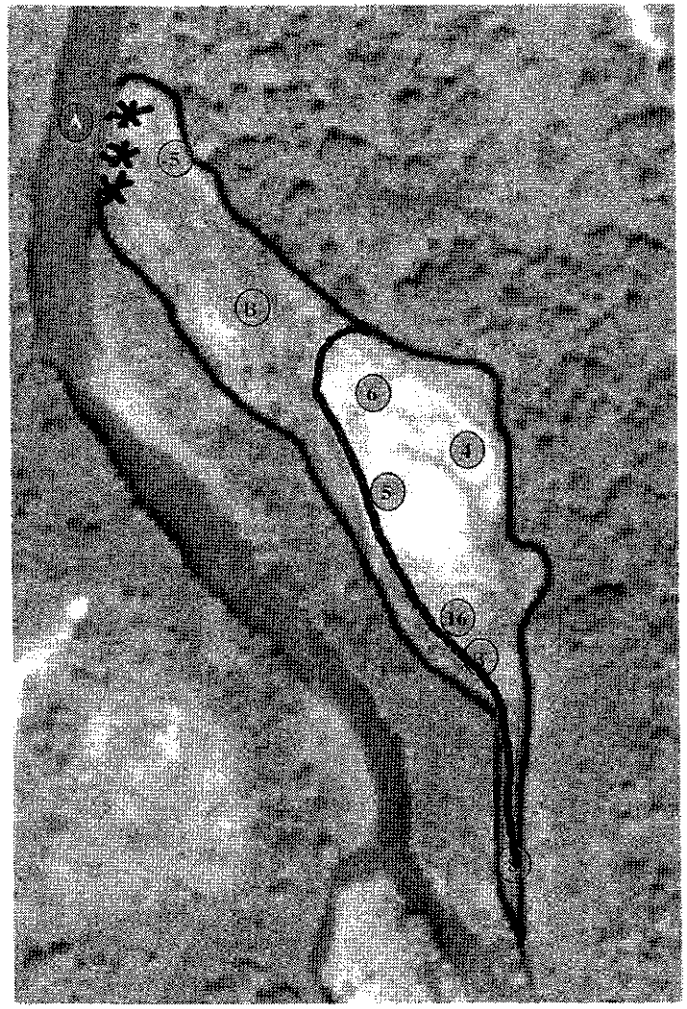
AH AND AH-2

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=50'
DATE ISSUED:	4-22-09
PROJECT NO.	08-0032
CHKD?	

https://mail.pwt.com/exchange/jdeangelis/Inbox/FDSS%20Scans.EML/1_multipart_...

* Plant willows



FLUVIAL DEPOSIT AH

Bank Stabilization

Bank A: 50 feet Type 3. Plant 4 mature willows along bank. No other stabilization required.

Bank B: 225' Type 2 (discontinuous) within low rock-lined channel. No excavation of existing materials. Treat mine waste then add biolog and transplants along bank of channel. Hand-seed completed bank. Include seep channel at south end of deposit.

Fluvial Deposit Outline

Bank Stabilization Location

16 Depth of mine waste (inches)

Note: Figure not to scale.
Locations and streambank lengths estimated.
All treatment locations will be confirmed and marked prior to initiation of construction.

04/27/2009 12:45:21 PM

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID **AH**

POLYGON CHARACTERISTICS

Net Application Rate	60	tons/1000 tons
Mixing Safety Factor (25% unless noted otherwise)	25.00%	%
% Rock	25.00%	%
Total Area	0.39	acres

Average Depth Calculation

Depth (inches)		% of Total Area		
6	X	100.00%	=	6
	X		=	
	X		=	
	X		=	
		Average Depth		6 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.0000%	X 0.1	=	0.0000%	(A)
Percent 10 - 60 mesh	0.0800%	X 0.5	=	0.0400%	(B)
Percent < 60 mesh	99.9200%	X 1	=	99.9200%	(C)
Lime Reactivity			=	99.9600%	A+B+C

Calcium Carbonate Equivalence			82.20%	%
Percent Moisture			32.00%	%
Bulk Density	0.75 grams/cc	=	0.632078	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate	100.6736 tons/acre	=	39.46405 tons total
Lime Rate	159.2741 cy/acre	=	62.43546 cy total

Signature: [signature]

Date: 4/27/09

Signature: [signature]

Date: 04-27-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **AH-2**

POLYGON CHARACTERISTICS

Net Application Rate	60 tons/1000 tons
Mixing Safety Factor (25% unless noted otherwise)	25.00% %
% Rock	15.00% %
Total Area	0.07 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
18	X	100.00%	=	18
	X		=	
	X		=	
	X		=	
		Average Depth		18 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.0000%	X 0.1	=	0.0000%	(A)
Percent 10 - 60 mesh	0.0800%	X 0.5	=	0.0400%	(B)
Percent < 60 mesh	99.9200%	X 1	=	99.9200%	(C)
Lime Reactivity			=	99.9600%	A+B+C

Calcium Carbonate Equivalence			82.20% %
Percent Moisture			32.00% %
Bulk Density	0.75 grams/cc	=	0.632078 tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate 342.2902 tons/acre ✓ = 25.32947 tons total ✓

Lime Rate 541.532 cy/acre = 40.07337 cy total

Signature: Jan M Thurston

Date: 4/27/09

Signature: 04-27-09

FERTILIZER CALIBRATION

- Place a known weight (e.g., one 50-lb bag) into the spreader hopper.
- Follow the operations manual to set the equipment to meet the design field application rate (e.g., spreader opening, travel speed, RPMs, etc.)
- Make one pass dispersing the fertilizer until the contents of the spreader are emptied.
- Measure the area over which the fertilizer was applied
- Divide the weight of material applied by the total area it was applied to, convert to lbs/acre, and compare to the design field application rate.
- An acceptable test will be within 10% of the required rate.

Fertilizer Calibration Record

Date: 04-28-09 Time: 12:30

Irrigated Meadow / Fluvial Deposit Polygon ID: A H

Fertilizer Type: 0:45:0 (N:P:K)

Design Field Application Rate: 153 lbs/acre (± 10% range = _____)
per 6-inch trt depth

Calibration Data for one 50 pound bag of fertilizer:

Dimensions over which bag was spread: _____ feet x _____ feet

Total Calibration Area: _____ (ft^2) * 1 acre / 43560 ft^2 = _____ acres

Calibrated Application Rate: _____ (lbs/acre)

Note: Broadcast with Manual Spreader

Quality Control Data for Field Application Verification:

Area of Polygon: 0.392 (acres)

Total Weight to be Applied: 60 (lbs)

$\frac{153 \text{ lbs}}{6 \text{ inch trt}} \times 0.392 \text{ acres} = 60 \text{ lbs}$

# of 50 lb. Bags to be Applied: 1 bags

FESI applied 2 bags (≈ 100 lbs)

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

FERTILIZER CALIBRATION

- Place a known weight (e.g., one 50-lb bag) into the spreader hopper.
- Follow the operations manual to set the equipment to meet the design field application rate (e.g., spreader opening, travel speed, RPMs, etc.)
- Make one pass dispersing the fertilizer until the contents of the spreader are emptied.
- Measure the area over which the fertilizer was applied
- Divide the weight of material applied by the total area it was applied to, convert to lbs/acre, and compare to the design field application rate.
- An acceptable test will be within 10% of the required rate.

Fertilizer Calibration Record

Date: 04-28-09 Time: 12:30

Irrigated Meadow / Fluvial Deposit Polygon ID: AM-2

Fertilizer Type: 0 : 45 : 0 (N:P:K)

Design Field Application Rate: 153 lbs/acre (± 10% range = _____)
per 6-inch trt depth (18 inch total)

Calibration Data for one 50 pound bag of fertilizer:

Dimensions over which bag was spread: _____ feet x _____ feet

Total Calibration Area: _____ (ft^2) * 1 acre / 43560 ft^2 = _____ acres

Calibrated Application Rate: _____ (lbs/acre)

Note Broadcast with Manual Spreader

Quality Control Data for Field Application Verification:

Area of Polygon: 0.074 (acres)

$0.074 \frac{\text{acre}}{} \times \frac{153 \text{ lbs}}{1 \text{ acre}} \times 3\text{-6inch trt}$

Total Weight to be Applied: 50 (lbs)

$\approx$ 34 lbs

# of 50 lb. Bags to be Applied: 1 bags

(1 bag)

F&SI applied 1 bag

Print / Sign Name: _____
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: AH & AH-2

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	Acid Reaction to full depth?
AH 1 0-6"	7.5	7.0	8.0	NA	Yes
AH 2 0-6"	7.3	7.0	7.5	NA	Yes
AH Tailings beneath 6" Tst Depth	6.3	6.0	6.5	NA	No
AH 2 16" Tst Depth					
Note: Saturated Soil @ 12" Groundwater @ 18" depth		Bands of Clumpy Lime		11-14" depth	
0-12"	7.5	7.5	7.5	NA	Yes to 12"

Name/Signature: A. G. Ahl

Date: 04-30-09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record

Fluvial Deposit/Irrigated Meadows Polygon: AH & AH 2

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
Pit 1 ↓ AH 0-6"	Tare Scale (0.0)	19.0	19.4	7.0
AH Pit 2 0-6"		18.7	17.5	7.0
AH 2 0-6"		19.9	18.4	7.3
AH-2 6-12"		18.8	17.7	7.3

Note: 12-18" Sample Not Collected as SATURATED Soils Began @ 12" and Water Entering Test Pit @ 16". This is result of volume of cobble removed & placed in adjacent channel; which affected "starting grade" vs "finish grade" of deposit.

Performed One-Point Cal pH Buffer 7.0 before testing samples

Name/Signature: [signature]

Date: 05-01-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **AH-1**

POLYGON CHARACTERISTICS

Target % Organic Carbon (2.5% unless otherwise noted)	1.50% %
Treatment Depth (Full treatment depth up to 12")	6 inches
(enter number directly or enter average calculated below)	

Depth (inches)		% of Total Area		
6	X	100.00%	=	6
	X		=	0
	X		=	0
	X		=	0
		Average Depth		6 inches

Treatment Area			0.392 acres

COMPOST CHARACTERISTICS

Percent Organic Carbon			29.50%	%
Percent Moisture			16.00%	%
Wet Bulk Density	0.707 grams/cc	=	0.60	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"}}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate =	60.53 tons/acre	=	23.73 tons ✓
Compost Rate =	101.59 cy/acre	=	39.82 cy

Signature: B Scott Wright

Date: 5/5/09

Signature: Mark Li

Date: 05-05-09

This is a verification calculation for numbers given to Frontier by Jan Christner.

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **AH-2**

POLYGON CHARACTERISTICS

Target % Organic Carbon (2.5% unless otherwise noted)	1.50% %
Treatment Depth (Full treatment depth up to 12")	12 inches
(enter number directly or enter average calculated below)	

Depth (inches)		% of Total Area		
12	X	100.00%	=	12
	X		=	0
	X		=	0
	X		=	0
		Average Depth		12 inches

Treatment Area 0.074 acres

COMPOST CHARACTERISTICS

Percent Organic Carbon			29.50%	%
Percent Moisture			16.00%	%
Wet Bulk Density	0.707 grams/cc	=	0.60	tons/cy

CALCULATE COMPOST APPLICATION RATE

Compost = $\frac{\text{Target \% OC * depth * 1000 tons/acre/6"}}{\text{Compost \% OC * (1- \%Moisture/100)}}$

Compost Rate =	121.07 tons/acre	=	8.96 tons ✓
Compost Rate =	203.18 cy/acre	=	15.04 cy

Signature: Barb Nicol

Date: 5/5/09

Signature: [illegible]

Date: 05-05-09

This is a verification calculation for numbers given to Frontier by Jan Christner.

FILE MEMO

Regarding: Lime Compost Fertilizer Mulch (Seed) Other

Fluvial Deposit ID: AH **Irrigated Meadow ID:** ~~Irrigated Meadow ID:~~ _____

Acreage: (Below)

Target Application: (Below)

Amount Applied: AH → 9.6 lbs AH-2 1.7 lbs

Comments:

AH 0.792 acres × 22.88 PLS (Double Rate) = 8.97 lbs Target

AH-2 0.074 acres × 22.88 = 1.69 lbs Target

Signature

06-08-05

Date

Kind: TABLE FD-2 MIX
Lot: 2144725

Kind & Variety:	Pure%	Germ%	Origin:
WESTERN W/G, ROSANNA	48.83	92	WY
SLENDER W/G, SAN LUIS	31.53	95	WA
CANADA BLUEGRASS	3.25	92	WA
BLUEJOINT REEDGRASS	2.88	78	ID
TUFTED HAIRGRASS	1.76	85	CAN
PRAIRIE JUNEGRASS	3.51	32	WA
REDTOP	1.16	97	WA
BALTIC RUSH	.86	87	CO
YARROW	.77	97	OR
ROCKY MOUNTAIN PENSTEMON	.30	98	CO

Crop: .17% Inert: 4.81% Weed: .18% Net Wt: 26.7 #(22.88 PLS#) 2 ACRES

Noxious Weed: None Found Test Date: 2/09

Remarks: FRONTIER ENVIRONMENTAL
JOB: OU 11 FLUVIAL DEPOSITS

AG
AH
AI

AH-2

1.69 lbs Target
1.7 lbs used

Kind: TABL
Lot: 2

Kind & Variety:	m%	Origin:
WESTERN W/G, ROSANNA	92	WY
SLENDER W/G, SAN LUIS	95	WA
CANADA BLUEGRASS	92	WA
BLUEJOINT REEDGRASS	78	ID
TUFTED HAIRGRASS	85	CAN
PRAIRIE JUNEGRASS	32	WA
REDTOP	97	WA
BALTIC RUSH	87	CO
YARROW	97	OR
ROCKY MOUNTAIN PENSTEMON	98	CO

Crop: .17% Inert: 4.81% Weed: .18% Net Wt: CRES

Noxious Weed: None Fou te: 2/09

Remarks: FRONT MENTAL
JOB: OU 11 FL ITS

AH Used
9.4 lbs
8.9 Target

Kind: FLUVIAL DEPOSITS MIX Re-seed FA/FB & A's

Lot: 2148042

Kind & Variety:	Pure%	Germ%	Origin:
Lg WESTERN W/G, ROSANNA	51.88	90	SD
Lg SLENDER W/G, SAN LUIS	32.77	95	WA
CANADA BLUEGRASS, REUBENS Sm	3.39	92	WA
RED TOP Sm	2.57	91	CAN
TUFTED HAIRGRASS Sm	1.84	85	CAN
PRAIRIE JUNEGRASS Sm	1.26	92	WA
BALTIC RUSH Sm	.90	87	CO
YARROW Sm	.86	90	OR
ROCKY MTN PENSTEMON Sm	.35	89	CO

Crop: .10% Inert: 3.92% Weed: .16% Net Wt: 12.875#(11.29 PLS) 1 ACRE

Noxious Weed: None Found Test Date: 5/09 87%

Remarks: FRONTIER ENVIRONMENTAL

JOB: EPA OU-11 LEADVILLE

LARGE SEED - 11.50#

Winfield Solutions PO Box 64589 St Paul, MN 55164

Polygon Completion Form
Fluvial Deposits

Fluvial Deposit Polygon Name/ID: AI

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
04-15-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.3. **Comments/Deviations:**
05-04-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.4. **Comments/Deviations:**
05-05-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Section 3.6A through 3.6E. 04-29-09 Lime Initiated **Comments/Deviations:**
05-07-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.6F through 3.6I. **Comments/Deviations:**
NA	NA	Completed replacement of erosion channels in accordance with Specification Section 3.7. **Comments/Deviations:** No applicable channels.
06-01-09	06-01-09	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.8. **Comments/Deviations:**
06-02-09	✓	Completed mulching in accordance with Specification Section 3.9. **Comments/Deviations:** Applied Mulch 06-01-09
Week of 10-01	✓	Completed reinstallation of fencing in accordance with Specification Section 3.10. **Comments/Deviations:**
11-03-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.14. **Comments/Deviations:**

Quantity of Work Estimated in Proposal: NA - Addressed in Invoice Documentation

Quantity of Work Performed:

[signature] 11-03-09
Signature of ~~Subcontractor~~ Contractor Date

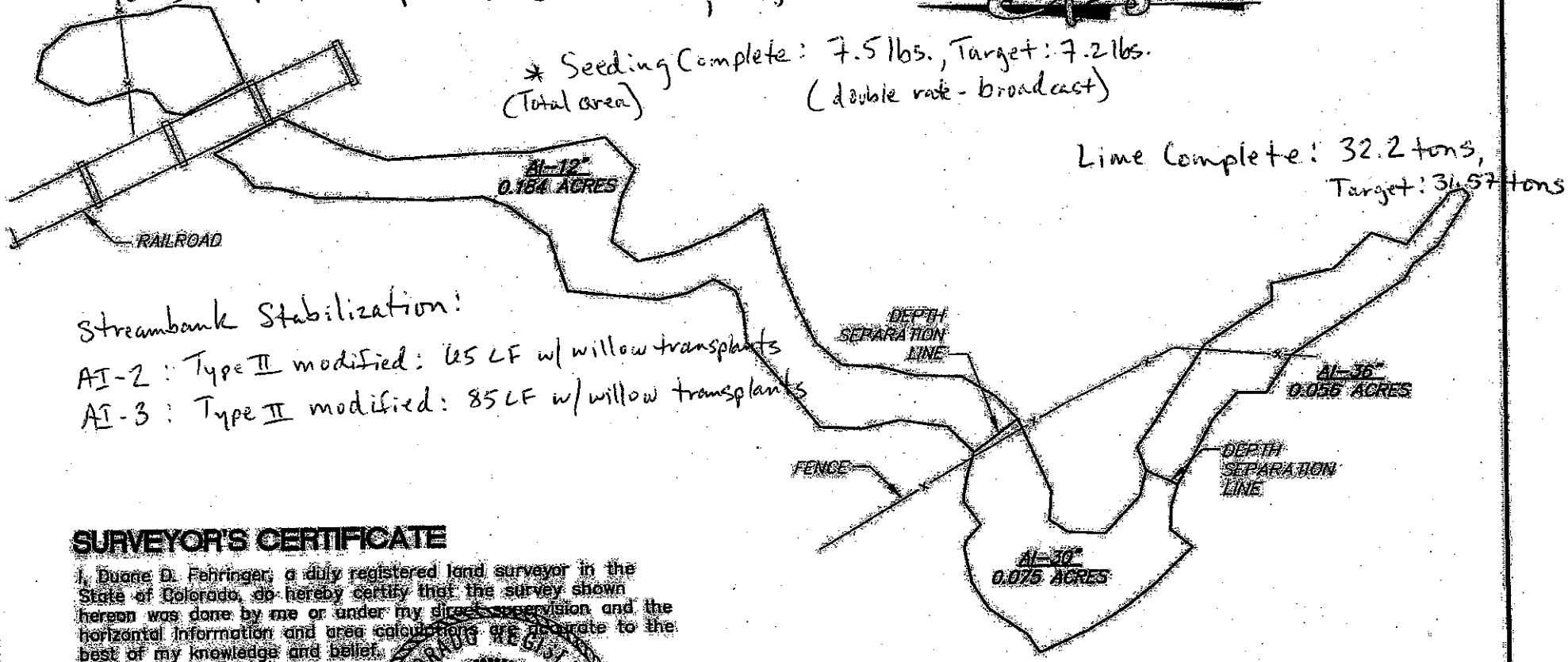
[signature] 11/05/09
Signature of Contractor Date

- Complete -

Lime Complete: 47.27 tons, Target: 46.93 tons
Fertilizer Complete: 4 bags (200 lbs.) over entire area

(Bios) Compost Complete: 38.77 tons, Target: 38.14 tons (entire polygon)

* Seeding Complete: 7.5 lbs., Target: 7.2 lbs.
(Total area) (double rate - broadcast)



Lime Complete: 32.2 tons, Target: 31.57 tons

Streambank Stabilization:
AI-2: Type II modified: 65 LF w/ willow transplants
AI-3: Type II modified: 85 LF w/ willow transplants

Lime Complete: 36.14 tons, Target: 35.24

SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

Duane D. Fehringer P.E. & P.L.S. 26626

COLORADO REGISTERED DUANE D. FEHRINGER 26626 P.E. AND P.L.S.

* Straw Mulch Complete: 16 bales (640 lbs.)

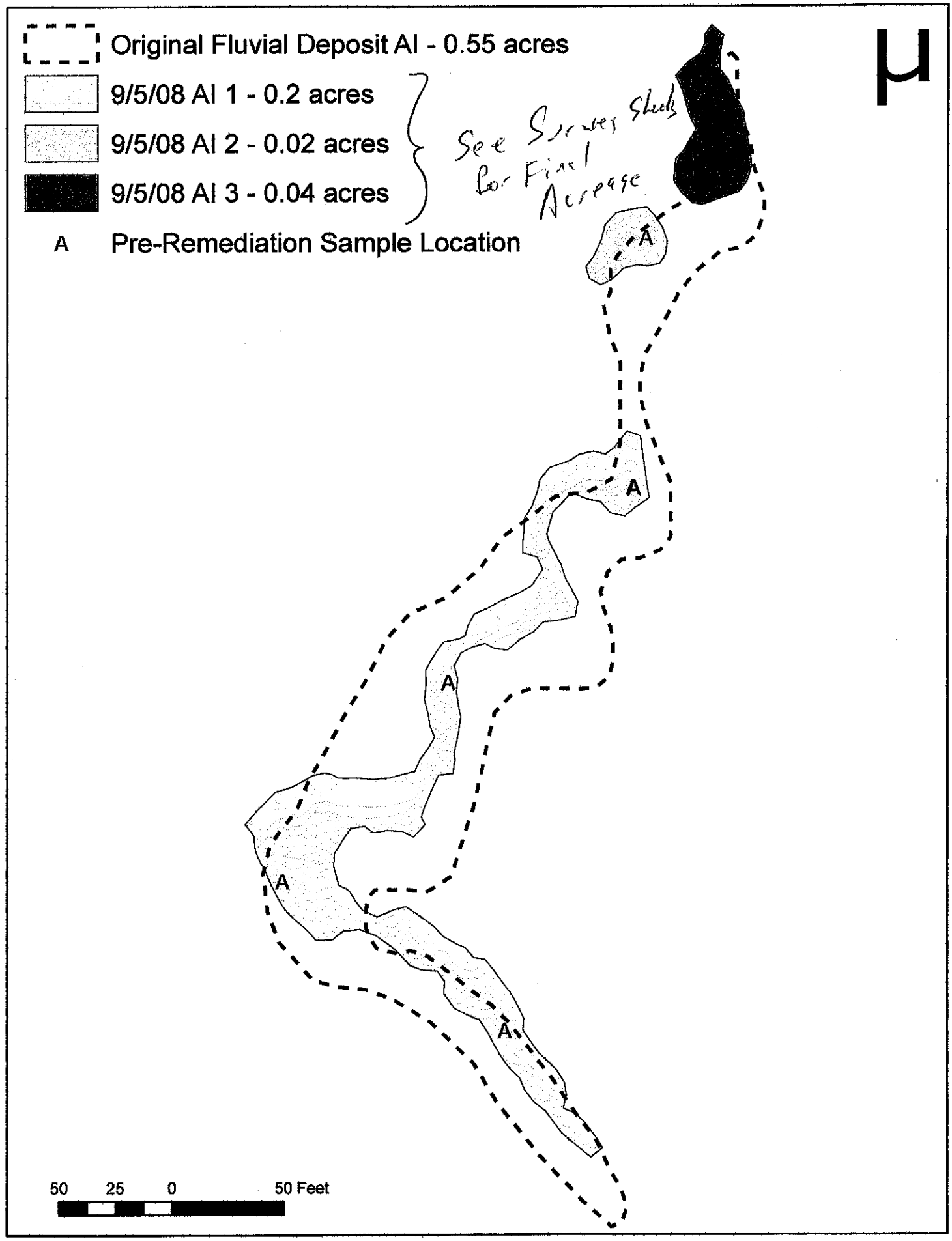
Inter-Mountain ENGINEERING
Civil Engineers & Surveyors

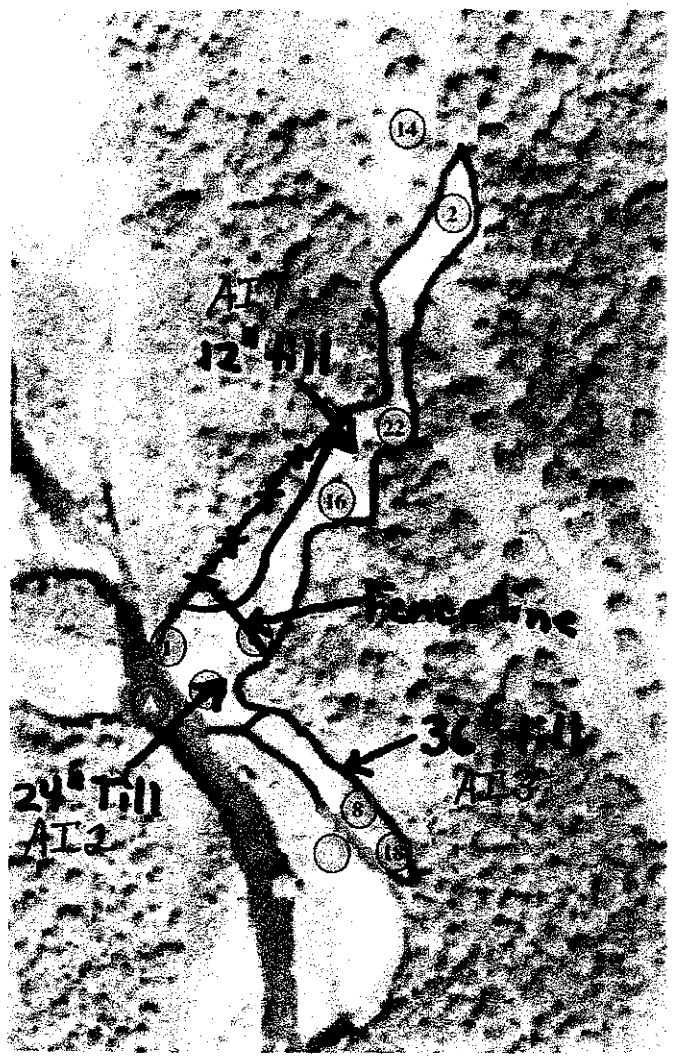
FRONTIER ENVIRONMENTAL INC.

AI
CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY: BPF
SCALE: 1"=60'
DATE ISSUED: 4-22-08
PROJECT NO: 08-0032
SHEET

* Pre-Tilled


Original Fluvial Deposit AI - 0.55 acres
9/5/08 AI 1 - 0.2 acres
9/5/08 AI 2 - 0.02 acres
9/5/08 AI 3 - 0.04 acres
See Survey Sheet for Final Acreage
A Pre-Remediation Sample Location
A
A
A
A
50 25 0 50 Feet



FLUVIAL DEPOSIT AI

Bank Stabilization modified - no fill / - 6 willows - blue print

Bank A: 50' Type 2 stabilization behind existing vegetation.

Bank B: 50' modified Type 2 stabilization along seep channel. No soil replacement required. Stabilize treated soils along bank. Save existing vegetation.

2 segments

Healthy willows and Carex located within deposits AII and AI are available to be used for bank stabilization. Willows removed for access road construction may also be available.

Bridge behind existing Carex

9 willow clumps

30% Rock for 24" (AI2) and 36" till areas (AI3)

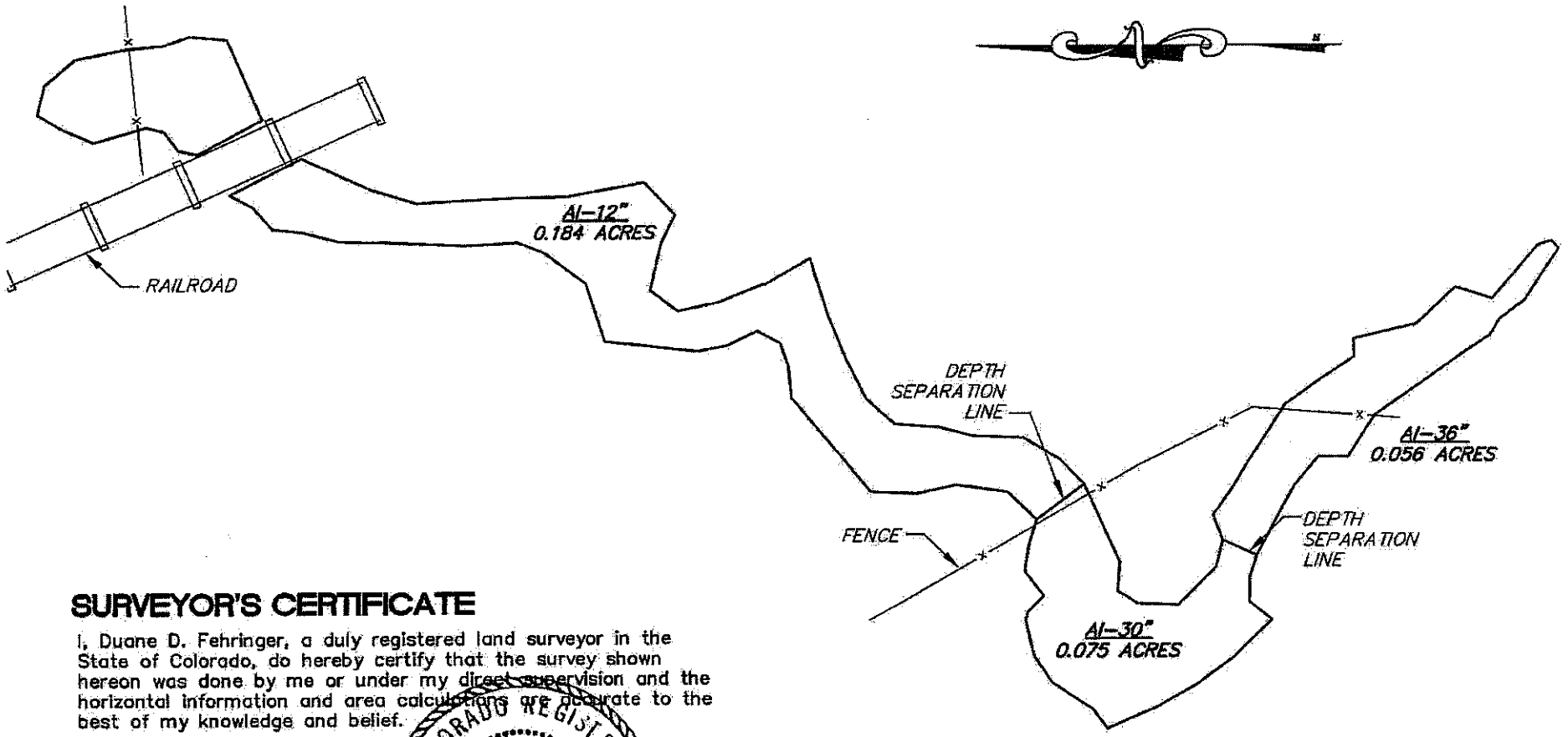
5% Rock for 12" till. (AI1)

Fluvial Deposit Outline

Bank Stabilization Location

35 Deposit number/stabilization

Note: Figure not to scale.
Locations and streambank lengths estimated.
All treatment locations will be confirmed and marked prior to initiation of construction.



SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 4-22 26626 P.E. AND P.L.S.

Duane D. Fehringer P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
40881 US HWY 6&24, SUITE 203 BOX 978 AVON, CO 81620 PH: (970)949-5872
6551 S. REVERE PARKWAY, SUITE 106 CENTENNIAL, CO 80111 PH: (303)649-6230

CLIENT: FRONTIER ENVIRONMENTAL INC.

This document was prepared for the exclusive use of the Client specified hereon. The use of this document or the information contained herein by any other person or entity is not authorized. In the event that any other person or entity desires to use this document or the information contained herein for any purpose they must first obtain written authorization from Inter-Mountain Engineering. This document and any information contained herein is intended to be used within one year of the date hereof. Use after that period is not authorized.

A1

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=50'
DATE ISSUED:	4-22-09
PROJECT NO.	08-0032
EXHIBIT	

J:\projects\80032\dwg\OU-11 Areas.dwg

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **AI - 36" area**

POLYGON CHARACTERISTICS

Net Application Rate	60 tons/1000 tons
Mixing Safety Factor (25% unless noted otherwise)	25.00% %
% Rock	30.00% %
Total Area	0.056 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
36	X	100.00%	=	36
	X		=	
	X		=	
	X		=	
		Average Depth		36 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1 =	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5 =	0.04%	(B)
Percent < 60 mesh	99.92%	X 1 =	99.92%	(C)
Lime Reactivity		=	99.96%	A+B+C

Calcium Carbonate Equivalence			82.20% %
Percent Moisture			32.00% %
Bulk Density	0.75 grams/cc	=	0.632 tons/cy

CALCULATE LIME RATE

Lime Rate = $\frac{\text{Net Application Rate} * (1 + \text{Mixing Factor}/100) * (1 - \%\ \text{Rock}/100) * \text{Depth}}{(\text{Lime Reactivity}) * (\text{Calcium Carbonate Equivalence}/100) * (1 - \%\ \text{Moisture}/100)}$

Lime Rate = 563.77 tons/acre = 31.57 tons total

Lime Rate = 891.94 cy/acre = 49.95 cy total

Signature: [signature]

Date: 4-28-09

Signature: [signature]

Date: 04-28-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **AI - 12" area**

POLYGON CHARACTERISTICS

Net Application Rate	60 tons/1000 tons
Mixing Safety Factor (25% unless noted otherwise)	25.00% %
% Rock	5.00% %
Total Area	0.18 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
12	X	100.00%	=	12
	X		=	
	X		=	
	X		=	
		Average Depth		12 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1 =	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5 =	0.04%	(B)
Percent < 60 mesh	99.92%	X 1 =	99.92%	(C)
Lime Reactivity		=	99.96%	A+B+C

Calcium Carbonate Equivalence			82.20% %
Percent Moisture			32.00% %
Bulk Density	0.75 grams/cc	=	0.632 tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 255.04 tons/acre = 46.93 tons total

Lime Rate = 403.49 cy/acre = 74.24 cy total

Signature: [signature]

Date: 4-28-09

Signature: [signature]

Date: 04-28-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **AI - 30" area**

POLYGON CHARACTERISTICS

Net Application Rate	60	tons/1000 tons
Mixing Safety Factor (25% unless noted otherwise)	25.00%	%
% Rock	30.00%	%
Total Area	0.075	acres

Average Depth Calculation

Depth (inches)		% of Total Area		
30	X	100.00%	=	30
	X		=	
	X		=	
	X		=	
		Average Depth		30 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1 =	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5 =	0.04%	(B)
Percent < 60 mesh	99.92%	X 1 =	99.92%	(C)
Lime Reactivity		=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20%	%
Percent Moisture		32.00%	%
Bulk Density	0.75 grams/cc =	0.632	tons/cy

CALCULATE LIME RATE

Lime Rate = (Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth) / ((Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100))

Lime Rate = 469.81 tons/acre = 35.24 tons total

Lime Rate = 743.28 cy/acre = 55.75 cy total

Signature: [signature]

Date: 4-28-09

Signature: [signature]

Date: 04-28-09

FILE MEMO

Regarding: Lime Compost (Fertilizer) Mulch Seed Other

Fluvial Deposit ID: AI **Irrigated Meadow ID:** _____

Acreage: .184 (12") .075 (36") .056 (36")

Target Application: 56 lbs (1.1 bags) 69 lbs (1.4 bags) 51 lbs ≈ (1 bag)

176 lbs total ≈ 3.5 bags

(153 lbs/acre per 6-inch tot depth)

Amount Applied: 4 bags entire area ≈ 200 lbs

Comments:

Hand Broadcast

Signature

05-04-09

Date

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: AI

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	Acid Reacting to Full Depth
12" Area	7.0	7.0	7.0	0%	Yes
Tails beneath 12"	6.0	5.5	6.5	NA	NA
30" Area	7.0 - 7.3	7.0	7.5	NA	Yes
Tails beneath 30"	5.5-6.0	5.5	~6.0	NA	NA
5-5-09		Soil	H_2O	pH	
AI 0-6		15.5	15.5	7.5	Y, copied to Acid pH Test Sheet AK
AI 6-12		15.0	15.1	7.4	
AI30 0-6		15.1	15.1	7.2	
" 6-12		15.3	15.7	7.1	
" 12-18		15.2	15.5	7.1	
" 18-24		15.4	15.3	6.6	

Name/Signature: _____ **Date:** _____

calibrated pH meter with 7 & 10 Buffer AK 5-5-09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record

Fluvial Deposit/Irrigated Meadows Polygon: AI

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
5-5-09	Tare 0.0			
AF 0-6		15.5	15.5	7.5
AI 6-12		15.0	15.1	7.4
AI30 0-6		15.1	15.1	7.2
AI30 6-12		15.3	15.7	7.1
AI30 12-18		15.2	15.5	7.1
AI30 18-24		15.4	15.3	6.6 Re-Tested Excess Sample in Bag
~~Re-test AI~~ AI30 18-24	0.0	16.8	15.5	7.1 05-06-09

Name/Signature: John G. Mitchell Date: 05-06-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **AI (all 3 areas > 12")**

POLYGON CHARACTERISTICS

Target % Organic Carbon (2.5% unless otherwise noted) 1.50% %
Treatment Depth (Full treatment depth up to 12") 12 inches
(enter number directly or enter average calculated below)

Depth (inches)		% of Total Area		
12	X	100.00%	=	12
	X		=	0
	X		=	0
	X		=	0
		Average Depth		12 inches

Treatment Area 0.315 acres

COMPOST CHARACTERISTICS

Percent Organic Carbon			29.50%	%
Percent Moisture			16.00%	%
Wet Bulk Density	0.707 grams/cc	=	0.60	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC * depth * 1000 tons/acre/6"}}{\text{Compost \% OC * (1- \%Moisture/100)}}$$

Compost Rate = 121.07 tons/acre = 38.14 tons ✓

Compost Rate = 203.18 cy/acre = 64.00 cy

Signature: [signature]

Date: 5/5/09

Signature: [signature]

Date: 05-05-09

Th.3 .3a Verification calculation for numbers given to Frontier by Jan Christman

FILE MEMO

Regarding: Lime Compost Fertilizer Mulch (Seed) Other

Fluvial Deposit ID: AF **Irrigated Meadow ID:** ~~Irrigated Meadow ID:~~ _____

Acreage: 0.184 + 0.075 + 0.054 = 0.32 Acres

Target Application: 0.32 X 22.88 PLS (2acre = Double Rate)
= 7.3 lbs

Amount Applied: 7.5 lbs

Comments: Hand Broadcasted

John G. Neli
Signature

06-01-05
Date

Kind: TABLE FD-2 MIX
Lot: 2144725

Kind & Variety:	Pure%	Germ%	Origin:
WESTERN W/G, ROSANNA	48.83	92	WY
SLENDER W/G, SAN LUIS	31.53	95	WA
CANADA BLUEGRASS	3.25	92	WA
BLUEJOINT REEDGRASS	2.88	78	ID
TUFTED HAIRGRASS	1.76	85	CAN
PRAIRIE JUNEGRASS	3.51	32	WA
REDTOP	1.16	97	WA
BALTIC RUSH	.86	87	CO
YARROW	.77	97	OR
ROCKY MOUNTAIN PENSTEMON	.30	98	CO

Crop: .17% Inert: 4.81% Weed: .18% Net Wt: 26.7 #'# (22.88 PLS#) 2 ACRES

Noxious Weed: None Found Test Date: 2/09

Remarks: FRONTIER ENVIRONMENTAL
JOB: OU 11 FLUVIAL DEPOSITS

AG
AH
AI

Tursed 7.2 lbs.
7.5 lbs used

Kind: TABL
Lot: 21

Kind & Variety:	m%	Origin:
WESTERN W/G, ROSANNA	92	WY
SLENDER W/G, SAN LUIS	95	WA
CANADA BLUEGRASS	92	WA
BLUEJOINT REEDGRASS	78	ID
TUFTED HAIRGRASS	85	CAN
PRAIRIE JUNEGRASS	32	WA
REDTOP	97	WA
BALTIC RUSH	87	CO
YARROW	97	OR
ROCKY MOUNTAIN PENSTEMON	98	CO

Crop: .17% Inert: 4.81% Weed: .18% Net Wt: CRES

Noxious Weed: None Fou te: 2/09

Remarks: FRONT MENTAL
JOB: OU 11 FL ITS

Kind: FLUVIAL DEPOSITS MIX Re-seed FA/FB & A's

Lot: 2148042

Kind & Variety:	Pure%	Germ%	Origin:
Lg WESTERN W/G, ROSANNA	51.88	90	SD
Lg SLENDER W/G, SAN LUIS	32.77	95	WA
CANADA BLUEGRASS, REUBENS Sm	3.39	92	WA
RED TOP Sm	2.57	91	CAN
TUFTED HAIRGRASS Sm	1.84	85	CAN
PRAIRIE JUNEGRASS Sm	1.26	92	WA
BALTIC RUSH Sm	.90	87	CO
YARROW Sm	.86	90	OR
ROCKY MTN PENSTEMON Sm	.35	89	CO

Crop: .10% Inert: 3.92% Weed: .16% Net Wt: 12.875#(11.29 PLS) 1 ACRE

Noxious Weed: None Found Test Date: 5/09 87%

Remarks: FRONTIER ENVIRONMENTAL
JOB: EPA OU-11 LEADVILLE
LARGE SEED - 11.50#

Winfield Solutions PO Box 64589 St Paul, MN 55164

Activity Tracking Form
Fluvial Deposits
Clear, Grub, Grade, Pre-Till

Fluvial Deposit Polygon Name/ID: FA-FB

Activity Start Date: 09-18-08

Activity End Date: 11-12-08

Activities Verified As Completed (indicate NA if appropriate)

✓ EPA collected pre-remediation composite samples from full remediation depth at a rate of 1 per 5 acre the sampling locations were surveyed.

✓ Completed pre-remediation site walk and final delineation of remediation boundaries and depth profiles from test pits.

NA Survey points for post-treatment depth verification were identified and elevations documented by survey crew before any ground disturbance. Rates will vary from 5 per acre and more in areas of high variability. **(Attach or reference survey data)**

Ground disturbance / lime treatment authorized without survey by S. Jennings / R. Merrick

Treatment depth measured in in-situ pH test pits

✓ Type 1 and/or Unmodified Type 2 streambank stabilization tasks completed before starting Fluvial Deposit remediation.

✓ Removed and disposed of existing trash or debris in accordance with Specification Section 01 74 16.

✓ All robust woody vegetation identified during pre-remediation walk was preserved wherever possible

✓ Pockets of good vegetation were either left in place, or salvaged and used as part of the streambank stabilization, as determined by EPA and directed by the Contractor. Emphasis was placed on salvaging Carex and willows.

✓ Plants removed were transplanted immediately or managed IAW Specification Section 02 96 00.

✓ Removed dead or decadent large woody vegetation located in or adjacent to remediation areas from the remediation area but were not removed in the floodplain.

NA Conifer trees greater than 5 feet tall were left in place.

NA Locations of erosional channels surveyed for post-treatment replacement.

✓ Graded area as necessary for effective remediation.

✓ Pre-tilled the remediation areas to a minimum depth of 6 inches.

Activity Tracking Form

Fluvial Deposits

Clear, Grub, Grade, Pre-Till

Fluvial Deposit Polygon Name/ID: FA - FB

Quantity of Work Estimated in Proposal: _____

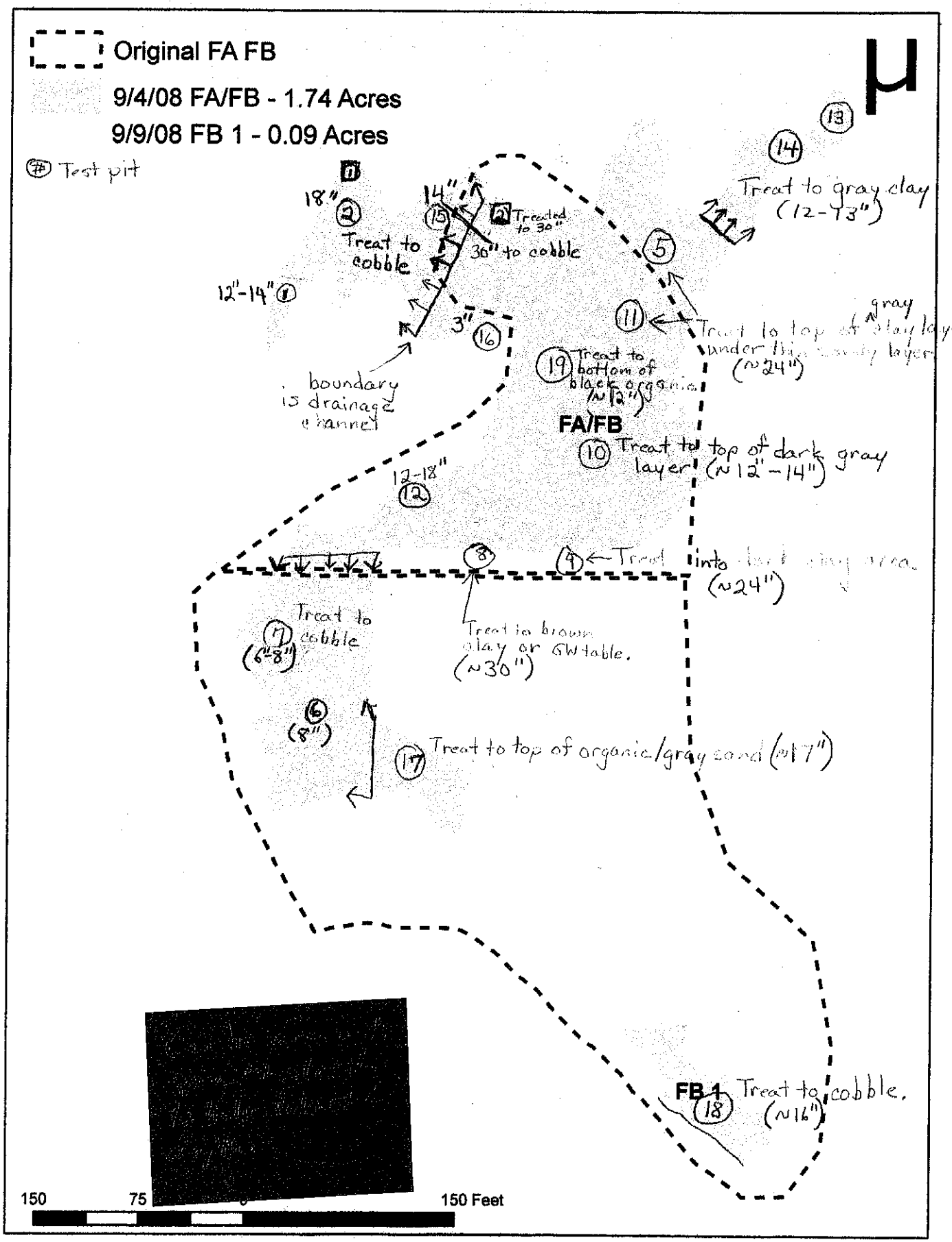
Quantity of Work Performed: 1.83 acres

Survey Data/Date: 09-09-08

Note: Attach copies of the survey data (area and depth) to this form

_____ 12-09-08
Signature of Contractor Date

_____ 12-09-08
Signature of Subcontractor Date


Original FA FB
9/4/08 FA/FB - 1.74 Acres
9/9/08 FB 1 - 0.09 Acres
(#) Test pit
N
1
18"
2
Treat to cobble
14"
15
2 Treated to 30"
30" to cobble
12"-14" 1
3"
16
boundary is drainage channel
5
Treat to gray clay (12-13")
13
14
11
Treat to top of gray clay layer under [illegible] layer (~24")
19 Treat to bottom of black organics (~12")
FA/FB
10 Treat to top of dark gray layer (~12"-14")
12-18"
12
8
9 ← Treat into [illegible] (~24")
7 Treat to cobble (6"-8")
Treat to brown clay or GW table. (~30")
6 (8")
17 Treat to top of organic/gray sand (~17")
FB 1
18 Treat to cobble. (~16")
150
75
0
150 Feet

FA/FB - Pre-Till Test Pit Notes

Soil samples were taken from various depths in each open test pit to conduct XRF analysis and also look at past pH levels near the lowest levels of the test pit.

		pH	Pb	As	Zn
TP 1-1	9" - 12" layer of silty sand with color striations including red, grey and brown		1799	105	1052
TP 1-2	6" - 8" layer of orange to red sand / cobble layer	3.3	2170	213	1101
TP1	**Treat to cobble. Approximately 12" - 14"**				
TP 2-1	~9" layer of highly stratified brown, red, grey silty soil		2500	135	643
TP 2-2	~2"-3" layer of yellowish brown sand		2056	249	2306
TP 2-3	~4"-6" layer of dark red sand	5.9	2409	205	2469
TP2	**Treat to cobble. Approximately 18"**				
TP 5-1	~4"-6" layer of yellowish brown soil		3689	198	2388
TP 5-2	Gray to dark reddish brown layer	4.7	67		4324
TP 5-3	Black organic layer	6.1	55		781
In-situ	Black/brown organic over thin sandy layer	6	113		3597
In-situ	Black/brown organic under thin sandy layer	6 - 6.5	28		82
In-situ	Sandy layer between	5.5 - 6	22		886
TP5	**Treat to the top of the black organic layer below the thin sandy layer. Approximately 24"**				
	Note that another black organic layer (that needs to be treated) is located above the thin sandy layer.				
TP 6-1	~8" layer of greyish brown cobblely layer with thin yellow layer included		2990	187	13800
TP 6-2	soil from interstitials of high cobble layer	5.6	365	34	7032
TP6	**Treat to cobble. Approximately 8"**				
TP 7-1	Light brown / tan dry silty sand layer 6"-8" thick		4167	251	23200
TP 7-2	Soil from interstitials of high cobble layer	6.5	126	20	2551
TP7	**Treat to cobble. Approximately 6" - 8"**				
TP 8-1	~18" of yellow to red silty sand layer		2108	168	2784
TP 8-2	~2"-3" gray / red / purple layer		7582	320	3298
TP 8-3	Dark gray clay layer	5.4	3321	265	18100
TP 8-4	Brown clay layer	6.6	1203	84	2503
In-situ	Black clay under orange		2026		4459
In-situ	Gray layer under black clay	6.5	2184		2291
In-situ	Medium gray at 36"		751		1163
TP8	**Treat to brown clay layer or groundwater table. Approximately 30"**				
TP 9-1	~10"-13" reddish brown layer		5486	401	13300
TP 9-2	Greyish red layer	5.5	607		5724
In-situ	Dark gray, 22"		407		2894
TP9	**Treat into top of dark gray layer. Approximately 24"**				
TP 10-1	~ 6"-8" yellowish brown layer	3.4	4121	271	1989
TP 10-2	~10"-12" 2nd grey layer	6.1	45		176
TP10	**Treat to top of lower gray layer. Approximately 12" - 14"**				
TP 11-1	Top 10" yellowish brown layer		3566	232	3508
TP 11-2	Grey to black layer		4195	234	5610
TP 11-3	3rd layer at west end of TP is red course sand layer	3.9	1330	72	2664
TP 11-4	Light grey layer in between 11-1 and 11-2	5.1	62		136
In-situ	Above red gravel - west end	6 - 6.5	3583		4778
In-situ	Black Organic (12" depth, N side of trench)	6	2062		4188
In-situ	Brown Organic (9" depth, S side of trench)	5.5	3420		2535
TP11	**Treat to top of gray clay layer under thin sandy layer. Approximately 24"**				
TP12	Clay lens at 16"		27		2446
TP12	Black Gray Sand, 18" - 24"		25		574
TP12	Red Gray Sand, 24"		13		840
TP12	**Treat to 12" - 18"**				

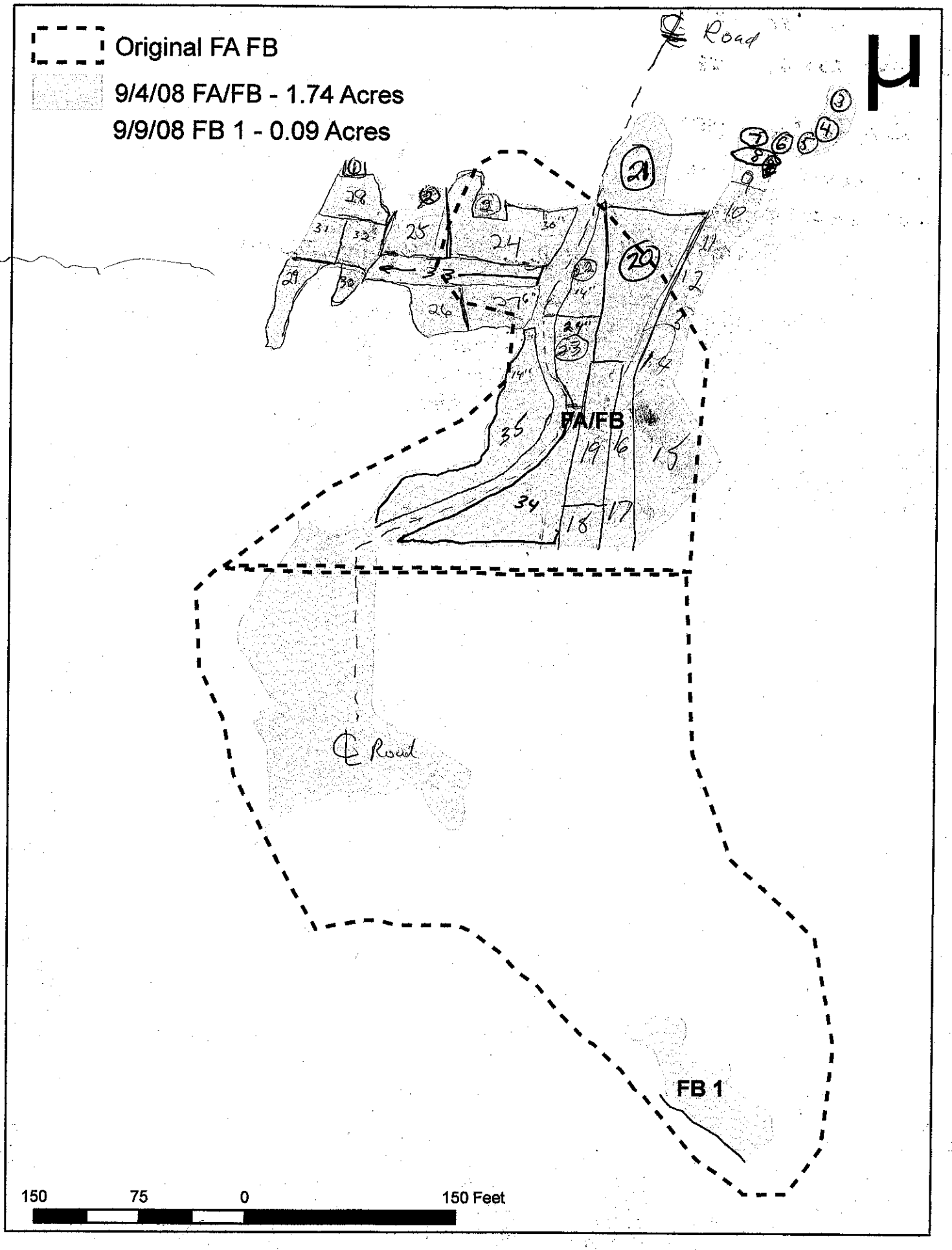
FA/FB - Pre-Till Test Pit Notes

| | | |

FA/FB - Pre-Till Test Pit Notes

TP 13	Brown root zone, 0-5"							6 - 6.5	1268		3828
TP 13	Sand lens, 5"-7"								1040		1125
TP 13	Light brown clay, 7"-9"								3275		1551
TP 13	9"-13"								3727		xx
TP 13	Bottom gray clay, 13"								738		922
TP13	**Treat to top of gray clay. Approximately 12" - 13"**										
TP14	Bottom black, 8"							6 - 6.5	157		1924
TP14	Upper brown, 0-8"							6 - 6.5	3241		3819
TP14	**Treat to top of gray clay. Approximately 12" - 13"**										
TP15	Black organic under tailings								5735		23000
TP15	Black clay								3524		14300
TP15	**Treat to cobble. Approximately 14" on west end to 30" on east end.**										
TP16	Top 8"							6 - 6.5	31		789
TP16	Below top 8"							6 - 6.5	26		2036
TP16	Top 3" in north end of pit							6	965		8859
TP16	**Treat to 6" depth.**										
Dig additional test pits between 15 and 16 to see depth gradient between pits.											
	Near TP 16										
		Reddish brown, 0-6"							2837		6795
		Brown silty clay, 7" - 20"							32		1539
		Tan/red silty sand, 22"							24		340
		Light gray Layer, 31"							31		1249
		Dark gray, 36"							26		40
	30' N of Willows by TP16										
		Reddish orange sandy silty clay, 0-6"							3605		5546
		Dark brown/black silty clay							74		1589
	Just south of area treated to 30"										
		Brown, 0 - 4"							3053		2517
		Dark gray, 4" - 20"							73		2588
		Light gray, 20" and below							30		682
Treat to 6" throughout and deeper toward north end.											
The black organic/clay layer toward the northern portion has high metals and should be treated.											
TP17	Top 3" Root zone								2690		20100
	Dark organic 3" - 6"								717		15200
	Sandy layer, 6" - 17"								47		2697
	Organic/gray sand, 17" and below								27		207
Treat to sandy layer. Approximately 17"											
TP18	Organic, 0-6"								1042		13600
	Medium brown silty clay, 3 - 10"								70		2901
	Gray/red silty clay								146		3475
	Cobble at 16"										
Treat to cobble. Approximately 16"											
TP19	Reddish brown sandy clay, 0-4"								4030		3995
	Brown clay/silt								3413		4185
	Black organic, 8" - 12"								196		6657
	Red/gray mottled sand								39		873
	Gray sand, 16" and below										
Treat to bottom of black organic layer. Approximately 12"											

TP 13	Brown root zone, 0-5"						6 - 6.5	1268		3828	
TP 13	Sand lens, 5"-7"							1040		1125	
TP 13	Light brown clay, 7"-9"							3275		1551	
TP 13	9"-13"							3727		xx	
TP 13	Bottom gray clay, 13"							738		922	
TP13	**Treat to top of gray clay. Approximately 12" - 13"**										
TP14	Bottom black, 8"						6 - 6.5	157		1924	
TP14	Upper brown, 0-8"						6 - 6.5	3241		3819	
TP14	**Treat to top of gray clay. Approximately 12" - 13"**										
TP15	Black organic under tailings							5735		23000	
TP15	Black clay							3524		14300	
TP15	**Treat to cobble. Approximately 14" on west end to 30" on east end.**										
TP16	Top 8"						6 - 6.5	31		789	
TP16	Below top 8"						6 - 6.5	26		2036	
TP16	Top 3" in north end of pit						6	965		8859	
TP16	**Treat to 6" depth.**										
Dig additional test pits between 15 and 16 to see depth gradient between pits.											
	Near TP 16										
		Reddish brown, 0-6"						2837		6795	
		Brown silty clay, 7" - 20"						32		1539	
		Tan/red silty sand, 22"						24		340	
		Light gray Layer, 31"						31		1249	
		Dark gray, 36"						26		40	
	30' N of Willows by TP16										
		Reddish orange sandy silty clay, 0-6"						3605		5546	
		Dark brown/black silty clay						74		1589	
	Just south of area treated to 30"										
		Brown, 0 - 4"						3053		2517	
		Dark gray, 4" - 20"						73		2588	
		Light gray, 20" and below						30		682	
Treat to 6" throughout and deeper toward north end.											
The black organic/clay layer toward the northern portion has high metals and should be treated.											
TP17	Top 3" Root zone							2690		20100	
	Dark organic 3" - 6"							717		15200	
	Sandy layer, 6" - 17"							47		2697	
	Organic/gray sand, 17" and below							27		207	
Treat to sandy layer. Approximately 17"											
TP18	Organic, 0-6"							1042		13600	
	Medium brown silty clay, 3 - 10"							70		2901	
	Gray/red silty clay							146		3475	
	Cobble at 16"										
Treat to cobble. Approximately 16"											
TP19	Reddish brown sandy clay, 0-4"							4030		3995	
	Brown clay/silt							3413		4185	
	Black organic, 8" - 12"							196		6657	
	Red/gray mottled sand							39		873	
	Gray sand, 16" and below										
Treat to bottom of black organic layer. Approximately 12"											


Original FA FB
9/4/08 FA/FB - 1.74 Acres
9/9/08 FB 1 - 0.09 Acres
Road
FA/FB
Road
FB 1
150
75
0
150 Feet

953 cups

Fluvial Deposit Polygon Treatment Summary Table

Subtract 223.41 from 2623.88 → 2400.4

Fluvial Deposit ID: FA/FB

Net Lime Rate: 60 (dry tons lime/100 tons soil)

690

Cups 0.45 cu	Sub-polygon #	Performed By (Initials)	Date Performed	From Design Rate Tables: % Rock	Treatment Depth (inches)	Bucket Size (Cu. Yds.)	Design Application Area (Sq. Ft.)	Field Data: Length (Ft)	Width (Ft)	Area (Sq. Ft.)	# Buckets Added to Sub-Polygon	HCl Reaction Observed (Y/N) (when performed)	InSitu pH Result (when performed)	
	1 (16)	RM	9-18-08	0	16	1	88	11	16	176	2	Y	7	3.75
	2 (16)	RM	9-19-08	0	30	1	47	10	20	200	4	Y	7 (18.5)	25.0
6	3 (16)	RM	9-24	0	14	4.25	392	25	16	400	1	Y	7-8 (17.5)	3.9
6	4	RM	9-25-08	0	14	1	~~392~~ 92	25	16	400	4.3	Y	7-7.5	17.3
5	5	RM	9-25-08	0	12	1	108	23 (triangle)	12 + 1/2 x 1/2 x 1/2	388	3.6	Y	7.5-8	14.3
5½	6	RM	9-25-08	0	14	1	92	16	23	368	4	Y	7.5-8	16.8
5½	7	JD	09-25-08	0	14	1	92	17	22	374	4	Y	7	16.2
5½	8	JD	09-25-08	0	8	1	162	33	20	660	4	Y	8	16.3
11½	9 (17)	RM	9-29-08	0	12	1	108	29	30	870	8	Y	8	32.2
11½	10	RM	9-29-08	0	24	1	54	15	30	450	8.3	—	—	
11½	11 (8) (10)	RM	9-29-08	0	24	1	54	25	30	450	8.3	—	—	
22.4	10 (8) (10)	RM	09-26-08	0	24	1	54	30	30	900	16.5	Y	7.5-8.0	66.7
9	11 (10)	JD	09-29-08	0	14	1	92	30	20	600	6.5	Y	7.5-8.0	25.9
~~18~~	~~12~~	~~SD~~	~~09-29-08~~	~~0~~	~~14~~	~~1~~	~~92~~	~~40~~	~~30~~	~~1200~~	~~13.0~~	~~Y~~		
189	12	JD	9/29/08	0	14	1	92	20	30	600	6.5	Y	7.5-8	25.9
18	13	SRJ	9/29/08	0	14	1	92	40	30	1200	13.0	Y	7.5-8	51.9
9	14	SRJ	09/29/08	0	14	1	92	20	30	600	6.5	Y	8.0	25.9
62	15	SRS/SD	09-30-08	0	14	1	92	irregular		4071	44 1/4	Y	8.0	176
49	16	JD/RM	10-01-08	0	24	1	54	63	30	1890	35			140
49	17	"	"	0	24	1	54	63	30	1890	35			140
64	18	JD	10-02-08	0	24	1	54	54	46	2484	46			
40	19	RM	10-3-08	0	14	1	92	irregular	50' back	2632	28.5	Y	7.5-8.0	184
63	20	RM	10-3-08	0	14	1	92	"	"	4139	45	Y	8.0	179
36	21	JD	10-07-08	0	14	1	92	irregular		2402	26	Y	8.0	103.8
19	22	JD	10-08-08	0	14	1	92	Irregular		1225	13.5	Y	8.0	53
30	23	JD	10-08-08	0	24	1	54	Irregular		1140	21			84
~~42~~	~~24~~	~~JD~~	~~10-08-08~~	~~0~~	~~30~~	~~1~~	~~43~~	~~50~~	~~26~~	~~1300~~	~~30~~	~~Y~~		
11	25	JD	10-09-08	50	16	1	162	50	26	1300	8	Y	7.5-8	64
95	24	JD	10-10-08	0	30	1	43	Irregular		2940	68	Y	7.5-8	272
12	26	JD	10-11-08	0	16	1	81	20	35	700	8.5	Y	7.5-8	34.6
13	27	JD	10-13-08	6	6	1	215	35	56	1960	9	Y	7.5-8	36.3
28	28	JD	10-14-08	0	16	1	81	Irreg		1604	20			72.2
14	29	JD	10-14-08	0	12	1	108	Irreg	west finger	1040	10	Y	~~9.5-8~~ 7-8	west finger
4	30	JD	10-14-08	0	12	1	108	Irreg	east finger	347	3	Y	7-8	12.9
14	31	JD	10-14-08	0	18	1	129	38	35	1330	10			41
10	32	JD	10-14-08	0	18	1	72	38	14	532	7.5			29.6
83	33	JD	10-16-08	0	16	1	81	Irreg		1904	23.5	Y	7.0-7.5	94
105	34	JD	10-17-08	0	30	1	43	½ 54 x 118		3186	74			295
76	35	JD	10-17-08	0	14	1	92	Irreg		4977	54			215
140	36	JD	10-24-08	0	16	1	81	Irreg		8110	100			AFA ROAD

Rev. 0 - 9/18/08

450 + 900 + 75 + 10 = 1040

347 + 450 + 900 + 75 = 1775 − 160

1640 sq ft + 1300 = 2940

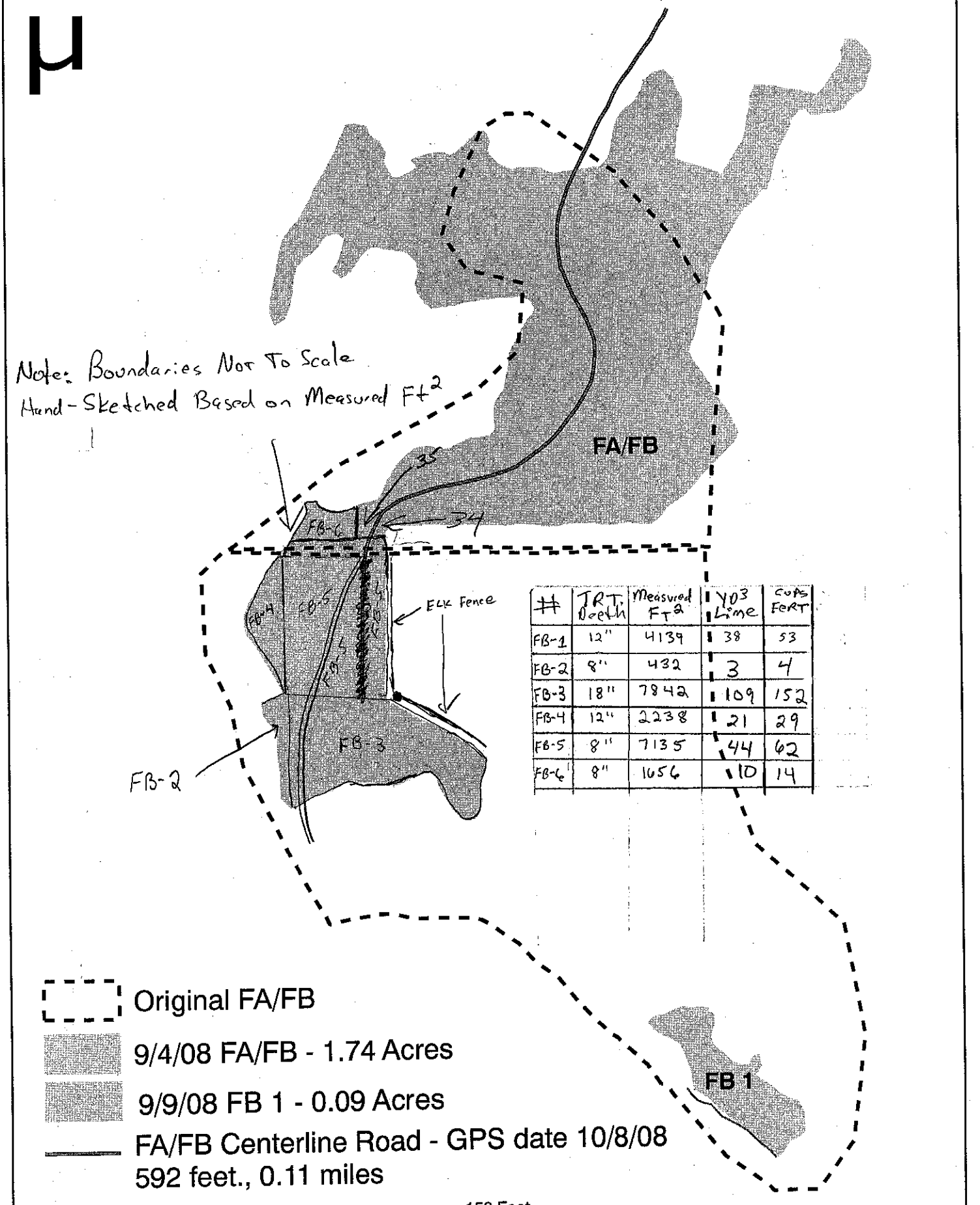
Fluvial Deposit Polygon
Treatment Summary Table

Fluvial Deposit ID: _____

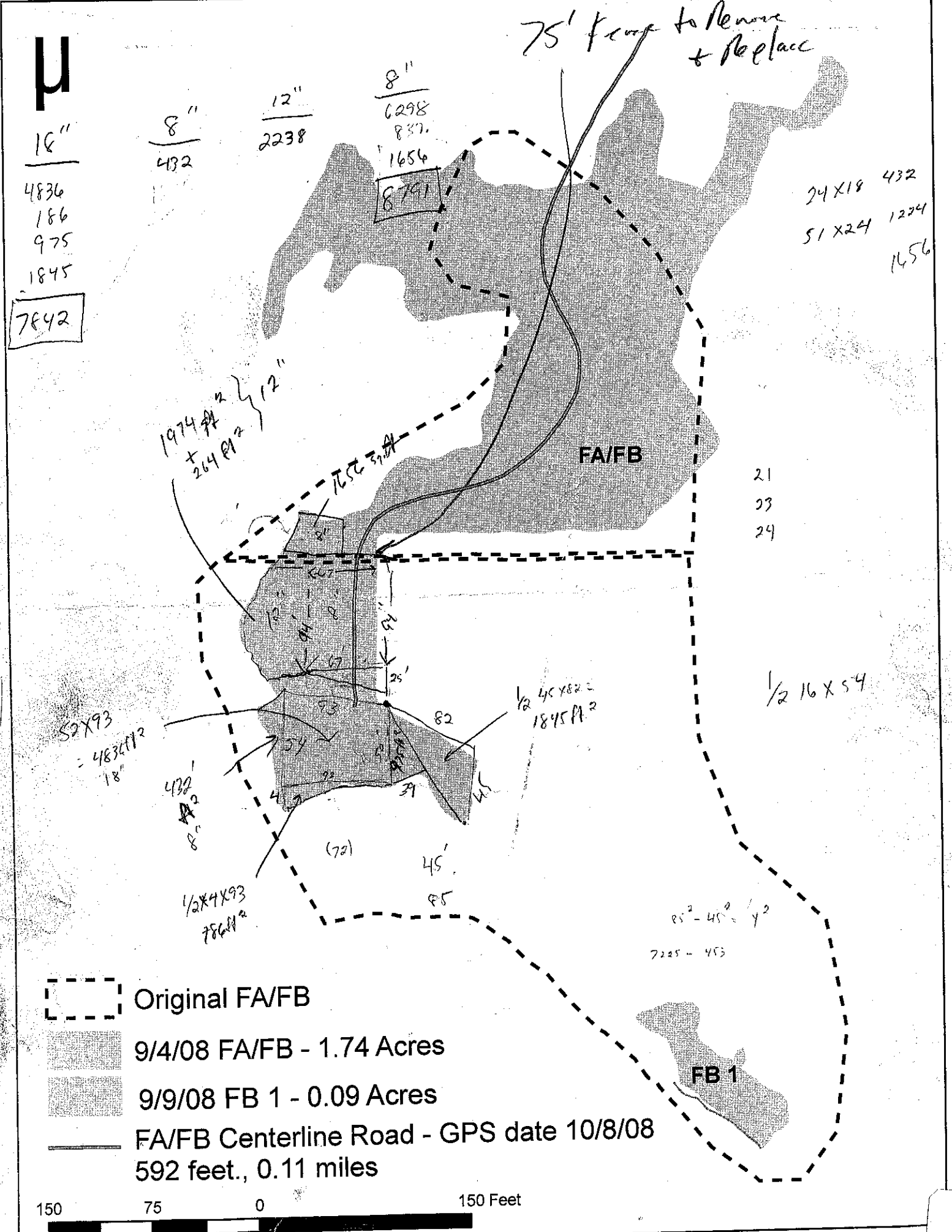
Net Lime Rate: _____ (dry tons lime/100 tons soil)

Sub-polygon #	Performed By (Initials)	Date Performed	From Design Rate Tables				Field Data					
			% Rock	Treatment Depth (inches)	Bucket Size (Cu. Yds.)	Design Application Area (Sq. Ft.)	Length (Ft)	Width (Ft)	Area (Sq. Ft.)	# Buckets Added to Sub-Polygon	HCl Reaction Observed (Y/N) (when performed)	InSitu pH Result (when performed)
FB-1	JAo	11-27-08	0	12	1	108	Irreg		4139	$38\ yd^3$		
FB-2												
FB-3											Y	7.5-8
FB-4	See Table on Map										Y	7-7.5
FB-5												
FB-6												

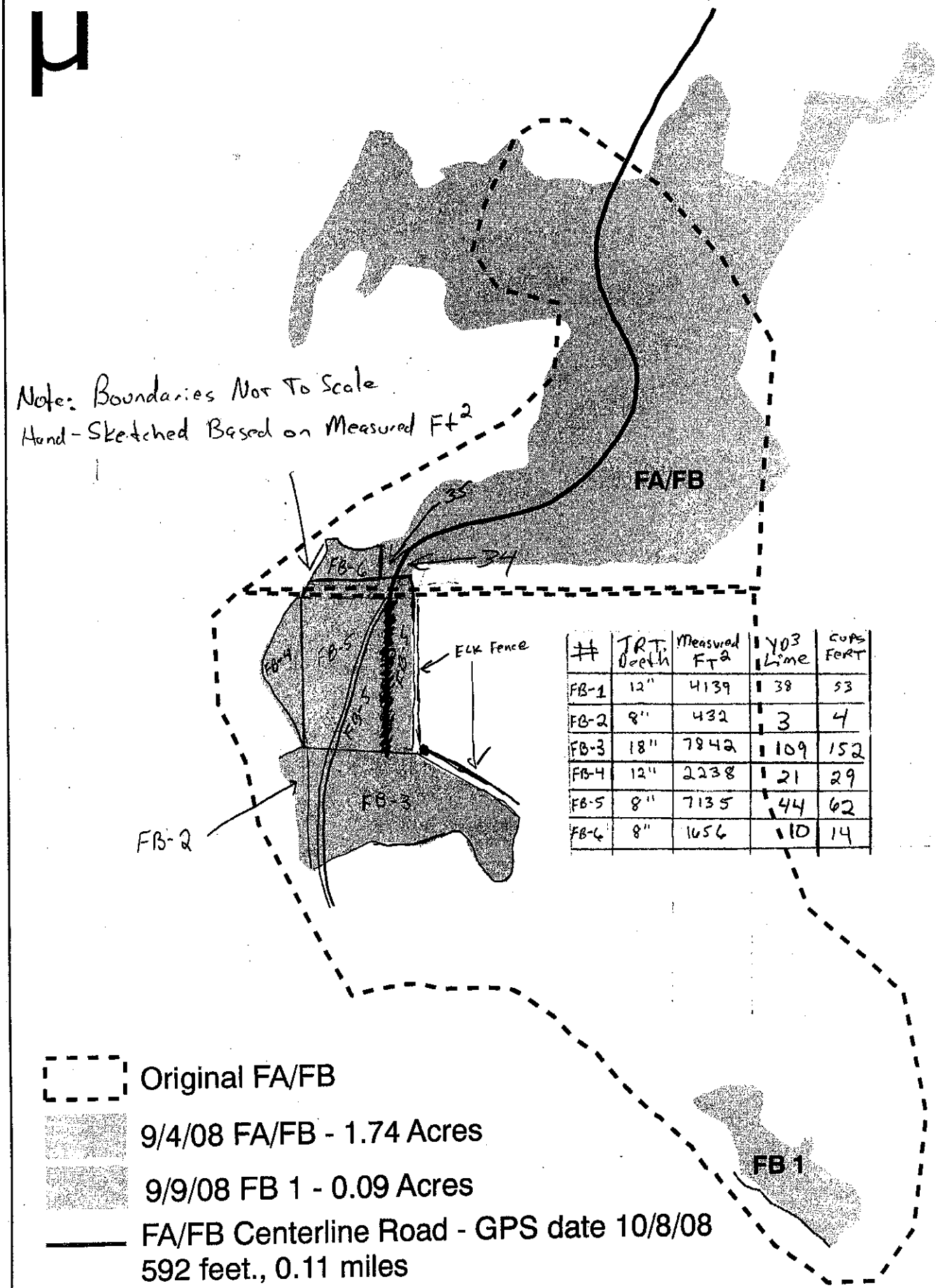
Rev. 0 - 9/18/08



#	JRT Depth	Measured Ft²	YDS Lime	CUPS FERT
FB-1	12"	4139	38	53
FB-2	8"	432	3	4
FB-3	18"	7842	109	152
FB-4	12"	2238	21	29
FB-5	8"	7135	44	62
FB-6	8"	1056	10	14


75' Fence to Remove + Replace
FA/FB
FB 1
Original FA/FB
9/4/08 FA/FB - 1.74 Acres
9/9/08 FB 1 - 0.09 Acres
FA/FB Centerline Road - GPS date 10/8/08
592 feet., 0.11 miles
150
75
0
150 Feet

μ



#	JRT Depth	Measured Ft²	YO3 Lime	CUPS FERT
FB-1	12"	4139	38	53
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FB-4	12"	2238	21	29
FB-5	8"	7135	44	62
FB-6	8"	1056	10	14

For Use On Fluvial Deposits With A Net Application Rate Of 30 Tons of Lime / 1000 Tons of Soil Using a 3.25 CY Bucket

Net Application Rate = 30 (tons / 1000 tons soil)

% Moisture = 28.6%

Bulk Density = 0.6321 (tons / CY)

Bucket Size = 3.25 (CY) <-- 938 Loader Bucket

% Rock					
0%	10%	20%	30%	40%	50%
Lime Rate (tons/acre)					
64	58	51	45	38	32
Lime Rate (CY/acre)					
101	91	81	71	61	51

Treatment Depth (inches)	Application Area (Sq. Ft.)					
6	1400	1556	1750	2000	2333	2800
8	1050	1167	1312	1500	1750	2100
10	840	933	1050	1200	1400	1680
12	700	778	875	1000	1167	1400
14	600	667	750	857	1000	1200
16	525	583	656	750	875	1050
18	467	519	583	667	778	933
20	420	467	525	600	700	840
22	382	424	477	545	636	764
24	350	389	437	500	583	700
26	323	359	404	462	538	646
28	300	333	375	429	500	600
30	280	311	350	400	467	560
32	262	292	328	375	437	525
34	247	275	309	353	412	494
36	233	259	292	333	389	467

Treatment Depth (inches)	Application Depth (inches)					
6	0.75	0.68	0.60	0.53	0.45	0.38
8	1.00	0.90	0.80	0.70	0.60	0.50
10	1.25	1.13	1.00	0.88	0.75	0.63
12	1.50	1.35	1.20	1.05	0.90	0.75
14	1.76	1.58	1.40	1.23	1.05	0.88
16	2.01	1.81	1.60	1.40	1.20	1.00
18	2.26	2.03	1.81	1.58	1.35	1.13
20	2.51	2.26	2.01	1.76	1.50	1.25
22	2.76	2.48	2.21	1.93	1.65	1.38
24	3.01	2.71	2.41	2.11	1.81	1.50
26	3.26	2.93	2.61	2.28	1.96	1.63
28	3.51	3.16	2.81	2.46	2.11	1.76
30	3.76	3.38	3.01	2.63	2.26	1.88
32	4.01	3.61	3.21	2.81	2.41	2.01
34	4.26	3.84	3.41	2.98	2.56	2.13
36	4.51	4.06	3.61	3.16	2.71	2.26

0:45:0 Fertilizer Application Rate PER 3.25 CY Bucket of Lime						
Lbs/Cup =	0.54	4.9	Lbs	OR	9.1	Cups

For Use On Fluvial Deposits With A Net Application Rate Of 30 Tons of Lime / 1000 Tons of Soil Using a 4.25 CY Bucket

Net Application Rate = 30 (tons / 1000 tons soil)

% Moisture = 28.6%

Bulk Density = 0.6321 (tons / CY)

Bucket Size = 4.25 (CY) <-- 950 Loader Bucket

% Rock					
0%	10%	20%	30%	40%	50%
Lime Rate (tons/acre)					
64	58	51	45	38	32
Lime Rate (CY/acre)					
101	91	81	71	61	51

Treatment Depth (inches)	Application Area (Sq. Ft.)					
6	1831	2034	2288	2615	3051	3661
8	1373	1526	1716	1962	2288	2746
10	1098	1220	1373	1569	1831	2197
12	915	1017	1144	1308	1526	1831
14	785	872	981	1121	1308	1569
16	687	763	858	981	1144	1373
18	610	678	763	872	1017	1220
20	549	610	687	785	915	1098
22	499	555	624	713	832	999
24	458	509	572	654	763	915
26	422	469	528	604	704	845
28	392	436	490	560	654	785
30	366	407	458	523	610	732
32	343	381	429	490	572	687
34	323	359	404	462	538	646
36	305	339	381	436	509	610

Treatment Depth (inches)	Application Depth (inches)					
6	0.75	0.68	0.60	0.53	0.45	0.38
8	1.00	0.90	0.80	0.70	0.60	0.50
10	1.25	1.13	1.00	0.88	0.75	0.63
12	1.50	1.35	1.20	1.05	0.90	0.75
14	1.76	1.58	1.40	1.23	1.05	0.88
16	2.01	1.81	1.60	1.40	1.20	1.00
18	2.26	2.03	1.81	1.58	1.35	1.13
20	2.51	2.26	2.01	1.76	1.50	1.25
22	2.76	2.48	2.21	1.93	1.65	1.38
24	3.01	2.71	2.41	2.11	1.81	1.50
26	3.26	2.93	2.61	2.28	1.96	1.63
28	3.51	3.16	2.81	2.46	2.11	1.76
30	3.76	3.38	3.01	2.63	2.26	1.88
32	4.01	3.61	3.21	2.81	2.41	2.01
34	4.26	3.84	3.41	2.98	2.56	2.13
36	4.51	4.06	3.61	3.16	2.71	2.26

0:45:0 Fertilizer Application Rate PER 4.25 CY Bucket of Lime						
Lbs/Cup =	0.54	6.4	Lbs	OR`	11.9	Cups

For Use On Fluvial Deposits With A Net Application Rate Of 30 Tons of Lime / 1000 Tons of Soil Using a 1 CY Bucket

Net Application Rate = 30 (tons / 1000 tons soil)

% Moisture = 28.6%

Bulk Density = 0.6321 (tons / CY)

Bucket Size = 1 (CY) <-- Excavator

% Rock					
0%	10%	20%	30%	40%	50%
Lime Rate (tons/acre)					
64	58	51	45	38	32
Lime Rate (CY/acre)					
101	91	81	71	61	51

Treatment Depth (inches)	Application Area (Sq. Ft.)					
6	431	479	538	615	718	862
8	323	359	404	462	538	646
10	258	287	323	369	431	517
12	215	239	269	308	359	431
14	185	205	231	264	308	369
16	162	179	202	231	269	323
18	144	160	179	205	239	287
20	129	144	162	185	215	258
22	117	131	147	168	196	235
24	108	120	135	154	179	215
26	99	110	124	142	166	199
28	92	103	115	132	154	185
30	86	96	108	123	144	172
32	81	90	101	115	135	162
34	76	84	95	109	127	152
36	72	80	90	103	120	144

Treatment Depth (inches)	Application Depth (inches)					
6	0.75	0.68	0.60	0.53	0.45	0.38
8	1.00	0.90	0.80	0.70	0.60	0.50
10	1.25	1.13	1.00	0.88	0.75	0.63
12	1.50	1.35	1.20	1.05	0.90	0.75
14	1.76	1.58	1.40	1.23	1.05	0.88
16	2.01	1.81	1.60	1.40	1.20	1.00
18	2.26	2.03	1.81	1.58	1.35	1.13
20	2.51	2.26	2.01	1.76	1.50	1.25
22	2.76	2.48	2.21	1.93	1.65	1.38
24	3.01	2.71	2.41	2.11	1.81	1.50
26	3.26	2.93	2.61	2.28	1.96	1.63
28	3.51	3.16	2.81	2.46	2.11	1.76
30	3.76	3.38	3.01	2.63	2.26	1.88
32	4.01	3.61	3.21	2.81	2.41	2.01
34	4.26	3.84	3.41	2.98	2.56	2.13
36	4.51	4.06	3.61	3.16	2.71	2.26

0:45:0 Fertilizer Application Rate PER 1 CY Bucket of Lime					
Lbs/Cup =	0.54	1.5	Lbs	OR`	2.8	Cups

For Use On Fluvial Deposits With A Net Application Rate Of 60 Tons of Lime / 1000 Tons of Soil Using a 3.25 CY Bucket

Net Application Rate = 60 (tons / 1000 tons soil)

% Moisture = 28.6%

Bulk Density = 0.6321 (tons / CY)

Bucket Size = 3.25 (CY) <-- 938 Loader Bucket

% Rock					
0%	10%	20%	30%	40%	50%
Lime Rate (tons/acre)					
128	115	102	89	77	64
Lime Rate (CY/acre)					
202	182	162	142	121	101

Treatment Depth (inches)	Application Area (Sq. Ft.)					
6	700	778	875	1000	1167	1400
8	525	583	656	750	875	1050
10	420	467	525	600	700	840
12	350	389	437	500	583	700
14	300	333	375	429	500	600
16	262	292	328	375	437	525
18	233	259	292	333	389	467
20	210	233	262	300	350	420
22	191	212	239	273	318	382
24	175	194	219	250	292	350
26	162	179	202	231	269	323
28	150	167	187	214	250	300
30	140	156	175	200	233	280
32	131	146	164	187	219	262
34	124	137	154	176	206	247
36	117	130	146	167	194	233

Treatment Depth (inches)	Application Depth (inches)					
6	1.50	1.35	1.20	1.05	0.90	0.75
8	2.01	1.81	1.60	1.40	1.20	1.00
10	2.51	2.26	2.01	1.76	1.50	1.25
12	3.01	2.71	2.41	2.11	1.81	1.50
14	3.51	3.16	2.81	2.46	2.11	1.76
16	4.01	3.61	3.21	2.81	2.41	2.01
18	4.51	4.06	3.61	3.16	2.71	2.26
20	5.01	4.51	4.01	3.51	3.01	2.51
22	5.52	4.96	4.41	3.86	3.31	2.76
24	6.02	5.42	4.81	4.21	3.61	3.01
26	6.52	5.87	5.21	4.56	3.91	3.26
28	7.02	6.32	5.62	4.91	4.21	3.51
30	7.52	6.77	6.02	5.27	4.51	3.76
32	8.02	7.22	6.42	5.62	4.81	4.01
34	8.52	7.67	6.82	5.97	5.11	4.26
36	9.03	8.12	7.22	6.32	5.42	4.51

0:45:0 Fertilizer Application Rate PER 3.25 CY Bucket of Lime						
Lbs/Cup =	0.54	2.5	Lbs	OR	4.6	Cups

For Use On Fluvial Deposits With A Net Application Rate Of 60 Tons of Lime / 1000 Tons of Soil Using a 1 CY Bucket

Net Application Rate = 60 (tons / 1000 tons soil)

% Moisture = 28.6%

Bulk Density = 0.6321 (tons / CY)

Bucket Size = 1 (CY) <-- Excavator

% Rock					
0%	10%	20%	30%	40%	50%
Lime Rate (tons/acre)					
128	115	102	89	77	64
Lime Rate (CY/acre)					
202	182	162	142	121	101

Treatment Depth (inches)	Application Area (Sq. Ft.)					
6	215	239	269	308	359	431
8	162	179	202	231	269	323
10	129	144	162	185	215	258
12	108	120	135	154	179	215
14	92	103	115	132	154	185
16	81	90	101	115	135	162
18	72	80	90	103	120	144
20	65	72	81	92	108	129
22	59	65	73	84	98	117
24	54	60	67	77	90	108
26	50	55	62	71	83	99
28	46	51	58	66	77	92
30	43	48	54	62	72	86
32	40	45	50	58	67	81
34	38	42	48	54	63	76
36	36	40	45	51	60	72

Treatment Depth (inches)	Application Depth (Inches)					
6	1.50	1.35	1.20	1.05	0.90	0.75
8	2.01	1.81	1.60	1.40	1.20	1.00
10	2.51	2.26	2.01	1.76	1.50	1.25
12	3.01	2.71	2.41	2.11	1.81	1.50
14	3.51	3.16	2.81	2.46	2.11	1.76
16	4.01	3.61	3.21	2.81	2.41	2.01
18	4.51	4.06	3.61	3.16	2.71	2.26
20	5.01	4.51	4.01	3.51	3.01	2.51
22	5.52	4.96	4.41	3.86	3.31	2.76
24	6.02	5.42	4.81	4.21	3.61	3.01
26	6.52	5.87	5.21	4.56	3.91	3.26
28	7.02	6.32	5.62	4.91	4.21	3.51
30	7.52	6.77	6.02	5.27	4.51	3.76
32	8.02	7.22	6.42	5.62	4.81	4.01
34	8.52	7.67	6.82	5.97	5.11	4.26
36	9.03	8.12	7.22	6.32	5.42	4.51

0:45:0 Fertilizer Application Rate PER 1 CY Bucket of Lime						
Lbs/Cup =	0.54	0.8	Lbs	OR	1.4	Cups

SUPER-CROP

50 LBS. (22.7 kg) **NET WT.**

fertilizer

super phosphate

GUARANTEED ANALYSIS	
NITROGEN (N)	0%
AVAIL. PHOSPHORIC ACID (P_2O_5)	45%
SOLUBLE POTASH (K_2O)	0%
SULFUR (Combined) (S)	%
IRON (Fe)	%

AMERICAN PRIDE CO-OP

HENDERSON, COLORADO 80640

DIRECTIONS FOR USE:

GENERAL - Phosphate is one of the 3 major plant nutrients. Phosphate base fertilizers are used as a root and shoot stimulant for new lawn sites. Phosphates are generally highly water insoluble and therefore do not move very much through the soil. For best results, phosphates should be applied at the rate of 10-15 lbs. per 1000 square feet and mixed well in the top 6-8 inches of soil with a roto-tiller, disc, harrow, etc. This rate can be used for new lawn sites, in vegetable and flower gardens.

- High rates can be applied without injuring the plant.

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record

Fluvial Deposit/Irrigated Meadows Polygon: FA-FB

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
FA-12	0.0	19.2	19.3	7.1
FA-30 FB-3	0.0	21.9	19.3	7.2
~~FB-4~~ mud	0.0	19.1	19.6	7.1
FA-18 ~~FA-36~~ mud	0.0	20.8	19.3	6.9
FA-7	0.0	20.0	19.9	7.0
Dupe (FB-4)	0.0	17.8	17.1	7.0
		mud		

Name/Signature: [signature]

Date: 11-11-08

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record FA-FB

Fluvial Deposit/Irrigated Meadows Polygon:

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
FA-28	0.0	18.4	36.18.2	7.3
FB-6	0.0	17.7	16.8	7.5

Name/Signature: [signature]

Date: 11-20-08

Activity Tracking Form
Fluvial Deposits
Spread and Incorporate Lime and Fertilizer

Fluvial Deposit Polygon Name/ID: FA-FB

Activity Start Date: 09-18-08

Activity End Date: 11-12-08

Activities Verified As Completed (indicate NA if appropriate)

Lime Application

✓ EPA calculated field application rate based on material quality, rock content & depth

Lime rate = _____ tons/acre Varied as FA-FB was completed in Sections See Attached

NA EPA and/or PWT was present for lime spreader calibrations. Lime Spreader was not utilized (excavator)

NA Lime was spread across the remediation area at the calculated field lime application rate using a calibrated spreader **(Attach calibration sheets)**

✓ The application rate was varied across the deposit due to the varying depth of mine waste as shown on the FDSS and as determined from test pits excavated during the pre-remediation walk-through.

✓ Lime was not spread in any areas with standing water, that was cemented, consolidated, caked, or frozen.

✓ Lime was not spread under windy conditions where wind was sufficient to blow lime off the ground surface before it could be tilled.

✓ Lime was not spread just before or during significant rain events.

✓ Lime was not applied on vegetation outside remediation areas.

Fertilizer Application

✓ Fertilizer had a nitrogen:phosphorous:potassium (N:P:K) ratio of 0:45:0. **(Attach copy of fertilizer certification)**

✓ EPA calculated field application rate based on material quality, rock content & depth

Fertilizer rate = 1.4 cues ~~pounds/acres~~ 1 yd³ bucket lime

✓ Fertilizer was spread to achieve a net application rate of 70 pounds of P2O5/1000 tons of soil (i.e., per 6 inches of remediation depth). The field application rate for 0:45:0 fertilizer was 153 pounds of fertilizer per acre per 6 inches of remediation depth. If a different fertilizer was used, EPA calculated different application rates.

NA EPA and/or PWT was present for fertilizer spreader calibrations. Calibrations not performed

NA Fertilizer was spread across the remediation area at the calculated field fertilizer application rate using a calibrated spreader. **(Attach daily calibration sheets)** Spreader not utilized

✓ Fertilizer was applied uniformly at the specified rate. Fertilizer was not spread in any areas

Activity Tracking Form
Fluvial Deposits
Spread and Incorporate Lime and Fertilizer

Fluvial Deposit Polygon Name/ID: FA-FB

with standing water, that was cemented, consolidated, caked, or frozen.

✓ Fertilizer was not spread under windy conditions where wind was sufficient to blow fertilizer off the ground surface before it could be tilled.

✓ Fertilizer was not spread just before or during significant rain events.

Mixing of Lime and Fertilizer

✓ Lime and fertilizer were incorporated into the soil at least 6" as soon as possible after spreading, and always by the end of the day it was spread.

✓ Lime and fertilizer were mixed to the full remediation depth as determined by EPA and directed by PWT. The tolerance for mixing depth is generally prescribed depth minus 2 inches with a minimum remediation depth of 6 inches. Wider variations in mixing depth were only allowed if rocky depositions, the water table, or other restrictive conditions were encountered. If rocky deposits, the water table, or other restrictions were encountered, PWT was notified immediately, and the area or restriction delineated. EPA determined revised mixing depth if restrictive conditions occurred.

✓ Lime and fertilizer were mixed to the full depth of contamination without unnecessarily incorporating alluvial materials (rocks, sand, and gravel).

✓ Lime and fertilizer were thoroughly mixed IAW accepted mixing methods proposed by the Subcontractor. **(Attach copies of field confirmation testing data)**

NA Survey was done at accepted coordinate points to verify mixing depth. PWT and/or EPA were present during Subcontractor survey for remediation depth verification. Treatment depth measured in In-situ pH test pits.

Quantity of Lime Applied: _____

Quantity of Fertilizer Applied: _____

Quantity of Work Estimated in Proposal: _____

Quantity of Work Performed: 1.83 acres

Survey Data/Date: 09-09-08 ~~1.83 acres~~ AM

Note: Attach copies of daily calibration records, fertilizer cert, field pH testing and survey data

[signature] 17-09-08
Signature of Contractor Date

[signature] 17-09-08
Signature of Subcontractor Date

PWT
PACIFIC WESTERN TECHNOLOGIES, LTD.

10-21-08 FA/FB Fluvial Deposit.

S. Jennings & J. Feiler (Frontier) Determined Compost Application for West Side of FA/FB (Areas 28 thru 33 - see Map)

Area is Inaccessible to Rome Harrow & Tractor amongst willows on streambank. Therefore, objective was to spread compost with Front End Loader and incorporate Compost to 12" Depth with Excavator.

Calculation of Total yd^3 Compost:

Areas 28 thru 33 → 5400 sq ft or 0.124 acres

Target Application on Surface for 12" Treatment: 2.75" thickness

$$\frac{2.75"}{12"} \times 5400\,ft^2 / 27\,ft^3/1\,yd^3 \approx \boxed{45.6\,yd^3} \text{ Compost}$$

or 12" Treatment Design Rate $334\,yd^3$ (Used For Smith 3 and 4 recently based on compost moisture content)

$$\frac{334\,yd^3}{1\,acre} \times \frac{0.124\,acres}{} = \boxed{41\,yd^3} \text{ Compost}$$

∴ Frontier placed 11 - 950 Loader Buckets ($4.25\,yd^3$/Bucket)

or $\boxed{46\,yd^3}$ Compost in Target Area.

10-23-08

PWT
PACIFIC WESTERN TECHNOLOGIES, LTD.

10-28-08

Calculation YD³ Compost to Reel 7 to FB "Island"

Treated Area w/Lime Measured: 4139 sq ft

Additional: 12 YD³ or 325 sq ft @ 12" depth excavated Contaminated soil @ Streambank

4464 sq ft treat w/compost to 12" depth @ appl. rate of 334 YD³/acre

$$4464 \text{ sq ft} \times \frac{1 \text{ acre}}{43560 \text{ sq ft}} = 0.102 \text{ acres} \times \frac{334 \text{ YD}^3}{\text{acre}}$$

∴ 34 YD³ Compost applied to FB "Island"

JRW
10-29-08

PWT
PACIFIC WESTERN TECHNOLOGIES, LTD.

10-31-08 FA/FB Type II Streambank

Excavated 1' to Cobble 10' wide; Observed Alluvium (appeared uncontaminated)

40' Streambank Restoration Length; however, ~~Saturday~~ Sunday ~~with~~ one Willow ~~tree~~ remain in place

12" x 35 x 10 - (Willow = 48 sq ft) = 302/27 = 11 yd³

11 yd³ with 85% rock; 12" deep Ft; ~~25~~ 302

Factor 120 2.5 yd³ Line

3.5 Cuys Feet

302 yd³ / 43560 .006 acres x 394 yd³/Acre

2.3 yd³ Compost.

PWT

PACIFIC WESTERN TECHNOLOGIES, LTD.

11-12-08 Compost Calc FA-FB Areas 3 thru 7

3	400 sq ft	} Limit 12 + 4" Depth
4	400 "	
5	388 "	
6	368 "	
7	374 "	

1930 ft² — 12" Treatment w/ compost

$\frac{1930 ft^2}{43560}$ = 0.044 acres × 334 yd³/acre = 15 yd³ Compost

---

11-12-08 Compost Calc. FA-FB for FB-2 and portion of FB-3 inaccessible to Rotary Mowers & Spreading Equipment

FB-2 432 ft² 8" Treatment

Portion FB-3 ½ × 77 × 32 = 1232 ft² 12" Treatment

1,664 ft²

FB-2 Portion: $\frac{432}{43560}$ = 0.0099 acres × 334 yd³/acre = 3.3 yd³ × .67 (8" Treatment) ≈ 2 yd³

FB-3 Portion: $\frac{1232}{43560}$ = 0.028 acres × 334 yd³/acre = 9.3 yd³

Total: 11.5 yd³

COMPOST SPREADER CALIBRATION

- Place a known volume into the spreader hopper.
- Set the equipment to the desired settings as determined by the Frontier Site Superintendent (e.g., guillotine door opening, dampening gate opening, travel speed, RPMs, etc.)
- Make one pass dispersing the compost until the contents of the spreader are emptied.
- Measure the area over which the compost was applied.
- Divide the volume of material applied by the total area it was applied to determine the Calibrated Application Rate in yd^3/acre.
- Divide the Design Application Rate by the Calibrated Application Rate to determine the number of passes required.
- Repeat.

Compost Spreader Calibration Record

Date: 11-19-08 Time: 07:40

Irrigated Meadow / Fluvial Deposit Polygon ID: FA - FB

Design Application Rate: 334 (yd^3/acre)

Calibration Data for one load of compost:

	Test Run 1	Test Run 2	Average
Compost Quantity (yd^3)			6.50
Compost was spread over (ft^2) 46 X 17	782	56 x 18 900	841
Calibration area (acres)			0.019
Calibrated Application Rate (yd^3/acre)			342

Quality Control Data for Field Application Verification:

(A) Design Application Rate: 334 (yd^3/acre)

(B) Average Calibrated Application Rate: 342 (yd^3/acre)

Passes to be Applied: ~~>~~ 1 passes (= A/B)

Print / Sign Name: Clay E. Combrink / Clay E. Combrink
Frontier Representative

Print / Sign Name: _____
PWT / EPA Representative

Activity Tracking Form
Fluvial Deposits
Spread and Incorporate Organic Material

Fluvial Deposit Polygon Name/ID: FA-FB

Activity Start Date: 10-21-08

Activity End Date: 11-19-08

Activities Verified As Completed (indicate NA if appropriate)

✓ Amendments have been applied at a field application rate calculated by EPA and as directed PWT. Calculated application rate was 334 yd3 tons/acre

✓ Organic amendment was spread evenly across the remediation area using a calibrated agricultural manure spreader or other accepted equipment. **(Attach calibration records)** Areas inaccessible to spreader were corrected using excavator

✓ Organic amendment was applied in a uniform manner and was not applied to areas with standing or flowing water or on frozen soil. Rutting and compaction of the soil were minimized.

✓ Organic amendment was not spread under windy conditions where wind was sufficient to blow organic amendment off the ground surface before it could be tilled.

✓ Organic amendment was not spread just before or during significant rain events.

* Organic material was mixed to the full remediation depth, or to 12 inches, whichever was less. The tolerance for mixing is generally – 2 inches (2 inches less than specified) with a minimum remediation depth of 6 inches. Some Areas < 12" treatment were treated with 12" compost

✓ Organic amendment that was spread was mixed by the end of each day.

NA Survey was done at accepted coordinate points to verify mixing depth. PWT and/or EPA was present during Subcontractor survey for remediation depth verification. Surveys not conducted

The number of test pits installed to verify adequate mixing was 2 post-remediation samples

NA EPA \ PWT conducted visual inspections and field tests to verify adequate incorporation of organic amendment.

Quantity of Organic Amendment Applied: _____

Quantity of Work Estimated in Proposal: _____

Quantity of Work Performed: 1.83 acres

Survey Data/Date: 09-09-08

Note: Attach copies of the daily calibration records and survey data to this form

Signature of Contractor _____ Date 12-09-08

Signature of Subcontractor _____ Date 12-09-08

Activity Tracking Form
Fluvial Deposits
Replacement of Erosion Channels

Fluvial Deposit Polygon Name/ID: FA-FB

Activity Start Date: NA

Activity End Date: NA

Activities Verified As Completed (indicate NA if appropriate)

NA Using pre-remediation demarcation information, reconstructed, to the extent practicable, the erosion channels in the same locations, extent, and width as present before implementation of the remedy. No channels pre-existed in FA-FB

NA Replacement channels were constructed at grades necessary to restore the original flow pattern.

NA Carex or young willows were transplanted in the erosion channels, as determined appropriate by EPA and directed by the Contractor. Reference Specification Section 02 96 00

Survey Data/Date: 09-09-08

Note: Attach copies of survey data to this form

Signature of Contractor — Date: 12-09-08

Signature of Subcontractor — Date: 12-09-08

Activity Tracking Form
Type 3 Streambank Stabilization

Streambank Segment ID: FA-FB

Activity Start Date: 10-20-08

Activity End Date: 10-24-08

Activities Verified As Completed (indicate NA if appropriate)

✓ Completed pre-remediation site walk and final delineation of remediation boundaries.

✓ Healthy vegetation and wetland areas not to be disturbed were delineated and marked.

✓ Borrow sources for willows were determined by EPA and marked by subcontractor.

NA Stormwater, sediment and erosion controls were in place before starting work and maintained.
Not required this area

✓ Salvaged transplants (Willows and/or carex) were either transplanted as defined below with 12 hours of salvage or relocated to an on-site nursery and watered per an approved watering plan.

✓ Willow Transplanting Completed

- ✓ Willow borrow areas were marked by EPA and identified during the pre-remediation/ stabilization site walk for each Fluvial Deposit.
- ✓ Willows were not excavated 50' of the Arkansas River or 10' of a tributary/distributary channel without approval by EPA and directed by PWT.
- ✓ Identified willows were carefully excavated with up to a 30-inch diameter root ball. The size of the willow transplant dictated the size of the required root ball.
- ✓ If willows were growing in mine waste, minimized the amount of contaminated soil from around the roots prior to transplanting.
- NA Young willows were excavated together and divided into smaller plant groups.
- ✓ When planting willows, excavated a 48-inch hole to within 6-12 inches of the water table where the willow was placed, placed the root wad in the hole, surrounded with clean fill (or treated mine waste in locations without clean fill).
- ✓ If smaller willows were salvaged, depth of planting was approximately twice the diameter of the root ball. Lightly compacted adjacent soil.
- ✓ For tipped willows, placed a mature willow with branches extended into the Arkansas River with stems pointing downstream at a 45 degree angle, and the root was firmly planted and anchored in soil.
- NA Willows were planted in the transition zone (10' - 30' from bank).
Trial (demonstration) type III as per S. Jennings
10' transition zone did not exist

Activity Tracking Form
Type 3 Streambank Stabilization

Streambank Segment ID: FA-FB

✓ Transplants placed during dormant periods do not require watering. Weekly watering may be required for transplants during hotter, drier periods.
(Attach copies of water metering logs)

NA Carex Transplants Performed – **not typically required**. However, if mature willows were not available for salvage and transplant, small willow saplings intergrown with Carex were salvaged similar to the Carex sod salvage for Types 1 and 2. Carex transplants was only conducted where determined to be appropriate by EPA and directed by PWT.

Quantity of Work Estimated in Proposal: 400' AND

Quantity of Work Performed: 160'

Survey Data/Date: 09-09-08

Note: Attach copies of the water metering records and survey data to this form

Signature of Contractor — Date: 12-09-08

Signature of Subcontractor — Date: 12-09-08

Activity Tracking Form
Type 1 Streambank Stabilization

Streambank Segment ID: FA-FB

Activity Start Date: 10-23-08

Activity End Date: 10-31-08

Activities Verified As Completed (indicate NA if appropriate)

✓ Completed pre-remediation site walk and final delineation of remediation boundaries.

✓ Healthy vegetation and wetland areas not to be disturbed were delineated and marked.

✓ Borrow sources for willows and Carex were determined by EPA and marked by subcontractor.

✓ Local borrow sources for soil were identified near the Streambank segment areas

NA Stormwater, sediment and erosion controls were in place before starting work and maintained.

✓ Mine waste within 10 feet of the bank that has been excavated and replaced with clean fill.

_____ Rock Roll/Cylindrical Gabion Installation Complete

- ✓ Cobble / gravel in rock roll is generally > 2" diameter (smaller ok if stays inside mesh) & rolls are ~ 1.5' in diameter and minimum of 10' long.
- ✓ Rock rolls were transported to SBS location ~~with~~ dragging or other damaging means without pins
- ✓ Placed rock roll/cylinder gabion as shown on the Drawings and FDSS such that the top elevation of the roll was approximately equivalent to the mean high water elevation.
- ✓ Anchored the roll using 36" #5 rebar pins. The rebar pins were pounded into the rock roll on 6-foot centers until the 1" (min) ~~flat washer~~ made contact with the top of the rock roll. Rebar pins did not deviate more than 20 degrees from vertical. Anchor pins penetrated the soil a minimum of 12-inches. Ensured the rock roll/cylinder gabion was anchored into the bank at the upstream and downstream ends of the reconstructed bank to inhibit erosion at these key points. No washers, Bent ends sufficient

✓ Biolog/Coir roll (or equivalent) Installation Complete

- ✓ Biolog/Coir roll were certified as weed free **(Attach copy of certification)**
- ✓ Biolog/Coir rolls were 12-inch (nominal) diameter, 10 feet minimum length with ~ 10% extra length for end effects. Weight was 3 pounds per foot minimum.
- ✓ Biologs/Coir rolls were placed behind the rock roll as shown on the Drawings and FDSS, or as determined by EPA and directed by PWT. Biologs/Coir Rolls were embedded

Activity Tracking Form
Type 1 Streambank Stabilization

Streambank Segment ID: FA - FB

~ 3 to 4 inches into the soil in continuous contact with soil. Biologs/Coir roll mid-point was installed at the top elevation of the rock roll. If necessary, clean fill was placed prior to installation of the Biologs/Coir roll to allow accurate placement.

✓ Biologs/Coir Rolls were anchored with 32" #4 rebar pins. The rebar pins were placed on 6' centers until the 1" (min) flat washer ~~made~~ contact with the top of the Biologs/Coir roll. Rebar pins did not deviate more than 20 degrees from vertical. Anchor pins penetrated the soil a minimum of 12-inches. Hooked ends sufficient

✓ Salvaged transplants (Carex & willows) were either transplanted as defined below ~~with~~ immediately ~~12 hours~~ of ~~salvage or relocated to an on-site nursery and watered per an approved~~ watering plan.

✓ Willow Transplanting Completed

✓ Willows were not excavated 50' of the Arkansas River or 10' of a tributary/distributary channel without approval by EPA and directed by PWT.

✓ Identified willows were carefully excavated with up to a 30-inch diameter root ball. The size of the willow transplant dictated the size of the required root ball.

✓ If willows were growing in mine waste, minimized the amount of contaminated soil from around the roots prior to transplanting.

NA Young willows were excavated together and divided into smaller plant groups.

✓ When planting willows, excavated a 48-inch hole to within 6-12 inches of the water table where the willow was placed, placed the root wad in the hole, surrounded with clean fill (or treated mine waste in locations without clean fill).

✓ If smaller willows were salvaged, depth of planting was approximately twice the diameter of the root ball. Lightly compacted adjacent soil.

✓ For tipped willows, placed a mature willow with branches extended into the Arkansas River with stems pointing downstream at a 45 degree angle, and the root was firmly planted and anchored in soil.

✓ Willows were planted in the transition zone (10' - 30' from bank).

NA Transplants placed during dormant periods do not require watering. Weekly watering may be required for transplants during hotter, drier periods.
(Attach copies of water metering logs) — No watering required metered

✓ Carex Transplanting Completed

✓ Carex was salvaged from Fluvial Deposits prior to stabilization or from adjacent wet areas.

✓ Soil containing Carex was excavated to a depth of at least 4 inches

Activity Tracking Form
Type 1 Streambank Stabilization

Streambank Segment ID: FA-FB

N/A If Carex was rooted in soil identified as contaminated, shook Carex to remove loose soil/mine waste prior to placement. The root mat was salvaged along with the above ground green vegetation (conceptually a thick sod).

✓ Carex was transplanted onto the 10-foot streambank treatment zone.

✓ Placed pieces of sod to form a jigsaw puzzle of sod blocks fitted together to achieve greater than 80% vegetation cover of the reconstructed streambank. Wooden anchoring stakes were used to anchor the sod if sod blocks were susceptible to erosion.

✓ Wooden anchor stakes were 18" x 1.5" x 0.75" minimum

✓ Carex transplants were watered immediately after placement and again approximately 24 hours after placement.

N/A Weekly watering was required for transplants placed during hot, dry periods. **(Attach copies of water metering logs)**

✓ Bare ground was broadcast seeded with seed mix from Table FD-3 and raked in ~ 0.5". **(Attach copy of seed certification)**

Quantity of Work Estimated in Proposal: ~~70'~~ 40'

Quantity of Work Performed: 70'

Survey Data/Date: 09-09-08

Note: Attach copies of the watering records (inc. metering records for daily), weed free certifications, seed mix certifications, and survey data to this form

Signature of Contractor — Date: 12-09-08

Signature of Subcontractor — Date: 12-09-08

Activity Tracking Form
Type 2 Modified Streambank Stabilization
Type 2 - Modified (Excluded Mine Waste Excavation)

Streambank Segment ID: FA-FB

Activity Start Date: 10-31-08

Activity End Date: 11-04-08

Activities Verified As Completed (indicate NA if appropriate)

✓ Completed pre-remediation site walk and final delineation of remediation boundaries.

✓ Healthy vegetation and wetland areas not to be disturbed were delineated and marked.

✓ Borrow sources for willows and Carex were determined by EPA and marked by subcontractor.

✓ Local borrow sources for soil were identified near the Streambank segment areas

NA Stormwater, sediment and erosion controls were in place before starting work and maintained.
Not required for this area

✓ Mine waste within 10 feet of the bank that has been amended (lime, fert, compost) and lightly compacted.

✓ Biolog/Coir roll (or equivalent) Installation Complete

- ✓ Biolog/Coir roll were certified as weed free **(Attach copy of certification)**
- ✓ Biolog/Coir rolls were 12-inch (nominal) diameter, 10 feet minimum length with ~ 10% extra length for end effects. Weight was 3 pounds per foot minimum.
- ✓ Biologs/Coir rolls were placed behind the rock roll as shown on the Drawings and FDSS, or as determined by EPA and directed by PWT. Biologs/Coir Rolls were embedded approximately 3 to 4 inches into the soil and in continuous contact with the soil. The Biologs/Coir roll mid-point was installed at approximately the top elevation of the rock roll. If necessary, clean fill was placed prior to installation of the Biologs/Coir roll to allow accurate placement.
- ✓ Biologs/Coir Rolls were anchored with 32" #4 rebar pins. The rebar pins were placed on 6-foot centers until the 1" (min) ~~flat washer made~~ contact with the top of the Biologs/Coir roll. Rebar pins did not deviate more than 20 degrees from vertical. Anchor pins penetrated the soil a minimum of 12-inches. Anchor pins appropriate

✓ Salvaged transplants (Carex & willows) were either transplanted immediately as defined below with ~~12 hours of~~ salvage or ~~relocated to an on-site nursery and~~ watered per an approved watering plan.

✓ Willow Transplanting Completed

- ✓ Willow borrow areas were marked by EPA and identified during the pre-remediation/ stabilization site walk for each Fluvial Deposit.

Activity Tracking Form
Type 2 Modified Streambank Stabilization
Type 2 - Modified (Excluded Mine Waste Excavation)

Streambank Segment ID: FA - FB

✓ Willows were not excavated 50' of the Arkansas River or 10' of a tributary/distributary channel without approval by EPA and directed by PWT.

✓ Identified willows were carefully excavated with up to a 30-inch diameter root ball. The size of the willow transplant dictated the size of the required root ball.

✓ If willows were growing in mine waste, minimized the amount of contaminated soil from around the roots prior to transplanting.

N/A Young willows were excavated together and divided into smaller plant groups.

✓ When planting willows, excavated a 48-inch hole to within 6-12 inches of the water table where the willow was placed, placed the root wad in the hole, surrounded with clean fill (or treated mine waste in locations without clean fill).

✓ If smaller willows were salvaged, depth of planting was approximately twice the diameter of the root ball. Lightly compacted adjacent soil.

N/A For tipped willows, placed a mature willow with branches extended into the Arkansas River with stems pointing downstream at a 45 degree angle, and the root was firmly planted and anchored in soil.

✓ Willows were planted in the transition zone (10' - 30' from bank).

✓ Transplants placed during dormant periods do not require watering. Weekly watering may be required for transplants during hotter, drier periods.
(Attach copies of water metering logs)

✓ Carex Transplanting Completed

✓ Carex was salvaged from Fluvial Deposits prior to stabilization or from adjacent wet areas.

✓ Soil containing Carex was excavated to a depth of at least 4 inches

N/A If Carex was rooted in soil identified as contaminated, shook Carex to remove loose soil/mine waste prior to placement. The root mat was salvaged along with the above ground green vegetation (conceptually a thick sod).

✓ Carex was transplanted onto the 10-foot streambank treatment zone.

✓ Placed pieces of sod to form a jigsaw puzzle of sod blocks fitted together to achieve greater than 80% vegetation cover of the reconstructed streambank. Wooden anchoring stakes were used to anchor the sod if sod blocks are susceptible to erosion.

✓ Wooden anchor stakes were 18" x 1.5" x 0.75" minimum

Activity Tracking Form

Type 2 Modified Streambank Stabilization

Type 2 - Modified (Excluded Mine Waste Excavation)

Streambank Segment ID: FA - FB

✓ Carex transplants were watered immediately after placement and again approximately 24 hours after placement.

✓ Bare ground was broadcast seeded with seed mix from Table FD-3 and raked in ~ 0.5". **(Attach copy of seed certification)**

NA Weekly watering was required for transplants placed during hot, dry periods. **(Attach copies of water metering logs)**

Quantity of Work Estimated in Proposal: ~~40' FA+B~~

Quantity of Work Performed: 40' FA

Survey Data/Date:

Note: Attach copies of the watering records (inc. metering records for daily) and survey data to this form

Signature of Contractor — Date: 12-09-08

Signature of Subcontractor — Date: 12-09-08

Seeder Calibration Form

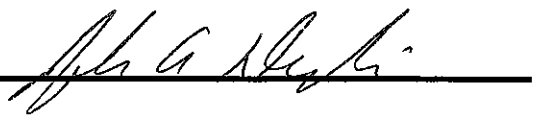
Calibration Form Instructions

1) Enter the Polygon ID, Polygon acreage, Calibration Date, Target seed rate(s), %PLS in each seed mix, and % seed in each each mix
2) Perform seeder calibration per the manufacturers' instructions 3 times and enter the total weight of bulk seed mix in grams collected for each seed box
3) For each individual calibration run, verify that the achieved rate is within ±20 % of the 1/2 Target Rate
4) After the 3rd calibration run, verify that the 3 Run Average rate is within ±10% of the 1/2 Target Rate

NOTE: The BLUE text shows the "calculated values" based on the entered data

Polygon ID FA-FB **Acres:** 1.89 **Date:** 11/20/08

	Seed Mix 1		Seed Mix 2	
Target Rate	10.00	lbs PLS / acre	1.29	lbs PLS / acre
% PLS in seed mix	87%		86%	
Dilution Factor	100%	(% seed)	100%	(% seed)
Target Application Rate	11.49	bulk pounds / acre	1.50	bulk pounds / acre
	21.7	Total bulk pounds	2.8	total bulk pounds
1/2 Target Rate (2 passes)	5.75	bulk pounds / acre	0.75	bulk pounds / acre
	10.9	1/2 of total bulk pounds	1.4	1/2 of total bulk pounds
Test Run 1	11.20	total grams in 3 bags	1.70	total grams in 3 bags
	5.60	bulk lbs/acre	0.85	bulk lbs/acre
Test Run 2	11.10	total grams in 3 bags	1.70	total grams in 3 bags
	5.55	bulk lbs/acre	0.85	bulk lbs/acre
Test Run 3	10.50	total grams in 3 bags	1.80	total grams in 3 bags
	5.25	bulk lbs/acre	0.90	bulk lbs/acre
3 Run Average	10.93	total grams in 3 bags	1.73	total grams in 3 bags
	5.47	bulk lbs/acre	0.87	bulk lbs/acre
For QC Checks:				
+20% of 1/2 Target Rate	6.90	bulk pounds / acre	0.90	bulk pounds / acre
-20% of 1/2 Target Rate	4.60	bulk pounds / acre	0.60	bulk pounds / acre
+10% of 1/2 Target Rate	6.32	lbs seed mix / acre	0.83	lbs seed mix / acre
-10% of 1/2 Target Rate	5.17	lbs seed mix / acre	0.68	lbs seed mix / acre

PWT Signature: 

Frontier Signature:

Arkansas Valley Seed

Supplying QUALITY Seed
With INTEGRITY Since 1945

PRELIMINARY INVOICE

Limitation of Warranty and Finance Charge Agreement are part of the terms and conditions of this sale. See back of this invoice.

www.avseeds.com
rabbitears@seedsolutions.com

Page Number	-	1
Date	-	11/17/08
Customer	-	445479
Brn/Plt	-	DEN
Related PO	-	
Order Nbr	-	2435312 SO
Invoice	-	

Sold To: FRONTIER ENVIRONMENTAL
5350 VIVAIN ST UNIT B
ARVADA CO 80002

Ship To: FRONTIER ENVIRONMENTAL
5350 VIVAIN ST UNIT B
ARVADA CO 80002

Tax ID:
Tax Cert:

Request Date	Customer P.O.	F.O.B.	Ship Via
11/14/08			DAN 303-908-7577 Inet

Description	Lot Number	Quantity Shipped	UM	Price	Extended Price	Tax
LARGE SEED MIX Native Grass Mix-Bulk 10 PLS#/ACRE @ $38.00 X 2 ACRES JOB: FLUVIAL DEPOSITS	2139134	23.0000	LB	3.3043	76.00	Y
SMALL SEED MIX Native Grass Mix-Bulk 1.29 PLS#/ACRE @ $24.00/ACRE X 2 ACRES JOB: FLUVIAL DEPOSITS	2139135	3.0000	LB	16.0000	48.00	Y

2008

		Sales Tax	Total Order
Terms Net 30 Days	Net Due Date 12/17/08	Tax Rt 3.620	4.49	128.49

Arkansas Valley Seed
4333 Hwy. 66
Longmont, CO 80504
(877) 907-3337
(970) 535-4522 Fax

Arkansas Valley Seed
4625 Colorado Blvd.
Denver, CO 80216
(877) 957-3337
(303) 320-7516 Fax

Arkansas Valley Seed
12th & Santa Fe Tracks
Rocky Ford, CO 81067
(719) 254-7469
(719) 254-4115 Fax

Colorado Seed
195 N. Washington
Monte Vista, CO 81144
(719) 852-3505
(719) 852-4942 Fax

Wilbers Seed
809 N. Broadway
Miller, SD 57362
(800) 952-2233
(605) 853-2639 Fax

Kind: LARGE SEED MIX
Lot: 2139144

Kind & Variety:	Pure%	Germ%	Origin:
WESTERN W/G, ROSANNA	58.12	90	WA
SLENDER W/G, SAN LUIS	37.89	92	WA

2008 Fluvial

Crop: .27% Inert: 3.73% Weed: .00% Net Wt: 23# (20 PLS#) 2 ACRES

Noxious Weed: None Found Test Date: 6/08

REMARKS: FRONTIER ENVIRONMENTAL
JOB: FLUVIAL DEPOSITS
ARKANSAS VALLEY SEED, 4333 HWY 66, LONGMONT CO 80504

Kind: SMALL SEED MIX
Lot: 2139135

Kind & Variety:	Purity:	Germ%	Origin:
CANADA BLUEGRASS, REUBENS	29.76	90	WA
REDTOP	20.57	97	WA
TUFTED HAIRGRASS	15.68	85	CAN
PRAIRIE JUNEGRASS	11.53	88	WA
BALTIC RUSH	7.62	87	CO
COMMON YARROW	7.02	96	OR
RYDBERG'S PENSTEMON	3.27	79	CA

2008 Fluvial

Crop: .32% Inert:2.66 % Weed: 1.58% Net Wt: 3# (2.58 PLS#) 2 ACRES

Noxious Weed: None Found Test Date: 6/08

REMARKS: FRONTIER ENVIRONMENTAL
JOB: FLUVIAL DEPOSITS
ARKANSAS VALLEY SEED, 4333 HWY 66, LONGMONT CO 80504

Activity Tracking Form
Fluvial Deposits
Seedbed Preparation and Seeding

Fluvial Deposit Polygon Name/ID: FA - FB

Activity Start Date: 11-19-08

Activity End Date: 11-20-08

Activities Verified As Completed (indicate NA if appropriate)

NA EPA and/or PWT has collected ~~and analyzed~~ grab soil samples to verify performance standards have been met. Samples were not analyzed before seeding.

Preparation of Seedbed

✓ Smoothed the seedbed by conducting additional mixing to the extent practical for effective seeding.

NA Rock removal from the seedbed was performed by the Subcontractor at the direction of the Contractor if the determination was made that the surface was too rocky to effectively seed following mixing of amendment.

✓ There were no soil clods greater than 4 inch in diameter.

✓ Seedbed was not excessively loose from mixing nor overly compacted by equipment traffic.

✓ No erosional features were present prior to seeding.

✓ Loosened areas compacted by weather or colonized by weeds resulting from time gaps between remediation and seeding, as necessary.

Seed Application

NA Lab samples show acid-base account and TOC test results in acceptable ranges before seeding (Above)

✓ Seedbed was evaluated immediately prior to seeding by PWT / EPA to ensure seedbed requirements were achieved and that the seedbed had not degraded since amendments were applied and mixed.

✓ Used the seed mix specified in Table FD-2 unless otherwise determined by EPA and directed by PWT.

✓ Applied seed at rates shown in the appropriate Seed Mix table (within 10 weight %). **(Attach calibration data)**

✓ Seed was not applied to areas with standing water, where the ground was frozen or covered in snow.

✓ Seed was not applied under windy conditions where wind was sufficient to blow seed off the ground surface.

✓ Did not seed just before or during significant rain events or during wet conditions

Activity Tracking Form
Fluvial Deposits
Seedbed Preparation and Seeding

Fluvial Deposit Polygon Name/ID: FA - FB

when seed equipment could cause ruts in the ground or prevent good seed placement.

✓ Areas were drill seeded wherever possible. Conducted drill seeding in 2 applications, each at half the seeding rates specified in Table FD-2 or other appropriate seeding tables. The direction of the second application was perpendicular to the first application. Drill seeding may have been accomplished in 1 application if the Subcontractor demonstrated, and EPA accepted, that the drilling technique technique results in acceptable seeding rates. ~~Seed mix may have been diluted with rice hulls~~ or other Contractor-accepted material, if necessary to achieve the lower seeding rate. For each acre seeded, checked the hopper and applicator tubes for clogged tubes and to verify even application rates. Checked periodically during drill seeding.

✓ Seed was applied to the appropriate depth of 0.25 to 0.5 inches when using drill seeding

✓ Broadcast seeding was applied in locations that could not be accessed by drill seeding equipment. Areas to be broadcast seeded were approved by PWT.

✓ Broadcast seeding was done at twice the drill seeding rate where applicable **(Attach calibration data)**

✓ The seed was raked (or equivalent) into the soil and was not covered by > 1" of soil.

Quantity of Seed Applied: 260 lbs. (Lg. & Sm.)

Quantity of Work Estimated in Proposal: _____

Quantity of Work Performed: _____

Survey Data/Date: _____

Note: Attach copies of the daily calibration records and survey data to this form

[signature] 12-09-08
Signature of Contractor Date

[signature] 12-09-08
Signature of Subcontractor Date

Note: FA - FB Re-seeded Using Drill Specs 10-16-09

Activity Tracking Form
Fluvial Deposits
Mulch Application

Fluvial Deposit Polygon Name/ID: FA-FB

Activity Start Date: 11-21-08

Activity End Date: 11-24-08

Activities Verified As Completed (indicate NA if appropriate)

✓ Mulch certified as weed free **(attached Certification documentation)**

✓ Mulch was stored properly and not degraded by water or other contaminants before use.

✓ Mulch was applied immediately after seeding unless the nature of the mulch required that it must be incorporated into the soil; in that case the mulch was applied before seeding.

NA If wood mulch/shredded wood fibers were applied, the application rate was 10 to 12 tons per acre, or 50 to 60 cubic yards per acre using a blower flail spreader, or other means that provide even distribution across the remediated area. Depending on the nature of the wood chips, they were left as a surface application, crimped or lightly disked into the top 2 inches to prevent dispersion **(Circle method used)**. Hand-applied approx. ½ Area

✓ If straw or native hay mulch was applied, the application rate was 2,000 pounds per acre using equipment specifically designed for application of mulch at a uniform rate to produce a mat covering the seed. Straw or native hay mulch was crimped using crimping equipment with round, blades approximately ¼-inch thick by 18 inches in diameter spaced 8 inches apart. The crimper was equipped with disc scrapers and had sufficient weight to force the vegetative mulch to a minimum depth of 3-inches into the soil. Crimped mulch within 24 hours of application. mulch crimped using D6 Dozer tracks.

NA Stormwater, sediment, and erosion control measures have remained in place throughout implementation of the remedy and have been maintained in good condition during and after mulch placement to prevent surface water run-on and run-off that may erode or otherwise damage the remediated area. Not required for this area

Quantity of Mulch Applied: 3780 lbs. / 75 bales

Quantity of Work Estimated in Proposal:

Quantity of Work Performed: 1.89 acres

Survey Data/Date: 09-09-08

Signature of Contractor — Date: 12-09-08

Signature of Subcontractor — Date: 12-09-08

COLORADO DEPARTMENT OF AGRICULTURE
DIVISION OF PLANT INDUSTRY
700 Kipling Street, Suite 4000
Lakewood, Colorado 80215-8000
(303) 239-4149

TRANSIT CERTIFICATE
WEED FREE FORAGE CROP CERTIFICATION ACT 35-27.5

TO WHO IT MAY CONCERN:

The forage crop, to which this Transit Certificate relates, has been officially certified according to the Colorado Weed Free Forage Crop Certification Act 35-27.5. Pursuant to those standards, the information below has been included in this Transit Certificate concerning said certification. The Certificate of Inspection relating to said forage crop is on file at the:

Colorado Department of Agriculture
Division of Plant Industry
700 Kipling Street, Suite 4000
Lakewood, Colorado 80215-8000
Telephone: (303) 239-4149
FAX: (303) 239-4177

Sec: 1, 1A
2, 6
FA-FB

PLEASE PRINT IN INK

Murray Farms — L.B. Murray
Grower's Name — Grower's Signature

Adams
County of Origin

Identify Forage Crop Type: Wheat Straw

634 — 10/28/08
Bales Sold — Date of Sale

IDENTIFICATION
INSPECTOR'S INITIALS DHF
GROWER'S INITIALS LBM.
FIELD NUMBER F-8
DATE 7/05/07

(Identification found in upper right corner of Certificate of Inspection: Form DPI-WF-05)

FORAGE CERTIFIED ACCORDING TO THE REGIONAL WEED FREE FORAGE STANDARDS

NOTE: Forage certified under the Colorado Weed Free Forage Crop Certification Act shall be baled with at least one strand of **blue and orange** colored twine or **galvanized** wire.

GROWER MUST ISSUE WHITE COPY TO PURCHASER; MAIL PINK COPY TO DEPARTMENT OF AGRICULTURE; KEEP GREEN COPY FOR FILE FOR EACH SALE.

DPI-WF-07
04/00

White - Purchaser

Distribution:
Pink - DPI

Green - Grower

Seeder Calibration Form

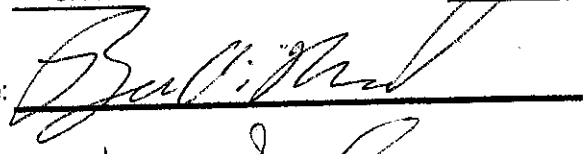
Calibration Form Instructions

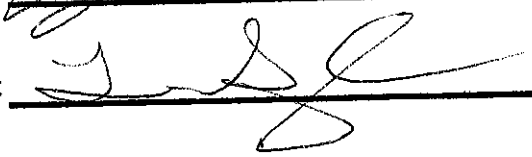
1) Enter the Polygon ID, Polygon acreage, Calibration Date, Target seed rate(s), %PLS in each seed mix, and % seed in each each mix
2) Perform seeder calibration per the manufacturers' instructions 3 times and enter the total weight of bulk seed mix in grams collected for each seed box
3) For each individual calibration run, verify that the achieved rate is within ±20 % of the 1/2 Target Rate
4) After the 3rd calibration run, verify that the 3 Run Average rate is within ±10% of the 1/2 Target Rate

NOTE: The BLUE text shows the "calculated values" based on the entered data

Polygon ID FA/FB (reseed) **Acres:** 1.793 **Date:** 10/15/09 (for 10/16)

	Seed Mix 1		Seed Mix 2	
Target Rate	10.00	lbs PLS / acre	1.29	lbs PLS / acre
% PLS in seed mix	88%		85%	
Dilution Factor	100%	(% seed)	100%	(% seed)
Target Application Rate	11.36	bulk pounds / acre	1.52	bulk pounds / acre
	20.4	Total bulk pounds	2.7	total bulk pounds
1/2 Target Rate (2 passes)	**5.68**	bulk pounds / acre	**0.76**	bulk pounds / acre
	10.2	1/2 of total bulk pounds	1.4	1/2 of total bulk pounds
Test Run 1	11.80	total grams in 3 bags	1.30	total grams in 3 bags
	5.90	bulk lbs/acre	0.65	bulk lbs/acre
Test Run 2	11.80	total grams in 3 bags	1.70	total grams in 3 bags
	5.90	bulk lbs/acre	0.85	bulk lbs/acre
Test Run 3	12.30	total grams in 3 bags	1.60	total grams in 3 bags
	6.15	bulk lbs/acre	0.80	bulk lbs/acre
3 Run Average	11.97	total grams in 3 bags	1.53	total grams in 3 bags
	5.98	**bulk lbs/acre**	0.77	**bulk lbs/acre**
For QC Checks:				
+20% of 1/2 Target Rate	6.82	bulk pounds / acre	0.91	bulk pounds / acre
-20% of 1/2 Target Rate	4.55	bulk pounds / acre	0.61	bulk pounds / acre
+10% of 1/2 Target Rate	6.25	lbs seed mix / acre	0.83	lbs seed mix / acre
-10% of 1/2 Target Rate	5.11	lbs seed mix / acre	0.68	lbs seed mix / acre

PWT Signature: 

Frontier Signature: 

2009 **Kind: FLUVIAL DEPOSITS MIX** Re-seed FA/FB & IA's

Lot: 2148042

Kind & Variety:	Pure%	Germ%	Origin:
Lg WESTERN W/G, ROSANNA	51.88	90	SD
Lg SLENDER W/G, SAN LUIS	32.77	95	WA
CANADA BLUEGRASS, REUBENS Sm	3.39	92	WA
RED TOP Sm	2.57	91	CAN
TUFTED HAIRGRASS Sm	1.84	85	CAN
PRAIRIE JUNEGRASS Sm	1.26	92	WA
BALTIC RUSH Sm	.90	87	CO
YARROW Sm	.86	90	OR
ROCKY MTN PENSTEMON Sm	.35	89	CO

Crop: .10% Inert: 3.92% Weed: .16% Net Wt: 12.875#(11.29 PLS) 1 ACRE

Noxious Weed: None Found Test Date: 5/09 87%

Remarks: FRONTIER ENVIRONMENTAL
JOB: EPA OU-11 LEADVILLE
LARGE SEED - 11.50#

Winfield Solutions PO Box 64589 St Paul, MN 55164

Polygon Completion Form
Fluvial Deposits

Fluvial Deposit Polygon Name/ID: NA

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
04-30-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.3. **Comments/Deviations:**
05-01-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.4. **Comments/Deviations:**
07-20-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Section 3.6A through 3.6E. Appl'y Lime 07-20-09 **Comments/Deviations:**
07-22-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.6F through 3.6I. **Comments/Deviations:**
NA	NA	Completed replacement of erosion channels in accordance with Specification Section 3.7. **Comments/Deviations:** No Channel Work required
07-22-09	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.8. **Comments/Deviations:** Allw Dressed Seedbed Seeded 10-05-09
07-28-09	✓	Completed mulching in accordance with Specification Section 3.9. **Comments/Deviations:** Applied mulch + crimped 07-28-09
N/A	N/A	Completed reinstallation of fencing in accordance with Specification Section 3.10. **Comments/Deviations:**
10-29-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.14. **Comments/Deviations:**

Quantity of Work Estimated in Proposal: NA - Addressed in Invoice Documentation Only

Quantity of Work Performed:

[signature] 11-06-09
Signature of Subcontractor Date

[signature] 10-29-09
Signature of Contractor Date

-Complete-

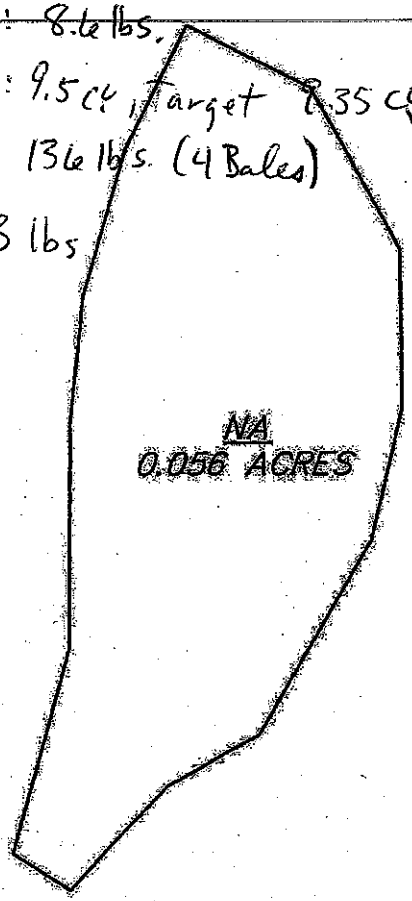
Lime Complete: 4.8 CY, Target: 4.26 CY

Fertilizer Complete: 8.6 lbs.

Compost Complete: 9.5 CY, Target 8.35 CY

Mulch Complete: 136 lbs. (4 Bales)

Seed Complete: 1.3 lbs



SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and bred dimensions are accurate to the best of my knowledge and belief.

Duane D. Fehringer, P.E. & P.L.S. 26626

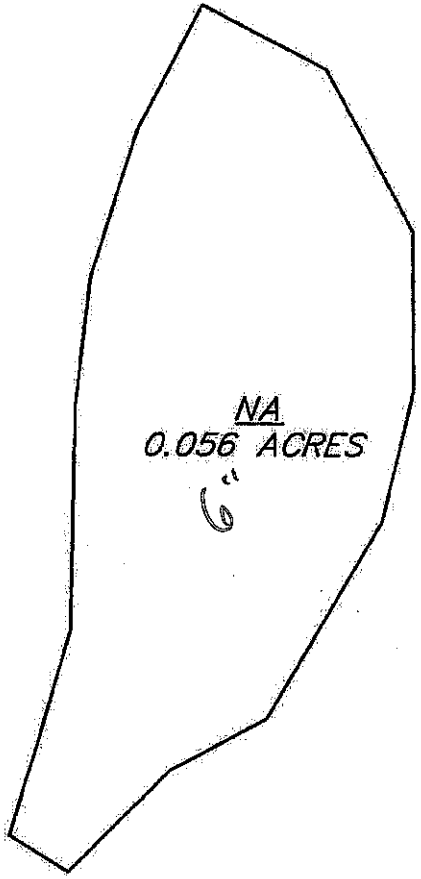
COLORADO D. FEHRINGER 26626 L.S. AND P.E.

Inter-Mountain ENGINEERING Civil Engineers & Surveyors	FRONTIER ENVIRONMENTAL INC.	NA CALIFORNIA GULCH CERCLA SITE OPERABLE UNIT NUMBER 11 LAKE COUNTY, COLORADO

DRAWN: BR
SCALE: 1"=20'
DATE ISSUED: 5-1-08
PROJECT NO: 08-0032
SHEET

J:\projects\0032\dwg\0032dwg01.rt1.dwg

* Pre-Tilled



SURVEYOR'S CERTIFICATE

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COLORADO REGISTERED DUANE D. FEHRINGER 26626 L.S. AND P.E.

5-5-09

Duane D. Fehringer, P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING

Civil Engineers & Surveyors

40881 US HWY 6&24, SUITE 280 BOX 978 AVON, CO 81620 PH: (970)949-5872
6333 S. REVERE PARKWAY, SUITE 106 CENTENNIAL, CO 80111 PH: (303)948-6228

CLIENT: FRONTIER ENVIRONMENTAL INC.

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NA

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	EPF
SCALE:	1"=20'
DATE ISSUED:	5-4-09
PROJECT NO.	08-0032
EXHIBIT	

J:\projects\08032\dwg\OU-11 Areas.dwg

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **NA**

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	15.00% %
Total Area	0.056 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
6	X	100.00%	=	6
	X		=	
	X		=	
	X		=	
		Average Depth		6 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		29.00% %	
Bulk Density	0.75 grams/cc	= 0.63	tons/cy

CALCULATE LIME RATE

$$\text{Lime Rate} = \frac{\text{Net Application Rate} * (1 + \text{Mixing Factor}/100) * (1 - \%\ \text{Rock}/100) * \text{Depth}}{(\text{Lime Reactivity}) * (\text{Calcium Carbonate Equivalence}/100) * (1 - \%\ \text{Moisture}/100)}$$

Lime Rate = 48.08 tons/acre = 2.69 tons total

Lime Rate = 76.07 cy/acre = 4.26 cy total

Depth of Lime to be Applied = 0.6 inches

Signature: Bill Nunl

Date: 5/19/09

Signature: John A. Jennings

Date: 05-19-09

FILE MEMO

Regarding: Lime Compost Fertilizer Mulch Seed Other

Fluvial Deposit ID: NA **Irrigated Meadow ID:** _____

Acreage: 0.056

Target Application: 153 lbs x 1 (6-inc) x .056 acres ≈ 8.5 lbs

Amount Applied: 1/5th 50 lb Bag

Comments:
0:45:0 Hand Broadcasted

Signature

07-20-09
Date

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: NA

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	HCl Reaction
NA 0-6"	6.75	6.5	7.0	0%	Yes
		RB			

Name/Signature: Rob Burns Date: 07-20-09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record NA

Fluvial Deposit/Irrigated Meadows Polygon:

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
NA 0-6"	Tare @ 0.0	22.9	22.8	6.66

RE

Name/Signature: Rob Bar

Date: 07.20.09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **NA**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	6	inches
% Rock	15%	
Treatment Area	0.056	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon		15.79%	%
Percent Moisture		29.63%	%
Wet Bulk Density	=	0.687	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate =	114.75 tons/acre	=	6.43	tons
Compost Rate =	167.03 cy/acre	=	9.35	cy
	Depth of Compost to be Applied =		1.2	inches

Signature: [signature]

Date: 6/4/09

Signature: [signature]

Date: 06-04-09

FILE MEMO

Regarding: Lime Compost Fertilizer Mulch (Seed) Other

Fluvial Deposit ID: NA Deposit **Irrigated Meadow ID:** _____

Acreage: 0.056

Target Application: 0.056 X 11.44 PLS/Acre X 2 (Broadcast) = 1.28#

Amount Applied: 1.3 lbs

Comments: Confirmed Fluvial Deposit Seed Mixed Used Weighed 1.3 lbs in Field; Broadcast w/ wheel-mounted flail broadcaster

Signature

10-05-09

Date

Polygon Completion Form
Fluvial Deposits

Fluvial Deposit Polygon Name/ID: NC

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
05-28-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.3. **Comments/Deviations:**
05-28-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.4. Start Re-fill 05-28-09 **Comments/Deviations:**
06-16-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Section 3.6A through 3.6E. Apply Lime 06-01-09 **Comments/Deviations:** Start Tilling w/ALLW 06-16-09 and Completed * Under-Applied Fertilizer (40 lbs instead of 102 lbs) - Subcontractor mis-calculated treatment depth.
07-10-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.6F through 3.6I. **Comments/Deviations:** Apply Compost 06-23-09 (discontinued-wet) Apply Compost 07-07-09 & Start Compost Incorp 07-09-09
NA	NA	Completed replacement of erosion channels in accordance with Specification Section 3.7. **Comments/Deviations:** No Channel work was required.
10-05-09	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.8. **Comments/Deviations:** Seedbed Prep Completed by ALLW 09-18 Seeded 10-05-09
07-28-09	✓	Completed mulching in accordance with Specification Section 3.9. **Comments/Deviations:** Mulched, Crimped on 07-28-09
N/A	N/A	Completed reinstallation of fencing in accordance with Specification Section 3.10. **Comments/Deviations:**
10-29-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.14. **Comments/Deviations:**

Quantity of Work Estimated in Proposal: NA - Addressed in Invoice Documentation

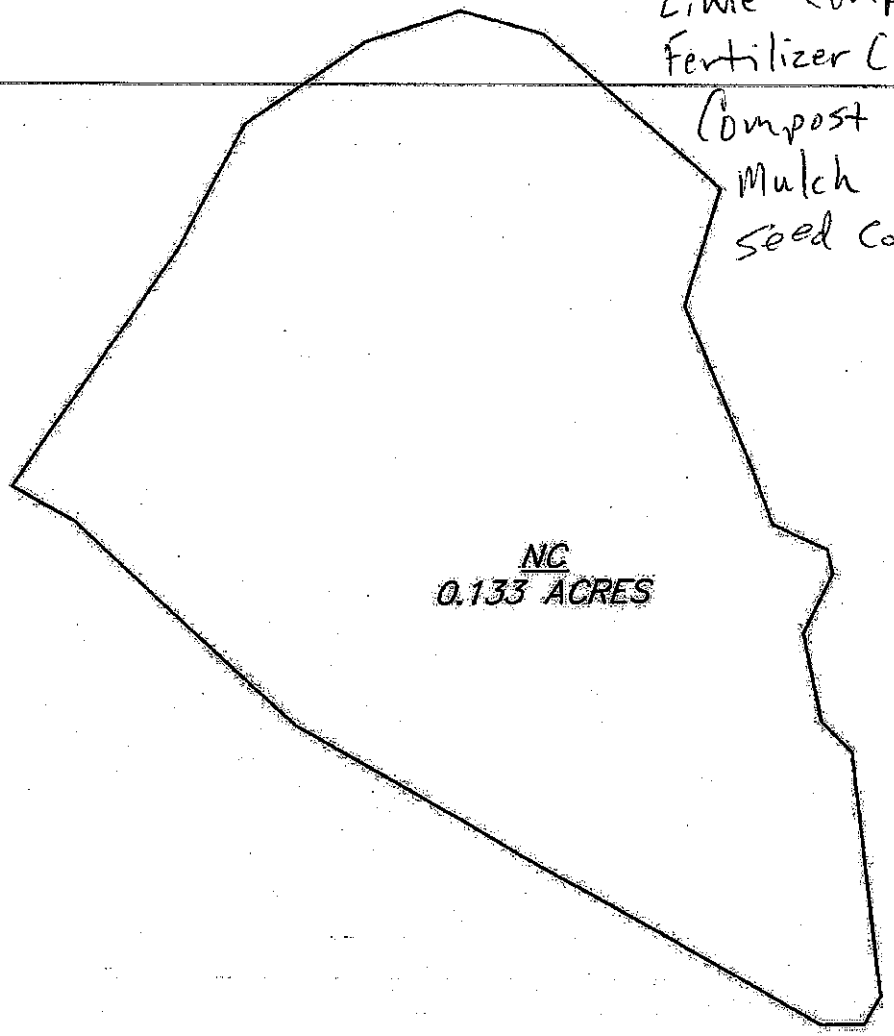
Quantity of Work Performed:

Signature of Subcontractor 11-04-09 Date

Signature of Contractor 10-29-09 Date

-COMPLETE-

Lime Complete: 58.5 CY, Target: 59.51 CY
Fertilizer Complete: 40 lbs.
Compost Complete: 54 CY, Target: 52.27 CY
Mulch Complete: 272 lbs. (8 Bales)
Seed Complete: 3.0 lbs



SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and field calculations are accurate to the best of my knowledge and belief.

Duane D. Fehringer P.E. & P.L.S. 26626

COLORADO DUANE D. FEHRINGER 26626 L.S. AND P.E.

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors

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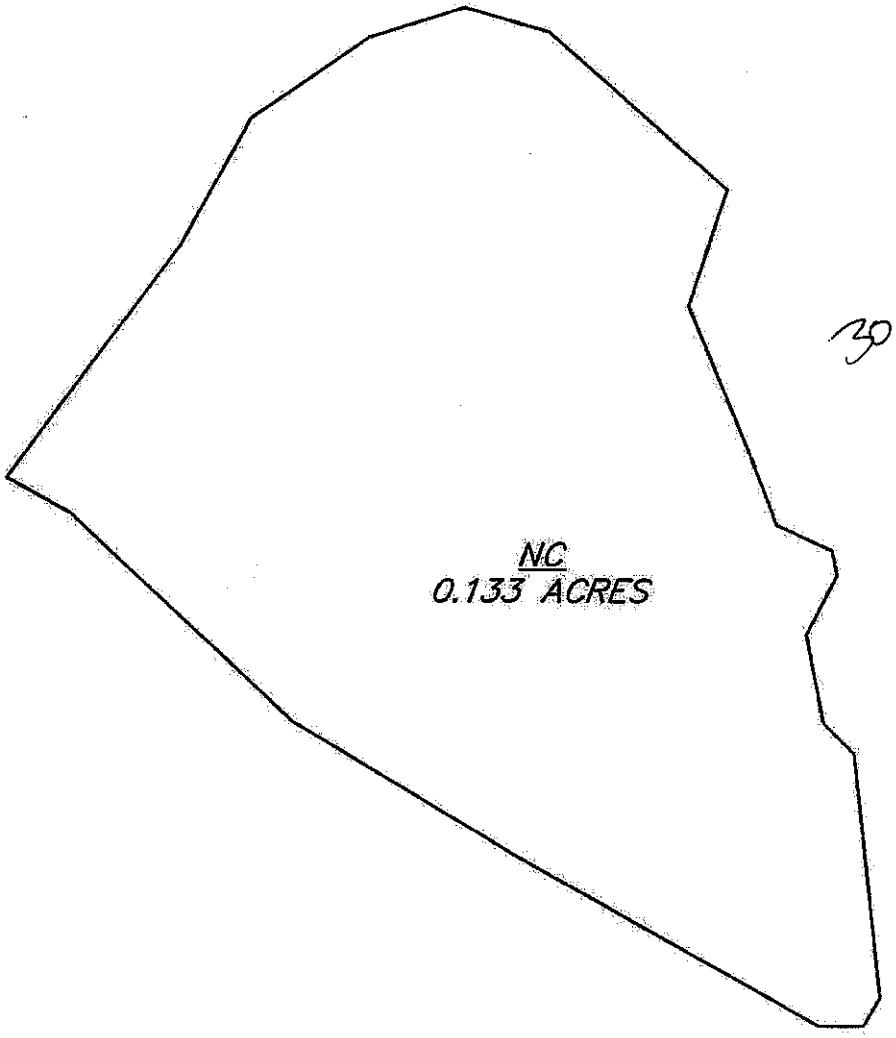
NC
CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY: SPF
SCALE: 1"=20'
DATE ISSUED: 5-4-09
PROJECT NO.: 08-0032
CHKD:

J:\projects\08032\dwg\OU-11 Area.dwg

* Pre-Tilled



30-inch

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COLORADO REGISTERED DUANE D. FEHRINGER 26626 L. AND P.

Duane D. Fehringer P.E. &L.P.L.S. 26626

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors

40201 US HWY 6&24, SUITE 203 BOX 979 AVON, CO 81620 PH: (970)949-9870
6551 S. REVERE PARKWAY, SUITE 186 CENTENNIAL, CO 80111 PH: (303)703-6228

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NC

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY	SPF
SCALE	1"=20'
DATE ISSUED	5-4-09
PROJECT NO.	08-0032
CHKD BY	

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Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **NC**

POLYGON CHARACTERISTICS

Net Application Rate	30	tons/1000 tons
Mixing Safety Factor (~~25% unless noted otherwise~~ 10% per Jennings on 5/14/09)	10.00%	%
% Rock	0.00%	%
Total Area	0.133	acres

Average Depth Calculation

Depth (inches)		% of Total Area		
30	X	100.00%	=	30
	X		=	
	X		=	
	X		=	
		Average Depth		30 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence			82.20%	%
Percent Moisture			29.00%	%
Bulk Density	0.75 grams/cc	=	0.63	tons/cy

CALCULATE LIME RATE

$$\text{Lime Rate} = \frac{\text{Net Application Rate} * (1 + \text{Mixing Factor}/100) * (1 - \%\ \text{Rock}/100) * \text{Depth}}{(\text{Lime Reactivity}) * (\text{Calcium Carbonate Equivalence}/100) * (1 - \%\ \text{Moisture}/100)}$$

Lime Rate = 282.83 tons/acre = 37.62 tons total

Lime Rate = 447.46 cy/acre = 59.51 cy total

Depth of Lime to be Applied = 3.3 inches

Signature: [signature]

Date: 5/18/09

Signature: [signature]

Date: 05-18-09

FILE MEMO

Regarding: Lime Compost Fertilizer Mulch Seed Other

Fluvial Deposit ID: NC **Irrigated Meadow ID:** _____

Acreage: 0.133 acres

Target Application: ≈ 2 bags 0.133 × 5(30-inch) × 153 lbs/acre = 102 lbs / 50 ≈ 2 bags

Amount Applied: * 40 lbs

Comments:

PWT not present to confirm fertilizer was under-applied

_____ 06-09-09

Signature **Date**

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: NC

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	Acid Reaction?
NC 0-6	8.0	8.0	8.0	None	Yes
6-12	8.0	8.0	8.0	None	Yes
12-18	7.5	7.0	8.0	None	Yes
18-24	7.3	7.0	7.5	None	Yes
24-30	7.3	7.0	7.5	None	Yes

Name/Signature: [signature]

Date: 06-17-09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record

Fluvial Deposit/Irrigated Meadows Polygon: NC 06-17

Re-check 06-18-09

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH	
NC 0-6	Tare@0.0	15.3	15.5	6.9	7.0
6-12	↓	15.1	15.1	6.9	6.9
12-18		15.2	15.2	7.0	
18-24		15.2	15.3	6.9	7.0
24-30		15.5	15.7	6.9	6.9

Name/Signature: GARY SLIEKA / [signature] Date: 6/17/09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: NC

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	0%	
Treatment Area	0.133	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1-\%\text{rock}/100)}{\text{Compost \% OC} * (1-\%\text{Moisture}/100)}$$

Compost Rate =	269.99 tons/acre	=	35.91 tons
Compost Rate =	393.00 cy/acre	=	52.27 cy
		Depth of Compost to be Applied =	2.9 inches

Signature: [signature]

Date: 6/4/09

Signature: [signature]

Date: 06-04-09

FILE MEMO

Regarding: Lime Compost Fertilizer Mulch (Seed) Other

Fluvial Deposit ID: NC **Irrigated Meadow ID:** _____

Acreage: 0.133

Target Application: 0.133 X 11.44 pls/Acre X 2 (Twice Drill Rate) = 3 lbs

Amount Applied: ~~3~~ ≈ 3 lbs

Comments: Confirmed Used FD Seed Mix; weighed target amount, broadcast w/ flail spreader

Signature

16-05-69

Date

Polygon Completion Form
Fluvial Deposits

Fluvial Deposit Polygon Name/ID: Nd

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
05-28-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.3. **Comments/Deviations:**
06-01-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.4. Start Pre-till 05-29-09 **Comments/Deviations:**
06-17-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Section 3.6A through 3.6E. Apply Lime 06-01-09; Fertilize 06-09-09 **Comments/Deviations:**
07-10-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.6F through 3.6I. **Comments/Deviations:** Apply Compost 07-06-09
NA	NA	Completed replacement of erosion channels in accordance with Specification Section 3.7. **Comments/Deviations:** No Channel Work Required.
10-08-09	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.8. **Comments/Deviations:**
07-28-09	✓	Completed mulching in accordance with Specification Section 3.9. **Comments/Deviations:** Mulched & Crimped 07-28-09
NA	NA	Completed reinstallation of fencing in accordance with Specification Section 3.10. **Comments/Deviations:**
10-29-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.14. **Comments/Deviations:**

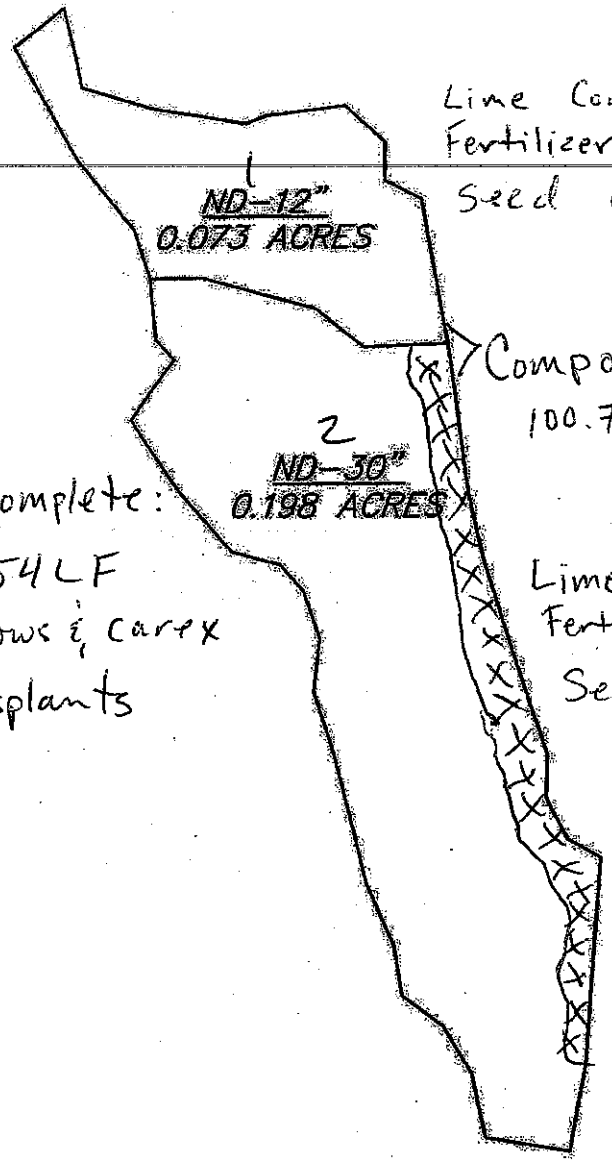
Quantity of Work Estimated in Proposal: NA

Quantity of Work Performed:

[signature] 11-06-09
Signature of Subcontractor Date

[signature] 10-29-09
Signature of Contractor Date

—COMPLETE—



Lime Complete: 13 CY, Target: 12.41 CY
Fertilizer Complete: 22lbs.
Seed Complete: 2 lbs.

Compost Complete:
100.75 CY, Target: 101.2 CY

Mulch Complete:
544 lbs. (16 Bales)

* SBS Complete:
Type I - 154 LF
w/ willows & carex transplants

Lime Complete: 84.5 CY, Target: 84.17 CY
Fertilizer Complete: 3 bags (151lbs.)
Seed Complete: 5.4 lbs.

SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

DUANE D. FEHRINGER — 26629 — LAND SURVEYOR — P.L.S. — AND P.L.

Duane D. Fehringer P.E. & P.L.S. 26629

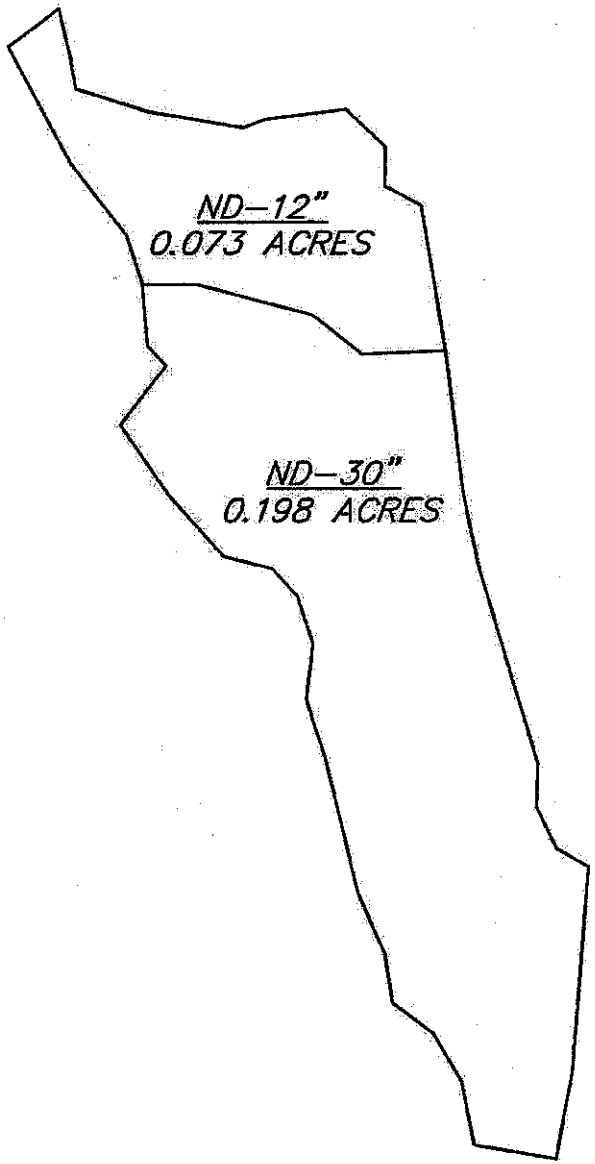
Inter-Mountain ENGINEERING
Civil Engineers & Surveyors

FRONTIER ENVIRONMENTAL INC.

ND
CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DESIGN BY: BPF
SCALE: 1"=40'
DATE ISSUED: 5-12-08
PROJECT NO: 08-0032
SHEET

* Pre-Tilled



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COLORADO REGISTERED DUANE D. FEHRINGER 26626 L.S. AND P.L.

Duane D. Fehringer P.E. & P.L.S. 26626

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Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
42581 US HWY 6&24, SUITE 203 BOX 978 AVON, CO 81620 PH: (970)949-6123
6551 S. REVERE PARKWAY, SUITE 106 CENTENNIAL, CO 80111 PH: (303)843-6123

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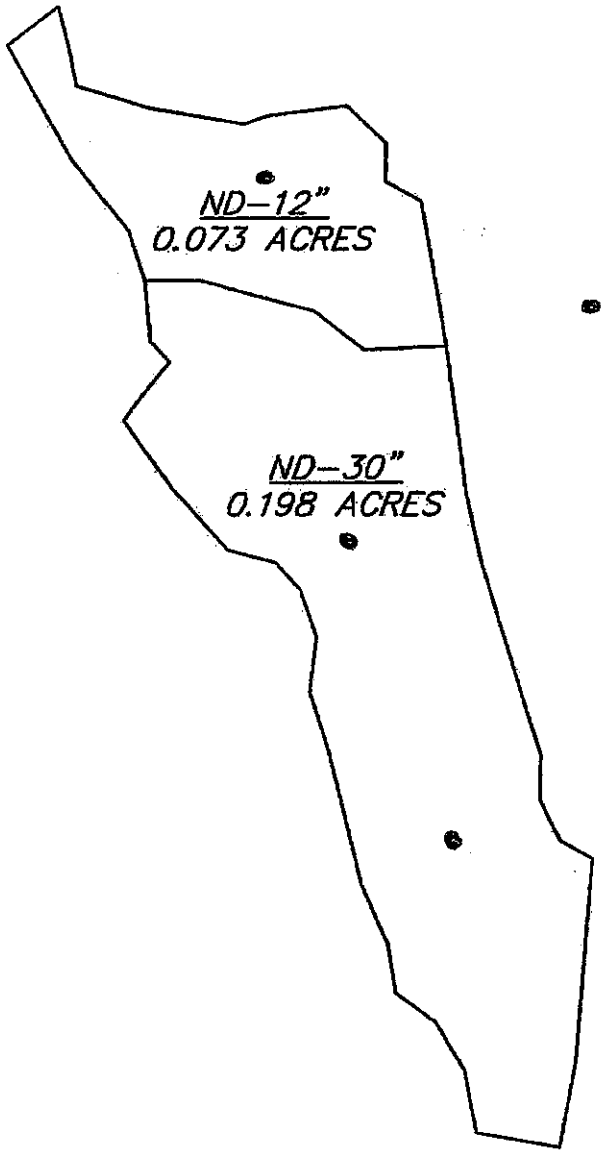
ND

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=40'
DATE ISSUED:	5-4-09
PROJECT NO.	08-0032
SHEET	



Pre-Samele : 05-21-09 10:30

Post-Samele : 07-13-09 08:50

• Composite Locations

All Samples 0-12" Deeth

SURVEYOR'S CERTIFICATE

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COLORADO REGISTERED DUANE D. FEHRINGER 26626 L.S. AND P.L.S.

Duane D. Fehringer P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
[illegible]

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ND

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY	EPF
SCALED	1"=40'
DATE ISSUED	5-4-09
PROJECT NO.	08-0032
SHEET	

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Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **ND-1 (north end)**

POLYGON CHARACTERISTICS

Net Application Rate	30	tons/1000 tons
Mixing Safety Factor (~~25% unless noted otherwise~~)	10.00%	%
% Rock (10% per Jennings on 5/14/09)	5.00%	%
Total Area	0.073	acres

Average Depth Calculation

Depth (inches)		% of Total Area		
12	X	100.00%	=	12
	X		=	
	X		=	
	X		=	
		Average Depth		12 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20%	%
Percent Moisture		29.00%	%
Bulk Density	0.75 grams/cc =	0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = (Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth) / ((Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100))

Lime Rate =	107.48 tons/acre	=	7.85 tons total
Lime Rate =	170.04 cy/acre	=	12.41 cy total
		Depth of Lime to be Applied =	1.3 inches

Signature: [signature]

Date: 5/18/09

Signature: [signature]

Date: 05-18-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **ND-2 (south end)**

POLYGON CHARACTERISTICS

Net Application Rate	30	tons/1000 tons
Mixing Safety Factor (~~25% unless noted otherwise~~)	10.00%	%
% Rock (10% per Jennings on 5/14/09)	5.00%	%
Total Area	0.198	acres

Average Depth Calculation

Depth (inches)		% of Total Area		
30	X	100.00%	=	30
	X		=	
	X		=	
	X		=	
		Average Depth		30 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.0000%	X 0.1	=	0.0000%	(A)
Percent 10 - 60 mesh	0.0800%	X 0.5	=	0.0400%	(B)
Percent < 60 mesh	99.9200%	X 1	=	99.9200%	(C)
Lime Reactivity			=	99.9600%	A+B+C

Calcium Carbonate Equivalence		82.20%	%
Percent Moisture		29.00%	%
Bulk Density	0.75 grams/cc	= 0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 268.69 tons/acre = 53.20 tons total

Lime Rate = 425.09 cy/acre = 84.17 cy total

Depth of Lime to be Applied = 3.2 inches

Signature: [signature]

Date: 5/18/09

Signature: [signature]

Date: 05-18-09

FILE MEMO

Regarding: Lime Compost Fertilizer Mulch Seed Other

Fluvial Deposit ID: N/D **Irrigated Meadow ID:** _____

Acreage: (Below)

(12") 158 lbs x 2(12-inch) x .073 acres = 22.3 lbs ≈ 0.5 hay

Target Application: _____ 30" 153 lbs x 5(30") x .198 acres = 152 lbs ≈ 3 hays

Amount Applied: 12" - 22 lbs; 30" - 151 lbs

0.5 hays @ 12"

Comments: 3 hays @ 30"

Hand Broadcast 0:45:0

_____

_____ 06-09-09

Signature **Date**

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: Nd

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	NCL Reached?
Nd (30") 0-6	7.5			0 %	Yes
6-12	7.5				Yes
12-18	7.0				Yes
18-24	7.0				Yes
24-30	7.0				Yes
Tailings 30"+	5.5	5.0	6.0	None	NA
Nd (12") 0-6	7.3	7.0	7.5	None	Yes
" 6-12	7.3	7.0	7.5	None	Yes

Name/Signature: [signature]

Date: 06-17-09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Fluvial Deposit/Irrigated Meadows Polygon: **Paste pH Record** Nd

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
Nd 30" 0-6	Tare 0.0	17.3	17.2	7.1
6-12		15.0	15.6	7.1
12-18		17.3	16.8	7.1
18-24		17.7	16.8	7.1
18-24 (Dupe)		17.8	16.9	7.0
24-30		18.2	18.3	6.9
				6.9
Nd 12" 0-6		17.6	16.9	7.0
" 6-12		16.1	16.2	7.0

Name/Signature: GARY SLIFKA / Gary Slifka **Date:** 6/18/09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **ND (ND 1 & 2 are both 12" & 5% rock)**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	5%	
Treatment Area	0.271	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 256.5 tons/acre = 69.5 tons

Compost Rate = 373.4 cy/acre = 101.2 cy

Depth of Compost to be Applied = 2.8 inches

Signature: [signature]

Date: 6/4/09

Signature: [signature]

Date: 06-04-09

FILE MEMO

Regarding: Lime Compost Fertilizer Mulch (Seed) Other

Fluvial Deposit ID: NP **Irrigated Meadow ID:** _____

Acreage: 0.271

Target Application: 0.271 acres x 11.44 lbs/acre x 2 ≈ 6.2 lbs

Amount Applied: ~~7.8~~ 7.4 lbs

Comments:

PWT Contracted Subcontractor using FD Seed Mix, weighed amount in field, broadcasted seed w/ flail broadcaster.

_____ 10-05-09

Signature **Date**

Polygon Completion Form
Fluvial Deposits

Fluvial Deposit Polygon Name/ID: NN

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
08-14-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.3. **Comments/Deviations:**
08-14-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.4. Pre-Till simultaneous to line placement LS per 08-05-09 **Comments/Deviations:** ms
08-24-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Section 3.6A through 3.6E. Started Lime App 08-14-09; Fertilized 08-19-09 **Comments/Deviations:**
10-01-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.6F through 3.6I. Incorp w/ ARM 10-1-09 **Comments/Deviations:**
NA	NA	Completed replacement of erosion channels in accordance with Specification Section 3.7. **Comments/Deviations:**
wk of 10-12-09	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.8. **Comments/Deviations:** Seedbed prep accomplished w/ ARM 10-1-09 Seeded wk of 10-13-09
10-20-09	✓	Completed mulching in accordance with Specification Section 3.9. **Comments/Deviations:**
NA	NA	Completed reinstallation of fencing in accordance with Specification Section 3.10. **Comments/Deviations:**
10-27-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.14. **Comments/Deviations:**

Quantity of Work Estimated in Proposal: NA - Addressed in Invoice Documentation
Quantity of Work Performed:

[signature] 11-010-09
Signature of Subcontractor Date

[signature] 10-30-09
Signature of Contractor Date

-COMPLETE-

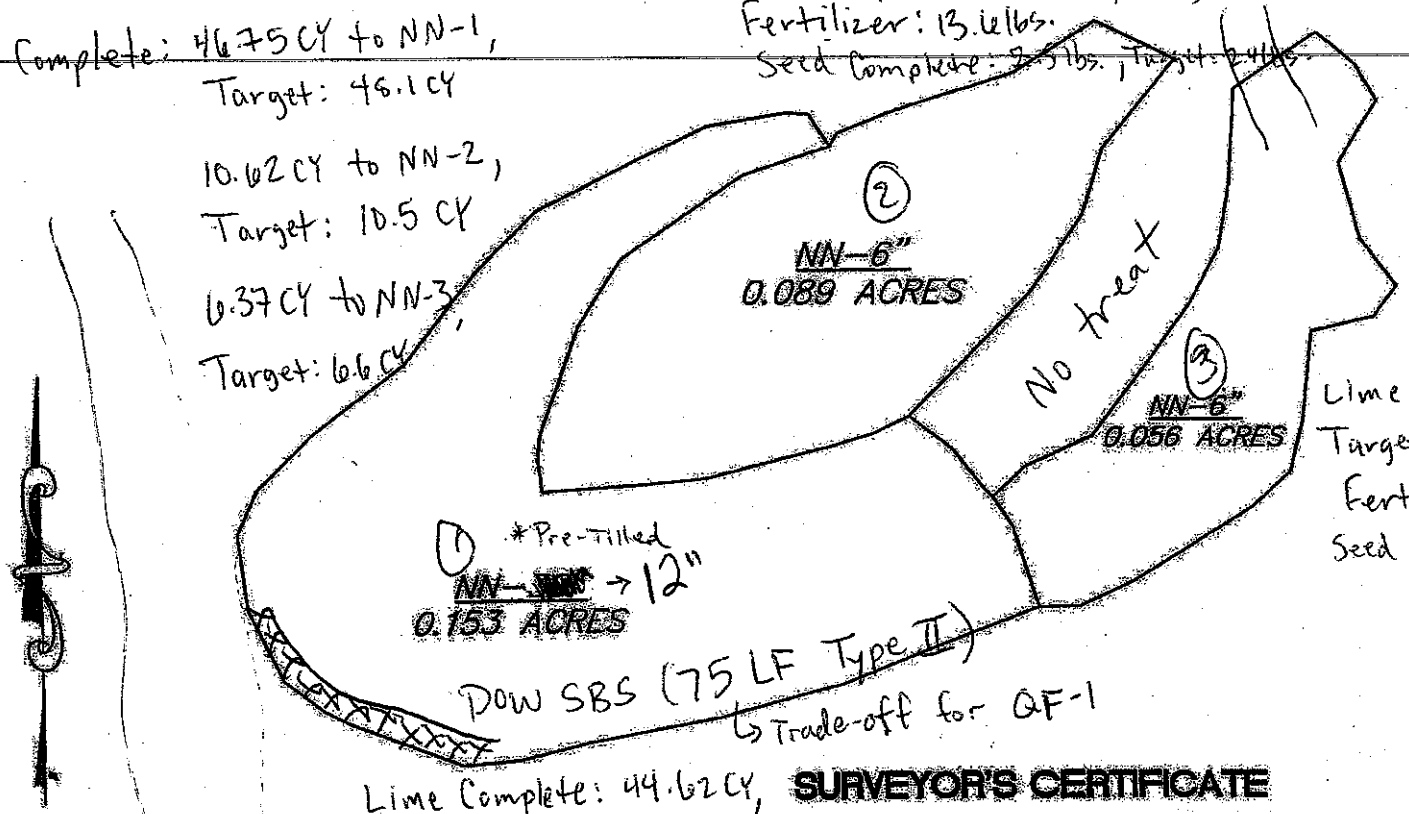
* Pre-Tilled

Compost Complete: 46.75 CY to NN-1,
Target: 46.1 CY

10.62 CY to NN-2,
Target: 10.5 CY

6.37 CY to NN-3,
Target: 6.6 CY

Lime Complete: 9.77 CY, Target: 9.56 CY
Fertilizer: 13.1 lbs.
Seed Complete: 3.5 lbs., Target: 3.4 lbs.



Lime Complete: 6.37 CY,
Target: 6.01 CY
Fertilizer: 8.56 lbs.
Seed Complete: 1.5 lbs. Target: 1.5 lbs

DOW SBS (75 LF Type II)
↳ Trade-off for QF-1

Lime Complete: 44.62 CY,
Target: 43.82 CY
Fertilizer: 46.8 lbs.
Seed Complete: 4.0 lbs., Target: 4.1 lbs.

Mulch Complete: (600 lbs., 15 Bales)

SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

5-22-08

Duane D. Fehringer P.E. & P.L.S. 26626

STATE OF COLORADO
DUANE D. FEHRINGER
26626
LICENSED
AND P.

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors

CLIENT: FRONTIER ENVIRONMENTAL INC.

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NN
CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY: SPF
SCALE: 1"=30'
DATE ISSUED: 5-22-08
PROJECT NO.: 08-0032
DRAWN:

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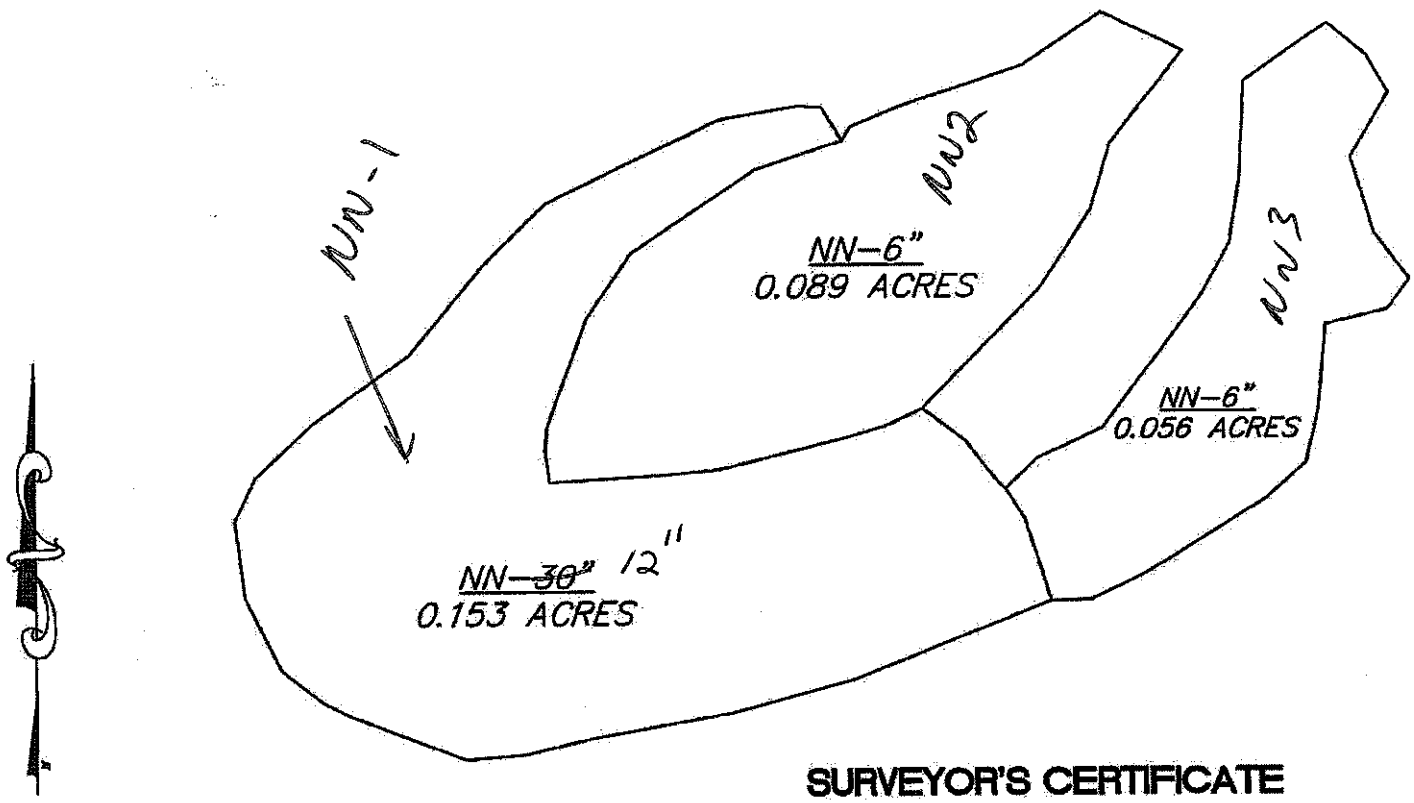

SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

4-22-09

Duane D. Fehringer P.E. & P.L.S. 26626

COLORADO REGISTERED DUANE D. FEHRINGER 26626 P.E. AND P.L.S.

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
40801 US HWY 6&24, SUITE 203 BOX 978 AVON, CO 81620 PH: (970)949-5072
6551 S. REVERE PARKWAY, SUITE 126 CENTENNIAL, CO 80111 PH: (303)348-6338

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NN

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=30'
DATE ISSUED:	4-22-09
PROJECT NO.	08-0032
EXHIBIT	

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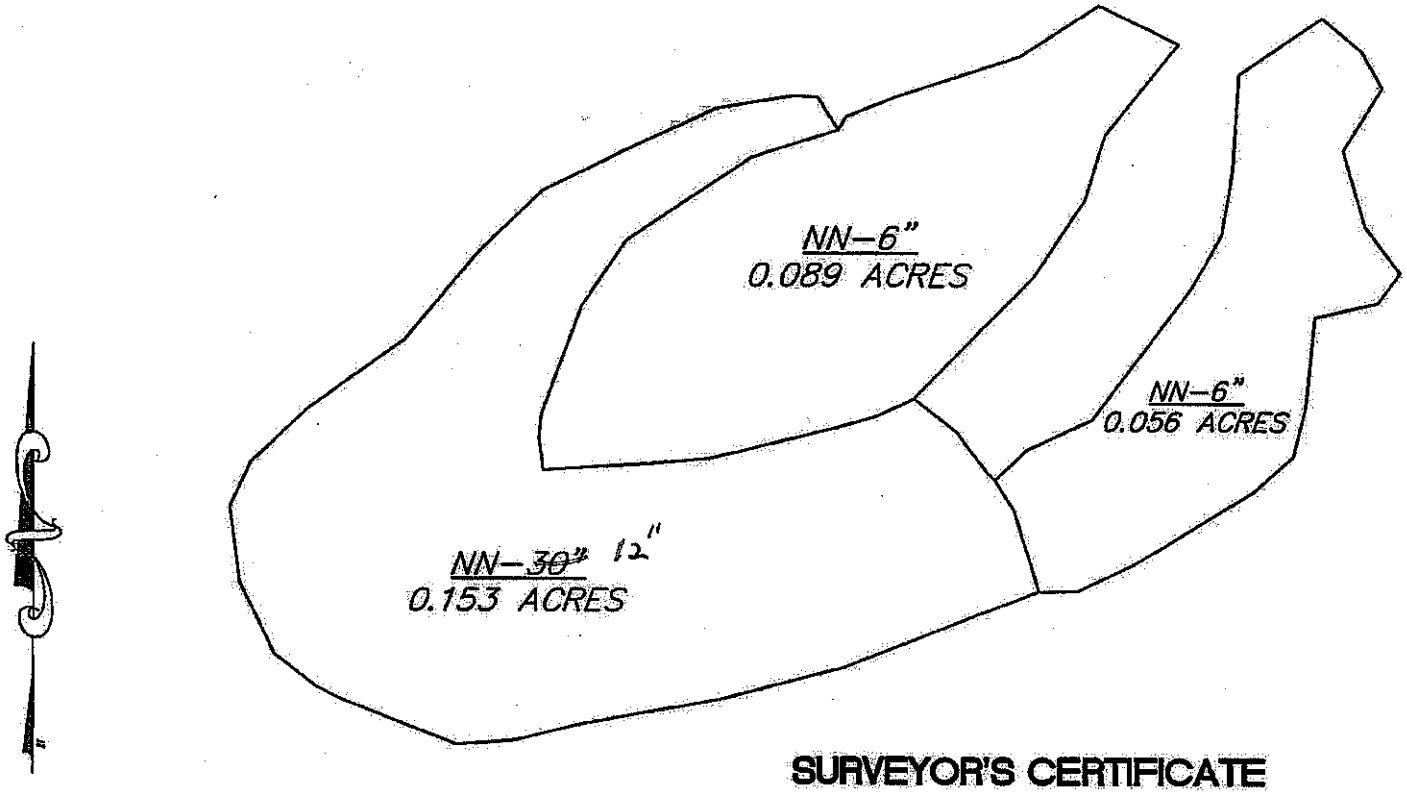

SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO DUANE D. FEHRINGER 26626 LAND SURVEYOR

4-22-09

Duane D. Fehringer P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
42520 US HWY 6&24, SUITE 203 BOX 978 AVON, CO 81620 PH: (970)949-5072
6501 E. BELLEVIEW PARKWAY, SUITE 106 CENTENNIAL, CO 80111 PH: (303)948-6330

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NN

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=30'
DATE ISSUED:	4-22-09
PROJECT NO:	08-0032
EXHIBIT	

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Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **NN-1**

POLYGON CHARACTERISTICS

Net Application Rate	60 tons/1000 tons
Mixing Safety Factor (25% unless noted otherwise)	10.00% %
% Rock	20.00% %
Total Area	0.153 acres

Average Depth Calculation

	Depth (inches)		% of Total Area		
Level ground before tilling soil to compensate for soil washed away by high water after pre-till	12	X	100.00%	=	12
		X		=	
		X		=	
		X		=	
			Average Depth		12 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.0000%	X 0.1	=	0.0000%	(A)
Percent 10 - 60 mesh	0.0800%	X 0.5	=	0.0400%	(B)
Percent < 60 mesh	99.9200%	X 1	=	99.9200%	(C)
Lime Reactivity			=	99.9600%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		29.00% %	
Bulk Density	0.75 grams/cc	= 0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth / (Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 181.01 tons/acre = 27.69 tons total

Lime Rate = 286.38 cy/acre = 43.82 cy total

Depth of Lime to be Applied = 2.1 inches

Signature: [signature]

Date: 7/29/09

Signature: [signature]

Date: 07-29-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **NN-2**

POLYGON CHARACTERISTICS

Net Application Rate	60 tons/1000 tons
Mixing Safety Factor (25% unless noted otherwise)	10.00% %
% Rock	40.00% %
Total Area	0.089 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
6	X	100.00%	=	6
	X		=	
	X		=	
	X		=	
		Average Depth		6 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.0000%	X 0.1	=	0.0000%	(A)
Percent 10 - 60 mesh	0.0800%	X 0.5	=	0.0400%	(B)
Percent < 60 mesh	99.9200%	X 1	=	99.9200%	(C)
Lime Reactivity			=	99.9600%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		29.00% %	
Bulk Density	0.75 grams/cc	= 0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = (Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth) / ((Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100))

Lime Rate = 67.88 tons/acre = 6.04 tons total

Lime Rate = 107.39 cy/acre = 9.56 cy total

Depth of Lime to be Applied = 0.8 inches

Signature: Ben A. Mack

Date: 7/29/09

Signature: [illegible]

Date: 07-29-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **NN-3**

POLYGON CHARACTERISTICS

Net Application Rate	60 tons/1000 tons
Mixing Safety Factor (25% unless noted otherwise)	10.00% %
% Rock	40.00% %
Total Area	0.056 acres ✓

Average Depth Calculation

Depth (inches)		% of Total Area		
6 ✓	X	100.00%	=	6
	X		=	
	X		=	
	X		=	
		Average Depth		6 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.0000%	X 0.1	=	0.0000%	(A)
Percent 10 - 60 mesh	0.0800%	X 0.5	=	0.0400%	(B)
Percent < 60 mesh	99.9200%	X 1	=	99.9200%	(C)
Lime Reactivity			=	99.9600%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		29.00% %	
Bulk Density	0.75 grams/cc	=	0.63 tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 67.88 tons/acre = 3.80 tons total

Lime Rate = 107.39 cy/acre = 6.01 cy total

Depth of Lime to be Applied = 0.8 inches

Signature: Ben G. Neal

Date: 7/29/09

Signature: Ken

Date: 07-29-09

FILE MEMO

Regarding: Lime Compost Fertilizer Mulch Seed Other

Fluvial Deposit ID: NN **Irrigated Meadow ID:** _____

Acreage: See Below

Target Application: (Below)

Amount Applied: (Below)

Comments:

NN1: .153 acres × 153 lbs/acre × 2 (6-inch) = ~~46~~ 46.8 lbs ≈ 1 bag

NN2: 0.089 acres × 153 × 1 (6-inch) = 13.6 lbs

NN3: .056 acres × 153 × 1 (6-inch) = 8.6 lbs

Confirmed weighted amounts in field and hand-broadcasted

0:45:0

_____ 08-19-09

Signature **Date**

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: NN

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	HCL Reaction?
NN1 0-6	7.5			None	Yes
NN1 6-12	7.5			None	Yes
NN2 0-6	7.3	7.0	7.5	None	Yes
NN3 0-6	7.3	7.0	7.5	None	Yes

Name/Signature: Josh A. Mink **Date:** 08-25-09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record

Fluvial Deposit/Irrigated Meadows Polygon: NN

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
NN1 0-6	0.0	21.5	20.4	7.2
NN1 6-12		21.0	21.0	7.3
NN2 0-6		21.2	21.2	7.6
NN3 0-6		19.6	19.6	7.3

Name/Signature: [signature]

Date: 08-25-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **NN-1**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	20%	
Treatment Area	0.153	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon		15.79%	%
Percent Moisture		29.63%	%
Wet Bulk Density	=	0.687	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1-\%\text{rock}/100)}{\text{Compost \% OC} * (1- \%\text{Moisture}/100)}$$

Compost Rate = 216.0 tons/acre = 33.0 tons

Compost Rate = 314.4 cy/acre = 48.1 cy

Depth of Compost to be Applied = 2.3 inches

Signature: [signature]

Date: 7/29/09

Signature: [signature]

Date: 08-03-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **NN-2 (numbering per FDSS - western 6" area)**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50% %
Treatment Depth (Full treatment depth up to 12")	6 inches
% Rock	40%
Treatment Area	0.089 acres

COMPOST CHARACTERISTICS

Percent Organic Carbon		15.79%	%
Percent Moisture		29.63%	%
Wet Bulk Density	=	0.687	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 81.0 tons/acre = 7.2 tons

Compost Rate = 117.9 cy/acre = 10.5 cy

Depth of Compost to be Applied = 0.9 inches

Signature: Barb Nad

Date: 7/29/09

Signature: [illegible]

Date: 08-03-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **NN-3 (numbering per FDSS - eastern 6" area)**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	6	inches
% Rock	40%	
Treatment Area	0.056	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	0.687	=	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 81.0 tons/acre = 4.5 tons

Compost Rate = 117.9 cy/acre = 6.6 cy

Depth of Compost to be Applied = 0.9 inches

Signature: [signature]

Date: 7/29/09

Signature: [signature]

Date: 08-03-09

Polygon Completion Form
Fluvial Deposits

Fluvial Deposit Polygon Name/ID: NP

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
08-12-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.3. **Comments/Deviations:**
08-13-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.4. Pre fill Simultaneous w/ partial line in core w/excavator **Comments/Deviations:**
08-21-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Section 3.6A through 3.6E. Apply lime 08-13-09; Apply fert. 08-19-09 **Comments/Deviations:** Incorp w/ALLU 08-21-09
10-01-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.6F through 3.6I. Start compost application 08-24-09 **Comments/Deviations:** Begin ALLU Encore 09-30-09
NA	NA	Completed replacement of erosion channels in accordance with Specification Section 3.7. **Comments/Deviations:** Seedbed Prep Completed w/ ALLU Incorp Compost
08-21-09	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.8. **Comments/Deviations:** Seeded wk of 10-12-09
10-20-09	✓	Completed mulching in accordance with Specification Section 3.9. **Comments/Deviations:**
NA	NA	Completed reinstallation of fencing in accordance with Specification Section 3.10. **Comments/Deviations:**
10-27-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.14. **Comments/Deviations:**

Quantity of Work Estimated in Proposal: NA

Quantity of Work Performed:

[signature] 11-06-09
Signature of Subcontractor Date

[signature] 10-30-09
Signature of Contractor Date

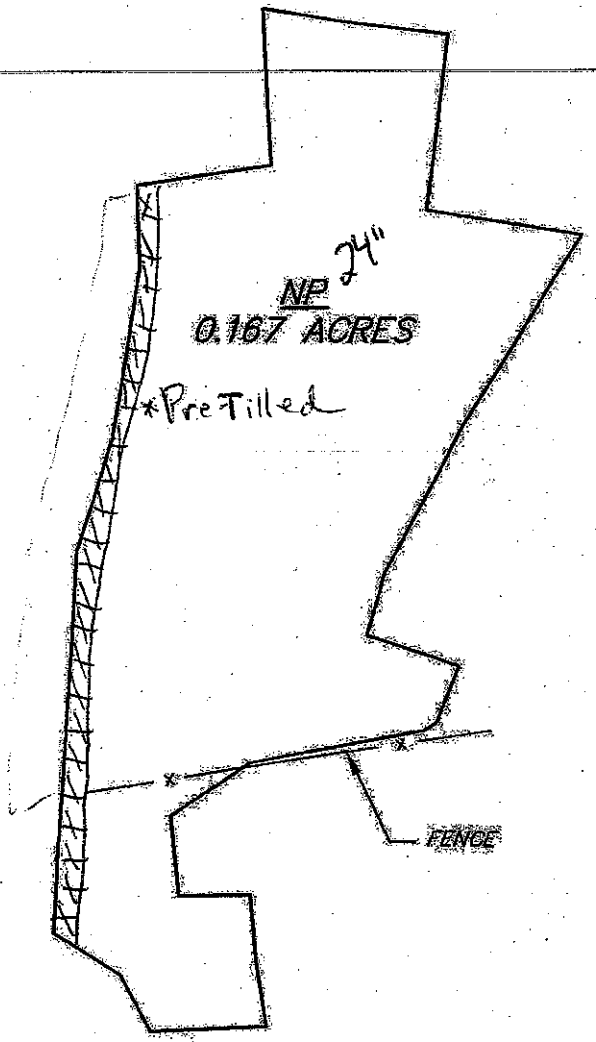
*Pretilled – COMPLETE –

Lime Complete: 69.29 tons, Target: 71.79

Fertilizer: 102.2 lbs.

Compost Complete: 61.62 CY, Target: 62.3 CY

Seed Complete: NP-1 2 lbs, Target: 2.1 lbs.
NP-2 4.5 lbs, Target: 4.5 lbs.



*SBS: 70LF - Type-I
70LF - Type-II
unmod.

Mulch Complete: (320 lbs., 8 Bales)

SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

4-22-08

Duane D. Fehringer P.E. or P.L.S. 26626

COLORADO FEHRINGER 26626 P.E. AND P.L.S.

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors

CLIENT: FRONTIER ENVIRONMENTAL INC.

NP

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY: BFF
SCALE: 1"=30'
DATE ISSUED: 4-22-08
PROJECT NO.: 08-0032
SHEET:

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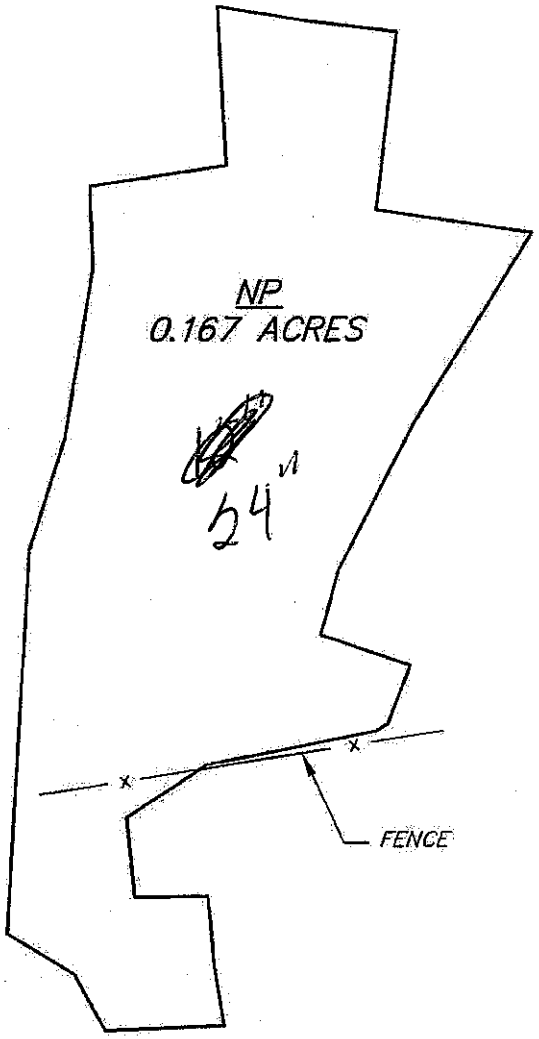

SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

Duane D. Fehringer P.E. & P.L.S. 26626

COLORADO REGISTERED DUANE D. FEHRINGER 4-22-09 26626 P.E. AND P.L.S.

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
40801 US HWY 6&24, SUITE 203 BOX 978 AVON, CO 81620 PH: (970)949-5872
6421 S. REVERE PARKWAY, SUITE 106 CENTENNIAL, CO 80111 PH: (303)948-6222

CLIENT: FRONTIER ENVIRONMENTAL INC.

This document was prepared for the exclusive use of the Client specified hereon. The use of this document or the information contained herein by any other person or entity is not authorized. In the event that any other person or entity desires to use this document or the information contained herein for any purpose they must first obtain written authorization from Inter-Mountain Engineering. This document and any information contained herein is intended to be used within one year of the date hereof. Use after that period is not authorized.

NP

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=30'
DATE ISSUED:	4-22-09
PROJECT NO.:	08-0032
EXHIBIT	

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Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: ~~NC-2~~ **NP per IME Survey)**

POLYGON CHARACTERISTICS

Net Application Rate	60	tons/1000 tons
Mixing Safety Factor (25% unless noted otherwise)	10.00%	%
% Rock	5.00%	%
Total Area	0.167	acres

Average Depth Calculation

Depth (inches)		% of Total Area		
24	X	100.00%	=	24
	X		=	
	X		=	
	X		=	
		Average Depth		24 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.0000%	X 0.1 =	0.0000%	(A)
Percent 10 - 60 mesh	0.0800%	X 0.5 =	0.0400%	(B)
Percent < 60 mesh	99.9200%	X 1 =	99.9200%	(C)
Lime Reactivity		=	99.9600%	A+B+C

Calcium Carbonate Equivalence		82.20%	%
Percent Moisture		29.00%	%
Bulk Density	0.75 grams/cc	= 0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 429.90 tons/acre = 71.79 tons total

Lime Rate = 680.14 cy/acre = 113.58 cy total

Depth of Lime to be Applied = 5.1 inches

Signature: B. A. Neal

Date: 7/29/09

Signature: _____

Date: _____

FILE MEMO

Regarding: Lime Compost Fertilizer Mulch Seed Other

Fluvial Deposit ID: NP **Irrigated Meadow ID:** ~~Irrigated Meadow ID:~~

Acreage: .167

Target Application: .167 acres x 153 lbs/acre x 4(6-inch) = 102 lbs ≈ 2 bags

Amount Applied: Confirmed 0:45:0 Hand Broadcasted 2 bags
JMS
08-19-09

Comments:

Signature

08-19-09

Date

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: NP

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	HCl Reaction
NP 0-6"	6.5	6.5	7.0	0%	Yes
NP 6-12"					
NP 12-18"					
NP 18-24"					
NP-1 0-6"					
NP-1 6-12"					
Dupe NP-1 6-12"					
NP-1 12-18"					
NP-1 18-24"					

Name/Signature: [signature]

Date: 8-24-04

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record NP

Fluvial Deposit/Irrigated Meadows Polygon: _____

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
NP 0-6"	Tare @ 0.0	20.0	20.2	6.8
NP 6-12"		20.0	19.9	6.7
NP 12-18"		20.0	20.0	6.8
NP 18-24"		20.2	20.3	6.7
NP-1 0-6"		20.0	20.0	6.7
NP-1 6-12"		20.0	20.0	6.8
Dupe NP-1 6-12"		20.0	20.0	6.8
NP-1 12-18"		21.0	21.0	6.8
NP-1 18-24"		20.3	20.6	6.8
		RB		

Name/Signature: Rob Brown **Date:** 8-24-09

pH meter calibrated using Brown standards on 8-24-09 by Robert Brown RB

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **NP (per IME Survey) / NO2 per FDSS**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	5%	
Treatment Area	0.167	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	0.687	=	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate =	256.5 tons/acre	=	42.8 tons
Compost Rate =	373.4 cy/acre	=	62.3 cy
	Depth of Compost to be Applied =		2.8 inches

Signature: Ben A. Neal

Date: 7/29/09

Signature: Jeff A. Mitchell

Date: 08-04-09

Polygon Completion Form
Fluvial Deposits

Fluvial Deposit Polygon Name/ID: NR

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
05-15-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.3. **Comments/Deviations:**
05-19-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.4. **Comments/Deviations:**
06-03-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Section 3.6A through 3.6E. **Comments/Deviations:** Fertilize- Seed on 05-26-09; Begin lime & fert in core 05-26-09 Finish lime/fert in core. 06-03-09; Start Compost
07-09-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.6F through 3.6I. **Comments/Deviations:** Start Compost Apply 06-04-09; Begin incorp w/Excv on 07-07-09
NA	NA	Completed replacement of erosion channels in accordance with Specification Section 3.7. **Comments/Deviations:** No erosion/channels
Wk ending 10-25-09	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.8. **Comments/Deviations:** Seedbed prep w/Excv during compost incorp Seeded wk ending 10-25-09
10-22-09	✓	Completed mulching in accordance with Specification Section 3.9. **Comments/Deviations:**
NA	NA	Completed reinstallation of fencing in accordance with Specification Section 3.10. **Comments/Deviations:**
10-27-09		Completed final inspection and Acceptance of Work in accordance with Specification Section 3.14. **Comments/Deviations:**

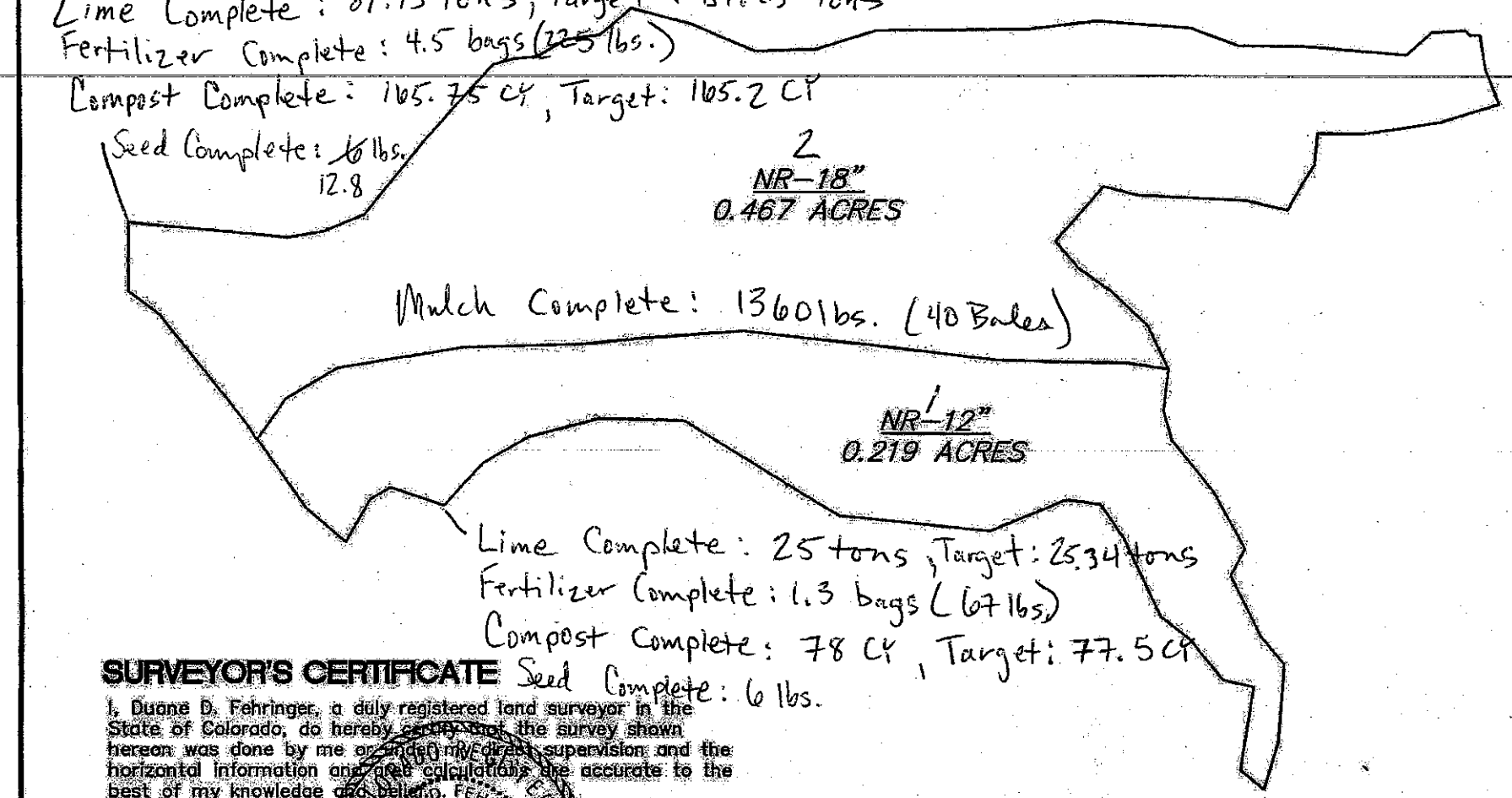
Quantity of Work Estimated in Proposal: NA

Quantity of Work Performed:

[signature] 11-06-09
Signature of Subcontractor Date

[signature] 10-30-09
Signature of Contractor Date

-COMPLETE-



SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief. D. FEHRINGER 26626 L.S. AND P.L.

Duane D. Fehringer P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING Civil Engineers & Surveyors	CLIENT: FRONTIER ENVIRONMENTAL INC.	NR CALIFORNIA GULCH CERCLA SITE OPERABLE UNIT NUMBER 11 LAKE COUNTY, COLORADO

DRAWN BY: SEE
SCALE: 1"=40'
DATE ISSUED: 5-4-09
PROJECT NO.: 08-0032
SHEET

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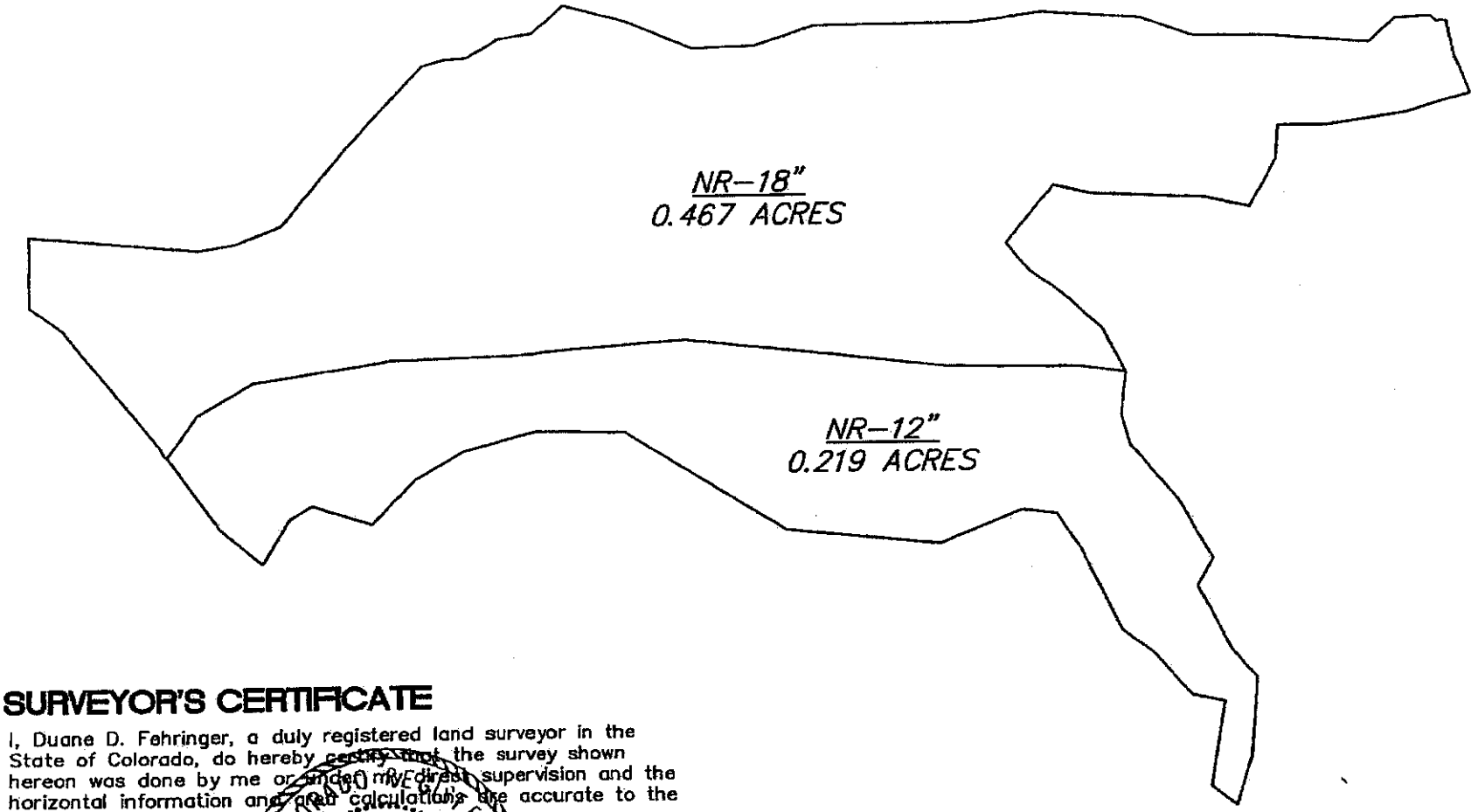
* Pre-Tilled



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COLORADO REGISTERED DUANE D. FEHRINGER 26626 AND P.L.S.

Duane D. Fehringer P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
40021 US HWY 6&24, SUITE 203 BOX 979 AVON, CO 81620 PH: (970)949-5877
6101 E. SEVERE PARKWAY, SUITE 106 CENTENNIAL, CO 80111 PH: (303)948-6228

CLIENT: FRONTIER ENVIRONMENTAL INC.

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NR

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=40'
DATE ISSUED:	5-4-00
PROJECT NO.	08-0032
CHKD BY:	

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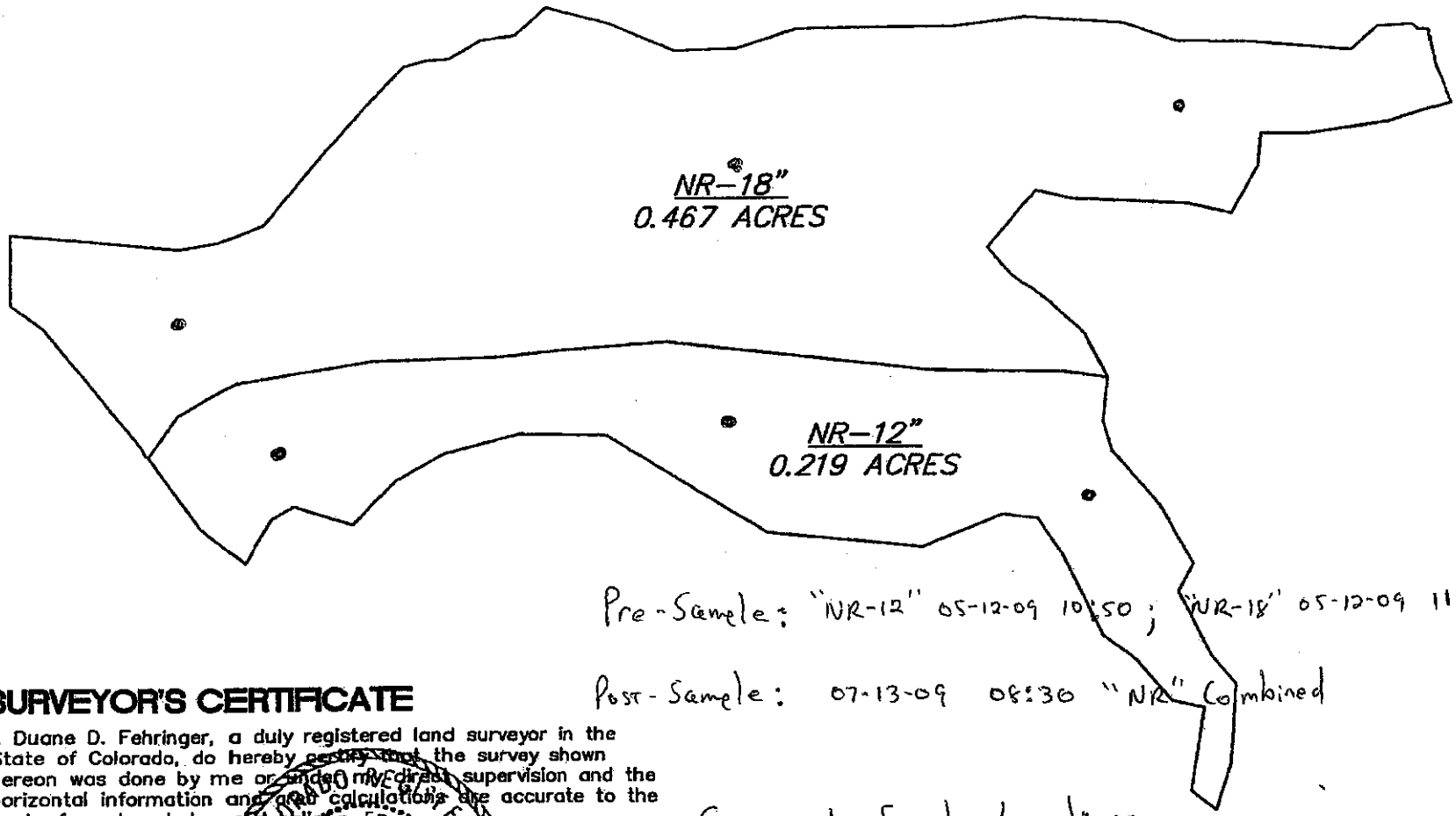
Pre- and Post - Remediation Samples



Pre-Sample: "NR-12" 05-12-09 10:50 ; "NR-18" 05-12-09 11:15

Post-Sample: 07-13-09 08:30 "NR" Combined

• Composite Sample Locations

All Samples 0-12" Depth

SURVEYOR'S CERTIFICATE

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COLORADO REGISTERED DUANE D. FEHRINGER 26626 LAND SURVEYOR AND P.L.S.

Duane D. Fehringer P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING

Civil Engineers & Surveyors

40081 US HWY 6&24, SUITE 203 BOX 978 AVON, CO 81620 PH: (970)949-5873

6311 S. REVERE PARKWAY, SUITE 186 CENTENNIAL, CO 80111 PH: (303)948-6328

CLIENT: FRONTIER ENVIRONMENTAL INC.

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NR

CALIFORNIA GULCH CERCLA SITE

OPERABLE UNIT NUMBER 11

LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=40'
DATE ISSUED:	9-4-09
PROJECT NO.	08-0032
CO-ORD:	

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Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **NR-1 (per FDSS & west side 12" treatment area)**

POLYGON CHARACTERISTICS

Net Application Rate				30	tons/1000 tons
Mixing Safety Factor (25% unless noted otherwise)				25.00%	%
% Rock				10.00%	%
Total Area				0.219	acres
Average Depth Calculation					
Depth (inches)		% of Total Area			
12	X	100.00%	=	12	
	X		=		
	X		=		
	X		=		
		Average Depth		12	inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.0000%	X 0.1	=	0.0000%	(A)
Percent 10 - 60 mesh	0.0800%	X 0.5	=	0.0400%	(B)
Percent < 60 mesh	99.9200%	X 1	=	99.9200%	(C)
Lime Reactivity			=	99.9600%	A+B+C

Calcium Carbonate Equivalence			82.20%	%
Percent Moisture			29.00%	%
Bulk Density	0.75 grams/cc	=	0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = $\frac{\text{Net Application Rate} * (1 + \text{Mixing Factor}/100) * (1 - \%\ \text{Rock}/100) * \text{Depth}}{(\text{Lime Reactivity}) * (\text{Calcium Carbonate Equivalence}/100) * (1 - \%\ \text{Moisture}/100)}$

Lime Rate = 115.70 tons/acre = 25.34 tons total

Lime Rate = 183.05 cy/acre = 40.09 cy total

Depth of Lime to be Applied = 1.4 inches

Signature: [signature]

Date: 5/14/09

Signature: [signature]

Date: 05-19-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **NR-2 (per FDSS & east side 18" treatment area)**

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (25% unless noted otherwise)	25.00% %
% Rock	10.00% %
Total Area	0.467 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
18	X	100.00%	=	18
	X		=	
	X		=	
	X		=	
		Average Depth		18 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.0000%	X 0.1	=	0.0000%	(A)
Percent 10 - 60 mesh	0.0800%	X 0.5	=	0.0400%	(B)
Percent < 60 mesh	99.9200%	X 1	=	99.9200%	(C)
Lime Reactivity			=	99.9600%	A+B+C

Calcium Carbonate Equivalence			82.20% %
Percent Moisture			29.00% %
Bulk Density	0.75 grams/cc	=	0.63 tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
/ (Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 173.56 tons/acre = 81.05 tons total

Lime Rate = 274.58 cy/acre = 128.23 cy total

Depth of Lime to be Applied = 2.0 inches

Signature: [signature]

Date: 5/14/09

Signature: [signature]

Date: 05-19-09

FILE MEMO

Regarding: Lime Compost (Fertilizer) Mulch Seed Other

Fluvial Deposit ID: NR **Irrigated ~~Meadow~~ ID:** _____

Acreage: .467 (18") & .219 (12")

Target Application: _____ 18" → .467 X 153 lbs X 3(6-inch) = 214 lbs ≈ 4.2 bags

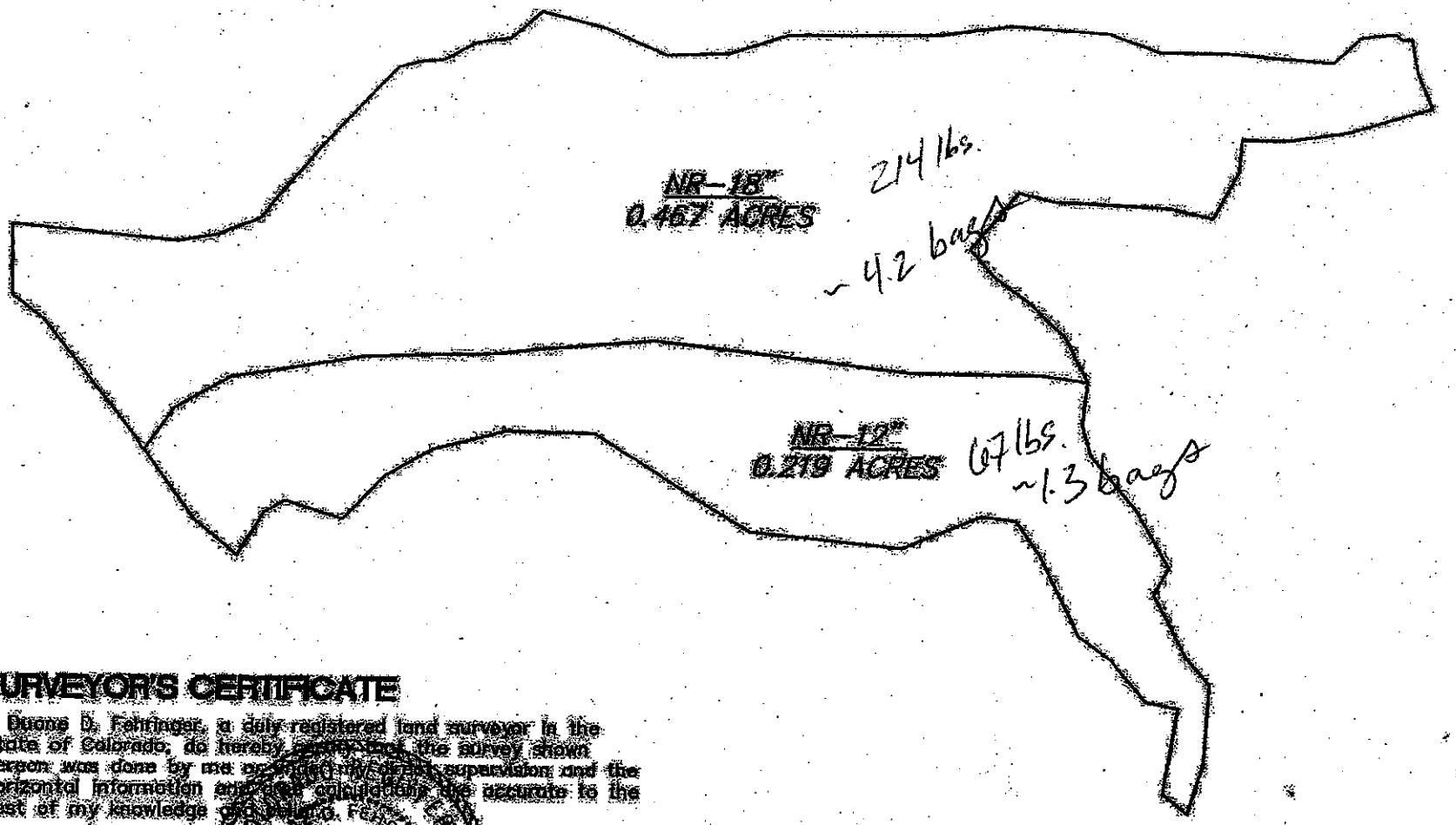
Amount Applied: _____ 12" → .219 X 153 lbs X 2(6-in) = 67 lbs ≈ 1.3 bags

Comments: Hand Broadcasted ≈ 6 Bags (5,8) 0:45:0

Signature

05-26-09

Date



SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and data calculations are accurate to the best of my knowledge and belief.

Duane D. Fehringer P.E. & P.L.S. 26626

STATE OF COLORADO
26626
DUANE D. FEHRINGER
PLS

Inter-Mountain ENGINEERING
CIVIL Engineers & Surveyors

FRONTIER ENVIRONMENTAL, INC.

NR

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

95-0032

* Pre-Tilled

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Retests
5/29/09
6.6
6.8

Paste pH Record NR-1

Fluvial Deposit/Irrigated Meadows Polygon: _____

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
NR1 0-6	TARE 00	15.0	15.0	6.5
NR1 6-12	TARE 00.0	15.0	15.0	6.5

Name/Signature: GARY SLIFKA / _____ **Date:** 5/28/09

2 point Calibration both days

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record

Fluvial Deposit/Irrigated Meadows Polygon: NR (18" Treatment)

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
NR-18 0-6	tare @ 0.0	16.5	16.5	7.0
NR-18 6-12	↓	16.8	16.8	7.3
NR-18 12-18	↓	15.3	15.3	7.3
NR-18 6-12 (Dupe)	0.0	16.6	16.9	7.2

Name/Signature: GARY SLIFKA / [signature] **Date:** 06-03-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **NR (both 1 & 2 were >12" &10% rock)**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	10%	
Treatment Area	0.686	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate =	243.0 tons/acre	=	166.7 tons
Compost Rate =	353.7 cy/acre	=	242.6 cy
	Depth of Compost to be Applied =		2.6 inches

Signature: [signature]

Date: 6/4/09

Signature: [signature]

Date: 06-04-09

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: NR

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	HCl Reaction?
NR1 0-6	7.3	7.0	7.5	None	Yes
NR1 6-12	7.3	7.0	7.5	None	Yes
NR 0-6	7.75	7.0	8.5	0	Y
6-12	7.25	7.0	7.5	0	Y
12-18	7.0	7.0	7.0	0	Y
				22" down 5.0 = N	
NT06	7.0	7.0	7.0	0	yes
NT18 6-12	7.0	7.0	7.0	0	yes
NT30 0-6	7.5	7.0	8.0	0	yes
6-12				0	yes
12-18				0	yes
18-24				0	yes
24-30				0	yes

6/4/09

Name/Signature: GARY SLIFKA / Gary Slifka **Date:** 6-3-09

31.40 PLS
37.67 lbs/bag 84% 18.8 lbs

FILE MEMO

Regarding: Lime Compost Fertilizer Mulch (Seed) Other

Fluvial Deposit ID: NR **Irrigated Meadow ID:** _____

Acreage: .469 + .219 = .686 acres

Target Application: .686 X 11.44 lbs/acre x 2 (Double Rate) + 16% (84% PLS)
= 18.2 lbs Seed

Amount Applied: 18.8 lbs

Comments: Pure Contract FD Seed Mix; Hand Broadcasted amount dispersed using scale & Reelved with Plastic broadcaster

Signature

10-23-09
Date

Polygon Completion Form
Fluvial Deposits

Fluvial Deposit Polygon Name/ID: NT

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
05-15-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.3. **Comments/Deviations:**
05-20-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.4. **Comments/Deviations:**
06-05-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Section 3.6A through 3.6E. Spread lime (turned but not incorporated) on 05-22-09) **Comments/Deviations:** fertilized on 05-26-09; Began Incorp 06-03-09
07-07-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.6F through 3.6I. Apply Completed 06-05-09 **Comments/Deviations:** Street finish: 06-30-09
NA	NA	Completed replacement of erosion channels in accordance with Specification Section 3.7. **Comments/Deviations:** No channels to replace
10-22-09	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.8. **Comments/Deviations:** Re-seeded/re scarified compacted areas near haul roads wk of 10-19; Seeded 10-22-09
07-28-09	✓	Completed mulching in accordance with Specification Section 3.9. **Comments/Deviations:** Mulched, Crimped 07-28-09
NA	NA	Completed reinstallation of fencing in accordance with Specification Section 3.10. **Comments/Deviations:**
10-27-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.14. **Comments/Deviations:**

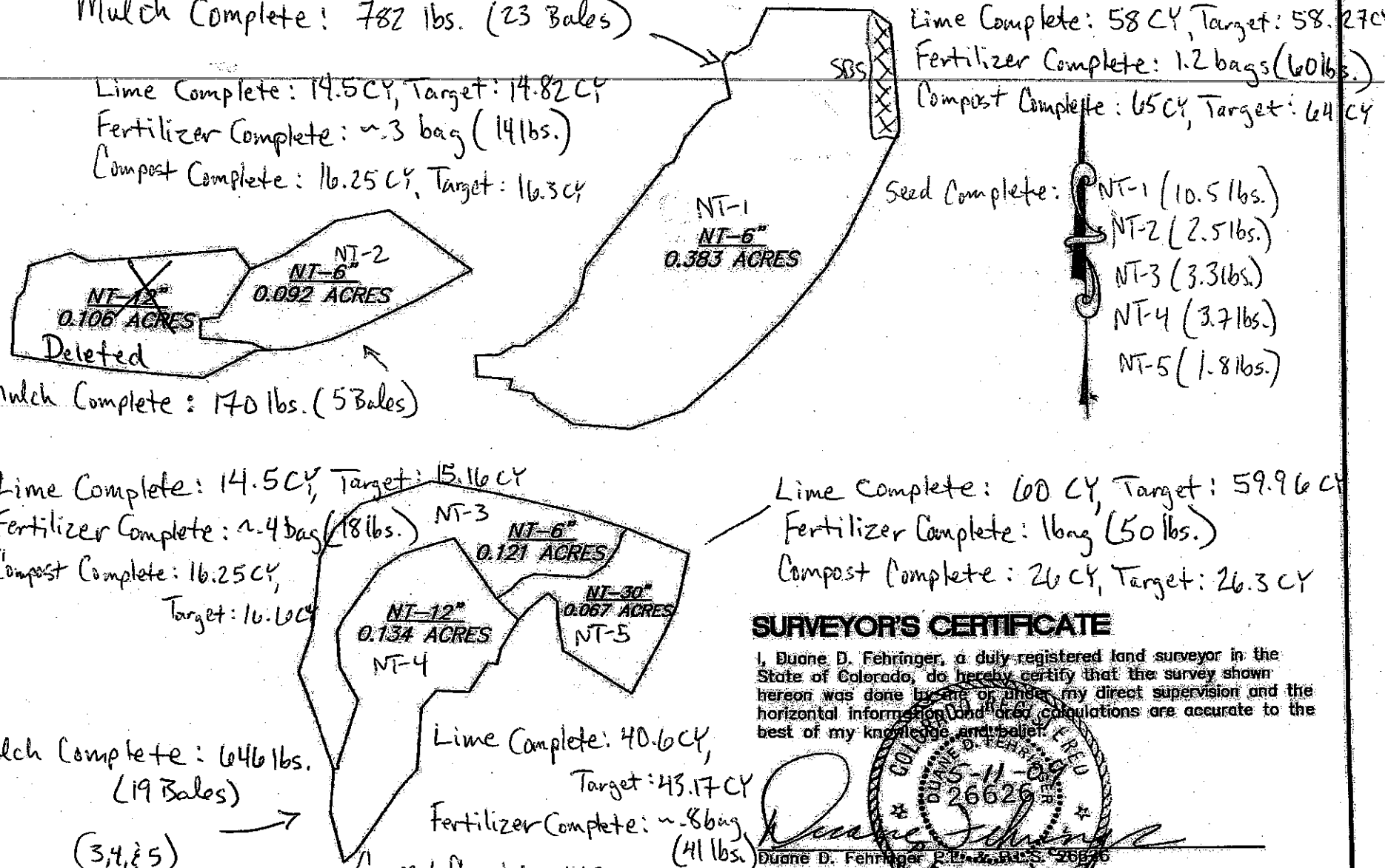
Quantity of Work Estimated in Proposal: NA - Addressed in Invoice Recs. Amd
Quantity of Work Performed:

11-06-09
Signature of Subcontractor Date

10-30-09
Signature of Contractor Date

- COMPLETE -

* Streambank Stabilization Complete: 41 LF of Type I w/ willow/carex transplants



SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO DUANE D. FEHRINGER 26626 L.S. 11-09 P.L.S. AND P.E.

Duane D. Fehringer P.L.S. No. 26626

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
0301 US HWY 6&24, SUITE 203 BOX 979 AVON, CO 81620 PH: (970)949-5072
6551 S. REVERE PARKWAY, SUITE 106 CENTENNIAL, CO 80111 PH: (303)925-4220

CLIENT: FRONTIER ENVIRONMENTAL INC.

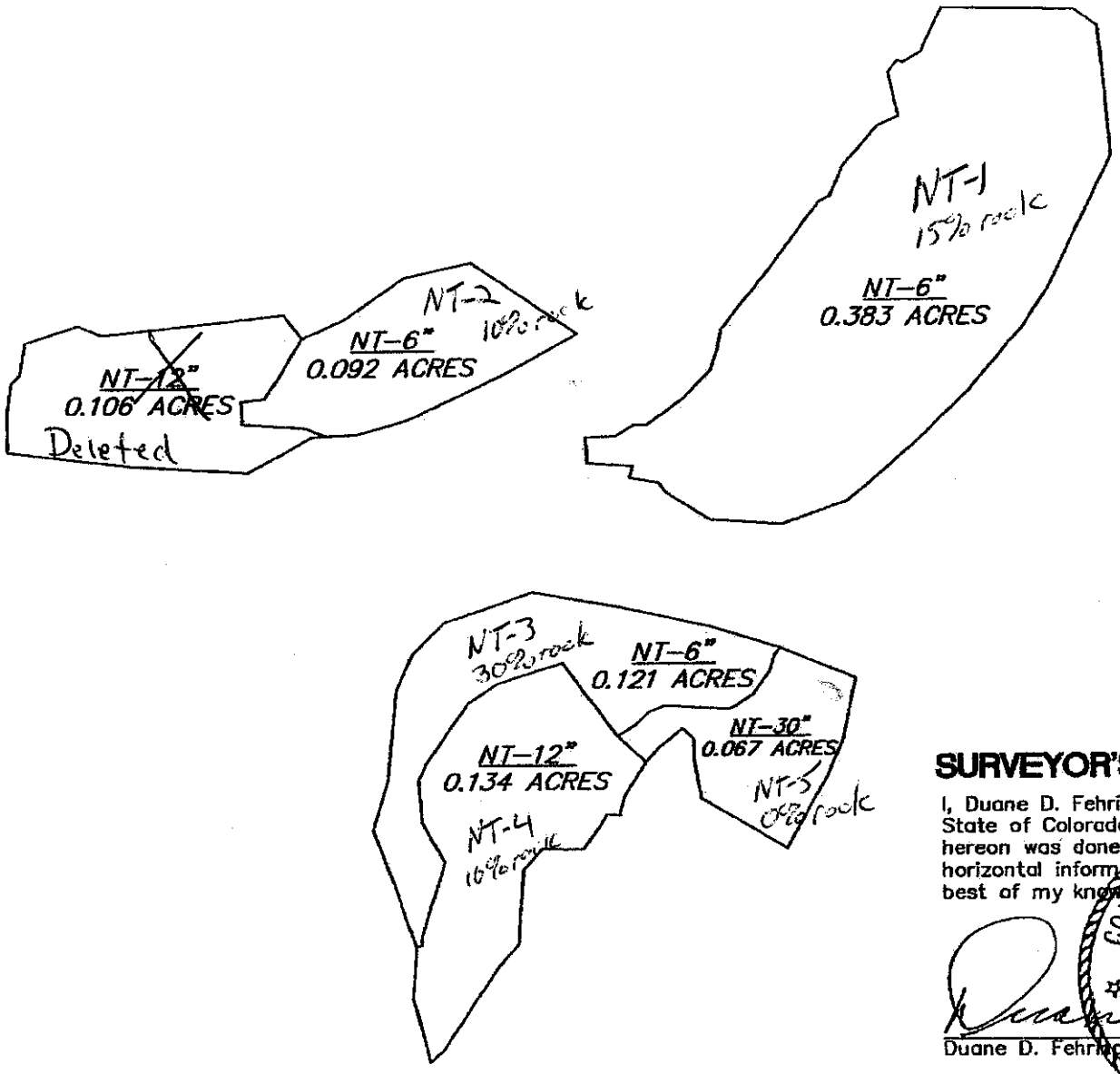
This document was prepared for the exclusive use of the Client specified herein. The use of this document or the information contained herein by any other person or entity is not authorized. In the event that any other person or entity desires to use this document or the information contained herein, for any purpose they must first obtain written authorization from Inter-Mountain Engineering. This document and any information contained herein is intended to be used within one year of the date hereof. Use after that period is not authorized.

NT

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=80'
DATE ISSUED:	11-4-09
PROJECT NO.:	08-0032
CHKD:	

* Pre-Tilled



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5-11-09

Duane D. Fehringer P.E. & P.L.S. 26626

COLORADO REG. P.E. & P.L.S. DUANE D. FEHRINGER 26626

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
40081 US HWY 6&24, SUITE 203 BOX 978 AVON, CO 81620 PH: (970)949-5072
6551 S. REVERE PARKWAY, SUITE 106 CENTENNIAL, CO 80111 PH: (303)948-4220

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NT

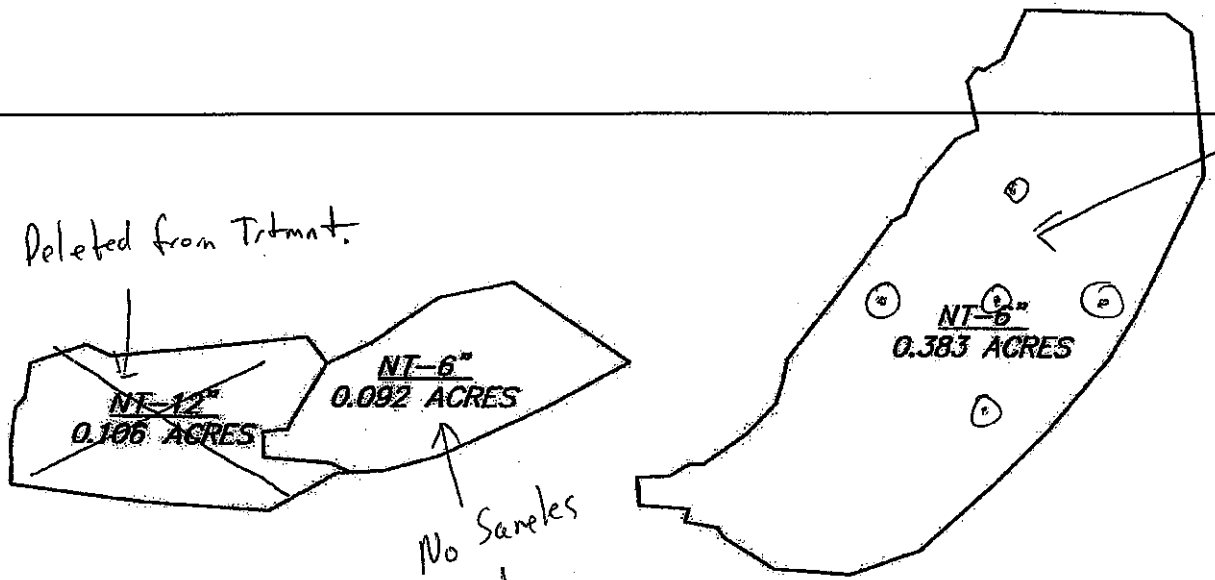
CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=60'
DATE ISSUED:	5-4-09
PROJECT NO:	08-0032
SHEET	

(0-6" Depth)

5-Point Pre-Sample

* Did Not Analyze



"NT-12"

• 5 point composite

Pre: 05-12-09 13:45

Post: 07-09-09 07:45

GPS: N39.14 99535 ?
W-106. 31754944)

"NT-30" • 5 point composite

Pre: 05-12-09 13:30 N 39.14998521

Post: 07-09-09 07:50 W-106.3172499

SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and all calculations are accurate to the best of my knowledge and belief.

5-11-09

Duane D. Fehringer P.E. & P.L.S. 26626

COLORADO REGISTERED DUANE D. FEHRINGER 26626 P.E. AND P.L.S.

Inter-Mountain ENGINEERING

Civil Engineers & Surveyors

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NT

CALIFORNIA GULCH CERCLA SITE

OPERABLE UNIT NUMBER 11

LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=80'
DATE ISSUED:	5-11-09
PROJECT NO.	08-0032
SHEET	

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **NT-1**

POLYGON CHARACTERISTICS

Net Application Rate	60 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock (per walk with Jennings)	15.00% %
Total Area	0.383 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
6	X	100.00%	=	6
	X		=	
	X		=	
	X		=	
		Average Depth		6 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence			82.20% %
Percent Moisture			29.00% %
Bulk Density	0.75 grams/cc	=	0.63 tons/cy

CALCULATE LIME RATE

Lime Rate = $\frac{\text{Net Application Rate} * (1 + \text{Mixing Factor}/100) * (1 - \%\ \text{Rock}/100) * \text{Depth}}{(\text{Lime Reactivity}) * (\text{Calcium Carbonate Equivalence}/100) * (1 - \%\ \text{Moisture}/100)}$

Lime Rate = 96.16 tons/acre = 36.83 tons total

Lime Rate = 152.14 cy/acre = 58.27 cy total

Depth of Lime to be Applied = 1.1 inches

Signature: [signature]

Date: 5/14/09

Signature: [signature]

Date: 05-14-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **NT-2**

POLYGON CHARACTERISTICS

Net Application Rate	60 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock (per walk with Jennings)	10.00% %
Total Area	0.092 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
6	X	100.00%	=	6
	X		=	
	X		=	
	X		=	
		Average Depth		6 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence			82.20% %
Percent Moisture			29.00% %
Bulk Density	0.75 grams/cc	=	0.63 tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth / (Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 101.82 tons/acre = 9.37 tons total

Lime Rate = 161.09 cy/acre = 14.82 cy total

Depth of Lime to be Applied = 1.2 inches

Signature: Ben A. Jennings

Date: 5/14/09

Signature: Debra Curtis

Date: 05-14-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **NT-3**

POLYGON CHARACTERISTICS

Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	60 tons/1000 tons
% Rock (per walk with Jennings)	10.00% %
% Rock	30.00% %
Total Area	0.121 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
6	X	100.00%	=	6
	X		=	
	X		=	
	X		=	
		Average Depth		6 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		29.00% %	
Bulk Density	0.75 grams/cc	= 0.63	tons/cy

CALCULATE LIME RATE

$$\text{Lime Rate} = \frac{\text{Net Application Rate} * (1 + \text{Mixing Factor}/100) * (1 - \%\ \text{Rock}/100) * \text{Depth}}{(\text{Lime Reactivity}) * (\text{Calcium Carbonate Equivalence}/100) * (1 - \%\ \text{Moisture}/100)}$$

Lime Rate = 79.19 tons/acre = 9.58 tons total

Lime Rate = 125.29 cy/acre = 15.16 cy total

Depth of Lime to be Applied = 0.9 inches

Signature: [signature]

Date: 5/14/09

Signature: [signature]

Date: 05-14-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **NT-4**

POLYGON CHARACTERISTICS

Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	60	tons/1000 tons
% Rock (per walk with Jennings)	10.00%	%
% Rock	10.00%	%
Total Area	0.134	acres

Average Depth Calculation

Depth (inches)		% of Total Area		
12	X	100.00%	=	12
	X		=	
	X		=	
	X		=	
		Average Depth		12 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20%	%
Percent Moisture		29.00%	%
Bulk Density	0.75 grams/cc =	0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 203.64 tons/acre = 27.29 tons total

Lime Rate = 322.17 cy/acre = 43.17 cy total

Depth of Lime to be Applied = 2.4 inches

Signature: [signature]

Date: 5/14/09

Signature: [signature]

Date: 05-14-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **NT-5**

POLYGON CHARACTERISTICS

Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	60 tons/1000 tons
% Rock (per walk with Jennings)	10.00% %
% Rock	0.00% %
Total Area	0.067 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
30	X	100.00%	=	30
	X		=	
	X		=	
	X		=	
		Average Depth		30 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		29.00% %	
Bulk Density	0.75 grams/cc	= 0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth / (Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 565.66 tons/acre = 37.90 tons total

Lime Rate = 894.93 cy/acre = 59.96 cy total

Depth of Lime to be Applied = 6.7 inches

Signature: [signature]

Date: 5/14/09

Signature: [signature]

Date: 05-14-09

FILE MEMO

Regarding: Lime Compost **Fertilizer** Mulch Seed Other

Fluvial Deposit ID: NT **Irrigated Meadow ID:** ~~IM~~ NP

Acreage: Below

Target Application: (Below)

Amount Applied: ≃ 7 bags · Broadcasted with hand spreader - distributed per below (attached)

Comments:

0.092 X 1 (6-inch) X 153 = 14 lbs / 50 ≃ 3.6 bags

0.383 X 1 (6-inch) X 153 = 58.5 lbs/50 ≃ 1.2 bags

0.121 X 1 (6 inch) X 153 = 18.5 lbs/50 ≃ 0.4 bags

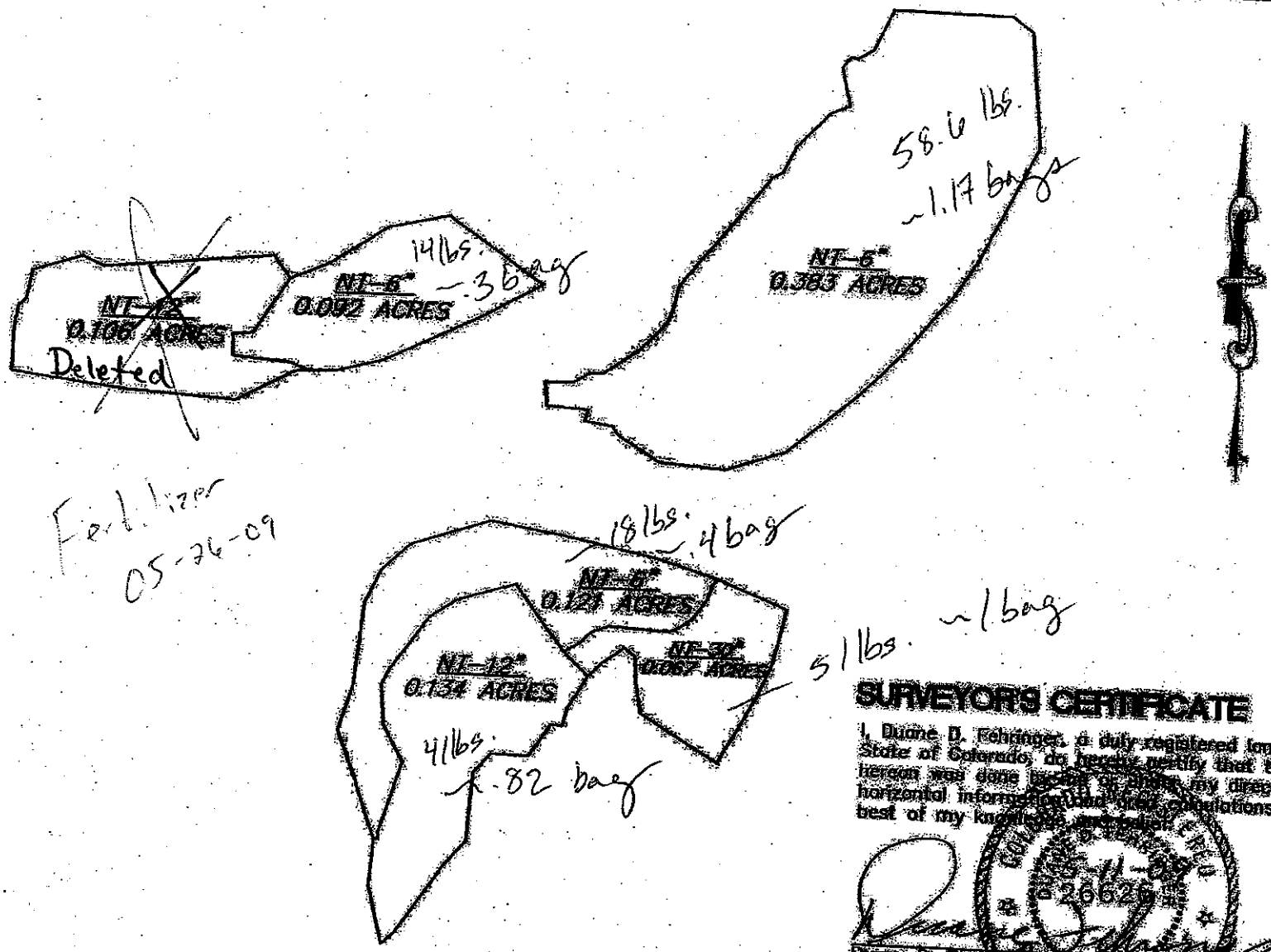
0.134 X 2 (12-inch) X 153 = 41 lbs/50 ≃ 0.8 bags

0.067 X 5 (30-inch) X 153 = 51.2 lbs/50 ≃ 1 bag

Signature

05-26-09

Date



SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and data calculations are accurate to the best of my knowledge and belief.

Duane D. Fehringer, P.E./L.S. Colorado

NT

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors

FRONTIER ENVIRONMENTAL, INC.

08-0032

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record

Fluvial Deposit/Irrigated Meadows Polygon: NT

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
NT12 0-6	TARE@0.0	15.4	15.4	7.1
6-12		15.6	15.6	7.1
NT30 0-6		15.0	15.0	7.0
6-12		15.1	15.1	7.0
12-18		15.7	15.7	7.1
18-24		15.4	15.4	6.9
24-30		15.3	15.4	7.0
NT-30 18-20	0.0	15.4	15.4	7.0 6-5-09 re-test

Name/Signature: GARY SLUTKA / [signature] Date: 6-4-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **NT-1**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	6	inches
% Rock	15%	
Treatment Area	0.383	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	0.687	=	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC * depth * 1000 tons/acre/6" * (1-\%rock/100)}}{\text{Compost \% OC * (1-\%Moisture/100)}}$$

Compost Rate = 114.7 tons/acre = 43.9 tons

Compost Rate = 167.0 cy/acre = 64.0 cy

Depth of Compost to be Applied = 1.2 inches

Signature: [signature]

Date: 6/4/09

Signature: [signature]

Date: 06-04-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **NT-2**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	6	inches
% Rock	10%	
Treatment Area	0.092	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 121.5 tons/acre = 11.2 tons

Compost Rate = 176.9 cy/acre = 16.3 cy

Depth of Compost to be Applied = 1.3 inches

Signature: [signature]

Date: 6/4/09

Signature: [signature]

Date: 06-04-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: NT-3

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	6	inches
% Rock	30%	
Treatment Area	0.121	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

Compost = $\frac{\text{Target \% OC * depth * 1000 tons/acre/6" * (1-\%rock/100)}}{\text{Compost \% OC * (1- \%Moisture/100)}}$

Compost Rate =	94.5 tons/acre	=	11.4 tons
Compost Rate =	137.6 cy/acre	=	16.6 cy
	Depth of Compost to be Applied =		1.0 inches

Signature: [signature]

Date: 6/4/09

Signature: [signature]

Date: 06-04-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **NT-4**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	10%	
Treatment Area	0.134	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate =	243.0 tons/acre	=	32.6 tons
Compost Rate =	353.7 cy/acre	=	47.4 cy
	Depth of Compost to be Applied =		2.6 inches

Signature: [signature]

Date: 6/4/09

Signature: [signature]

Date: 06-04-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: NT-5

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	0%	
Treatment Area	0.067	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

Compost = $\frac{\text{Target \% OC * depth * 1000 tons/acre/6" * (1-\%rock/100)}}{\text{Compost \% OC * (1- \%Moisture/100)}}$

Compost Rate =	270.0 tons/acre	=	18.1 tons
Compost Rate =	393.0 cy/acre	=	26.3 cy
	Depth of Compost to be Applied =		2.9 inches

Signature: [signature]

Date: 6/4/09

Signature: [signature]

Date: 06-04-09

FD Mix $\frac{31.46 \text{ PLS}}{37.67 \text{ lbs/bag}} = 84\%$

FILE MEMO

Regarding: Lime Compost Fertilizer Mulch (Seed) Other

Fluvial Deposit ID: NT **~~Irrigated Meadow ID:~~**

Acreage: .092+.383+.067+.121+.134 = 0.797 x 11.44 pls/acre x 2 (Double Rate) = 18.2 + 16% = 21.2 lbs seed

Target Application:

Amount Applied: 21.8 lbs

Comments:

PWT Confirmed FD Seed Mix, lbs pcs, Hand weighed 21.8 lbs in field, broadcasted with Flail Spreader

Signature

10-22-09

Date

Polygon Completion Form
Fluvial Deposits

Fluvial Deposit Polygon Name/ID: NW

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
05-27-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.3. **Comments/Deviations:**
05-28-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.4. Begin Pre-Till 05-27-09, finished 05-28-09 **Comments/Deviations:**
06-18-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Section 3.6A through 3.6E. Start & Incorp. Lime & Fert 06-17-09 **Comments/Deviations:** * Subcontractor mis-calculated treatment depth for fertilizer and under-applied (164 lbs instead of target 262 lbs)
07-14-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.6F through 3.6I. **Comments/Deviations:** Strip Place Compost 07-01-09,
NA	NA	Completed replacement of erosion channels in accordance with Specification Section 3.7. **Comments/Deviations:** No Channel work required
10-05-09 07-14-09	✓ ✓	Completed ~~Seedbed Preparation~~ and Seeding in accordance with Specification Section 3.8. **Comments/Deviations:** Re-drug surface 10-07-09; Seeded 10-05-09
10-19-09	✓	Completed mulching in accordance with Specification Section 3.9. **Comments/Deviations:** Molched 10-19-09 & Crimped
NA	NA	Completed reinstallation of fencing in accordance with Specification Section 3.10. **Comments/Deviations:**
10-27-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.14. **Comments/Deviations:**

Quantity of Work Estimated in Proposal: NA - Documented with Invoice Materials

Quantity of Work Performed:

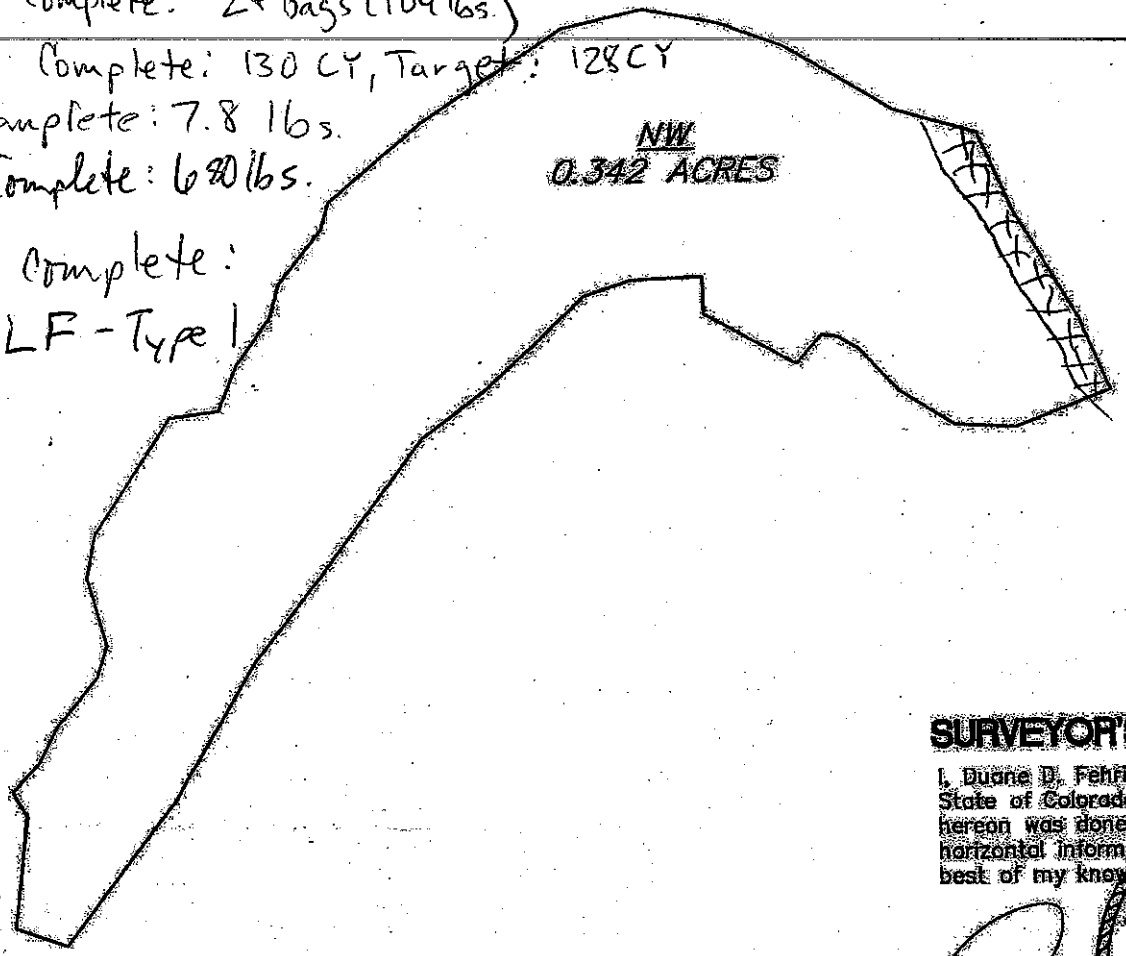
[signature] 11-06-09
Signature of Subcontractor Date

[signature] 10-30-09
Signature of Contractor Date

- COMPLETE -

Lime Complete: 146.25 CY, Target: 145.38 CY
Fertilizer Complete: 2+ bags (104 lbs.)
Compost Complete: 130 CY, Target: 128 CY
Seed Complete: 7.8 lbs.
Mulch Complete: 680 lbs.

* SBS Complete:
60 LF - Type I



SURVEYOR'S CERTIFICATE

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5-5-09

Duane D. Fehringer P.E. & P.L.S. 26626

COLORADO D. FEHRINGER 26626 P.E. AND P.L.S.

NW

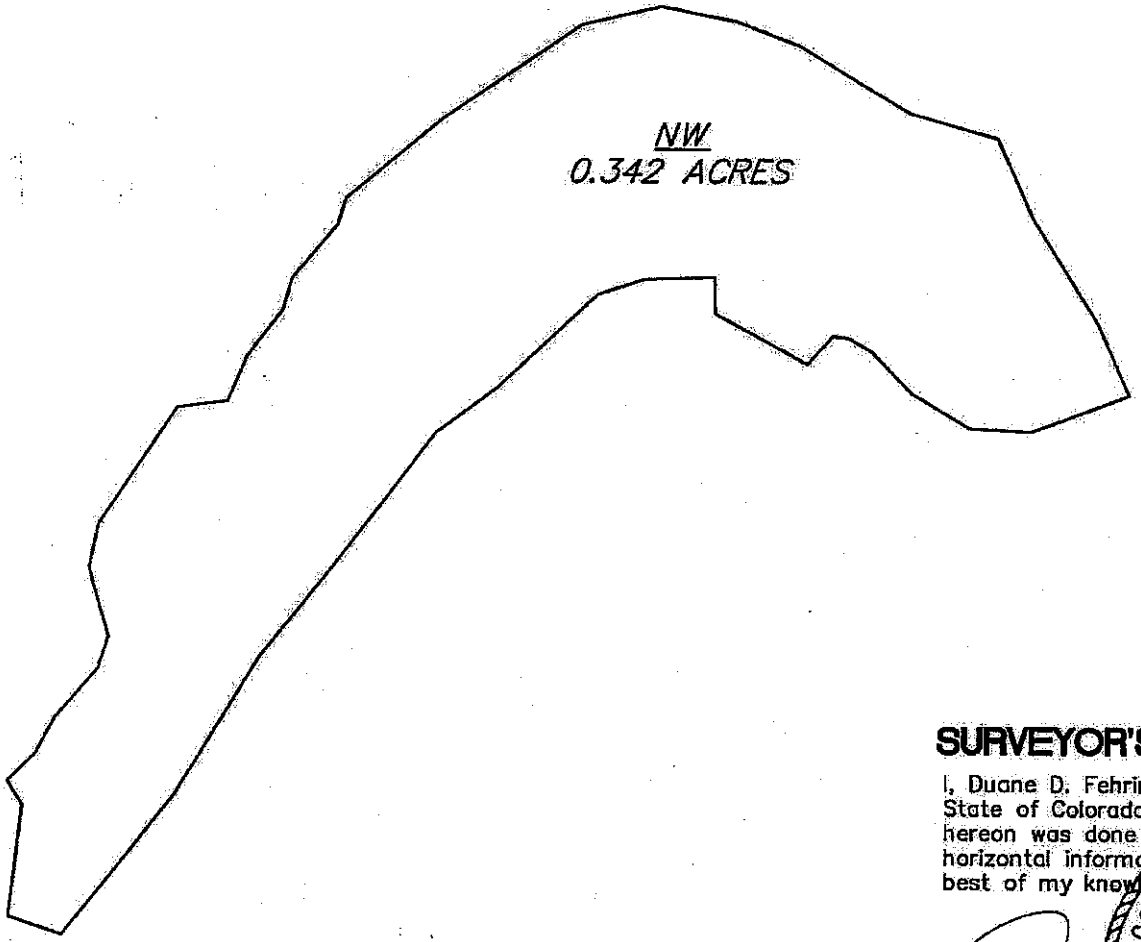
Inter-Mountain ENGINEERING
Civil Engineers & Surveyors

CLIENT: FRONTIER ENVIRONMENTAL INC.

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

PROJECT NO: 08-0032

* Pre-Tilled



SURVEYOR'S CERTIFICATE

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Duane D. Fehringer P.E. & P.L.S. 26626

COLORADO REGISTERED DUANE D. FEHRINGER 5-5-09 26626 P.E. AND P.L.S.

J:\projects\08032\dwg\OU-11 Areas.dwg

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
45511 US HWY 6&24, SUITE 203 BOX 975 AVON, CO 81620 PH: (970)949-5872
4251 S. REVERE PARKWAY, SUITE 180 CENTENNIAL, CO 80111 PH: (303)694-6228

CLIENT: FRONTIER ENVIRONMENTAL INC.

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NW

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=40'
DATE ISSUED:	5-4-09
PROJECT NO.	08-0032
EXHIBIT	

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **NW**

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	5.00% %
Total Area	0.342 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
30	X	100.00%	=	30
	X		=	
	X		=	
	X		=	
		Average Depth		30 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.0000%	X 0.1	=	0.0000%	(A)
Percent 10 - 60 mesh	0.0800%	X 0.5	=	0.0400%	(B)
Percent < 60 mesh	99.9200%	X 1	=	99.9200%	(C)
Lime Reactivity			=	99.9600%	A+B+C

Calcium Carbonate Equivalence			82.20% %
Percent Moisture			29.00% %
Bulk Density	0.75 grams/cc	=	0.63 tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 268.69 tons/acre = 91.89 tons total

Lime Rate = 425.09 cy/acre = 145.38 cy total

Depth of Lime to be Applied = 3.2 inches

Signature: [signature]

Date: 5/19/09

Signature: [signature]

Date: 05-19-09

FILE MEMO

Regarding: Lime Compost (Fertilizer) Mulch Seed Other

Fluvial Deposit ID: NW **Irrigated Meadow ID:** _____

Acreage: 0342

0.342 x 153 lbs/acre x 5 (30-inch) = 262 lbs/50 ≈ 5 bags

Target Application: 5 bags

Amount Applied: *104 lbs

Comments:

* PWT not present during application to note that fertilizer was not calculated correctly by FESE (wrong fractrent depth used)

[signature]

Signature

06-09-09

Date

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: NW

	Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	HCl Reaction?
NW-1	0-6	7.0			0%	Yes
	6-12	7.0			0%	yes
	12-18	7.0			0%	yes
	18-24	7.0			0%	yes
	24-30	7.0			0%	yes
NW-2	0-6	7.5		8.0	0%	yes
	6-12	7.5		8.0	0%	yes
	12-18	7.5		8.0	0%	yes
	~~12-18 (pipe)~~	NA (Paste)				
	18-24	7.5		8.0	0%	yes
	24-30	7.5		8.0	0%	yes
Tailings Beneath						
NW-1	34" +	5.0-5.5				
NW-2	34" +	4.5-5.5				

Name/Signature: [signature]

Date: 06-18-09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

* NEW TEST 6/22/09 From Same Composite Bag Intervals

Fluvial Deposit/Irrigated Meadows Polygon: **Paste pH Record** NW

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH	
NW-1 0-6	0.0	15.5	15.3	6.4	7.1
6-12	↓	13.4	12.7	6.4	7.4
12-18		16.2	16.2	6.6	
18-24		15.1	15.7	6.3	7.4
24-30		17.1	17.5	6.6	
NW-2 0-6		16.0	16.2	6.6	
6-12		15.1	15.6	7.3	
12-18		15.7	15.6	7.4	
12-18 (Dupe)		18.8	17.7	7.2	
18-24		16.6	15.5	7.3	
24-30	↓	18.1	18.2	~~7.0~~ GS 7.2	
				~~?~~	
* NW1 0-6	TARE @ 0.0	15.0	15.2	7.1	
NW1 6-12	↓	15.0	15.4	7.4	
NW1 18-24		15.4	15.4	7.4	

Name/Signature: GARY SLIFKA / [signature] **Date:** 6/19/09

NW-1

06-22-09

Retests after setting up samples from same bag samples collected 06-19-09

		Soil Wt	H2O wt	pH
NW1 0-6	Tare 0.0	15.0	15.2	7.1
6-12	↓	15.0	15.4	~~7.5~~ 7.4
18-24		15.4	15.4	7.4

2 Point Calibration
pH 7.0 & 10.0 Buffers

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: NW

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	5%	
Treatment Area	0.342	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	0.687	=	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 256.5 tons/acre = 87.7 tons

Compost Rate = 373.4 cy/acre = 127.7 cy

Depth of Compost to be Applied = 2.8 inches

Signature: [signature]

Date: 6/4/09

Signature: [signature]

Date: 06-04-09

FILE MEMO

Regarding: Lime Compost Fertilizer Mulch (Seed) Other

Fluvial Deposit ID: NW **Irrigated Meadow ID:** _____

Acreage: 0.342

Target Application: 0.342 X 11.44 lbs/acre x 2 (Double Drill Rate) = 7.8 lbs

Amount Applied: ~8 lbs

Comments:
Weighed Seed, Contained FD Seed Mix, Broadcasted with Wheel-Mounted Flail

Signature

10-05-09
Date

Polygon Completion Form
Fluvial Deposits

Fluvial Deposit Polygon Name/ID: OA

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
04-30-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.3. **Comments/Deviations:**
05-03-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.4. **Comments/Deviations:**
05-13-09 ~~05-18~~	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Section 3.6A through 3.6E. Start Lime and Fert 05-07-09 **Comments/Deviations:**
06-04-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.6F through 3.6I. Start Compost Appl. 05-21-09 **Comments/Deviations:**
NA	NA	Completed replacement of erosion channels in accordance with Specification Section 3.7. **Comments/Deviations:** No channels of significance
06-04-09	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.8. **Comments/Deviations:** Seedbed Prep w/ RLLO 06-04-09 Seeded on 06-09-09 Hand Broadcast Double Rate Re-Seed 10-28-09
06-04-09	✓	Completed mulching in accordance with Specification Section 3.9. **Comments/Deviations:** Mulched 06-04-09 (Hand)
NA	NA	Completed reinstallation of fencing in accordance with Specification Section 3.10. **Comments/Deviations:** No fencing
10-30-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.14. **Comments/Deviations:**

Quantity of Work Estimated in Proposal: ~~NA~~ Addressed in Invoice Documentation

Quantity of Work Performed:

11-06-09
Signature of Subcontractor Date

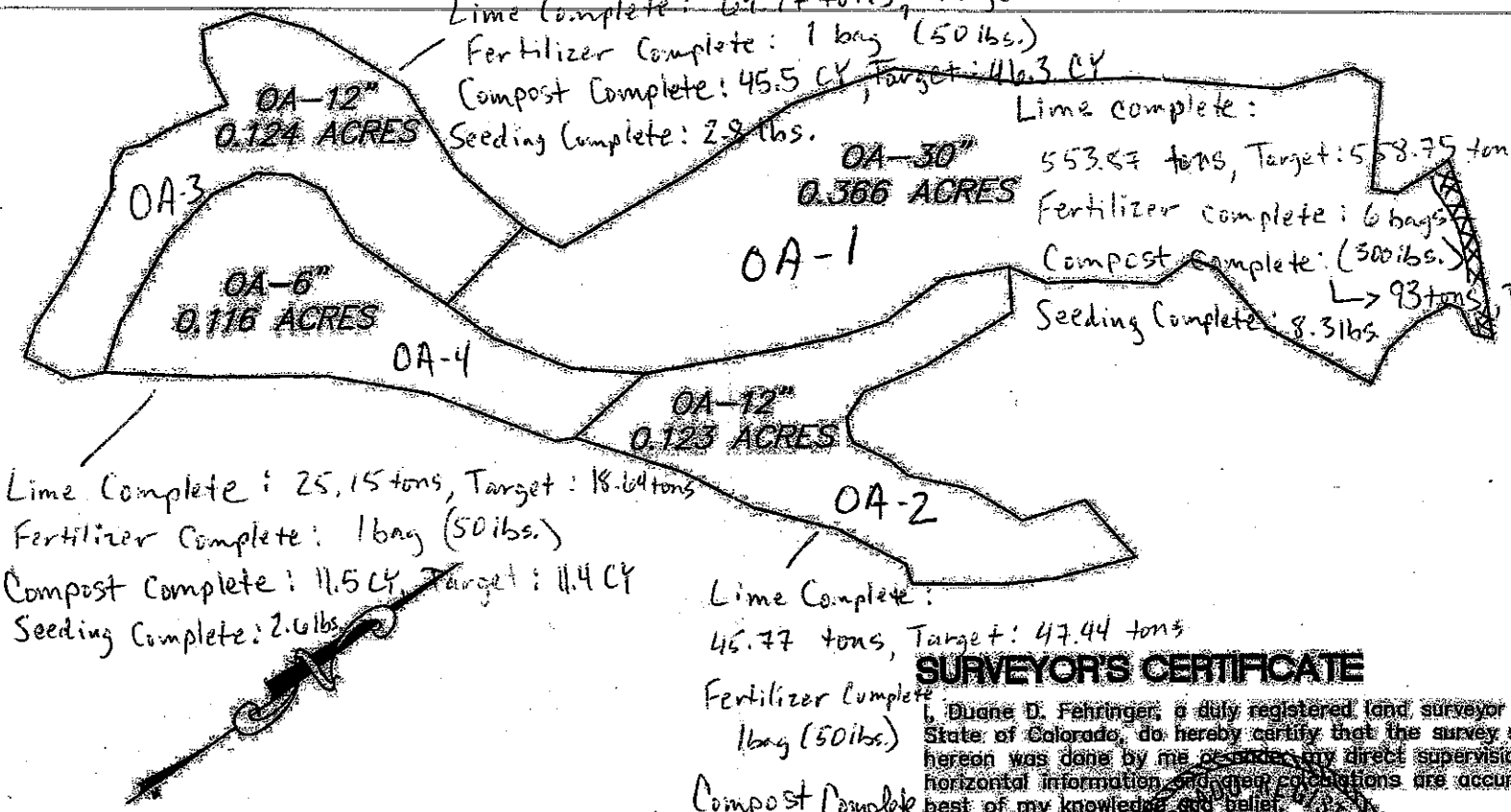
10-30-09
Signature of Contractor Date

Mulching Complete: 37 Bales (1480lbs.)

Streambank Stabilization: Type II Mod. 56 LF

- Complete -

Entire area reseeded: 20.0 lbs



Lime Complete: 69.97 tons, Target: 75.72 tons
Fertilizer Complete: 1 bag (50 lbs.)
Compost Complete: 45.5 CY, Target: 46.3 CY
Seeding Complete: 2.9 lbs.

Lime complete: 553.67 tons, Target: 558.75 tons
Fertilizer complete: 6 bags
Compost Complete: (300 lbs.)
↳ 93 tons, Target: 93.88 tons
Seeding Complete: 8.3 lbs

Lime Complete: 25.15 tons, Target: 18.64 tons
Fertilizer Complete: 1 bag (50 lbs.)
Compost Complete: 11.5 CY, Target: 11.4 CY
Seeding Complete: 2.6 lbs.

Lime Complete: 46.77 tons, Target: 47.44 tons
Fertilizer Complete: 1 bag (50 lbs.)
Compost Complete: 29.25 CY, Target: 29 CY
Seeding Complete: 2.8 lbs.

SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and given elevations are accurate to the best of my knowledge and belief.

COLORADO U.S.A. DUANE D. FEHRINGER 5-5-09 26626 LAND SURVEYOR

Duane D. Fehringer, P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors

CLIENT: FRONTIER ENVIRONMENTAL INC.

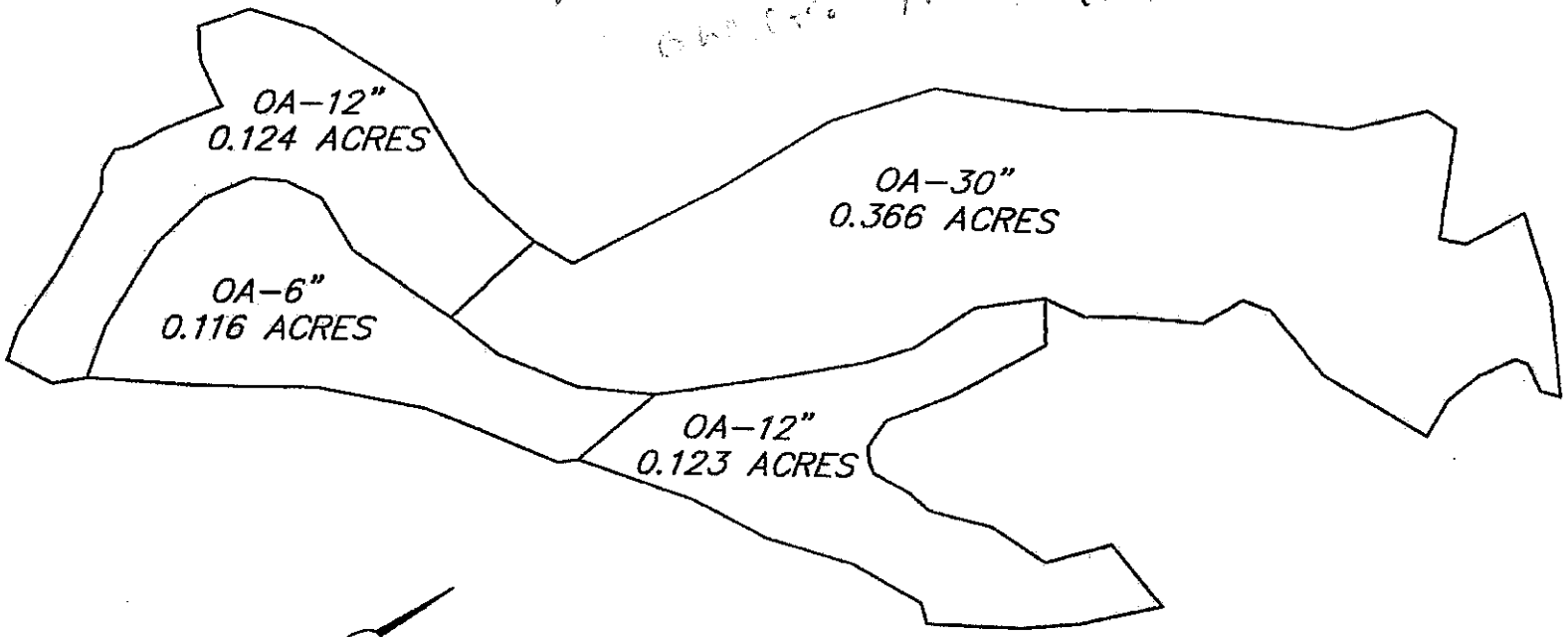
OA

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

SCALE: 1"=50'
DATE: 5-4-09
08-0032

*Pre-Tilled

Pre-Samples



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Duane D. Fehringer P.E. & P.L.S. 26626

COLORADO REGISTERED DUANE D. FEHRINGER 26626 P.E. AND P.L.S.

OA

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
42531 US HWY 6&24, SUITE 233 BOX 978 AVON, CO 81620 PH: (970)949-8873
6551 S. REVERE PARKWAY, SUITE 186 CENTENNIAL, CO 80111 PH: (303)948-5323

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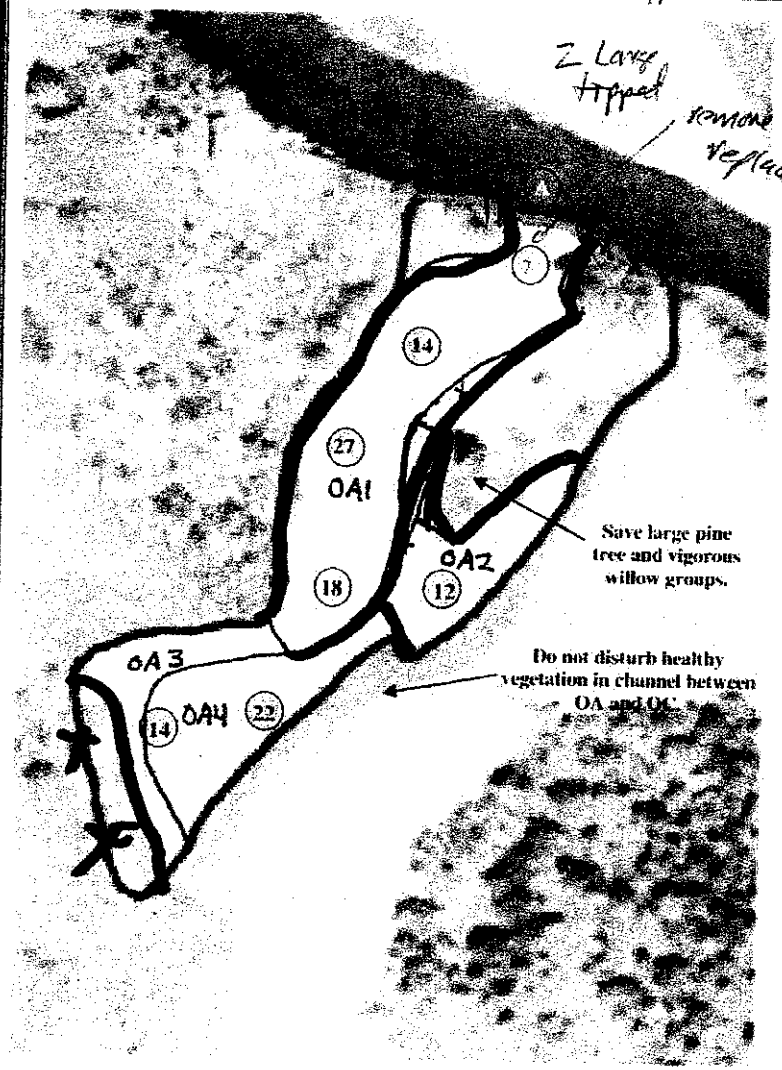
DRAWN BY:	SPF
SCALE:	1"=60'
DATE ISSUED:	5-4-09
PROJECT NO.	08-0032
SHEET	

J:\projects\80032\sldwg\CU-11 Areas.dwg

15' Type 3

FLUVIAL DEPOSIT OA



Bank Stabilization

Bank A: 80' Type 2 stabilization of 1'-2' high bank. Save all willows along the bank. ~~Where willows are located along the bank, place the biolog behind the willows.~~ The completed bank should include a transition zone with a second tier of willows on 10' spacing.

OA1 Treat to 30". 5% Rock
OA2 Treat to 12". 40% Rock
OA3 Level. Treat to 12". 5% Rock
OA4 Treat to 6". 50% Rock

Type 1 - 20'
- ~~w/o clean fill - use treated bars~~
- use 1 loader bucket = 4 cy
- add compost w/OA amendment
- add 2 willows

Fluvial Deposit OA

Bank Stabilization Location

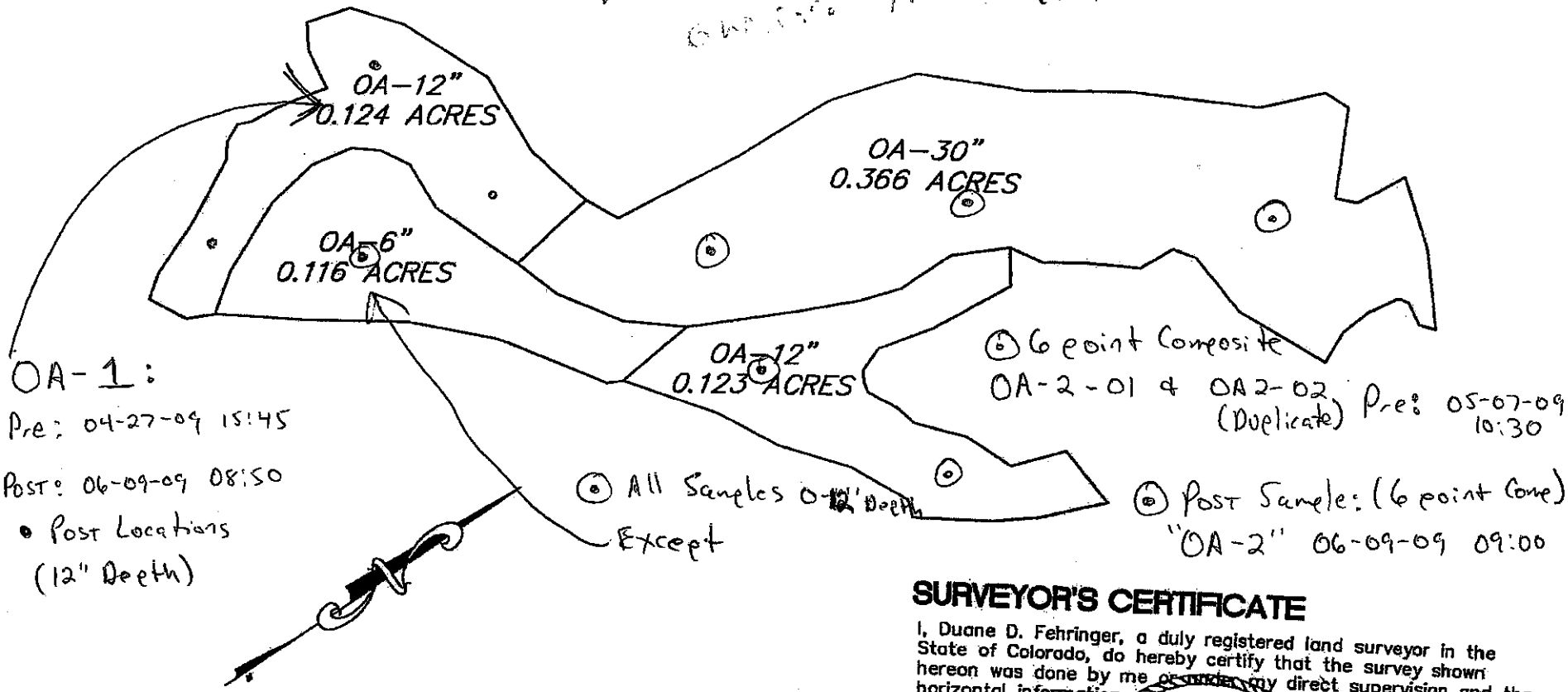
18 Depth of water in channel

Notes: [illegible]

Locations and quantities are approximate.

Illustrations by [illegible]

Pre- and Post- Remediation Sampling Locations



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COLORADO REGISTERED DUANE D. FEHRINGER 5-5-09 26626 L.S. E. AND P.L.S.

Duane D. Fehringer P.E. & P.L.S. 26626

OA

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
40881 US HWY 6&24, SUITE 203 BOX 978 AVON, CO 81620 PH: (970)949-5771
6551 S. REVERE PARKWAY, SUITE 106 CENTENNIAL, CO 80111 PH: (303)948-4220

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DRAWN BY:	SPF
SCALE:	1"=50'
DATE ISSUED:	5-6-09
PROJECT NO.	08-0032
EXHIBIT	

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Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **OA-1**

POLYGON CHARACTERISTICS

Net Application Rate	150	tons/1000 tons
Mixing Safety Factor (25% unless noted otherwise)	25.00%	%
% Rock	5.00%	%
Total Area	0.366	acres

Average Depth Calculation

Depth (inches)		% of Total Area		
30	X	100.00%	=	30
	X		=	
	X		=	
	X		=	
		Average Depth		30 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.0000%	X 0.1	= 0.0000%	(A)
Percent 10 - 60 mesh	0.0800%	X 0.5	= 0.0400%	(B)
Percent < 60 mesh	99.9200%	X 1	= 99.9200%	(C)
Lime Reactivity			= 99.9600%	A+B+C

Calcium Carbonate Equivalence		82.20%	%
Percent Moisture		29.00%	%
Bulk Density	0.75 grams/cc	= 0.632	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth / (Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 1526.65 tons/acre = 558.75 tons total

Depth of Lime to be Applied = 18.0 inches

Signature: [signature]

Date: 5/7/09

Signature: [signature]

Date: 05-07-09

DRAFT Lime Application Rate Calculation Form

Fluvial Deposits

Fluvial Deposit ID: **OA-2**

POLYGON CHARACTERISTICS

Net Application Rate	150 tons/1000 tons
Mixing Safety Factor (25% unless noted otherwise)	25.00% %
% Rock	40.00% % ✓
Total Area	0.123 acres ✓

Average Depth Calculation

Depth (inches)		% of Total Area		
12	X	100.00%	=	12
	X		=	
	X		=	
	X		=	
		Average Depth		12 inches ✓

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.0000%	X 0.1	=	0.0000%	(A)
Percent 10 - 60 mesh	0.0800%	X 0.5	=	0.0400%	(B)
Percent < 60 mesh	99.9200%	X 1	=	99.9200%	(C)
Lime Reactivity			=	99.9600%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		29.00% %	
Bulk Density	0.75 grams/cc	= 0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 385.68 tons/acre = 47.44 tons total

Lime Rate = 610.18 cy/acre = 75.05 cy total

Signature: _____

Date: _____

Signature: _____

Date: 05-07-09

DRAFT Lime Application Rate Calculation Form

Fluvial Deposits

Fluvial Deposit ID: **OA-3**

POLYGON CHARACTERISTICS

Net Application Rate	150 tons/1000 tons
Mixing Safety Factor (25% unless noted otherwise)	25.00% %
% Rock	5.00% % ✓
Total Area	0.124 acres ✓

Average Depth Calculation

Depth (inches)		% of Total Area		
12	X	100.00%	=	12
	X		=	
	X		=	
	X		=	
		Average Depth		12 inches ✓

Level area for pre-fill

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.0000%	X 0.1 =	0.0000%	(A)
Percent 10 - 60 mesh	0.0800%	X 0.5 =	0.0400%	(B)
Percent < 60 mesh	99.9200%	X 1 =	99.9200%	(C)
Lime Reactivity		=	99.9600%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		29.00% %	
Bulk Density	0.75 grams/cc	=	0.63 tons/cy

CALCULATE LIME RATE

~~Lime Rate =~~ ~~Net Application Rate~~ *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth

(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 610.66 tons/acre = 75.72 tons total

Lime Rate = 966.11 cy/acre = 119.80 cy total

Signature: _____

Date: _____

Signature: [signature]

Date: 05-07-09

DRAFT Lime Application Rate Calculation Form

Fluvial Deposits

Fluvial Deposit ID: **OA-4**

POLYGON CHARACTERISTICS

Net Application Rate	150 tons/1000 tons
Mixing Safety Factor (25% unless noted otherwise)	25.00% %
% Rock	50.00% %
Total Area	0.116 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
6	X	100.00%	=	6
	X		=	
	X		=	
	X		=	
		Average Depth		6 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.0000%	X 0.1	=	0.0000%	(A)
Percent 10 - 60 mesh	0.0800%	X 0.5	=	0.0400%	(B)
Percent < 60 mesh	99.9200%	X 1	=	99.9200%	(C)
Lime Reactivity			=	99.9600%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		29.00% %	
Bulk Density	0.75 grams/cc	= 0.63	tons/cy

CALCULATE LIME RATE

$$\text{Lime Rate} = \frac{\text{Net Application Rate} * (1 + \text{Mixing Factor}/100) * (1 - \%\ \text{Rock}/100) * \text{Depth}}{(\text{Lime Reactivity}) * (\text{Calcium Carbonate Equivalence}/100) * (1 - \%\ \text{Moisture}/100)}$$

Lime Rate = 160.70 tons/acre = 18.64 tons total

Lime Rate = 254.24 cy/acre = 29.49 cy total

Signature: _____

Date: _____

Signature: _____

Date: 05-07-09

FILE MEMO

Regarding: Lime Compost (Fertilizer) Mulch Seed Other

Fluvial Deposit ID: OA-1 (30")

~~Irrigated Meadow~~ ID: _____

153 lbs/acre per 6-inch trt

Acreage: 0.366

Target Application: 280 lbs ≈ 5.6 bags

Amount Applied: 6

Comments: Hand Broadcast

_____

_____

Signature

05-07-09

Date

FILE MEMO

Regarding: Lime Compost Fertilizer Mulch Seed Other

Fluvial Deposit ID: OA-2 (12") **Irrigated Meadow ID:** _____

Acreage: .123

Target Application: 37.6 lbs ≈ (153 lbs/acre per 4 inch d-t depth)
≈ 3/4 bag

Amount Applied: 1 bag

Comments: Hand Broadcast

Signature

05-08-09

Date

FILE MEMO

Regarding: Lime Compost (Fertilizer) Mulch Seed Other

Fluvial Deposit ID: OA-3 (12") **Irrigated Meadow ID:** _____

Acreage: .124

Target Application: 38 lbs ≈ 0.76 bags (153 lbs × 216 sq ft × .124)

Amount Applied: 1 bag

Comments:

Hand Broadcast

Signature

05-09-05

Date

FILE MEMO

Regarding: Lime Compost (Fertilizer) Mulch Seed Other

Fluvial Deposit ID: OA·4 / 6" **Irrigated Meadow ID:** _____

Acreage: .116

Target Application: 17.8 lbs (153 lbs/acre × .116 acres × 1 (6-inch)) ≈ 0.4 bags

Amount Applied: 1 bag

Comments:
Hand Broadcast

Signature

05-08-09
Date

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: OA

HCl Reaction?

	Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	
OA 30	0-6	8.0	8.0	8.0	None	Yes
	6-12	8.0	8.0	8.0		Yes
	12-18	8.0	8.0	8.0		Yes
	18-24	8.0	8.0	8.0		Yes
	24-30	8.0	8.0	8.0		Yes
	Tailings beneath (35-40")	5.3	5.0	5.5	0	NA
~~OA 06~~						
	~~6-12~~					
	~~12-18~~					
	~~18-24~~					
	~~24-30~~					
OA2	0-6	7.7	7.5	8.0	None	Yes
OA2	6-12	7.7	7.5	8.0	None	Yes
OA3	0-6	7.5	7.5	7.5	None	Yes

Name/Signature: [signature]

Date: 05-13-08

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record

Fluvial Deposit/Irrigated Meadows Polygon: OA

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
OA 0-6	TARE 00	16.2	15.3	7.2
OA 6-12		15.6	15.7	7.4
OA 12-18		15.2	15.5	7.4
OA 18-24		16.0	~~32~~ 16.0	7.1
OA 24-30	Tare 0.0	15.3	15.3	7.3
OA 0-6 12" Area SE		18.0	18.0	7.0
OA 6-12 " "		16.6	15.1	7.1
OA Pipe (0-6) 12" Area SE		17.0	18.0	7.2
OA 0-6	6" Area SW	14.7	15.5	7.1

Calibrated pH 7+10

Name/Signature: GARY SUIFKA / Gary Suifka Date: 5/15/09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **OA-1**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	5%	
Treatment Area	0.366	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	0.687	=	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 256.49 tons/acre = 93.88 tons

Compost Rate = 373.35 cy/acre = 136.65 cy

Depth of Compost to be Applied = 2.8 inches

Signature: [signature] 5/14/09

Date: 5/14/09

Signature: [signature]

Date: 5/14/09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **OA-2**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	40%	
Treatment Area	0.123	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate =	162.00 tons/acre	=	19.93 tons
Compost Rate =	235.80 cy/acre	=	29.00 cy
		Depth of Compost to be Applied =	1.8 inches

Signature: _____

Date: 5/14/09

Signature: _____

Date: 5/14/09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **OA-3**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	5%	
Treatment Area	0.124	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	0.687	=	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 256.49 tons/acre = 31.81 tons

Compost Rate = 373.35 cy/acre = 46.30 cy

Depth of Compost to be Applied = 2.8 inches

Signature: [signature]

Date: 5/14/09

Signature: [signature]

Date: 5/14/09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **OA-4**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	6	inches
% Rock	50%	
Treatment Area	0.116	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	0.687	=	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 67.50 tons/acre = 7.83 tons

Compost Rate = 98.25 cy/acre = 11.40 cy

Depth of Compost to be Applied = 0.7 inches

Signature: _____

Date: 5/14/09

Signature: _____

Date: 5/14/09

FILE MEMO

Regarding: Lime Compost Fertilizer Mulch (Seed) Other

Fluvial Deposit ID: OA **Irrigated Meadow ID:** _____

Acreage: 0.73 total

Target Application: 22.88 #/s (2 acres) (Double Rate) x 0.73 = 16.71 lbs

Amount Applied: 16.5

Comments:
Hand Broadcast (Seed Mix Label Attached)

Signature

06-09-09
Date

2.4
2.8
2.8
8.3
16.5 #

OC

Kind: TABLE FD-2 MIX
Lot: 2144725

Kind & Variety:	Pure%	Germ%	Origin:
WESTERN W/G, ROSANNA	48.83	92	WY
SLENDER W/G, SAN LUIS	31.53	95	WA
CANADA BLUEGRASS	3.25	92	WA
BLUEJOINT REEDGRASS	2.88	78	ID
TUFTED HAIRGRASS	1.76	85	CAN
PRAIRIE JUNEGRASS	3.51	32	WA
REDTOP	1.16	97	WA
BALTIC RUSH	.86	87	CO
YARROW	.77	97	OR
ROCKY MOUNTAIN PENSTEMON	.30	98	CO

Crop: .17% Inert: 4.81% Weed: .18% Net Wt: 26.76# (22.88 PLS#) 2 ACRES

Noxious Weed: None Found Test Date: 2/09

Remarks: FR NTIER ENVIRONMENTAL

JOB: OU FLUVIAL DEPOSITS

Polygon Completion Form
Fluvial Deposits

Fluvial Deposit Polygon Name/ID: OB

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
08-12-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.3. **Comments/Deviations:**
08-13-14-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.4. Pretill Simultaneous w/ line placement & partial incorp using excavator **Comments/Deviations:**
08-21-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Section 3.6A through 3.6E. Apply lime 08-13-14-09; Apply fert 08-19-09 **Comments/Deviations:** Start ALLU Incorp 08-19-09
10-02-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.6F through 3.6I. **Comments/Deviations:** ALLU Incorp Start 10-01-09
N/A	NA	Completed replacement of erosion channels in accordance with Specification Section 3.7. **Comments/Deviations:**
wk ending 10-18-09	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.8. **Comments/Deviations:** Seedbed prep w/ ALLU Incorp; Seeded wk ending 10-18-09; Start Rolled
10-20-09	✓	Completed mulching in accordance with Specification Section 3.9. **Comments/Deviations:** Mulched 10-20-09
N/A	NA	Completed reinstallation of fencing in accordance with Specification Section 3.10. **Comments/Deviations:**
10-27-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.14. **Comments/Deviations:**

Quantity of Work Estimated in Proposal: N/A - Addressed in Invoice Documentation
Quantity of Work Performed:

11-06-09
Signature of Subcontractor Date

10-27-09
Signature of Contractor Date

*Pre-Tilled – COMPLETE –

Seed Complete: 2.0 lbs., Target: 2.1 lbs

Compost: 3.18 CY, Target: 3.54 CY

Lime Complete: 6.2 tons, Target: 6.11 tons

Fert: 4.13 lbs.

Seed Complete: 1.7 lbs., Target: 1.7 lbs.

OB6
0.009 ACRES
Seed Complete: 0.2 lb., Target: 0.2 lb.

OB3 12"
0.078 ACRES

Lime Complete: 29.75 CY, Target: 30 CY
Fert: 12.85 lbs.

ROAD

Lime Complete: 36 tons, Target: ~~36.65 tons~~

OB2
0.064 ACRES
18"

Fert: 36.71 lbs.
Compost Complete: 14.8 CY, Target: 15.33 CY

24"
OB4
0.045 ACRES

Lime Complete: 43.5 tons, Target: 43.5 tons
Fert: 29.3 lbs.

OB1
0.042 ACRES
24"

Compost Complete: 40.37 CY, Target: 41 CY

Seed Complete: 1.0 lbs., Target: 1.1 lbs.

Seed Complete: 1.2 lbs., Target: 1.2 lbs.

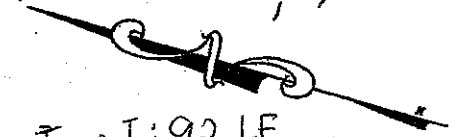
Lime Complete: 36.38 tons, Target: 36.65 tons

Fert: ~~27.54~~ lbs.

Compost Complete: 15.93 CY, Target: 15.92 CY

18"
OB5
0.020 ACRES
Lime Complete: 10.7 tons, Target: 10.18 tons
Fert: 9.18 lbs.

Mulch Complete (520 lbs., ≈ 13 Bales)



* SBS: OB-1 Type I: 92 LF
Type II M: 32 LF
OB-2 Type II M: 65 LF
Type III: 25 LF

Seed Complete: 0.5 lb., Target: 0.5 lb.

Compost Complete: 6.37 CY, Target: 5.9 CY

SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 26626 P.E. AND P.L.S.

Duane D. Fehringer, P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
40401 US HWY 6&24, SUITE 103 BOX 978 AVON, CO 81620 PH: (970)949-5072
6551 S. REVERE PARKWAY, SUITE 186 CENTENNIAL, CO 80111 PH: (303)948-6220

CLIENT: FRONTIER ENVIRONMENTAL INC.

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OB

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=40'
DATE ISSUED:	8-3-09
PROJECT NO.	08-0032
DWG#:	

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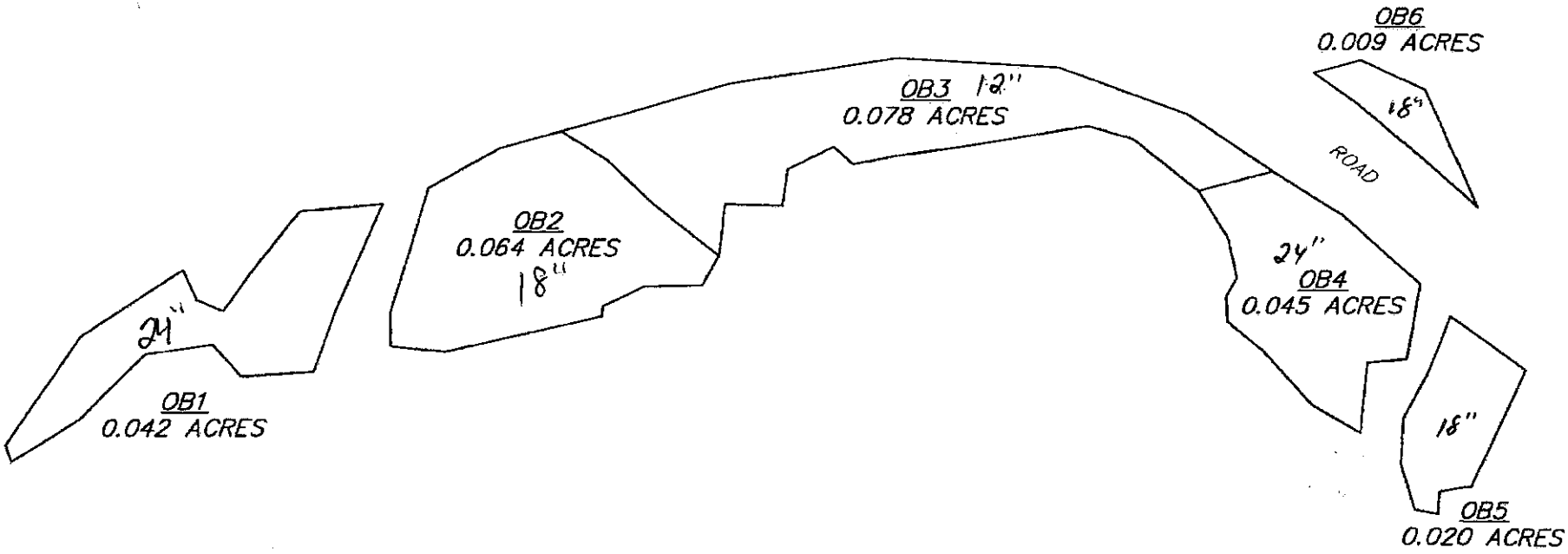

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COLORADO U.S. REGD. DUANE D. FEHRINGER 26626 L.S. E. AND P.L.S.

Duane D. Fehringer, P.E. & P.L.S. 26626

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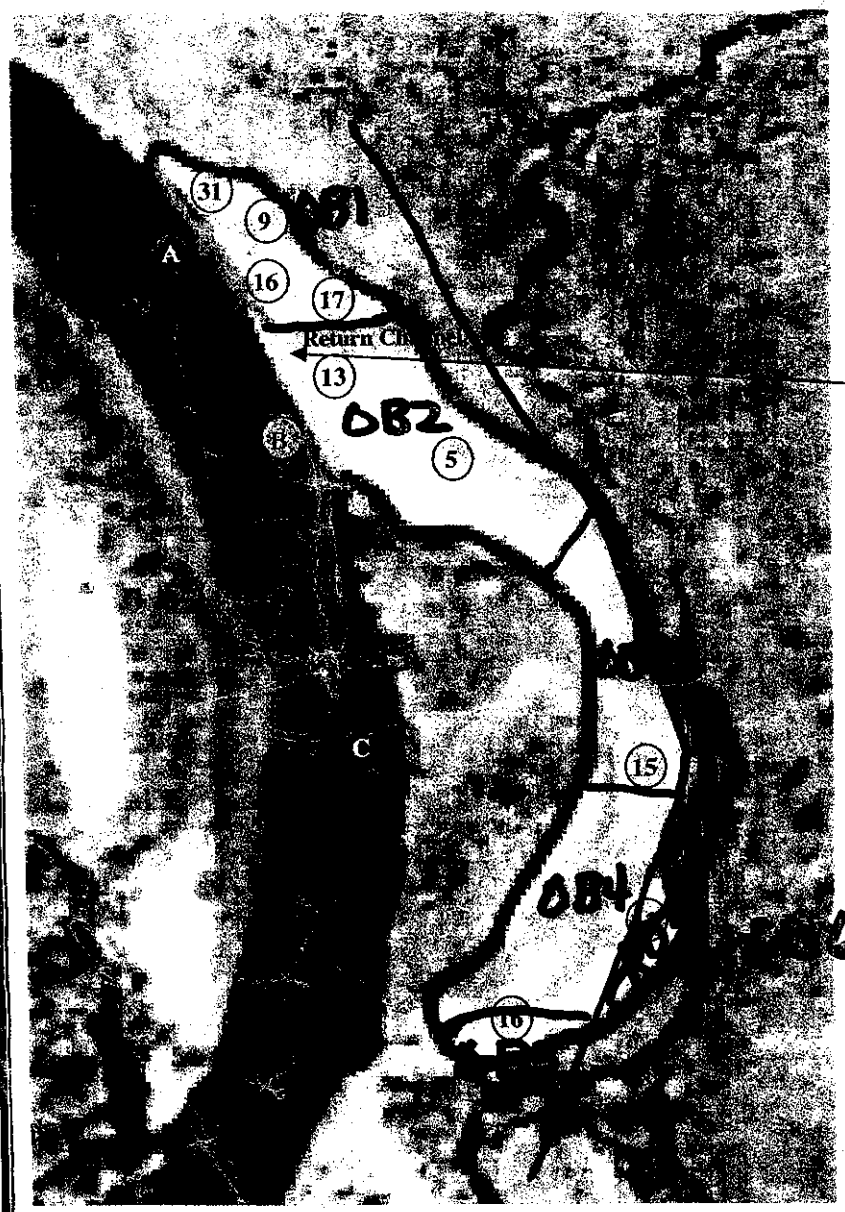
OB

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=40'
DATE ISSUED:	8-3-09
PROJECT NO.	08-0032
REVISIONS	

FLUVIAL DEPOSIT OB



Fluvial Deposit Outline

Bank Stabilization Location

16 Depth of mine waste (inches)

Note: Figure not to scale.
Locations and streambank lengths estimated.
All treatment locations will be confirmed and marked [illegible] of construction.

Bank Stabilization

Bank A: 50' Type 1 stabilization. The scour area should be filled with clean soil and treated as part of the Type 1 stabilization. Prior to soil amendment, excavate contaminated soil and place on the treatment area south of the return channel and backfill with clean soil.

Between Banks A and B: Stabilize the return /overflow channel between Banks A and B with carex and young willows.

Bank B: 20' Type 2 stabilization behind existing vegetation.

The well vegetated area surrounded by the mine waste deposit is located on an outside bend in the Arkansas River and may require stabilization measures to prevent future erosion. This will be reevaluated in the field.

Bank C: 10' modified Type 2 stabilization. No soil excavation. Use clean soil to fill small scour area. Add 1 mature willow, biolog, and carex. Use small equipment to minimize disturbance of well vegetated area.

OB1	24"	0%	ORANGE
OB2	18"	0%	Green
OB3	12"	50%	white
OB4	24"	10%	orange
OB5	18"	25%	Green
OB6	18"	0%	

EAST Side of Road

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **OB**

POLYGON CHARACTERISTICS

Net Application Rate	120 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5-14-09 by Jennings)	10.00% %
% Rock	0.00% %
Total Area	0.262 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
20	X	100.00%	=	20
	X		=	
	X		=	
	X		=	
		Average Depth		20 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.0000%	X 0.1 =	0.0000%	(A)
Percent 10 - 60 mesh	0.0800%	X 0.5 =	0.0400%	(B)
Percent < 60 mesh	99.9200%	X 1 =	99.9200%	(C)
Lime Reactivity		=	99.9600%	A+B+C

Calcium Carbonate Equivalence			82.20% %
Percent Moisture			29.00% %
Bulk Density	0.75 grams/cc	=	0.632 tons/cy

CALCULATE LIME RATE

$$\text{Lime Rate} = \frac{\text{Net Application Rate} * (1 + \text{Mixing Factor}/100) * (1 - \%\ \text{Rock}/100) * \text{Depth}}{(\text{Lime Reactivity}) * (\text{Calcium Carbonate Equivalence}/100) * (1 - \%\ \text{Moisture}/100)}$$

Lime Rate = 754.22 tons/acre = 197.60 tons total

Depth of Lime to be Applied = 8.9 inches

Signature: _____

Date: Estimate for Tracking

Signature: _____

Date: _____

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **OB-1**

POLYGON CHARACTERISTICS

Net Application Rate	120 tons/1000 tons ✓
Mixing Safety Factor (revised to 10% on 5-14-09 by Jennings)	10.00% %
% Rock	0.00% % ✓
Total Area	0.042 acres ✓

Average Depth Calculation

Depth (inches)		% of Total Area		
24 ✓	X	100.00%	=	24
	X		=	
	X		=	
	X		=	
		Average Depth		24 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.0000%	X 0.1	=	0.0000%	(A)
Percent 10 - 60 mesh	0.0800%	X 0.5	=	0.0400%	(B)
Percent < 60 mesh	99.9200%	X 1	=	99.9200%	(C)
Lime Reactivity			=	99.9600%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		29.00% %	
Bulk Density	0.75 grams/cc	= 0.632	tons/cy

CALCULATE LIME RATE

$$\text{Lime Rate} = \frac{\text{Net Application Rate} * (1 + \text{Mixing Factor}/100) * (1 - \%\ \text{Rock}/100) * \text{Depth}}{(\text{Lime Reactivity}) * (\text{Calcium Carbonate Equivalence}/100) * (1 - \%\ \text{Moisture}/100)}$$

Lime Rate = 905.06 tons/acre = 38.01 tons total

Depth of Lime to be Applied = 10.7 inches

Signature: [signature]

Date: 8/4/09

Signature: 08-04-09

Date: [signature]

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **OB-2**

POLYGON CHARACTERISTICS

Net Application Rate	120	tons/1000 tons ✓
Mixing Safety Factor (revised to 10% on 5-14-09 by Jennings)	10.00%	%
% Rock	0.00%	% ✓
Total Area	0.064	acres ✓

Average Depth Calculation

Depth (inches)		% of Total Area		
18 ✓	X	100.00%	=	18
	X		=	
	X		=	
	X		=	
		Average Depth		18 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.0000%	X 0.1	=	0.0000%	(A)
Percent 10 - 60 mesh	0.0800%	X 0.5	=	0.0400%	(B)
Percent < 60 mesh	99.9200%	X 1	=	99.9200%	(C)
Lime Reactivity			=	99.9600%	A+B+C

Calcium Carbonate Equivalence		82.20%	%
Percent Moisture		29.00%	%
Bulk Density	0.75 grams/cc	= 0.632	tons/cy

CALCULATE LIME RATE

$$\text{Lime Rate} = \frac{\text{Net Application Rate} * (1 + \text{Mixing Factor}/100) * (1 - \%\ \text{Rock}/100) * \text{Depth}}{(\text{Lime Reactivity}) * (\text{Calcium Carbonate Equivalence}/100) * (1 - \%\ \text{Moisture}/100)}$$

Lime Rate = 678.80 tons/acre = 43.44 tons total

Depth of Lime to be Applied = 8.0 inches

Signature: [signature]

Date: 8/4/09

Signature: [signature]

Date: 08-04-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **OB-3**

POLYGON CHARACTERISTICS

Net Application Rate	120 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5-14-09 by Jennings)	10.00% %
% Rock	50.00% %
Total Area	0.078 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
12	X	100.00%	=	12
	X		=	
	X		=	
	X		=	
		Average Depth		12 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.0000%	X 0.1 =	0.0000%	(A)
Percent 10 - 60 mesh	0.0800%	X 0.5 =	0.0400%	(B)
Percent < 60 mesh	99.9200%	X 1 =	99.9200%	(C)
Lime Reactivity		=	99.9600%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		29.00% %	
Bulk Density	0.75 grams/cc	= 0.632	tons/cy

CALCULATE LIME RATE

$$\text{Lime Rate} = \frac{\text{Net Application Rate} * (1 + \text{Mixing Factor}/100) * (1 - \%\ \text{Rock}/100) * \text{Depth}}{(\text{Lime Reactivity}) * (\text{Calcium Carbonate Equivalence}/100) * (1 - \%\ \text{Moisture}/100)}$$

Lime Rate = 226.27 tons/acre = 17.65 tons total

Depth of Lime to be Applied = 2.7 inches

Signature: [signature]

Date: 8/4/09

Signature: [signature]

Date: 08-04-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **OB-4**

POLYGON CHARACTERISTICS

Net Application Rate	120 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5-14-09 by Jennings)	10.00% %
% Rock	10.00% %
Total Area	0.045 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
24	X	100.00%	=	24
	X		=	
	X		=	
	X		=	
		Average Depth		24 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.0000%	X 0.1	=	0.0000%	(A)
Percent 10 - 60 mesh	0.0800%	X 0.5	=	0.0400%	(B)
Percent < 60 mesh	99.9200%	X 1	=	99.9200%	(C)
Lime Reactivity			=	99.9600%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		29.00% %	
Bulk Density	0.75 grams/cc	= 0.632	tons/cy

CALCULATE LIME RATE

$$\text{Lime Rate} = \frac{\text{Net Application Rate} * (1 + \text{Mixing Factor}/100) * (1 - \%\ \text{Rock}/100) * \text{Depth}}{(\text{Lime Reactivity}) * (\text{Calcium Carbonate Equivalence}/100) * (1 - \%\ \text{Moisture}/100)}$$

Lime Rate = 814.55 tons/acre = 36.65 tons total

Depth of Lime to be Applied = 9.6 inches

Signature: [signature]

Date: 8/4/09

Signature: [signature]

Date: 08-04-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: OB-5

POLYGON CHARACTERISTICS

Net Application Rate	120 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5-14-09 by Jennings)	10.00% %
% Rock	25.00% %
Total Area	0.020 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
18	X	100.00%	=	18
	X		=	
	X		=	
	X		=	
		Average Depth		18 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.0000%	X 0.1	=	0.0000%	(A)
Percent 10 - 60 mesh	0.0800%	X 0.5	=	0.0400%	(B)
Percent < 60 mesh	99.9200%	X 1	=	99.9200%	(C)
Lime Reactivity			=	99.9600%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		29.00% %	
Bulk Density	0.75 grams/cc	= 0.632	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth / (Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 509.10 tons/acre = 10.18 tons total

Depth of Lime to be Applied = 6.0 inches

Signature: [signature]

Date: 8/4/09

Signature: [signature]

Date: 08-04-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **OB-6**

POLYGON CHARACTERISTICS

Net Application Rate	120 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5-14-09 by Jennings)	10.00% %
% Rock	0.00% % ✓
Total Area	0.009 acres ✓

Average Depth Calculation

Depth (inches)		% of Total Area		
18 ✓	X	100.00%	=	18
	X		=	
	X		=	
	X		=	
		Average Depth		18 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.0000%	X 0.1 =	0.0000%	(A)
Percent 10 - 60 mesh	0.0800%	X 0.5 =	0.0400%	(B)
Percent < 60 mesh	99.9200%	X 1 =	99.9200%	(C)
Lime Reactivity		=	99.9600%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		29.00% %	
Bulk Density	0.75 grams/cc	= 0.632	tons/cy

CALCULATE LIME RATE

$$\text{Lime Rate} = \frac{\text{Net Application Rate} * (1 + \text{Mixing Factor}/100) * (1 - \%\ \text{Rock}/100) * \text{Depth}}{(\text{Lime Reactivity}) * (\text{Calcium Carbonate Equivalence}/100) * (1 - \%\ \text{Moisture}/100)}$$

Lime Rate = 678.80 tons/acre = 6.11 tons total

Depth of Lime to be Applied = 8.0 inches

Signature: [signature]

Date: 5/4/09

Signature: [signature]

Date: 08-04-09

FILE MEMO

Regarding: Lime Compost ~~Fertilizer~~ Mulch Seed Other

Fluvial Deposit ID: OB **Irrigated Meadow ID:** _____

Acreage: See Below

Target Application: See Below

Amount Applied: Below

*FFSI applied 12.85 lbs

Comments:

OB1: .042 acres	x 153 lbs/acre	x 4 (6-inch) =	25.7 lbs	≈ 1/2 bag
OB2: .064	x 153	x 3 (6-inch) =	29.4 lbs	
OB3: .078	x 153	x 2 (6-inch) =	23.8 lbs	≈ 1/2 bag
OB4: .045	x 153	x 4 (6-inch) =	27.5 lbs	≈
OB5: .020	x 153	x 3 (6-inch) =	9.2 lbs	
OB6: .009	x 153	x 3 (6-inch) =	4 lbs	

_____ 05-19-09

Signature **Date**

PWT confirmed 0:45:0 fert. used.
Applied using hand broadcaster, weighing amounts per sub-plot in field.

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: OB

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	HCL Reaction
OB3-1 0-6	7.7	7.5	8.0	None	yes
OB3-1 6-12	7.7	7.5	8.0	None	yes
OB3-2 0-6	7.7	7.5	8.0	None	yes
OB3-2 6-12	7.7	7.5	8.0	None	yes
OB2 0-6	7.0	—	—	None	yes
OB2 6-12	7.0	—	—	None	yes
OB2 12-18	7.0	—	—	None	yes
OB1 0-6	7.3	7.0	7.5	None	yes
OB1 6-12	7.3	7.0	7.5	None	yes
OB1 12-18	7.0	—	—	None	yes
OB1 18-24	7.0	—	—	None	yes

Note: Good conditions - No Saturated Soils @ Treatment Depth

Name/Signature: [signature]

Date: 08-21-09

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: OB

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	HCL Reaction?
OB2 0-6	7.3	7.0	7.5	None	Yes
OB2 6-12	7.3	7.0	7.5	None	Yes
OB2 12-18	7.3	7.0	7.5	None	Yes
OB1 0-6	7.0			None	Yes
OB1 6-12	7.0			None	Yes
OB1 12-18	7.0			None	Yes
OB1 18-24	6.7	6.5	7.0	None	Yes

Name/Signature: [signature]

Date: 08-21-09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record

Fluvial Deposit/Irrigated Meadows Polygon: OB

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
OB1 0-6"	Tare @ 0.0	20.0	20.0	6.6
OB1 6-12"		20.0	20.0	6.7
OB1 12-18"		20.0	20.0	6.7
OB1 18-24		20.0	20.0	6.7
OB2 0-6"		20.0	20.0	6.7
OB2 6-12"		20.0	20.0	6.8
OB2 12-18"		20.0	20.0	6.7
OB3-1 0-6"		20.0	20.0	6.9
OB3-1 6-12"		20.0	20.0	6.9
OB3-2 0-6"		20.1	20.1	6.7
Dupe OB2-2 0-6"		20.0	20.0	6.7
OB3-2 6-12"		20.0	20.0	6.6

Name/Signature: Rob Bom Date: 8-21-09

pH meter calibrated using known standards at 11:00 on 8-21-09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record OB

Fluvial Deposit/Irrigated Meadows Polygon:

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
OB1 0-6	0.0	16.6	16.3	7.7
OB1 6-12		16.0	16.3	7.5
OB1 12-18		18.2	17.9	7.7
OB1 18-24		18.8	17.9	7.7
OB2 0-6		17.2	16.9	7.8
OB2 6-12		16.0	16.5	7.7
OB2 12-18		14.4	14.6	7.6

Name/Signature: M G. Mali **Date:** 08-21-09

pH meter calibrated using three known standards on 8.21.09 by Robert Brown.

Rob Brown

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **OB 1 & 2 Combined**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	0%	
Treatment Area	0.106	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 269.99 tons/acre = 28.62 tons

Compost Rate = 393.00 cy/acre = 41.66 cy

Depth of Compost to be Applied = 2.9 inches

Signature: [signature]

Date: 8/4/09

Signature: [signature]

Date: 01-04-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **OB-3**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	50%	
Treatment Area	0.078	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 135.00 tons/acre = 10.53 tons

Compost Rate = 196.50 cy/acre = 15.33 cy

Depth of Compost to be Applied = 1.5 inches

Signature: [signature]

Date: 8/4/09

Signature: [signature]

Date: 08-04-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **OB-4**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	10%	
Treatment Area	0.045	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 242.99 tons/acre = 10.93 tons

Compost Rate = 353.70 cy/acre = 15.92 cy

Depth of Compost to be Applied = 2.6 inches

Signature: [signature]

Date: 8/4/09

Signature: [signature]

Date: 08-04-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **OB-5**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	25%	
Treatment Area	0.020	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 202.49 tons/acre = 4.05 tons

Compost Rate = 294.75 cy/acre = 5.90 cy

Depth of Compost to be Applied = 2.2 inches

Signature: [signature]

Date: 8/4/09

Signature: [signature]

Date: 08-04-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: OB -6

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	0%	
Treatment Area	0.009	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 269.99 tons/acre = 2.43 tons

Compost Rate = 393.00 cy/acre = 3.54 cy

Depth of Compost to be Applied = 2.9 inches

Signature: [signature]

Date: 8/4/09

Signature: [signature]

Date: 08-04-09

Polygon Completion Form
Fluvial Deposits

Fluvial Deposit Polygon Name/ID: OC

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
05-11-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.3. **Comments/Deviations:**
05-12-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.4. **Comments/Deviations:**
05-15-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Section 3.6A through 3.6E. 05-14-09 Applying lime & fert **Comments/Deviations:**
06-05-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.6F through 3.6I. Second Compost 05-27-09 **Comments/Deviations:** Finished Incorp 06-05-09
NA	NA	Completed replacement of erosion channels in accordance with Specification Section 3.7. **Comments/Deviations:** No channels
06-05-09	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.8. **Comments/Deviations:** Seedbed prep completed w/ALLU Ryker 06-05-09 Seeded on 06-09-09; Re-seeded October 2009 (wk ending 10-16-09)
06-09-09	✓	Completed mulching in accordance with Specification Section 3.9. **Comments/Deviations:** Mulched 06-09-09
NA	NA	Completed reinstallation of fencing in accordance with Specification Section 3.10. **Comments/Deviations:** No fencing
11-03-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.14. **Comments/Deviations:**

Quantity of Work Estimated in Proposal: NA - Addressed in Invoice Documentation

Quantity of Work Performed:

Unavailable
Signature of Subcontractor Date

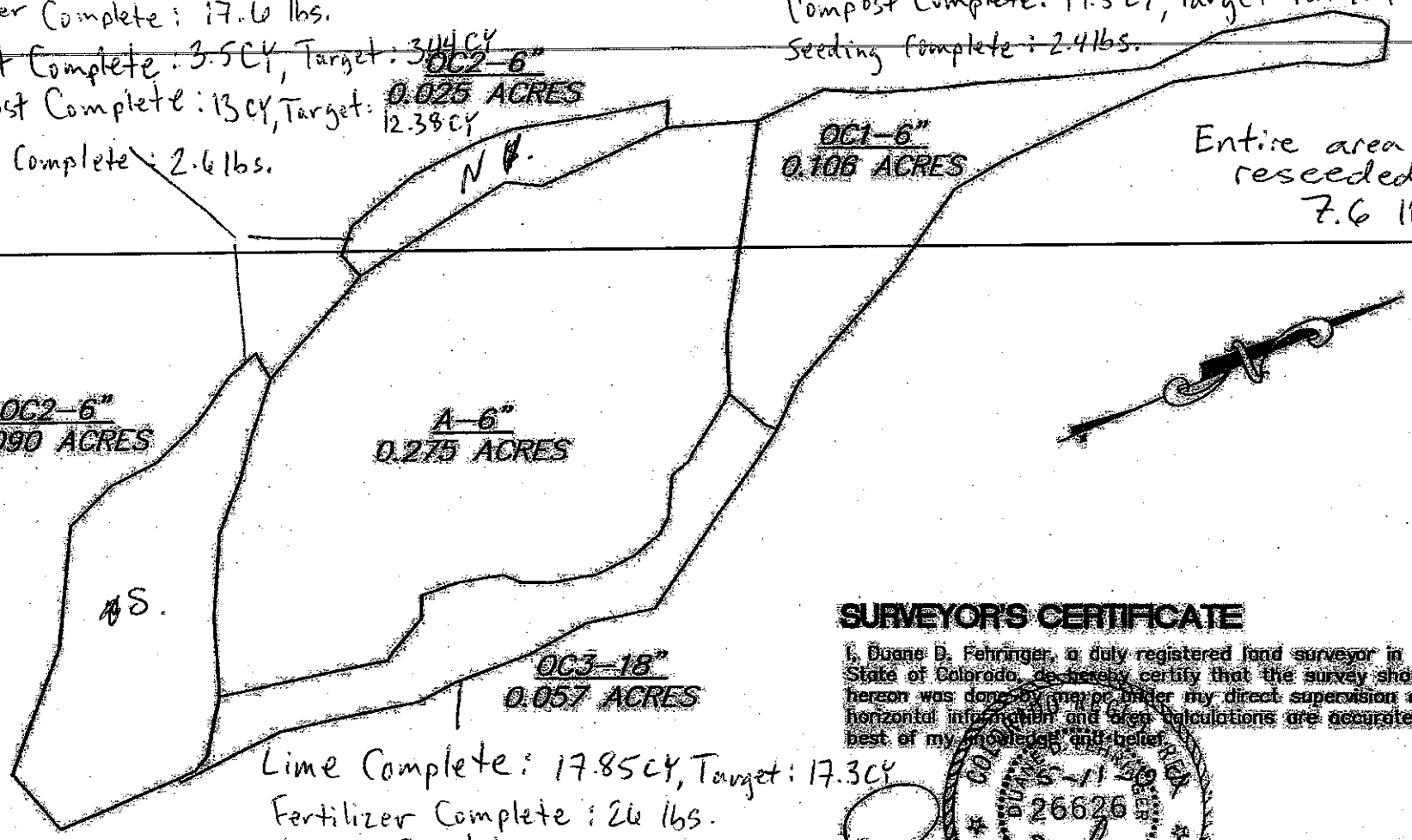
Signature of Contractor 11-02-09
Date

Mulching Complete : 14 Bales, (560 lbs.) — Complete —

Lime Complete : 8.93 CY, Target : 8.1 CY
Fertilizer Complete : 17.6 lbs.
~~Compost Complete : 3.5 CY, Target : 3.4 CY~~
Compost Complete : 13 CY, Target : 12.38 CY
Seeding Complete : 2.6 lbs.

Lime Complete : 9.75 CY, Target : 9.6 CY
Fertilizer Complete : ~17 lbs.
Compost Complete : 19.5 CY, Target : 18.75 CY
Seeding Complete : 2.4 lbs.

Entire area reseeded: 7.6 lbs



Lime Complete : 17.85 CY, Target : 17.3 CY
Fertilizer Complete : 26 lbs.
Compost Complete : 22.75 CY, Target : 22.4 CY
Seeding Complete : 13 lbs.

SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO — DUANE D. FEHRINGER — 26626 — LAND SURVEYOR

Duane D. Fehringer P.E. & P.L.S. 26626

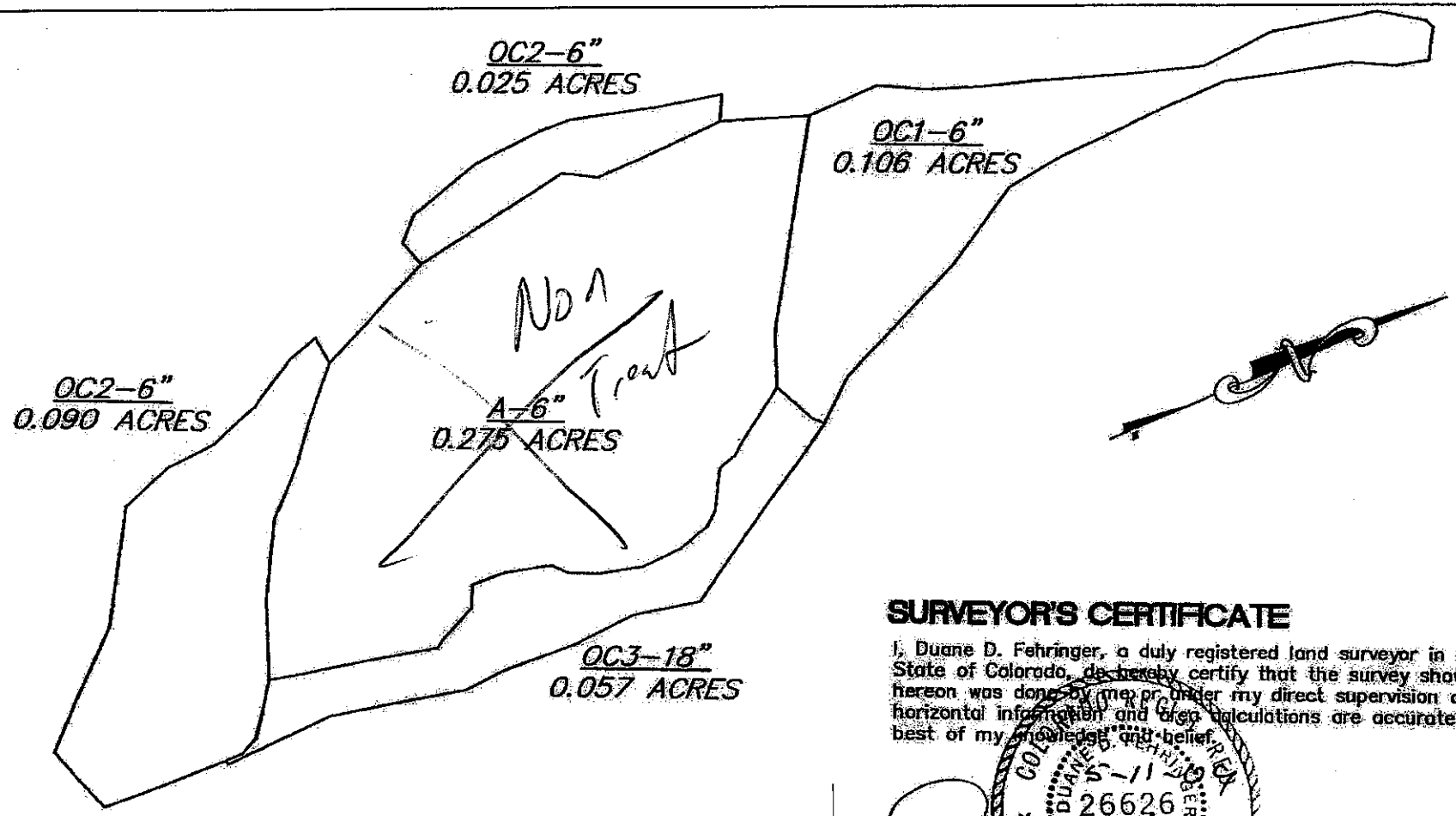
Inter-Mountain ENGINEERING
Civil Engineers & Surveyors

FRONTIER ENVIRONMENTAL INC.

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY: SFF
SCALE: 1"=40'
DATE ISSUED: 8-8-08
PROJECT NO.: 08-0032
CHECK:

* Pre-Tilled



SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 11-11-09 26626 L.S. AND P.L.S.

Duane D. Fehringer P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
40081 US HWY 6&24, SUITE 203 BOX 978 AVON, CO 81620 PH: (970)949-5772
6551 S. REVERE PARKWAY, SUITE 106 CENTENNIAL, CO 80111 PH: (303)925-6220

CLIENT: FRONTIER ENVIRONMENTAL INC.

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OC

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=40'
DATE ISSUED:	5-8-09
PROJECT NO.:	08-0032
EXHIBIT	

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **OC-1 (per IME Survey)**

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (25% unless noted otherwise)	25.00% %
% Rock	10.00% %
Total Area	0.106 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
6	X	100.00%	=	6
	X		=	
	X		=	
	X		=	
		Average Depth		6 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.0000%	X 0.1	=	0.0000%	(A)
Percent 10 - 60 mesh	0.0800%	X 0.5	=	0.0400%	(B)
Percent < 60 mesh	99.9200%	X 1	=	99.9200%	(C)
Lime Reactivity			=	99.9600%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		28.50% %	
Bulk Density	0.75 grams/cc	= 0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth / (Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 57.45 tons/acre = 6.09 tons total 9.6 yd^3

Depth of Lime to be Applied = 0.7 inches

Signature: [signature]

Date: 05-12-09

Signature: [signature]

Date: 5/12/09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **OC-2 (per IME Survey)**

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (25% unless noted otherwise)	25.00% %
% Rock	30.00% %
Total Area	0.115 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
6	X	100.00%	=	6
	X		=	
	X		=	
	X		=	
		Average Depth		6 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.0000%	X 0.1	=	0.0000%	(A)
Percent 10 - 60 mesh	0.0800%	X 0.5	=	0.0400%	(B)
Percent < 60 mesh	99.9200%	X 1	=	99.9200%	(C)
Lime Reactivity			=	99.9600%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		28.50% %	
Bulk Density	0.75 grams/cc	= 0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 44.68 tons/acre = 5.14 tons total $8,140^3$

Depth of Lime to be Applied = 0.5 inches

Signature: [signature]

Date: 05-12-09

Signature: [signature]

Date: 5/12/09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **OC-3 (per IME Survey)**

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (25% unless noted otherwise)	25.00% %
% Rock	0.00% %
Total Area	0.057 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
18	X	100.00%	=	18
	X		=	
	X		=	
	X		=	
		Average Depth		18 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.0000%	X 0.1	=	0.0000%	(A)
Percent 10 - 60 mesh	0.0800%	X 0.5	=	0.0400%	(B)
Percent < 60 mesh	99.9200%	X 1	=	99.9200%	(C)
Lime Reactivity			=	99.9600%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		28.50% %	
Bulk Density	0.75 grams/cc	= 0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = $\frac{\text{Net Application Rate *(1+ Mixing Factor/100)* (1 - \% Rock/100) * Depth}}{\text{(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - \% Moisture/100)}}$

Lime Rate = 191.49 tons/acre = 10.91 tons total 17.3 YD^3

Depth of Lime to be Applied = 2.3 inches

Signature: John A. Hall

Date: 05-12-09

Signature: Brian A. Nunn

Date: 5/12/09

FILE MEMO

Regarding: Lime Compost Fertilizer Mulch Seed Other

Fluvial Deposit ID: OC **Irrigated Meadow ID:** ~~_____~~

Acreage: 6" Areas = 0.221 acres total x 153 lbs/acre = 34 lbs

18" Area = .057 acres x 3(6 inch) x 153 = 26 lbs

Target Application: _____

Amount Applied: 26 lbs - 18" ; 34 lbs - 6 inch areas

Comments:

Hand Broadcast 0:45:0 Fert

Signature

05-14-09

Date

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Fluvial Deposit/Irrigated Meadows Polygon: **Paste pH Record** OC

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
OC3 0-6	Tare (0.0)	15.8	14.9	7.2
OC3 6-12	↓	17.8	16.6	7.1
OC3 12-18	↓	17.4	16.8	6.9
OC1 0-6	↓	15.7	15.1	~~2.6~~ Repeat
OC2 0-6	↓	16.0	15.9	7.1
OC1 0-6 Repeat	↓	15.3	15.3	7.2 ← OK

Name/Signature: GARY SLIFKA / Gary Slifka **Date:** 5-15-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **OC-1**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	6	inches
% Rock	10%	
Treatment Area	0.106	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	0.687	=	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * \text{1000 tons/acre/6"} * (1-\%\text{rock}/100)}{\text{Compost \% OC} * (1-\ \%\text{Moisture}/100)}$$

Compost Rate = 121.50 tons/acre = 12.88 tons

Compost Rate = 176.85 cy/acre = 18.75 cy

Depth of Compost to be Applied = 1.3 inches

Signature: _____

Date: 5/21/09

Signature: _____

Date: 05-21-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **OC-2 North**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	6	inches
% Rock	30%	
Treatment Area	0.025	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	0.687	=	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 94.50 tons/acre = 2.36 tons

Compost Rate = 137.55 cy/acre = 3.44 cy

Depth of Compost to be Applied = 1.0 inches

Signature: [signature]

Date: 5/21/09

Signature: [signature]

Date: 05-21-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **OC-2 South**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	6	inches
% Rock	30%	
Treatment Area	0.09	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	0.687	=	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 94.50 tons/acre = 8.50 tons

Compost Rate = 137.55 cy/acre = 12.38 cy

Depth of Compost to be Applied = 1.0 inches

Signature: [signature]

Date: 5/21/09

Signature: [signature]

Date: 05-21-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **OC-3**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	0%	
Treatment Area	0.057	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	0.687	=	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 269.99 tons/acre = 15.39 tons

Compost Rate = 393.00 cy/acre = 22.40 cy

Depth of Compost to be Applied = 2.9 inches

Signature: Brad Mink

Date: 5/21/09

Signature: John A. Schultz

Date: 05-21-09

FILE MEMO

Regarding: Lime Compost Fertilizer Mulch (Seed) Other

Fluvial Deposit ID: OC **Irrigated Meadow ID:** _____

Acreage: 0.29

Target Application: 0.29 X 22.88 plS (2 acres) (Double Rate) = 6.6 lbs

Amount Applied: 6.3 lbs

Comments:

Hand Broadcasted - Seed Mix Attached

Signature

06-09-05

Date

2.6
2.4
1.3
6.3#

OA

Kind: TABLE FD-2 MIX
Lot: 2144725

Kind & Variety:	Pure%	Germ%	Origin:
WESTERN W/G, ROSANNA	48.83	92	WY
SLENDER W/G, SAN LUIS	31.53	95	WA
CANADA BLUEGRASS	3.25	92	WA
BLUEJOINT REEDGRASS	2.88	78	ID
TUFTED HAIRGRASS	1.76	85	CAN
PRAIRIE JUNEGRASS	3.51	32	WA
REDTOP	1.16	97	WA
BALTIC RUSH	.86	87	CO
YARROW	.77	97	OR
ROCKY MOUNTAIN PENSTEMON	.30	98	CO

Crop: .17% Inert: 4.81% Weed: .18% Net Wt: 26.76# (22.88 PLS#) 2 ACRES

Noxious Weed: None Found Test Date: 2/09

Remarks: FR[illegible]NTIER ENVIRONMENTAL

JOB: OU[illegible] FLUVIAL DEPOSITS

Polygon Completion Form
Fluvial Deposits

Fluvial Deposit Polygon Name/ID: OE

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
05-11-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.3. **Comments/Deviations:**
05-13-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.4. **Comments/Deviations:**
05-20-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Section 3.6A through 3.6E. Reelienton 05-15-20-09 **Comments/Deviations:** Paste pH issue on 30" trt. area - Retest 05-26-09 ✓
06-16-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.6F through 3.6I. Reelived Compost 05-27-09; Finish Allco **Comments/Deviations:** Incore 06-16-09
NA	NA	Completed replacement of erosion channels in accordance with Specification Section 3.7. **Comments/Deviations:** No channels
06-16-09	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.8. **Comments/Deviations:**
06-18-09	✓	Completed mulching in accordance with Specification Section 3.9. **Comments/Deviations:** Completed mulching without seeding; will drill seed in fall '09; Seeded 10-23-09
NA	NA	Completed reinstallation of fencing in accordance with Specification Section 3.10. **Comments/Deviations:** No fence work required
11-03-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.14. **Comments/Deviations:**

Quantity of Work Estimated in Proposal: NA - Addressed in Invoice Documentation ✓

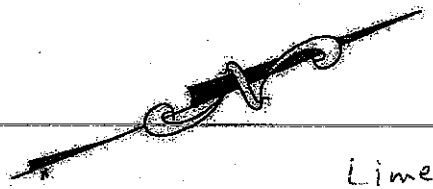
Quantity of Work Performed:

Unavailable
Signature of Subcontractor Date

[signature] 11-03-09
Signature of Contractor Date

* Mulching Complete: 82 bales, (3280 lbs.)

- Complete -



Lime Complete: 109 tons, Target: 109.79
Fertilizer Complete: 5 bags (550 lbs.)
Compost Complete: 135 CY, Target: 135.19
Seed Complete: 9.4 lbs.

Pre-Tilled

Lime Completed: 25.5 CY,
Target: 25.8 CY
Fertilizer Complete: 1 bag (50 lb
Compost Complete: 50 CY, Target:
Seed Complete: 10 lbs. 30.21 C

OE1-30"
0.344 ACRES

OE2-6"
0.365 ACRES

OE3-6"
0.034 ACRES

OE4-12"
0.890 ACRES

Lime Complete: 2 CY, Target: 1.72 CY
Fertilizer Complete: 5 lbs.
Compost Complete: 3.25 CY, Target: 3.34 CY
Seed Complete: 0.9 (1 lb)

Lime Complete:
107.95 tons, Target: 107.94 tons
Fertilizer Complete: 5.5 bags (275 lbs.)
Compost Complete: 331.5 CY, Target: 332.28 CY
Seed Complete: 24.5 lbs.

SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO DUANE D. FEHRINGER 26626 L.S. 5-11-09 P.E. AND P.L.S.

Duane D. Fehringer P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors

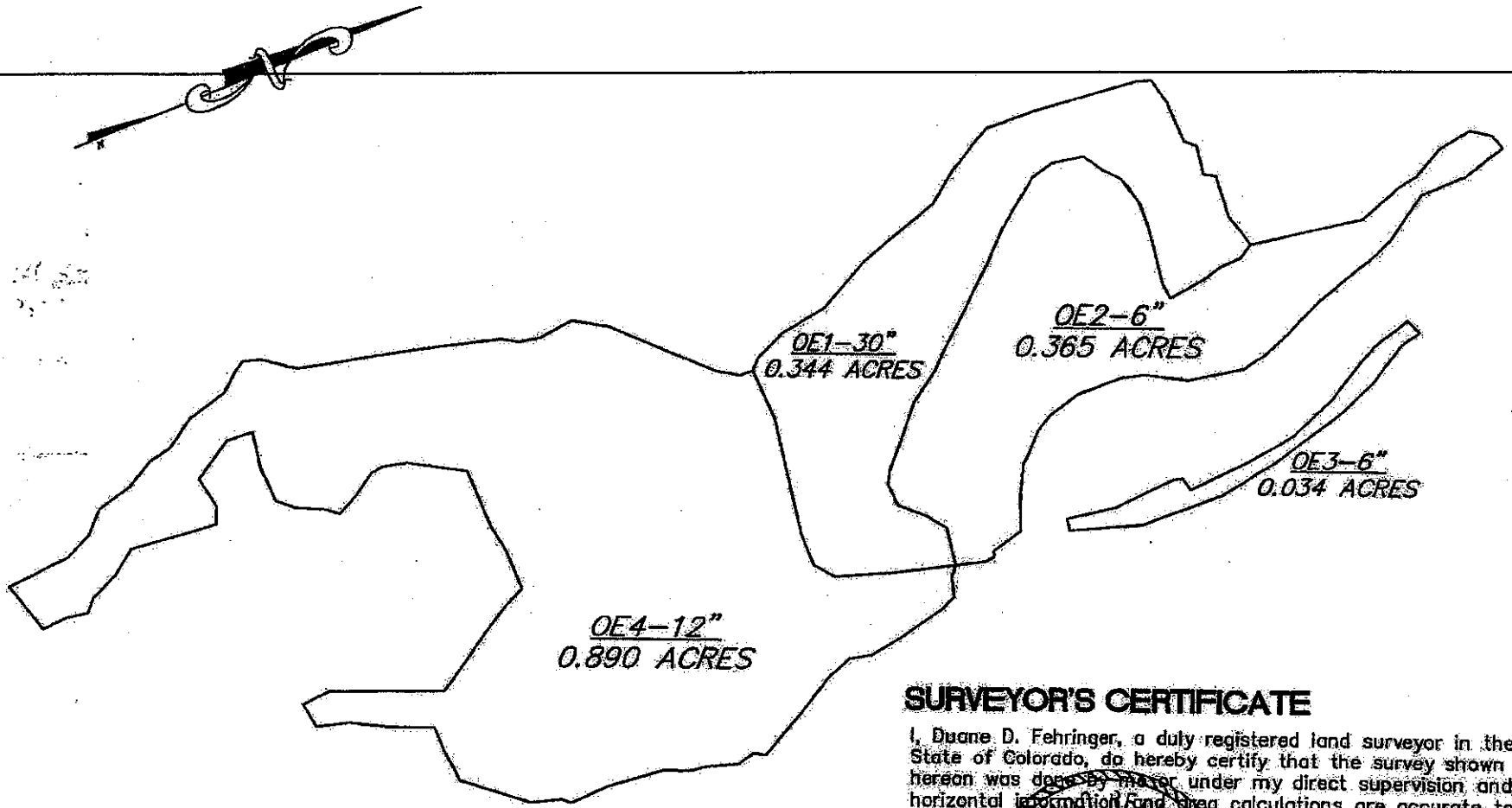
CLIENT: FRONTIER ENVIRONMENTAL INC.

OE

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY: SDF
SCALE: 1"=70'
DATE ISSUED: 5-5-09
PROJECT NO: 08-0032
CHKD:

* Pre-Tilled



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COLORADO REGISTERED DUANE D. FEHRINGER 26626 L.S. 11-20-09 P.E. AND P.L.S.

Duane D. Fehringer P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
40801 US HWY 6&24, SUITE 205 BOX 978 AVON, CO 81620 PH (970)949-0877
6551 S. REVERE PARKWAY, SUITE 180 CENTENNIAL, CO 80111 PH (303)948-6120

CLIENT: FRONTIER ENVIRONMENTAL INC.

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OE

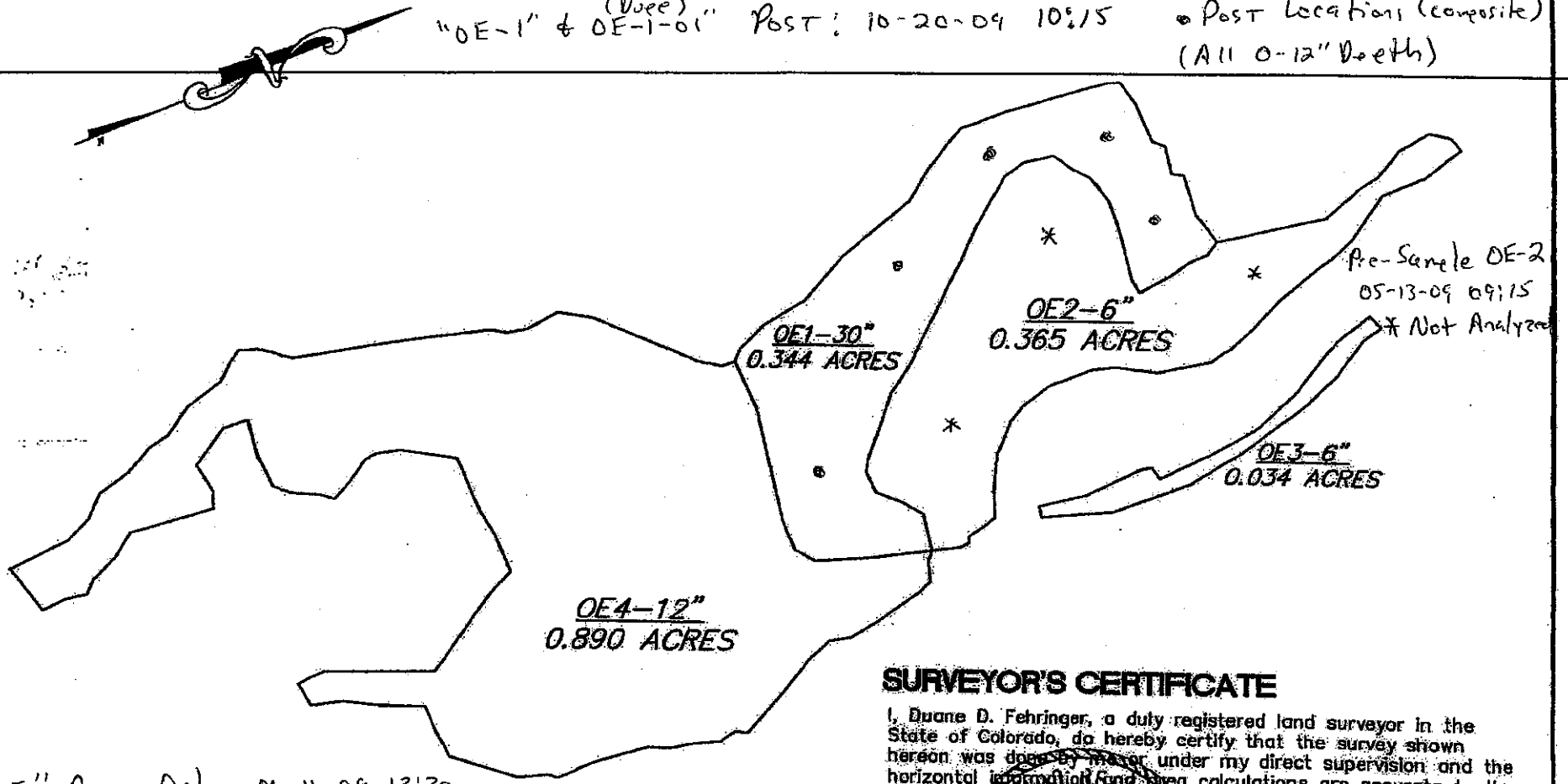
CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=70'
DATE ISSUED:	5-8-09
PROJECT NO:	08-0032
SHEET	

J:\projects\08032\dwg\OU-11 Areas.dwg

"OE-1" & "OE-1-01" (Duee) Pre: 04-27-09 15:15

"OE-1" & OE-1-01" (Duee) Post: 10-20-09 10:15 • Post Location (composite) (All 0-12" Depth)



"OE" Post Only 06-16-09 13:30
Only went to ESAT (Not Energy)
Location?

SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge, and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 5-11 26626 L.S. AND P.L.S.

Duane D. Fehringer P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
40881 US HWY 6&24, SUITE 203 BOX 978 AVON, CO 81620 PH: (970)949-5873
6551 S. REVERE PARKWAY, SUITE 160 CENTENNIAL, CO 80111 PH: (303)948-6266

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OE

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=70'
DATE ISSUED:	6-6-09
PROJECT NO.	08-0032
EXHIBIT	

J:\projects\80032\dwg\OU-11 Areas.dwg

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **OE-1 (per IME Survey)**

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (25% unless noted otherwise)	25.00% %
% Rock	0.00% %
Total Area	0.34 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
30	X	100.00%	=	30
	X		=	
	X		=	
	X		=	
		Average Depth		30 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.0000%	X 0.1	=	0.0000%	(A)
Percent 10 - 60 mesh	0.0800%	X 0.5	=	0.0400%	(B)
Percent < 60 mesh	99.9200%	X 1	=	99.9200%	(C)
Lime Reactivity			=	99.9600%	A+B+C

Calcium Carbonate Equivalence			82.20% %
Percent Moisture			28.50% %
Bulk Density	0.75 grams/cc	=	0.63 tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
/ (Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 319.15 tons/acre = 109.79 tons total

Lime Rate = 504.92 cy/acre = 173.69 cy total

Depth of Lime to be Applied = 3.8 inches

Signature: [signature]

Date: 05-12-05

Signature: [signature]

Date: 5/12/05

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **OE-2 (per IME Survey)**

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (25% unless noted otherwise)	25.00% %
% Rock	30.00% %
Total Area	0.365 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
6	X	100.00%	=	6
	X		=	
	X		=	
	X		=	
		Average Depth		6 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.0000%	X 0.1	=	0.0000%	(A)
Percent 10 - 60 mesh	0.0800%	X 0.5	=	0.0400%	(B)
Percent < 60 mesh	99.9200%	X 1	=	99.9200%	(C)
Lime Reactivity			=	99.9600%	A+B+C

Calcium Carbonate Equivalence			82.20% %
Percent Moisture			28.50% %
Bulk Density	0.75 grams/cc	=	0.63 tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth / (Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 44.68 tons/acre = 16.31 tons total

Lime Rate = 70.69 cy/acre = 25.80 cy total

Depth of Lime to be Applied = 0.5 inches

Signature: [signature]

Date: 05-12-09

Signature: [signature]

Date: 5/12/09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **OE-3 (per IME Survey)**

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (25% unless noted otherwise)	25.00% %
% Rock	50.00% %
Total Area	0.0340 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
6	X	100.00%	=	6
	X		=	
	X		=	
	X		=	
		Average Depth		6 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.0000%	X 0.1 =	0.0000%	(A)
Percent 10 - 60 mesh	0.0800%	X 0.5 =	0.0400%	(B)
Percent < 60 mesh	99.9200%	X 1 =	99.9200%	(C)
Lime Reactivity		=	99.9600%	A+B+C

Calcium Carbonate Equivalence			82.20% %
Percent Moisture			28.50% %
Bulk Density	0.75 grams/cc	=	0.63 tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 31.92 tons/acre = 1.09 tons total

Lime Rate = 50.49 cy/acre = 1.72 cy total

Depth of Lime to be Applied = 0.4 inches

Signature: [signature]

Date: 05-12-09

Signature: [signature]

Date: 5/12/09

FILE MEMO

Regarding: Lime Compost Fertilizer Mulch Seed Other

Fluvial Deposit ID: OE **Irrigated Meadow ID:** _____

Acreage: See Below

Target Application: _____

Amount Applied: _____ 6" Area ≈ 1 bag; 30" Area: 5 bags; 12" Area: 5 1/2 bags

Comments:

6" Area = 0.399 acres × 153 lbs/acre = 61 lbs ≈ 1 bag

30" Area = 0.344 acres × 153 lbs × 5 (6-inch) = 263 lbs ≈ 5.5 bags

12" Area = 0.89 acres × 153 lbs × 2 (6-inch) = 272 lbs = 5.5 bags

_____ 05-18-19/09

Signature **Date**

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: OE deposits

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	HCl Reactive
OE2 0-6	7.0	6.5	7.5	0	100%
OE4 0-6	6.5	6.5	6.5	0	"
OE4 6-12	7.0	7.0	7.0	0	"
OE-1 0-6	7.0	7.0	7.0	0	"
6-12	↓	↓	↓	↓	
12-18					
18-24					
24-30					
>30					

Name/Signature: [signature]

Date: 5-20-09

PASTE PH

05-21-09
Retest after
2 point calibration

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record OE

Fluvial Deposit/Irrigated Meadows Polygon:

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH	
OE2 0-6	Tare@0.0	15.0	~~30~~ 15.0	7.4	
OE4 0-6		15.2	15.2	7.0	
OE4 6-12		15.1	15.1	6.8	6.8
OE1 0-6		15.3	15.3	5.9	6.3
OE1 6-12		15.1	15.1	4.4	5.0
OE1 12-18*		15.9	15.9 ~~30~~	6.1	6.3
OE1 18-24		15.1	~~30~~ 15.1	6.3	6.6
OE1 24-30		15.3	15.3	6.0	6.6
OE1 12-18 Dup*		15.2	15.2	6.1	6.4
OE1 6-12 Repeat	0.0	15.2	15.2	4.3	5.2
OE1 6-12 Gloves	NA	NA	NA		5.1

Note: Excavation of additional test pits and re-testing to follow JMO

~~JMO~~

Name/Signature: GARY SLIFKA / Gary Slifka **Date:** 5/20/09

2pt Calibration

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

Robert sheet

05-22-09

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: OE - 30" Trench A

HCL Reaction

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	
OE North Pit (0-6)	7.5	7.0	8.0	None	Yes
6-12					
12-18					
18-24					
24-30					
OE NW 0-6	7.5	7.0	8.0	None	Y
6-12	7.5	7.0	8.0	None	Y
12-18	5.5	5.0	6.0	Trace - Not entire 6" Interval - Spot	Y
18-24	7.5	7.0	8.0	None	Y
24-30	7.5	7.0	8.0	None	Y

Name/Signature: [signature]

Date: 05-22-09

PASTE PH

Retest Sheet

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Setup Samples 05-22-09

Paste pH Record

Fluvial Deposit/Irrigated Meadows Polygon: FD + OE

Run Tests (05-26-09)

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
OEN 0-6	TARE@0.0	15.8	15.8	7.1
OEN 6-12	↓	15.2	15.2	7.1
OEN 12-18		15.5	15.5	6.7 *
OEN 18-24		15.1	15.3	6.9 *
OEN 24-30	↓	15.4	15.4	7.1
OENW 0-6	TARE@0.0	15.1	15.1	6.9 *
OENW 6-12	↓	15.6	15.6	6.8 *
OENW 12-18		15.7	15.7	6.7 *
OENW 18-24		15.2	15.2	6.7 *
OENW 24-30	↓	15.2	15.2	6.8

* OK per S. Jennings protocol (attached)

Name/Signature: GARY SLIFKA

Date: 5/22/09

PASTE PH (revised 9/30/08)

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

← allowed to sit overnight

Paste pH Record

Fluvial Deposit/Irrigated Meadows Polygon: Smith - 2

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH * (w/ lid off)
221				6.7 7.0
219				7.0 7.2
228			FLAG →	6.3 (7.6) Duplicate
272				7.1
266				7.2
278	0.0	17.1	17.8	7.2
260	0.0	17.4	17.8	6.8 (6.9) Duplicate
255	0.0	17.5	19.4	7.3
264	0.0	19.9	20.6	7.5
252	0.0	17.5	19.0	7.2
280	0.0 tare	19.8	19.8	7.6

* note that several samples had pH values < 6.3 - 6.9 after morning and allowing to sit for 0.5 hr. The pH meter was carefully calibrated & suspicion was elevated when samples with good field pH exhibited depressed paste pH. Addition of 10% HCl to dry subsamples showed strong effervescence & plus visible lime particles. Decided to let samples sit overnight to equilibrate

→ S. Jennings Protocol for pH results < 7.0

Copy to OE File

Name/Signature: Jennings - pH meter
Delmagyn - Sample mix

Date: 10/1/08

Review specs & GMP on paste pH requirements - Non-retentive
Recommend: target 7.0-6.5 allowable 6.9-7.0

reject 40

Evening pH meter calibration verification
pH 7.0 buffer = 7.1
pH 10.0 buffer = 10.0
pH 4.0 buffer = 3.9
→ good to go

Cautionary protocol
- when pH in paste is 6.0-6.5

1) make duplicate - does it corroborate earlier reading?

2) 10% HCl fizz - would not expect strong fizz w/pH 6.0-6.5

3) visual evidence of lime - are white lime particles visible in sample?

4) let sit overnight and check in the morning

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

~~*In Situ* pH Record~~ # + pH Paste

Fluvial Deposit/Irrigated Meadows Polygon: OE (12" Sites)

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	HCl Reaction
OE 12"	7.25	7.0	7.5	0	yes
		~~PH PASTE~~			
OE 12"	Tare @ 0.0	15.3 soil	16.4 H_2O	7.6 *	

*Note - Test performed after tilling of organic material

See previous sheets for pH testing conducted subsequent to lime treatment. gms

Name/Signature: GARY SUFKA/ ~~Gary Sufka~~ **Date:** 6/16/09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Fluvial Deposit/Irrigated Meadows Polygon:

Paste pH Record OE Retest Original @ Approx 30" Test Pit Location

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH (prepared 6/5 tested 6/8)
OE 0-6	0.0 (Tare)	16.5	15.9	6.9
6-12	↓	17.7	17.3	7.1
12-18	↓	18.6	18.2	7.0
18-24	↓	19.3	19.5	7.0
24-30	↓	18.5	17.7	7.0
4/8/09 6-12	↓	14.1	14.4	7.3 (prepared & tested 6/8)
Dupe 12-18	↓	17.0	17.0	0? whomever tested did not record, same be missing?

Name/Signature: [signature]

Date: 06-09-09

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: OE Retest 1st Pit

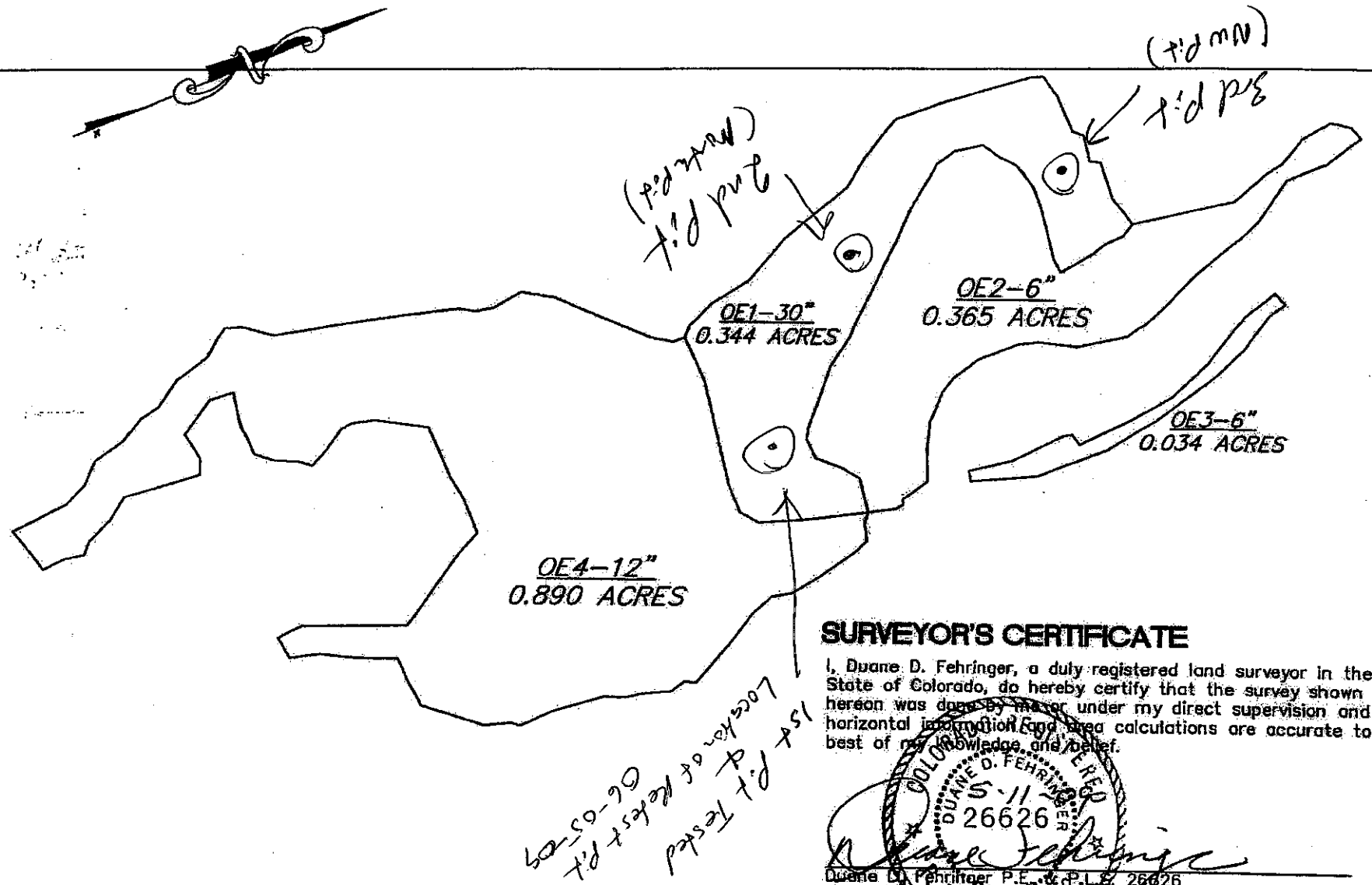
MCL Reaction?

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	
0-6	7.5	7.0	8.0	0	Yes
6-12	7.5	7.0	8.0	0	Yes
12-18	7.5	7.0	8.0	0	Yes
18-24	7.5	7.0	8.0	0	Yes
24-30	6.3	6.0	6.5	0	Yes

Name/Signature: [signature]

Date: 06-05-09

OE Test Pit & Re-test Pit Locations



SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 5-11-09 26626 L.S. AND P.L.S.

Duane D. Fehringer P.E. & P.L.S. 26626

OE

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
40881 US HWY 6&24, SUITE 203 BOX 979 AVON, CO 81620 PH: (970)949-6872
6181 S. REVERE PARKWAY, SUITE 106 CENTENNIAL, CO 80111 PH: (303)348-4228

CLIENT: FRONTIER ENVIRONMENTAL INC.

This document was prepared for the exclusive use of the Client specified hereon. The use of this document or the information contained herein by any other person or entity is not authorized. In the event that any other person or entity desires to use this document or the information contained herein for any purpose they must first obtain written authorization from Inter-Mountain Engineering. This document and any information contained herein is intended to be used within one year of the date hereof. Use after that period is not authorized.

DRAWN BY:	SPF
SCALE:	1"=70'
DATE ISSUED:	5-8-09
PROJECT NO.	08-0032
SHEET	

J:\projects\80032\dwg\OU-11 Areas.dwg

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **OE-1**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	0%	
Treatment Area	0.344	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	0.687	=	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 269.99 tons/acre = 92.88 tons

Compost Rate = 393.00 cy/acre = 135.19 cy

Depth of Compost to be Applied = 2.9 inches

Signature: _____

Date: 5/21/09

Signature: _____

Date: 05-21-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **OE-2**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	6	inches
% Rock	30%	
Treatment Area	0.365	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	0.687	=	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 94.50 tons/acre = 34.49 tons

Compost Rate = 137.55 cy/acre = 50.21 cy

Depth of Compost to be Applied = 1.0 inches

Signature: Barbara Neal

Date: 5/21/09

Signature: [illegible]

Date: 05-21-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **OE-3**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	6	inches
% Rock	50%	
Treatment Area	0.034	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	0.687	=	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 67.50 tons/acre = 2.29 tons

Compost Rate = 98.25 cy/acre = 3.34 cy

Depth of Compost to be Applied = 0.7 inches

Signature: [signature]

Date: 5/21/09

Signature: [signature]

Date: 05-21-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **OE-4**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	5%	
Treatment Area	0.890	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	0.687	=	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 256.49 tons/acre = 228.28 tons

Compost Rate = 373.35 cy/acre = 332.28 cy

Depth of Compost to be Applied = 2.8 inches

Signature: _____

Date: 5/21/09

Signature: _____

Date: 05-21-09

80% PLS

FILE MEMO

Regarding: **Lime** **Compost** **Fertilizer** **Mulch** **Seed** **Other**

Fluvial Deposit ID: OE **Irrigated Meadow ID:** _____

Acreage: _____

Target Application: Below

Amount Applied: _____

Comments:

			Applied
OE1	.344 x 11.44 x 2 + 20% =	9.4 lbs	9.4
OE2	0.365 x 11.44 x 2 + 20% =	10 lbs	10.0
OE3	0.054 x " " " =	0.93 ≈ 1 lb	1 lb
OE4	0.89 x " " =	24.4 lbs	24.5 lbs

_____ 10-23-09

Signature **Date**

Polygon Completion Form
Fluvial Deposits

Fluvial Deposit Polygon Name/ID: OH

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
05-27-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.3. **Comments/Deviations:**
05-27-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.4. **Comments/Deviations:**
06-09-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Section 3.6A through 3.6E. Apply lime 06-02-09; Apply fert 06-08-09 **Comments/Deviations:** Start Incorp 06-08-09
07-15-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.6F through 3.6I. **Comments/Deviations:** Start Incorp 07-14-09
NA	NA	Completed replacement of erosion channels in accordance with Specification Section 3.7. **Comments/Deviations:**
10-06-09	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.8. **Comments/Deviations:** Proceed w/ Incorp 07-15-09 Seeded 10-06-09
10-19-09	✓	Completed mulching in accordance with Specification Section 3.9. **Comments/Deviations:** Mulched & Crimped 10-19-09
NA	NA	Completed reinstallation of fencing in accordance with Specification Section 3.10. **Comments/Deviations:**
11-03-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.14. **Comments/Deviations:**

Quantity of Work Estimated in Proposal: N/A - Addressed in Invoice Documentation AM

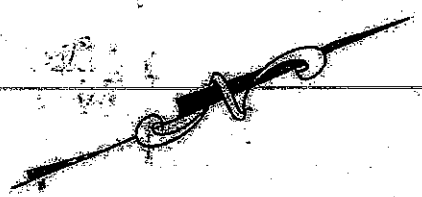
Quantity of Work Performed:

E. Cantrell 11-06-09
Signature of Subcontractor Date

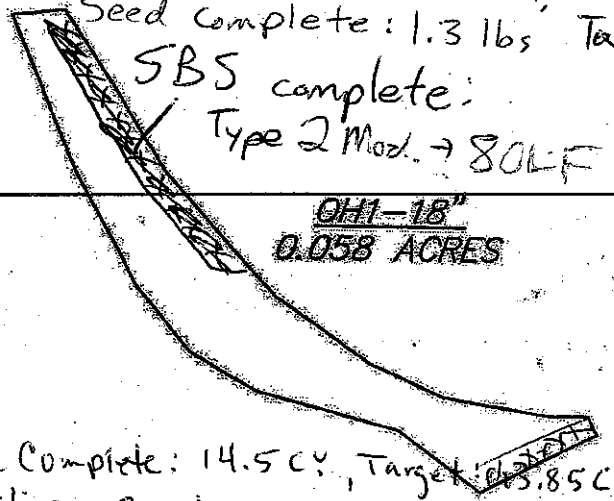
[signature] 11-07-09
Signature of Contractor Date

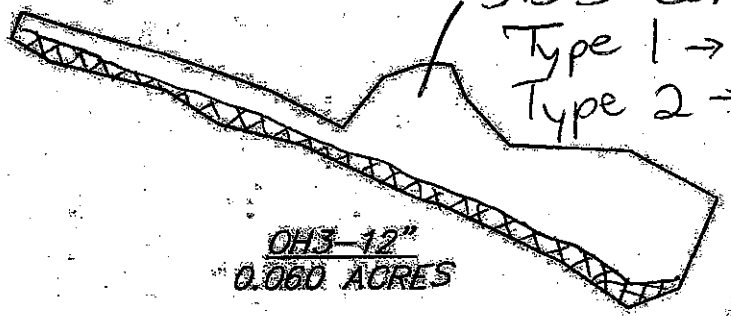
-Complete-

* Double rate (4.25 CY)



Lime Complete: 4.8 CY, Target: 4.67 CY
Fertilizer Complete: 26 lbs.
Compost Complete: 6.5 CY, 6.8 CY
Seed Complete: 1.3 lbs Target





Lime Complete: 14.5 CY, Target: 13.85 CY
Fertilizer Complete: 26 lbs.
Compost Complete: 16.25 CY, Target: 15.21 CY
Seed Complete: 1.0 lb

Lime Complete: 11 CY, Target: 10.74 CY
Fertilizer Complete: 18.5 lbs.
Compost Complete: 24.5 CY, Target: 23.58 CY
Seed Complete: 1.4 lbs

Mulch Complete OH-1, 2, & 3 (322 lbs.)

SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

DUANE D. FEHRINGER 26626 LAND SURVEYOR

Duane D. Fehringer P.E. & P.L.S. 26626
AND P.L.S.

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors

CLIENT: FRONTIER ENVIRONMENTAL INC.

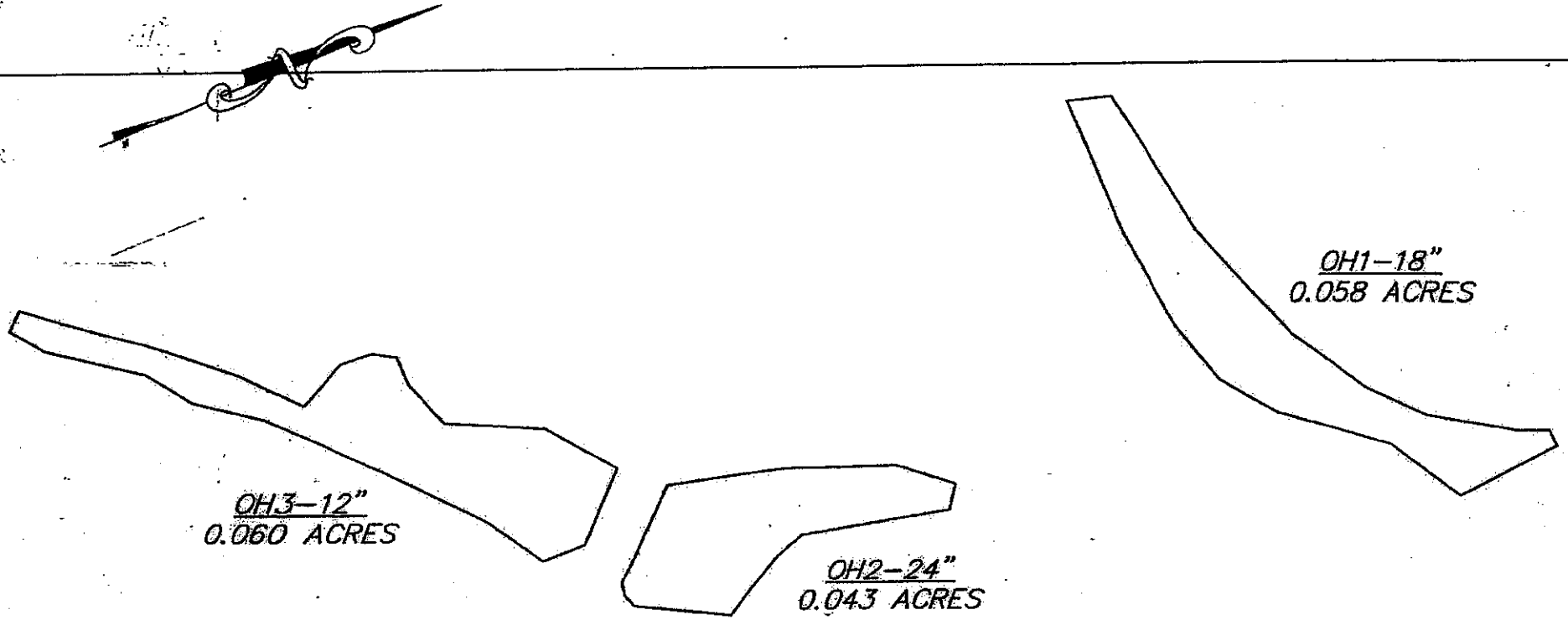
OH

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY: SPF
SCALE: 1"=40'
DATE ISSUED: 9-8-08
PROJECT NO.: 08-0032
CHKD:

J:\projects\1800\32\dwg\OU-11-Areas.dwg

* Pre-Tilled



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5-11-09

Duane D. Fehringer P.E. & P.L.S. 26626

COLORADO REGISTERED DUANE D. FEHRINGER 26626 AND P.L.S.

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
40581 US HWY 6&24, SUITE 283 BOX 978 AVON, CO 81620 PH: (970)949-5172
6551 S. REVERE PARKWAY, SUITE 186 CENTENNIAL, CO 80111 PH: (303)948-6220

CLIENT: FRONTIER ENVIRONMENTAL INC.

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OH

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=40'
DATE ISSUED:	5-8-09
PROJECT NO.	08-0032
EXHIBIT	

J:\projects\8003\dwg\OU-11 Area.dwg

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **OH-1 (north section)**

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	70.00% %
Total Area	0.058 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
18	X	100.00%	=	18
	X		=	
	X		=	
	X		=	
		Average Depth		18 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence			82.20% %
Percent Moisture			29.00% %
Bulk Density	0.75 grams/cc	=	0.63 tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 50.91 tons/acre = 2.95 tons total

Lime Rate = 80.54 cy/acre = 4.67 cy total

Depth of Lime to be Applied = 0.6 inches

Signature: [signature]

Date: 5/18/09

Signature: [signature]

Date: 05-18-09

FILE MEMO

Regarding: Lime Compost (Fertilizer) Mulch Seed Other

Fluvial Deposit ID: OH **Irrigated Meadow ID:** ~~N/A~~

Acreage: See Below

Target Application: Below

Amount Applied: Below

Comments:

			Needed
OH-1	3(6-inch) x 153/lbs/acre x .058acres =	26.6lbs ≈ 0.5 bag	26lbs
OH-2	4(24-inch) x 153 " x .043acres =	26.3 " ≈ 0.5 bag	26lbs
OH-3	2(12-inch) x 153 " x .060acres =	18.4 " ≈ 0.4 bag	18.5lbs

Hand Broadcasted 06-08-09

Signature

06-08-09

Date

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: OH

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	HCl Reaction
OH1-18W 0-6	7.0	6.5	7.5	0	yes
" 6-12	7.0	6.5	7.5	0	yes
" 12-18	7.0	6.5	7.5	0	yes
OH2 0-6	7.5	7.0	8.0	0	yes
" 6-12	7.5	7.0	8.0	0	yes
" 12-18	7.5	7.0	8.0	0	yes
" 18-24	7.5	7.0	8.0	0	yes
OH3 0-6	7.0	7.0	7.0	0	yes
6-12	7.0	7.0	7.0	0	yes
OH 0-6W	7.25	7.0	7.5	0	yes
6-12W Dups	7.25	7.0	7.5	0	yes
12-18W	7.25	7.0	7.5	0	yes
0-6E	7.00	7.0	7.0	0	yes
6-12E	7.00	7.0	7.0	0	yes
12-8E	7.00	7.0	7.0	0	yes

Name/Signature: GABY SLIFKA / Gaby Slifka **Date:** 6-9-9

E = EAST

W = WEST

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: OH-1

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	HCl Reaction?
0-6	7.5	7.0	8.0	No	Yes
6-12	7.5	7.0	8.0	No	Yes
12-18	7.5	7.0	8.0	No	Yes

Retest after adding additional line per 5 Samples above

Name/Signature: [signature]

Date: 07-15-09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

1 point cal pH 7.0 Buffer

Fluvial Deposit/Irrigated Meadows Polygon: **Paste pH Record** OH

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH	
OH3 0-6	0.0	15.4	15.8	7.1	Retest 06-10
" 6-12		15.1	14.9	6.8	6.9
OH2 0-6		17.1	17.9	7.0	
OH2 6-12		17.1	17.6	7.3	
OH2 12-18		16.1	16.5	7.3	
OH2 18-24		16.7	16.3	7.3	
OH1 0-6		16.1	18.6	7.5	
OH1 6-12		19.4	18.5	7.5	
OH1 12-18		19.1	19.1	3.7 *	Told FFSI to hold off on compost on OH1 (See Reports)

Name/Signature: [signature] Date: 06-09-09

Note: Retest followed FESI placement of additional line @ OH-1

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record OH-1 Re Test

Fluvial Deposit/Irrigated Meadows Polygon:

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
0-6	0.0 (Tare)	20.1	20.1	8.2
6-12	↓	20.0	20.5	8.1
12-18	↓	20.0	20.1	7.4 * previously 3.7

Name/Signature: [signature] **Date:** 07-15-09

2-Point Calibration 7.0 & 10.0 Buffers [signature]

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **OH-1**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	70%	
Treatment Area	0.058	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	0.687	=	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 81.00 tons/acre = 4.70 tons

Compost Rate = 117.90 cy/acre = 6.84 cy

Depth of Compost to be Applied = 0.9 inches

Signature: [signature]

Date: 6/4/09

Signature: [signature]

Date: 06-04-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **OH-2**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	10%	
Treatment Area	0.043	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon		15.79%	%
Percent Moisture		29.63%	%
Wet Bulk Density	=	0.687	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate =	242.99 tons/acre	=	10.45 tons
Compost Rate =	353.70 cy/acre	=	15.21 cy
	Depth of Compost to be Applied =		2.6 inches

Signature: [signature]

Date: 6/4/09

Signature: [signature]

Date: 06-04-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **OH-3**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	0%	
Treatment Area	0.060	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	0.687	=	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 269.99 tons/acre = 16.20 tons

Compost Rate = 393.00 cy/acre = 23.58 cy

Depth of Compost to be Applied = 2.9 inches

Signature: [signature]

Date: 6/4/09

Signature: [signature]

Date: 06-04-09

FILE MEMO

Regarding: **Lime** **Compost** **Fertilizer** **Mulch** **Seed** **Other**

Fluvial Deposit ID: OH **Irrigated Meadow ID:** _____

Acreage: Below

Target Application: Below

Amount Applied: Below

Comments:

	Target	Applied
0.058 acres x 11.44 PLS x 2 (Double Rate) =	1.3 lbs	1.3 lbs
0.043 acres x 11.44 x 2 =	0.98 lbs	1.0 lb
0.060 " " x 2 =	1.4 lbs	1.4 lbs

FD Seed Mix: Weighted and Flail Broadcasted Amounts shown

_____ 10-06-09

Signature **Date**

Polygon Completion Form
Fluvial Deposits

Fluvial Deposit Polygon Name/ID: OI

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
05-27-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.3. **Comments/Deviations:**
05-27-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.4. **Comments/Deviations:**
06-04-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Section 3.6A through 3.6E. Acely Lime 06-02-09; Acely Fert 06-08-09 **Comments/Deviations:**
06-30-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.6F through 3.6I. **Comments/Deviations:**
NA	NA	Completed replacement of erosion channels in accordance with Specification Section 3.7. **Comments/Deviations:**
wk ending 10-18	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.8. **Comments/Deviations:** Seedbed prep during Compost incorp 06-30-09 Seeded wk ending 10-18-09
10-19-09	✓	Completed mulching in accordance with Specification Section 3.9. **Comments/Deviations:** Mulched & Crimped 10-19
NA	NA	Completed reinstallation of fencing in accordance with Specification Section 3.10. **Comments/Deviations:**
11-03-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.14. **Comments/Deviations:**

Quantity of Work Estimated in Proposal: NA - Addressed in Invoice Documentation

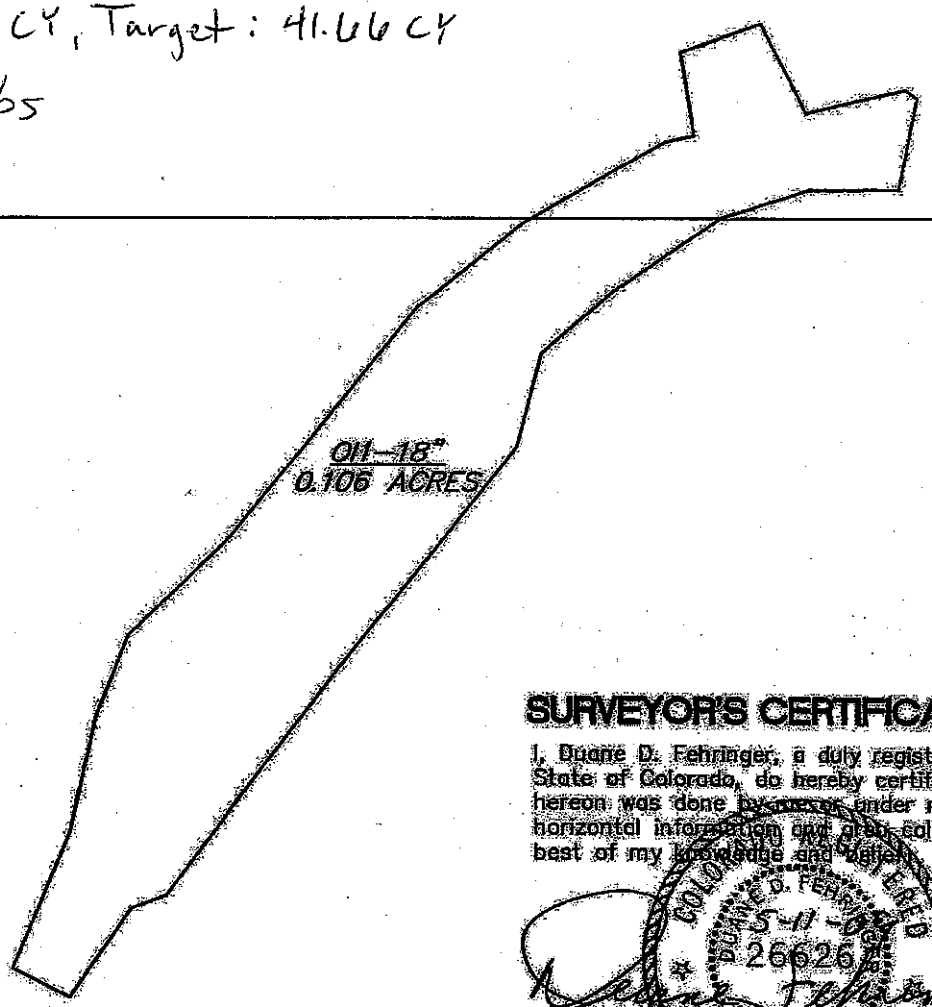
Quantity of Work Performed:

Signature of Subcontractor — Date: 11-06-09

Signature of Contractor — Date: 11-03-09

- Complete -

Lime Complete: 29.25 CY, Target: 28.46 CY
Fertilizer Complete: 1 bag (50 lbs.)
Compost Complete: 42.25 CY, Target: 41.66 CY
Seed Complete: 2.4 lbs
Mulch Complete:
(200 lbs.)



SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED LAND SURVEYOR
DUANE D. FEHRINGER
5-11-09
26626
L.S.

Duane D. Fehringer, P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors

CLIENT: FRONTIER ENVIRONMENTAL INC.

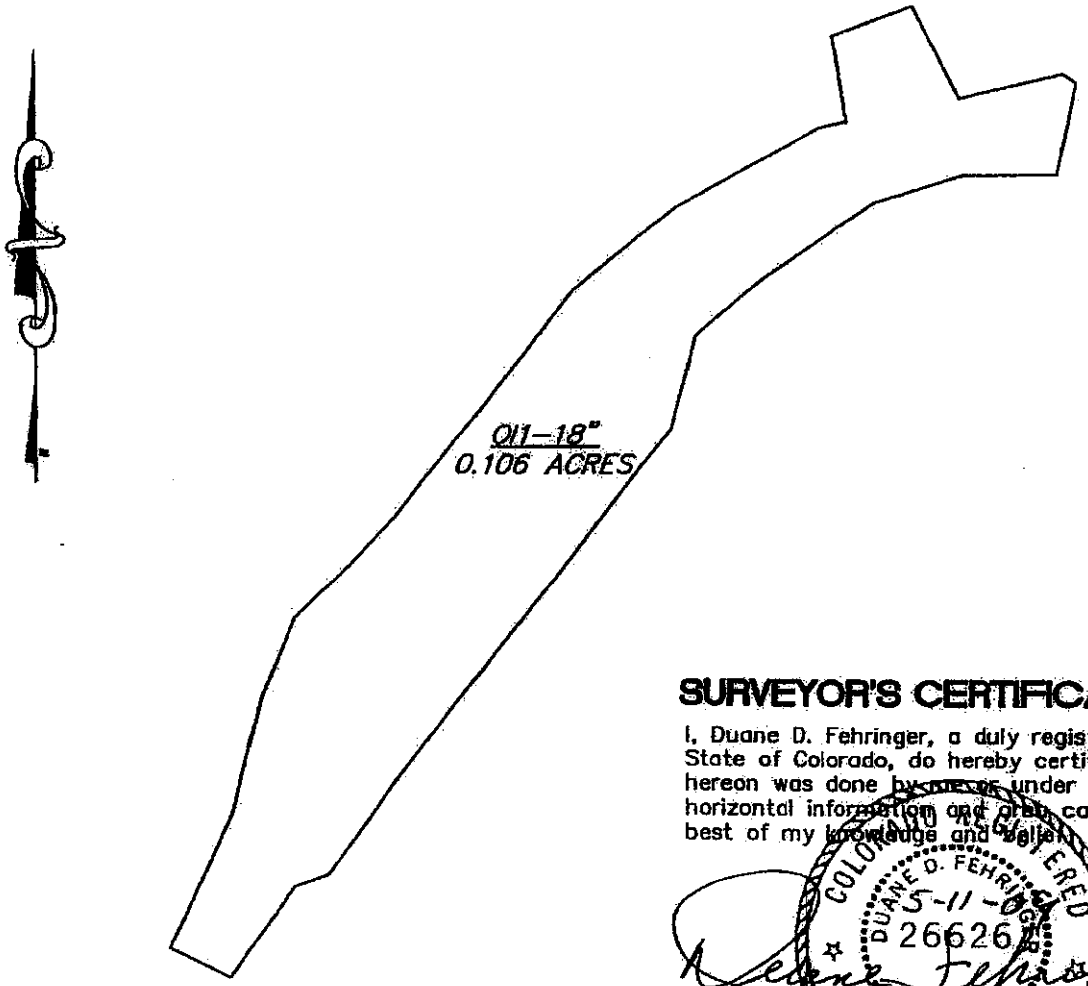
OU-11

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY: DF
SCALE: 1"=30'
DATE ISSUED: 5-5-09
PROJECT NO: 08-0032
SHEET

J:\projects\80032\dwg\OU-11_Areas.dwg

* Pre-Tilled



SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED
DUANE D. FEHRINGER
5-11-09
26626
P.E. AND P.L.S.

Duane D. Fehringer, P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
0081 US HWY 6&24, SUITE 203 BOX 978 AVON, CO 81620 PH: (970)949-5873
6551 S. REVERE PARKWAY, SUITE 130 CENTENNIAL, CO 80111 PH: (303)948-4626

CLIENT: FRONTIER ENVIRONMENTAL INC.

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OU

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=30'
DATE ISSUED:	5-8-09
PROJECT NO.	08-0032
SHEET	

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Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **OI**

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5-14-09 by Jennings)	10.00% %
% Rock	0.00% %
Total Area	0.106 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
18	X	100.00%	=	18
	X		=	
	X		=	
	X		=	
		Average Depth		18 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.0000%	X 0.1	=	0.0000%	(A)
Percent 10 - 60 mesh	0.0800%	X 0.5	=	0.0400%	(B)
Percent < 60 mesh	99.9200%	X 1	=	99.9200%	(C)
Lime Reactivity			=	99.9600%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		29.00% %	
Bulk Density	0.75 grams/cc	= 0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 169.70 tons/acre = 17.99 tons total

Lime Rate = 268.48 cy/acre = 28.46 cy total

Depth of Lime to be Applied = 2.0 inches

Signature: [signature]

Date: 5/18/09

Signature: [signature]

Date: 05-18-09

FILE MEMO

Regarding: Lime Compost Fertilizer Mulch Seed Other

Fluvial Deposit ID: QI **Irrigated Meadow ID:** ~~_____~~ 0no

Acreage: 0.106

Target Application: $0.106 \times \frac{15\text{lbs}}{\text{acre}} \times 3(6\text{-inch}) = 48\text{lbs}$

Amount Applied: ≈ 1 bag (50 lbs)

Comments:

Hand Broadcasted 1 bag; Confirmed 0345:0

John A. Duli

Signature

06-08-09

Date

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

06-09-09
2 point Cal. before prior to test

Paste pH Record OI

Fluvial Deposit/Irrigated Meadows Polygon: _____

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH	06-10-09
OI 1 0-6	0.0	18.3	18.7	6.9	6.9
OI 1 0-6 Dupe		16.0	16.1	6.8	6.8
OI 1 6-12		15.5	15.7	6.6	6.8
OI 1 6-12 Dupe		15.5	16.3	6.6	6.8
OI 1 12-18		14.4	13.7	6.7	6.9
OI 1 E 0-6		17.9	16.6	—	6.8
OI 1 E 6-12		17.3	17.5	—	6.9
OI 1 E 12-18		17.8	16.8	—	6.9

Name/Signature: _____ **Date:** 06-10-09

2 point Cal prior to reads on 06-10-09 JMS
Buffers 7 & 10

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **OI**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	0%	
Treatment Area	0.106	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon		15.79%	%
Percent Moisture		29.63%	%
Wet Bulk Density	=	0.687	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate =	269.99 tons/acre	=	28.62 tons
Compost Rate =	393.00 cy/acre	=	41.66 cy
	Depth of Compost to be Applied =		2.9 inches

Signature: [signature]

Date: 6/4/09

Signature: [signature]

Date: 06-04-09

Polygon Completion Form
Fluvial Deposits

Fluvial Deposit Polygon Name/ID: 05

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
06-01-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.3. **Comments/Deviations:**
06-11-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.4. **Comments/Deviations:**
06-30-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Section 3.6A through 3.6E. Start lime app on 06-11-09 ; Fertilize 06-22-09 **Comments/Deviations:** Start Encore 06-25-09
07-17-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.6F through 3.6I. Place Compost 06-29-30-09 **Comments/Deviations:**
N/A	N/A	Completed replacement of erosion channels in accordance with Specification Section 3.7. **Comments/Deviations:**
10-06-09	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.8. **Comments/Deviations:** Prep w/ALLO 07-17-09 Seeded 10-06-09
10-19-09	✓	Completed mulching in accordance with Specification Section 3.9. **Comments/Deviations:** Molched & Crimped 10-19-09
N/A	N/A	Completed reinstallation of fencing in accordance with Specification Section 3.10. **Comments/Deviations:**
11-03-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.14. **Comments/Deviations:**

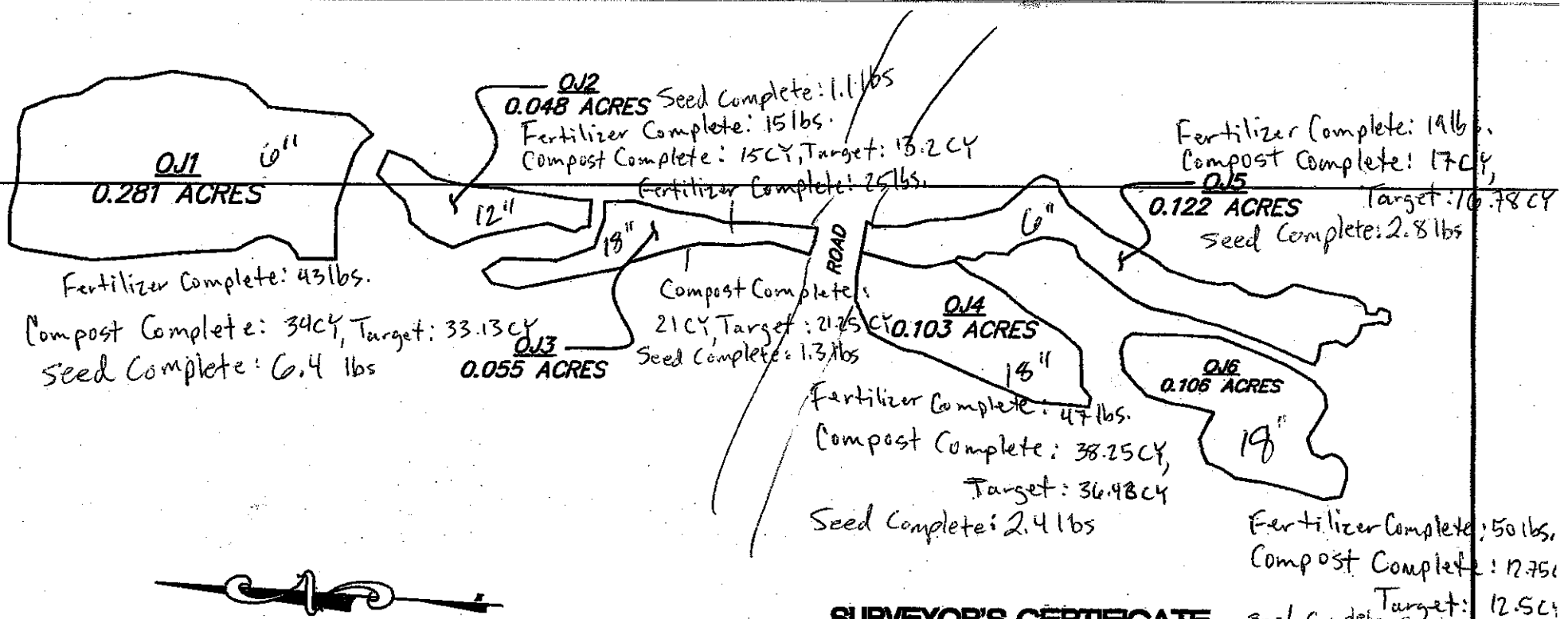
Quantity of Work Estimated in Proposal: N/A - Addressed in Invoice Documentation
Quantity of Work Performed:

[signature] 11-06-09
Signature of Subcontractor Date

[signature] 11-03-09
Signature of Contractor Date

Lime Complete: OJ1- 30.8 CY, Target: 30.18 CY
OJ2- 12 CY, Target: 12.03 CY
OJ3- 29.25 CY, Target: 29.53 CY
OJ4- 50 CY, Target: 49.78 CY
OJ5 [illegible]
OJ6 - 17.8 CY, Target: 17.08 CY

— COMPLETE —



Mulch Complete: OJ-1,2,3,4,5,&6
(1440lbs.)
36 bales

SURVEYOR'S CERTIFICATE

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COLORADO REGISTERED DUANE D. FEHRINGER 5-27 26626 L.S. AND P.E.

Duane D. Fehringer P.E. & P.L.S. 26626

*Pre-Tilled

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
[illegible]

CLIENT: FRONTIER ENVIRONMENTAL INC.

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CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY: EFT
SCALE: 1"=70'
DATE ISSUED: 5-27-09
PROJECT NO.: 08-0032
SHEET

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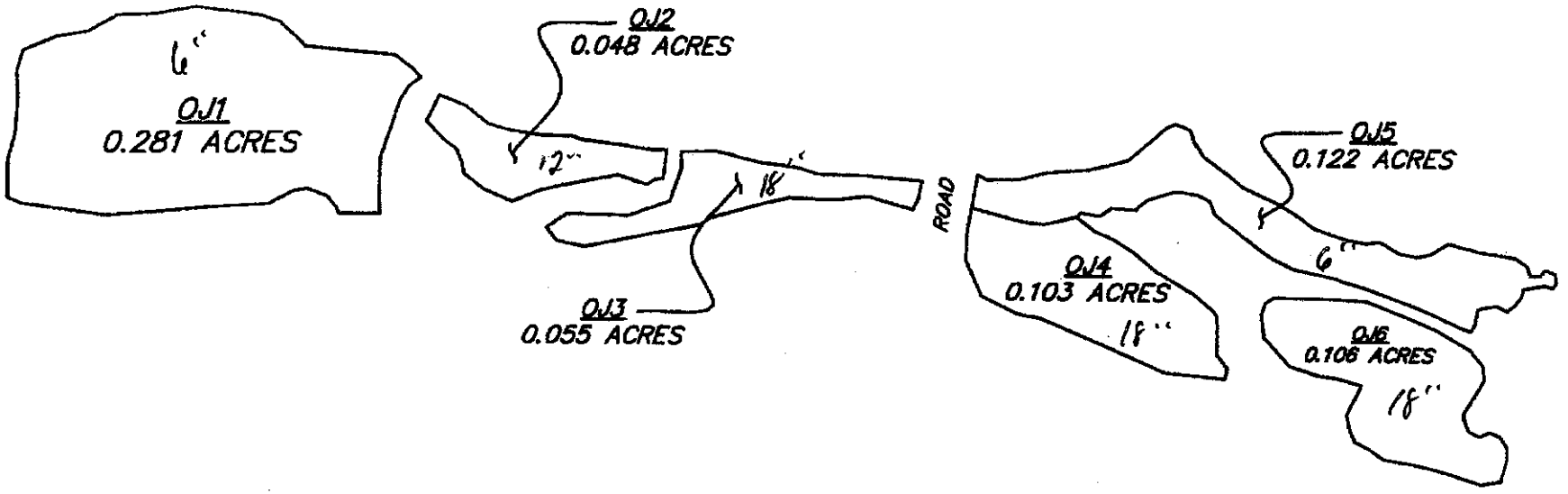

SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and survey calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 5-27-08 26626 L. AND P.L.S.

Duane D. Fehringer P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors

CLIENT: FRONTIER ENVIRONMENTAL INC.

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY: SMF
SCALE: 1"=70'
DATE ISSUED: 5-27-08
PROJECT NO.: 08-0032
SHEET

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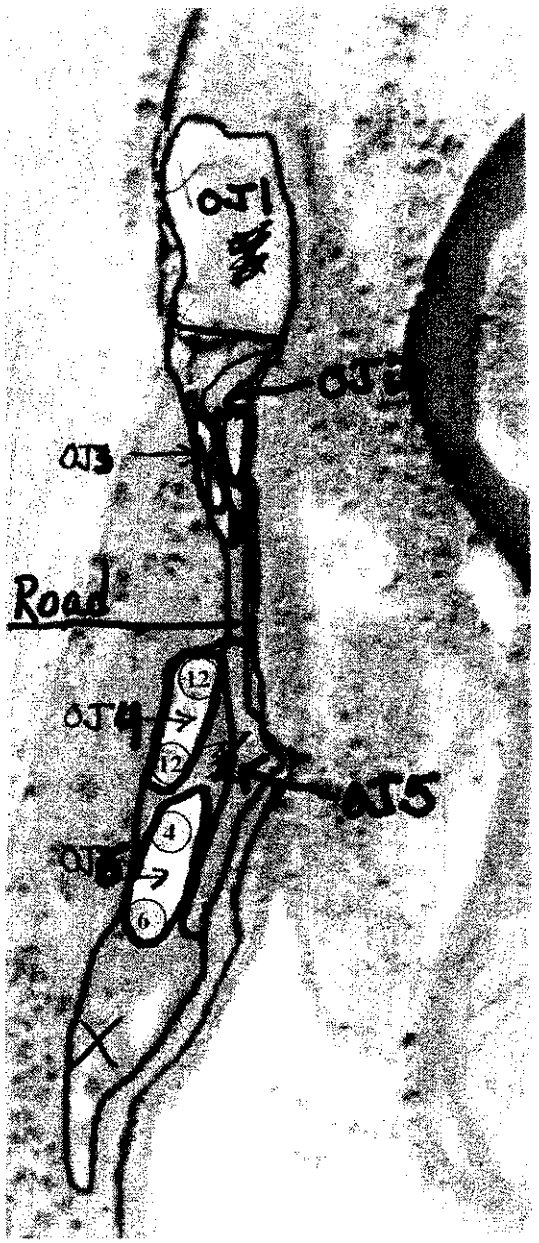


ALLUVIAL DEPOSIT OJ

OJ3	Treat to	18"	0% Rock
OJ4	Treat to	18"	10% Rock
OJ6	Treat to	18"	70% Rock
OJ1	Treat to	6"	40% Rock
OJ2	[illegible]	12"	30% Rock
OJ5	Treat to	6"	30% Rock

Plastic Deposit Outline

Bank Stabilization Locations

Depth to water in the channel

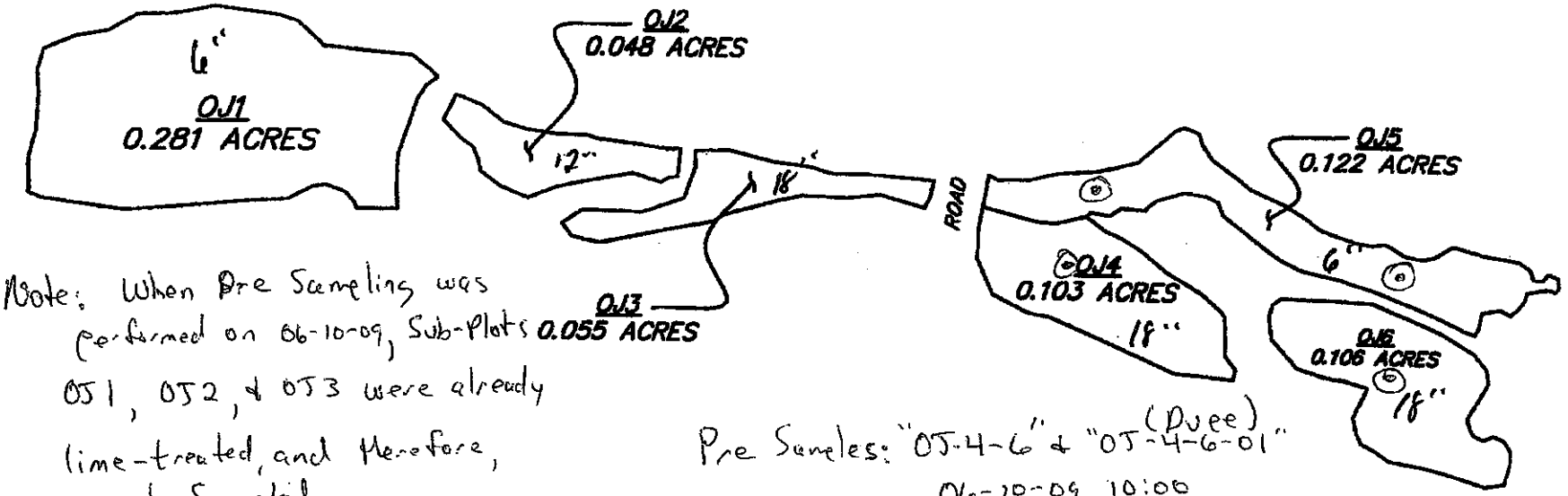
Note: [illegible]

Locations and treatment lengths estimated.

[illegible]

Pre- and Post- Remediation Sampling Locations

One Sample Labeled "OJ-1" 06-13-09 11:25
Location Unknown



Note: When Pre Sampling was performed on 06-10-09, Sub-Plots OJ1, OJ2, & OJ3 were already lime-treated, and therefore, not Sampled.

Pre Samples: "OJ-4-6" & "OJ-4-6-01" (Dupe)
06-10-09 10:00
⊙ 4 point Composite (0-6" OJ5; 0-12" OJ4&6)

Post Samples: "OJ-4-6"
"OJ-4-6-01" (Dupe)
⊙ 4 point Composite
07-17-09 10:00

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COLORADO (DUANE D. FEHRINGER) 5-27 26626 L.S. AND P.E.

Duane D. Fehringer P.E. & P.L.S. #26626

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors

CLIENT: FRONTIER ENVIRONMENTAL INC.

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY: BFF
SCALE: 1"=70'
DATE ISSUED: 9-27-09
PROJECT NO.: 05-0032
SHEET:

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Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **OJ -1**

POLYGON CHARACTERISTICS

Net Application Rate	60 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5-14-09 by Jennings)	10.00% %
% Rock	40.00% %
Total Area	0.281 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
6	X	100.00%	=	6
	X		=	
	X		=	
	X		=	
		Average Depth		6 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.0000%	X 0.1	=	0.0000%	(A)
Percent 10 - 60 mesh	0.0800%	X 0.5	=	0.0400%	(B)
Percent < 60 mesh	99.9200%	X 1	=	99.9200%	(C)
Lime Reactivity			=	99.9600%	A+B+C

Calcium Carbonate Equivalence			82.20% %
Percent Moisture			29.00% %
Bulk Density	0.75 grams/cc	=	0.632 tons/cy

CALCULATE LIME RATE

Lime Rate = $\frac{\text{Net Application Rate *(1+ Mixing Factor/100)* (1 - \% Rock/100) * Depth}}{\text{(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - \% Moisture/100)}}$

Lime Rate = 67.88 tons/acre = 19.07 tons total

Lime Rate = 107.39 cy/acre = 30.18 cy total

Signature: [signature]

Date: 6/8/09

Signature: [signature]

Date: 06-04-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **OJ-2**

POLYGON CHARACTERISTICS

Net Application Rate	60 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5-14-09 by Jennings)	10.00% %
% Rock	30.00% %
Total Area	0.048 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
12	X	100.00%	=	12
	X		=	
	X		=	
	X		=	
		Average Depth		12 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.0000%	X 0.1	=	0.0000%	(A)
Percent 10 - 60 mesh	0.0800%	X 0.5	=	0.0400%	(B)
Percent < 60 mesh	99.9200%	X 1	=	99.9200%	(C)
Lime Reactivity			=	99.9600%	A+B+C

Calcium Carbonate Equivalence			82.20% %
Percent Moisture			29.00% %
Bulk Density	0.75 grams/cc	=	0.632 tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth / (Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 158.39 tons/acre = 7.60 tons total

Lime Rate = 250.58 cy/acre = 12.03 cy total

Signature: [signature]

Date: 6/8/09

Signature: [signature]

Date: 06-08-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **OJ-3**

POLYGON CHARACTERISTICS

Net Application Rate	60 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5-14-09 by Jennings)	10.00% %
% Rock	0.00% %
Total Area	0.055 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
18	X	100.00%	=	18
	X		=	
	X		=	
	X		=	
		Average Depth		18 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.0000%	X 0.1	=	0.0000%	(A)
Percent 10 - 60 mesh	0.0800%	X 0.5	=	0.0400%	(B)
Percent < 60 mesh	99.9200%	X 1	=	99.9200%	(C)
Lime Reactivity			=	99.9600%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		29.00% %	
Bulk Density	0.75 grams/cc	= 0.632	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth / (Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 339.40 tons/acre = 18.67 tons total

Lime Rate = 536.96 cy/acre = 29.53 cy total

Signature: [signature]

Date: 6/8/09

Signature: [signature]

Date: 06-08-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **OJ-4**

POLYGON CHARACTERISTICS

Net Application Rate	60	tons/1000 tons
Mixing Safety Factor (revised to 10% on 5-14-09 by Jennings)	10.00%	%
% Rock	10.00%	%
Total Area	0.103	acres

Average Depth Calculation

Depth (inches)		% of Total Area		
18	X	100.00%	=	18
	X		=	
	X		=	
	X		=	
		Average Depth		18 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.0000%	X 0.1	=	0.0000%	(A)
Percent 10 - 60 mesh	0.0800%	X 0.5	=	0.0400%	(B)
Percent < 60 mesh	99.9200%	X 1	=	99.9200%	(C)
Lime Reactivity			=	99.9600%	A+B+C

Calcium Carbonate Equivalence		82.20%	%
Percent Moisture		29.00%	%
Bulk Density	0.75 grams/cc	= 0.632	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth / (Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 305.46 tons/acre = 31.46 tons total

Lime Rate = 483.26 cy/acre = 49.78 cy total

Signature: [signature]

Date: 6/8/09

Signature: [signature]

Date: 06-05-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **OJ-5**

POLYGON CHARACTERISTICS

Net Application Rate	60 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5-14-09 by Jennings)	10.00% %
% Rock	30.00% %
Total Area	0.122 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
6	X	100.00%	=	6
	X		=	
	X		=	
	X		=	
		Average Depth		6 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.0000%	X 0.1	= 0.0000%	(A)
Percent 10 - 60 mesh	0.0800%	X 0.5	= 0.0400%	(B)
Percent < 60 mesh	99.9200%	X 1	= 99.9200%	(C)
Lime Reactivity			= 99.9600%	A+B+C

Calcium Carbonate Equivalence			82.20% %
Percent Moisture			29.00% %
Bulk Density	0.75 grams/cc	=	0.632 tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 79.19 tons/acre = 9.66 tons total

Lime Rate = 125.29 cy/acre = 15.29 cy total

Signature: Brad Mark

Date: 6/8/09

Signature: John G. Mehl

Date: 06-08-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **OJ-6**

POLYGON CHARACTERISTICS

Net Application Rate	60 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5-14-09 by Jennings)	10.00% %
% Rock	70.00% %
Total Area	0.106 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
18	X	100.00%	=	18
	X		=	
	X		=	
	X		=	
		Average Depth		18 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.0000%	X 0.1	=	0.0000%	(A)
Percent 10 - 60 mesh	0.0800%	X 0.5	=	0.0400%	(B)
Percent < 60 mesh	99.9200%	X 1	=	99.9200%	(C)
Lime Reactivity			=	99.9600%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		29.00% %	
Bulk Density	0.75 grams/cc	= 0.632	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth / (Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 101.82 tons/acre = 10.79 tons total

Lime Rate = 161.09 cy/acre = 17.08 cy total

Signature: [signature]

Date: 6/8/09

Signature: [signature]

Date: 06-08-09

FILE MEMO

Regarding: Lime Compost Fertilizer Mulch Seed Other

Fluvial Deposit ID: 05 **Irrigated ~~Meadow~~ ID:** _____

Acreage: See Below

Target Application: See Below

Amount Applied: 5.5 bags

Comments:

Needed

051	0.281 Acres	x 1 (6-inch) x 153 lbs/Acre	= 42.99 lbs	≈	0.9 bag		43 lbs
052	0.048 "	x 2 (12-inch) x 153 "	= 14.7 lbs	≈	0.3 bag		15 lbs
053	0.055 "	x 3 (18 inch) x 153 "	= 25.2 lbs	≈	0.5 bag		25 lbs
054	0.103 "	x 3 (18 inch) x 153 "	= 42.3 lbs	≈	1 bag		47 lbs
055	0.122 "	x 1 (6 inch) x 153 "	= 18.7 lbs	≈	0.4 bag		19 lbs
056	0.106 "	x 3 (18-inch) x 153 "	= 48.7 lbs	≈	1 bag		50 lbs
					4.1 bags		

Hand Broadcasted 0:45:0

_____ 06-22-09

Signature **Date**

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: 05

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	HCl Reaction?
053 0-6	8.0	8.0	8.0	0%	Yes
053 6-12	8.0			0	Yes
053 12-18	8.0			0	Yes
052 0-6	7.0	7.0	7.0	0	Yes
052 6-12	7.0	7.0	7.0	0	Yes
05-1-1 0-6	7.0-7.5			0	Yes
05-1-2 0-6	7.0-7.5			0	Yes

Name/Signature: [signature]

Date: 06-30-09

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: OJ

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	HCl Reaction?
OJ 4 0-6	8.5			None	Yes
OJ 4 6-12	8.5			None	Yes
OJ 4 12-18	8.5			None	Yes
~~OJ 6 0-6~~					
~~OJ 4 6-12 Dupe~~					
OJ 5-1- 0-6	7.5			None	Yes
OJ-52 0-6	7.5			None	Yes
OJ 6 0-6	7.0-7.5			None	Yes
OJ 6 6-12	7.0-7.5			None	Yes
OJ 6 12-18	7.0-7.5			None	Yes

Name/Signature: [signature] Date: 06-26-09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Fluvial Deposit/Irrigated Meadows Polygon:

Paste pH Record OJ

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
OJ 1-1 0-6"	Tare @ 0.0	16.0	16.0	6.9
OJ 1-2 0-6"		15.5	15.5	7.1
OJ 2 0-6		15.5	15.5	6.9
OJ 2 6-12		15.5	15.5	6.9
OJ 3 0-6		15.6	15.8	6.9
OJ 3 6-12		15.0	15.2	6.7
OJ 3 12-18		15.3	15.6	6.9

Name/Signature: GARY SLIFKA / Gary Slifka **Date:** 7-1-09

2 pH Calibration

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Fluvial Deposit/Irrigated Meadows Polygon: **Paste pH Record** OJ

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
OJ 4 0-6	TARE (0.0)	17.7	16.5	7.4
OJ 4 6-12		18.5	18.1	7.5
OJ 4 6-12 (Dupe)		15.6	16.0	7.5
OJ 4 12-18		16.0	14.2	7.5
OJ S-1 - 0-6		19.3	20.9	7.3
OJ S-2 - 0-6		15.3	15.7	7.6
OJ 6 0-6		17.9	17.3	7.7
OJ 6 6-12		18.0	18.2	7.6
OJ 6 -12-18		16.7	15.6	7.6

Name/Signature: GARY SLUKA / [signature] **Date:** 6-29-09

2pt Calibration 7+10

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **OJ-1**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	6	inches
% Rock	40%	
Treatment Area	0.281	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	0.687	=	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 81.00 tons/acre = 22.76 tons

Compost Rate = 117.90 cy/acre = 33.13 cy

Depth of Compost to be Applied = 0.9 inches

Signature: [signature]

Date: 6/8/09

Signature: [signature]

Date: 06-08-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **OJ-2**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	30%	
Treatment Area	0.048	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 188.99 tons/acre = 9.07 tons

Compost Rate = 275.10 cy/acre = 13.20 cy

Depth of Compost to be Applied = 2.0 inches

Signature: [signature]

Date: 6/8/09

Signature: [signature]

Date: 06-08-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **OJ-3**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	0%	
Treatment Area	0.055	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 269.99 tons/acre = 14.85 tons

Compost Rate = 393.00 cy/acre = 21.62 cy

Depth of Compost to be Applied = 2.9 inches

Signature: [signature]

Date: 6/8/09

Signature: [signature]

Date: 06-08-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **OJ-4**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	10%	
Treatment Area	0.103	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	0.687	=	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 242.99 tons/acre = 25.03 tons

Compost Rate = 353.70 cy/acre = 36.43 cy

Depth of Compost to be Applied = 2.6 inches

Signature: [signature]

Date: 6/8/09

Signature: [signature]

Date: 06-08-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **OJ-5**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	6	inches
% Rock	30%	
Treatment Area	0.122	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	0.687	=	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 94.50 tons/acre = 11.53 tons

Compost Rate = 137.55 cy/acre = 16.78 cy

Depth of Compost to be Applied = 1.0 inches

Signature: [signature]

Date: 6/8/09

Signature: [signature]

Date: 06-08-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **OJ-6**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	70%	
Treatment Area	0.106	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 81.00 tons/acre = 8.59 tons

Compost Rate = 117.90 cy/acre = 12.50 cy

Depth of Compost to be Applied = 0.9 inches

Signature: [signature]

Date: 6/8/09

Signature: [signature]

Date: 06-08-09

FILE MEMO

Regarding: Lime Compost Fertilizer Mulch (Seed) Other

Fluvial Deposit ID: OJ **Irrigated Meadow ID:** _____

Acreage: Below

Target Application: Below

Amount Applied: _____

Comments:

OJ1: 0.281 Acres x 11.44 PLS/acre x 2 (Double Rate) = 6.4 lbs

OJ2: 0.048 x " " = 1.1 lbs

OJ3: 0.055 x " " = 1.3 lbs

OJ4: 0.103 x " " = 2.4 lbs

OJ5: 0.122 x " " = 2.8 lbs

OJ6: 0.106 x " " = 2.4 lbs

FD seed mix confirmed; Weighed amounts in field, broadcast spread

_____ 10-06-09

Signature **Date**

Polygon Completion Form
Fluvial Deposits

Fluvial Deposit Polygon Name/ID: PA

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
08-25-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.3. **Comments/Deviations:** Noted Carex in PA 4 to be salvaged
08-25-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.4. No Pre Till Required **Comments/Deviations:**
09-09-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Section 3.6A through 3.6E. Began Stockpiling Time 08-25-09 **Comments/Deviations:** Fertilize on 09-03-09; Start ALLU Incorp 09-04-09 Finish ALLU Incorp 09-09-09
10-08-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.6F through 3.6I. Start Compost placement 09-09-09 **Comments/Deviations:** Finish Placement On/Incorporated 09-14-09 Start w/ALLU 10-02-09; Resume 10-06-09
N/A	N/A	Completed replacement of erosion channels in accordance with Specification Section 3.7. **Comments/Deviations:**
wk ending 10-18	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.8. **Comments/Deviations:** Seedbed Prep Completed w/ Compost Incorp Seeded wk ending 10-18-09
10-20-09	✓	Completed mulching in accordance with Specification Section 3.9. **Comments/Deviations:** Mulched + Crimped 10-20
N/A	N/A	Completed reinstallation of fencing in accordance with Specification Section 3.10. **Comments/Deviations:**
11-04-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.14. **Comments/Deviations:**

Quantity of Work Estimated in Proposal: NA - Addressed in Invoice Documentation

Quantity of Work Performed:

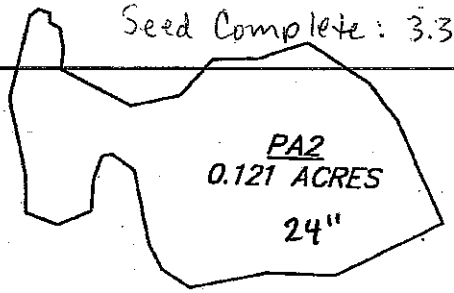
11-06-09
Signature of Subcontractor Date

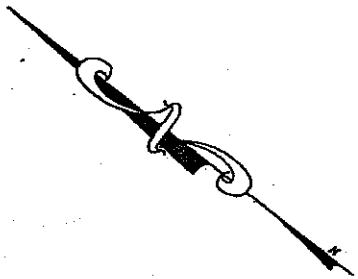
11-04-09
Signature of Contractor Date

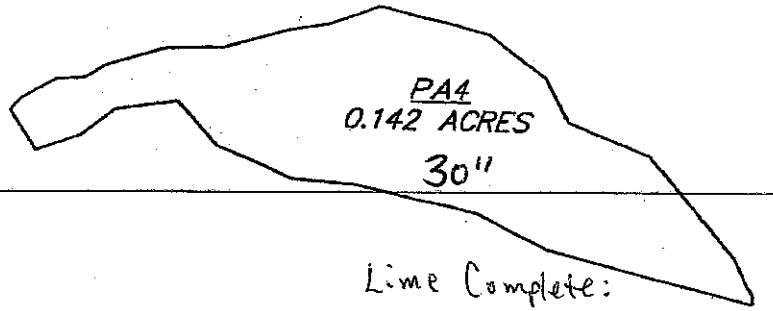
*Pre-Tilled

~~COMPLETE~~

Lime Complete: 43.22 CY, Target: 43.31 CY
Fertilizer: ~~108.63~~ lbs 74.05
Compost: 32.67 tons
Seed Complete: 3.3 lbs.

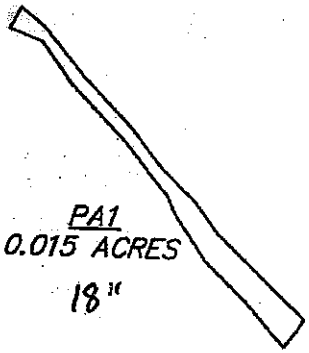




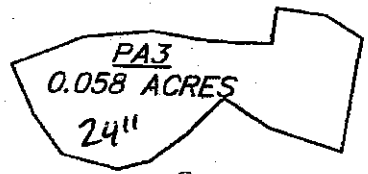


Lime Complete:
63.75 CY, Target: 63.54 CY
Fert. Complete: 108.63 lbs
Compost: 38.34 tons
Seed Complete: 3.9 lbs.

* Mulch Complete: (680 lbs, 17 Bales)



Lime Complete: 4.25 CY,
Target: 4.03 CY
Fert. Complete: 6.88 lbs
Compost: 4.05 tons
Seed Complete: 0.41 lbs.



Lime Complete: 17 CY,
Target: 16.61 CY
Fert. Complete: 35.5 lbs
Compost: 12.53 tons
Seed Complete: 1.6 lbs.

SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 6-2-09 26626 AND P.L.S.

Duane D. Fehringer, P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
40301 US HWY 6&24, SUITE 203 BOX 975 AVON, CO 81620 PH: (970)949-5072
6551 S. REVERE PARKWAY, SUITE 106 CENTENNIAL, CO 80111 PH: (303)948-6228

CLIENT: FRONTIER ENVIRONMENTAL INC.

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PA
CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=50'
DATE ISSUED:	6-23-09
PROJECT NO:	08-0032
CHKD:	

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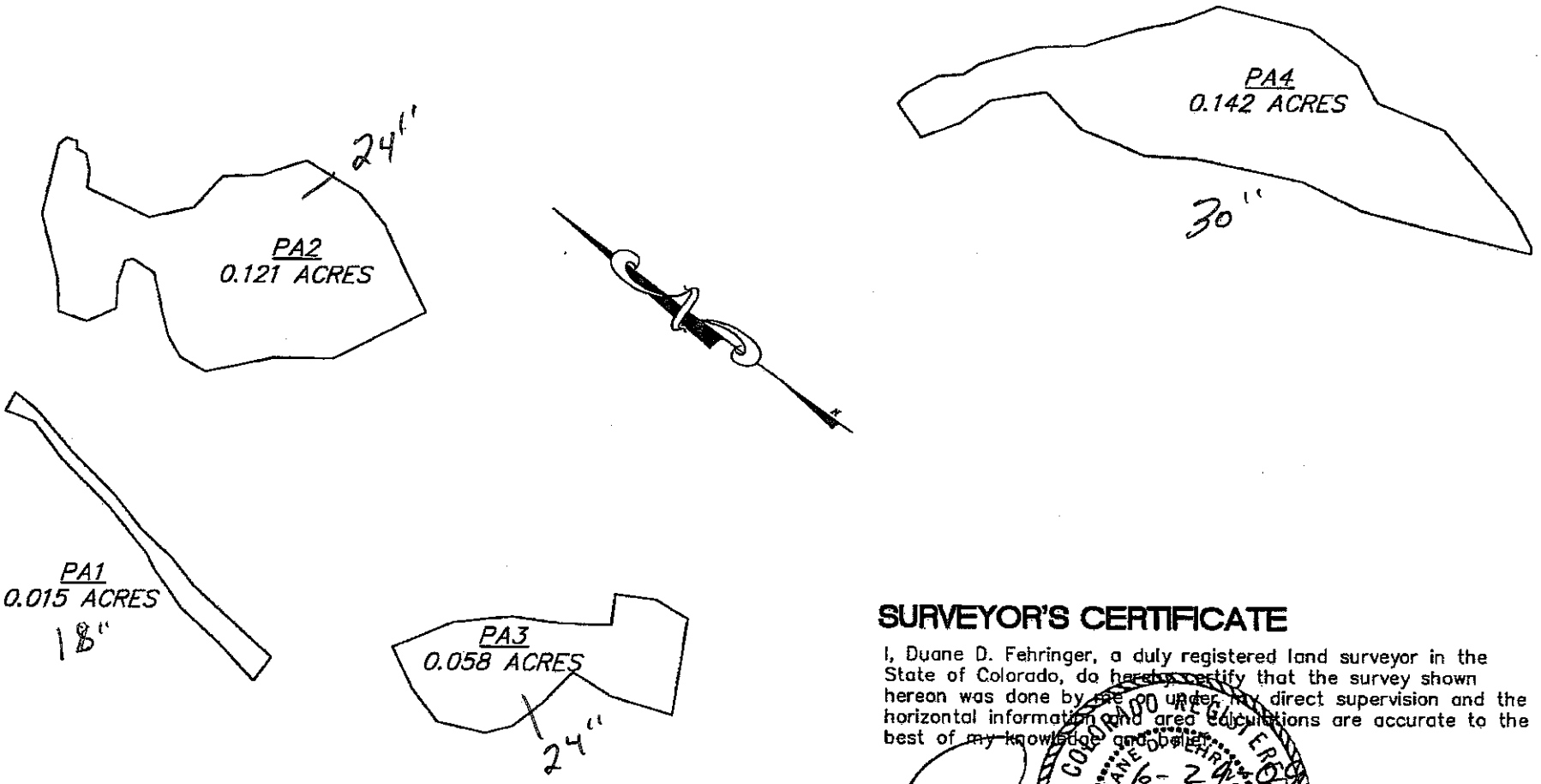

SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED
DUANE D. FEHRINGER
6-24-09
26626
AND P.L.S.

Duane D. Fehringer, P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
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4551 S. REVERE PARKWAY, SUITE 106 CENTENNIAL, CO 80111 PH: (303)948-6220

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PA

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=50'
DATE ISSUED:	6-23-09
PROJECT NO:	08-0032
CHKD BY:	

J:\projects\80032s\dwg\OU-11 Areas.dwg

Fluvial Deposit PA

Bank Stabilization

Bank A: 30' Type 2 stabilization

Bank B: 60' Type 1 stabilization

	Treat to	% Rock	Flagging
1-	18"	0%	Pink
2-	24"	0%	Blue
3-	24"	20%	Blue
4-	30"	0%	Blue

Fluvial Deposit Outline

Bank Stabilization Location

Depth of mine waste (inches)

Note: Figure not to scale.
Locations and streambank lengths estimated.
All treatment locations will be confirmed and marked prior to initiation of construction.

Bank A

Reconstruct bank @ crossing using existing rock.

Reply | Reply to all | Forward | Close | Help

From: Roger Merrick [roger.merrick@e2.com]

Sent: Tue 6/16/2009 2:53 PM

To: Jan_Christner@URSCorp.com

Cc: DeAngelis, John; holmes.michael@epa.gov; sjennings@reclamationresearch.net; Clay Conbrink

Subject: Revised FDSSs for PA, QF, QL, QO, QR

Attachments: Attachments may contain viruses that are harmful to your computer. Attachments may not display correctly.

QR.pdf(2MB) | PA.pdf(2MB) | QF.pdf(9MB) | QL.pdf(4MB) | QO.pdf(4.23MB)

Show as Web Page

Jan,

Here are the revised FDSSs for the subject polygons. The revisions are based on our telephone conversations and our field observations and are as follows:

PA - #'s 2 & 3 were combined since they were contiguous and the same depth & % rock (this also changed the numbering). The new #4 (old 5) was expanded based on the pH and the fact that the fragile carex would be tracked over multiple times to get to the smaller treatment area.

QF - The instructions to replace the large channel was replaced with "fill and level" since we can berm up the two low spots east of #'s 3 & 4 to keep the overflow channel from draining into the polygon.

QL - the polygon just south of the road was added in as #5.

QO - We walked the access road path with Clay and figured out where he'd be adding a cobble road "cap" and where he'd just drive over the polygon. With that and the water level being down since you left, I expanded polygon 4 and 2 (slightly to the north) to add in some obvious tailings that must have been under water when you were here last week.

QR - Just added a note to fill the overflow channel with culled rock from the 6" area based on my walk with Clay.

We'll try to get QH and PJ next week if the water drops low enough.

Roger

Roger A. Merrick
E2 Consulting Engineers, Inc.
450 E 17th Avenue, Suite 200
Denver, CO 80203
(720) 279-7638 direct
(303) 434-3605 cell
(303) 238-8972 fax
www.e2.com

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: PA-1

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5-14-09 by Jennings)	10.00 %
% Rock	0.00 % ✓
Total Area	0.015 acres ✓

Average Depth Calculation

Depth (inches)		% of Total Area		
18 ✓	X	100.00%	=	18
	X		=	
	X		=	
	X		=	
		Average Depth		18 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.0000%	X 0.1	=	0.0000%	(A)
Percent 10 - 60 mesh	0.0800%	X 0.5	=	0.0400%	(B)
Percent < 60 mesh	99.9200%	X 1	=	99.9200%	(C)
Lime Reactivity			=	99.9600%	A+B+C

Calcium Carbonate Equivalence		82.20%	%
Percent Moisture		29.00%	%
Bulk Density	0.75 grams/cc	= 0.632	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 169.70 tons/acre = 2.55 tons total

Lime Rate = 268.48 cy/acre = 4.03 cy total

Depth of Lime to be Applied = 2.0 inches

Signature: Ben G. Mead

Date: 4/26/09

Signature: Mel G Mead

Date: 07-28-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **PA-2**

POLYGON CHARACTERISTICS

Net Application Rate	30	tons/1000 tons
Mixing Safety Factor (revised to 10% on 5-14-09 by Jennings)	10.00%	%
% Rock	0.00%	%
Total Area	0.121	acres

Average Depth Calculation

Depth (inches)		% of Total Area		
24	X	100.00%	=	24
	X		=	
	X		=	
	X		=	
		Average Depth		24 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.0000%	X 0.1	=	0.0000%	(A)
Percent 10 - 60 mesh	0.0800%	X 0.5	=	0.0400%	(B)
Percent < 60 mesh	99.9200%	X 1	=	99.9200%	(C)
Lime Reactivity			=	99.9600%	A+B+C

Calcium Carbonate Equivalence		82.20%	%
Percent Moisture		29.00%	%
Bulk Density	0.75 grams/cc	= 0.632	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 226.27 tons/acre = 27.38 tons total

Lime Rate = 357.97 cy/acre = 43.31 cy total

Depth of Lime to be Applied = 2.7 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-27-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **PA-3**

POLYGON CHARACTERISTICS

Net Application Rate	30	tons/1000 tons
Mixing Safety Factor (revised to 10% on 5-14-09 by Jennings)	10.00%	%
% Rock	20.00%	%
Total Area	0.058	acres

Average Depth Calculation

Depth (inches)		% of Total Area		
24	X	100.00%	=	24
	X		=	
	X		=	
	X		=	
		Average Depth		24 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.0000%	X 0.1	=	0.0000%	(A)
Percent 10 - 60 mesh	0.0800%	X 0.5	=	0.0400%	(B)
Percent < 60 mesh	99.9200%	X 1	=	99.9200%	(C)
Lime Reactivity			=	99.9600%	A+B+C

Calcium Carbonate Equivalence		82.20%	%
Percent Moisture		29.00%	%
Bulk Density	0.75 grams/cc	= 0.632	tons/cy

CALCULATE LIME RATE

$$\text{Lime Rate} = \frac{\text{Net Application Rate} *(1+ \text{Mixing Factor}/100)* (1 - \%\ \text{Rock}/100) * \text{Depth}}{(\text{Lime Reactivity}) * (\text{Calcium Carbonate Equivalence}/100) * (1 - \%\ \text{Moisture}/100)}$$

Lime Rate = 181.01 tons/acre = 10.50 tons total

Lime Rate = 286.38 cy/acre = 16.61 cy total

Depth of Lime to be Applied = 2.1 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-28-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **PA-4**

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5-14-09 by Jennings)	10.00% %
% Rock	0.00% %
Total Area	0.142 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
30	X	100.00%	=	30
	X		=	
	X		=	
	X		=	
		Average Depth		30 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.0000%	X 0.1 =	0.0000%	(A)
Percent 10 - 60 mesh	0.0800%	X 0.5 =	0.0400%	(B)
Percent < 60 mesh	99.9200%	X 1 =	99.9200%	(C)
Lime Reactivity		=	99.9600%	A+B+C

Calcium Carbonate Equivalence			82.20% %
Percent Moisture			29.00% %
Bulk Density	0.75 grams/cc	=	0.632 tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth / (Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate =	282.83 tons/acre	=	40.16 tons total
Lime Rate =	447.46 cy/acre	=	63.54 cy total
		Depth of Lime to be Applied =	3.3 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-28-09

FILE MEMO

Regarding: Lime Compost Fertilizer Mulch Seed Other

Fluvial Deposit ID: PA **Irrigated Meadow ID:** _____

Acreage: _____ See Below

Target Application: _____

Amount Applied: _____

Comments:

PA1: 0.015 acres × 153 lbs/acre × 3(6-inch) = 6.8 lbs
4(6-inch) = 27 lbs ≈ 1.5 bags

PA2: 0.121 × " 4(6-inch) = 35.5 lbs

PA3: 0.058 × " 5(6-in) = 109 lbs ≈ 2+ bags

PA4: 0.142 × "

Confirmed that 0:45:0 fert. was used, weighed in field, and had broadcasted per area.

_____ 09-03-09

Signature **Date**

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: PA

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	HCl reaction?
PA-2 0-6"	6.75	6.5	7.5	0%	Yes
PA-2 6-12"					
PA-2 12-18"					
PA-2 18-24"					
Dupe PA-3 0-6"	6.75	6.5	7.0	0%	Yes
PA-3 0-6"					
PA-3 6-12"					
PA-3 12-18"					
PA-3 18-24"					
Dupe PA-1 0-6"	7.0	6.5	7.5	0%	Yes
PA-1 0-6"					
PA-1 6-12"					
PA-1 12-18"					
PA-4 0-6"	6.5	6.0	7.0	0%	Yes
PA-4 6-12"					
PA-4 12-18"					
PA-4 18-24"					
PA-4 24-30"					

Name/Signature: [signature] Robert Brown

Date: 09-10-11-09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record PA

Fluvial Deposit/Irrigated Meadows Polygon:

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
PA-2 0-6"	Tare @ 0.0	20.0	20.1	7.3
PA-2 6-12"		19.8	19.8	8.0
PA-2 12-18"		20.2	20.3	8.0
PA-2 18-24"		19.5	19.5	7.8
Dupe PA-3 0-6"		20.4	20.4	6.8
PA-3 0-6"		21.0	21.2	6.9
PA-3 6-12"		20.0	20.0	7.0
PA-3 12-18"		20.1	20.1	6.7
PA-3 18-24"		19.0	19.2	6.7
Dupe PA-1 0-6"		19.8	19.8	7.2
PA-1 6-12"		20.7	20.7	7.2
PA-1 12-18"		20.6	20.0	7.2
PA-1 0-6"		21.8	21.8	7.1
PA-4 6-6"		20.5	20.6	7.0
PA-4 6-12"		20.0	20.0	7.0
PA-4 12-18"		20.5	20.7	6.8
PA-4 18-24"		20.0	20.0	7.0
PA-4 24-36"		18.4	19.0	7.0

Name/Signature: [signature]

Date: 7-11-09

3 point Calibration conducted pH buffers 4.0, 7.0 & 10.0

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **PA-1**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	0%	
Treatment Area	0.015	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	0.687	=	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 269.99 tons/acre = 4.05 tons

Compost Rate = 393.00 cy/acre = 5.90 cy

Depth of Compost to be Applied = 2.9 inches

Signature: [signature]

Date: 7/29/09

Signature: [signature]

Date: 08-03-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **PA-2**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	0%	
Treatment Area	0.121	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	0.687	=	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate =	269.99 tons/acre	=	32.67 tons
Compost Rate =	393.00 cy/acre	=	47.55 cy
	Depth of Compost to be Applied =		2.9 inches

Signature: [signature]

Date: 7/29/09

Signature: [signature]

Date: 08-03-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **PA-3**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	20%	
Treatment Area	0.058	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	0.687	=	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 215.99 tons/acre = 12.53 tons

Compost Rate = 314.40 cy/acre = 18.24 cy

Depth of Compost to be Applied = 2.3 inches

Signature: [signature]

Date: 7/29/09

Signature: [signature]

Date: 08-03-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **PA-4**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	0%	
Treatment Area	0.142	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	0.687	=	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 269.99 tons/acre = 38.34 tons

Compost Rate = 393.00 cy/acre = 55.81 cy

Depth of Compost to be Applied = 2.9 inches

Signature: [signature]

Date: 7/29/09

Signature: [signature]

Date: 08-07-09

Polygon Completion Form
Fluvial Deposits

Fluvial Deposit Polygon Name/ID: PE

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
06-01-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.3. **Comments/Deviations:**
06-05-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.4. **Comments/Deviations:**
06-25-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Section 3.6A through 3.6E. Started Lime App 06-05, 09-09 **Comments/Deviations:** Apply Fert. 06-22-09 ; Started Incore 06-24
07-16-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.6F through 3.6I. 07-01-09 Applied Compost **Comments/Deviations:**
NA	NA	Completed replacement of erosion channels in accordance with Specification Section 3.7. **Comments/Deviations:**
10-06-09	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.8. **Comments/Deviations:** Prepped W/Mow 07-16-09 Seeded 10-06-09
10-19-09	✓	Completed mulching in accordance with Specification Section 3.9. **Comments/Deviations:** Mulched Covered 10-19-09
NA	NA	Completed reinstallation of fencing in accordance with Specification Section 3.10. **Comments/Deviations:**
11-03-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.14. **Comments/Deviations:**

Quantity of Work Estimated in Proposal: N/A - Addressed in Invoice

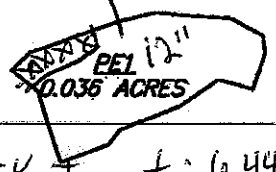
Quantity of Work Performed:

Signature of Subcontractor — Date: 11-06-09

Signature of Contractor — Date: 11-03-09

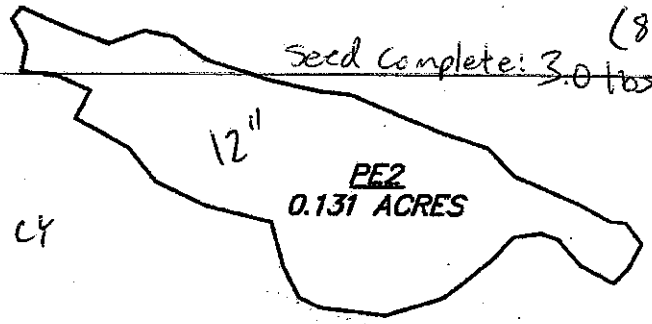
— COMPLETE —

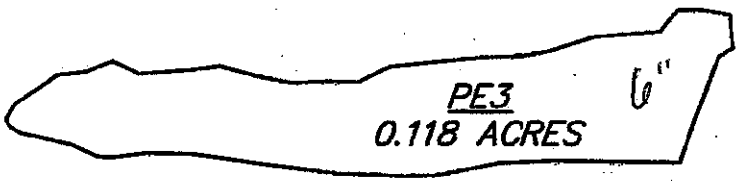
SBS Complete
Type 2 Mod. ⇒ 15 LF



Lime Complete: 0.5 CY, Target: 0.44 CY
Fertilizer Complete: 11 lbs.
Compost Complete: 14.8 CY, Target: 14.15 CY
Mulch Complete: 68 lbs. (2 Bales)
Seed Complete: 0.8 lb

Lime Complete: 24.4 CY, Target: 23.45C
Fertilizer Complete: 40 lbs.
Compost Complete: 51 CY, Target: 51.48C
Mulch Complete: 272 lbs. (8 Bales)
Seed Complete: 3.0 lbs





Lime Complete: 8.1 CY, Target: 8.45 CY
Fertilizer Complete: 18 lbs.
Compost Complete: 19 CY, Target: 18.55 CY
Seed Complete: 2.7 lbs.
Mulch Complete: 240 lbs. (6 bales)

SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 26626 LAND SURVEYOR

5-27

Duane D. Fehringer P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
[illegible] AVON, CO [illegible]
[illegible] CENTENNIAL, CO [illegible]

CLIENT: FRONTIER ENVIRONMENTAL INC.

This document was prepared for the exclusive use of the Client specified herein. The use of this document or the information contained herein by any other person or entity is not authorized. In the event that any other person or entity wishes to use this document or the information contained herein for any purpose they must first obtain written authorization from Inter-Mountain Engineering. This document and any information contained herein is intended to be used within one year of the date hereof. Use after that period is not authorized.

PE

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

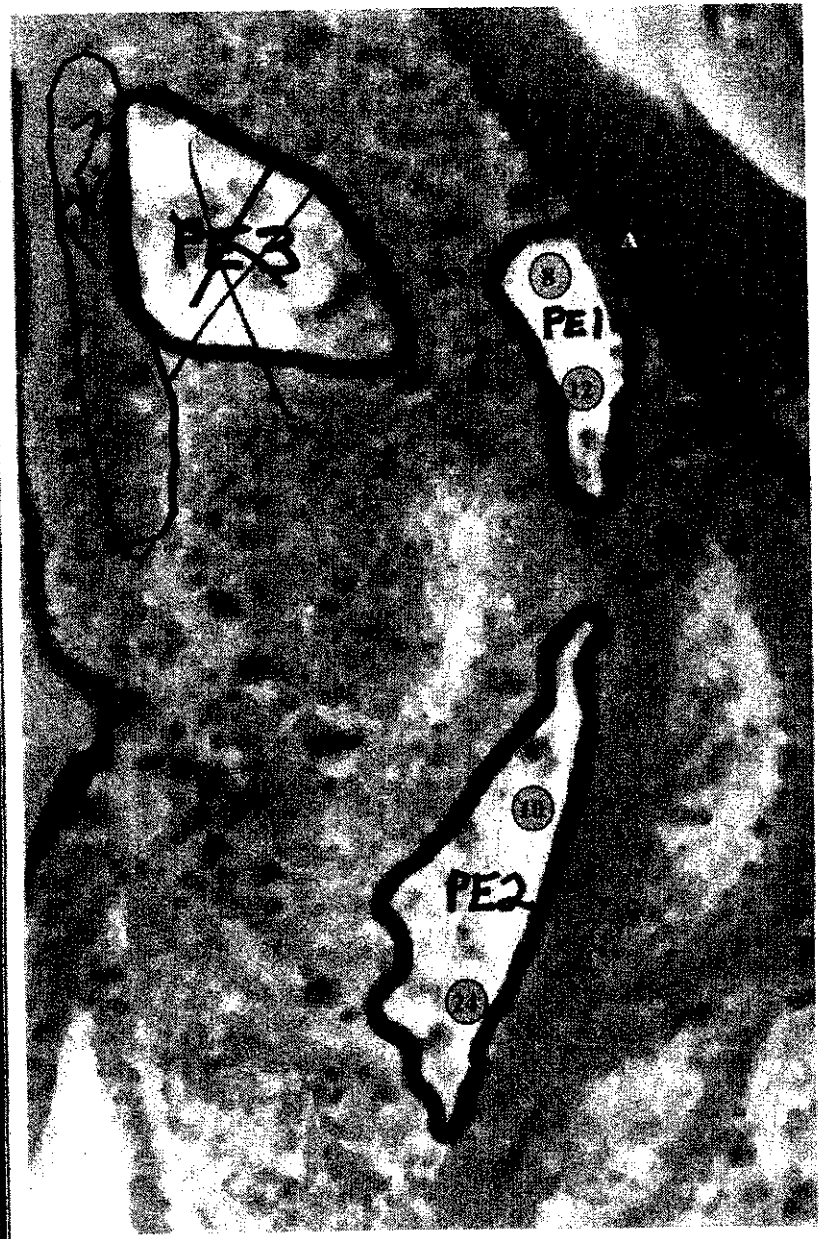
DRAWN BY:	SFF
SCALE:	1"=50'
DATE ISSUED:	5-27-08
PROJECT NO.	08-0032
SHEET	

J:\projects\08003231\dwg\OU-11 Areas.dwg

* Pre-Tilled

PE

Bank Stabilization



Bank A: 15' Type 2 stabilization along Arkansas River. Use mature transplants. Do not disturb healthy willows along bank.
No streambank stabilization along the overflow stream channel that is lined with dense willows and grassy vegetation.

PE1 Treat to 12". 0% Rock.

PE2 Grade. Treat to 12". 0% rock.

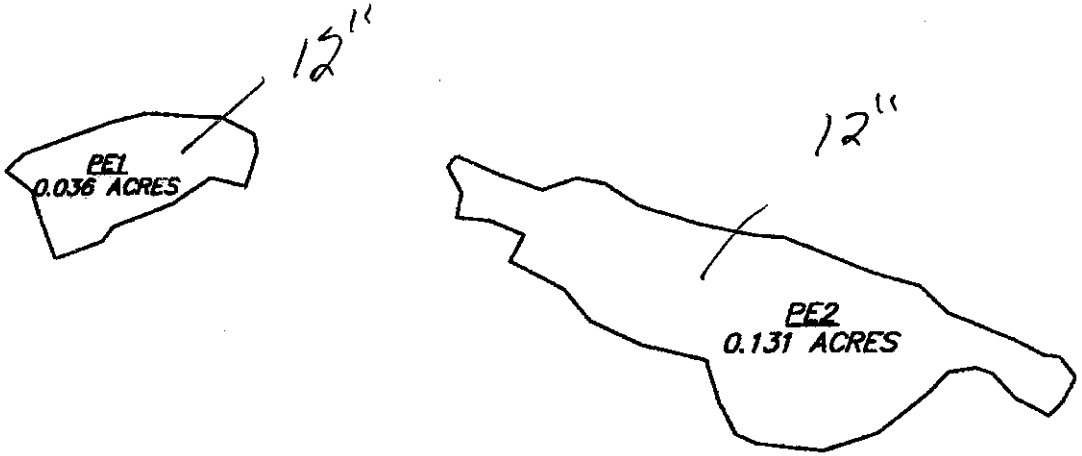
PE3 Treat to 6". 20% Rock.

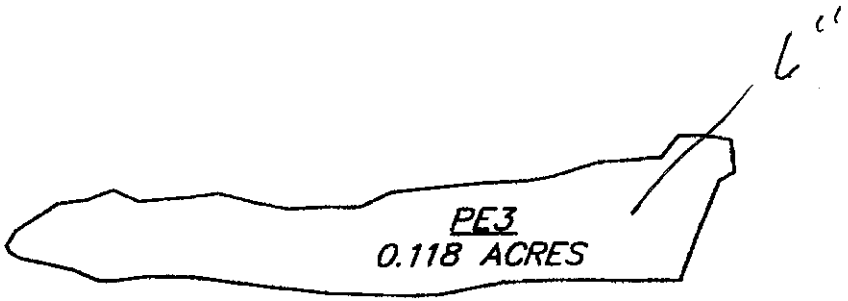
Fluvial Deposit Outline

Bank Stabilization Location

16 Depth of mine waste (inches)

Note: Figure not to scale.
Locations and streambank lengths estimated.
All treatment locations will be confirmed and marked prior to initiation of construction.





SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 26626 LAND SURVEYOR

Duane D. Fehringer P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors

CLIENT: FRONTIER ENVIRONMENTAL INC.

PE

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY	MW
SCALE	1"=50'
DATE ISSUED	6-27-08
PROJECT NO.	08-0032
SHEET	

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **PE-1**

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	0.00% %
Total Area	0.036 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
12	X	100.00%	=	12
	X		=	
	X		=	
	X		=	
		Average Depth		12 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1 =	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5 =	0.04%	(B)
Percent < 60 mesh	99.92%	X 1 =	99.92%	(C)
Lime Reactivity		=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		29.00% %	
Bulk Density	0.75 grams/cc	= 0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 113.13 tons/acre = 4.07 tons total

Lime Rate = 178.99 cy/acre = 6.44 cy total

Depth of Lime to be Applied = 1.3 inches

Signature: [signature]

Date: 6/4/09

Signature: [signature]

Date: 06-04-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **PE-2**

POLYGON CHARACTERISTICS

Net Application Rate	30	tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00%	%
% Rock	0.00%	%
Total Area	0.131	acres

Average Depth Calculation

Depth (inches)		% of Total Area		
12	X	100.00%	=	12
	X		=	
	X		=	
	X		=	
		Average Depth		12 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20%	%
Percent Moisture		29.00%	%
Bulk Density	0.75 grams/cc	= 0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate =	113.13 tons/acre	=	14.82 tons total
Lime Rate =	178.99 cy/acre	=	23.45 cy total
		Depth of Lime to be Applied =	1.3 inches

Signature: [signature]

Date: 6/4/09

Signature: [signature]

Date: 06-04-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **PE-3**

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	20.00% %
Total Area	0.118 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
6	X	100.00%	=	6
	X		=	
	X		=	
	X		=	
		Average Depth		6 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		29.00% %	
Bulk Density	0.75 grams/cc	= 0.63	tons/cy

CALCULATE LIME RATE

$$\text{Lime Rate} = \frac{\text{Net Application Rate} * (1 + \text{Mixing Factor}/100) * (1 - \%\ \text{Rock}/100) * \text{Depth}}{(\text{Lime Reactivity}) * (\text{Calcium Carbonate Equivalence}/100) * (1 - \%\ \text{Moisture}/100)}$$

Lime Rate = 45.25 tons/acre = 5.34 tons total

Lime Rate = 71.59 cy/acre = 8.45 cy total

Depth of Lime to be Applied = 0.5 inches

Signature: [signature]

Date: 6/8/09

Signature: [signature]

Date: 06-08-09

FILE MEMO

Regarding: Lime Compost (Fertilizer) Mulch Seed Other

Fluvial Deposit ID: PE **Irrigated Meadow ID:** _____

Acreage: Below

Target Application: Below

Amount Applied: 1.5 bags

Comments:

PE 1 0.036 Acres × 2(12-inch) × 153 lbs/Acre = 11.02 lbs ≈ 0.2 bags
PE 2 0.131 Acres × 2(12-inch) × 153 lbs/Acre = 40 lbs ≈ 0.9 bag
PE 3 0.118 Acres × 1(6-inch) × 153 lbs/Acre = 18 lbs ≈ 0.4 bag
1.5 bags

Hand Broadcasted 0:45:0; weighed amounts in field.

Signature

06-22-09
Date

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: PE

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	HCl Reaction
PE1-0-6	7.5	7.0	8.0	None	Yes
PE1 6-12	7.5	7.0	8.0	None	Yes
PE2 0-6	7.0-8.0			None	Yes
PE2 6-12	7.0-8.0			None	Yes
PE3-1 0-6	8.0			None	Yes
PE3-2 0-6	7.0-8.0			None	Yes

Name/Signature: [signature]

Date: 06-25-09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

1 point calibration w/ pH 7.0 Buffer

Fluvial Deposit/Irrigated Meadows Polygon: **Paste pH Record** PE

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
PE-1 0-6	TARE(0.0)	16.4	15.6	7.1
PE 1 6-12		16.6	15.2	7.2
PE 2 0-6		18.0	17.0	6.9
PE 2 6-12		16.5	15.6	7.0
PE3-1 0-6		17.8	17.5	7.1
PE3-2 0-6		18.4	17.8	7.0

Name/Signature: [signature] **Date:** 06-26-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: PE-1

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	0%	
Treatment Area	0.036	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 269.99 tons/acre = 9.72 tons

Compost Rate = 393.00 cy/acre = 14.15 cy

Depth of Compost to be Applied = 2.9 inches

Signature: [signature]

Date: 6/4/09

Signature: [signature]

Date: 06-04-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **PE-2**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	0%	
Treatment Area	0.131	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon		15.79%	%
Percent Moisture		29.63%	%
Wet Bulk Density	=	0.687	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate =	269.99 tons/acre	=	35.37 tons
Compost Rate =	393.00 cy/acre	=	51.48 cy
	Depth of Compost to be Applied =		2.9 inches

Signature: [signature]

Date: 6/4/09

Signature: [signature]

Date: 06-04-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **PE-3**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	6	inches
% Rock	20%	
Treatment Area	0.118	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate =	108.00 tons/acre	=	12.74	tons
Compost Rate =	157.20 cy/acre	=	18.55	cy
		Depth of Compost to be Applied =	1.2	inches

Signature: _____

Date: 6/8/09

Signature: _____

Date: 06-08-09

FILE MEMO

Regarding: Lime Compost Fertilizer Mulch (Seed) Other

Fluvial Deposit ID: PE **Irrigated Meadow ID:** _____

Acreage: _____

Target Application: _____

Amount Applied: ~~Confirmed~~ Ap

Comments:

PE1: 0.036 Acres x 11.44 lbs x 2 (Double Rate) = 0.8 lbs

PE2: 0.131 x " x " ≈ 3 lbs

PE3: 0.118 x " x " = 2.7 lbs

Confirmed FD Seed Mix Used; weighed amounts and broadcasted as targeted.

_____ 10-06-09

Signature **Date**

Polygon Completion Form
Fluvial Deposits

Fluvial Deposit Polygon Name/ID: PG

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
05-26-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.3. **Comments/Deviations:**
05-26-27-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.4. Start Pre-Till 05-26-09, d Completed **Comments/Deviations:** Start Applying lime 06-03-09
06-24-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Section 3.6A through 3.6E. Fertilize 06-09-09; Start Incorp Lime+Fert 06-18-09 **Comments/Deviations:**
07-24-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.6F through 3.6I. **Comments/Deviations:**
NA	NA	Completed replacement of erosion channels in accordance with Specification Section 3.7. **Comments/Deviations:**
10-07-09	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.8. **Comments/Deviations:** Seedbed prep w/Incorp 07-24-09 Seeded on 10-07-09; Drag raked
10-19-09	✓	Completed mulching in accordance with Specification Section 3.9. **Comments/Deviations:** Molded & Crimped 10-19-09
NA	NA	Completed reinstallation of fencing in accordance with Specification Section 3.10. **Comments/Deviations:**
11-04-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.14. **Comments/Deviations:**

Quantity of Work Estimated in Proposal: N/A - Addressed in Invoice Area

Quantity of Work Performed:

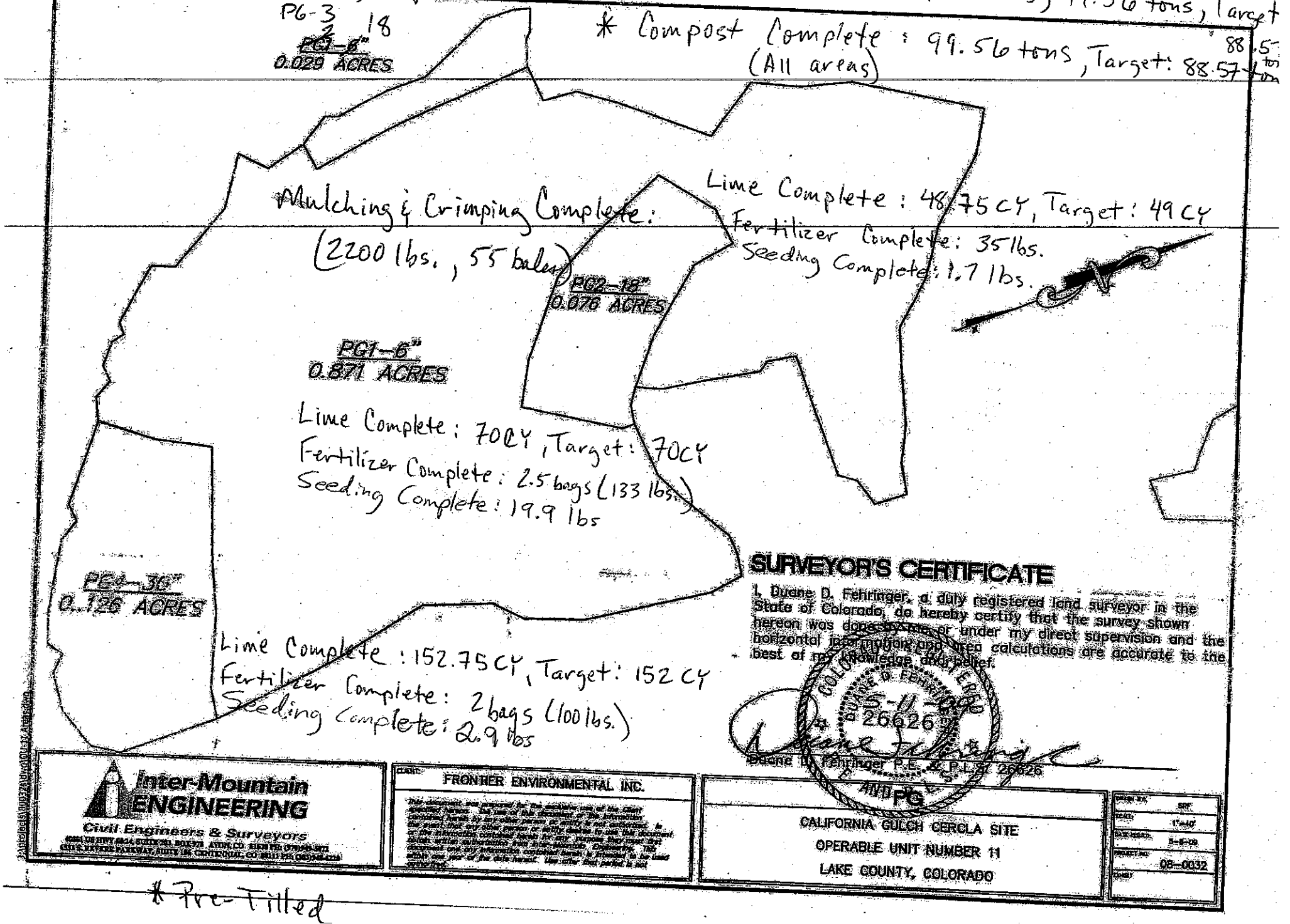
11-06-09
Signature of Subcontractor Date

11-04-09
Signature of Contractor Date

COMPLETE –

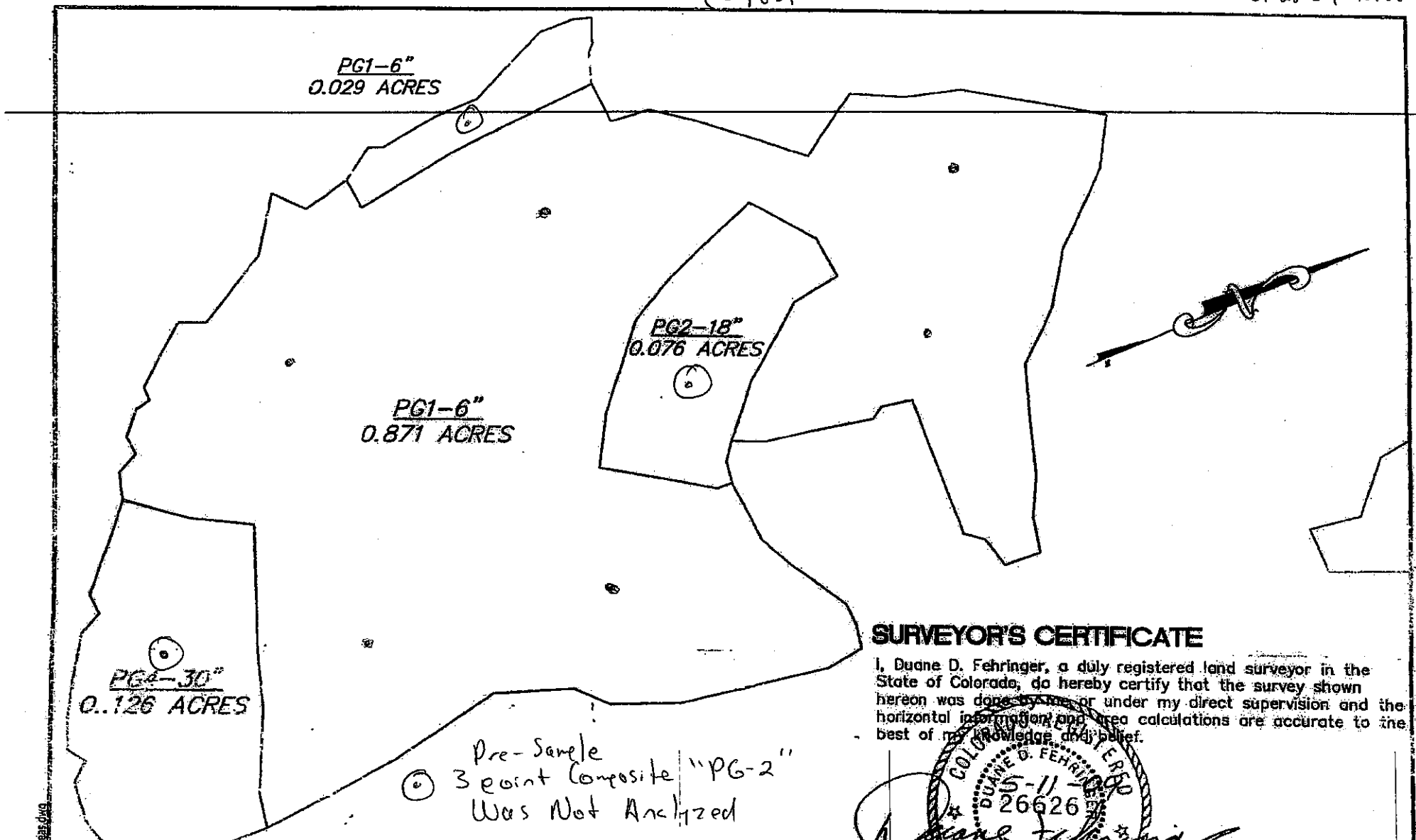
Lime Complete : 14.5 CY, Target: 19 CY
Fertilizer Complete: 13 lbs.
Seeding Complete: 1.7 lbs

* Compost Complete: (All areas) 99.56 tons, Target 88.5 tons



* Pre-Filled

All 0-6" Depth { • Pre-Sample 6 point Composite "PG-1" 05-26-09 10:30
• Post " " " " " " 07-28-09 10:00



SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 26626 LAND SURVEYOR

5-11-09

Duane D. Fehringer P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
40521 US HWY 6&24, SUITE 203 BOX 978 AVON, CO 81620 PH: (970)949-5972
6181 S. REVERE PARKWAY, SUITE 186 CENTENNIAL, CO 80111 PH: (303)948-6220

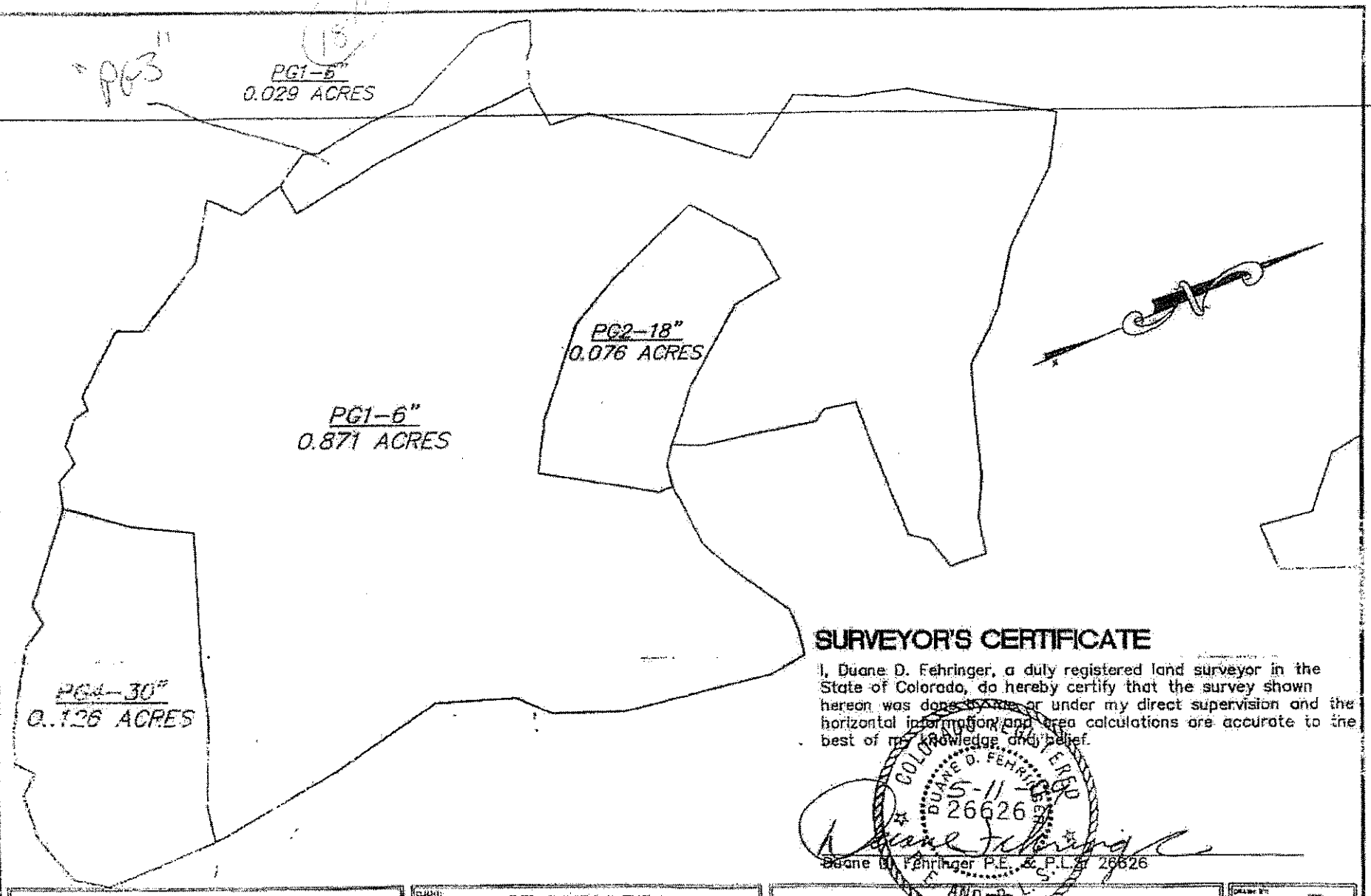
CLIENT: FRONTIER ENVIRONMENTAL INC.

This document was prepared for the exclusive use of the Client specified herein. The use of this document or the information contained herein by any other person or entity is not authorized. In the event that any other person or entity desires to use this document or the information contained herein for any purpose they must first obtain written authorization from Inter-Mountain Engineering. This document and any information contained herein is intended to be used within one year of the date hereof. Use after that period is not authorized.

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=40'
DATE ISSUED:	6-5-09
PROJECT NO.	08-0032
SHEET	

J:\projects\08\0032\dwg\OU-11 Areas.dwg



SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO DUANE D. FEHRINGER 26626 LAND SURVEYOR AND PG

5-11-06

Duane D. Fehringer P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors

CLIENT: FRONTIER ENVIRONMENTAL INC.

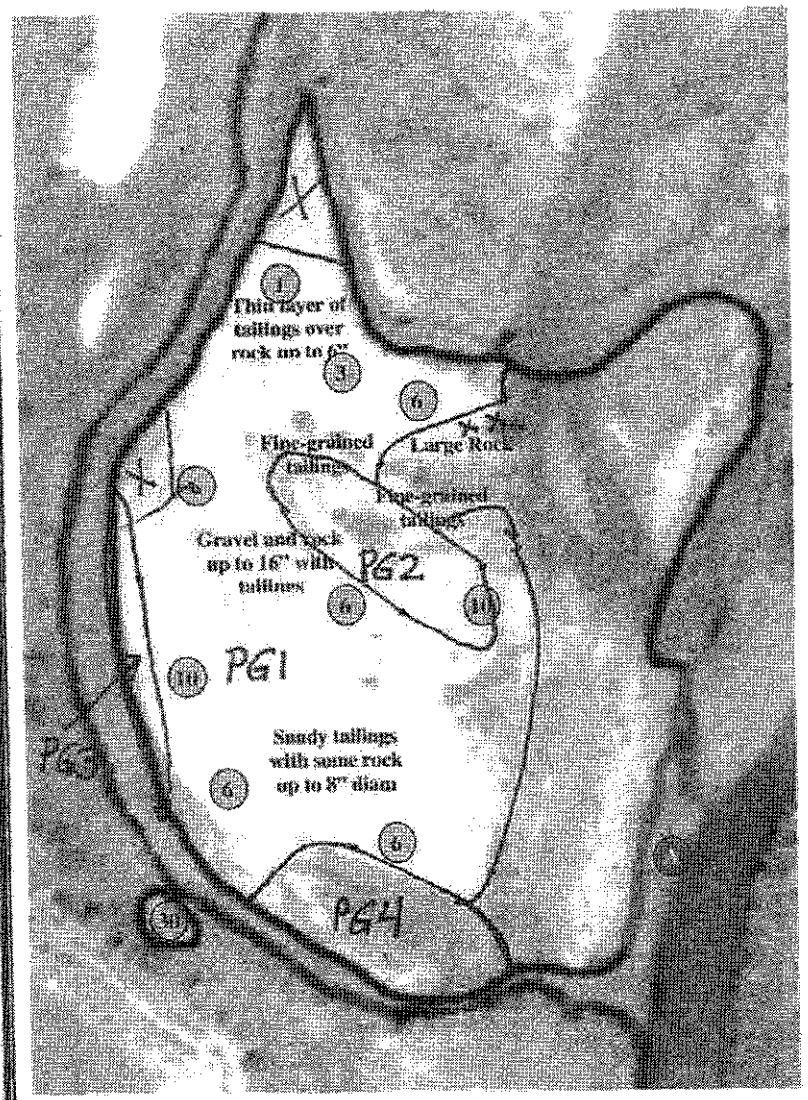
This document was prepared for the exclusive use of the Client specified hereon. The use of this document or the information contained herein by any other person or entity is not authorized. In the event that any other person or entity desires to use this document or the information contained herein for any purpose they must first obtain written authorization from Inter-Mountain Engineering. This document and any information contained herein is intended to be used within one year of the date hereof. Use after that period is not authorized.

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY: SW
SCALE: 1"=40'
DATE REVISED: 5-11-06
PROJECT NO: 06-0032
SHEET

11.4 PGs / Acre 1.132 Acres

FLUVIAL DEPOSIT PG



Bank Stabilization

Bank A: 150' Type A stabilization should include at least 5 mature willows and two tipped willows. Transplants should be placed between existing vegetation.

PG1 Treat to 6". 70% Rock
PG2 Grade. Treat to 18". 20% Rock
PG3 Treat to 18". 20% Rock
PG4 Treat to 30". 10% Rock

Fluvial Deposit Outline

Bank Stabilization Location

Depth of mine waste (inches)

Note: Figure not to scale.
Locations and streambank lengths estimated.
All treatment locations will be confirmed and marked prior to initiation of construction.

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **PG-1 (largest area in middle)**

POLYGON CHARACTERISTICS

Net Application Rate	90 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	70.00% %
Total Area	0.871 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
6	X	100.00%	=	6
	X		=	
	X		=	
	X		=	
		Average Depth		6 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence			82.20% %
Percent Moisture			29.00% %
Bulk Density	0.75 grams/cc	=	0.63 tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth / (Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 50.91 tons/acre = 44.34 tons total

Lime Rate = 80.54 cy/acre = 70.15 cy total

Depth of Lime to be Applied = 0.6 inches

Signature: Roger A. Wright

Date: 5/18/2009

Signature: John A Jennings

Date: 05-18-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **PG-2**

POLYGON CHARACTERISTICS

Net Application Rate	90 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	20.00% %
Total Area	0.076 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
18	X	100.00%	=	18
	X		=	
	X		=	
	X		=	
		Average Depth		18 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence			82.20% %
Percent Moisture			29.00% %
Bulk Density	0.75 grams/cc	=	0.63 tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth / (Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 407.28 tons/acre = 30.95 tons total

Lime Rate = 644.35 cy/acre = 48.97 cy total

Depth of Lime to be Applied = 4.8 inches

Signature: Roger A. Wright

Date: 5/18/2009

Signature:

Date: 05-18-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **PG-3 (Small 2nd area on west also listed as PG1 on IME Survey)**

POLYGON CHARACTERISTICS

Net Application Rate	90 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	20.00% %
Total Area	0.029 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
18	X	100.00%	=	18
	X		=	
	X		=	
	X		=	
		Average Depth		18 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1 =	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5 =	0.04%	(B)
Percent < 60 mesh	99.92%	X 1 =	99.92%	(C)
Lime Reactivity		=	99.96%	A+B+C

Calcium Carbonate Equivalence			82.20% %
Percent Moisture			29.00% %
Bulk Density	0.75 grams/cc	=	0.63 tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 407.28 tons/acre = 11.81 tons total

Lime Rate = 644.35 cy/acre = 18.69 cy total

Depth of Lime to be Applied = 4.8 inches

Signature: Raymond W. Wood

Date: 5/18/2009

Signature: John A Jennings

Date: 05-18-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **PG-4 (south end)**

POLYGON CHARACTERISTICS

Net Application Rate	90 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	10.00% %
Total Area	0.126 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
30	X	100.00%	=	30
	X		=	
	X		=	
	X		=	
		Average Depth		30 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		29.00% %	
Bulk Density	0.75 grams/cc	= 0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth / (Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 763.64 tons/acre = 96.22 tons total

Lime Rate = 1208.15 cy/acre = 152.23 cy total

Depth of Lime to be Applied = 9.0 inches

Signature: Roger A. Morris

Date: 5/18/2009

Signature: [signature]

Date: 05-18-09

FILE MEMO

0:45:0

Regarding: Lime Compost (Fertilizer) Mulch Seed Other

Fluvial Deposit ID: PG **Irrigated Meadow ID:** ~~_____~~

Acreage: Below

Target Application: Below

Amount Applied: _____

Comments:

PG-1 0.871 Acres X 1(6-inch) x 153 lbs : 133.3 lbs/50 ≈ 2.7 bags

PG-2 0.076 Acres X 3(18-inch) x 153 lbs : 34.9 lbs/50 : 0.7 bags

PG-3 0.029 Acres X 3/4(6-inch) x 153 lbs : 13/4.4 lbs ~~4 lbs~~

PG-4 0.124 Acres X 5(30-inch) x 153 lbs : 96 lbs/50 ≈ 2 bags

G. [illegible]

Signature

06-09-09

Date

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: PG

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	HCl Reaction
PG2 0-6	7.5	—	—	0%	Yes
" 6-12	7.5	—	—	"	Yes
" 12-18	7.5	—	—	"	Yes
PG1 0-6	7.3	—	—	"	Yes
PG1-1 0-6	7.5	—	—	"	Yes
PG1-2 0-6	7.5	—	—	"	Yes
PG1-3 0-6	7.3	—	—	"	Yes
PG1-4 0-6	7.3	—	—	"	Yes
PG4 0-6	7.3	7.0	7.5	"	Yes
PG4 6-12	7.5	7.0	2.5	"	Yes
PG4 12-18	7.0	7.0	7.0	"	Yes
PG4 18-24	7.0	7.0	7.0	"	Yes
PG4 24-36	* Note: Saturation, Conditions & Rock (Refusal) Below 24" depth @ test pit location. FESE removed rock during treatment and altered original grade (similar to Observations @ AH deposit)				

Name/Signature: [signature]

Date: 06-23-09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Fluvial Deposit/Irrigated Meadows Polygon: (PG)

Paste pH Record PG

	Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
PG-2	0-6	0.0	19.0	20.0	7.0
"	6-12		14.4	14.2	7.0
"	12-18		17.0	16.5	6.9
PG-1	0-6		15.1	15.2	7.0
PG1-1	0-6		13.1	12.3	7.0
PG1-2	0-6		14.5	15.5	7.0
PG1-3	0-6		19.3	18.9	7.2
PG1-4	0-6		19.5	19.8	7.2
PG1-2	0-6 (Dupe)		16.8	16.5	7.0
PG 4	0-6		17.3	16.8	7.1
"	6-12		14.4	14.4	7.0
"	12-18		18.1	17.3	7.0
"	18-24		16.0	16.4	7.1

Note: 24-30 - No Sample Collected (Rock) FESE culled Rock from deposit, at least original grade. Saturated conditions & rock below 24" after treatment

Name/Signature: [signature]

Date: 06-24-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **PG-1**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	6	inches
% Rock	70%	
Treatment Area	0.871	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon		15.79%	%
Percent Moisture		29.63%	%
Wet Bulk Density	=	0.687	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 40.50 tons/acre = 35.27 tons

Compost Rate = 58.95 cy/acre = 51.35 cy

Depth of Compost to be Applied = 0.4 inches

Signature: [signature]

Date: 6/4/09

Signature: [signature]

Date: 06-04-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **PG-2**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	20%	
Treatment Area	0.076	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate =	215.99 tons/acre	=	16.42 tons
Compost Rate =	314.40 cy/acre	=	23.89 cy
	Depth of Compost to be Applied =		2.3 inches

Signature: _____

Date: 6/4/09

Signature: _____

Date: 06-04-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **PG-3**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	20%	
Treatment Area	0.029	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 215.99 tons/acre = 6.26 tons

Compost Rate = 314.40 cy/acre = 9.12 cy

Depth of Compost to be Applied = 2.3 inches

Signature: [signature]

Date: 6/4/09

Signature: [signature]

Date: 06-04-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **PG-4**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	10%	
Treatment Area	0.126	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 242.99 tons/acre = 30.62 tons

Compost Rate = 353.70 cy/acre = 44.57 cy

Depth of Compost to be Applied = 2.6 inches

Signature: [signature]

Date: 6/4/09

Signature: [signature]

Date: 06-04-09

FILE MEMO

Regarding: Lime Compost Fertilizer Mulch (Seed) Other

Fluvial Deposit ID: PG **Irrigated Meadow ID:** _____

Acreage: 1.102 (lime) X 11.44 x 2 = 25.2 lbs

Target Application: _____

Amount Applied: 2 26 lbs

Comments:
PWT Confirmed FD-2 Seed Mix; Used 1-26 lb bag; Broadcasted @ 11.4 Hlbs/Acre setting

[signature]
Signature

10-07-09
Date

Polygon Completion Form
Fluvial Deposits

Fluvial Deposit Polygon Name/ID: PJ

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
09-03-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.3. **Comments/Deviations:** Adjusted PJ4 to extend into excluded area, to use excess line from PJ7 reduced by access road
09-04-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.4. Pre Till Concurrent w/ lime placement using 345 Excavator **Comments/Deviations:**
09-18-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Section 3.6A through 3.6E. Start Lime 09-03/04-09; Begin Allu Incorp 09-11 **Comments/Deviations:** Fertilize 09-09-09
10-12-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.6F through 3.6I. Begin Stockpiling Compost 09-18-09 **Comments/Deviations:** Compost Spreading & Incorp w/ Allu Started 10-06-09
N/A	N/A	Completed replacement of erosion channels in accordance with Specification Section 3.7. **Comments/Deviations:**
10-28-09	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.8. **Comments/Deviations:** Started Seedbed Prep w/ Allu 10-06-09; Complete 10-12-09; Seeded on 10-28-09
10-28-09		Completed mulching in accordance with Specification Section 3.9. **Comments/Deviations:** Mulched & Track-Crimped w/ Excav. 10-28-09
NA	NA	Completed reinstallation of fencing in accordance with Specification Section 3.10. **Comments/Deviations:**
11-02-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.14. **Comments/Deviations:**

Quantity of Work Estimated in Proposal: NA - Addressed in Invoice Documentation
Quantity of Work Performed:

Signature of Subcontractor 11-06-09 Date

Signature of Contractor 11-02-09 Date

-COMPLETE-

Mulch Complete: 55 bales (2,200 lbs)

Area reduced by 22% from new roads
Lime complete: 155 CY (155.2 target)
Fert. Complete: 133.18 lbs
Seed Complete: 6.8 lbs ↑ Tu-set 152 lbs

Lime Complete: 133.25 CY (133.7 target)
Fert. Complete: 114.29 lbs
Seed Complete: 6.8 lbs

Compost complete
PJ-1,2,3,5,6
-PJ-7 (covered by road)
282.96 tons

PJ3
0.249 ACRES
18"

PJ5
0.150 ACRES
24"

PJ6
0.129 ACRES
24"

AREA EXCLUDED

PJ4
0.037 ACRES

PJ7
0.045 ACRES
12"

6"

Area not treated (covered by new road)

Area doubled to 0.074 acres
Lime Complete: 8.5 CY (7.94 target)
Fert Complete: 11.32 lbs
Compost Complete (Area Doubled): 6.0 tons
Seed Complete: 2.0 lbs

24"
PJ2
0.342 ACRES

Lime complete: 244.37 CY (244.85 target)
Fert. Complete: 209.3 lbs
Seed Complete: 9.4 lbs

18"
PJ1
0.178 ACRES

AREA EXCLUDED

Lime complete: 95.87 CY (95.58 target)
Fert. Complete: 81.7 lbs
Seed Complete: 4.9 lbs

SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me, or under my direct supervision and the horizontal information and grad calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 26626 LAND SURVEYOR AND P.L.S.

8-4-09

Duane D. Fehringer P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
0588 | US HWY 6&24, SUITE 263 BOX 978 AVON, CO 81620 PH: (970)949-5072
6551 S. REVERE PARKWAY, SUITE 106 CENTENNIAL, CO 80111 PH: (303)948-6228

CLIENT: FRONTIER ENVIRONMENTAL INC.

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PJ
CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=70'
DATE ISSUED:	5-27-09
PROJECT NO.	08-0032
EXHIBIT	

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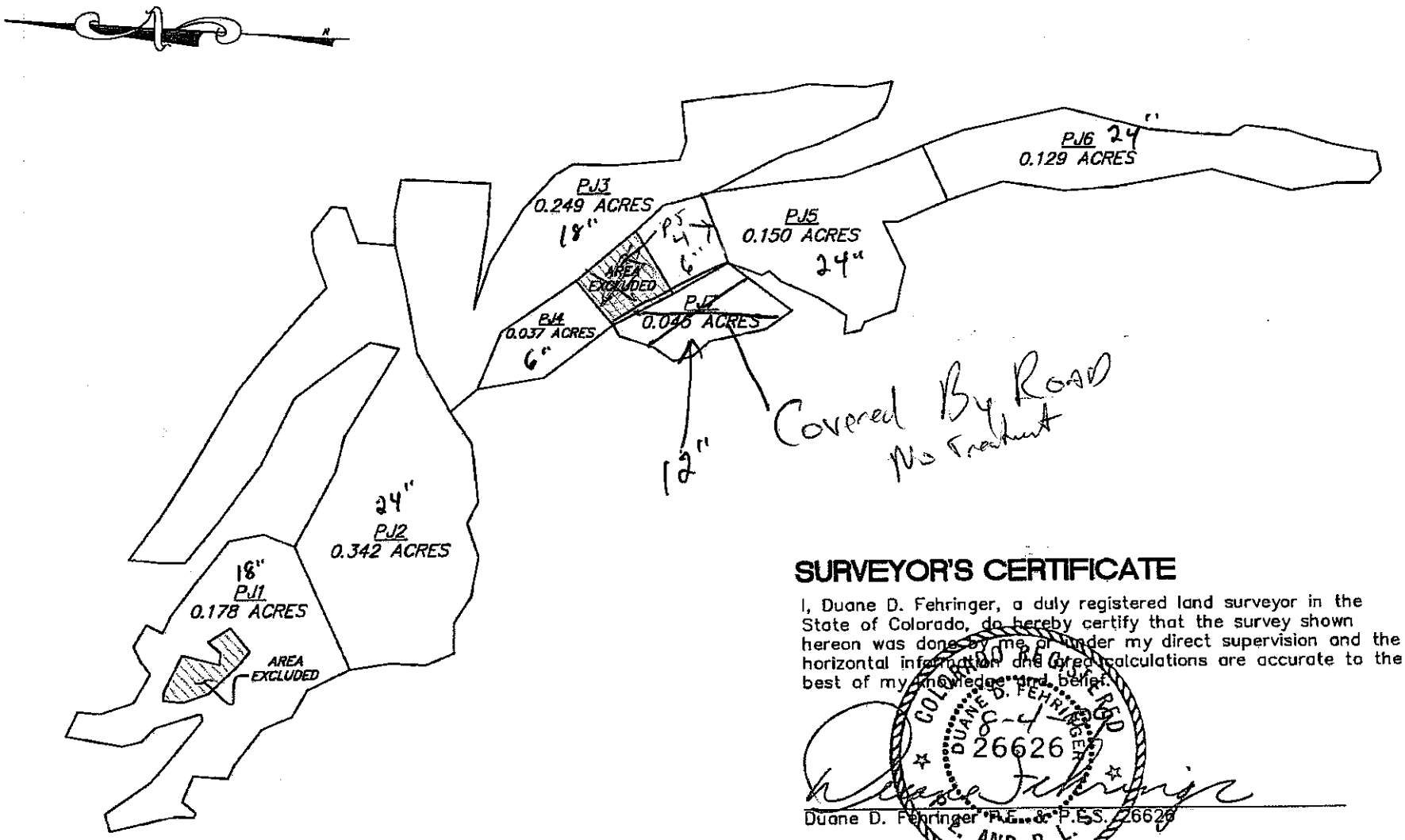

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COLORADO REGISTERED DUANE D. FEHRINGER 26626 L. AND P. L. S.

Duane D. Fehringer P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING

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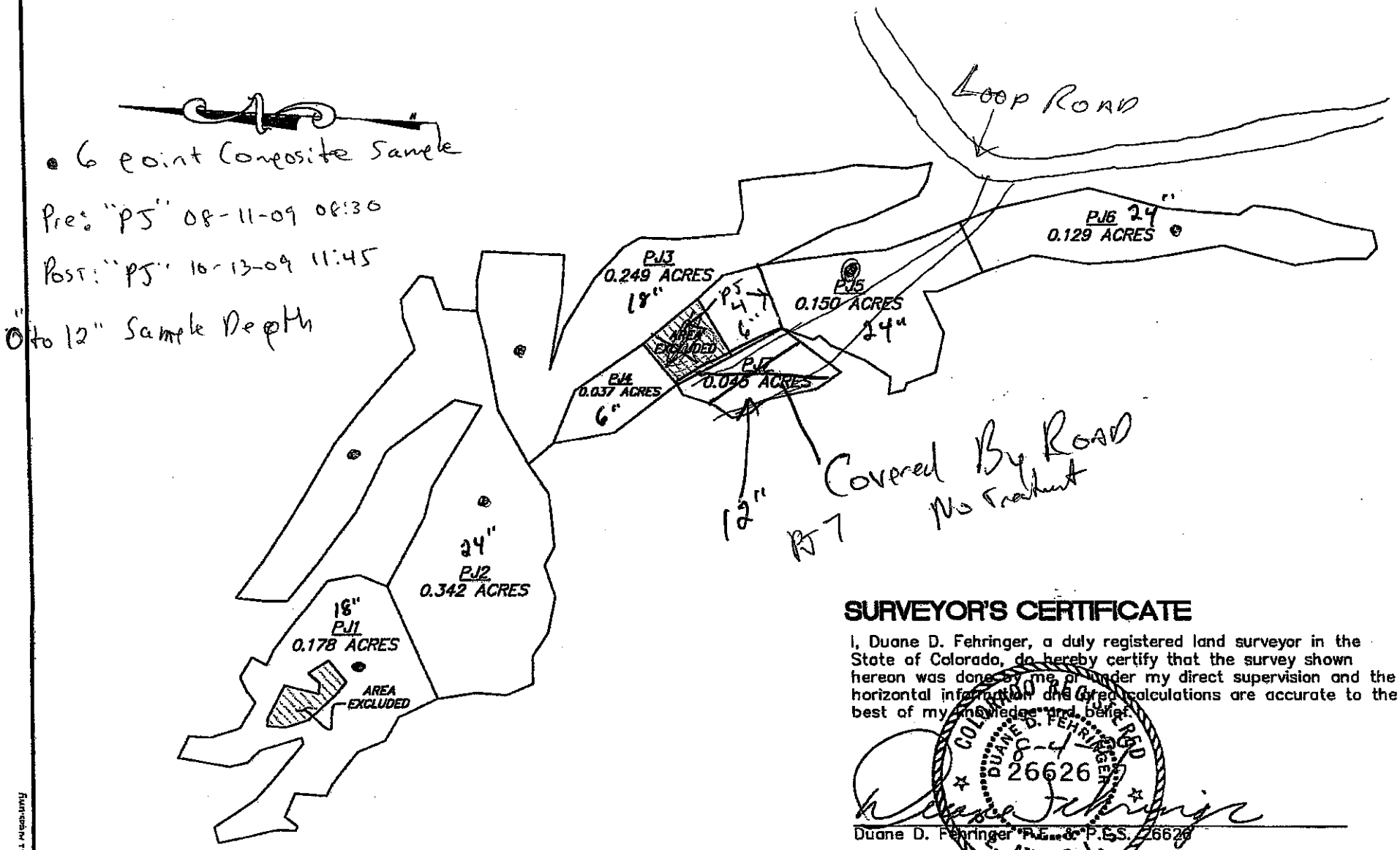
CALIFORNIA GULCH CERCLA SITE

OPERABLE UNIT NUMBER 11

LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=70'
DATE ISSUED:	5-27-09
PROJECT NO.	08-0032
CHKD?	



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8-4

Duane D. Fehringer P.E. & P.L.S. 26626

COLORADO REGISTERED DUANE D. FEHRINGER 26626 P.E. AND P.L.S.

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
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PJ

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=70'
DATE ISSUED:	5-27-09
PROJECT NO.	08-0032
EXHIBIT	

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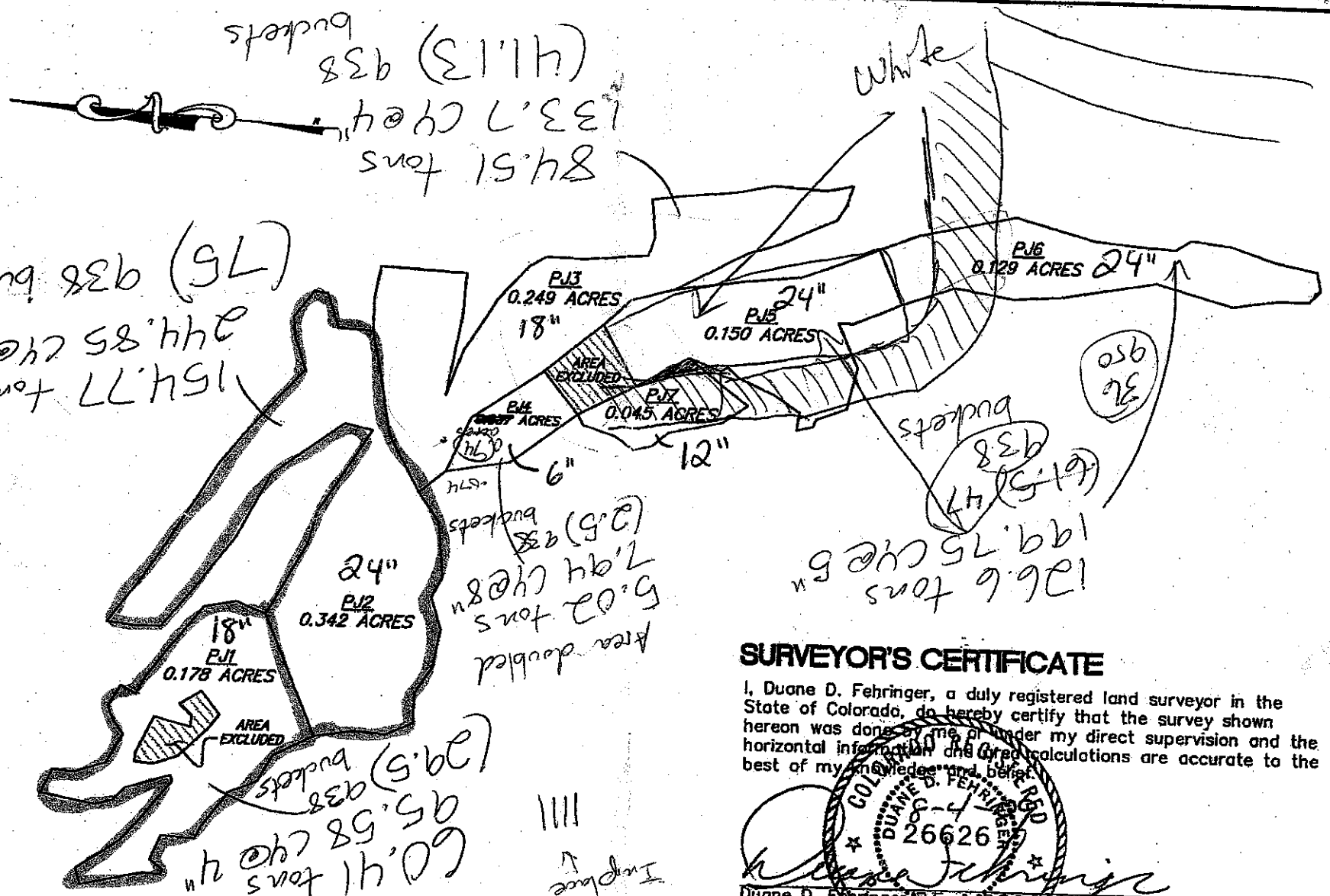

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COLORADO REGISTERED DUANE D. FEHRINGER 26626 AND P.L.S.

Duane D. Fehringer P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
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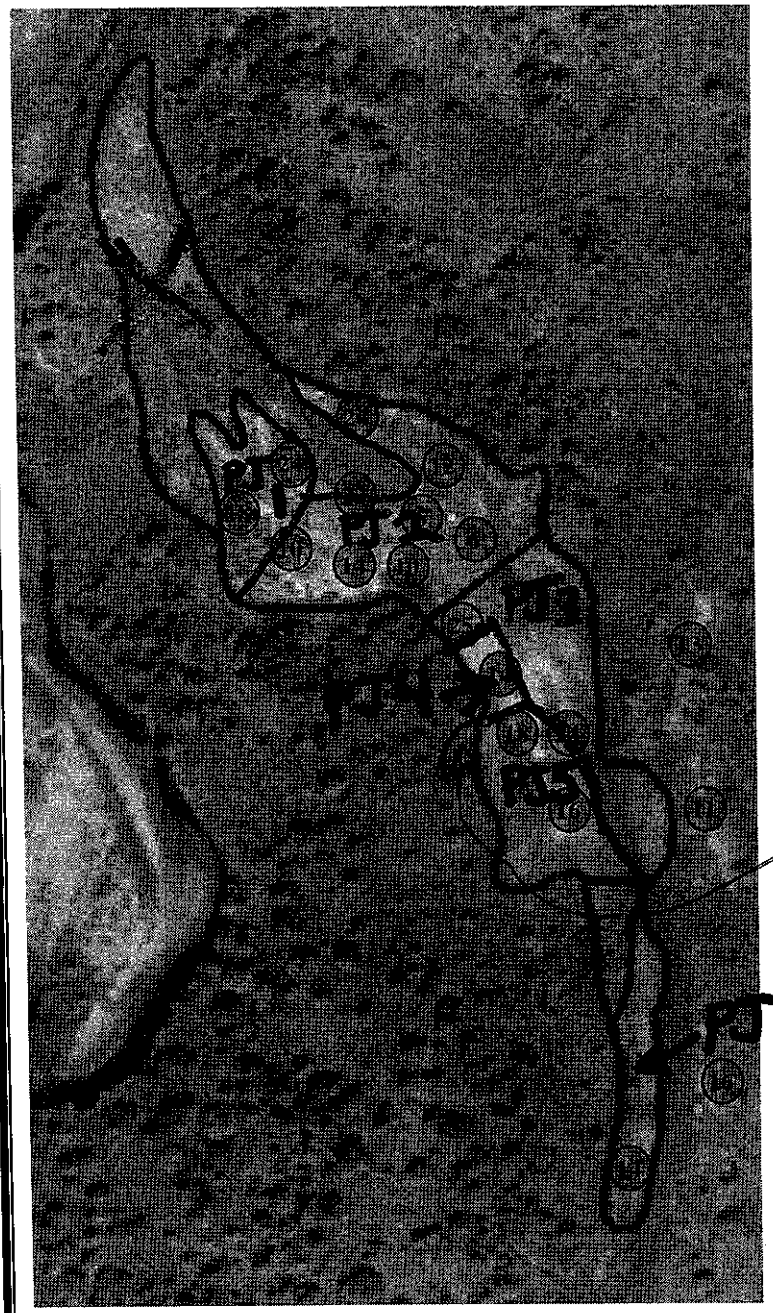
PJ

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=70'
DATE ISSUED:	5-27-09
PROJECT NO.	08-0032
EXHIBIT	

FLUVIAL DEPOSIT PJ



PJ1	18"	0%	White
PJ2	24"	0%	Orange
PJ3	18"	0%	Blue
PJ4	6"	40%	Red
PJ5	24"	0%	White
PJ6	24"	0%	

As written By J. Christner 09-02-09

PJ 7 Blue

Fluvial Deposit Outline

Bank Stabilization Location

15 Depth of mine waste (inches)

Note: Figure not to scale.
Locations and streambank lengths estimated.
All treatment locations will be confirmed and marked prior to initiation of construction.

FILE MEMO

Regarding: (Lime) **Compost** **Fertilizer** **Mulch** **Seed** **Other**

Fluvial Deposit ID: PJ5 **Irrigated Meadow ID:** _____

Acreage: _____

Target Application: _____

Amount Applied: _____

Comments:

As a result of road construction for access to PJ5, treatment areas in PJ5 were reduced in area after they were surveyed. In addition, PJ4 was doubled in area. The following adjustments were made to the lime rate (see attached).

* Note Below

_____ 09-08-09

Signature **Date**

For Billing purposes, PJ4 original acreage was doubled from .037 to .074; PJ5 reduced from .150 to .134, PJ6 reduced from .129 to .114. PJ7 covered by road improvements and deleted from invoice.

PACIFIC WESTERN TECHNOLOGIES, LTD.

09-08-09 – Revise Lime Rates, PJ 4, 5

Original Acreage PJ 5 & PJ 6:

(.150 acres) + (.129 acres) = 0.279 acres

61.5 938 Loader Buckets

199.75 cy Lime

5.3 inches thick

PJ 4 Expanded into PJ 5

PJ 4 Original: 0.037 acres revised to 0.074 acres (Doubled in Area)

PJ 5 loss in acreage: Original 0.150 acres

1) PJ 4 − .037

2) Covered by Reno Measured 1,000 sq ft = 0.023 acres − .023

Revised PJ 5: 0.09 acres

Remove PJ 6 .114
.134
.248

Revised PJ 5 & PJ 6:

(0.09) + (0.129) = .219 acres / Original .279 acres = 78% or (22% Reduction)

Revised Lime App PJ 5 & PJ 6: 199.75 cy (0.78) = 155.8 cy

= 47 938 Loader Buckets Lime
or
= 36 950 Loader Buckets Lime

} ~24" thick

Initial 09-08-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **PJ**

POLYGON CHARACTERISTICS

Net Application Rate	60 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	0.00% %
Total Area	1.056 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
20	X	100.00%	=	20
	X		=	
	X		=	
	X		=	
		Average Depth		20 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		29.00% %	
Bulk Density	0.75 grams/cc	= 0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 377.11 tons/acre = 398.23 tons total

Lime Rate = 596.62 cy/acre = 630.03 cy total

Depth of Lime to be Applied = 4.4 inches

Signature: _____

Date: Estimate for Trucking

Signature: _____

Date: _____

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **PJ-1**

POLYGON CHARACTERISTICS

Net Application Rate	60	tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00%	%
% Rock	0.00%	%
Total Area	0.178	acres

Average Depth Calculation

Depth (inches)		% of Total Area		
18	X	100.00%	=	18
	X		=	
	X		=	
	X		=	
		Average Depth		18 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20%	%
Percent Moisture		29.00%	%
Bulk Density	0.75 grams/cc	= 0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 339.40 tons/acre = 60.41 tons total

Lime Rate = 536.96 cy/acre = 95.58 cy total

Depth of Lime to be Applied = 4.0 inches

Signature: [signature]

Date: 8/4/09

Signature: [signature]

Date: 08-04-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **PJ-2**

POLYGON CHARACTERISTICS

Net Application Rate	60 tons/1000 tons ✓
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	0.00% % ✓
Total Area	0.342 acres ✓

Average Depth Calculation

Depth (inches)		% of Total Area		
24 ✓	X	100.00%	=	24
	X		=	
	X		=	
	X		=	
		Average Depth		24 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1 =	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5 =	0.04%	(B)
Percent < 60 mesh	99.92%	X 1 =	99.92%	(C)
Lime Reactivity		=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		29.00% %	
Bulk Density	0.75 grams/cc =	0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate =	452.53 tons/acre	=	154.77 tons total
Lime Rate =	715.94 cy/acre	=	244.85 cy total
		Depth of Lime to be Applied =	5.3 inches

Signature: [signature]

Date: 8/4/05

Signature: [signature]

Date: 08-04-05

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **PJ-3**

POLYGON CHARACTERISTICS

Net Application Rate	60 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	0.00% %
Total Area	0.249 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
18	X	100.00%	=	18
	X		=	
	X		=	
	X		=	
		Average Depth		18 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1 =	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5 =	0.04%	(B)
Percent < 60 mesh	99.92%	X 1 =	99.92%	(C)
Lime Reactivity		=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		29.00% %	
Bulk Density	0.75 grams/cc	= 0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 339.40 tons/acre = 84.51 tons total

Lime Rate = 536.96 cy/acre = 133.70 cy total

Depth of Lime to be Applied = 4.0 inches

Signature: [signature]

Date: 8-4-09

Signature: [signature]

Date: 08-04-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **PJ-4**

POLYGON CHARACTERISTICS

Net Application Rate	60 tons/1000 tons ✓
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	40.00% % ✓
Total Area	0.037 acres ✓

Average Depth Calculation

Depth (inches)		% of Total Area		
6 ✓	X	100.00%	=	6
	X		=	
	X		=	
	X		=	
		Average Depth		6 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		29.00% %	
Bulk Density	0.75 grams/cc	= 0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate =	67.88 tons/acre	=	2.51 tons total
Lime Rate =	107.39 cy/acre	=	3.97 cy total
		Depth of Lime to be Applied =	0.8 inches

Signature: [signature]

Date: 8/4/09

Signature: [signature]

Date: 08-04-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **PJ-5 & PJ-6 Combined**

POLYGON CHARACTERISTICS

Net Application Rate	60 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	0.00% %
Total Area	0.279 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
24	X	100.00%	=	24
	X		=	
	X		=	
	X		=	
		Average Depth		24 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1 =	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5 =	0.04%	(B)
Percent < 60 mesh	99.92%	X 1 =	99.92%	(C)
Lime Reactivity		=	99.96%	A+B+C

Calcium Carbonate Equivalence			82.20% %
Percent Moisture			29.00% %
Bulk Density	0.75 grams/cc	=	0.63 tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
/ (Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate =	452.53 tons/acre	=	126.26 tons total
Lime Rate =	715.94 cy/acre	=	199.75 cy total
		Depth of Lime to be Applied =	5.3 inches

Signature: [signature]

Date: 8/4/09

Signature: [signature]

Date: 08-04-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **PJ-7**

POLYGON CHARACTERISTICS

Net Application Rate	60 tons/1000 tons ✓
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	0.00% % ✓
Total Area	0.045 acres ✓

Average Depth Calculation

Depth (inches)		% of Total Area		
12 ✓	X	100.00%	=	12
	X		=	
	X		=	
	X		=	
		Average Depth		12 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1 =	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5 =	0.04%	(B)
Percent < 60 mesh	99.92%	X 1 =	99.92%	(C)
Lime Reactivity		=	99.96%	A+B+C

Calcium Carbonate Equivalence			82.20% %
Percent Moisture			29.00% %
Bulk Density	0.75 grams/cc	=	0.63 tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 226.27 tons/acre = 10.18 tons total

Lime Rate = 357.97 cy/acre = 16.11 cy total

Depth of Lime to be Applied = 2.7 inches

Signature: [signature]

Date: 8/4/09

Signature: [signature]

Date: 08-04-09

* Note - Covered by Road & Not Treated

FILE MEMO

Regarding: Lime Compost (Fertilizer) Mulch Seed Other

Fluvial Deposit ID: PJ **Irrigated Meadow ID:** _____

Acreage: _____

Target Application: _____ See Below

Amount Applied: _____

Comments:

PJ1: 153 lbs/acre × 0.178 acres × 3(6-inch) = 81.71 lbs ≈ 1.6 bags

PJ2: " × .342 " × 4(6-inch) = 209 lbs ≈ 4+ bags

PJ3: " × .249 × 3(6-inch) = 114.3 lbs ≈ 2.3 bags

PJ4: " × .074 × 1(6-inch) = 11.3 lbs

PJ5: " ~~× .156~~ .134 × 4(6-inch) = ~~91.8 lbs~~ 52 lbs = ~~1.8 bags~~

PJ6: " ~~× .129~~ .114 × 4(6-inch) = ~~74 lbs~~ 70 lbs ≈ ~~1.5 bags~~

PJ7 N/A - Covered by Road

Signature

09-09-09

Date

Confirmed ease weighed amounts in field and hand broadcasted over subplots as targeted.

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: PJ

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0
PJ-4 0-6"	6.5	6.0	7.6	8%
PJ-3 0-6"	↓	↓	↓	↓
PJ-3 6-12"				
PJ-3 12-18"				
PJ-5 0-6"				6%
PJ-5 6-12"				↓
PJ-5 12-18"				
PJ-5 18-24"				
		RE		

Name/Signature: Robin Sun Date: 9-18-09

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: PJ

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	HCl reaction?
Ape PJ-1 0-6"	6.9	6.5	7.5	0%	Yes
PJ-1 6-12"	↓	↓	↓	↓	↓
PJ-1 12-18"					
PJ-1 0-6"					
PJ-2 0-6"	7.0	6.5	7.8		
PJ-2 6-12"	↓	↓	↓		
PJ-2 12-18"					
PJ-2 18-24"					
PJ-2-1 0-6"	7.0	6.5	7.5	0%	
PJ-2-1 6-12"	↓	↓	↓	↓	
Ape PJ-2-1 6-12"					
PJ-2-1 12-18"					
PJ-2-1 18-24"					
PJ-6 0-6"	6.8	6.5	7.5	0%	Yes
PJ-6 6-12"	↓	↓	↓	↓	↓
PJ-6 12-18"					
PJ-6 18-24"					

Name/Signature: Rob Bson

Date: 9.17.09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record PJ

Fluvial Deposit/Irrigated Meadows Polygon:

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
Dupe PJ-1 0-6"	Tare @ 0.0	20.4	20.5	6.8
PJ-1 0-6"		20.1	20.3	6.8
PJ-1 6-12"		20.5	20.5	6.8
PJ-1 12-18"		20.2	20.2	6.8
PJ-2 0-6"		20.0	20.1	7.0
PJ-2 6-12"		20.4	20.4	7.1
PJ-2 12-18"		20.1	20.6	7.3
PJ-2 18-24"		20.6	20.1	7.1
PJ-2-1 0-6"		20.0	20.0	7.0
PJ-2-1 6-12"		20.1	20.4	7.3
Dupe PJ-2-1 6-12"		19.8	19.8	7.2
PJ-2-1 12-18"		20.4	20.6	7.0
PJ-2-1 18-24"		20.2	20.4	6.9
PJ-6 0-6"		19.9	20.1	7.2
PJ-6 6-12"		20.1	20.3	7.4
PJ-6 12-18"		20.3	20.4	7.5
PJ-6 18-24"		19.8	19.8	7.5

Name/Signature: Rob Brown **Date:** 9-17-09

pH meter calibrated using 3 Rnown standards

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record PJ

Fluvial Deposit/Irrigated Meadows Polygon: _____

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
PJ-4 0-6"	Tare@0.0	19.9	20.0	6.9
PJ-3 0-6"		20.3	20.5	6.8
PJ-3 6-12"		20.0	20.0	7.0
PJ-3 12-18"		20.4	20.5	7.2
PJ-5 0-6"		20.0	20.1	7.2
PJ-5 6-12"		20.3	20.4	7.4
PJ-5 12-18"		20.0	20.0	7.5
PJ-5 18-24"		20.3	20.3	7.5
		RF		

Name/Signature: Robin Brown **Date:** 9-16-09

pH meter was calibrated using 3 known standards

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **PJ-4**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	6	inches
% Rock	40%	
Treatment Area	0.037	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 81.00 tons/acre = 3.00 tons

Compost Rate = 117.90 cy/acre = 4.36 cy

Depth of Compost to be Applied = 0.9 inches

Signature: [signature]

Date: 8/4/09

Signature: [signature]

Date: 08-04-09

FD Seed Mix 83.1% Pure Live Seed (Add 16.9%)

FILE MEMO

Regarding: Lime Compost Fertilizer Mulch (Seed) Other

Fluvial Deposit ID: ~~PC~~ PJ **Irrigated Meadow ID:** _____

Acreage: .178 + .342 + .249 + .074 + 0.09 + 0.129 = 1.062 acre

Target Application: 1.062 x 11.44 lbs/acre x 2 (Double Rate) + 16.9% = 26.4 lbs

Amount Applied: ≈ 30 lbs - 31 lbs

Comments:

Combined FD Seed Mix used; FESS ~~used~~ used 1 bag (≈ 31 lbs in bag) and hand broadcasted with flail broadcaster over deposit

_____ 10-28-09

Signature **Date**

"L" Maint East Side "M" Maint, **Kind: FLUVIAL DEPOSITS** QC & PJ
Lot:2148593

Kind & Variety:	Pure%	Germ%	Origin:
WESTERN W/G, ROSANNA	48.85	90	SD
SLENDERW/G, SAN LUIS	30.86	95	WA
BLUEJOINT REEDGRASS	2.61	84	AK
CANADA BLUEGRASS, REUBENS	3.19	92	WA
TUFTED HAIRGRASS	1.73	85	CAN
REDTOP	1.20	91	CAN
PRAIRIE JUNEGRASS	1.18	92	WA
BALTIC RUSH	.83	87	CO
YARROW FLOWER	.81	90	OR
ROCKY MTN PENSTEMON	.31	88	CO

Crop: .05% Inert: 8.22% Wd: .16% Net Wt: 29.25#(24.31 PLS) 2.125 ACRES

Noxious Weed: None Found Test Date: 5/09

Remarks: FRONTIER ENVIRONMENTAL

Winfield Solutions PO Box 64589 St Paul, MN 55164

"C" Maint,

Polygon Completion Form
Fluvial Deposits

Fluvial Deposit Polygon Name/ID: PM - PN

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
07-09-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.3. **Comments/Deviations:**
07-10-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.4. **Comments/Deviations:** Start Pre-Till PM 07-09-09
(PM & PN) 07-28-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Section 3.6A through 3.6E. Apply lime & partial incorp 07-15-09 **Comments/Deviations:** Apply Fertilizer 07-27-09
08-06-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.6F through 3.6I. Apply Compost 07-31-09; Start Compost **Comments/Deviations:** Incorp 08-06-09
N/A	N/A	Completed replacement of erosion channels in accordance with Specification Section 3.7. **Comments/Deviations:**
10-23-09	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.8. **Comments/Deviations:** Seedbed Prep Simultaneous to Compost Incorp. Seeded & Raked 10-23-09
10-23-09	✓	Completed mulching in accordance with Specification Section 3.9. **Comments/Deviations:** Mulch & Crimp 10-23
NA	NA	Completed reinstallation of fencing in accordance with Specification Section 3.10. **Comments/Deviations:**
10-29-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.14. **Comments/Deviations:**

Quantity of Work Estimated in Proposal: N/A - Addressed in Invoice
Quantity of Work Performed:

[signature] 11-06-09
Signature of Subcontractor Date

[signature] 10-29-09
Signature of Contractor Date

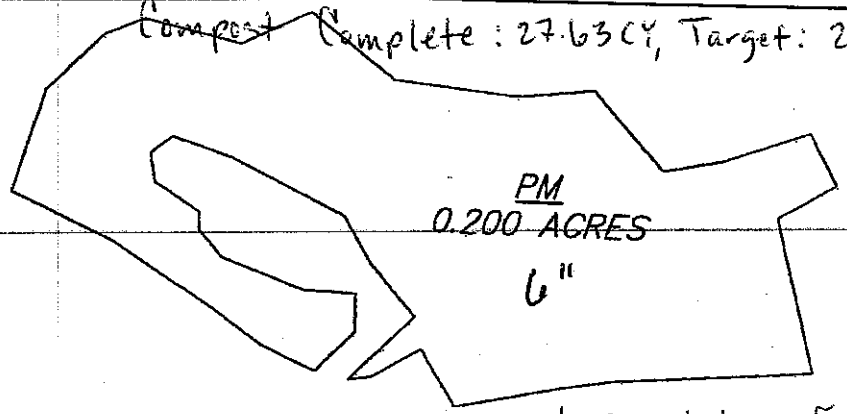
* Pre-Tilled

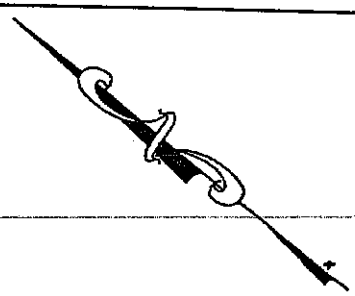
~~COMPLETE~~

Lime Complete : 13 CY, Target : 12.53 CY

Fertilizer Complete: 30 lbs.

~~Compost~~ Complete : 27.63 CY, Target: 27.51 CY





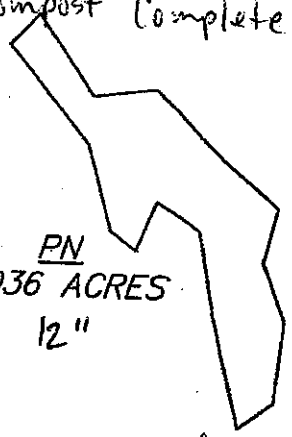
Seed Complete: 5.5 lbs., Target: 5.4 lbs.

Mulch Complete: 400 lbs., 10 bales

Lime Complete : 6.37 CY, Target: 6.44 C

Fertilizer Complete: 11 lbs.

Compost Complete: 14.8 CY, Target: 14.8 CY



Seed Complete:
1.0 lb., Target: 1.0 lb.

Mulch Complete: 80 lbs, 2 bales

* Pre-Tilled

SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 6-24-09 26626 L.S. AND P.E.

Duane D. Fehringer P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
40811 US HWY 6&24, SUITE 203 BOX 978 AVON, CO 81620 PH: (970)949-5072
4551 S. REVERE PARKWAY, SUITE 196 CENTENNIAL, CO 80111 PH: (303)948-4228

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PM-PN

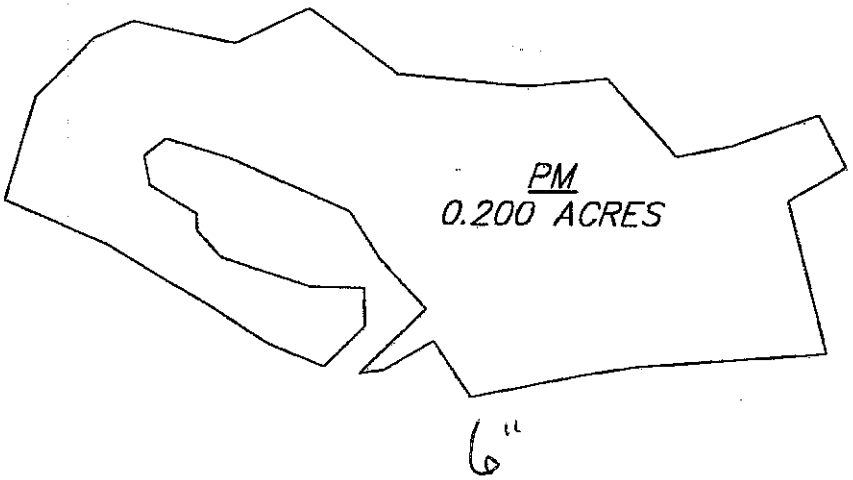
CALIFORNIA GULCH CERCLA SITE

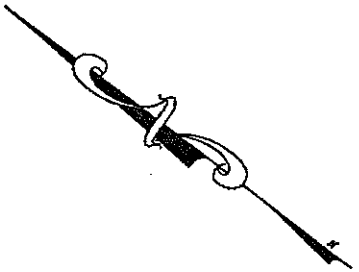
OPERABLE UNIT NUMBER 11

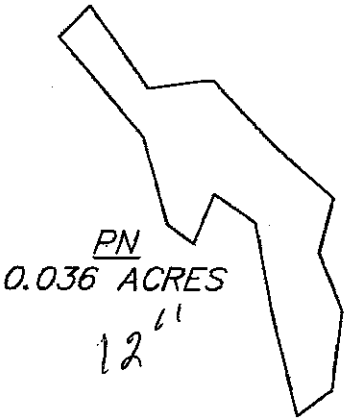
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=40'
DATE ISSUED:	6-23-09
PROJECT NO.	08-0032
DWG#	

J:\WORKSETS\08\0032\dwg\01-11 Areas.dwg







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COLORADO REGISTERED DUANE D. FEHRINGER 6-24-09 26626 L.S. E. AND P. L.S.

Duane D. Fehringer P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING

Civil Engineers & Surveyors

40801 US HWY 6&24, SUITE 203 BOX 978 AVON, CO 81620 PH: (970)949-5072
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PM-PN

CALIFORNIA GULCH CERCLA SITE

OPERABLE UNIT NUMBER 11

LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=40'
DATE ISSUED:	6-23-09
PROJECT NO.	08-0032
EXHIBIT	

J:\projects\08032a\dwg\OU-11 Areas.dwg

FLUVIAL DEPOSIT PM/PN

Physical Characteristics

Area: 0.34 acre
Average Depth: 5"
Depth Range: 4" to 6"
The deposit consists of two poorly vegetated segments.
Approximately 20% of the deposit has 8"+ diameter rock. The rest is 6"- rock and sand.
The area to the east of PN contains tailings but is well vegetated so will not be treated.

Bank Stabilization

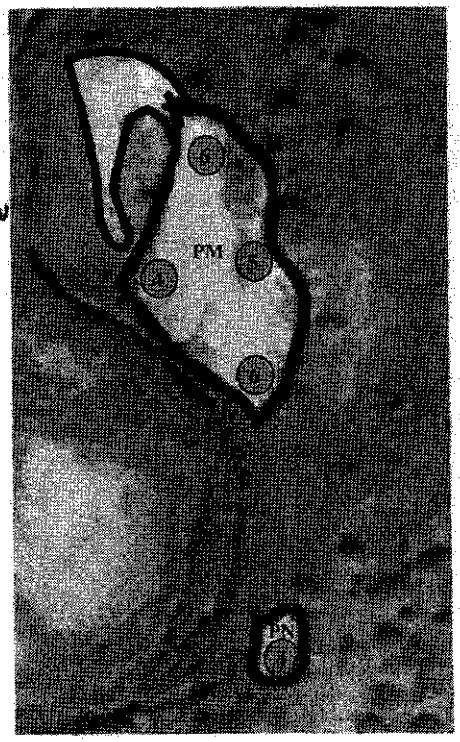
None

PM - Treat to 6" 30% Rock White

PN Treat to 12" 8% Rock Yellow

Proposed Treatment

Lime amendment rate: 30 tons/1000 tons
Estimated Rock Content Correction: 25%
Organic amendment rate: Default
Fertilizer rate: Default
Till Depth: 6"
Till Equipment: Rotary mixer that can handle rock up to 10".
Seed Mix: Fluvial Deposit Seed Mix
Notes: Areas with large rock may not be treatable.



Fluvial Deposit Outline

Bank Stabilization Location

Depth of mine waste (inches)

Note: Figure not to scale.
Locations and streambank lengths estimated.
All treatment locations will be confirmed and marked prior to initiation of construction.

https://mail.pwt.com/exchange/jdeangelis/Inbox/FDSS.EML/1_multipart_xF8FF_4_... 06/15/2009 05:06:46 PM

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **PM**

POLYGON CHARACTERISTICS

Net Application Rate	30	tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00%	%
% Rock	30.00%	%
Total Area	0.200	acres

Average Depth Calculation

Depth (inches)		% of Total Area		
6	X	100.00%	=	6
	X		=	
	X		=	
	X		=	
		Average Depth		6 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20%	%
Percent Moisture		29.00%	%
Bulk Density	0.75 grams/cc	0.63	tons/cy

CALCULATE LIME RATE

$$\text{Lime Rate} = \frac{\text{Net Application Rate} * (1 + \text{Mixing Factor}/100) * (1 - \%\ \text{Rock}/100) * \text{Depth}}{(\text{Lime Reactivity}) * (\text{Calcium Carbonate Equivalence}/100) * (1 - \%\ \text{Moisture}/100)}$$

Lime Rate = 39.60 tons/acre = 7.92 tons total

Lime Rate = 62.64 cy/acre = 12.53 cy total

Depth of Lime to be Applied = 0.5 inches

Signature: [signature]

Date: 6/16/09

Signature: [signature]

Date: 07-13-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID **PN**

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	0.00% %
Total Area	0.036 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
12	X	100.00%	=	12
	X		=	
	X		=	
	X		=	
		Average Depth		12 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		29.00% %	
Bulk Density	0.75 grams/cc	= 0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate =	113.13 tons/acre	=	4.07 tons total
Lime Rate =	178.99 cy/acre	=	6.44 cy total
		Depth of Lime to be Applied =	1.3 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-13-09

FILE MEMO

Regarding: Lime Compost (Fertilizer) Mulch Seed Other

Fluvial Deposit ID: PM & PN **Irrigated Meadow ID:** _____

Acreage: PM: 0.200 6-inch
PN: 0.036 12 inch

Target Application: PM: 0.200 X 153 lbs X 1 (6-inch) = 30.6 lbs ≈0.6 bag
PN: 0.036 X 153 lbs X 2 (6-inch) = 11 lbs

Amount Applied: 0.6 bag on PM
11 lbs on PN

Comments:

Fert: 0:45:0 ✓ Hand Broadcasted on 07-27-09

_____

Signature

07-27-09

Date

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: PM - [redacted]

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	HCL Present
PM-1	6.5	6.5	6.5	0	Yes
PM-2	7.0	6.5	7.5	0	Yes

RB

Name/Signature: Rob B

Date: 07-28-09

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: PN - [redacted]

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	HCL
PN 0-6"	7.0	6.5	7.0	0	Yes
PN 6-12"	7.0	6.5	7.0	0	Yes

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Fluvial Deposit/Irrigated Meadows Polygon: **Paste pH Record** PM- ~~marsh swale~~

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
PM-10-6"	Tare@0.0	20.5	20.5	7.0
PM-20-6"	Tare@0.0	20.1	20.7	6.5

Name/Signature: [signature] **Date:** 07-28-00

pH meter calibrated using 4.0 + 7.0 standards

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record PN

Fluvial Deposit/Irrigated Meadows Polygon:

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
PN-6-12"	Tare @0.0	20.4	20.4	6.6
PN-06"	tare @0.0	20.1	20.1	6.6
PN6-12"	Tare @0.0	22.4	25.6	6.3
		RR		

Name/Signature: [signature]

Date: 07-29-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **PM**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)		1.50%	%
Treatment Depth (Full treatment depth up to 12")		6	inches
% Rock		30%	
Treatment Area		0.200	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon		15.79%	%
Percent Moisture		29.63%	%
Wet Bulk Density	=	0.687	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 94.50 tons/acre = 18.90 tons

Compost Rate = 137.55 cy/acre = 27.51 cy

Depth of Compost to be Applied = 1.0 inches

Signature: Brian A. Mund

Date: 6/26/09

Signature: [illegible]

Date: 07-01-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **PN**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	0%	
Treatment Area	0.036	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 269.99 tons/acre = 9.72 tons

Compost Rate = 393.00 cy/acre = 14.15 cy

Depth of Compost to be Applied = 2.9 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-01-09

80% PLS Mix

FILE MEMO

Regarding: Lime Compost Fertilizer Mulch (Seed) Other

Fluvial Deposit ID: PM & PN **Irrigated Meadow ID:** _____

Acreage: Below

Target Application: Below

Amount Applied: PM → 5.5 lbs ; PN → 1.0 lb

Comments:

PM: 0.20 Acres x 11.44 lbs x 2 (Double Plant) + 20% = 5.5 lbs

PN: 0.036 x " " " = 1 lb

Confirmed FD Seed Mix; Hand Weighed in Field, Broadcasted.

_____ 10-23-09

Signature **Date**

Polygon Completion Form
Fluvial Deposits

Fluvial Deposit Polygon Name/ID: PP

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
07-07-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.3. **Comments/Deviations:** Start Pre-Till 07-07-09
07-09-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.4. **Comments/Deviations:**
07-28-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Section 3.6A through 3.6E. Apply lime & partial incorp 07-15-09 **Comments/Deviations:** Apply Fertilizer 07-27-09
08-25-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.6F through 3.6I. Apply Compost 07-31-09 **Comments/Deviations:** Start Compost Incorp 08-05-09 & Continue Compost incorp 08-25-09
NA	NA	Completed replacement of erosion channels in accordance with Specification Section 3.7. **Comments/Deviations:**
10-23-09	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.8. **Comments/Deviations:** Prep work completed with compost incorp. Seeded 10-22-09
10-23-09	✓	Completed mulching in accordance with Specification Section 3.9. **Comments/Deviations:** Mulched Comp 10-23
NA	NA	Completed reinstallation of fencing in accordance with Specification Section 3.10. **Comments/Deviations:**
10-29-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.14. **Comments/Deviations:**

Quantity of Work Estimated in Proposal: NA - Addressed in Invoice

Quantity of Work Performed:

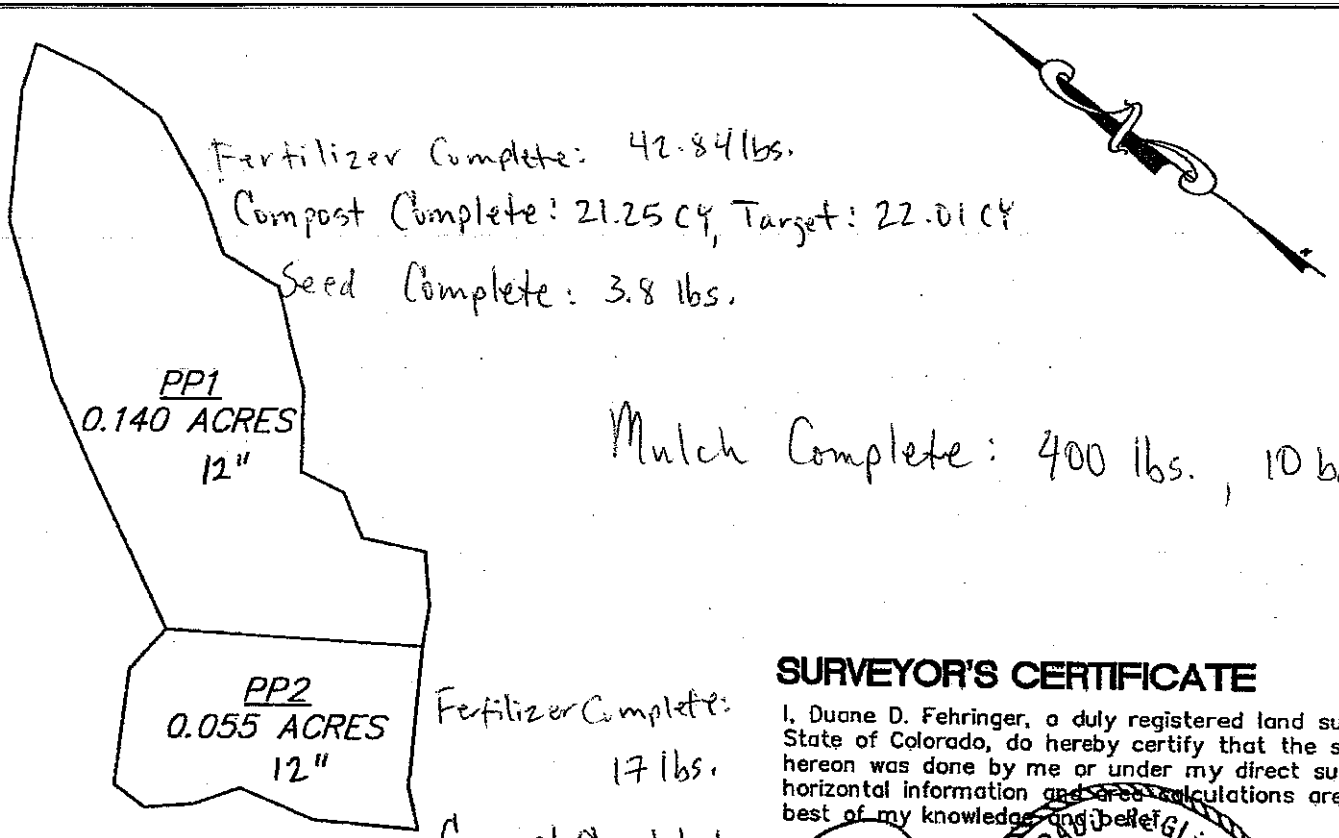
[signature] 11-06-09
Signature of Subcontractor Date

[signature] 10-29-09
Signature of Contractor Date

Pre-Tilled

- Lime Complete : 17 CY, Target : 17.9 CY

COMPLETE



Fertilizer Complete: 42.84 lbs.
Compost Complete : 21.25 CY, Target : 22.01 CY
Seed Complete : 3.8 lbs.

Mulch Complete : 400 lbs., 10 bales

Fertilizer Complete: 17 lbs.
Compost Complete : 17 CY, Target : 17.29 CY
Seed Complete : 1.51 lbs.

SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED LAND SURVEYOR DUANE D. FEHRINGER 26626 P.E. AND P.L.S.

6-24-09

Duane D. Fehringer P.E. & P.L.S. 26626

J:\projects\80032s\dwg\01-11 Areas.dwg

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PP

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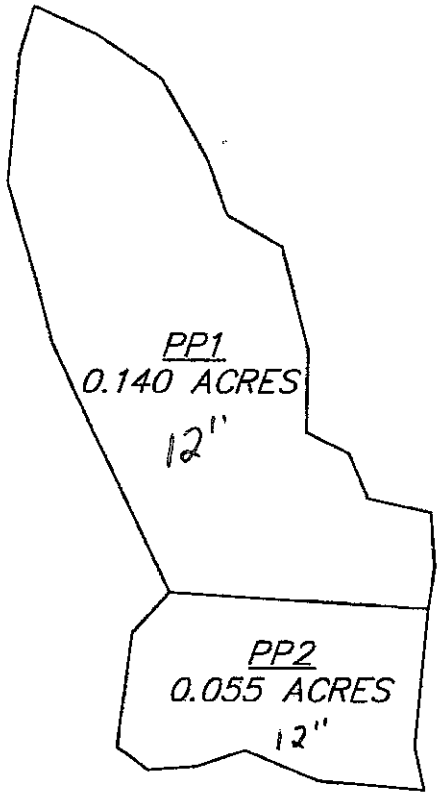
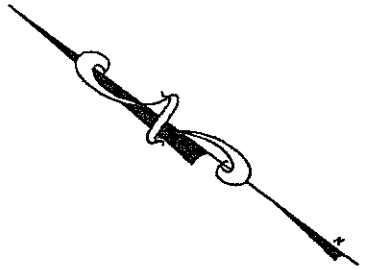
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=40'
DATE ISSUED:	6-23-09
PROJECT NO.	08-0032
EXHIBIT	





SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

6-24-09

Duane D. Fehringer P.E. & P.L.S. 26626

COLORADO REGISTERED DUANE D. FEHRINGER 26626 P. E. AND P. L. S.

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
40801 US HWY 6&24, SUITE 203 BOX 978 AVON, CO 81620 PH: (970)949-5072
6551 S. REVERE PARKWAY, SUITE 106 CENTENNIAL, CO 80111 PH: (303)948-6220

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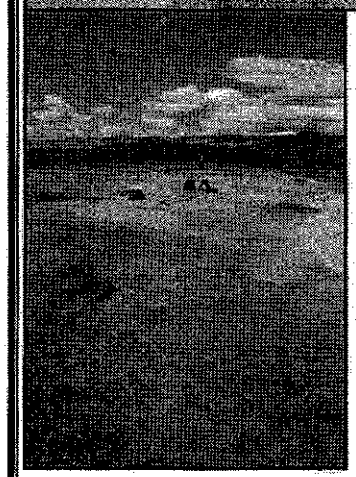
PP

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=40'
DATE ISSUED:	6-23-09
PROJECT NO.	08-0032
EXHIBIT	

J:\projects\80032\dwg\OU-11 Areas.dwg



FLUVIAL DEPOSIT PP

Physical Characteristics

Area: 0.29 acre
Average Depth: 13"
Depth Range: 3" to 24"
Sandy mine waste over cobble alluvium. Very little fine-grained materials are present on the surface. Some areas contain large rock.

2006 Data

Arsenic	89.6 mg/kg
Cadmium	3.7 mg/kg
Copper	131 mg/kg
Lead	2110 mg/kg
Manganese	167 mg/kg
Mercury	1.2 mg/kg
Zinc	652 mg/kg
pH	3.2
ABA	-17.8 t/1000t

Proposed Treatment

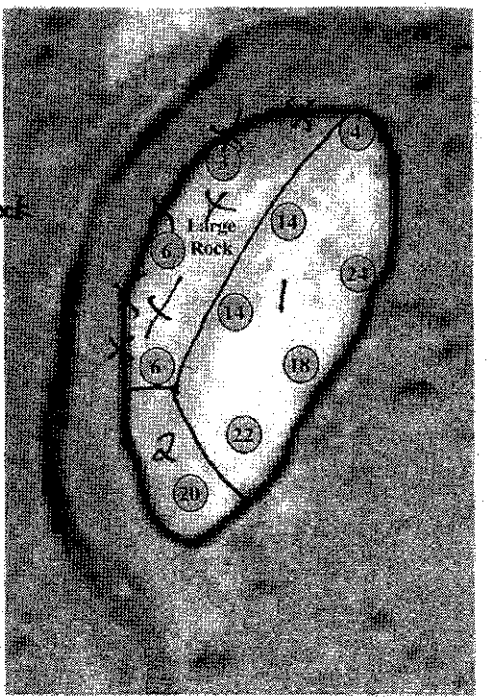
Lime amendment rate: 30 tons/1000 tons
Estimated Rock Content Correction: 25%
Organic amendment rate: Default
Fertilizer rate: Default
Till Depth: 6" to 24"
Average Till Depth: 13"
Till Equipment: Deep till rotary mixer that can handle rock up to 10".
Seed Mix: Fluvial Deposit Seed Mix
Notes: Depth profile appeared to change significantly between 1996 and 2006. Dig test pits to confirm depths shown on figure. Areas with large rock may not be treatable.

1 Treat to 12" 60% Rock
2 12 20

Pull in edges during pretill

Bank Stabilization

None



Fluvial Deposit Outline
Bank Stabilization Location
16 Depth of mine waste (inches)

Note: Figure not to scale.
Locations and streambank lengths estimated.
All treatment locations will be confirmed and marked prior to initiation of construction.

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **PP-1**

POLYGON CHARACTERISTICS

Net Application Rate	30	tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00%	%
% Rock	60.00%	%
Total Area	0.140	acres

Average Depth Calculation

Depth (inches)		% of Total Area		
12	X	100.00%	=	12
	X		=	
	X		=	
	X		=	
		Average Depth		12 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20%	%
Percent Moisture		29.00%	%
Bulk Density	0.75 grams/cc	= 0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 45.25 tons/acre = 6.34 tons total

Lime Rate = 71.59 cy/acre = 10.02 cy total

Depth of Lime to be Applied = 0.5 inches

Signature: Brian G. Ford

Date: 6/26/09

Signature: Jack G. Jennings

Date: 07-13-09

Lime Application Rate Calculation Form

Fluvial Deposits

Fluvial Deposit ID: PP(-2)

POLYGON CHARACTERISTICS

Net Application Rate	30	tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00%	%
% Rock	20.00%	%
Total Area	0.055	acres

Average Depth Calculation

Depth (inches)		% of Total Area		
12	X	100.00%	=	12
	X		=	
	X		=	
	X		=	
		Average Depth		12 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20%	%
Percent Moisture		29.00%	%
Bulk Density	0.75 grams/cc =	0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth / (Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 90.51 tons/acre = 4.98 tons total

Lime Rate = 143.19 cy/acre = 7.88 cy total

Depth of Lime to be Applied = 1.1 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-13-09

FILE MEMO

Regarding: Lime Compost (Fertilizer) Mulch Seed Other

Fluvial Deposit ID: PP **Irrigated Meadow ID:** _____

Acreage: 0.195 (total) acres

Target Application: 0.195 x 153 lbs/acre x 2 (c. inc b) = 59.7 lbs

Amount Applied: 1 bag + 10 lbs

Comments:

0:45:00 Hand Broadcasted

Signature

07-27-09

Date

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: PP

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	HCl Present
PP-0-6"	7.0	6.5	7.0	0	Yes
PP-6-12"	7.0	6.5	7.0	0	Yes

Name/Signature: [signature]

Date: 07-29-09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record PP

Fluvial Deposit/Irrigated Meadows Polygon:

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
PP 0-6"	Tare @ 0.0	20.0	20.0	7.5
PP 6-12"	↓	20.0	20.6	7.3

Name/Signature: Rob Brown **Date:** 07-29-09

pH probe calibrated to known standards

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **PP-1**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)		1.50%	%
Treatment Depth (Full treatment depth up to 12")		12	inches
% Rock		60%	
Treatment Area		0.140	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon		15.79%	%
Percent Moisture		29.63%	%
Wet Bulk Density	=	0.687	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre}/6" * (1-\%\text{rock}/100)}{\text{Compost \% OC} * (1-\%\text{Moisture}/100)}$$

Compost Rate = 108.00 tons/acre = 15.12 tons

Compost Rate = 157.20 cy/acre = 22.01 cy

Depth of Compost to be Applied = 1.2 inches

Signature: Brad Mead

Date: 6/26/09

Signature: John C. Ahlo

Date: 07-02-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **PP-2**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	20%	
Treatment Area	0.055	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 215.99 tons/acre = 11.88 tons

Compost Rate = 314.40 cy/acre = 17.29 cy

Depth of Compost to be Applied = 2.3 inches

Signature: Ben A. Mund

Date: 6/26/09

Signature: [signature]

Date: 07-07-09

(PLS 84% → Add 16% to weight)

FILE MEMO

Regarding: Lime Compost Fertilizer Mulch (Seed) Other

Fluvial Deposit ID: PP **Irrigated Meadow ID:** _____

Acreage: ~195 total

Target Application: ~194 X 11.44 PLS/acre X 2 (Double Rate) + 16% = 5.1 lbs

Amount Applied: ~~5 lbs/Ag~~ 5.3 lbs

Comments:
Confirmed FD Mix, weighed and broadcasted target amount

_____ 10-20-09

Signature **Date**

Polygon Completion Form
Fluvial Deposits

Fluvial Deposit Polygon Name/ID: QA

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
07-07-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.3. **Comments/Deviations:** Straw Pre-Till 07-09-09
07-09-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.4. **Comments/Deviations:**
jms 07-28-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Section 3.6A through 3.6E. Apply lime & partial incorp 07-15-09 **Comments/Deviations:** Apply Fertilizer 07-27-09
08-25-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.6F through 3.6I. Apply Compost 07-31-09 **Comments/Deviations:** Straw Compost Incorp 08-06-09 Continue Compost Incorp 08-25-09
NA	NA	Completed replacement of erosion channels in accordance with Specification Section 3.7. **Comments/Deviations:**
10-22-09	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.8. **Comments/Deviations:** Prep w/ excavator 08-28-09 Seeded 10-22-09
10-23-09	✓	Completed mulching in accordance with Specification Section 3.9. **Comments/Deviations:** Mulch & Curlex 10-23
~~10-27-09~~ NA	~~NA~~ ✓	Completed reinstallation of fencing in accordance with Specification Section 3.10. **Comments/Deviations:**
10-29-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.14. **Comments/Deviations:**

Quantity of Work Estimated in Proposal: NA Addressed in Invoicing Spec

Quantity of Work Performed:

E. C. C-l 11-06-09
Signature of Subcontractor Date

[signature] 10-29-09
Signature of Contractor Date

* Pre-Tilled

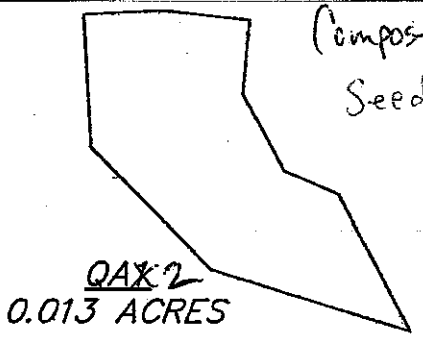
—COMPLETE—

Lime Complete: 5 CY, Target: 5.37 CY

Fertilizer Complete: 4 lbs.

Compost Complete: 3.25 CY, Target: 3.07 CY

Seed Complete: 0.3 lb., Target: 0.3 lb.



QAX2

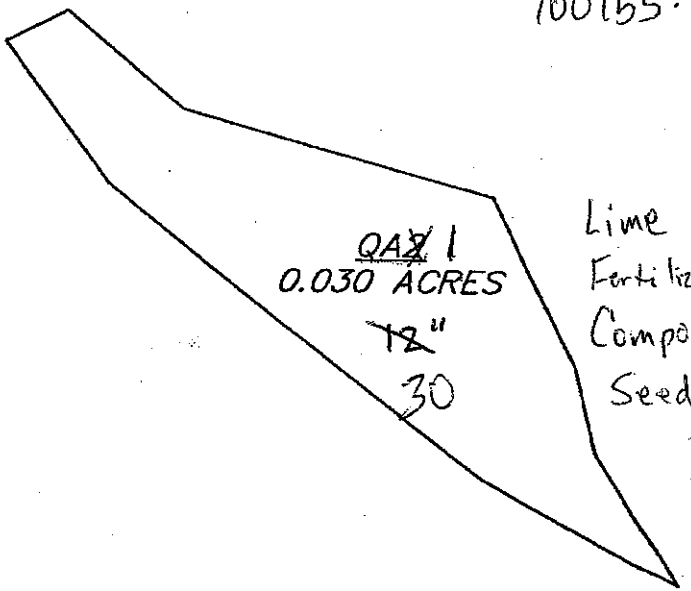
0.013 ACRES

~~30~~"

12

Mulch Complete: 2.5 bales

100 lbs.



QAX1

0.030 ACRES

~~12~~"

30

Lime Complete: 1.6 CY, Target: 1.

Fertilizer Complete: 23 lbs.

Compost Complete: 4.8 CY, Target: 4.72

Seed Complete: 1 lb., Target: 0.8 lb.

SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 26626 L.S. AND P.L.S.

6-24-09

Duane D. Fehringer P.E. & P.L.S. 26626

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Inter-Mountain ENGINEERING

Civil Engineers & Surveyors

40881 US HWY 6&24, SUITE 203 BOX 978 AVON, CO 81620 PH: (970)949-5032

6551 S. REVERE PARKWAY, SUITE 106 CENTENNIAL, CO 80111 PH: (303)948-6220

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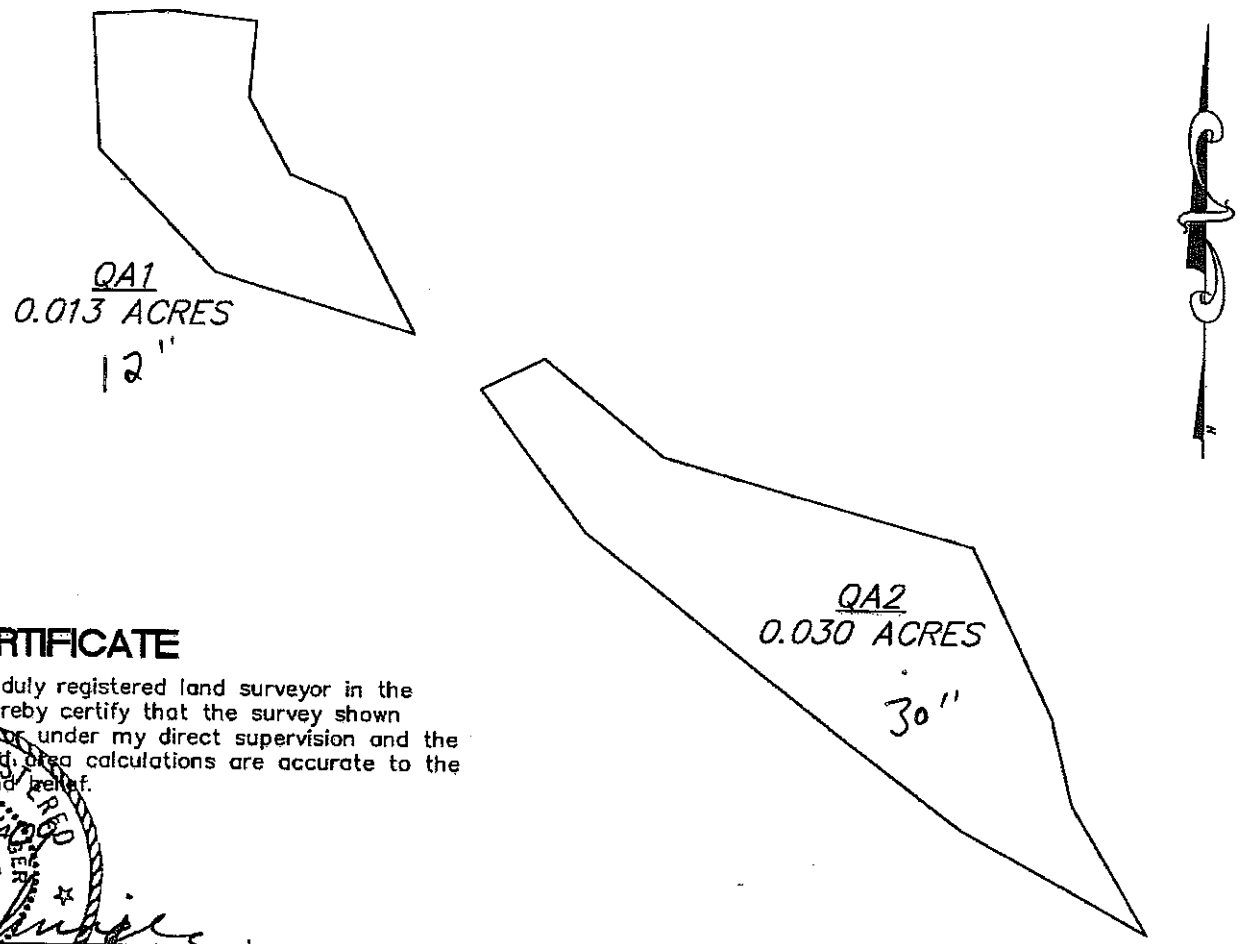
QA

CALIFORNIA GULCH CERCLA SITE

OPERABLE UNIT NUMBER 11

LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=20'
DATE ISSUED:	8-23-09
PROJECT NO.	08-0032
ENGR	



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COLORADO REGISTERED DUANE D. FEHRINGER 6-24 26626 L.S. AND P.L.

Duane D. Fehringer, P.E. & P.L.S. 26626

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Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
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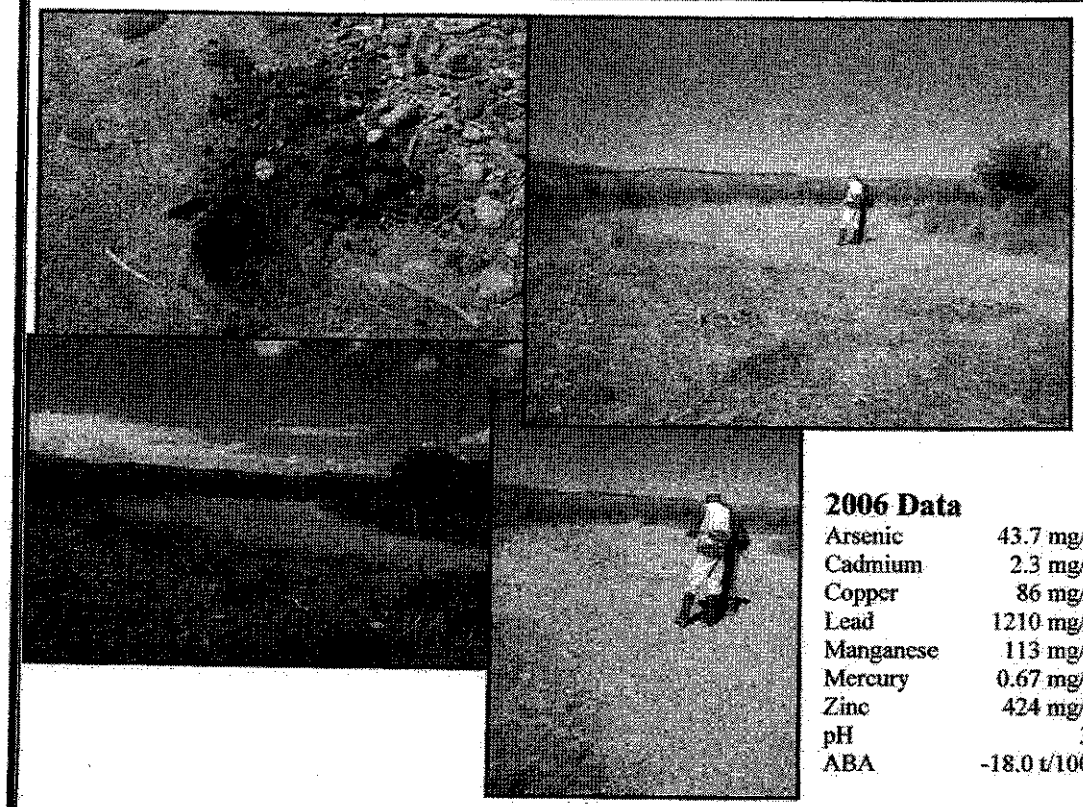
QA

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=20'
DATE ISSUED:	6-23-09
PROJECT NO.	08-0032
EXHIBIT	



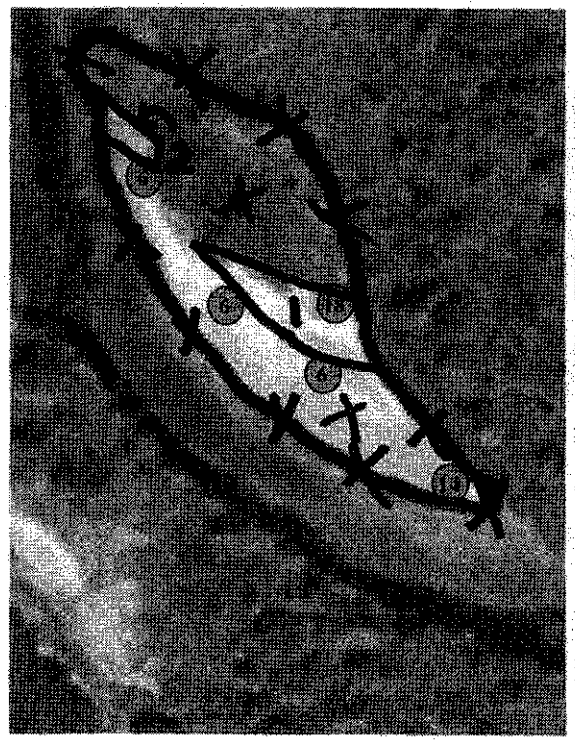
FLUVIAL DEPOSIT QA

Physical Characteristics

Area: 0.29 acre
Average Depth: 10"
Depth Range: 6" to 18"
Sandy mine waste mixed with gravel and cobble. Rocks up to 14" in two small areas. Rock up to 4" in rest of area.

2006 Data

Arsenic	43.7 mg/kg
Cadmium	2.3 mg/kg
Copper	86 mg/kg
Lead	1210 mg/kg
Manganese	113 mg/kg
Mercury	0.67 mg/kg
Zinc	424 mg/kg
pH	3.2
ABA	-18.0 t/1000t



Proposed Treatment

Lime amendment rate: 30 tons/1000 tons
Estimated Rock Content Correction: 30%
Organic amendment rate: Default
Fertilizer rate: Default
Till Depth: 6" across most of site; 14" to 18" along eastern and southern boundaries.
Average Till Depth: 10"
Till Equipment: Deep till rotary mixer able to handle rock.
Seed Mix: Fluvial Deposit Seed Mix
Notes: 40% of deposit may be too rocky to treat. The remainder of the deposit contains smaller rock up to 4"

Bank Stabilization

Dk. Pink/Red None 1 Treat to 30" 60%
Blue 2 12" 40%

Fluvial Deposit Outline
Bank Stabilization Location
Depth of mine waste (inches)

Note: Figure not to scale.
Locations and streambank lengths estimated.
All treatment locations will be confirmed and marked prior to initiation of construction.

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Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **QA-1 (per FDSS / IME suvery #s backwards)**

POLYGON CHARACTERISTICS

Net Application Rate	30	tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00%	%
% Rock	60.00%	%
Total Area	0.030	acres

Average Depth Calculation

Depth (inches)		% of Total Area		
30	X	100.00%	=	30
	X		=	
	X		=	
	X		=	
		Average Depth		30 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20%	%
Percent Moisture		29.00%	%
Bulk Density	0.75 grams/cc	= 0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 113.13 tons/acre = 3.39 tons total

Lime Rate = 178.99 cy/acre = 5.37 cy total

Depth of Lime to be Applied = 1.3 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-13-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **QA-2 (per FDSS / IME suvery #s backwards)**

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	40.00% %
Total Area	0.013 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
12	X	100.00%	=	12
	X		=	
	X		=	
	X		=	
		Average Depth		12 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1 =	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5 =	0.04%	(B)
Percent < 60 mesh	99.92%	X 1 =	99.92%	(C)
Lime Reactivity		=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		29.00% %	
Bulk Density	0.75 grams/cc =	0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 67.88 tons/acre = 0.88 tons total

Lime Rate = 107.39 cy/acre = 1.40 cy total

Depth of Lime to be Applied = 0.8 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-13-09

FILE MEMO

Regarding: Lime Compost (Fertilizer) Mulch Seed Other

Fluvial Deposit ID: QA **Irrigated Meadow ID:** _____

Acreage: QA 1 (12") 0.013 acres
QA 2 (30") 0.03 acres

Target Application: QA 1 = 0.013 x 153 lbs/acre x 2 (6-inch) = 4 lbs
QA 2 = 0.03 x 153 lbs/acre x 5 (6-inch) = 22.95 lbs ~~39.8 lbs~~

Amount Applied: QA 1 ≈ 4 lbs
QA 2 ≈ 23 lbs

Comments:

0:45:0 Hand Broadcasted 07-27-09

_____ 07-27-09

Signature **Date**

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: QA

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0
QA30-0-6"	7.0	6.5	7.0	0
QA30-6-12"				
QA30-12-18"				
QA30-18-24"				
QA30-24-30"				
QA12-0-6"				
QA12-6-12"				

HCl Yes

Name/Signature: [signature]

Date: 7-29-09

pH probe calibrated to known standards

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record QA

Fluvial Deposit/Irrigated Meadows Polygon: _____

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
QA30-0-6"	Tare @ 0.0	20.7	20.7	7.3
QA30-6-12"	↓	20.0	20.0	7.2
QA30-12-18"		20.3	21.1	7.4
QA30-18-24"		20.5	20.5	7.2
QA30-24-30"		21.0	21.0	7.1
QA12-0-6"		23.0	24.3	7.2
QA12 6-12"		20.0	20.1	6.8

6.9

07-30-09 AM

Name/Signature: Rob Z

Date: 07-29-09

pH probe calibrated to known standards

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **QA-1 (per FDSS / IME Survey has it backwards)**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	60%	
Treatment Area	0.030	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 108.00 tons/acre = 3.24 tons

Compost Rate = 157.20 cy/acre = 4.72 cy

Depth of Compost to be Applied = 1.2 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-02-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **QA-2 (per FDSS / IME Survey has it backwards)**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	40%	
Treatment Area	0.013	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

Compost = $\frac{\text{Target \% OC * depth * 1000 tons/acre/6" * (1-\%rock/100)}}{\text{Compost \% OC * (1- \%Moisture/100)}}$

Compost Rate =	162.00 tons/acre	=	2.11 tons
Compost Rate =	235.80 cy/acre	=	3.07 cy
	Depth of Compost to be Applied =		1.8 inches

Signature: _____

Date: 6/26/09

Signature: _____

Date: 07-02-09

FILE MEMO

Regarding: Lime Compost Fertilizer Mulch (Seed) Other

Fluvial Deposit ID: QA **Irrigated Meadow ID:** _____

Acreage: Below

Target Application: Below

Amount Applied: Below

84% PLS FD Seed Mix (Add 16%)

Comments:

			Applied
QA1: 0.036 Acres x 11.44 lbs x 2 (Double Rate)	+ 16% =	0.8 lbs →	1 lb
QA2: 0.013 Acres x 11.44 lbs x 2	+ 16% =	0.3 lbs	0.3 lbs

Confirmed FD seed Mix, weighed in Field, Flail Broadcaster

_____ 10-22-09

Signature **Date**

Polygon Completion Form
Fluvial Deposits

Fluvial Deposit Polygon Name/ID: Qd

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
08-05-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.3. **Comments/Deviations:**
08-10-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.4. START Pre-Till 08-05-09 **Comments/Deviations:**
08-18-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Section 3.6A through 3.6E. Apply Lime and Turn with excavator 08-10-09 **Comments/Deviations:** Begin AMU Incorp on 08-17
08-28-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.6F through 3.6I. Start Incorp Organic 08-26-09 **Comments/Deviations:** Completed Incorp 08-28-09
N/A	N/A	Completed replacement of erosion channels in accordance with Specification Section 3.7. **Comments/Deviations:**
wk ending 10-18	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.8. **Comments/Deviations:** Seedbed prep during Compost incorp 08-28-09 Seeded wk ending 10-18-09
10-20-09	✓	Completed mulching in accordance with Specification Section 3.9. **Comments/Deviations:** Mulched & Crimped 10-20
NA	NA	Completed reinstallation of fencing in accordance with Specification Section 3.10. **Comments/Deviations:**
11-03-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.14. **Comments/Deviations:**

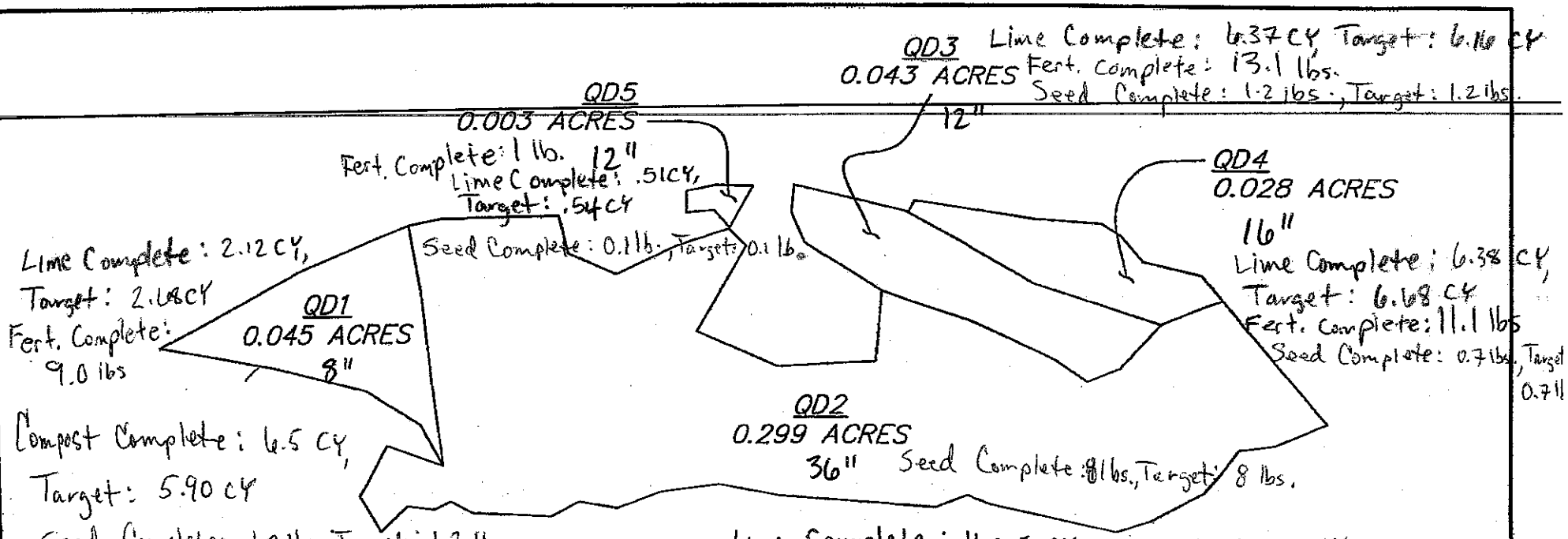
Quantity of Work Estimated in Proposal: N/A - Addressed in Invoicing
Quantity of Work Performed:

[signature] 11-06-09
Signature of Subcontractor Date

[signature] 11-03-09
Signature of Contractor Date

* Pre-Tilled

— COMPLETE —



SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO DUANE D. FEHRINGER 6-24-08 26626 L.S. AND P.L.

Duane D. Fehringer P.E. & P.L.S. 26626

Compost Complete: QD-2-5: 146.25 CY,
Target: 146.59 CY

Mulch Complete: (840 lbs, 21 Bales)

Inter-Mountain ENGINEERING Civil Engineers & Surveyors 40880 US HWY 6&24, SUITE 203 BOX 978 AVON, CO 81620 PH: (970)949-5872 4551 S. REVERE PARKWAY, SUITE 106 CENTENNIAL, CO 80111 PH: (303)948-6220	CLIENT: FRONTIER ENVIRONMENTAL INC. This document was prepared for the exclusive use of the Client specified hereon. The use of this document or the information contained herein by any other person or entity is not authorized. In the event that any other person or entity desires to use this document or the information contained herein for any purpose they must first obtain written authorization from Inter-Mountain Engineering. This document and any information contained herein is intended to be used within one year of the date hereof. Use after that period is not authorized.	QD CALIFORNIA GULCH CERCLA SITE OPERABLE UNIT NUMBER 11 LAKE COUNTY, COLORADO	DRAWN BY: SPF SCALE: 1"=40' DATE ISSUED: 8-25-08 PROJECT NO. 08-0032 EXHIBIT

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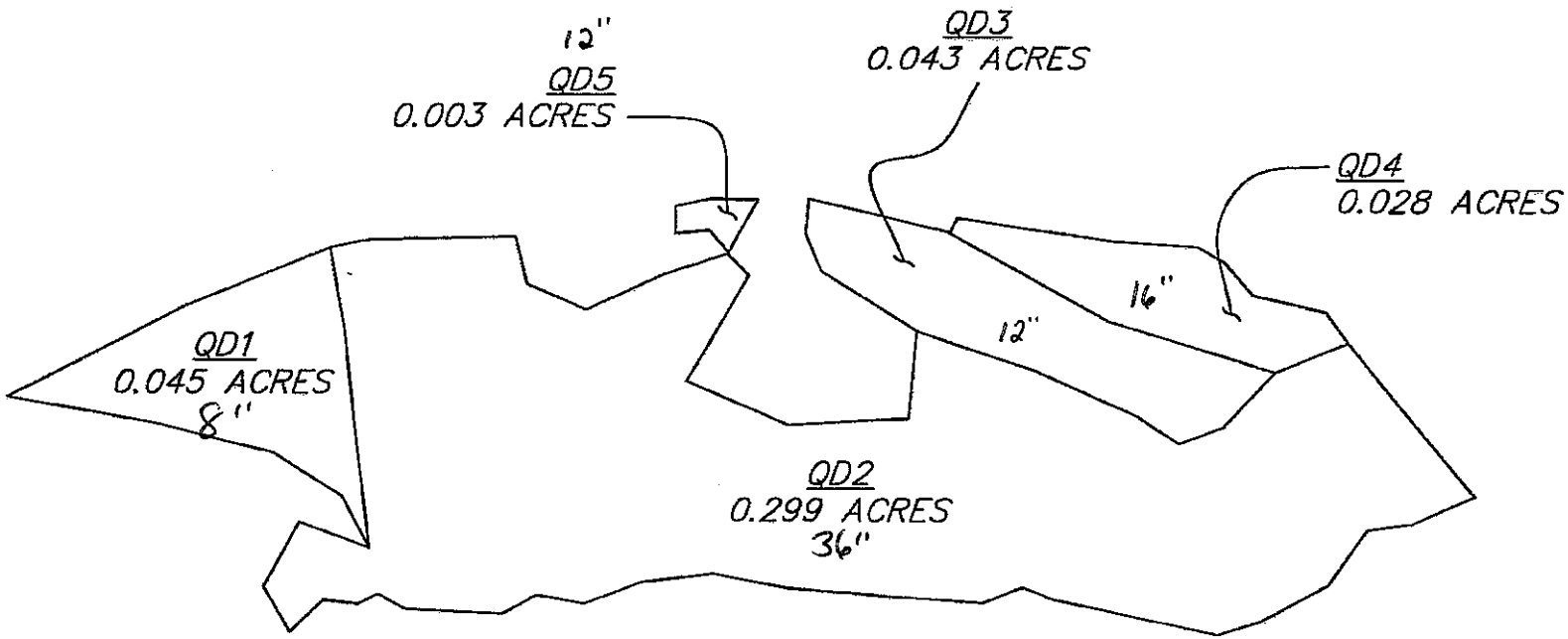

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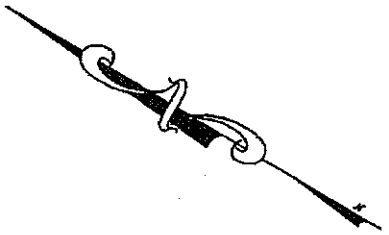
COLORADO REGISTERED DUANE D. FEHRINGER 6-24-09 26626 P.E. AND P.L.S.

Duane D. Fehringer, P.E. & P.L.S. 26626



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6551 S. REVERE PARKWAY, SUITE 106 CENTENNIAL, CO 80111 PH: (303)948-6220

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QD

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=40'
DATE ISSUED:	6-23-09
PROJECT NO.	08-0032
CHKD:	

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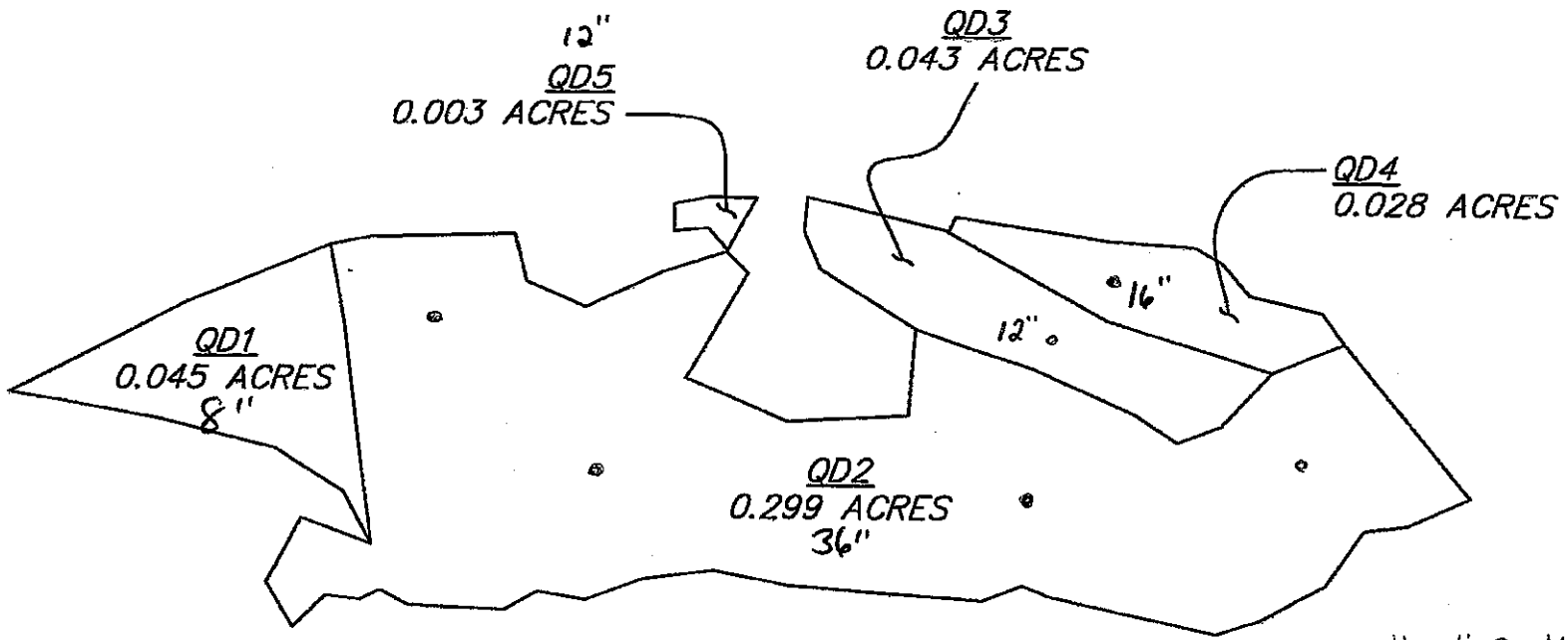

• 6 point Composite Samele (All 0"-12" Depth)

Pre: "QD" 07-15-09 15:00

Post: " 10-17-09 11:00

SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information contained calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 6-24-09 26626 P.E. AND P.L.S.

Duane D. Fehringer P.E. & P.L.S. 26626

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QD

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=40'
DATE ISSUED:	8-23-09
PROJECT NO.	08-0032
CHART	

FLUVIAL DEPOSIT QD

QD1	Treat to	8"	50% Rock - green
QD2		36"	0% - yellow
QD3		12"	20% - white
QD4		16"	High lime reqt so use 0% → orange flags
QD5		12"	0% rock → pink

Fluvial Deposit Outline

Bank Stabilization Location

(18) Depth of mine waste (inches)

Note: Figure not to scale.
Locations and streambank lengths estimated.
All treatment locations will be confirmed and marked prior to initiation of construction.

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **QD-1**

POLYGON CHARACTERISTICS

Net Application Rate				30	tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)				10.00%	%
% Rock				50.00%	% ✓
Total Area				0.045	acres ✓

Average Depth Calculation

Depth (inches)		% of Total Area		
8 ✓	X	100.00%	=	8
	X		=	
	X		=	
	X		=	
		Average Depth		8 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence			82.20%	%
Percent Moisture			29.00%	%
Bulk Density	0.75 grams/cc	=	0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
/ (Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 37.71 tons/acre = 1.70 tons total

Lime Rate = 59.66 cy/acre = 2.68 cy total

Depth of Lime to be Applied = 0.4 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-28-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **QD-2**

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	0.00% % ✓
Total Area	0.299 acres ✓

Average Depth Calculation

Depth (inches)		% of Total Area		
36 ✓	X	100.00%	=	36
	X		=	
	X		=	
	X		=	
		Average Depth		36 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1 =	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5 =	0.04%	(B)
Percent < 60 mesh	99.92%	X 1 =	99.92%	(C)
Lime Reactivity		=	99.96%	A+B+C

Calcium Carbonate Equivalence			82.20% %
Percent Moisture			29.00% %
Bulk Density	0.75 grams/cc	=	0.63 tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 339.40 tons/acre = 101.48 tons total

Lime Rate = 536.96 cy/acre = 160.55 cy total

Depth of Lime to be Applied = 4.0 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-28-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **QD-3**

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	20.00% % ✓
Total Area	0.043 acres ✓

Average Depth Calculation

Depth (inches) ✓		% of Total Area		
12	X	100.00%	=	12
	X		=	
	X		=	
	X		=	
		Average Depth		12 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		29.00% %	
Bulk Density	0.75 grams/cc	= 0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 90.51 tons/acre = 3.89 tons total

Lime Rate = 143.19 cy/acre = 6.16 cy total

Depth of Lime to be Applied = 1.1 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-28-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **QD-4**

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	0.00% %
Total Area	0.028 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
16	X	100.00%	=	16
	X		=	
	X		=	
	X		=	
		Average Depth		16 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1 =	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5 =	0.04%	(B)
Percent < 60 mesh	99.92%	X 1 =	99.92%	(C)
Lime Reactivity		=	99.96%	A+B+C

Calcium Carbonate Equivalence			82.20% %
Percent Moisture			29.00% %
Bulk Density	0.75 grams/cc	=	0.63 tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate =	150.84 tons/acre	=	4.22 tons total
Lime Rate =	238.65 cy/acre	=	6.68 cy total
		Depth of Lime to be Applied =	1.8 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-28-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **QD-5**

POLYGON CHARACTERISTICS

Net Application Rate				30	tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)				10.00%	%
% Rock				0.00%	% ✓
Total Area				0.003	acres ✓

Average Depth Calculation

Depth (inches)		% of Total Area		
12 ✓	X	100.00%	=	12
	X		=	
	X		=	
	X		=	
		Average Depth		12 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20%	%
Percent Moisture		29.00%	%
Bulk Density	0.75 grams/cc	0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = $\frac{\text{Net Application Rate} * (1 + \text{Mixing Factor}/100) * (1 - \%\ \text{Rock}/100) * \text{Depth}}{(\text{Lime Reactivity}) * (\text{Calcium Carbonate Equivalence}/100) * (1 - \%\ \text{Moisture}/100)}$

Lime Rate = 113.13 tons/acre = 0.34 tons total

Lime Rate = 178.99 cy/acre = 0.54 cy total

Depth of Lime to be Applied = 1.3 inches

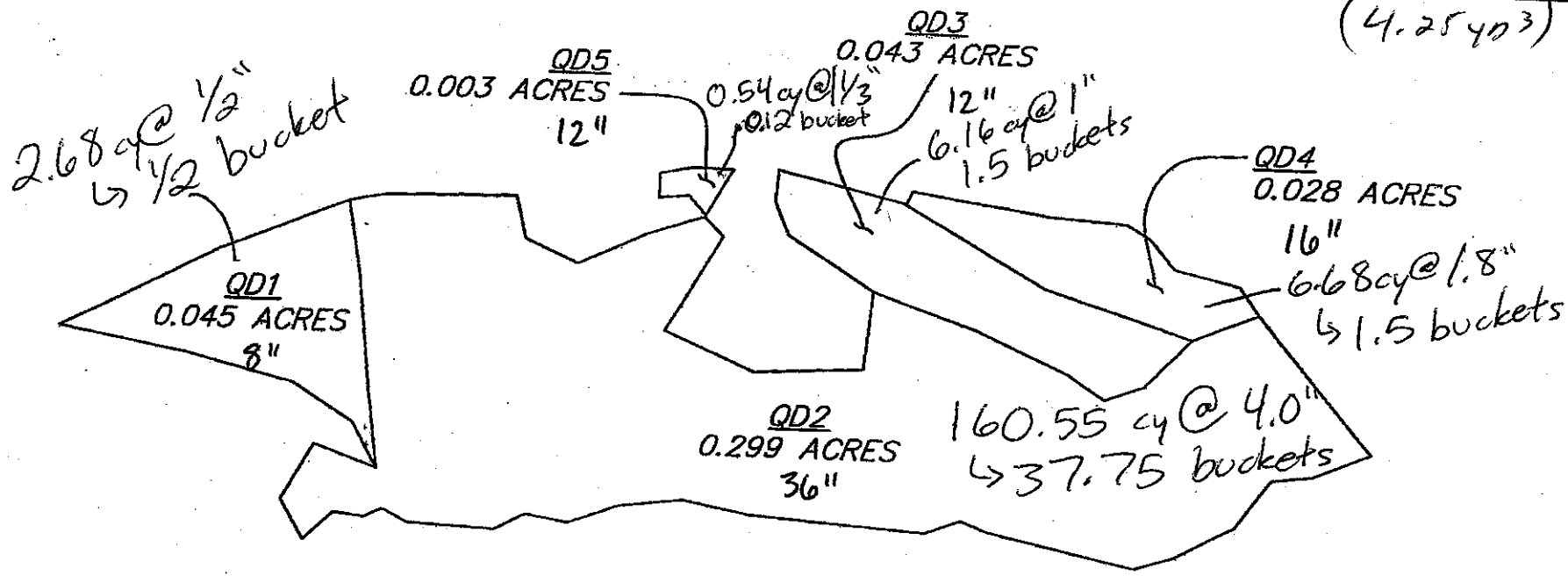
Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-28-09

LIME – All "buckets" are 950 Loaders (4.25 yd³)

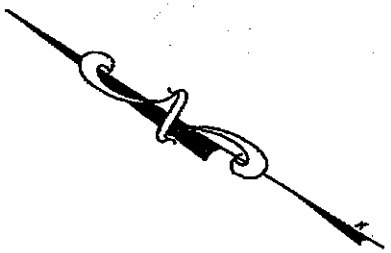


SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and the map calculations are accurate to the best of my knowledge and belief.

COLORADO DUANE D. FEHRINGER 6-20-09 26626 L.S. AND P.E.

Duane D. Fehringer, P.E. & P.L.S. 26626



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Civil Engineers & Surveyors
40581 US HWY 6&24, SUITE 203 BOX 971 AVON, CO 81620 PH: (970)949-5872
6551 S. REVERE PARKWAY, SUITE 106 CENTENNIAL, CO 80111 PH: (303)458-6228

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QD

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=40'
DATE ISSUED:	6-23-09
PROJECT NO.	08-0032
EXHIBIT	

FILE MEMO

Regarding: Lime Compost Fertilizer Mulch Seed Other

Fluvial Deposit ID: Qd **Irrigated Meadow ID:** _____

Acreage: See Below

Target Application: See Below

Amount Applied: Below

Comments:

Qd 1: .045 acres x 153 lbs/ace x ~~(0.67)~~ 1.3 6-inch = ~~4.6 lbs~~ 9 lbs → Applied 9 lbs

Qd 2: .299 " x 153 x 6 (6-inch) = 274 lbs ≈ 5.5 bags ✓

Qd 3: .043 x153 x 2 (6-inch) = 13.1 lbs ✓

Qd 4: .028 x153 x 16/6 (16-inch) = 11.4 lbs ✓

Qd 5: .003 x153 x 2 (6-inch) = 0.9 lbs ✓ 1 lb

Confirmed 0:45:0; Had Broadcasted amounts as weighted on hanging scale

MG Mink

Signature

08-12-09

Date

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: Qd

	Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	HCL Reaction?
Qd 2	0-6	7.3	7.0	7.5	None	Yes
Qd 2	6-12	7.5			"	Yes
"	12-18	7.5			"	Yes
	18-24	7.3	7.0	7.5	"	Yes
	24-30	7.5			"	Yes
	30-36	7.0	6.5	7.5	"	Yes
*Tailings Beneath		6.3	6.0	6.5	None	No
*Look like floodplain soils, dk brn, organic						
Qd 1	0-8	7.5			None	Yes
Qd 3	0-6	7.3	7.0	7.5	None	Yes
Qd 3	6-12	7.3	7.0	7.5	None	Yes
Qd 4	0-8	6.7	6.5	7.0	None	Yes
Qd 4	8-16	6.7	6.5	7.0	None	Yes

Name/Signature: [signature]

Date: 08-18-09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record Qd

Fluvial Deposit/Irrigated Meadows Polygon: _____

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
Qd 2 0-6	0.0 (Tare)	17.7	17.9	6.7
Qd 2 6-12	"	18.2	18.3	6.9
" 12-18		16.0	15.7	7.0
" 18-24		16.6	15.6	7.0
" 24-30		16.8	16.2	~~7.0~~ 7.1
" 30-36		*		7.0
" 18-24 (Dupe)		18.9	17.2	7.0

Note: Treated Soils Very Moist 0" to 24"; Saturated 30" to 36"

* Sample @ "Colston" ~~State~~ Condition without adding Water

Qd 1 0-8	0.0	16.7	15.7	7.1
Qd 3 0-6		14.8	13.9	7.1
Qd 3 6-12		16.4	15.8	7.2
Qd 4 0-8		17.1	16.9	6.8
Qd 4 8-16		19.9	19.8	6.9
		gms		

Name/Signature: _____ **Date:** 08-19-09

3 point calibration buffers 4, 7, 10 Apr 08-19-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **QD-1**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	8	inches
% Rock	50%	
Treatment Area	0.045	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 90.00 tons/acre = 4.05 tons

Compost Rate = 131.00 cy/acre = 5.90 cy

Depth of Compost to be Applied = 1.0 inches

Signature: Brad Mun

Date: 6/26/09

Signature: Lila Mutz

Date: 07-02-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **QD-2 through QD-5**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	0%	
Treatment Area	0.373	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 269.99 tons/acre = 100.71 tons

Compost Rate = 393.00 cy/acre = 146.59 cy

Depth of Compost to be Applied = 2.9 inches

Signature: _____

Date: 6/26/09

Signature: _____

Date: 07-02-09

Polygon Completion Form
Fluvial Deposits

Fluvial Deposit Polygon Name/ID: QF

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
07-20-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.3. **Comments/Deviations:**
07-30-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.4. Start Pre-Till 07-20-09 **Comments/Deviations:**
08-11-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Section 3.6A through 3.6E. Apply Lime (Start) 08-10-09 **Comments/Deviations:** ~~Apply Fertilizer 07-30-09~~ Apply Fertilizer 08-03-09
09-02-09 ~~08-10~~	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.6F through 3.6I. Start Compost Appl. (Stockpile) 08-10-09 **Comments/Deviations:** Mixed Compost w/ Mulch Finished 09-02-09
N/A	N/A	Completed replacement of erosion channels in accordance with Specification Section 3.7. **Comments/Deviations:**
wk ending 10-18	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.8. **Comments/Deviations:** Seedbed prep w/ compost in corp 09-02-09 Seeded wk ending 10-18-09
10-20-09	✓	Completed mulching in accordance with Specification Section 3.9. **Comments/Deviations:** Mulched 10-20-09 ; *QF Road not scarified 10-20-09 QF road fixed – scarified, re-mulched & re-seeded 10-23-09 Re-seeded
N/A	N/A	Completed reinstallation of fencing in accordance with Specification Section 3.10. **Comments/Deviations:**
11-03-09 ~~10-2~~	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.14. **Comments/Deviations:**

Quantity of Work Estimated in Proposal: N/A - Addressed in Invoicing
Quantity of Work Performed: N/A

[signature] 11-04-09
Signature of Subcontractor Date

[signature] 11-03-09
Signature of Contractor Date

* Pre-Tilled

— COMPLETE —

SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and the grid calculations are accurate to the best of my knowledge and belief.

COLORADO DUANE D. FEHRINGER 26626 L.S. AND P.L.S.

6-24-09

Duane D. Fehringer P.E. & P.L.S. 26626

(Total area)

* Compost Complete: 399.89 tons, Target: 398.24 tons

* Mulch Complete: (2960 lbs., 74 Bales)

QF6 0.049 ACRES 30"
Lime Complete: 21.25 CY, Target: 21.93 CY
Fert. Complete: 37.48 lbs (3/4 bag)
Seed Complete: 1.5 lbs., Target: 1.3 lbs.

QF7 0.188 ACRES 12"
Lime Complete: 29.75 CY, Target: 30.28
Fert. Complete: 57.52 lb. (1.15 bags)
Seed Complete: 5.8 lbs., Target: 5.0 lbs.

QF3 0.071 ACRES 18"
Lime Complete: 19.5 CY, Target: 19.06 CY
Fert. Complete: 32.53 lb (~.65 bag)
Seed Complete: 2.0 lbs., Target: 1.9 lbs.

QF4 0.507 ACRES 30"
Lime Complete: 227.5 CY, Target: 226.86 CY
Fert. Complete: 387.85 lb (7.75 bags)
Seed Complete: 14 lbs., Target: 13.6 lbs.

QF2 0.132 ACRES 2"
Lime Complete: 21.25 CY, Target: 21.26 CY
Fert Complete: 40.39 lb (~.8 bag)
Seed Complete: 3.5 lbs., Target: 3.5 lbs.

Fert Complete: 32.13 lb (0.6 bag)
Lime Complete: 15 CY, Target: 15.03 CY
QF5 0.105 ACRES 12"
Seed Complete: 3.0 lbs., Target: 2.8 lbs.

EXCLUDED (HATCH)

Fert. Complete: 63.81 lb (1.27 bags)
Lime Complete: 38.25 CY, Target: 37.32 C

Fert. Complete: 13.77 lb (0.27 bag)
Lime Complete: 8.12 CY
Seed Complete: 4.0 lbs., Target: 3.9 lbs. Target: 3.05 C

Lime Complete: 65.87 CY, Target: 64.51 CY
Fert. Complete: 129.74 lb (2.5 bags)
Seed Complete: 5.7 lbs., Target: 5.7 lbs.
QF1 0.212 ACRES 24"
SBS Complete: Type 2 Mod. → 85 LF

Type I SBS Complete: 180 LF

10 LF
90 LF
QF9 18" 0.139 ACRES
DOW BANK
QF10 0.045 ACRES 12"
SBS Complete Type I → 65 LF

80 LF
QF8 0.027 ACRES 24"
Lime Complete: 9.75 CY, Target: 9.67 CY
Fert. Complete: 16.52 lb. (0.33 bags)
Seed Complete: 0.7 lbs., Target: 0.7 lbs.

Seed Comp. 1.2 lbs. Target

Type III - 30 LF on QF-1 & Type III - 10 LF on QF-10)

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
42201 US HWY 6&24, SUITE 203 BOX 978 AVON, CO 81620 PH: (970)949-2872
6551 S. REVERE PARKWAY, SUITE 146 CENTENNIAL, CO 80111 PH: (303)968-6220

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QF
CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY: SPF
SCALE: 1"=80'
DATE ISSUED: 8-23-09
PROJECT NO: 08-0032
EXHIBIT: 1.2 lbs.

J:\projects\08\0032\dwg\QU-11 Areas.dwg

SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and the derived calculations are accurate to the best of my knowledge and belief.

COLORADO DUANE D. FEHRINGER 26626 L.S. 6-24-09 P.E. AND P.L.S.

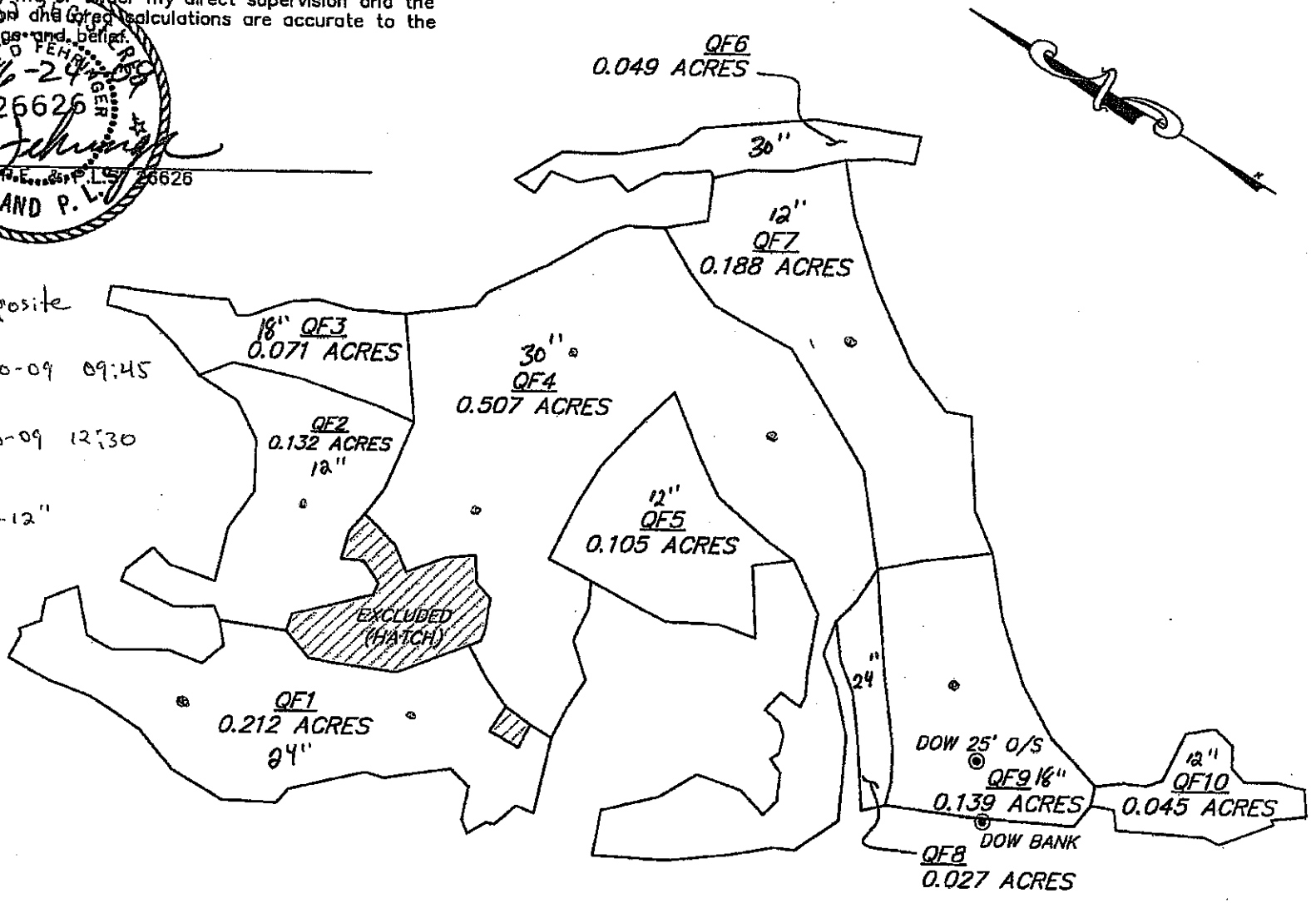
Duane D. Fehringer P.E. and P.L.S. 26626

• 8 point Composite

Pre: "QF" 07:20-09 09:45

Post: "QF" 10-20-09 12:30

Sample Depth: 0-12"



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Civil Engineers & Surveyors
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QF

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

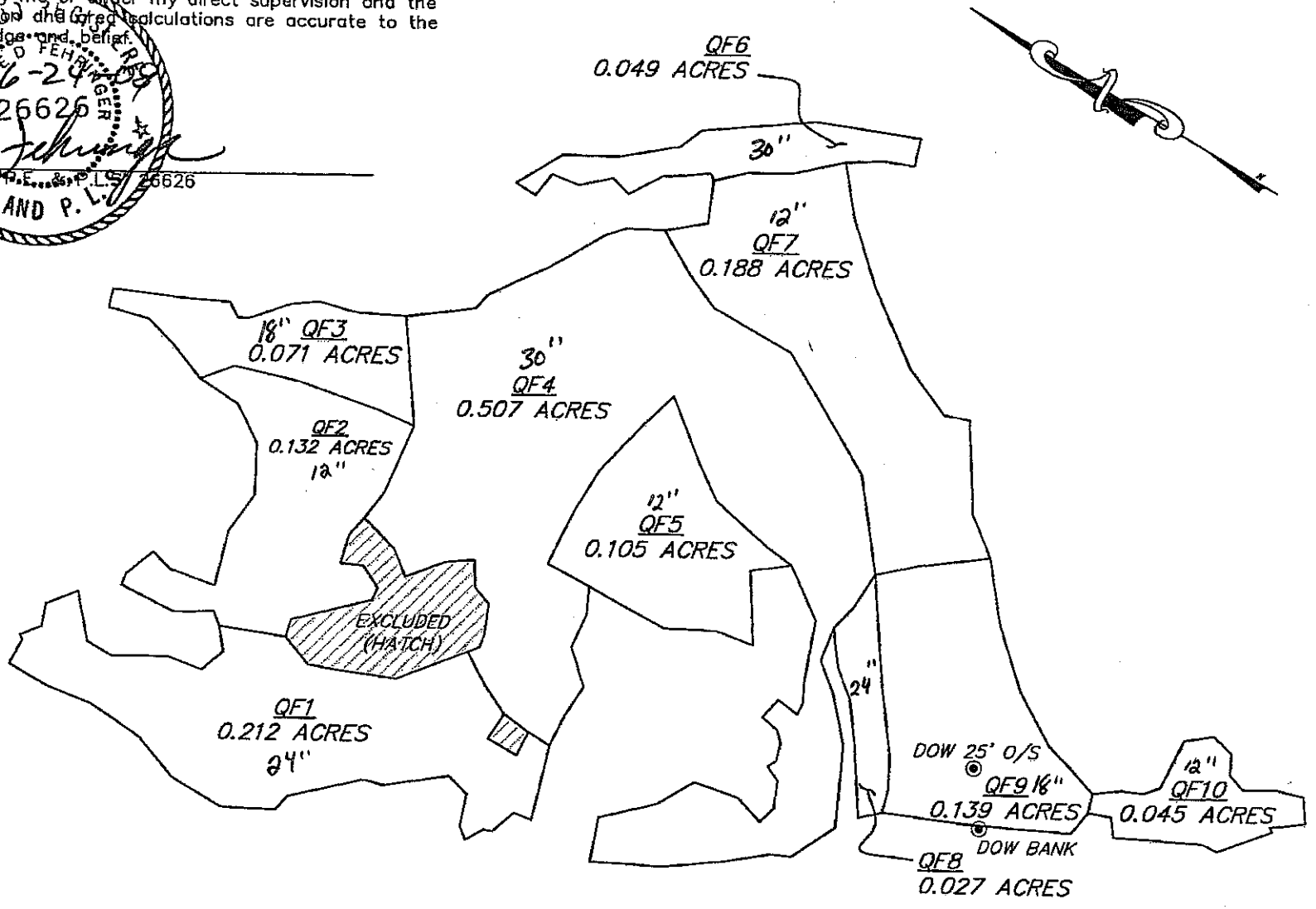
DRAWN BY:	SPF
SCALE:	1"=80'
DATE ISSUED:	6-23-09
PROJECT NO.	08-0032
CHKD BY:	

SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and derived calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 6-24-09 26626 L.S. AND P.L.S.

Duane D. Fehringer P.E. & P.L.S. 26626



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Civil Engineers & Surveyors
40801 US HWY 6&24, SUITE 203 BOX 978 AVON, CO 81620 PH: (970)949-5872
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QF

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=80'
DATE ISSUED:	6-23-09
PROJECT NO.	08-0032
CHKD BY:	

Berm up where blue flags are to keep water in channel to the north

FLUVIAL DEPOSIT QF

See flags.

Bank Stabilization

small segments

Bank A: 300' Type 3 stabilization. The north end of the Arkansas River bank is buffered by a zone of good grass and woody vegetation, but the buffer zone is lower than the mine waste, so the bank needs more willow transplants and Carex transplants near the base of the fan edge. At least 4 mature willows and 2 tipped willows should be planted along the bank.

Bank B: 50' Type 2 stabilization. Keep or reuse the large willows and sod on top of bank. Due to the high bank, two layers of biolog may be required.

Bank C: 80' Type 2 stabilization.

Bank D: 35' Type 2 stabilization in scour area south of QF.

Note: The erosional channel may require stabilization. This will be determined by the field engineer after evaluation of the water source. 300' (estimated) Type 3 stabilization using Carex and young willows.

Fluvial Deposit Outline

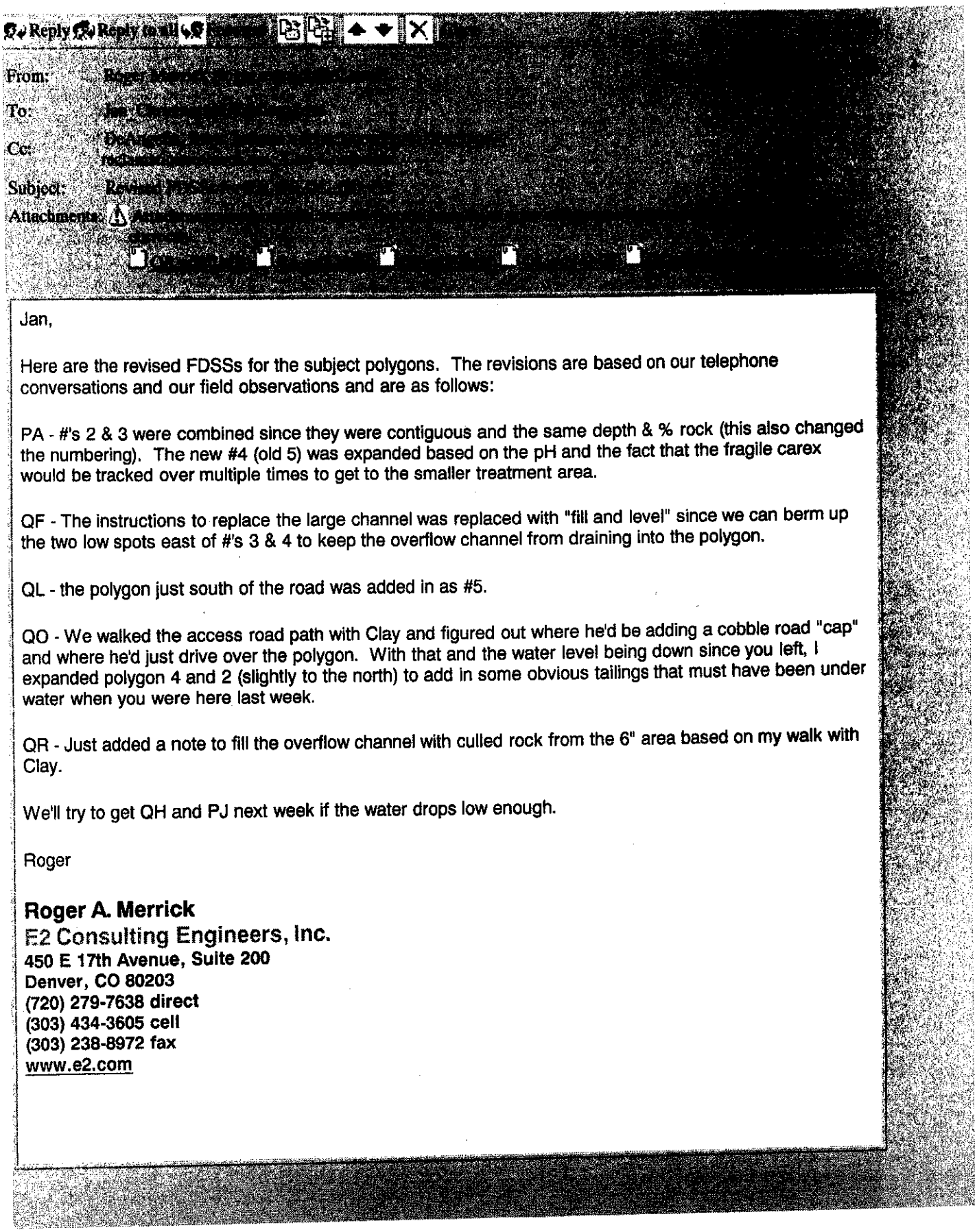
Bank Stabilization Location

Depth of mine waste (inches)

Note: Figure not to scale.
Locations and streambank lengths estimated.
All treatment locations will be confirmed and marked prior to initiation of construction.

	Depth	Rock
1	24"	15% Yellow
2	12"	10% Pink
3	18"	0% White
4	30"	0% Green
5	12"	20% Red
6	30"	0% Blue
7	12"	10% Pink
8	24"	0% Orange
9	18"	0% Red
10	12"	0% Blue

.....Channel. Treat soils, fill in channel, and level ground.



Reply Reply to all

From:

To:

Cc:

Subject:

Attachments:

Jan,

Here are the revised FDSSs for the subject polygons. The revisions are based on our telephone conversations and our field observations and are as follows:

PA - #'s 2 & 3 were combined since they were contiguous and the same depth & % rock (this also changed the numbering). The new #4 (old 5) was expanded based on the pH and the fact that the fragile carex would be tracked over multiple times to get to the smaller treatment area.

QF - The instructions to replace the large channel was replaced with "fill and level" since we can berm up the two low spots east of #'s 3 & 4 to keep the overflow channel from draining into the polygon.

QL - the polygon just south of the road was added in as #5.

QO - We walked the access road path with Clay and figured out where he'd be adding a cobble road "cap" and where he'd just drive over the polygon. With that and the water level being down since you left, I expanded polygon 4 and 2 (slightly to the north) to add in some obvious tailings that must have been under water when you were here last week.

QR - Just added a note to fill the overflow channel with culled rock from the 6" area based on my walk with Clay.

We'll try to get QH and PJ next week if the water drops low enough.

Roger

Roger A. Merrick
E2 Consulting Engineers, Inc.
450 E 17th Avenue, Suite 200
Denver, CO 80203
(720) 279-7638 direct
(303) 434-3605 cell
(303) 238-8972 fax
www.e2.com

SURVEYOR'S CERTIFICATE

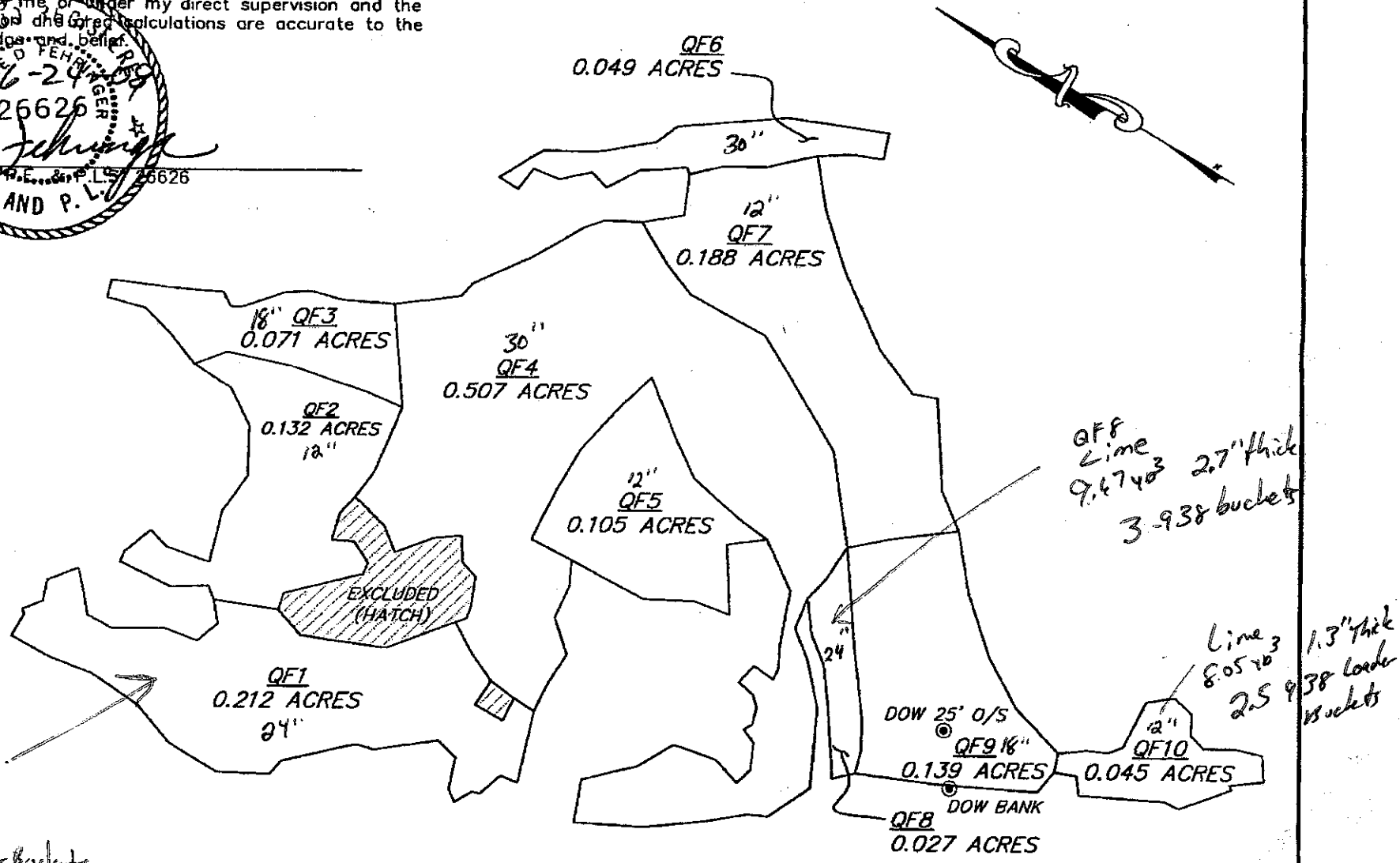
I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and the related calculations are accurate to the best of my knowledge and belief.

COLORADO LICENSED DUANE D. FEHRINGER 26626 P.E. AND P.L.S.

6-24-99

Duane D. Fehringer P.E. & P.L.S. 26626

977
25
82



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QF

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=80'
DATE ISSUED:	8-23-99
PROJECT NO.	08-0032
EXHIBIT	

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **QF-1**

POLYGON CHARACTERISTICS

Net Application Rate	30	tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00%	%
% Rock	15.00%	% ✓
Total Area	0.212	acres ✓

Average Depth Calculation

Depth (inches) ✓		% of Total Area		
24	X	100.00%	=	24
	X		=	
	X		=	
	X		=	
		Average Depth		24 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1 =	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5 =	0.04%	(B)
Percent < 60 mesh	99.92%	X 1 =	99.92%	(C)
Lime Reactivity		=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20%	%
Percent Moisture		29.00%	%
Bulk Density	0.75 grams/cc	= 0.63	tons/cy

CALCULATE LIME RATE

$$\text{Lime Rate} = \frac{\text{Net Application Rate} * (1 + \text{Mixing Factor}/100) * (1 - \%\ \text{Rock}/100) * \text{Depth}}{(\text{Lime Reactivity}) * (\text{Calcium Carbonate Equivalence}/100) * (1 - \%\ \text{Moisture}/100)}$$

Lime Rate = 192.33 tons/acre = 40.77 tons total

Lime Rate = 304.27 cy/acre = 64.51 cy total

Depth of Lime to be Applied = 2.3 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-10-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **QF-2**

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	10.00% % ✓
Total Area	0.132 acres ✓

Average Depth Calculation

Depth (inches) ✓		% of Total Area		
12	X	100.00%	=	12
	X		=	
	X		=	
	X		=	
		Average Depth		12 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		29.00% %	
Bulk Density	0.75 grams/cc	= 0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 101.82 tons/acre = 13.44 tons total

Lime Rate = 161.09 cy/acre = 21.26 cy total

Depth of Lime to be Applied = 1.2 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-10-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **QF-3**

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	0.00% %
Total Area	0.071 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
18	X	100.00%	=	18
	X		=	
	X		=	
	X		=	
		Average Depth		18 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1 =	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5 =	0.04%	(B)
Percent < 60 mesh	99.92%	X 1 =	99.92%	(C)
Lime Reactivity		=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		29.00% %	
Bulk Density	0.75 grams/cc	= 0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate =	169.70 tons/acre	=	12.05 tons total
Lime Rate =	268.48 cy/acre	=	19.06 cy total
		Depth of Lime to be Applied =	2.0 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-10-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: QF-4

POLYGON CHARACTERISTICS

Net Application Rate	30	tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00%	%
% Rock	0.00%	%
Total Area	0.507	acres

Average Depth Calculation

Depth (inches)		% of Total Area		
30	X	100.00%	=	30
	X		=	
	X		=	
	X		=	
		Average Depth		30 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1 =	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5 =	0.04%	(B)
Percent < 60 mesh	99.92%	X 1 =	99.92%	(C)
Lime Reactivity		=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20%	%
Percent Moisture		29.00%	%
Bulk Density	0.75 grams/cc =	0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 282.83 tons/acre = 143.40 tons total

Lime Rate = 447.46 cy/acre = 226.86 cy total

Depth of Lime to be Applied = 3.3 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-10-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **QF-5**

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	20.00% %
Total Area	0.105 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
12	X	100.00%	=	12
	X		=	
	X		=	
	X		=	
		Average Depth		12 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1 =	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5 =	0.04%	(B)
Percent < 60 mesh	99.92%	X 1 =	99.92%	(C)
Lime Reactivity		=	99.96%	A+B+C

Calcium Carbonate Equivalence			82.20% %
Percent Moisture			29.00% %
Bulk Density	0.75 grams/cc	=	0.63 tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate =	90.51 tons/acre	=	9.50 tons total
Lime Rate =	143.19 cy/acre	=	15.03 cy total
		Depth of Lime to be Applied =	1.1 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-10-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **QF-6**

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	0.00% %
Total Area	0.049 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
30	X	100.00%	=	30
	X		=	
	X		=	
	X		=	
		Average Depth		30 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1 =	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5 =	0.04%	(B)
Percent < 60 mesh	99.92%	X 1 =	99.92%	(C)
Lime Reactivity		=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		29.00% %	
Bulk Density	0.75 grams/cc	= 0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth / (Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 282.83 tons/acre = 13.86 tons total

Lime Rate = 447.46 cy/acre = 21.93 cy total

Depth of Lime to be Applied = 3.3 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-10-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **QF-7**

POLYGON CHARACTERISTICS

Net Application Rate	30	tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00%	%
% Rock	10.00%	%
Total Area	0.188	acres

Average Depth Calculation

Depth (inches)		% of Total Area		
12	X	100.00%	=	12
	X		=	
	X		=	
	X		=	
		Average Depth		12 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20%	%
Percent Moisture		29.00%	%
Bulk Density	0.75 grams/cc =	0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = (Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth) / ((Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100))

Lime Rate =	101.82 tons/acre	=	19.14 tons total
Lime Rate =	161.09 cy/acre	=	30.28 cy total
		Depth of Lime to be Applied =	1.2 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-10-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **QF-8**

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	0.00% %
Total Area	0.027 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
24	X	100.00%	=	24
	X		=	
	X		=	
	X		=	
		Average Depth		24 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1 =	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5 =	0.04%	(B)
Percent < 60 mesh	99.92%	X 1 =	99.92%	(C)
Lime Reactivity		=	99.96%	A+B+C

Calcium Carbonate Equivalence			82.20% %
Percent Moisture			29.00% %
Bulk Density	0.75 grams/cc	=	0.63 tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate =	226.27 tons/acre	=	6.11 tons total
Lime Rate =	357.97 cy/acre	=	9.67 cy total
		Depth of Lime to be Applied =	2.7 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-10-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **QF-9**

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	0.00% %
Total Area	0.139 acres
Average Depth Calculation	

Depth (inches)		% of Total Area		
18	X	100.00%	=	18
	X		=	
	X		=	
	X		=	
		Average Depth		18 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		29.00% %	
Bulk Density	0.75 grams/cc	= 0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate =	169.70 tons/acre	=	23.59 tons total
Lime Rate =	268.48 cy/acre	=	37.32 cy total
		Depth of Lime to be Applied =	2.0 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-10-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **QF-10**

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	0.00% %
Total Area	0.045 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
12	X	100.00%	=	12
	X		=	
	X		=	
	X		=	
		Average Depth		12 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1 =	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5 =	0.04%	(B)
Percent < 60 mesh	99.92%	X 1 =	99.92%	(C)
Lime Reactivity		=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		29.00% %	
Bulk Density	0.75 grams/cc =	0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 113.13 tons/acre = 5.09 tons total

Lime Rate = 178.99 cy/acre = 8.05 cy total

Depth of Lime to be Applied = 1.3 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-10-09

Lime Delivery

QF
1 - 64.51 cy @ 2.3" → 15.5 950 buckets
8 - 9.67 cy @ 2.7" → 3 938 buckets
10 - 8.05 cy @ 1.3" → 2.5 938 buckets

QG
1 - 7.49 cy @ 0.6" → 2.5 938 buckets
2 - 109.18 cy @ 3.3" → 25.5 950 buckets
3 - 23.98 cy @ 1.3" → 5.5-6.0 950 buckets

Access roads - QK / PJ

Compost Delivery
- QN
1, 2, & 3 → 352.52 cy → 2.9" → 82.94 → 83 950 buckets
4 → 4.4 cy → 1.2" → 1 950 bucket

FILE MEMO

Regarding: Lime Compost (Fertilizer) Mulch Seed Other

Fluvial Deposit ID: QF **Irrigated Meadow ID:** _____

Acreage: See Below

Target Application: See Below

Amount Applied: Confirmed 0:45:00; Hand Broadcasted weighed amounts using hanging scale JMD

Comments:

				Reload
QF1:	0.212 x 153 lbs/acre x 4(6-inch) ≈ 130 lbs ≈	2.6 bags	→	2.5 bags
QF2:	.132 x 153 x 2(6-inch) =	40 lbs = 0.8 bags ✓	→	40 lbs
QF3:	0.071 x 153 x 3(6-inch) =	32.6 lbs = 0.6 bags ✓	→	32.5 lbs
QF4:	.507 x 153 x 5(6-inch) =	387.9 lbs = 7 3/4 bags	→	7 3/4 bags
QF5:	.105 x 153 x 2(6-inch) =	32 lbs = 0.6 bags	→	32 lbs
QF6:	.049 x 153 x 5(6-inch) =	37.5 lbs = 3/4 bag	→	37 lbs
QF7:	~~.188 x 153 x 2(6-inch)~~ =	57.5 = 1.1 bag	→	1 bag
QF8:	.027 x 153 x 4(6-inch) =	16.8 lbs = 1/3 bag	→	1/3 bag

[signature]
Signature

08-04-09
Date

QF9:	.139 x 153 x 3(6-inch) =	64 lbs = 1.3 bags	→	1.3 bags
QF10:	.045 x 153 x 2(6-inch) =	13.8 lbs = 1/3 bag	→	14 lbs

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: QF

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	HCl reaction
QF10 0-6"	7.0	7.0	7.0	0%	Yes
QF10 6-12"	7.0	7.0	7.0	0%	Yes
QF9 0-6"	7.0	7.0	7.5	0%	Yes
QF9 6-12"	7.0	7.0	7.0	0%	Yes
QF9 12-18"	7.0	7.0	6.5	0%	Yes
Dup QF9 6-12"	7.0	7.0	6.5	0%	Yes
QF8 0-6"	7.0	7.0	7.0	0%	Yes
QF8 6-12"	7.0	7.0	7.0	0%	Yes
QF8 12-18"	7.0	7.0	7.0	0%	Yes
QF8 18-24"	7.0	7.0	7.0	0%	Yes

Name/Signature: Robert Bruno Date: 8-7-09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record QF

Fluvial Deposit/Irrigated Meadows Polygon:

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
QF 10 0-6"	Tare @ 0.0	20.0	20.0	6.9
QF 10 6-12"		20.0	20.0	6.5 6.6
QF9 0-6"		20.0	20.0	7.0
QF9 6-12"		20.0	20.2	6.8
QF9 12-18"		20.0	20.1	6.8
Dup QF9 6-12"		20.1	20.0	6.9
QF8 0-6"		20.0	20.1	6.7
QF8 6-12"		20.0	20.0	6.6
QF8 12-18"		20.3	20.3	6.9
QF8 18-24"		20.0	20.0	6.5

Name/Signature: Robert Brown

Date: 8.7.09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record QF

Fluvial Deposit/Irrigated Meadows Polygon:

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
QF-5 0-6	Tare	17.1	17.8	7.1
QF-5 6-12	"	15.9	15.7	7.0

08-10-09

Name/Signature: Joh G. Ahl **Date:** 08-10-09

1 Point Calibration pH Buffer 7.0

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: QF

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	HCl reaction
QF2 0-6"	7.0	7.0	7.5	0%	yes
QF2 6-12"					
QF3 0-6"					
QF3 6-12"					
QF3 12-18"					
QF7 0-6"					
QF7 6-12"					

TCTS

Name/Signature: Rob S

Date: 8-10-09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record QF

Fluvial Deposit/Irrigated Meadows Polygon: _____

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
QF2 0-6"	Tare@0.0	20.0	20.0	8.1
QF2 6-12"		20.3	20.5	8.0
QF3 0-6"		20.0	20.1	6.9
QF3 6-12"		20.1	20.4	6.9
QF3 12-18"		20.0	20.0	7.3
QF7 0-6"		20.0	20.0	7.4
QF7 6-12"		20.0	20.0	7.5

Name/Signature: _____ **Date:** 8-10-09

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: QF-1

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	HCl Reaction?
QF 1-1 0-6	7.3	7.0	7.5	None	Yes
QF1-1 6-12	7.3	7.0	7.5	"	Yes
QF1-1 12-18	7.5			"	Yes
QF1-1 18-24	7.5			"	Yes
QF1-2 0-6	7.5			"	Yes
QF1-2 6-12	7.5			"	Yes
QF1-2 12-18	7.5			"	Yes
QF1-2 18-24	7.5			"	Yes

Name/Signature: [signature]

Date: 08-10-09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record QF-1

Fluvial Deposit/Irrigated Meadows Polygon:

	Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH	
QF1-1	0-6	Tare (6)	16.2	15.9	6.9	
QF1-1	6-12		15.8	15.5	6.9	
QF1-1	6-12 (Dupe)		17.0	17.7	6.9	
QF1-1	12-18		15.5	16.1	7.0	08-11-09
QF1-1	18-24		16.0	16.8	6.9	Re-Sample same Bag
QF1-2	0-6		15.3	15.0	6.9	6.8
QF1-2	6-12		17.9	16.2	6.5	6.8
QF1-2	12-18		17.5	16.5	6.5	6.7
QF1-2	18-24		18.0	17.7	6.5	

RTB

Name/Signature: RDF Brown **Date:** 8-10-09

2 point calibration pH Buffers 4.0 & 7.0

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: QF 4

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	HCl reaction
QF4 0-6"	7.0	7.0	7.0	0%	Yes
QF4 6-12"					
QF4 12-18"					
QF4 18-24"					
QF4 24-30"					
Replicate QF4 24-30"					

BR

Name/Signature: Rob B

Date: 8-11-09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record QF6 RB

Fluvial Deposit/Irrigated Meadows Polygon:

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
QF6 0-6"	Tare @ 0.0	20.2	20.0	QF6 Duplicate 6.5
QF6 6-12"	↓	20.0	20.0	~~6.6~~ 6.6
QF6 12-18"		22.4	22.4	6.7
QF6 18-24"		21.0	21.0	6.7
QF6 24-30"		21.0	21.4	6.4
		RB		

Name/Signature: RobBrown **Date:** 8-11-09

pH meter calibrated with known standards by Robbie Brown. RobBrown 8-11-09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record QF 4

Fluvial Deposit/Irrigated Meadows Polygon:

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
QF4 0-6"	Tare@0.0	20.0	20.0	6.6
QF4 6-12"	↓	20.0	20.0	6.9
QF4 12-18"		20.1	20.1	6.5
QF4 18-24"		20.0	20.0	6.5
QF4 24-30"		20.1	20.1	6.1
Dup QF4 24-30"		20.0	20.0	6.6

Verified OK by R. Mantle 08-13-09

RB

Name/Signature: RobBrown **Date:** 8-11-09

pH meter calibrated by Robbie Brown with known standards on 8-11-09 at 1250.

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **QF 1 through 10**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	0%	
Treatment Area	1.475	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 269.99 tons/acre = 398.24 tons

Compost Rate = 393.00 cy/acre = 579.68 cy

Depth of Compost to be Applied = 2.9 inches

Signature: _____

Date: 6/26/09

Signature: _____

Date: 07-02-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **QF 1 through 10**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	0%	
Treatment Area	1.475	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC * depth * 1000 tons/acre/6" * (1-\%rock/100)}}{\text{Compost \% OC * (1- \%Moisture/100)}}$$

Compost Rate = 269.99 tons/acre = 398.24 tons

Compost Rate = 393.00 cy/acre = 579.68 cy

Depth of Compost to be Applied = 2.9 inches

Signature: _____

Date: 6/26/09

Signature: _____

Date: 07-07-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **QF 1 through 10**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	0%	
Treatment Area	1.475	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre}/6" * (1-\%\text{rock}/100)}{\text{Compost \% OC} * (1-\%\text{Moisture}/100)}$$

Compost Rate = 269.99 tons/acre = 398.24 tons

Compost Rate = 393.00 cy/acre = 579.68 cy

Depth of Compost to be Applied = 2.9 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-02-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **QF 1 through 10**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	0%	
Treatment Area	1.475	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate =	269.99 tons/acre	=	398.24 tons
Compost Rate =	393.00 cy/acre	=	579.68 cy
	Depth of Compost to be Applied =		2.9 inches

Signature: _____

Date: 6/26/09

Signature: _____

Date: 07-02-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **QF 1 through 10**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	0%	
Treatment Area	1.475	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate =	269.99 tons/acre	=	398.24 tons
Compost Rate =	393.00 cy/acre	=	579.68 cy
		Depth of Compost to be Applied =	2.9 inches

Signature: _____

Date: 6/26/09

Signature: _____

Date: 07-02-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **QF 1 through 10**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	0%	
Treatment Area	1.475	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon		15.79%	%
Percent Moisture		29.63%	%
Wet Bulk Density	=	0.687	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate =	269.99 tons/acre	=	398.24 tons
Compost Rate =	393.00 cy/acre	=	579.68 cy
	Depth of Compost to be Applied =		2.9 inches

Signature: _____

Date: 6/26/09

Signature: _____

Date: 07-02-09

Polygon Completion Form
Fluvial Deposits

Fluvial Deposit Polygon Name/ID: QG

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
07-30-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.3. **Comments/Deviations:**
08-03-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.4. Began Pre-Till 07-30-09 **Comments/Deviations:**
08-17-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Section 3.6A through 3.6E. Apply Lot 08-07; Begin Incorp 08-13-09 **Comments/Deviations:**
09-18-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.6F through 3.6I. Stover Compost Application 08-17-09 **Comments/Deviations:** Stover Compost Incorp on 09-03-09
N/A	N/A	Completed replacement of erosion channels in accordance with Specification Section 3.7. **Comments/Deviations:**
Plus Overseeding 10-28-09	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.8. **Comments/Deviations:** Seedbed prep while cultivating compost incorp. Seeded Overseeding 10-15-09 plus Seeded 10-29-09
10-28-09	✓	Completed mulching in accordance with Specification Section 3.9. **Comments/Deviations:** Mulched & Crimped 10-28-09 plus Mulched & Crimped 10-28-09
NA	NA	Completed reinstallation of fencing in accordance with Specification Section 3.10. **Comments/Deviations:**
11-03-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.14. **Comments/Deviations:**

Quantity of Work Estimated in Proposal: NA - Addressed in Invoicing

Quantity of Work Performed:

E. Cahill 11-06-09
Signature of Subcontractor Date

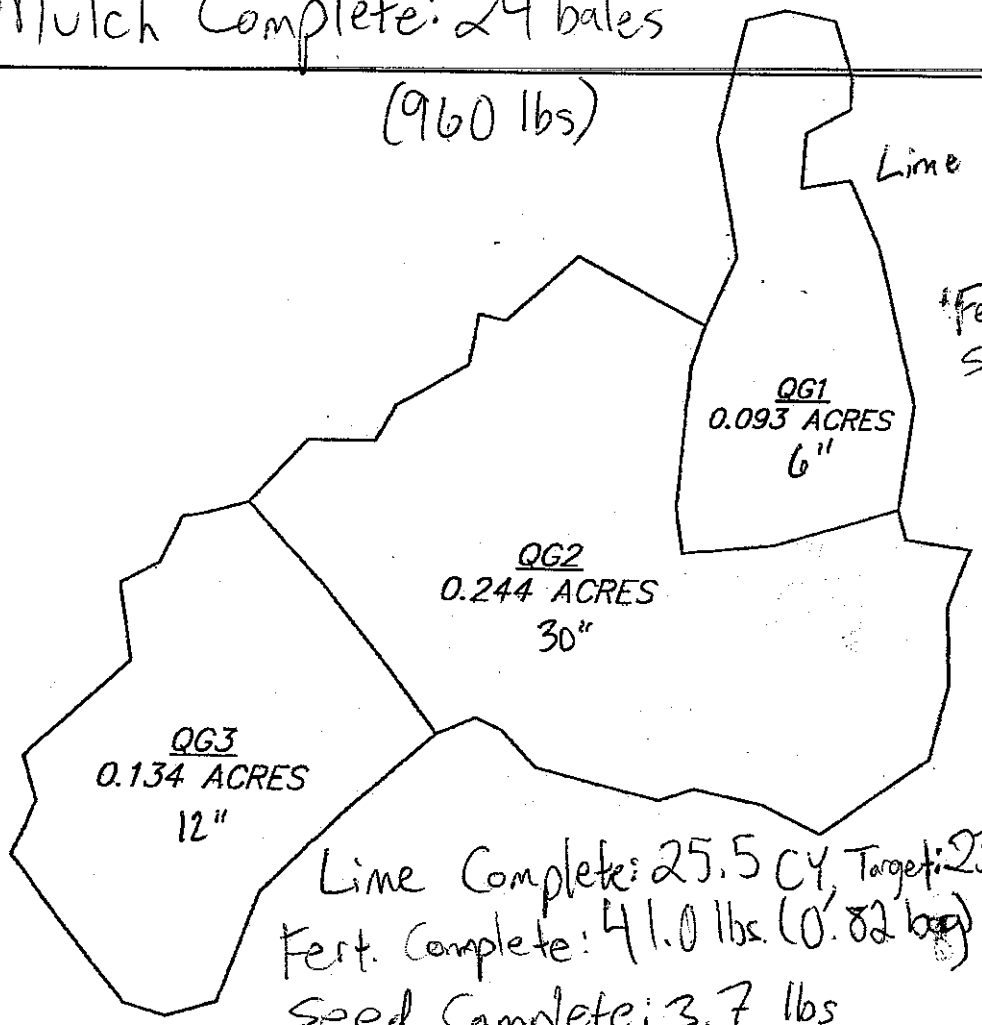
[signature] 11-03-09
Signature of Contractor Date

~~COMPLETE~~

*Pretilled

Mulch Complete: 24 bales
(960 lbs)

~~Compost Complete (All areas) : 113.5 tons,~~
Target: 113.72 tons



Lime Complete: 8.12 CY
Target: 7.49 CY
Fert. Complete: 14.33 lbs. (0.28 bag)
Seed Complete: 2.6 lbs

Lime Complete: 110.5 CY Target: 109.18 CY
Fert. Complete: 186.66 lbs. (3.7 bags)
Seed Complete: 6.7 lbs

Lime Complete: 25.5 CY, Target: 23.98 CY
Fert. Complete: 41.0 lbs. (0.82 bag)
Seed Complete: 3.7 lbs

SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO DUANE D. FEHRINGER 6-2 26626 L. AND P. L. S.

Duane D. Fehringer P.E. and P.L.S. 26626

J:\projects\80032\dwg\OU-11 Areas.dwg

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
40881 US HWY 6&24, SUITE 203 BOX 978 AVON, CO 81620 PH: (970)949-2072
8351 S. REVERE PARKWAY, SUITE 106 CENTENNIAL, CO 80111 PH: (303)948-4220

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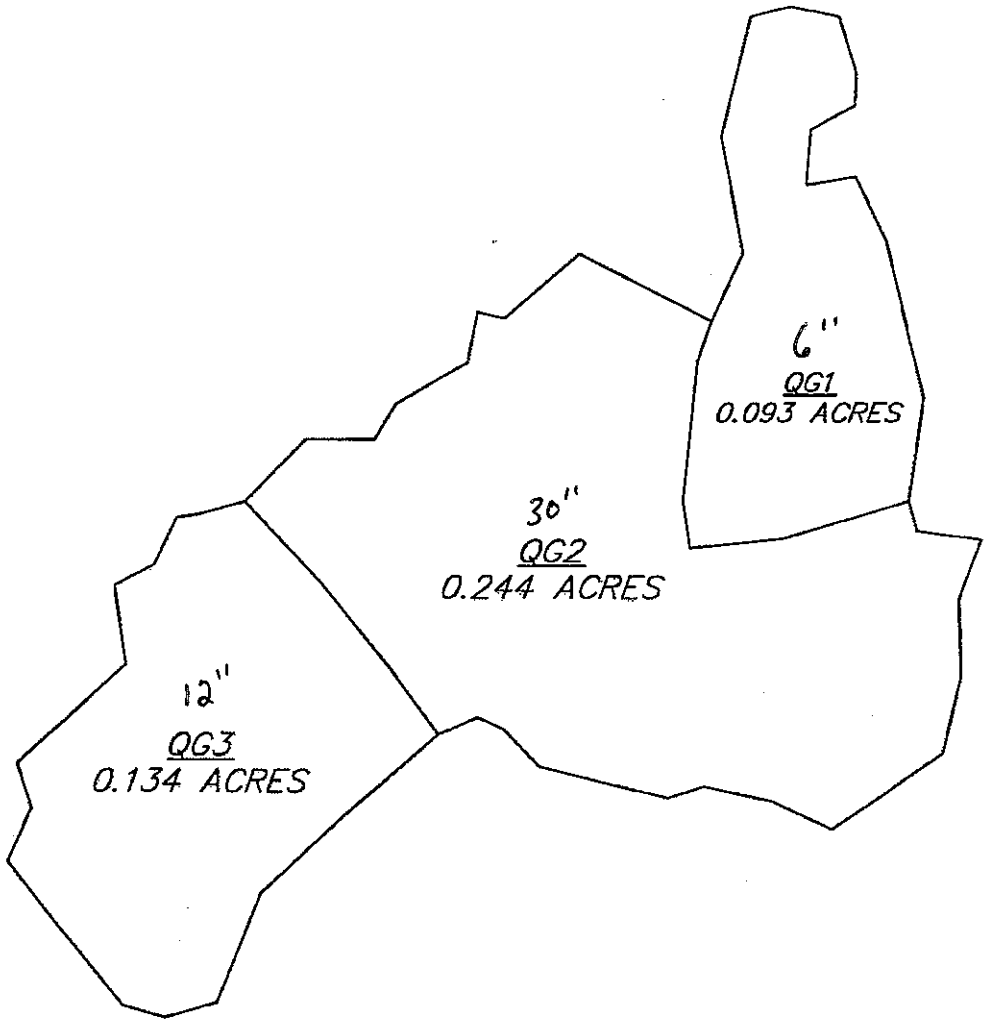
QG
CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=40'
DATE ISSUED:	6-23-09
PROJECT NO.	08-0032
EXHIBIT	



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COLORADO REGISTERED DUANE D. FEHRINGER 6-2 26626 L. AND P. L.

Duane D. Fehringer P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING

Civil Engineers & Surveyors

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QG

CALIFORNIA GULCH CERCLA SITE

OPERABLE UNIT NUMBER 11

LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=40'
DATE ISSUED:	6-23-09
PROJECT NO.	08-0032
EXHIBIT	

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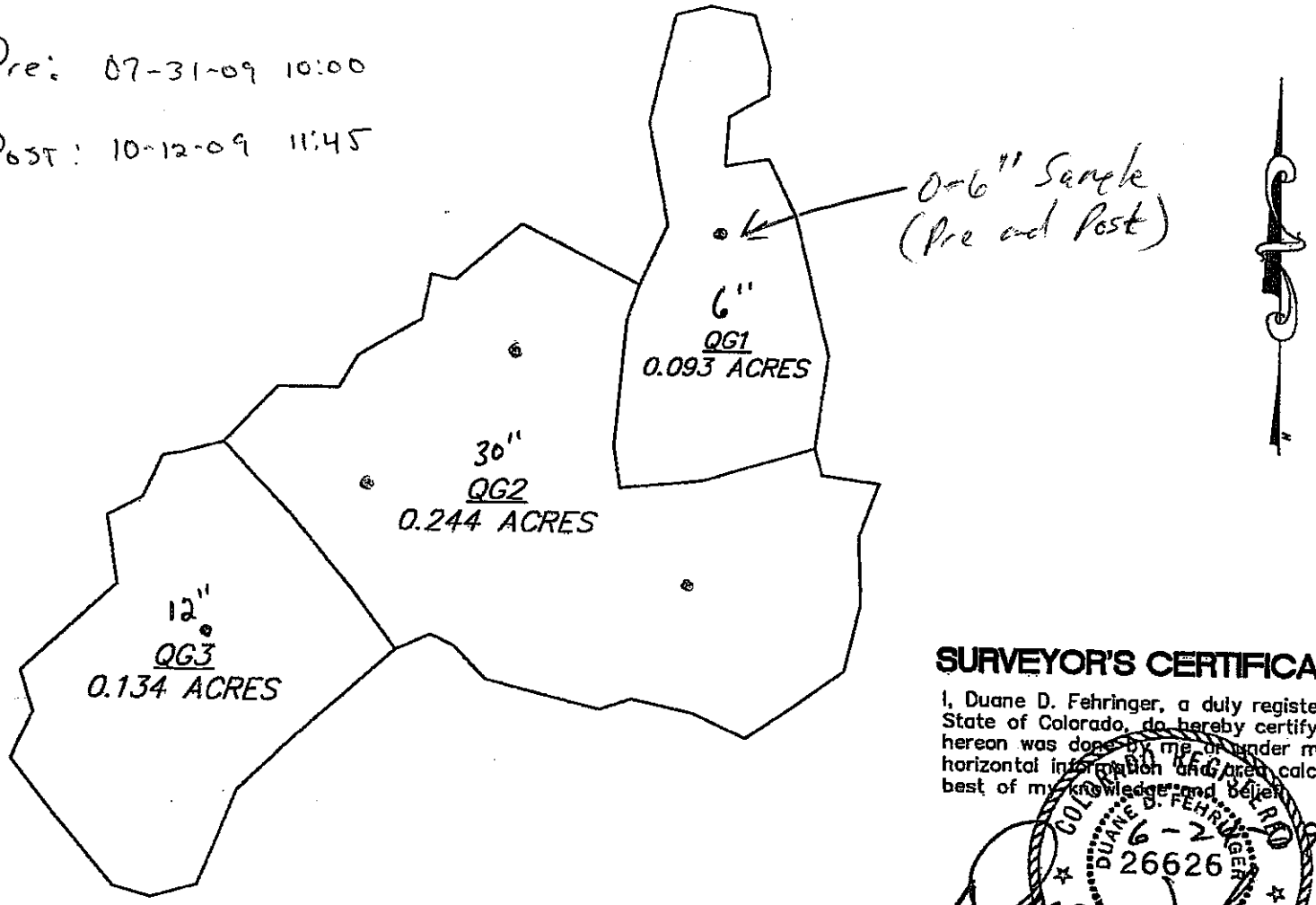
Pre- and Post-Remediation Sampling Locations

- 5 point Composite (0-12" except QG1)

Pre: 07-31-09 10:00

Post: 10-12-09 11:45



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COLORADO DUANE D. FEHRINGER 6-2 26626 L. AND P.L.

Duane D. Fehringer, Colo. L.S. or P.L.S. 26626

J:\projects\80032\dwg\QU-11 Areas.dwg

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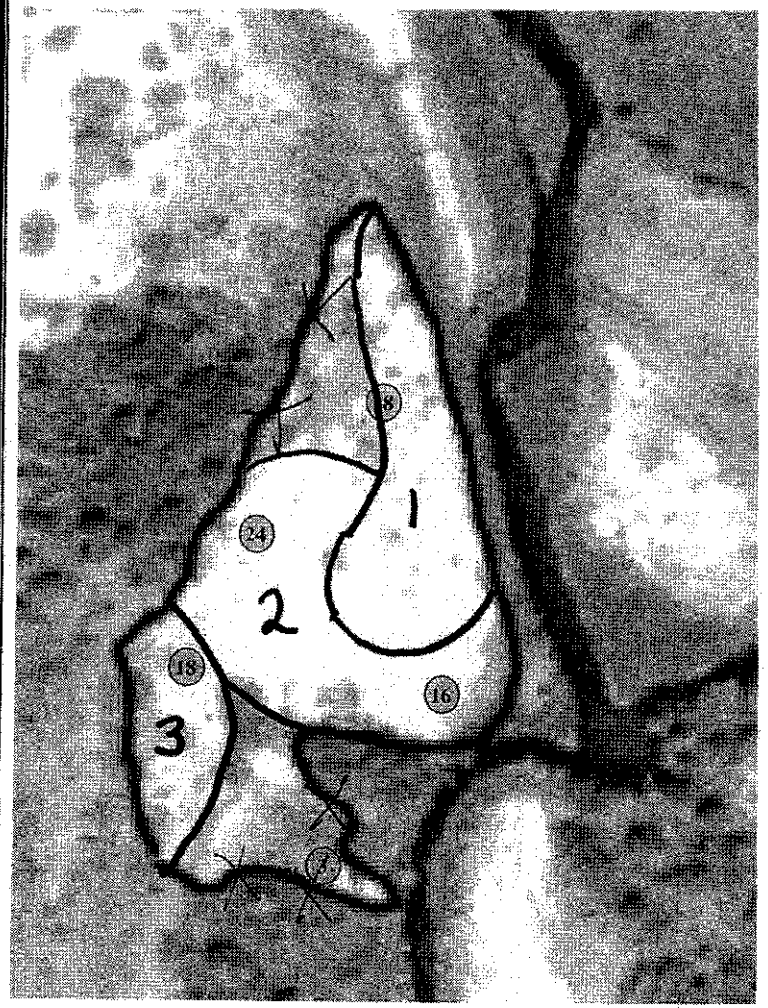
QG

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=40'
DATE ISSUED:	6-23-09
PROJECT NO.	08-0032
CHKD BY	



FLUVIAL DEPOSIT QG

Bank Stabilization

None.

BMPs near streambanks.

1	Treat to 6"	10% Rock - white
2	30"	0% - orange
3	12"	0% - yellow

Fluvial Deposit Outline

Bank Stabilization Location

(15) Depth of mine waste (inches)

Note: Figure not to scale.
Locations and streambank lengths estimated.
All treatment locations will be confirmed and marked prior to initiation of construction.

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: QG-1

POLYGON CHARACTERISTICS

Net Application Rate				30	tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)				10.00%	%
% Rock				10.00%	%
Total Area				0.093	acres
Average Depth Calculation					

Depth (inches)		% of Total Area		
6	X	100.00%	=	6
	X		=	
	X		=	
	X		=	
		Average Depth		6 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence			82.20%	%
Percent Moisture			29.00%	%
Bulk Density	0.75 grams/cc	=	0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth / (Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 50.91 tons/acre = 4.73 tons total

Lime Rate = 80.54 cy/acre = 7.49 cy total

Depth of Lime to be Applied = 0.6 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-28-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **QG-2**

POLYGON CHARACTERISTICS

Net Application Rate	30	tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00%	%
% Rock	0.00%	% ✓
Total Area	0.244	acres ✓

Average Depth Calculation

Depth (inches)		% of Total Area		
30 ✓	X	100.00%	=	30
	X		=	
	X		=	
	X		=	
		Average Depth		30 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20%	%
Percent Moisture		29.00%	%
Bulk Density	0.75 grams/cc	= 0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
/ (Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 282.83 tons/acre = 69.01 tons total

Lime Rate = 447.46 cy/acre = 109.18 cy total

Depth of Lime to be Applied = 3.3 inches

Signature: [signature]

Date: 6/26/07

Signature: [signature]

Date: 07-28-07

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **QG-3**

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	0.00% % ✓
Total Area	0.134 acres ✓

Average Depth Calculation

Depth (inches)		% of Total Area		
12 ✓	X	100.00%	=	12
	X		=	
	X		=	
	X		=	
		Average Depth		12 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1 =	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5 =	0.04%	(B)
Percent < 60 mesh	99.92%	X 1 =	99.92%	(C)
Lime Reactivity		=	99.96%	A+B+C

Calcium Carbonate Equivalence			82.20% %
Percent Moisture			29.00% %
Bulk Density	0.75 grams/cc	=	0.63 tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate =	113.13 tons/acre	=	15.16 tons total
Lime Rate =	178.99 cy/acre	=	23.98 cy total
		Depth of Lime to be Applied =	1.3 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-28-09

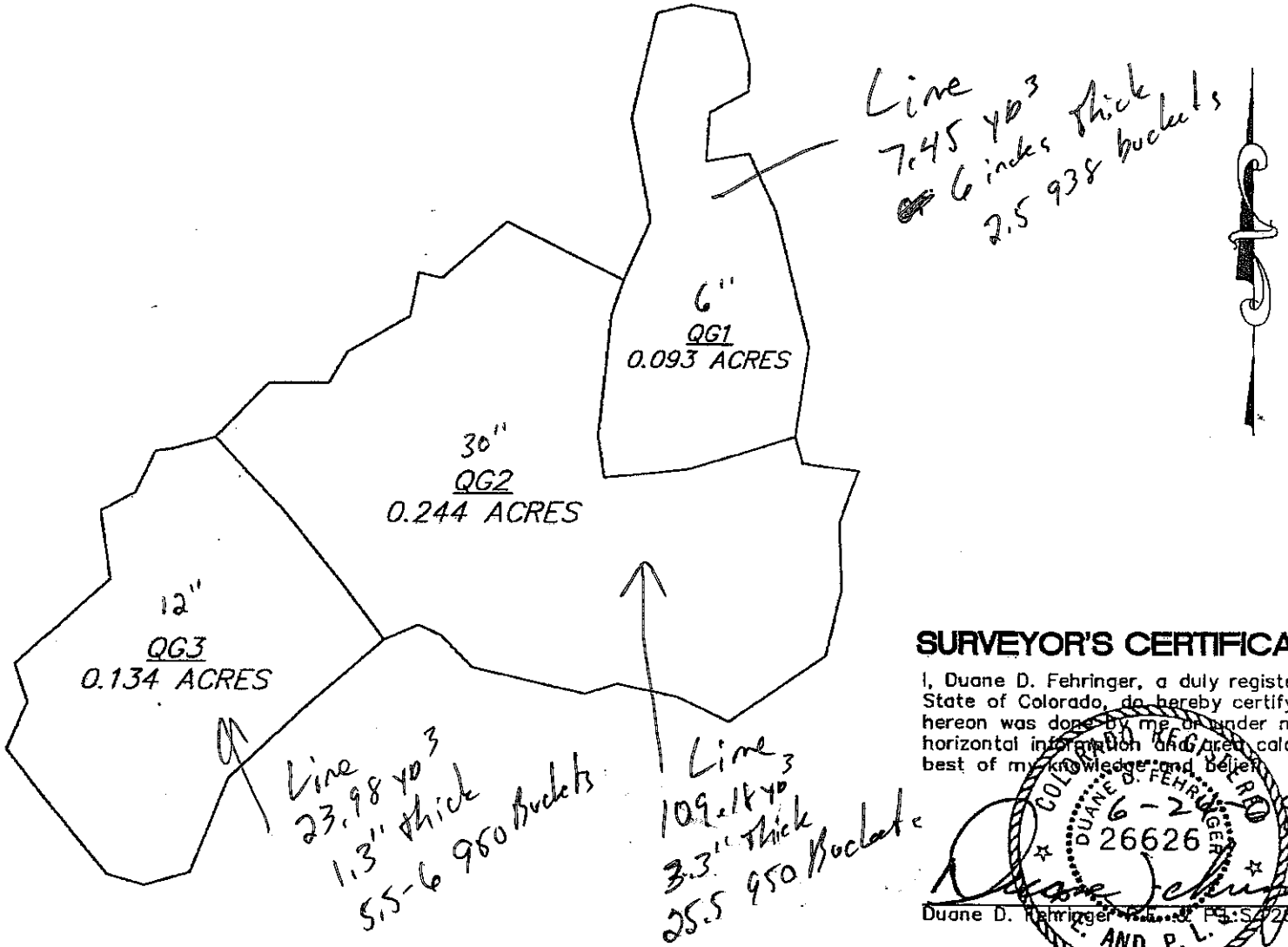
Lime Delivery

QF
- 1 - 64.51 cy @ 2.3" → 15.5 950 buckets
- 8 - 9.67 cy @ 2.7" → 3 938 buckets
- 10 - 8.05 cy @ 1.3" → 2.5 938 buckets

QG
- 1 - 7.49 cy @ 0.6" → 2.5 938 buckets
- 2 - 109.18 cy @ 3.3" → 25.5 950 buckets
- 3 - 23.98 cy @ 1.3" → 5.5-6.0 950 buckets

Access roads - QK / PJ

Compost Delivery
- QN
  - 1, 2, & 3 → 352.52 cy → 2.9" → 82.94 → 83 950 buckets
  - 4 → 4.4 cy → 1.2" → 1 950 bucket



SURVEYOR'S CERTIFICATE

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COLORADO REGISTERED DUANE D. FEHRINGER 6-23-09 26626 L. AND P. L. S.

Duane D. Fehringer P.E. & P.L.S. 26626

J:\projects\800325\dwg\QU-11 Areas.dwg

Inter-Mountain ENGINEERING

Civil Engineers & Surveyors

40881 US HWY 6&24, SUITE 103 BOX 978 AVON, CO 81620 PH: (970)949-5072

8551 S. REVERE PARKWAY, SUITE 106 CENTENNIAL, CO 80111 PH: (303)938-6220

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QG

CALIFORNIA GULCH CERCLA SITE

OPERABLE UNIT NUMBER 11

LAKE COUNTY, COLORADO

DRAWN BY	SPF
SCALE	1"=40'
DATE ISSUED	6-23-09
PROJECT NO.	08-0032
COMMENT	

FILE MEMO

Regarding: Lime Compost (Fertilizer) Mulch Seed Other

Fluvial Deposit ID: QG **Irrigated Meadow ID:** _____

Acreage: Below

Target Application: Below

Amount Applied: Observed weighing in field during application

Comments:

QG1: 0.093 acres × 153 lbs/acre × 1 (6-inch) = 14.2 lbs

QG2: 0.244 acres × " " × 5 (6-inch) = 187 lbs ≈ 3.7 bags

QG3: 0.134 acres × " " × 2 (6-inch) = 41 lbs

Continued 02:45:10 Hel Broadcasted

Accrox Target amounts

Signature

08-07-09

Date

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: QG

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	HCl reaction
QG3 0-6"	6.8	6.5	7.0	0%	Yes
QG3 6-12"	6.8	6.5	7.0	0%	
QG2 0-6"	6.5	6.0	7.0	0%	
QG2 6-12"	6.5	6.0	7.0	0%	
QG2 12-18"	6.5	6.0	7.0	0%	
QG2 18-24"	6.5	6.0	7.0	0%	
Dup QG2 18-24"	6.5	6.0	7.0	0%	
QG2 24-30"	6.5	6.0	7.0	0%	
QG1 0-6"	6.5	6.5	7.0	0%	Yes

RTB

Name/Signature: RoTBrown

Date: 8-17-09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record QG

Fluvial Deposit/Irrigated Meadows Polygon:

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
QG 3 0-6"	Tare @ 0.0	20.0	20.6	7.6
QG 3 6-12"		20.0	20.1	7.3
QG 2 0-6"		20.0	20.1	7.0
QG 2 6-12"		20.0	20.0	6.9 RB
QG 2 12-18"		20.0	20.0	6.7
QG 2 18-24"		20.0	20.0	7.1
Dupe QG 2 18-24"		20.0	20.0	6.9
QG 2 24-30"		20.0	20.0	7.1
QG 1 0-6"		20.0	20.1	7.3

RB

Name/Signature: RobBrown **Date:** 8-17-09

pH meter was calibrated using Known Standards on 8-17-09 at 0830 by Robbie Brown

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: QG-1

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	6	inches
% Rock	10%	
Treatment Area	0.093	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 121.50 tons/acre = 11.30 tons

Compost Rate = 176.85 cy/acre = 16.45 cy

Depth of Compost to be Applied = 1.3 inches

Signature: [signature]

Date: 6/26/07

Signature: [signature]

Date: 07-07-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **QG 2 & 3 combined**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	0%	
Treatment Area	0.378	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 269.99 tons/acre = 102.06 tons

Compost Rate = 393.00 cy/acre = 148.55 cy

Depth of Compost to be Applied = 2.9 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-07-09

FD Seed Mix @ 83.1% PLS (Add 16.9%)

FILE MEMO

Regarding: Lime Compost Fertilizer Mulch (Seed) Other

Fluvial Deposit ID: QC **Irrigated Meadow ID:** ~~_____~~

Acreage: .134 + .244 + .093 = 0.471 acres

Target Application: 0.471 x 11.44 lbs/Acre x 2 (Double Rate) + 16.9% = 12.6 lbs

Amount Applied: ≈ 13 lbs

Comments:

PWT Confirmed FD Seed Mix Ticket; FES E weighed 2 13 lbs Seed; Broadcasted using flail spreader

Signature

10-28-09

Date

"L" Maint Kind: FLUVIAL DEPOSITS QG & PJ
East Side "M" Maint, Lot:2148593

Kind & Variety:	Pure%	Germ%	Origin:
WESTERN W/G, ROSANNA	48.85	90	SD
SLENDERW/G, SAN LUIS	30.86	95	WA
BLUEJOINT REEDGRASS	2.61	84	AK
CANADA BLUEGRASS, REUBENS	3.19	92	WA
TUFTED HAIRGRASS	1.73	85	CAN
REDTOP	1.20	91	CAN
PRAIRIE JUNEGRASS	1.18	92	WA
BALTIC RUSH	.83	87	CO
YARROW FLOWER	.81	90	OR
ROCKY MTN PENSTEMON	.31	88	CO

Crop: .05% Inert: 8.22% W[illegible]d: .16% Net Wt: 29.25#(24.31 PLS) 2.125 ACRES

Noxious Weed: None Found Test Date: 5/09

Remarks: FRONTIER ENVIRONMENTAL

Winfield Solutions PO Box 64589 St Paul, MN 55164

"C" Maint,

Polygon Completion Form
Fluvial Deposits

Fluvial Deposit Polygon Name/ID: QH

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
08-31-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.3. **Comments/Deviations:**
08-31-09 09-01-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.4. Pre-Till Simultaneous to Lime Placement & Fold-In w/315 Knife **Comments/Deviations:**
09-03-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Section 3.6A through 3.6E. Lime placed 08-31/09-01-09; Fertilized 09-02-09 **Comments/Deviations:** Begin Incorp w/Alluv 09-03-09
10-01-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.6F through 3.6I. Aged Compost 09-09-09 **Comments/Deviations:** Start Incorp. w/315 09-30-09
NA	NA	Completed replacement of erosion channels in accordance with Specification Section 3.7. **Comments/Deviations:**
10-22-09	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.8. **Comments/Deviations:** Seedbed Prep completed during compost incorp. Seeded 10-22-09, including berm along distrib. channel
10-23-09	✓	Completed mulching in accordance with Specification Section 3.9. **Comments/Deviations:** Fiber Blow Mulch 10-23-09 & Crimped with 325 Tracks 10-23
NA	NA	Completed reinstallation of fencing in accordance with Specification Section 3.10. **Comments/Deviations:**
11-03-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.14. **Comments/Deviations:**

Quantity of Work Estimated in Proposal: NA - Addressed in Invoicing

Quantity of Work Performed: NA

[signature] 11-06-09
Signature of Subcontractor Date

[signature] 11-03-09
Signature of Contractor Date

-COMPLETE-

Fert. Complete: 53.55 lbs

Lime complete: 31.32 CY target
31.87 CY applied

Seed Complete: 1.9 lbs.

Compost complete: 25.92 tons

QH1 30"
0.070 ACRES

Lime complete:
11.46 CY target / 11.68 CY applied
Fert. Complete: 24.48 lbs
Seed Complete: 2.2 lbs.

QH2 12"
0.080 ACRES

Lime complete: 6.98 CY target / 7.43 CY applied
Fert. Complete: 11.93 lbs
Seed Complete: 0.7 lbs.

QH4 18"
0.026 ACRES

Compost complete:
36.29 tons

QH3 18"
0.088 ACRES

SBS: 20LF Type II
unmod.

Mulch Complete: 520 lbs, 13 bales

SURVEYOR'S CERTIFICATE

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COLORADO REGISTERED DUANE D. FEHRINGER 8-4-09 26626 L.S. AND P.L.S.

Duane D. Fehringer P.E. & P.L.S. 26626

Lime complete
18.9 CY target / 19.1 CY applied
Fert. Complete: 40.39 lbs
Seed Complete: 2.4 lbs.

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
40801 US HWY 6&24, SUITE 203 BOX 978 AVON, CO 81620 PH: (970)949-5072
4581 S. REVERE PARKWAY, SUITE 186 CENTENNIAL, CO 80111 PH: (303)948-8220

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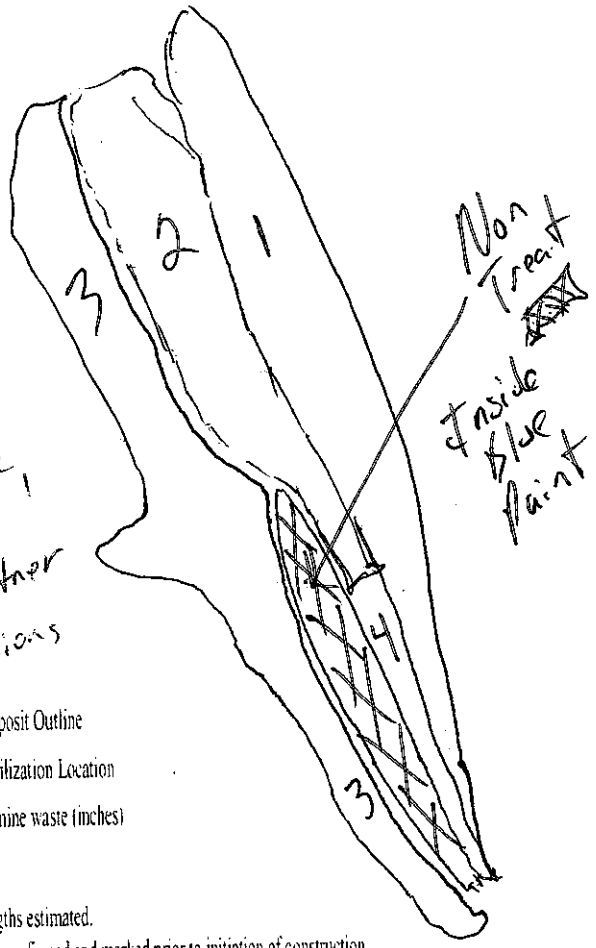
QH

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=20'
DATE ISSUED:	8-3-09
PROJECT NO.	08-0032
EXHIBIT	

QH 1	30"	0% Rock	Orange
QH 2	12"	20% Rock	White
QH 3	18"	20% Rock	Green
QH 4	18"	0% Rock	Green & Yellow

Sketch for IME to Stake, Based on J. Christner Revisions

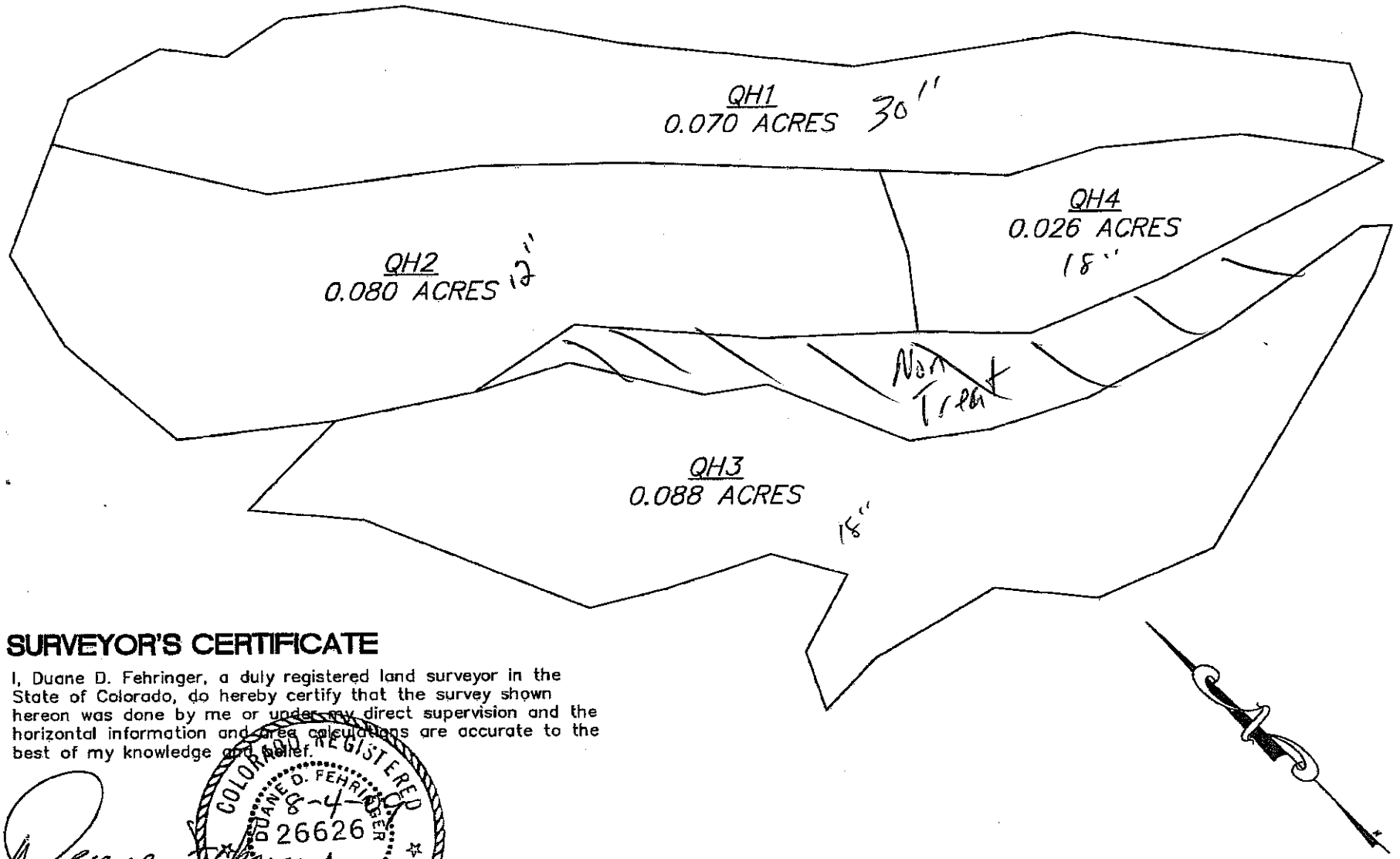


Fluvial Deposit Outline

Bank Stabilization Location

16 Depth of mine waste (inches)

Note: Figure not to scale.
Locations and streambank lengths estimated.
All treatment locations will be confirmed and marked prior to initiation of construction.



SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 6-4-09 26626 L.S. AND P.L.S.

Duane D. Fehringer P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING

Civil Engineers & Surveyors

40808 US HWY 6&24, SUITE 203 BOX 978 AVON, CO 81620 PH: (970)949-5072
4551 S. REVERE PARKWAY, SUITE 106 CENTENNIAL, CO 80111 PH: (303)948-6220

CLIENT: FRONTIER ENVIRONMENTAL INC.

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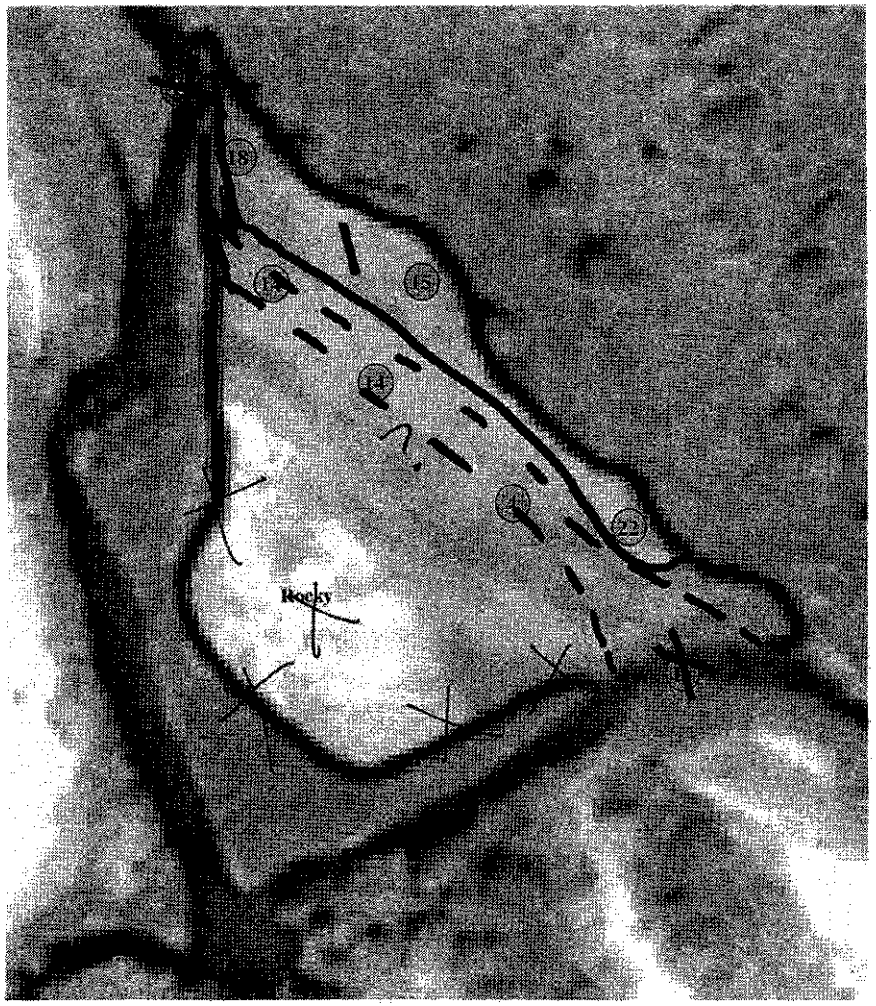
QH

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=20'
DATE ISSUED:	8-3-09
PROJECT NO.	08-0032
FOLDER	

fairview 11.dwg\qhfairview11.dwg



FLUVIAL DEPOSIT QH

Close off channel at A.

Bank Stabilization

Bank A: 2X' Type 2 stabilization of 1' high erosive bank located at the north end of the deposit. Young willows have begun to grow along a portion of the bank, so stabilization may not be required for the entire length shown on the figure.

Bank B: 20' Type 3 stabilization.

1 Treat to 30" 0% Rock

Note: When water recedes, evaluate presence of additional tailings. If additional tailings are of small volume, add to Segment 1 for treatment.

Fluvial Deposit Outline

Bank Stabilization Location

Depth of mine waste (inches)

Note: Figure not to scale.
Locations and streambank lengths estimated.
All treatment locations will be confirmed and marked prior to initiation of construction.

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **QH**

POLYGON CHARACTERISTICS

Net Application Rate	30	tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00%	%
% Rock	0.00%	%
Total Area	0.273	acres

Average Depth Calculation

Depth (inches)		% of Total Area		
18	X	100.00%	=	18
	X		=	
	X		=	
	X		=	
		Average Depth		18 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20%	%
Percent Moisture		29.00%	%
Bulk Density	0.75 grams/cc	= 0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth / (Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 169.70 tons/acre = 46.33 tons total

Lime Rate = 268.48 cy/acre = 73.29 cy total

Depth of Lime to be Applied = 2.0 inches

Signature: _____

Date: Estimate for Tracking

Signature: _____

Date: _____

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **QH-1**

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	0.00% %
Total Area	0.070 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
30	X	100.00%	=	30
	X		=	
	X		=	
	X		=	
		Average Depth		30 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1 =	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5 =	0.04%	(B)
Percent < 60 mesh	99.92%	X 1 =	99.92%	(C)
Lime Reactivity		=	99.96%	A+B+C

Calcium Carbonate Equivalence			82.20% %
Percent Moisture			29.00% %
Bulk Density	0.75 grams/cc	=	0.63 tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
/ (Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 282.83 tons/acre = 19.80 tons total

Lime Rate = 447.46 cy/acre = 31.32 cy total

Depth of Lime to be Applied = 3.3 inches

Signature: [signature]

Date: 8/4/09

Signature: [signature]

Date: 08-04-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: QH -2

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	20.00% %
Total Area	0.080 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
12	X	100.00%	=	12
	X		=	
	X		=	
	X		=	
		Average Depth		12 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1 =	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5 =	0.04%	(B)
Percent < 60 mesh	99.92%	X 1 =	99.92%	(C)
Lime Reactivity		=	99.96%	A+B+C

Calcium Carbonate Equivalence			82.20% %
Percent Moisture			29.00% %
Bulk Density	0.75 grams/cc	=	0.63 tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
/ (Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 90.51 tons/acre = 7.24 tons total

Lime Rate = 143.19 cy/acre = 11.46 cy total

Depth of Lime to be Applied = 1.1 inches

Signature: [signature]

Date: 8/4/09

Signature: [signature]

Date: 08-04-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: QH -3

POLYGON CHARACTERISTICS

Net Application Rate	30	tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00%	%
% Rock	20.00%	%
Total Area	0.088	acres

Average Depth Calculation

Depth (inches)		% of Total Area		
18	X	100.00%	=	18
	X		=	
	X		=	
	X		=	
		Average Depth		18 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20%	%
Percent Moisture		29.00%	%
Bulk Density	0.75 grams/cc =	0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 135.76 tons/acre = 11.95 tons total

Lime Rate = 214.78 cy/acre = 18.90 cy total

Depth of Lime to be Applied = 1.6 inches

Signature: [signature]

Date: 8/4/09

Signature: [signature]

Date: 08-04-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: QH -4

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	0.00% %
Total Area	0.026 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
18	X	100.00%	=	18
	X		=	
	X		=	
	X		=	
		Average Depth		18 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1 =	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5 =	0.04%	(B)
Percent < 60 mesh	99.92%	X 1 =	99.92%	(C)
Lime Reactivity		=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		29.00% %	
Bulk Density	0.75 grams/cc =	0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth / (Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 169.70 tons/acre = 4.41 tons total

Lime Rate = 268.48 cy/acre = 6.98 cy total

Depth of Lime to be Applied = 2.0 inches

Signature: [signature]

Date: 8/4/09

Signature: [signature]

Date: 08-04-09

FILE MEMO

Regarding: Lime Compost (Fertilizer) Mulch Seed Other

Fluvial Deposit ID: QH **Irrigated Meadow ID:** _____

Acreage: _____

Target Application: _____ } Below

Amount Applied: _____

Comments:

QH1: 153 lbs/acre × 0.070 acres × 5(6-mil) = 53.5 lbs ≈ 1+ bag

QH2: " × 0.080 " × 2(6-mil) = 24.8 lbs ≈ 1/2+ bag

QH3: " × 0.088 × 3(6-mil) = 40.4 lbs

QH4: " × 0.026 × 3(6-mil) = 12 lbs

~~Plot~~ Observed ~~pasture~~ using 0:4:0, weighing approx amounts, and hand broadcast per area above

_____ 09-02-09

Signature Date

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: QH

	Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	HCl Reaction
QH 1	0-6	7.0	7.0	7.0	None	Yes
"	6-12	7.0	7.0	7.0	None	Yes
"	12-18	7.0	7.0	7.0	None	Yes
"	18-24	7.0	7.0	7.0	None	Slight
" *	24-30	6.5			None	No
	SATURATED soils conditions in untrated flood plain soils 24 to 30"; collected Paste pH Sample					
QH 2	0-6	7.3	7.0	7.5	None	Yes
"	6-12	7.3	7.0	7.5	None	Yes
QH 4	0-8	7.0	6.5	7.5	None	Slight
" x	8-16	7.0	6.5	7.5	None	Slight
	x Groundwater entering test hole @ 16" depth					
QH 3	0-6 / 6-12	SATURATED Conditions throughout, GW @ 12"				Collected Paste Samples 0-6, 6-12

Name/Signature: [signature]

Date: 09-04-09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record QH

Fluvial Deposit/Irrigated Meadows Polygon: _____

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
QH1 0-6	0.0	19.4	19.9	7.5
QH1 6-12		18.4	17.8	7.5
QH1 12-18		16.0	15.9	7.6
QH1 18-24		18.5	18.8	7.6
*QH1 ~~18-24~~ 24-30 cm		17.3	17.2	7.4
QH2 0-6		17.8	16.8	8.2
QH2 6-12		18.6	17.4	8.2
QH3 0-6		18.3	18.9	7.6
QH3 6-12		20.8	19.9	8.0
QH3 0-6 Dupe		20.4	21.1	7.8
QH4 0-8		16.4	15.9	8.0
QH4 8-16		18.1	18.4	7.9
		RTS		

Name/Signature: Rob Brown Date: 9-7-09

* Untrated Floodplain Soil

pH meter calibrated using 3 known Standards

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: QH 1+4

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	0%	
Treatment Area	0.096	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	0.687	=	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 269.99 tons/acre = 25.92 tons

Compost Rate = 393.00 cy/acre = 37.73 cy

Depth of Compost to be Applied = 2.9 inches

Signature: [signature]

Date: 8/4/09

Signature: [signature]

Date: 08-04-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: QH – 2&3

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	20%	
Treatment Area	0.168	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon		15.79%	%
Percent Moisture		29.63%	%
Wet Bulk Density	=	0.687	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 215.99 tons/acre = 36.29 tons

Compost Rate = 314.40 cy/acre = 52.82 cy

Depth of Compost to be Applied = 2.3 inches

Signature: [signature]

Date: 8/4/09

Signature: [signature]

Date: 08-04-09

84% PLS

FILE MEMO

Regarding: Lime Compost Fertilizer Mulch (Seed) Other

Fluvial Deposit ID: Qfy **Irrigated Meadow ID:** ~~_____~~

Acreage: .070 + .080 + .026 + .088 = .264

Target Application: 0.264 X 11.44 PLS/Acre x 2 + 16% = 7.01 lbs

Amount Applied: 7 lbs

Comments:

Co-mixed Seed Type, Hand broadcasted ~ 7 lbs Seed.

Signature

10-22-09

Date

Polygon Completion Form
Fluvial Deposits

Fluvial Deposit Polygon Name/ID: QF

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
08-21-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.3. **Comments/Deviations:**
08-24-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.4. Simultaneous w/ lime pedal incorp using excavator **Comments/Deviations:**
08-27-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Section 3.6A through 3.6E. Apply lime 08-21 & 08-24-09 **Comments/Deviations:** Apply fert on 08-25-09; Rake Incorp 08-27-09
09-01-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.6F through 3.6I. Place Compost 09-01-09 **Comments/Deviations:** Incorp wk ending 09-04
N/A	N/A	Completed replacement of erosion channels in accordance with Specification Section 3.7. **Comments/Deviations:**
wk ending 10-18	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.8. **Comments/Deviations:** Seeded wk ending 10-18-09
10-20-09	✓	Completed mulching in accordance with Specification Section 3.9. **Comments/Deviations:** Mulched & Crimped 10-20
N/A	N/A	Completed reinstallation of fencing in accordance with Specification Section 3.10. **Comments/Deviations:**
10-29-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.14. **Comments/Deviations:**

Quantity of Work Estimated in Proposal: N/A - Addressed in Invoicing dpmt

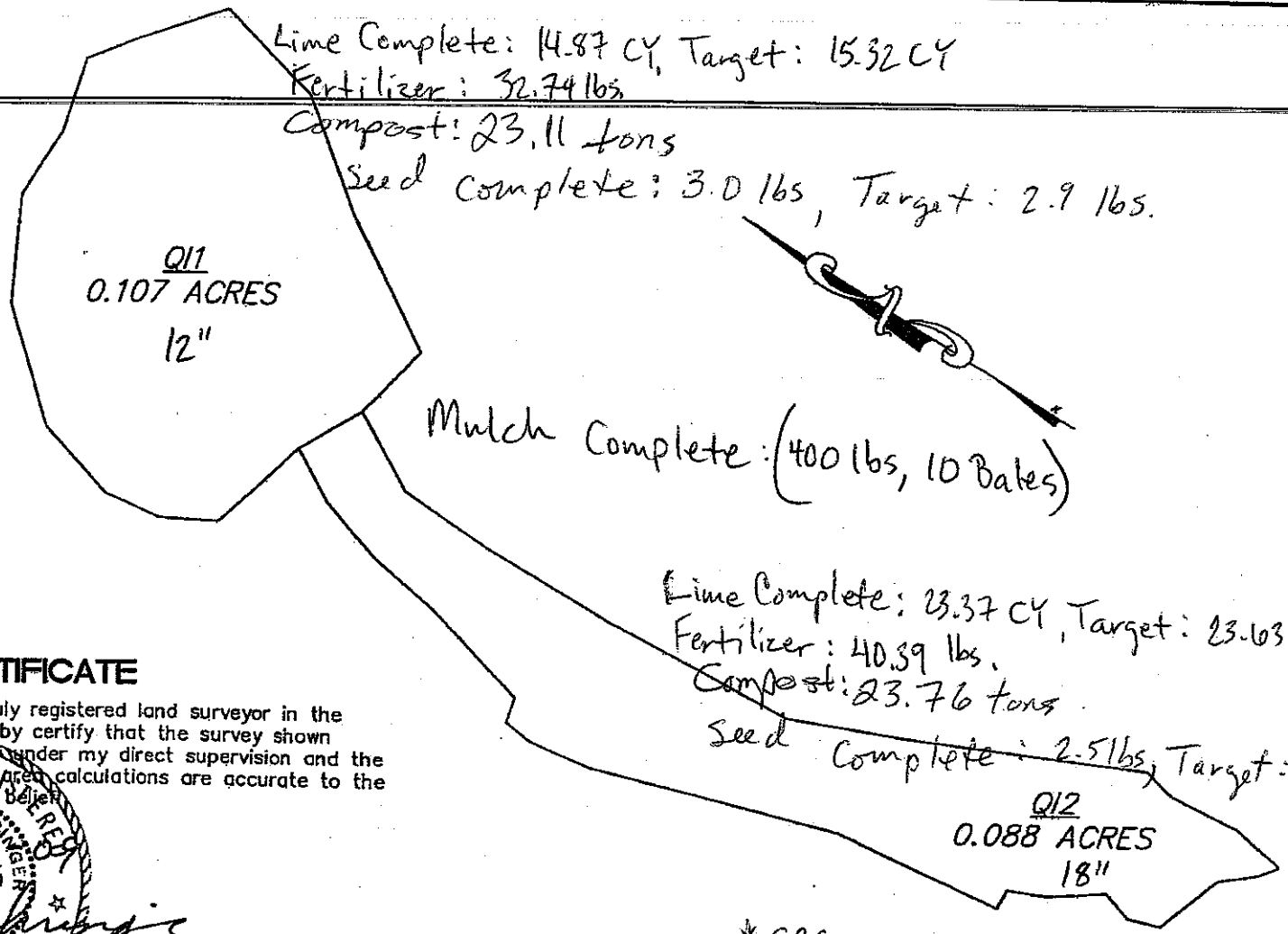
Quantity of Work Performed:

[signature] 11-06-09
Signature of Subcontractor Date

[signature] 10-29-09
Signature of Contractor Date

*Pre-Tilled

-COMPLETE-



*SBS: 70 LF Type II - unmod.

SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 6-24-09 26626 P.E. AND P.L.S.

Duane D. Fehringer P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING

Civil Engineers & Surveyors

40881 US HWY 6&24, SUITE 203 BOX 978 AVON, CO 81620 PH: (970)949-5072

8555 S. REVERE PARKWAY, SUITE 106 CENTENNIAL, CO 80111 PH: (303)948-4218

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Q1

CALIFORNIA GULCH CERCLA SITE

OPERABLE UNIT NUMBER 11

LAKE COUNTY, COLORADO

DRAWN BY:	SFF
SCALE:	1"=30'
DATE ISSUED:	8-23-09
PROJECT NO.	08-0032
CHKD BY	

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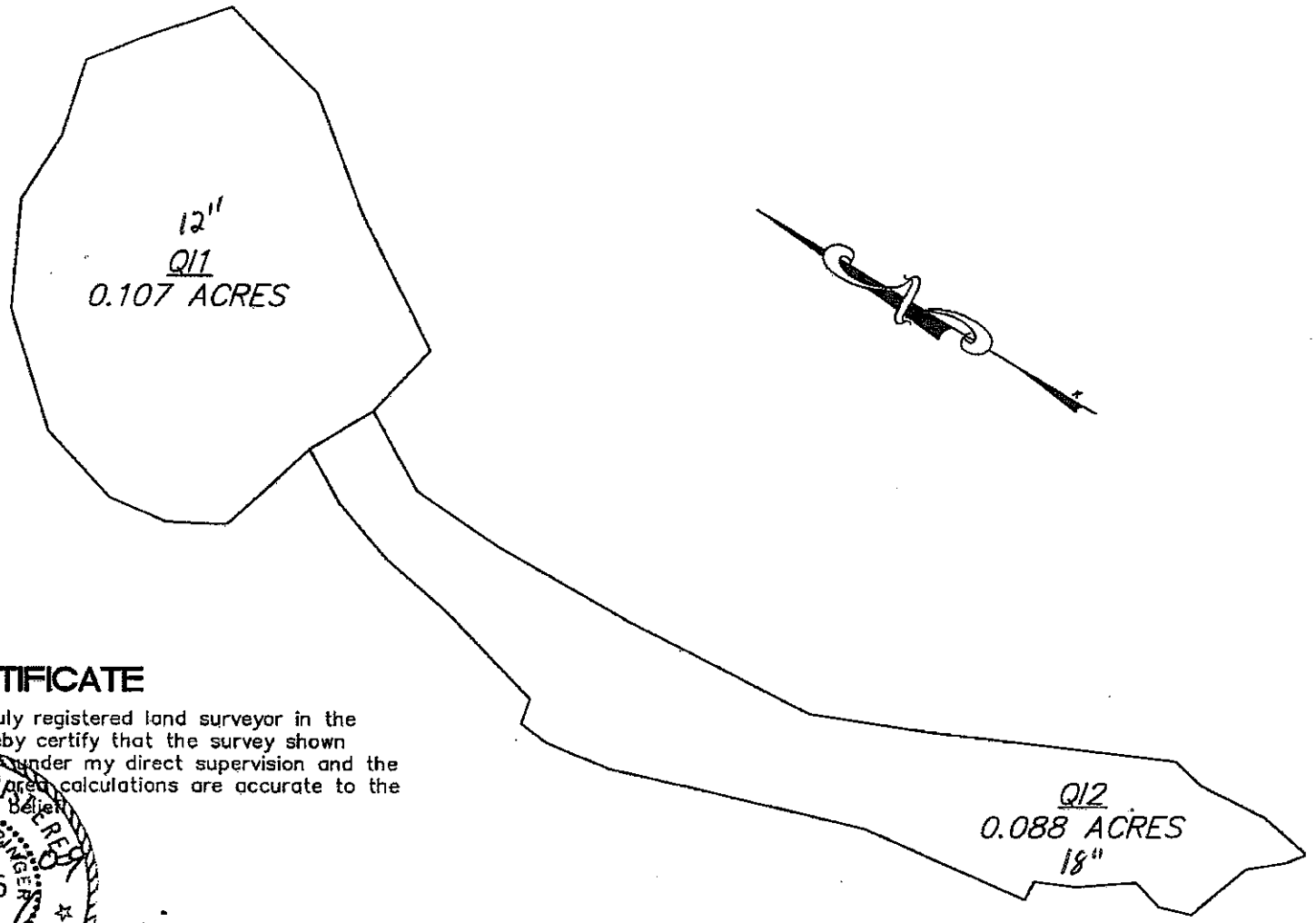

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I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 6-24-09 26626 P.E. AND P.L.

Duane D. Fehringer P.E. & P.L.S. 26626

J:\projects\80032s\dwg\OU-11 Areas.dwg

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
40801 US HWY 6&24, SUITE 203 BOX 978 AVON, CO 81620 PH: (970)949-5072
6551 S. REVERE PARKWAY, SUITE 106 CENTENNIAL, CO 80111 PH: (303)978-6220

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OI

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=30'
DATE ISSUED:	8-23-09
PROJECT NO.	08-0032
DESIGN	

FLUVIAL DEPOSIT QI

Bank Stabilization

Bank A: 35' Type 2 stabilization. Do not disturb large willows along streambank. Re-evaluate prior to treatment to determine if Type 1 stabilization is required.

1	Treat to 12"	20% Rock	Green
2	18"	0 %	Blue

Fluvial Deposit Outline

Bank Stabilization Location

(16) Depth of mine waste (inches)

Note: Figure not to scale.
Locations and streambank lengths estimated.
All treatment locations will be confirmed and marked prior to initiation of construction.

https://mail.pwt.com/exchange/jdeangelis/Inbox/FDSS2.EML/1_multipart_xF8FF_7_Q... 06/15/2009 05:02:56 PM

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **Q1-1**

POLYGON CHARACTERISTICS

Net Application Rate	30	tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00%	%
% Rock	20.00%	%
Total Area	0.107	acres

Average Depth Calculation

Depth (inches)		% of Total Area		
12	X	100.00%	=	12
	X		=	
	X		=	
	X		=	
		Average Depth		12 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20%	%
Percent Moisture		29.00%	%
Bulk Density	0.75 grams/cc	0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth / (Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate =	90.51 tons/acre	=	9.68 tons total
Lime Rate =	143.19 cy/acre	=	15.32 cy total
		Depth of Lime to be Applied =	1.1 inches

Signature: [signature]

Date: 6/24/09

Signature: [signature]

Date: 07-28-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: QI-2

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	0.00% %
Total Area	0.088 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
18	X	100.00%	=	18
	X		=	
	X		=	
	X		=	
		Average Depth		18 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1 =	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5 =	0.04%	(B)
Percent < 60 mesh	99.92%	X 1 =	99.92%	(C)
Lime Reactivity		=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		29.00% %	
Bulk Density	0.75 grams/cc =	0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate =	169.70 tons/acre	=	14.93 tons total
Lime Rate =	268.48 cy/acre	=	23.63 cy total
		Depth of Lime to be Applied =	2.0 inches

Signature: Ben A. Mund

Date: 6/26/09

Signature: [illegible]

Date: 07-28-09

FILE MEMO

Regarding: Lime Compost **Fertilizer** Mulch Seed Other

Fluvial Deposit ID: QI **Irrigated Meadow ID:** _____

Acreage: _____

Target Application: _____ > Below

Amount Applied: _____

Comments:

QI 1: 0.107 acres × 153 lbs/acre × 2(6-inch) = 33 lbs ≈ 0.7 bag

QI 2: 0.088 " × 153 " × 3(6-inch) = 40 lbs

Post Contained 0:45:0 Fert Applied using scale to weigh amounts and hand broadcasted on deposit.

Signature

08-25-09

Date

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: QIZ

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	HCl reaction
QIZ 0-6"	6.5	6.0	7.0	0%	Yes
QIZ 6-12"	↓	↓	↓	↓	Yes
QIZ 12-18"	↓	↓	↓	↓	Yes

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record

Fluvial Deposit/Irrigated Meadows Polygon: QI2

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
QI2 0-6"	Tare 20.0	19.9	19.9	6.6
QI2 6-12"	↓	20.0	20.0	6.6
QI2 12-18"	↓	20.1	20.1	7.0

Name/Signature: for Robert Brown **Date:** 08-31-09

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: QJ

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	HCl reaction
QJ 0-8"	7.0	6.5	7.5	0%	Yes
QJ 8-16"	↓	↓	↓	↓	Yes
QI1	6.5	6.0	7.0	0%	Yes
QI1	6.5	6.0	7.0	0%	Yes

Name/Signature: [signature] for Robert Brown

Date: 08-31-05

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record

Fluvial Deposit/Irrigated Meadows Polygon: Q5

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
Q5 0-8"	Tare @ 0.0	20.0	20.1	6.7
Q5 8-16"		20.0	20.0	6.5
QI 1 0-6"		20.0	20.0	6.9
QI1 6-12"		20.0	20.0	7.1
QI2		19.9	20.0	6.6
QI2		20.0	20.0	6.6
QI2		19.8	20.0	7.0
		RTB		

Name/Signature: RTB Date: 8-31-09

pH meter calibrated using known standards RTB

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **QI-1**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	20%	
Treatment Area	0.107	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%	%	
Percent Moisture	29.63%	%	
Wet Bulk Density	=	0.687	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate =	215.99 tons/acre	=	23.11 tons
Compost Rate =	314.40 cy/acre	=	33.64 cy
		Depth of Compost to be Applied =	2.3 inches

Signature: _____

Date: 6/26/09

Signature: _____

Date: 07-28-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **QI-2**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	0%	
Treatment Area	0.088	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 269.99 tons/acre = 23.76 tons

Compost Rate = 393.00 cy/acre = 34.58 cy

Depth of Compost to be Applied = 2.9 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-08-09

Polygon Completion Form
Fluvial Deposits

Fluvial Deposit Polygon Name/ID: QT

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
08-24-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.3. **Comments/Deviations:**
08-24-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.4. Pre-Till Simultaneous to Lime Placement; 315 Excavator **Comments/Deviations:**
08-27-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Section 3.6A through 3.6E. Lime App 08-24-09, Simultaneous w/pre-Till **Comments/Deviations:** Mix w/ ALCO on 08-27-09 Reel, Carter 08-25-09
wk ending 09-04 ~~08-28-09~~	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.6F through 3.6I. Place Cowcost 09-01-09 **Comments/Deviations:**
N/A	N/A	Completed replacement of erosion channels in accordance with Specification Section 3.7. **Comments/Deviations:**
wk ending 10-18	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.8. **Comments/Deviations:** Seeded wk ending 10-18-09
10-20-09	✓	Completed mulching in accordance with Specification Section 3.9. **Comments/Deviations:** Mulch & Crimp 10-20
N/A	N/A	Completed reinstallation of fencing in accordance with Specification Section 3.10. **Comments/Deviations:**
10-29-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.14. **Comments/Deviations:**

Quantity of Work Estimated in Proposal: N/A - Addressed in Invoice Documents

Quantity of Work Performed:

[signature] 11-06-09
Signature of Subcontractor Date

[signature] 10-29-09
Signature of Contractor Date

* Pre-Tilled —COMPLETE—

Lime Complete: 10.64 cy, Target: 10.98 cy

Fertilizer Complete: 18.1 lbs

Compost: 12.42 tons

Seed Complete: 1.5 lbs, Target: 1.21 lbs

Mulch Complete: (100 lbs. 2.5 Bales)

SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge, and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 7-13-09 26626 P.E. AND P.L.S.

Duane D. Fehringer P.E. & P.L.S. 26626

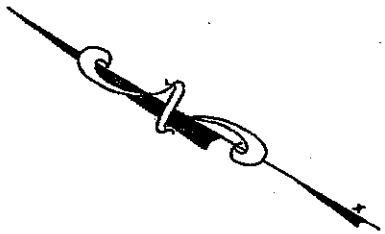
SBS: 60LF Type: I

10LF Type-II immod.

16"

QJ

0.046 ACRES



J:\projects\80032\dwg\QU-11 Areas.dwg

Inter-Mountain ENGINEERING

Civil Engineers & Surveyors

40581 US HWY 6&24, SUITE 203 BOX 978 AVON, CO 81620 PH: (970)949-5072

4551 S. REVERE PARKWAY, SUITE 196 CENTENNIAL, CO 80111 PH: (303)948-4220

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QJ

CALIFORNIA GULCH CERCLA SITE

OPERABLE UNIT NUMBER 11

LAKE COUNTY, COLORADO

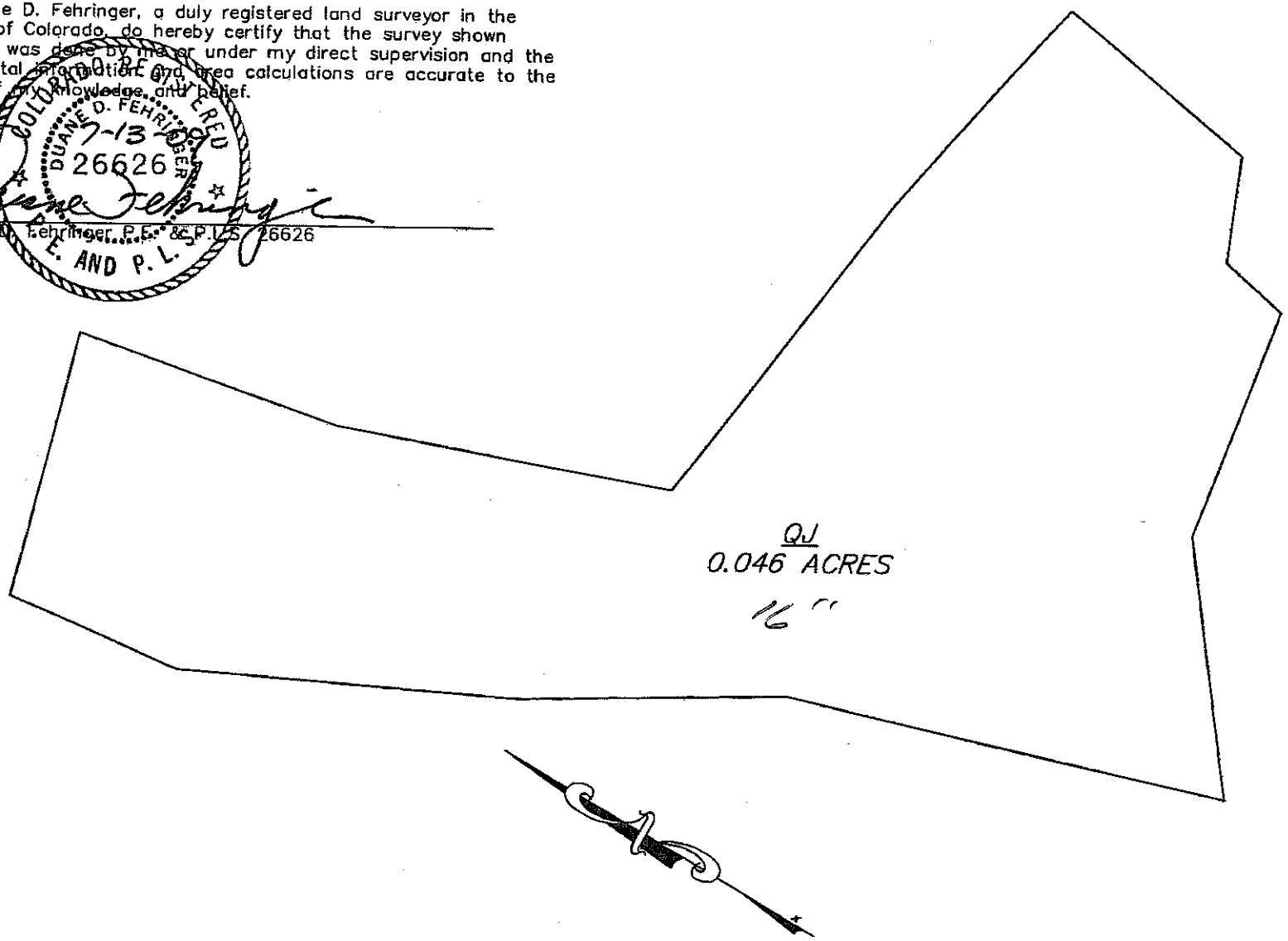
DRAWN BY:	SPF
SCALE:	1"=10'
DATE ISSUED:	7-13-09
PROJECT NO.:	08-0032
CHKD:	

SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO P.E. AND P.L. DUANE D. FEHRINGER 7-13-09 26626

Duane D. Fehringer P.E. & P.L.S. 26626



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Civil Engineers & Surveyors
40801 US HWY 6&24, SUITE 203 BOX 978 AVON, CO 81620 PH: (970)949-5072
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QJ

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=10'
DATE ISSUED:	7-13-09
PROJECT NO.	08-0032
CHKD?	

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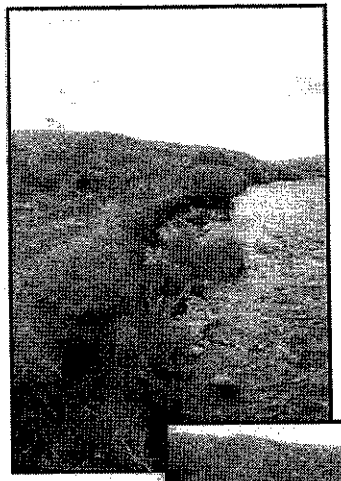
FLUVIAL DEPOSIT QJ



2006 Data

None

Physical Characteristics

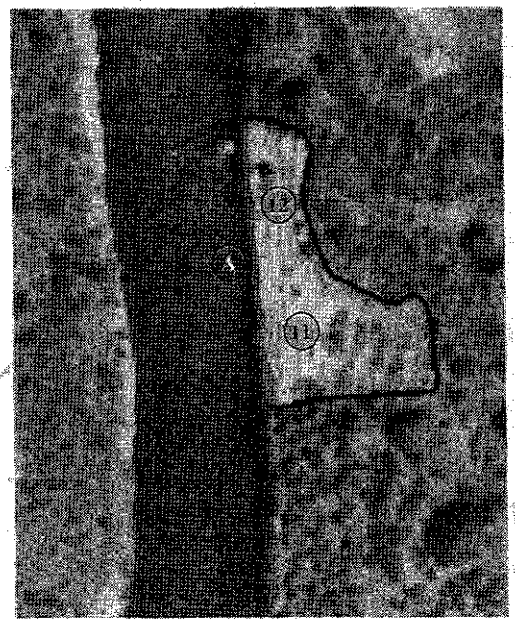
Area: 0.04 acre
Average Depth: 12"
Depth Range: 11" to 12"
Fine-grained to sandy mine waste over a thin organic layer over cobble alluvium.
Good willows surround the deposit. Some vigorous willows are located within the deposit.

Bank Stabilization

Bank A: 50' Type 2 stabilization behind existing vegetation.

50' Type 1

Treat to 16" 0% Rock



Proposed Treatment

Lime amendment rate: 30 tons/1000 tons
Estimated Rock Content Correction: None
Organic amendment rate: Default
Fertilizer rate: Default
Till Depth: 12"
Average Till Depth: 12"
Till Equipment: Deep till rotary mixer with easy maneuverability able to operate in small areas.
Seed Mix: Fluvial Deposit Seed Mix
Notes: Save healthy willows or use for bank stabilization. Minimize disruption of healthy vegetation in accessing this deposit.

Fluvial Deposit Outline
Bank Stabilization Location
(12) Depth of mine waste (inches)

Note: Figure not to scale.
Locations and streambank lengths estimated.
All treatment locations will be confirmed and marked prior to initiation of construction.

https://mail.pwt.com/exchange/jdeangelis/Inbox/FDSS2.EML/1_multipart_xF8FF_8_... 06/15/2009 05:03:27 PM

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **QJ**

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	0.00% %
Total Area	0.046 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
16	X	100.00%	=	16
	X		=	
	X		=	
	X		=	
		Average Depth		16 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1 =	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5 =	0.04%	(B)
Percent < 60 mesh	99.92%	X 1 =	99.92%	(C)
Lime Reactivity		=	99.96%	A+B+C

Calcium Carbonate Equivalence			82.20% %
Percent Moisture			29.00% %
Bulk Density	0.75 grams/cc	=	0.63 tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 150.84 tons/acre = 6.94 tons total

Lime Rate = 238.65 cy/acre = 10.98 cy total

Depth of Lime to be Applied = 1.8 inches

Roger A. Mink

Signature: _____

Date: 8/7/2009

Signature: _____

Date: 08-10-09

FILE MEMO

Regarding: Lime Compost ~~Fertilizer~~ Mulch Seed Other

Fluvial Deposit ID: QJ **Irrigated Meadow ID:** _____

Acreage: .046

Target Application: .046 x 103 lbs/acre x ≈2.5(6-inch) = 18 lbs ≈ 0.4 bags

Amount Applied: ≈18 lbs

Comments: PWT Confirmed amount weighed in field, 0:45:0 Fertilizer, hand broadcasted.

Signature

08-25-09

Date

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: QJ

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	HCl reaction
[redacted]	7.0	6.5	7.5	0%	Yes
[redacted]	↓	↓	↓	↓	Yes
QI1	6.5	6.0	7.0	0%	Yes
QI1	6.5	6.0	7.0	0%	Yes

Name/Signature: [signature] for Robert Brown

Date: 09-02-09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record

Fluvial Deposit/Irrigated Meadows Polygon: QI

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
[redacted]	Tare @ 0.0	20.0	20.1	6.7
[redacted]	↓	20.0	20.0	6.5
QI 1 6-6"	↓	20.0	20.0	6.9
QI 1 6-12"	↓	20.0	20.0	7.1
QI 2	↓	19.9	20.0	6.6
QI 2	↓	20.0	20.0	6.6
QI 2	↓	19.8	20.0	7.0

RTB

Name/Signature: Rob Brown **Date:** 8-31-09

pH meter calibrated using known standards RTB

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: QJ

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches ✓
% Rock	0%	✓
Treatment Area	0.046	acres ✓

COMPOST CHARACTERISTICS

Percent Organic Carbon		15.79%	%
Percent Moisture		29.63%	%
Wet Bulk Density	=	0.687	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 269.99 tons/acre = 12.42 tons

Compost Rate = 393.00 cy/acre = 18.08 cy

Depth of Compost to be Applied = 2.9 inches

Signature: [signature]

Date: 7/29/09

Signature: [signature]

Date: 08-03-09

Polygon Completion Form
Fluvial Deposits

Fluvial Deposit Polygon Name/ID: QK

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
08-19-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.3. **Comments/Deviations:**
08-19-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.4. Pre Till Simultaneous to lime placement & partial incorp w/excv. **Comments/Deviations:**
08-28-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Section 3.6A through 3.6E. Apply Lime 08-19-09 **Comments/Deviations:** Apply Fertilizer 08-25-09 ; Agg Incorp 08-27-28-09
10-06-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.6F through 3.6I. Place Compost 09-01-09 **Comments/Deviations:** Incorp w/315 Excv 10-05-09
N/A	NA	Completed replacement of erosion channels in accordance with Specification Section 3.7. **Comments/Deviations:**
wk ending 10-18	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.8. **Comments/Deviations:** Seedbed Prep w/315 Excv 10-06-09 Seeded wk ending 10-18-09
10-20-09	✓	Completed mulching in accordance with Specification Section 3.9. **Comments/Deviations:** Mulched Crimp 10-2-09
NA	NA	Completed reinstallation of fencing in accordance with Specification Section 3.10. **Comments/Deviations:**
11-03-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.14. **Comments/Deviations:**

Quantity of Work Estimated in Proposal: NA - Addressed in Invoices

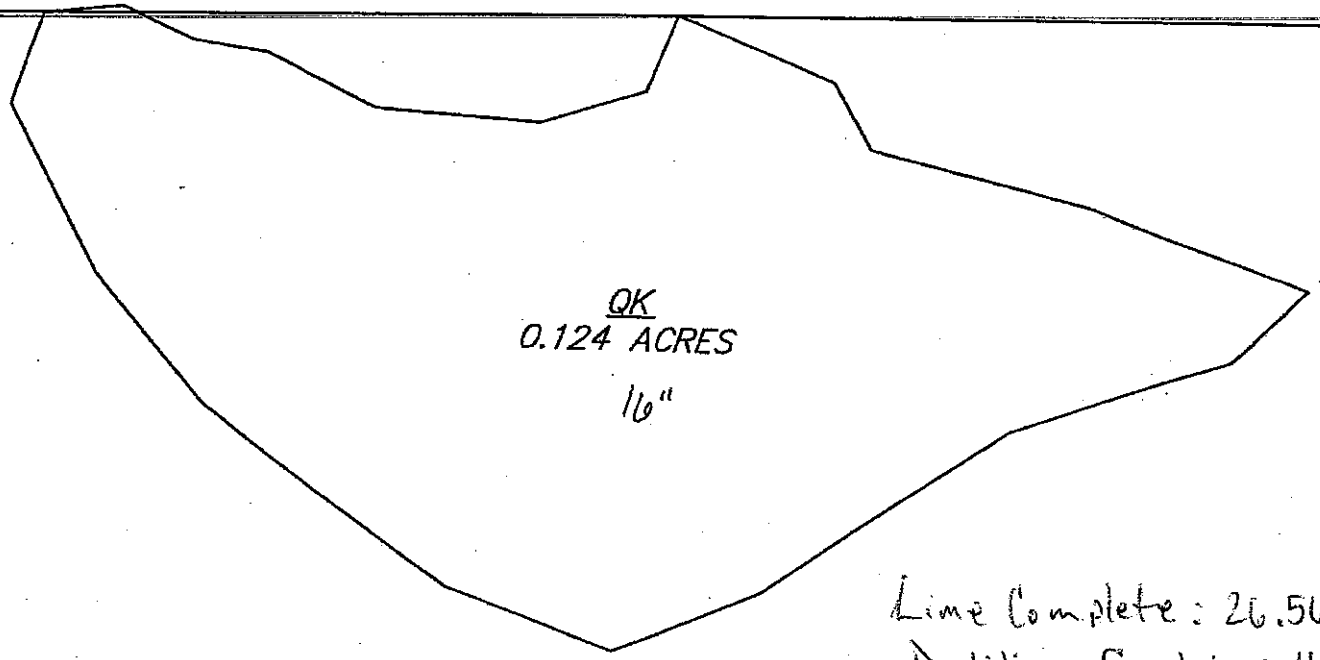
Quantity of Work Performed: AMS

[signature] 11-06-09
Signature of Subcontractor Date

[signature] 11-03-09
Signature of Contractor Date

*Pre-Trilled

~~COMPLETE~~



Lime Complete: 26.56 CY, Target: 26.63 CY
Fertilizer Complete: 49.3 lbs.
Compost Complete: 30.13 tons
43.86 CY target
43.87 CY applied

Seeding Complete:
2.8 lbs

Mulch Complete: (240 lbs.; 4 Bales)

SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and angular calculations are accurate to the best of my knowledge and belief.

COLORADO DUANE D. FEHRINGER 26626 P.E. AND P.L.S.

6-24-09

Duane D. Fehringer, P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
40801 US HWY 6&24, SUITE 203 BOX 978 AVON, CO 81620 PH: (970)949-5972
4551 S. REVERE PARKWAY, SUITE 104 CENTENNIAL, CO 80111 PH: (303)858-6120

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QK
CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=20'
DATE ISSUED:	6-23-09
PROJECT NO:	08-0032
EXHIBIT	

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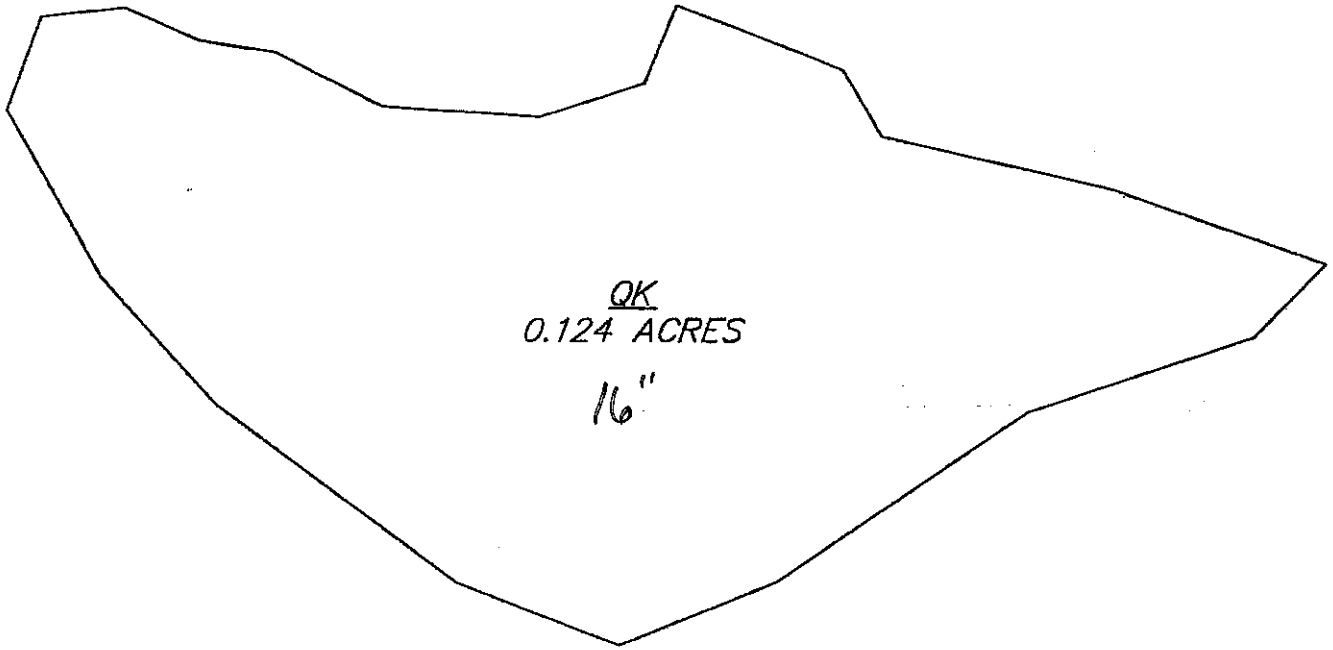


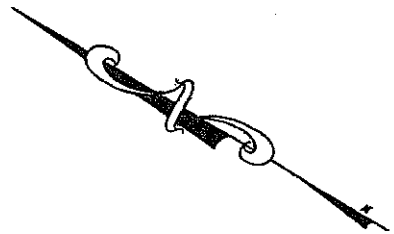
SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 26626 P.E. AND P.L.S.

6-24-09

Duane D. Fehringer P.E. & P.L.S. 26626



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Civil Engineers & Surveyors
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QK

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=20'
DATE ISSUED:	6-23-09
PROJECT NO:	08-0032
EXHIBIT	

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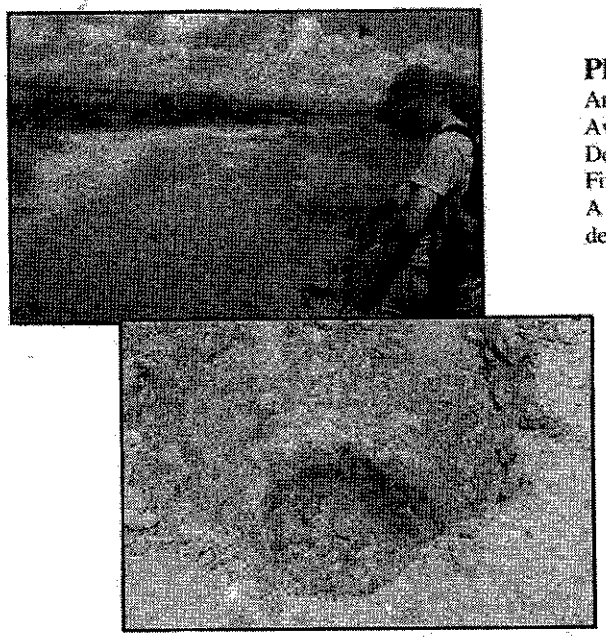
FLUVIAL DEPOSIT QK



Physical Characteristics

Area: 0.09 acre
Average Depth: 16"
Depth Range: 12" to 24"
Fine-grained mine waste over soil and cobble alluvium. A rocky area with 4" rock covers about 20% of the deposit.

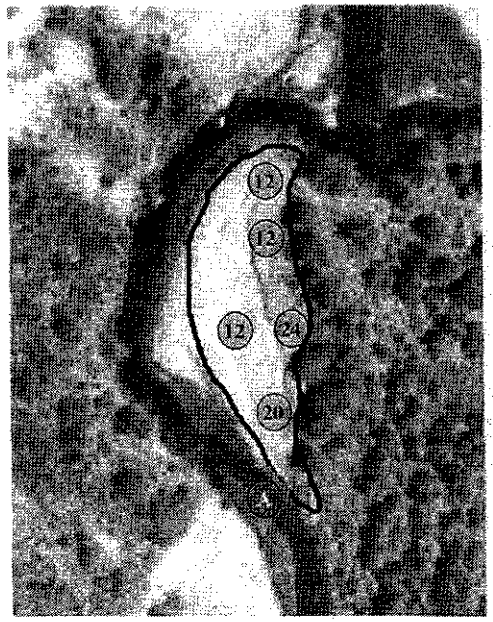
2006 Data

Arsenic	97.4 mg/kg
Cadmium	2.7 mg/kg
Copper	113 mg/kg
Lead	2380 mg/kg
Manganese	97.3 mg/kg
Mercury	1.2 mg/kg
Zinc	606 mg/kg
pH	3.1
ABA	-24.8 t/1000t

Bank Stabilization

Bank A: 20' Type 3 stabilization using young willows and Carex.

Treat to 16"
10% Rock



Proposed Treatment

Lime amendment rate: 30 tons/1000 tons
Estimated Rock Content Correction: 15%
Organic amendment rate: Default
Fertilizer rate: Default
Till Depth: 12" to 24"
Average Till Depth: 16"
Till Equipment: Deep till rotary mixer able to manage rocks.
Seed Mix: Fluvial Deposit Seed Mix
Notes: Excess Carex borrow is available at this deposit.

Fluvial Deposit Outline
Bank Stabilization Location
(15) Depth of mine waste (inches)

Note: Figure not to scale.
Locations and streambank lengths estimated.
All treatment locations will be confirmed and marked prior to initiation of construction.

https://mail.nwt.com/exchange/ideangelis/Inbox/FDSS2.EML/1_multipart_xF8FF_9... 06/15/2009 05:03:56 PM

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **QK**

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	10.00% %
Total Area	0.124 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
16	X	100.00%	=	16
	X		=	
	X		=	
	X		=	
		Average Depth		16 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1 =	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5 =	0.04%	(B)
Percent < 60 mesh	99.92%	X 1 =	99.92%	(C)
Lime Reactivity		=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		29.00% %	
Bulk Density	0.75 grams/cc =	0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate =	135.76 tons/acre	=	16.83 tons total
Lime Rate =	214.78 cy/acre	=	26.63 cy total
		Depth of Lime to be Applied =	1.6 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-28-09

FILE MEMO

Regarding: Lime Compost (Fertilizer) Mulch Seed Other

Fluvial Deposit ID: QK **Irrigated Meadow ID:** _____

Acreage: 0.124

Target Application: 0.124 x 153 lbs x ~2.5 (6-inch) = 47.4 lbs ≈ 1 bag

Amount Applied: 1 bag

Comments:
Confirmed 0:45:0 ; Hand Broadcasted over deposit

Signature

08-25-09
Date

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **QK**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches ✓
% Rock	10%	✓
Treatment Area	0.124	acres ✓

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	0.687	=	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 242.99 tons/acre = 30.13 tons

Compost Rate = 353.70 cy/acre = 43.86 cy

Depth of Compost to be Applied = 2.6 inches

Signature: [signature]

Date: 7/29/09

Signature: [signature]

Date: 08-07-09

Polygon Completion Form
Fluvial Deposits

Fluvial Deposit Polygon Name/ID: QL

Activities Verified As Completed (indicate NA if appropriate)

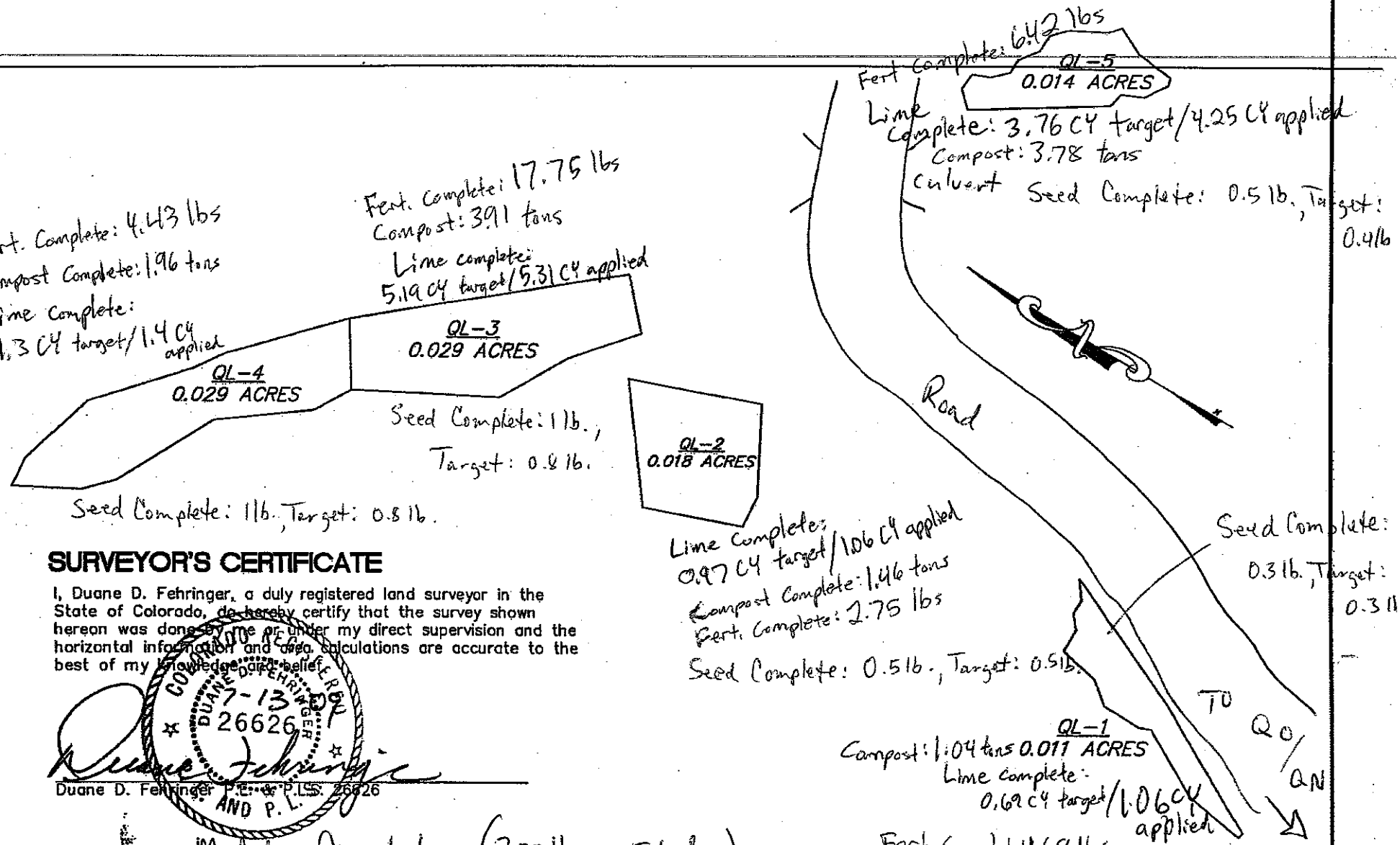
Date Completed	(√) ?	
08-31-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.3. **Comments/Deviations:**
08-31-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.4. Pre Till Simultaneous to Lime Placement for Partial Incorp. **Comments/Deviations:** 08-31-09
09-02-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Section 3.6A through 3.6E. Start lime placement and fold-in w/ 315 Excv **Comments/Deviations:** 08-31-09 – Lime placement completed 08-31-09 Fertilized 09-02-09.
09-21-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.6F through 3.6I. Incorp w/315 began 09-18-09 **Comments/Deviations:**
N/A	N/A	Completed replacement of erosion channels in accordance with Specification Section 3.7. **Comments/Deviations:**
wk ending 10-18	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.8. **Comments/Deviations:** Seedbed prep during compost incorp. Seeded wk ending 10-18-09
10-26-09	✓	Completed mulching in accordance with Specification Section 3.9. **Comments/Deviations:** Mulched & Crimped w/ 325 Excv 10-26-09
N/A	N/A	Completed reinstallation of fencing in accordance with Specification Section 3.10. **Comments/Deviations:**
11-03-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.14. **Comments/Deviations:**

Quantity of Work Estimated in Proposal: N/A - Addressed in Invoicing Docs.
Quantity of Work Performed:

[signature] 11-06-09
Signature of Subcontractor Date

[signature] 11-03-09
Signature of Contractor Date

— COMPLETE —



SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 7-13-09 26626 AND P.L.S.

Duane D. Fehringer P.E. & P.L.S. 26626

Mulch Complete: (200 lbs., 5 bales)

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
40801 US HWY 6&24, SUITE 203 BOX 978 AVON, CO 81620 PH: (970)949-5072
4551 S. REVERE PARKWAY, SUITE 186 CENTENNIAL, CO 80111 PH: (303)948-6219

CLIENT: FRONTIER ENVIRONMENTAL INC.

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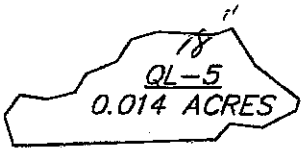
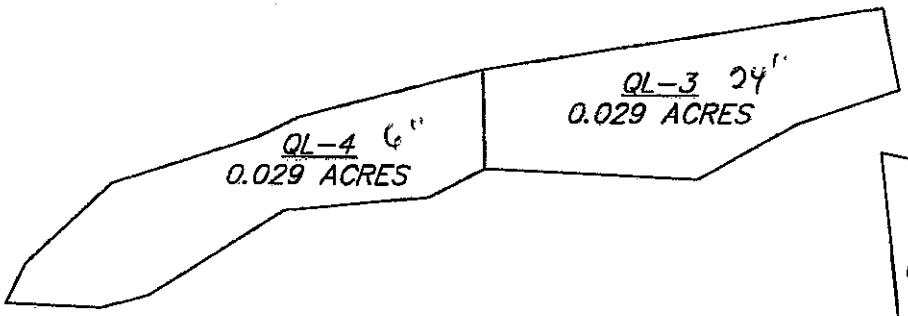
QL

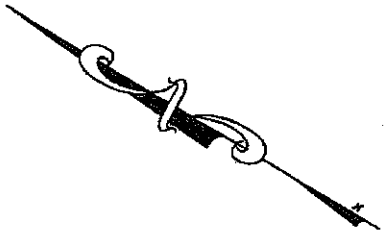
CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=30'
DATE ISSUED:	7-13-09
PROJECT NO.	08-0032
EXHIBIT	

J:\projects\08003zs\dwg\QU-11 Areas.dwg





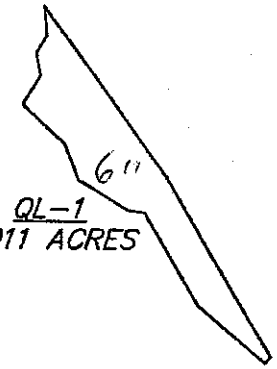


SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge, and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 7-13-09 26626 AND P.L.S.

Duane D. Fehringer P.E. & P.L.S. 26626



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Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
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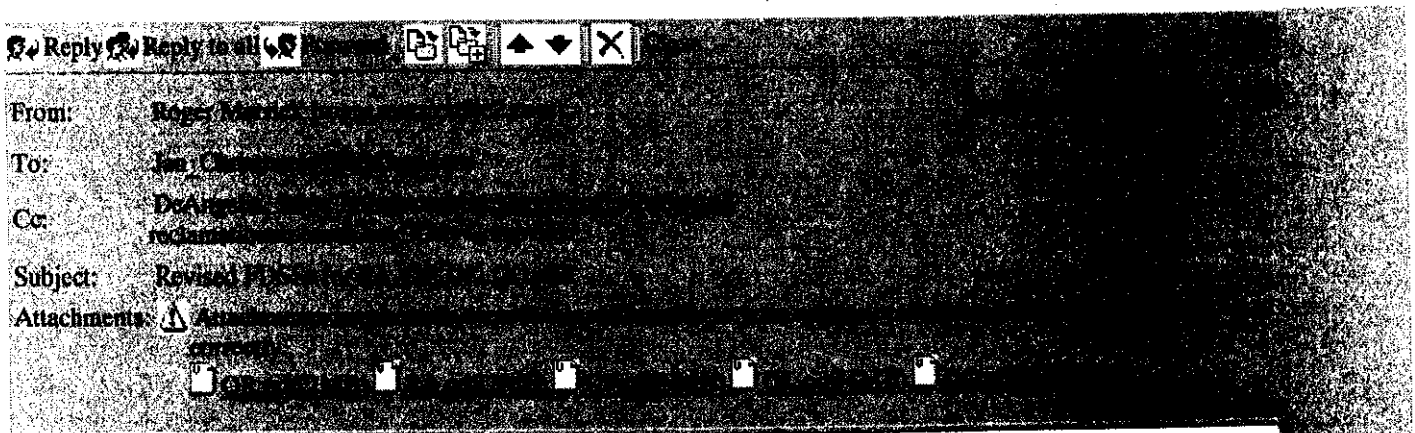
QL

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=30'
DATE ISSUED:	7-13-09
PROJECT NO.	08-0032
EXHIBIT	



Jan,

Here are the revised FDSSs for the subject polygons. The revisions are based on our telephone conversations and our field observations and are as follows:

PA - #'s 2 & 3 were combined since they were contiguous and the same depth & % rock (this also changed the numbering). The new #4 (old 5) was expanded based on the pH and the fact that the fragile carex would be tracked over multiple times to get to the smaller treatment area.

QF - The instructions to replace the large channel was replaced with "fill and level" since we can berm up the two low spots east of #'s 3 & 4 to keep the overflow channel from draining into the polygon.

QL - the polygon just south of the road was added in as #5.

QO - We walked the access road path with Clay and figured out where he'd be adding a cobble road "cap" and where he'd just drive over the polygon. With that and the water level being down since you left, I expanded polygon 4 and 2 (slightly to the north) to add in some obvious tailings that must have been under water when you were here last week.

QR - Just added a note to fill the overflow channel with culled rock from the 6" area based on my walk with Clay.

We'll try to get QH and PJ next week if the water drops low enough.

Roger

Roger A. Merrick
E2 Consulting Engineers, Inc.
450 E 17th Avenue, Suite 200
Denver, CO 80203
(720) 279-7638 direct
(303) 434-3605 cell
(303) 238-8972 fax
www.e2.com

FLUVIAL DEPOSIT QL

1	Treat to	6"	30% Rock	red
2		6"	40 %	orange
3		24"	50%	yellow
4		6"	50%	white
5		18"	0%	Pink

Fluvial Deposit Outline

Bank Stabilization Location

Depth of mine waste (inches)

Note: Figure not to scale.
Locations and streambank lengths estimated.
All treatment locations will be confirmed and marked prior to initiation of construction.

FLUVIAL DEPOSIT QL

QL-PJ loop road

Move tailings to QL and treat if practical.

QL5

1	Treat to	6"	30% Rock	red
2		6"	40 %	orange
3		24"	50%	yellow
4		6"	50%	white
5		18"	0%	Pink

Fluvial Deposit Outline

Bank Stabilization Location

Depth of mine waste (inches)

Note: Figure not to scale.
Locations and streambank lengths estimated.
All treatment locations will be confirmed and marked prior to initiation of construction.

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **QL-1**

POLYGON CHARACTERISTICS

Net Application Rate	30	tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00%	%
% Rock	30.00%	%
Total Area	0.011	acres

Average Depth Calculation

Depth (inches)		% of Total Area		
6	X	100.00%	=	6
	X		=	
	X		=	
	X		=	
		Average Depth		6 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20%	%
Percent Moisture		29.00%	%
Bulk Density	0.75 grams/cc	= 0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate =	39.60 tons/acre	=	0.44 tons total
Lime Rate =	62.64 cy/acre	=	0.69 cy total
		Depth of Lime to be Applied =	0.5 inches

Signature: Roger A. Merritt

Date: 8/7/2009

Signature: Jack G Martin

Date: 08-10-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **QL-2**

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	40.00% % ✓
Total Area	0.018 acres ✓

Average Depth Calculation

Depth (inches)		% of Total Area		
6	X	100.00%	=	6 ✓
	X		=	
	X		=	
	X		=	
		Average Depth		6 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence			82.20% %
Percent Moisture			29.00% %
Bulk Density	0.75 grams/cc	=	0.63 tons/cy

CALCULATE LIME RATE

$$\text{Lime Rate} = \frac{\text{Net Application Rate} * (1 + \text{Mixing Factor}/100) * (1 - \%\ \text{Rock}/100) * \text{Depth}}{(\text{Lime Reactivity}) * (\text{Calcium Carbonate Equivalence}/100) * (1 - \%\ \text{Moisture}/100)}$$

Lime Rate = 33.94 tons/acre = 0.61 tons total

Lime Rate = 53.70 cy/acre = 0.97 cy total

Depth of Lime to be Applied = 0.4 inches

Signature: Roger A. Minick

Date: 8/7/2009

Signature: [signature]

Date: 08-10-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **QL-3**

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	50.00% %
Total Area	0.029 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
24	X	100.00%	=	24
	X		=	
	X		=	
	X		=	
		Average Depth		24 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		29.00% %	
Bulk Density	0.75 grams/cc	= 0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth / (Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 113.13 tons/acre = 3.28 tons total

Lime Rate = 178.99 cy/acre = 5.19 cy total

Depth of Lime to be Applied = 1.3 inches

Signature: Roger A. Weiss

Date: 8/7/2009

Signature: [illegible]

Date: 08-10-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **QL-4**

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	50.00% %
Total Area	0.029 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
6	X	100.00%	=	6
	X		=	
	X		=	
	X		=	
		Average Depth		6 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1 =	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5 =	0.04%	(B)
Percent < 60 mesh	99.92%	X 1 =	99.92%	(C)
Lime Reactivity		=	99.96%	A+B+C

Calcium Carbonate Equivalence			82.20% %
Percent Moisture			29.00% %
Bulk Density	0.75 grams/cc	=	0.63 tons/cy

CALCULATE LIME RATE

$$\text{Lime Rate} = \frac{\text{Net Application Rate} * (1 + \text{Mixing Factor}/100) * (1 - \%\ \text{Rock}/100) * \text{Depth}}{(\text{Lime Reactivity}) * (\text{Calcium Carbonate Equivalence}/100) * (1 - \%\ \text{Moisture}/100)}$$

Lime Rate = 28.28 tons/acre = 0.82 tons total

Lime Rate = 44.75 cy/acre = 1.30 cy total

Depth of Lime to be Applied = 0.3 inches

Roger A. Main

Signature: _____

Date: 8/7/2009

Signature: _____

Date: 08-10-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **QL-5**

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	0.00% %
Total Area	0.014 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
18	X	100.00%	=	18
	X		=	
	X		=	
	X		=	
		Average Depth		18 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		29.00% %	
Bulk Density	0.75 grams/cc	= 0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = (Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth) / ((Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100))

Lime Rate = 169.70 tons/acre = 2.38 tons total

Lime Rate = 268.48 cy/acre = 3.76 cy total

Depth of Lime to be Applied = 2.0 inches

Signature: Roger A. Mink

Date: 8/7/2009

Signature: [illegible]

Date: 08-10-09

FILE MEMO

Regarding: Lime Compost (Fertilizer) Mulch Seed Other

Fluvial Deposit ID: QL **Irrigated Meadow ID:** _____

Acreage: _____

Target Application: _____ } Below

Amount Applied: _____

Comments:

QL1: 0.011 X 153 lbs/acre x 1 (6-inch) = 1.7 lbs
QL2: 0.018 X " x 1 (6-inch) = 2.7 lbs
QL3: 0.029 X " x 4 (6-inch) = 17.7 lbs
QL4: 0.029 X " x 1 (6-inch) = 4.4 lbs
QL5: 0.014 X " x 3 (6-inch) = 6.4 lbs

Confirmed applied 0:45:0 fertilizer, weighed approx amounts per area, and hand broadcasted

[signature]
Signature

09-02-09
Date

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: QL

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0
QL-1 0-6"	6.5	6.0	7.0	0%
QL2 0-6"	6.5	6.0	7.0	
Dupe QL2 0-6"	6.5	6.0	7.0	
QL3 0-6"	6.8	6.5	7.2	
QL3 6-12"	6.8	6.5	7.2	
QL3 12-18"	6.8	6.5	7.2	
QL3 18-24"	6.8	6.5	7.2	
QL4 0-6"	6.5	6.0	7.6	
QL-5 0-6"	6.5	6.6	7.0	
QL-5 6-12"	6.5	6.6	7.0	
QL-5 12-18"	6.5	6.0	7.0	

HCl Yes

RTB

Name/Signature: Robert Bennett Date: 9.3.09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record QL

Fluvial Deposit/Irrigated Meadows Polygon:

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
QL-1 0-6"	Tare @ 0.0	20.0	20.0	7.5
QL-2 0-6"		19.9	19.9	7.3
Dupe QL-2 0-6"		20.0	20.0	7.3
QL-3 0-6"		20.6	20.6	7.6
QL-3 6-12"		19.9	20.0	7.7
QL-3 12-18"		19.0	19.0	8.0
QL-3 18-24"		21.0	21.6	7.9
QL-4 0-6"		20.0	20.0	7.5
QL-5 0-6"		20.0	20.0	6.8
QL-5 6-12"		20.0	20.0	6.8
QL-5 12-18"		20.2	20.2	6.8
		RB		

Name/Signature: Rob B

Date: 9-3-09

pH meter calibrated using Kroom Standards

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **QL-1**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	6	inches ✓
% Rock	30%	✓
Treatment Area	0.011	acres ✓

COMPOST CHARACTERISTICS

Percent Organic Carbon		15.79%	%
Percent Moisture		29.63%	%
Wet Bulk Density	=	0.687	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 94.50 tons/acre = 1.04 tons

Compost Rate = 137.55 cy/acre = 1.51 cy

Depth of Compost to be Applied = 1.0 inches

Signature: [signature]

Date: 7/29/09

Signature: [signature]

Date: 08-03-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **QL-2**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	6	inches
% Rock	40%	
Treatment Area	0.018	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre}/6" * (1-\%\text{rock}/100)}{\text{Compost \% OC} * (1- \%\text{Moisture}/100)}$$

Compost Rate = 81.00 tons/acre = 1.46 tons

Compost Rate = 117.90 cy/acre = 2.12 cy

Depth of Compost to be Applied = 0.9 inches

Signature: [signature]

Date: 7/29/09

Signature: [signature]

Date: 08-03-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **QL-3**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	50%	
Treatment Area	0.029	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 135.00 tons/acre = 3.91 tons

Compost Rate = 196.50 cy/acre = 5.70 cy

Depth of Compost to be Applied = 1.5 inches

Signature: [signature]

Date: 7/29/09

Signature: [signature]

Date: 08-03-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **QL-4**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	6	inches ✓
% Rock	50%	✓
Treatment Area	0.029	acres ✓

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	0.687	=	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 67.50 tons/acre = 1.96 tons

Compost Rate = 98.25 cy/acre = 2.85 cy

Depth of Compost to be Applied = 0.7 inches

Signature: [signature]

Date: 7/29/09

Signature: [signature]

Date: 08-07-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **QL-5**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches ✓
% Rock	0%	✓
Treatment Area	0.014	acres ✓

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	0.687	=	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 269.99 tons/acre = 3.78 tons

Compost Rate = 393.00 cy/acre = 5.50 cy

Depth of Compost to be Applied = 2.9 inches

Signature: [signature]

Date: 7/29/09

Signature: [signature]

Date: 08-03-09

Polygon Completion Form
Fluvial Deposits

Fluvial Deposit Polygon Name/ID: QM

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
08-21-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.3. **Comments/Deviations:**
08-21-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.4. Simultaneous to linear incorp (partial) w/excavation **Comments/Deviations:**
08-25-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Section 3.6A through 3.6E. Start line app. 08-21-09 Apply fert 08-25-09 **Comments/Deviations:** Acid 08-28
09-14-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.6F through 3.6I. Place Compost 09-01-09 **Comments/Deviations:** Inc. w/backhoe 09-14-09
N/A	N/A	Completed replacement of erosion channels in accordance with Specification Section 3.7. **Comments/Deviations:**
wk ~~ending 10-18-09~~ 10-23-09	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.8. **Comments/Deviations:** Seedbed prep during compost incorp 09-14-09 ~~Seeded wk ending 10-18-09~~ Seeded 10-23-09
10-26-09	✓	Completed mulching in accordance with Specification Section 3.9. **Comments/Deviations:** Mulched Crimp 10-26
NA	NA	Completed reinstallation of fencing in accordance with Specification Section 3.10. **Comments/Deviations:**
11-03-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.14. **Comments/Deviations:**

Quantity of Work Estimated in Proposal: NA - Addressed in Invoice
Quantity of Work Performed: QM

11-06-09
Signature of Subcontractor Date

11-03-09
Signature of Contractor Date

*Pre-Tilled

-COMPLETE-

Lime Complete: 1.62 CY, Target: 1.78 CY
Fertilizer: 3.0 lbs.
Seeding complete: 0.1 lbs

SBS: 10 LF Type II-mod

QMN
0.005 ACRES
24"

Compost Complete
14.31 tons target
14.36 tons applied

~~SBS:~~

QMS
0.048 ACRES
24"

COLVERT

ROAD

Lime Complete: 17.06 CY,
Target: 17.18 CY
Fertilizer: 29.37 lbs.
Seeding Complete: 1.1 lbs

SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 26626 L.S. AND P.E.

6-24

Duane D. Fehringer P.E. & P.L.S. 26626

Mulch Complete: (120 lbs., 3 bales)

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
40801 US HWY 6&24, SUITE 203 BOX 976 AVON, CO 81620-PH: (970)949-5072
6551 S. REVERE PARKWAY, SUITE 106 CENTENNIAL, CO 80111 PH: (303)948-6210

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QM
CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=20'
DATE ISSUED:	6-23-09
PROJECT NO.	08-0032
EXHIBIT	

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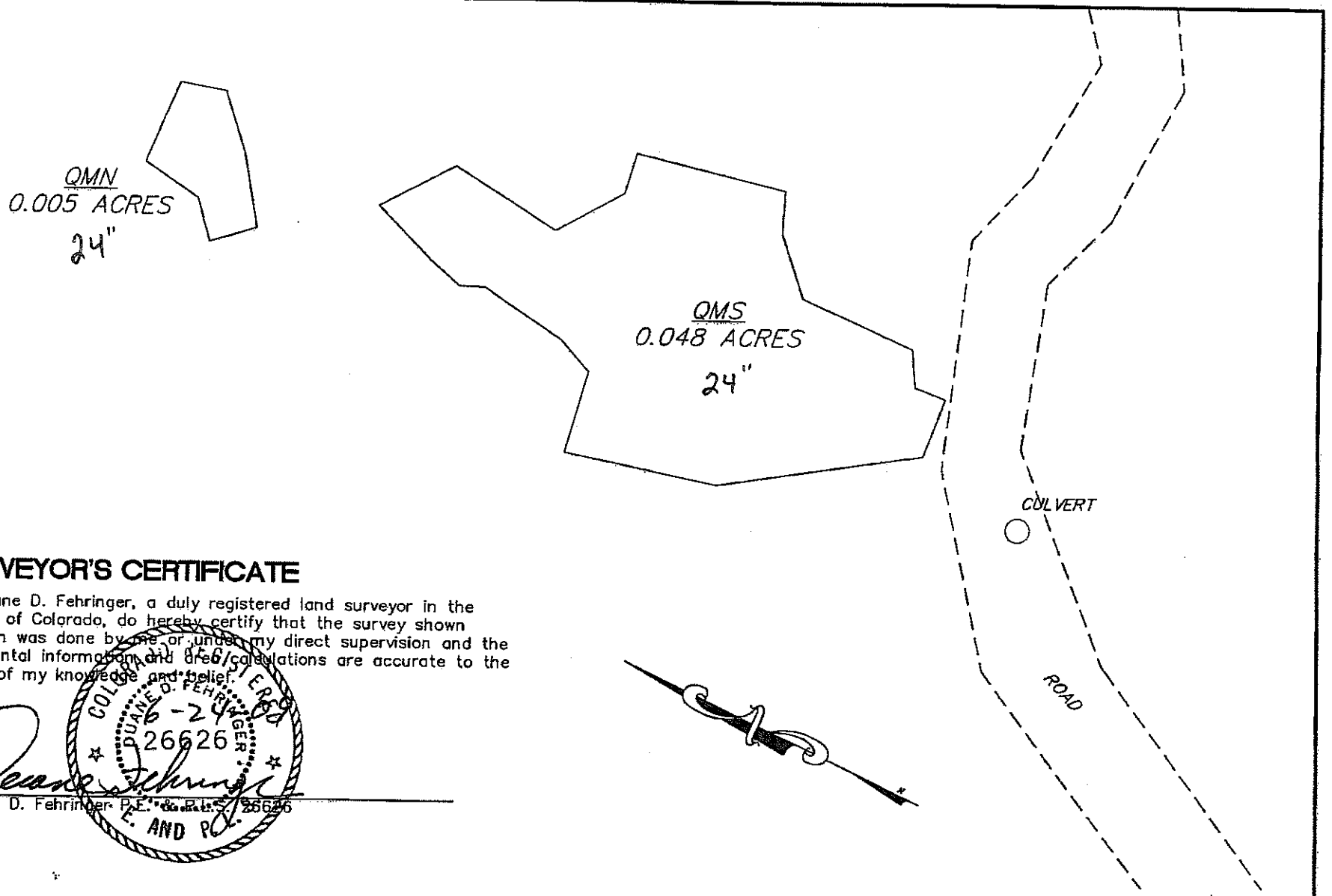

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COLORADO REGISTERED DUANE D. FEHRINGER 6-24-09 26626 L.S. AND P.E.

Duane D. Fehringer P.E. & P.L.S. 26626

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Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
40801 US HWY 6&24, SUITE 203 BOX 978 AVON, CO 81620 PH: (970)949-5872
6551 S. REVERE PARKWAY, SUITE 106 CENTENNIAL, CO 80111 PH: (303)948-6220

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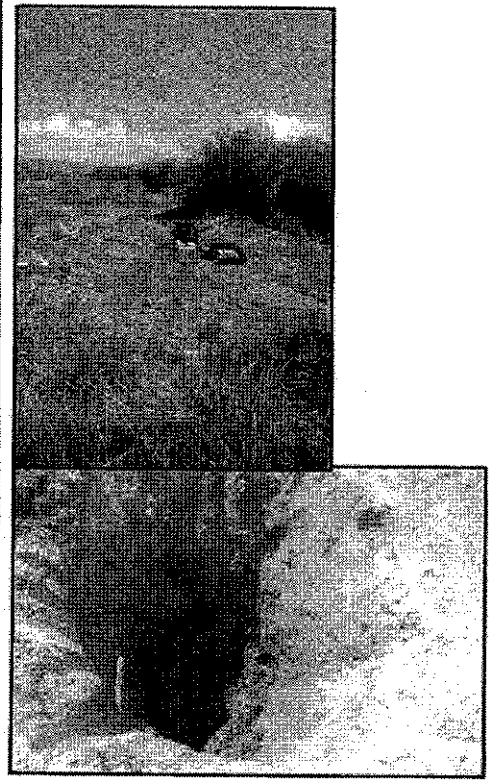
QM

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=20'
DATE ISSUED:	6-23-09
PROJECT NO.:	08-0032
EXHIBIT:	

FLUVIAL DEPOSIT QM



2006 Data

Arsenic	102 mg/kg
Cadmium	26.4 mg/kg
Copper	253 mg/kg
Lead	2170 mg/kg
Manganese	985 mg/kg
Mercury	0.34 mg/kg
Zinc	4510 mg/kg
pH	4.1
ABA	-27.1 t/1000t

Physical Characteristics

Area: 0.05 acre
Average Depth: 33"
Depth Range: 24" to 36"
Deep mine waste over cobble alluvium.
Lush vegetation surrounds mine waste.

Bank Stabilization

None.

BMPs at north end near channel.

Stabilize bank.
Short length Type 3.

Proposed Treatment

Lime amendment rate: 30 tons/1000 tons
Estimated Rock Content Correction: None
Organic amendment rate: Default
Fertilizer rate: Default
Till Depth: 24" to 36"
Average Till Depth: 33"
Till Equipment: Deep till rotary mixer with easy maneuverability in small areas.
Seed Mix: Fluvial Deposit Seed Mix or Riparian Seed Mix
Notes: Save healthy willows throughout site and grassy vegetation adjacent to tributary.

2 segments
Both - ~~30~~ 36" 0% Rock
24"

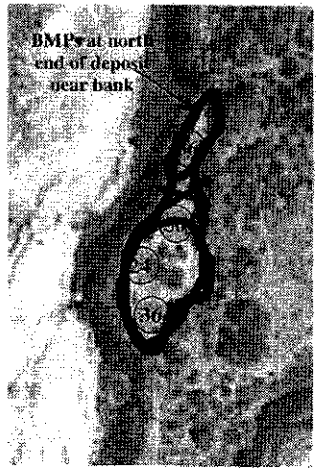
N. Segment Orange
S. Segment Blue

Fluvial Deposit Outline

Bank Stabilization Location

Depth of mine waste (inches)

Note: Figure not to scale.
Locations and streambank lengths estimated.
All treatment locations will be confirmed and marked prior to initiation of construction.



Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: QM-North

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	0.00% %
Total Area	0.005 acres
Average Depth Calculation	

Depth (inches)		% of Total Area		
24	X	100.00%	=	24
	X		=	
	X		=	
	X		=	
		Average Depth		24 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		29.00% %	
Bulk Density	0.75 grams/cc	= 0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate =	226.27 tons/acre	=	1.13 tons total
Lime Rate =	357.97 cy/acre	=	1.79 cy total
		Depth of Lime to be Applied =	2.7 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-29-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **QM-South**

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	0.00% % ✓
Total Area	0.048 acres ✓

Average Depth Calculation

Depth (inches)		% of Total Area		
24 ✓	X	100.00%	=	24
	X		=	
	X		=	
	X		=	
		Average Depth		24 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		29.00% %	
Bulk Density	0.75 grams/cc	= 0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate =	226.27 tons/acre	=	10.86 tons total
Lime Rate =	357.97 cy/acre	=	17.18 cy total
		Depth of Lime to be Applied =	2.7 inches

Signature: Ben A. Mack

Date: 6/26/09

Signature: [illegible]

Date: 07-28-09

FILE MEMO

Regarding: Lime Compost Fertilizer Mulch Seed Other

Fluvial Deposit ID: QM **Irrigated Meadow ID:** _____

Acreage: (Below)

Target Application: (Below)

Amount Applied: Below

Comments:

QM North: 0.005 x 153 lbs/acre x 4 (6-inch) = 3 lbs

QM South: 0.048 x 153 " x 4 (6-inch) = 29.4 lbs

PWT confirmed 0:45:0 fertilizer was applied.
Amounts weighed in field and hand broadcasted

_____ 08-25-09

Signature **Date**

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: QM North + South

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	HCl reaction?
Dupe QM-N 0-6"	6.7	6.5	7.0	0%	- Yes
QM-N 0-6"	↓	↓	↓	↓	↓
QM-N 6-12"					
QM-N 12-18"					
QM-N 18-24"					
QM-S 0-6"	6.7	6.5	7.0	0%	Yes
QM-S 6-12"	↓	↓	↓	↓	↓
QM-S 12-18"					
QM-S 18-24"					

RB

Name/Signature: Rob Brown **Date:** 8-31-09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Fluvial Deposit/Irrigated Meadows Polygon: **Paste pH Record** QM (North + South)

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
Dupe QMN 0-6"	Tare 20.0	20.0	20.0	6.8
QMN 6-12"		20.0	20.0	6.5
QMN 12-18"		20.0	20.0	6.9
QMN 18-24"		20.0	20.0	7.0
QMN 0-6"		20.0	20.1	6.8
QMS 0-6"		20.2	20.4	6.6
QMS 6-12"		20.0	20.0	6.8
QMS 12-18"		20.0	20.0	6.9
QMS 18-24"	↓	20.0	20.0	7.0
		RB		

Name/Signature: RofB **Date:** 8-31-09

pH meter calibrated using known standards

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **QM-North & South Combined**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	0%	
Treatment Area	0.053	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 269.99 tons/acre = 14.31 tons

Compost Rate = 393.00 cy/acre = 20.83 cy

Depth of Compost to be Applied = 2.9 inches

Signature: Brian A. Mud

Date: 6/26/09

Signature: John A. Mutt

Date: 07-07-09

Polygon Completion Form
Fluvial Deposits

Fluvial Deposit Polygon Name/ID: QN

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
07-10-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.3. **Comments/Deviations:**
07-17-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.4. **Comments/Deviations:** Began Pre-Till 07-10-09; Salvaging Carex 07-14-09
08-05/09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Section 3.6A through 3.6E. Apply lime & partial incorp 07-16-17-09 **Comments/Deviations:** Apply fertilizer 07-27-09; Start ALLU Incorp 07-29
10-12-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.6F through 3.6I. Start Compost Placement 09-04-09 **Comments/Deviations:** Start Incorp w 3rd Exc. 10-07-09
NA	NA	Completed replacement of erosion channels in accordance with Specification Section 3.7. **Comments/Deviations:**
wk of 10-18-09	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.8. **Comments/Deviations:** Seedbed prep w/compost incorp 10-12-09 Seeded week of 10-18-09
10-20-09	✓	Completed mulching in accordance with Specification Section 3.9. **Comments/Deviations:**
NA	NA	Completed reinstallation of fencing in accordance with Specification Section 3.10. **Comments/Deviations:**
11-03-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.14. **Comments/Deviations:**

Quantity of Work Estimated in Proposal: NA - Addressed in Invoicing dwg

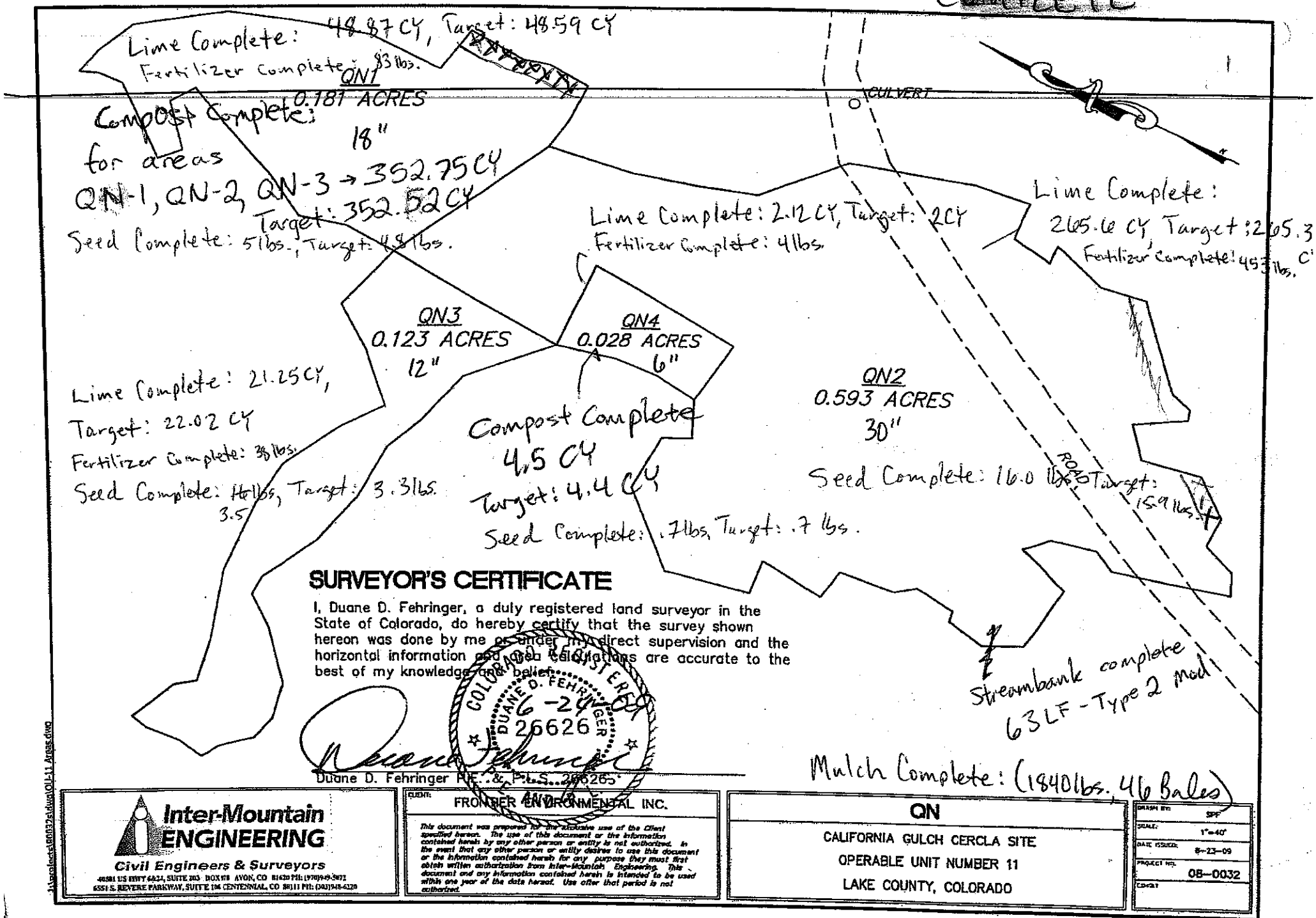
Quantity of Work Performed:

[signature] 11-06-09
Signature of Subcontractor Date

[signature] 11-03-09
Signature of Contractor Date

*Pre-Till Complete

COMPLETE



SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 6-24-09 26626 LAND SURVEYOR

Duane D. Fehringer PE & PLS 26626

Inter-Mountain ENGINEERING Civil Engineers & Surveyors 40581 US HWY 6&24, SUITE 203 BOX 978 AVON, CO 81620 PH: (970)949-5071 6551 S. REVERE PARKWAY, SUITE 196 CENTENNIAL, CO 80111 PH: (303)948-6220	CLIENT: FRONTIER ENVIRONMENTAL INC. This document was prepared for the exclusive use of the Client specified herein. The use of this document or the information contained herein by any other person or entity is not authorized. In the event that any other person or entity desires to use this document or the information contained herein for any purpose they must first obtain written authorization from Inter-Mountain Engineering. This document and any information contained herein is intended to be used within one year of the date hereof. Use after that period is not authorized.	QN CALIFORNIA GULCH CERCLA SITE OPERABLE UNIT NUMBER 11 LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=40'
DATE ISSUED:	8-23-09
PROJECT NO:	08-0032
CONSULT	

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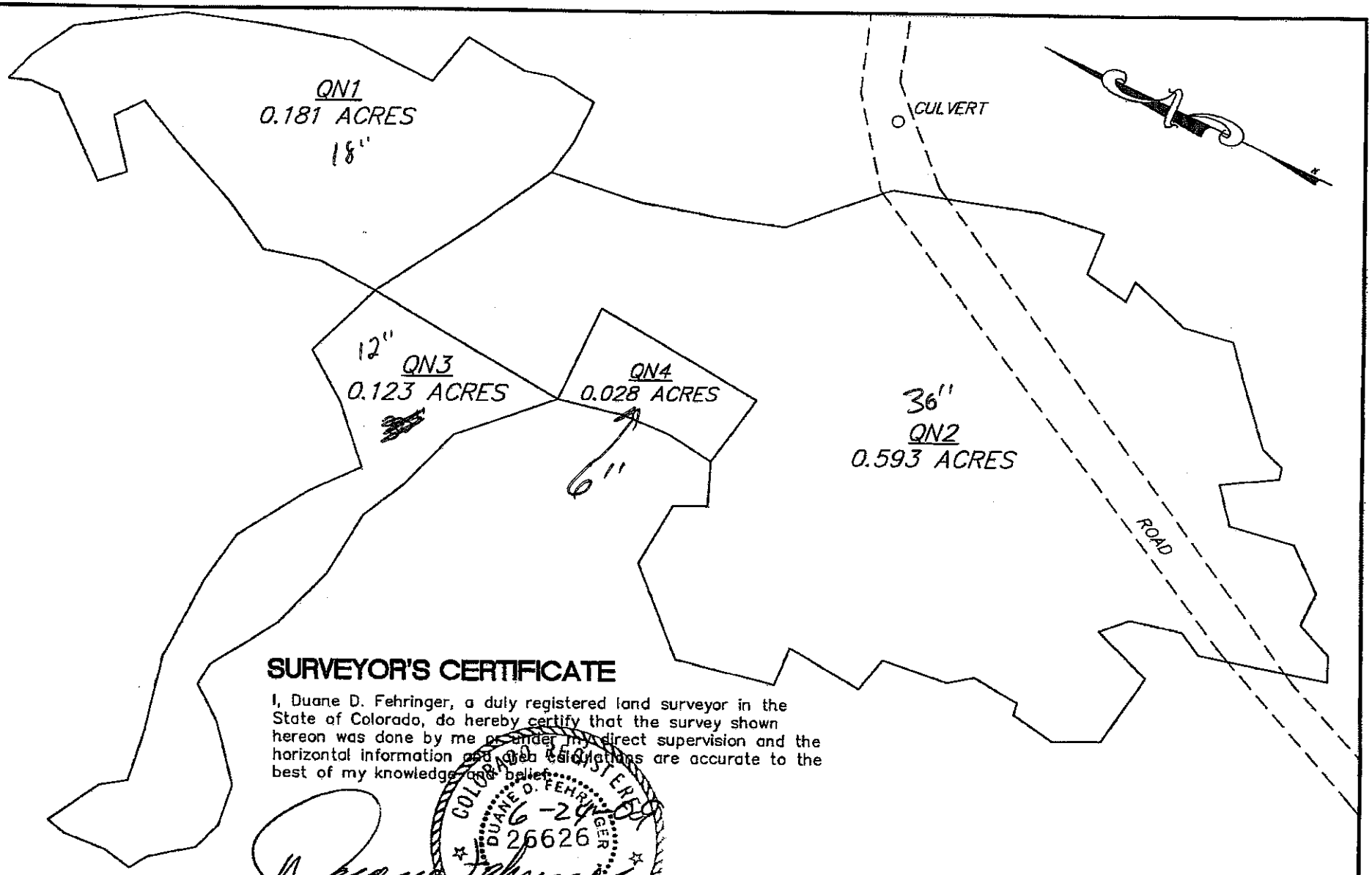

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COLORADO REGISTERED DUANE D. FEHRINGER 6-24-09 26626 L.S. AND P.E.

Duane D. Fehringer P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
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QN

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=40'
DATE ISSUED:	8-23-09
PROJECT NO.	08-0032
CHKD BY	

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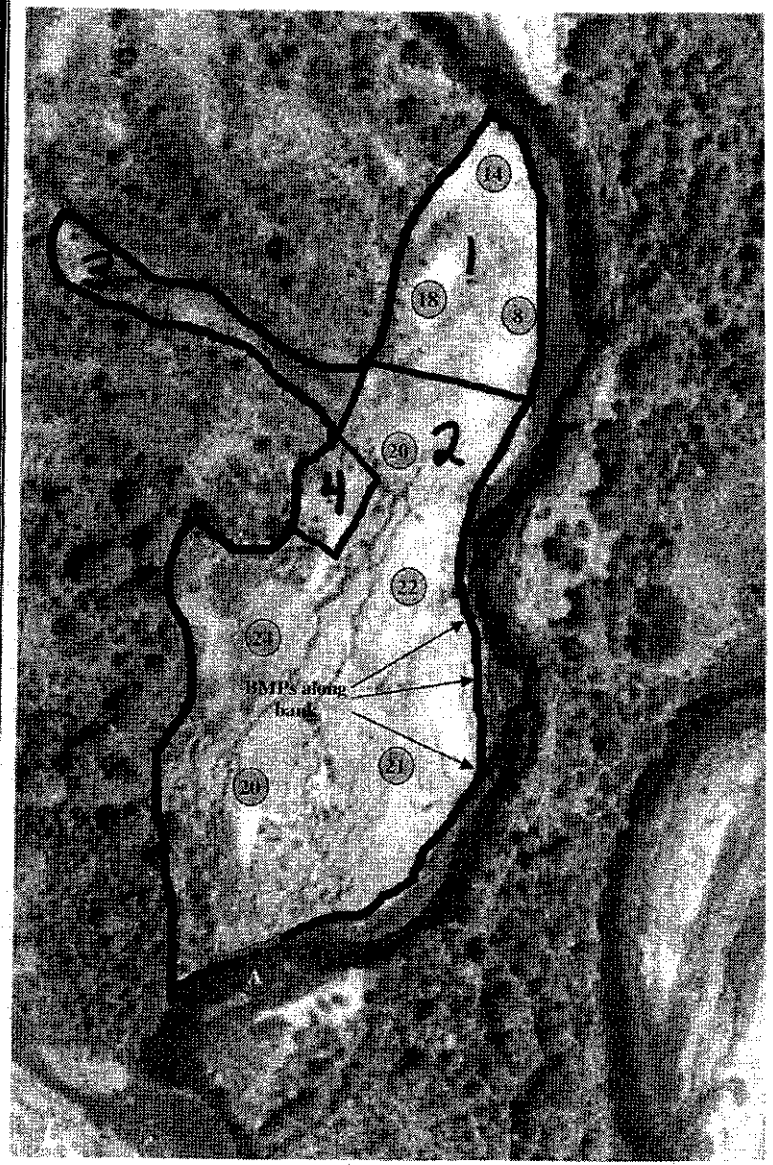
FLUVIAL DEPOSIT QN



Bank Stabilization

Bank A: 25' Type 2 or modified Type 2 stabilization.

Use BMPs where there is less than 10' between the deposit and the channel. Move willows and Carex moved for treatment to the erosional channel after treatment.

The need for additional stabilization will be reevaluated prior to treatment due to possible changes from the beaver dam located east of the deposit during September 2007.

1	Treat to 18"	0% Rock	Blue
2	30"	0%	Orange
3	12"	0%	Pink
	~~No compost on #3~~		
4	6"	20%	Yellow

Fluvial Deposit Outline

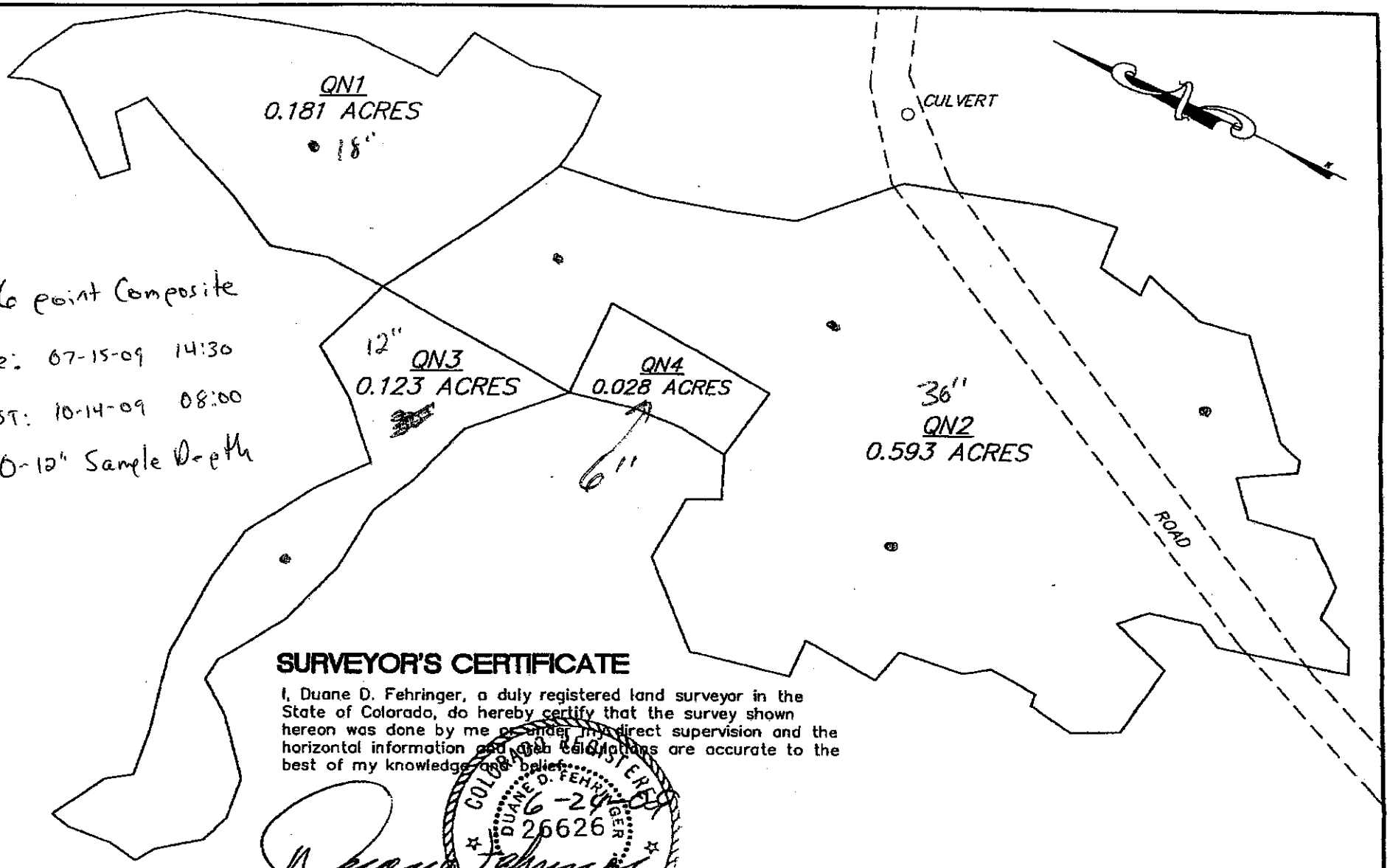
Bank Stabilization Location

(28) Depth of mine waste (inches)

Note: Figure not to scale

Locations and streambank lengths estimated.

All treatment locations will be confirmed and marked prior to initiation of construction.



• 6 point Composite

Pre: 07-15-09 14:30

Post: 10-14-09 08:00

0-12" Sample Depth

SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and data calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 6-24-09 26626

Duane D. Fehringer P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING

Civil Engineers & Surveyors

40881 US HWY 6&24, SUITE 203 BOX 978 AVON, CO 81620 PH: (970)949-5872

6551 S. REVERE PARKWAY, SUITE 106 CENTENNIAL, CO 80111 PH: (303)948-4220

CLIENT: FRONTIER ENVIRONMENTAL INC.

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QN

CALIFORNIA GULCH CERCLA SITE

OPERABLE UNIT NUMBER 11

LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=40'
DATE ISSUED:	8-23-09
PROJECT NO.	08-0032
EXHIBIT	

J:\projects\80032\dwg\OU-11 Areas.dwg

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **QN-1**

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	0.00% %
Total Area	0.181 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
18	X	100.00%	=	18
	X		=	
	X		=	
	X		=	
		Average Depth		18 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1 =	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5 =	0.04%	(B)
Percent < 60 mesh	99.92%	X 1 =	99.92%	(C)
Lime Reactivity		=	99.96%	A+B+C

Calcium Carbonate Equivalence			82.20% %
Percent Moisture			29.00% %
Bulk Density	0.75 grams/cc	=	0.63 tons/cy

CALCULATE LIME RATE

$$\text{Lime Rate} = \frac{\text{Net Application Rate} * (1 + \text{Mixing Factor}/100) * (1 - \%\ \text{Rock}/100) * \text{Depth}}{(\text{Lime Reactivity}) * (\text{Calcium Carbonate Equivalence}/100) * (1 - \%\ \text{Moisture}/100)}$$

Lime Rate = 169.70 tons/acre = 30.72 tons total

Lime Rate = 268.48 cy/acre = 48.59 cy total

Depth of Lime to be Applied = 2.0 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-13-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: QN-2

POLYGON CHARACTERISTICS

Net Application Rate	30	tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00%	%
% Rock	0.00%	%
Total Area	0.593	acres

Average Depth Calculation

Depth (inches)		% of Total Area		
30	X	100.00%	=	30
	X		=	
	X		=	
	X		=	
		Average Depth		30 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20%	%
Percent Moisture		29.00%	%
Bulk Density	0.75 grams/cc =	0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate =	282.83 tons/acre	=	167.72 tons total
Lime Rate =	447.46 cy/acre	=	265.35 cy total
		Depth of Lime to be Applied =	3.3 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-13-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **QN-3**

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	0.00% %
Total Area	0.123 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
12	X	100.00%	=	12
	X		=	
	X		=	
	X		=	
		Average Depth		12 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		29.00% %	
Bulk Density	0.75 grams/cc	= 0.63	tons/cy

CALCULATE LIME RATE

$$\text{Lime Rate} = \frac{\text{Net Application Rate} * (1 + \text{Mixing Factor}/100) * (1 - \%\ \text{Rock}/100) * \text{Depth}}{(\text{Lime Reactivity}) * (\text{Calcium Carbonate Equivalence}/100) * (1 - \%\ \text{Moisture}/100)}$$

Lime Rate =	113.13 tons/acre	=	13.92 tons total
Lime Rate =	178.99 cy/acre	=	22.02 cy total
		Depth of Lime to be Applied =	1.3 inches

Signature: _____

Date: 6/26/09

Signature: _____

Date: 07-13-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: QN-4

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	20.00% %
Total Area	0.028 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
6	X	100.00%	=	6
	X		=	
	X		=	
	X		=	
		Average Depth		6 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1 =	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5 =	0.04%	(B)
Percent < 60 mesh	99.92%	X 1 =	99.92%	(C)
Lime Reactivity		=	99.96%	A+B+C

Calcium Carbonate Equivalence			82.20% %
Percent Moisture			29.00% %
Bulk Density	0.75 grams/cc	=	0.63 tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate =	45.25 tons/acre	=	1.27 tons total
Lime Rate =	71.59 cy/acre	=	2.00 cy total
		Depth of Lime to be Applied =	0.5 inches

Signature: Brad Mast

Date: 6/26/09

Signature: [illegible]

Date: 07-13-09

FILE MEMO

Regarding: Lime Compost (Fertilizer) Mulch Seed Other

Fluvial Deposit ID: QN **Irrigated Meadow ID:** _____

Acreage: See Below

Target Application: See Below

Amount Applied: _____

Comments:

QN 1: 0.181 acres x 153 lbs/acre x 3 (6-inch) = 83 lbs ≈ 1.66 bags

QN 2: 0.593 acres x 153 lbs/acre x 5 (6-inch) = 453.6 lbs ≈ 9 bags

QN 3: .123 acres x 153 lbs/acre x 2 (6-inch) = 37.6 lbs ≈ 3/4 bag

QN 4: 0.028 acres x 153 lbs/acre x 1 (6-inch) = 4.3 lbs

0:45:0 Confirmed

Hand Broadcasted amounts per area as targeted, using hanging scale to weigh fertilizer.

John G. Mehl

Signature

07-27-09

Date

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: QN

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	HCl reaction
QN3 0-6"	7.0	6.5	7.5	0	Yes
QN3 6-12"	7.0	6.5	7.5	0	Yes
QN1 0-6"	7.5	7.0	8.0	0	Yes
QN1 6-12"	7.0	7.0	7.0	0	Yes
QN1 12-18"	7.0	7.0	7.0	0	Yes
QN4 0-6"	7.0	7.0	7.0	0	Yes
QN2 0-6"	7.0	6.5	7.0	0	Yes
QN2 6-12"	7.0	6.5	7.0	0	Yes
QN2 12-18"	7.0	6.5	7.0	0	Yes
QN2 18-24"	7.0	6.5	7.0	0	Yes
QN2 24-30"	7.0	6.5	7.0	0	Yes
QN2-1 0-6"	7.0	6.5	7.0	0	Yes
QN2-1 6-12"	7.0	6.5	7.0	0	Yes
QN2-1 12-18"	7.0	6.5	7.0	0	Yes
QN2-1 18-24"	7.0	6.5	7.0	0	Yes
QN2-1 24-30"	7.0	6.5	7.0	0	Yes

Name/Signature: [signature]

Date: 08-03-09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record QN

Fluvial Deposit/Irrigated Meadows Polygon:

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
QW3 0-6"	Tare@0.0	22.0	22.4	6.7
QW3 6-12"		20.0	20.1	6.8
QW1 0-6"		20.3	20.3	6.8
QW1 6-12"		20.4	21.1	7.1
QW1 12-18"		20.6	20.1	6.7
QW4 0-6"		21.2	21.4	7.3
QW2 0-6"		20.1	20.1	6.5
QW2 6-12"		20.0	20.0	6.8
QW2 12-18"		20.0	20.1	6.7
QW2 18-24"		20.2	20.1	6.8
QW2 24-30"		20.1	20.3	7.2
QW2-1 6-6"		21.1	21.0	7.3
QW2-1 6-12"		20.0	20.0	7.2
QW2-1 12-18"		20.1	20.2	7.4
QW2-1 18-24"		20.2	20.1	6.8
QW2-1 24-30"		20.3	20.4	6.9

Name/Signature: RobBrown **Date:** 08-03-09

pH probe calibrated to Brown standards on 08-03-09 by Rob Brown

RobBrown

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **QN 1, 2 & 3**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	0%	
Treatment Area	0.897	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	0.687	=	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate =	269.99 tons/acre	=	242.18 tons
Compost Rate =	393.00 cy/acre	=	352.52 cy
		Depth of Compost to be Applied =	2.9 inches

Signature: [signature]

Date: 7/29/09

Signature: [signature]

Date: 08-03-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **QN-4**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	6	inches
% Rock	20%	
Treatment Area	0.028	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon		15.79%	%
Percent Moisture		29.63%	%
Wet Bulk Density	=	0.687	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 108.00 tons/acre = 3.02 tons

Compost Rate = 157.20 cy/acre = 4.40 cy

Depth of Compost to be Applied = 1.2 inches

Signature: [signature]

Date: 7/29/09

Signature: [signature]

Date: 08-03-09

Lime Delivery

QF
1 - 64.51 cy @ 2.3" → 15.5 950 buckets
8 - 9.67 cy @ 2.7" → 3 938 buckets
10 - 8.05 cy @ 1.3" → 2.5 938 buckets

QG
1 - 7.49 cy @ 0.6" → 2.5 938 buckets
2 - 109.18 cy @ 3.3" → 25.5 950 buckets
3 - 23.98 cy @ 1.3" → 5.5-6.0 950 buckets

Access roads - QK / RJ

Compost Delivery

- QN
  1, 2, & 3 → 352.52 cy → 2.9" → 82.94 → 83 950 buckets
  4 → 4.4 cy → 1.2" → 1 950 bucket

Polygon Completion Form
Fluvial Deposits

Fluvial Deposit Polygon Name/ID: QO

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
08-03-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.3. **Comments/Deviations:**
08-05-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.4. **Comments/Deviations:** Pre till Started 08-03-09
08-13-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Section 3.6A through 3.6E. Appl, lime 08-11-12-09; Incorp w/Excavator **Comments/Deviations:** as authorized by R. Melrick (rock content)
10-01-09 09-29-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.6F through 3.6I. Start Placing Compost 08-14-09 **Comments/Deviations:** Compost Incorp w/Trs Excv 09-24-25-09 Rpsow 10-01-09
NA	N/A	Completed replacement of erosion channels in accordance with Specification Section 3.7. **Comments/Deviations:**
10-08-09	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.8. **Comments/Deviations:** Prep work w/ Compost Incorp w/Trs 3/5 Excv. 10-01-09. Seeded 10-08-09
10-26-09	✓	Completed mulching in accordance with Specification Section 3.9. **Comments/Deviations:** Mulched, Crimped w/Excv. 10-26-09
NA	NA	Completed reinstallation of fencing in accordance with Specification Section 3.10. **Comments/Deviations:**
11-03-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.14. **Comments/Deviations:**

Quantity of Work Estimated in Proposal: NA Addressed in Invoicing
Quantity of Work Performed:

Signature of Subcontractor — Date: 11-06-09

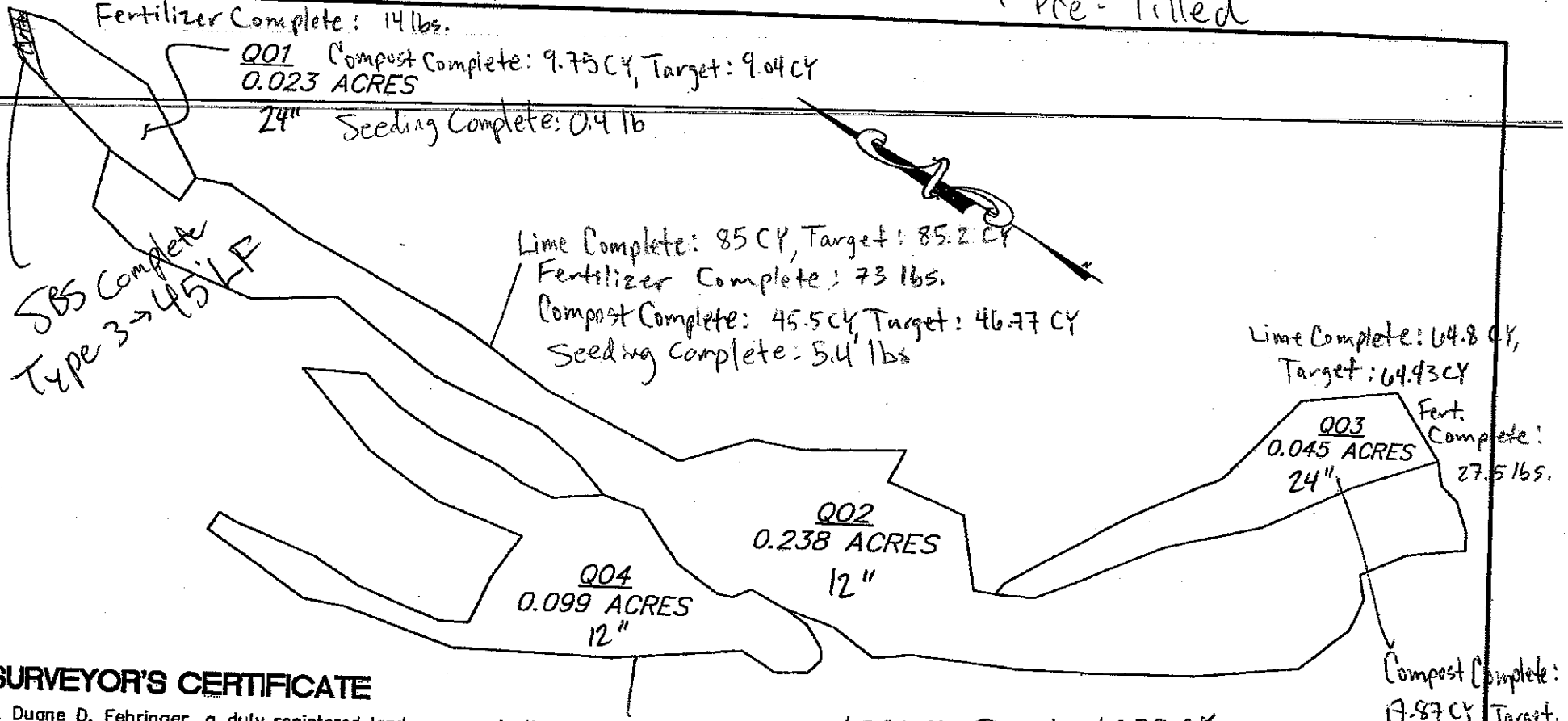
Signature of Contractor — Date: 11-03-09

Complete

Lime Complete: 32.93 CY, Target: 32.93 CY

Fertilizer Complete: 14 lbs.

* Pre-Tilled



SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and field calculations are accurate to the best of my knowledge and belief.

COLORADO DUANE D. FEHRINGER 26626 L.S. AND P.E.

6-24-09

Duane D. Fehringer, P.E. & P.L.S. 26626

Lime Complete: 63.75 CY, Target: 63.79 CY

Fertilizer Complete: 30 lbs.

Compost Complete: ~~34.93~~ 35.06 CY, Target: 35.02 CY (1.8.C)

Seeding Complete: 2.3 lbs

* Mulch Complete: (800 lbs, 20 bales)

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
40881 U.S. HWY 6&24, SUITE 203, BOX 978 AVON, CO 81620 PH: (970) 949-5972
6551 S. REVERE PARKWAY, SUITE 186 CENTENNIAL, CO 80111 PH: (303) 948-6220

CLIENT: FRONTIER ENVIRONMENTAL INC.

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QO

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=40'
DATE ISSUED:	6-23-09
PROJECT NO.	08-0032
EXHIBIT	

J:\projects\80032\dwg\QO-11 Areas.dwg

FLUVIAL DEPOSIT QO

[---] Cobble road

----- Drive over polygon to get to QR

⊗ Culvert

Bank Stabilization TBD

Bank A: 30' Type 3 stabilization where there is less than 10' of vegetation between the deposit and the stream. (Add carex and young willows. Mature willows not necessary.)

Bank B: 20' modified Type 2 stabilization at spring abutting mine waste at the southeast end of the deposit. No soil excavation and replacement required.

1 Treat to 24" 0% rock - yellow flags

2 Treat to 12" 50% rock - orange

3 Treat to 24" 0% rock - blue

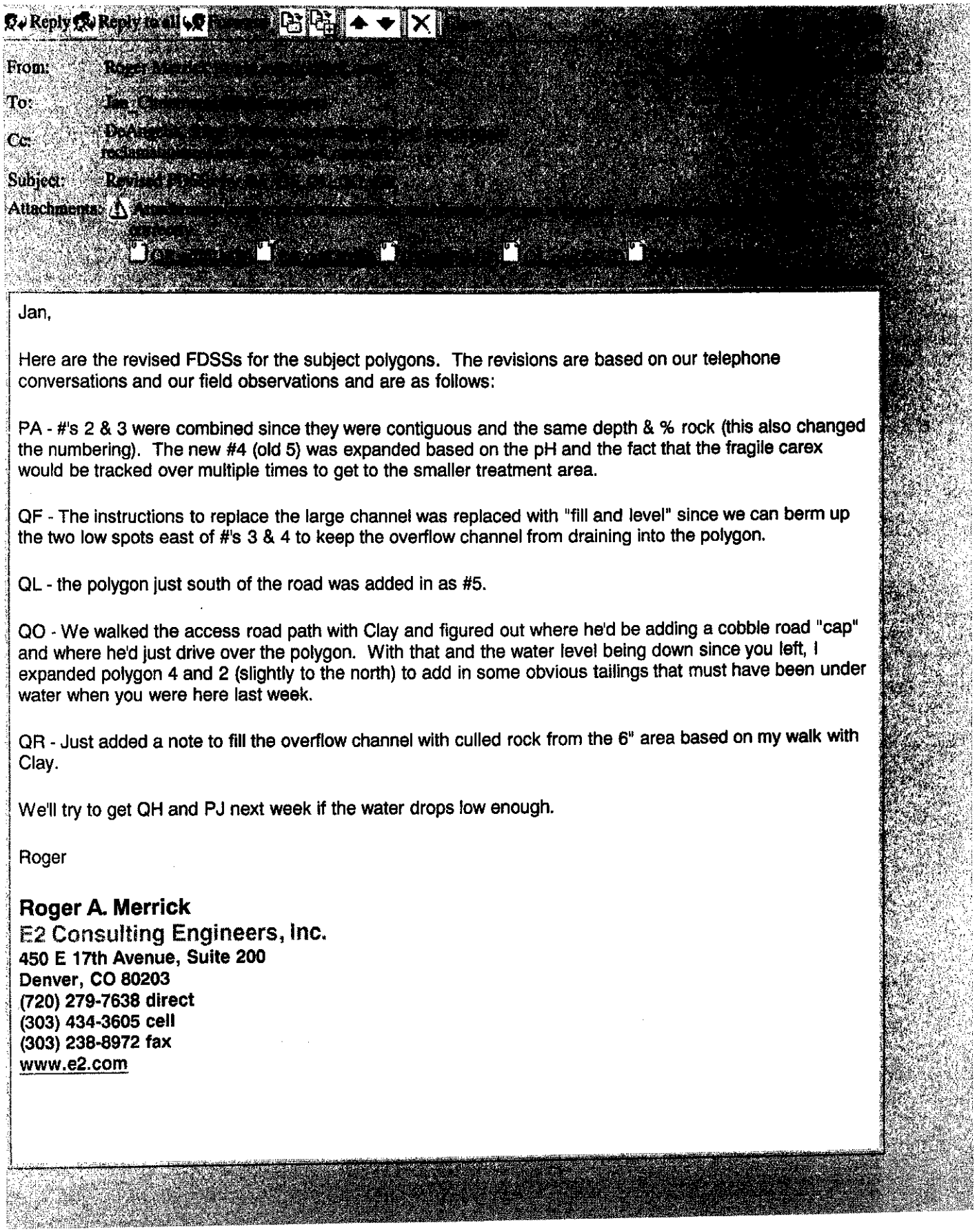
4 Treat to 12" 10% rock - blue

Fluvial Deposit Outline

Bank Stabilization Location

(18) Depth of mine waste (inches)

Note: Figure not to scale.
Locations and streambank lengths estimated.
All treatment locations will be confirmed and marked prior to initiation of construction.



Reply Reply to all

From:
To:
Cc:
Subject:
Attachments:

Jan,

Here are the revised FDSSs for the subject polygons. The revisions are based on our telephone conversations and our field observations and are as follows:

PA - #'s 2 & 3 were combined since they were contiguous and the same depth & % rock (this also changed the numbering). The new #4 (old 5) was expanded based on the pH and the fact that the fragile carex would be tracked over multiple times to get to the smaller treatment area.

QF - The instructions to replace the large channel was replaced with "fill and level" since we can berm up the two low spots east of #'s 3 & 4 to keep the overflow channel from draining into the polygon.

QL - the polygon just south of the road was added in as #5.

QO - We walked the access road path with Clay and figured out where he'd be adding a cobble road "cap" and where he'd just drive over the polygon. With that and the water level being down since you left, I expanded polygon 4 and 2 (slightly to the north) to add in some obvious tailings that must have been under water when you were here last week.

QR - Just added a note to fill the overflow channel with culled rock from the 6" area based on my walk with Clay.

We'll try to get QH and PJ next week if the water drops low enough.

Roger

Roger A. Merrick
E2 Consulting Engineers, Inc.
450 E 17th Avenue, Suite 200
Denver, CO 80203
(720) 279-7638 direct
(303) 434-3605 cell
(303) 238-8972 fax
www.e2.com

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: QO-1

POLYGON CHARACTERISTICS

Net Application Rate	120 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	0.00% % ✓
Total Area	0.023 acres ✓

Average Depth Calculation

Depth (inches)		% of Total Area		
24 ✓	X	100.00%	=	24
	X		=	
	X		=	
	X		=	
		Average Depth		24 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		29.00% %	
Bulk Density	0.75 grams/cc	= 0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate =	905.06 tons/acre	=	20.82 tons total
Lime Rate =	1431.88 cy/acre	=	32.93 cy total
		Depth of Lime to be Applied =	10.7 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-27-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: QO-2

POLYGON CHARACTERISTICS

Net Application Rate	120	tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00%	%
% Rock	50.00%	% ✓
Total Area	0.238	acres ✓

Average Depth Calculation

Depth (inches)		% of Total Area		
12 ✓	X	100.00%	=	12
	X		=	
	X		=	
	X		=	
		Average Depth		12 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20%	%
Percent Moisture		29.00%	%
Bulk Density	0.75 grams/cc	= 0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate =	226.27 tons/acre	=	53.85 tons total
Lime Rate =	357.97 cy/acre	=	85.20 cy total
		Depth of Lime to be Applied =	2.7 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-27-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **QO-3**

POLYGON CHARACTERISTICS

Net Application Rate	120 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	0.00% % ✓
Total Area	0.045 acres ✓

Average Depth Calculation

Depth (inches)		% of Total Area		
24 ✓	X	100.00%	=	24
	X		=	
	X		=	
	X		=	
		Average Depth		24 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		29.00% %	
Bulk Density	0.75 grams/cc	= 0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 905.06 tons/acre = 40.73 tons total

Lime Rate = 1431.88 cy/acre = 64.43 cy total

Depth of Lime to be Applied = 10.7 inches

Signature: [signature]

Date: 6/24/05

Signature: [signature]

Date: 07-2-9-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **QO-4**

POLYGON CHARACTERISTICS

Net Application Rate		120 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)		10.00% %
% Rock		10.00% % ✓
Total Area		0.099 acres ✓

Average Depth Calculation

Depth (inches)		% of Total Area		
12 ✓	X	100.00%	=	12
	X		=	
	X		=	
	X		=	
		Average Depth		12 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		29.00% %	
Bulk Density	0.75 grams/cc	= 0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate =	407.28 tons/acre	=	40.32 tons total
Lime Rate =	644.35 cy/acre	=	63.79 cy total
		Depth of Lime to be Applied =	4.8 inches

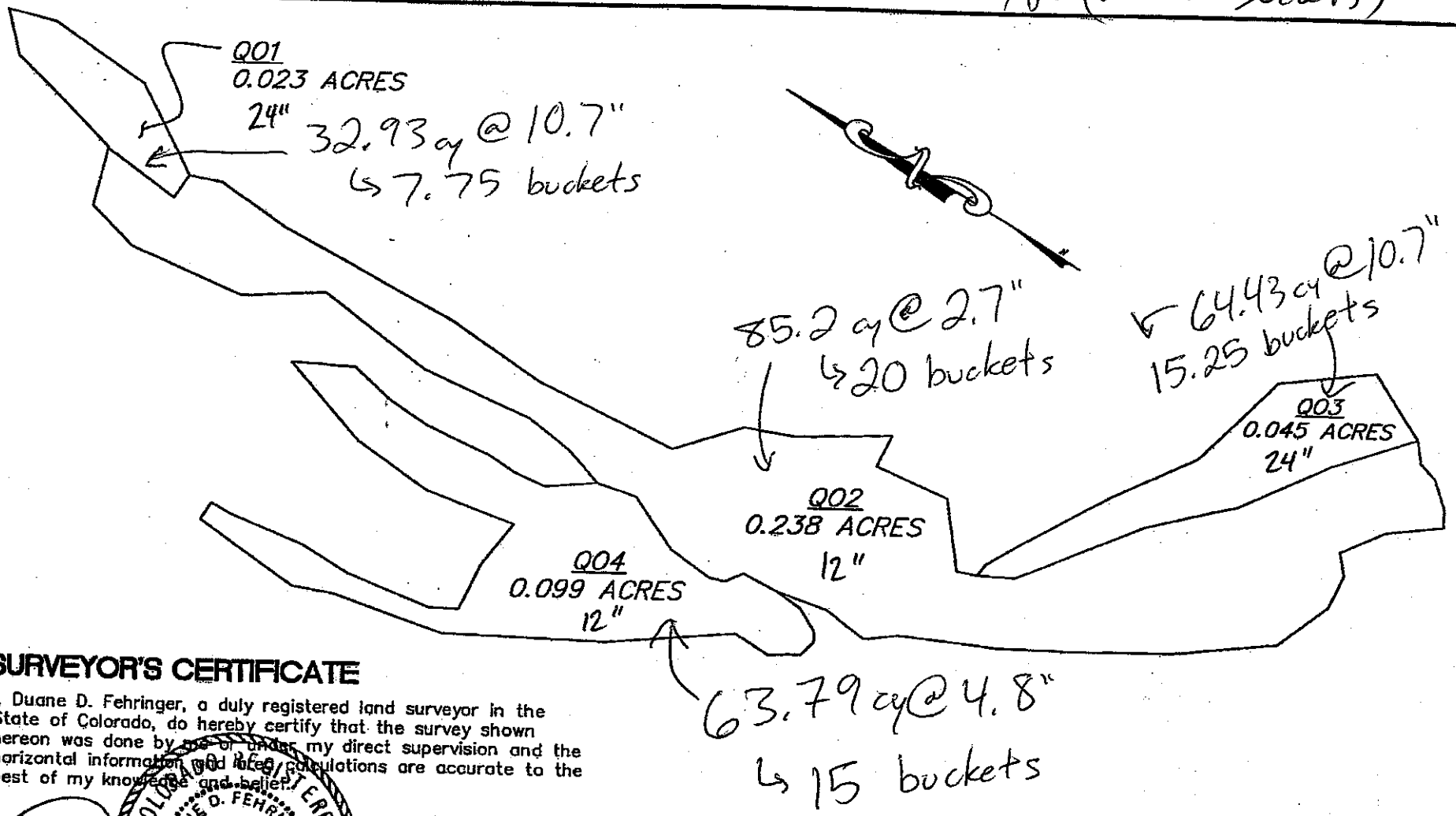
Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-27-09

LIME 950 (loads Buckets)



SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and field calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 6-24 26626 L.S. AND P.E.

Duane D. Fehringer, P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
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4551 S. REVERE PARKWAY, SUITE 186 CENTENNIAL, CO. 80111 PH: (303)948-4220

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QO
CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=40'
DATE ISSUED:	6-23-09
PROJECT NO:	08-0032
EXHIBIT	

J:\projects\08032s\dwg\QU-11 Areas.dwg

FILE MEMO

Regarding: Lime Compost (Fertilizer) Mulch Seed Other

Fluvial Deposit ID: Q0 **Irrigated Meadow ID:** _____

Acreage: See Below

Target Application: See Below

Amount Applied: _____

Comments:

Q01: .023 acres x 153 lbs/acre x 4(6-inch) = 14 lbs

Q02: .238 acres x 153 x 2(6-inch) = 73 lbs x 1.5 bags

Q03: .045 acres x 153 x 4(6-inch) = 275 lbs

Q04: .099 acres x 153 x 2(6-inch) = ~~30.3~~ lbs

Combined 0:45:0 and observed application approximate amounts weighted and hand broadcasted

[signature]

Signature

08-12-09

Date

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: Q0

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	HCl reaction
Q01 0-6"	7.0	6.5	7.5	0%	Yes
Q01 6-12"	7.0	6.5	7.5	0%	Yes
Q01 12-18"	7.0	6.5	7.5	0%	Yes
Q01 18-24"	7.0	6.5	7.5	0%	Yes
Q04 0-6"	7.6	6.5	7.5	0%	Yes
Q04 6-12"	7.0	6.5	7.5	0%	Yes

Name/Signature: Rob Bu

Date: 8-13-09

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: QO

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	HCL Reaction
QO-2 0-6	7.5	7.5	7.5	0%	Yes
QO-2 6-12	7.5	7.5	7.5	"	Yes
QO-3 0-6	7.3	7.0	7.5	"	Yes
QO-3 6-12	7.3	7.0	7.5	"	Yes
QO-3 12-18	7.3	7.0	7.5	"	Yes
QO-3 18-24	7.3	7.0	7.5	"	Yes
	Note: Near Saturated Conditions on				
	QO-3 12-18 & 18-24 below surface				

Name/Signature: [signature]

Date: 08-14-09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record QO

Fluvial Deposit/Irrigated Meadows Polygon:

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
QO1 0-6"	Tare @ 0.0	21.0	21.0	7.4
QO1 6-12"		20.0	20.0	7.6
QO1 12-18"		20.0	20.0	7.3
QO1 18-24"		21.4	21.5	7.1
QO4 0-6"		21.3	21.3	6.9
QO 4 6-12"		20.0	20.0	6.6
QO2 0-6"		20.0	20.0	7.8
QO2 6-12"		20.0	20.0	7.9
QO2 6-12" DUP		20.0	20.0	8.0
QO3 0-6"		21.3	21.3	7.7
QO3 6-12"		20.2	20.2	7.3
QO3 12-18"		20.2	20.3	7.2
QO3 18-24"		20.0	20.0	7.3

Name/Signature: Robin Brown **Date:** 8-14-09

pH meter calibrated to known standards of 4, 7, and 10 by Robin Brown on 8-14-09.

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: QO-1

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	0%	
Treatment Area	0.023	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 269.99 tons/acre = 6.21 tons

Compost Rate = 393.00 cy/acre = 9.04 cy

Depth of Compost to be Applied = 2.9 inches

Signature: [signature]

Date: 4/26/09

Signature: [signature]

Date: 07-07-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **QO-2**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	50%	
Treatment Area	0.238	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon		15.79%	%
Percent Moisture		29.63%	%
Wet Bulk Density	=	0.687	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 135.00 tons/acre = 32.13 tons

Compost Rate = 196.50 cy/acre = 46.77 cy

Depth of Compost to be Applied = 1.5 inches

Signature: _____

Date: 6/26/09

Signature: _____

Date: 07-07-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **QO-3**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	0%	
Treatment Area	0.045	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 269.99 tons/acre = 12.15 tons

Compost Rate = 393.00 cy/acre = 17.69 cy

Depth of Compost to be Applied = 2.9 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-07-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **QO-4**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	10%	
Treatment Area	0.099	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 242.99 tons/acre = 24.06 tons

Compost Rate = 353.70 cy/acre = 35.02 cy

Depth of Compost to be Applied = 2.6 inches

Signature: Ryan A. Mund

Date: 6/26/09

Signature: John A. Shultz

Date: 07-07-09

FILE MEMO

Regarding: Lime Compost Fertilizer Mulch (Seed) Other

Fluvial Deposit ID: QD **Irrigated Meadow ID:** ~~ID:~~ _____

Acreage: _____

Target Application: _____ } Below

Amount Applied: _____

Comments:

QD 1: .023 acres × 11.44 lbs × 2 (Bobble Rate) = 0.5 lbs

QD 2: 0.238 " " " = 5.4 lbs

QD 3: 0.045 " " = 1.0 lb

QD 4: 0.099 " " = 2.3 lbs

Confirmed FD Seed Mix; Subcontractor weighing and broadcasting seed.

_____ 10-08-09

Signature **Date**

Polygon Completion Form
Fluvial Deposits

Fluvial Deposit Polygon Name/ID: QP

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
08-17-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.3. **Comments/Deviations:**
08-19-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.4. Pre-Till Simultaneous to Lime App/Partial Till - Started 08-17 **Comments/Deviations:** Fertilized after lime app completed on 08-19-09
08-26-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Section 3.6A through 3.6E. Start Lime App 08-17; Start Rest Incore 08-25-09 **Comments/Deviations:**
10-06-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.6F through 3.6I. Completed Placement 08-28 **Comments/Deviations:** Tillage Completed 10-06
N/A	N/A	Completed replacement of erosion channels in accordance with Specification Section 3.7. **Comments/Deviations:**
10-08-09	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.8. **Comments/Deviations:** Seedbed Prep w/ 315 Excel 10-06-09 Seeded 10-08-09
10-19-09	✓	Completed mulching in accordance with Specification Section 3.9. **Comments/Deviations:** Mulch & Crimp 10-19
NA	NA	Completed reinstallation of fencing in accordance with Specification Section 3.10. **Comments/Deviations:**
11-03-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.14. **Comments/Deviations:**

Quantity of Work Estimated in Proposal: NA - Addressed in Invoice Documentation Any
Quantity of Work Performed:

[signature] 11-06-09
Signature of Subcontractor Date

[signature] 11-03-09
Signature of Contractor Date

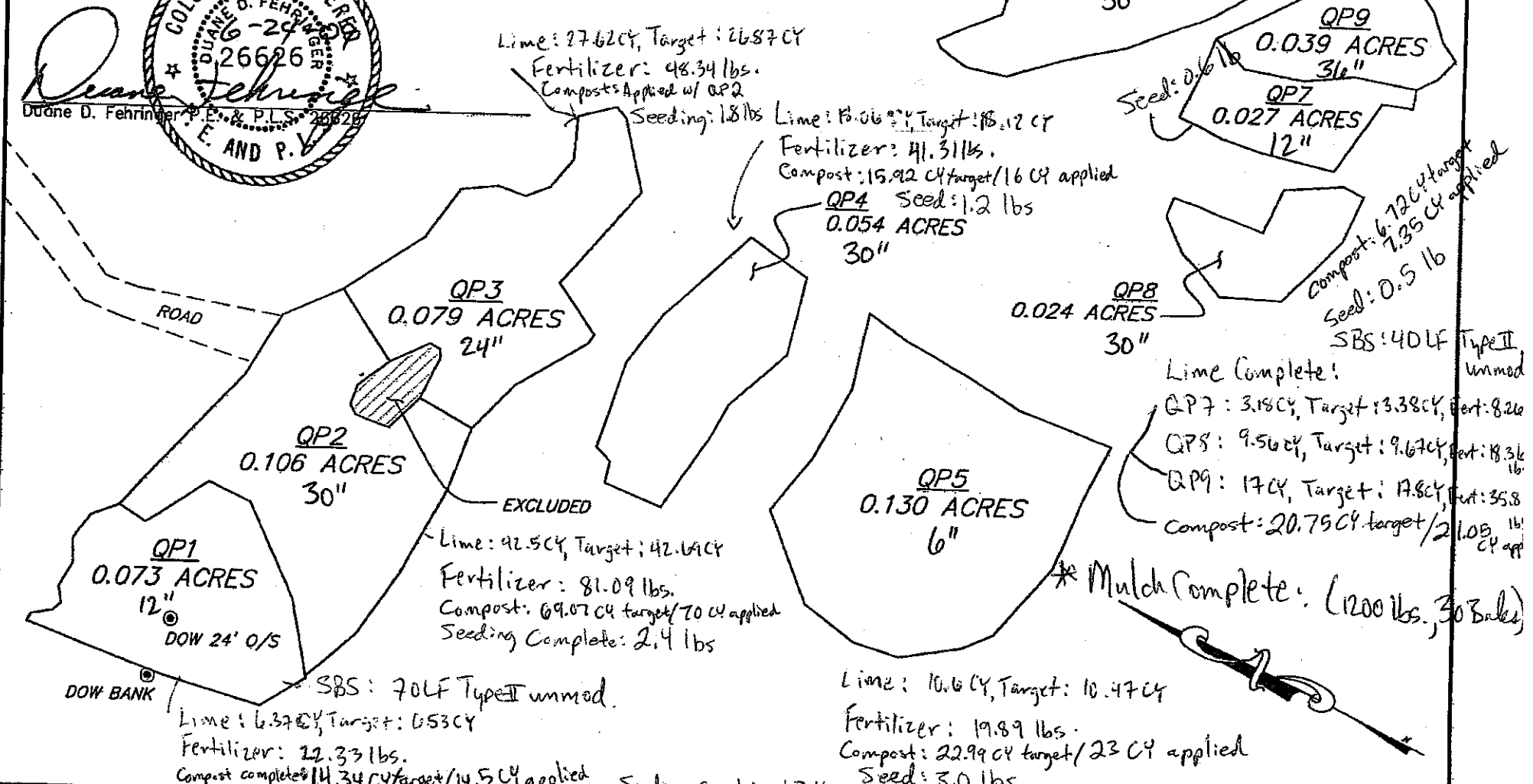
- COMPLETE -

SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and the calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 26626 L. AND P. V

Duane D. Fehringer, P.E. & P.L.S. 26626



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6551 S. REVERE PARKWAY, SUITE 106 CENTENNIAL, CO 80111 PH: (303)948-6220

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QP

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=40'
DATE ISSUED:	8-22-08
PROJECT NO.	08-0032
EXHIBIT	

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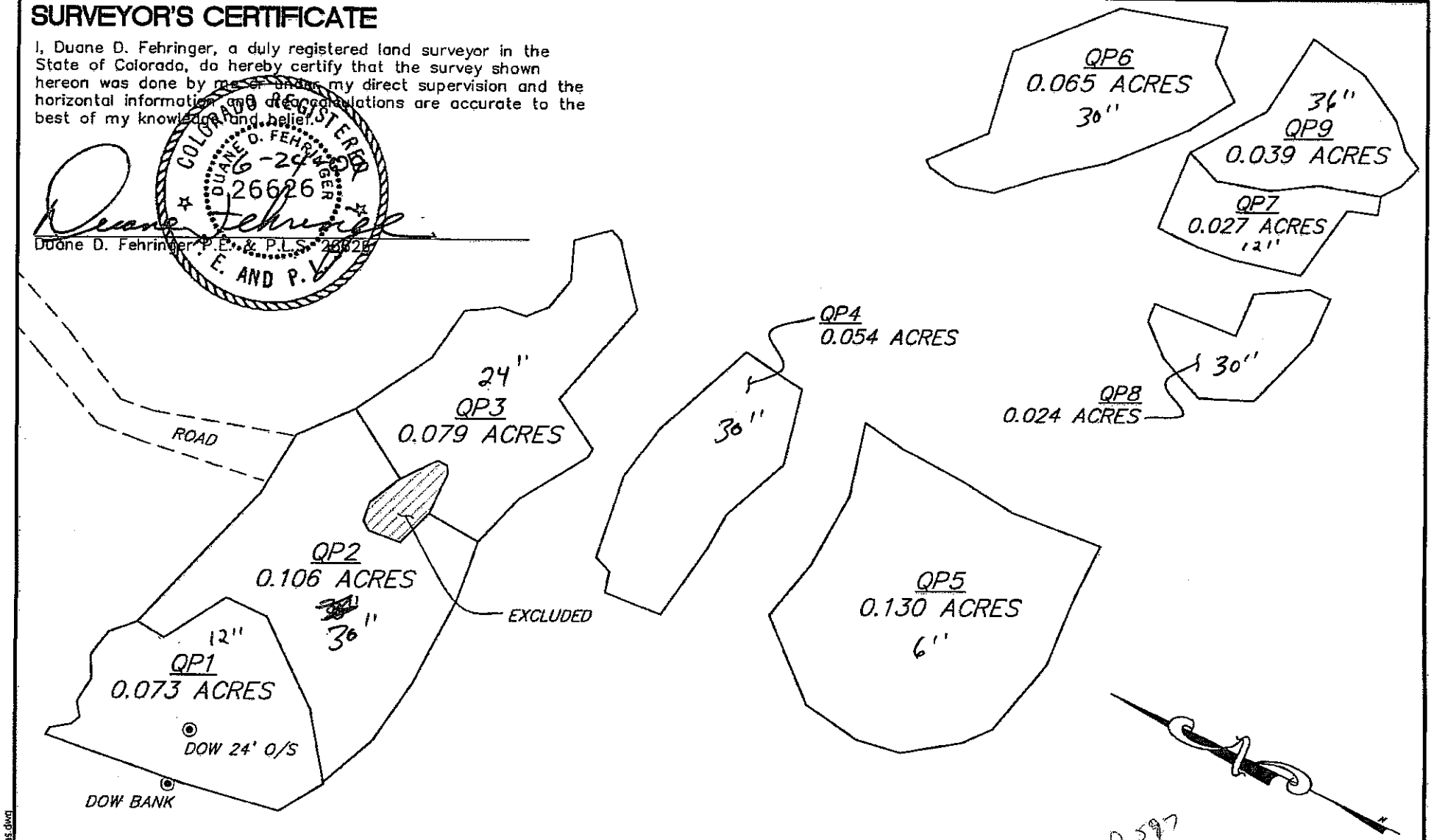
SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and the calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 26626 L.S. AND P.E.

6-24-09

Duane D. Fehringer P.E. & P.L.S. 26626



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QP

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=40'
DATE ISSUED:	6-23-09
PROJECT NO.	08-0032
EXHIBIT	

FLUVIAL DEPOSIT QP

Bank Stabilization

Bank A: 60' Type 2 stabilization

Bank B: 20' Type 1 stabilization

Bank C: 40' Type 2 stabilization

Banks are approximately 30" high.

1	12"	50% Rock	Yellow
2	30"	10%	Blue
3	24"	5%	Orange
4	30"	25%	White
5	6"	10%	Pink
6	30"	15%	Pink
7	12"	30%	Orange
8	30"	10%	Yellow
9	36"	15%	Red

Fluvial Deposit Outline

Bank Stabilization Location

Depth of mine waste (inches)

Note: Figure not to scale.
Locations and streambank lengths estimated.
All treatment locations will be confirmed and marked prior to initiation of construction.

Watch out for small pieces buried more

https://mail.pwt.com/exchange/jdeangelis/Inbox/FDSS3.EML/1_multipart_xF8FF_7_... 06/15/2009 04:59:11 PM

Pre- and Post Remedial Sampling Locations

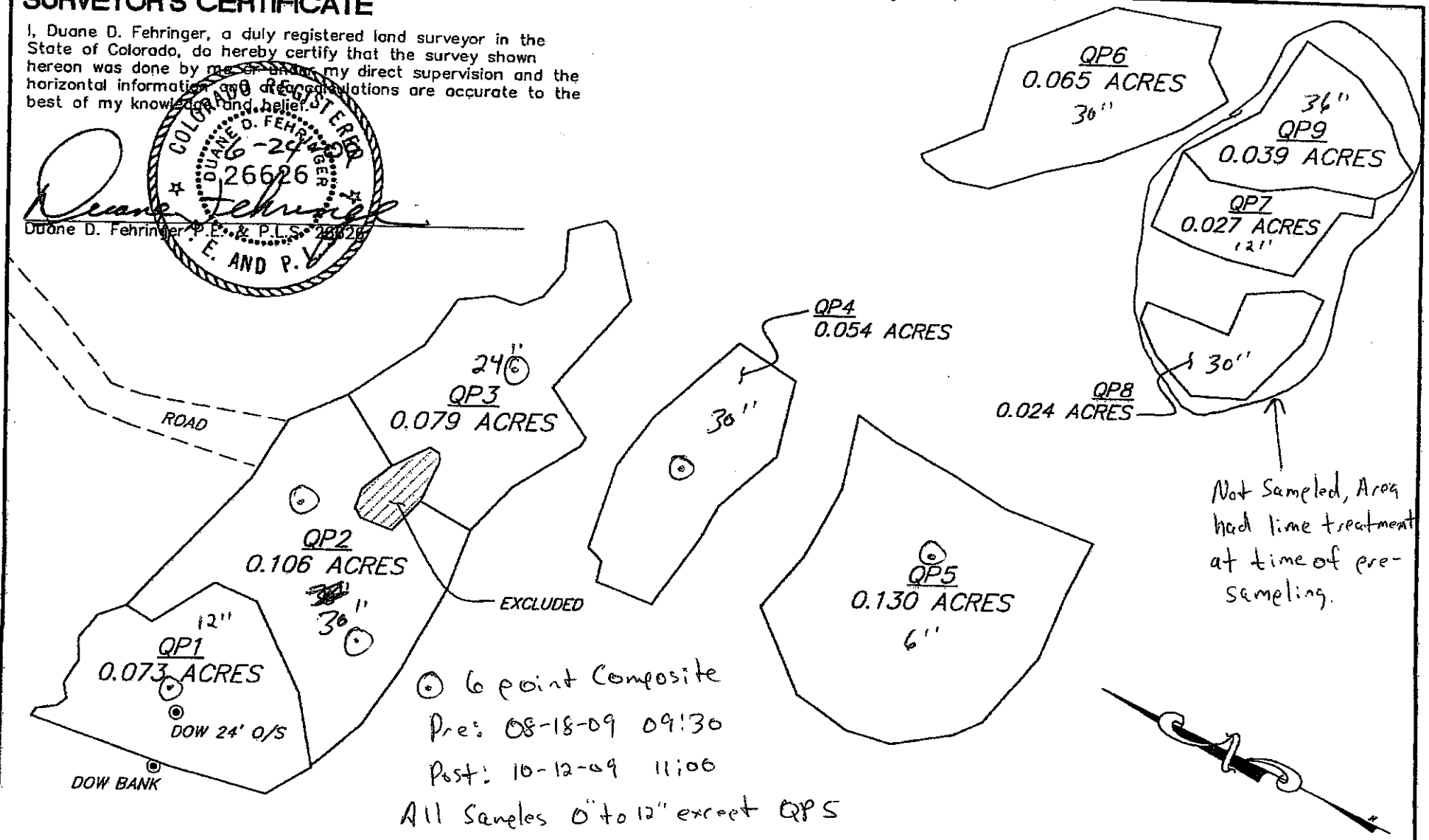
SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 26626 L. AND P. V.

6-24-09

Duane D. Fehringer P.E. & P.L.S. 26626



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QP

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=40'
DATE ISSUED:	8-23-09
PROJECT NO:	08-0032
CHECKED:	

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: Qp-1 Qp1

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	50.00% % ✓
Total Area	0.073 acres ✓

Average Depth Calculation

Depth (inches)		% of Total Area		
12 ✓	X	100.00%	=	12
	X		=	
	X		=	
	X		=	
		Average Depth		12 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		29.00% %	
Bulk Density	0.75 grams/cc	= 0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 56.57 tons/acre = 4.13 tons total

Lime Rate = 89.49 cy/acre = 6.53 cy total

Depth of Lime to be Applied = 0.7 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-27-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **QP-2**

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	10.00% %
Total Area	0.106 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
30	X	100.00%	=	30
	X		=	
	X		=	
	X		=	
		Average Depth		30 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1 =	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5 =	0.04%	(B)
Percent < 60 mesh	99.92%	X 1 =	99.92%	(C)
Lime Reactivity		=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		29.00% %	
Bulk Density	0.75 grams/cc =	0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate =	254.55 tons/acre	=	26.98 tons total
Lime Rate =	402.72 cy/acre	=	42.69 cy total
		Depth of Lime to be Applied =	3.0 inches

Signature: [signature]

Date: 4/26/09

Signature: [signature]

Date: 07-27-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **QP-3**

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	5.00% %
Total Area	0.079 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
24	X	100.00%	=	24
	X		=	
	X		=	
	X		=	
		Average Depth		24 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1 =	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5 =	0.04%	(B)
Percent < 60 mesh	99.92%	X 1 =	99.92%	(C)
Lime Reactivity		=	99.96%	A+B+C

Calcium Carbonate Equivalence			82.20% %
Percent Moisture			29.00% %
Bulk Density	0.75 grams/cc	=	0.63 tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate =	214.95 tons/acre	=	16.98 tons total
Lime Rate =	340.07 cy/acre	=	26.87 cy total
		Depth of Lime to be Applied =	2.5 inches

Signature: [signature]

Date: 4/26/09

Signature: [signature]

Date: 07-27-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: QP-4

POLYGON CHARACTERISTICS

Net Application Rate				30	tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)				10.00%	%
% Rock				25.00%	% ✓
Total Area				0.054	acres ✓

Average Depth Calculation

Depth (inches)		% of Total Area		
30 ✓	X	100.00%	=	30
	X		=	
	X		=	
	X		=	
		Average Depth		30 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence			82.20%	%
Percent Moisture			29.00%	%
Bulk Density	0.75 grams/cc	=	0.63	tons/cy

CALCULATE LIME RATE

$$\text{Lime Rate} = \frac{\text{Net Application Rate} * (1 + \text{Mixing Factor}/100) * (1 - \%\ \text{Rock}/100) * \text{Depth}}{(\text{Lime Reactivity}) * (\text{Calcium Carbonate Equivalence}/100) * (1 - \%\ \text{Moisture}/100)}$$

Lime Rate = 212.12 tons/acre = 11.45 tons total

Lime Rate = 335.60 cy/acre = 18.12 cy total

Depth of Lime to be Applied = 2.5 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-27-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **QP-5**

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	10.00% % ✓
Total Area	0.130 acres ✓

Average Depth Calculation

Depth (inches)		% of Total Area		
6 ✓	X	100.00%	=	6
	X		=	
	X		=	
	X		=	
		Average Depth		6 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		29.00% %	
Bulk Density	0.75 grams/cc	= 0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate =	50.91 tons/acre	=	6.62 tons total
Lime Rate =	80.54 cy/acre	=	10.47 cy total
		Depth of Lime to be Applied =	0.6 inches

Signature: Ben A. Mead

Date: 6/26/09

Signature: Mark G Ahlstrom

Date: 07-27-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: QP-6

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	15.00% % ✓
Total Area	0.065 acres ✓

Average Depth Calculation

Depth (inches)		% of Total Area		
30 ✓	X	100.00%	=	30
	X		=	
	X		=	
	X		=	
		Average Depth		30 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1 =	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5 =	0.04%	(B)
Percent < 60 mesh	99.92%	X 1 =	99.92%	(C)
Lime Reactivity		=	99.96%	A+B+C

Calcium Carbonate Equivalence			82.20% %
Percent Moisture			29.00% %
Bulk Density	0.75 grams/cc	=	0.63 tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth / (Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate =	240.41 tons/acre	=	15.63 tons total
Lime Rate =	380.34 cy/acre	=	24.72 cy total
		Depth of Lime to be Applied =	2.8 inches

Signature: Brian A. Neal

Date: 6/26/09

Signature: Josh A Jennings

Date: 07-27-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **QP-7**

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	30.00% % ✓
Total Area	0.027 acres ✓

Average Depth Calculation

Depth (inches)		% of Total Area		
12 ✓	X	100.00%	=	12
	X		=	
	X		=	
	X		=	
		Average Depth		12 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1 =	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5 =	0.04%	(B)
Percent < 60 mesh	99.92%	X 1 =	99.92%	(C)
Lime Reactivity		=	99.96%	A+B+C

Calcium Carbonate Equivalence			82.20% %
Percent Moisture			29.00% %
Bulk Density	0.75 grams/cc	=	0.63 tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate =	79.19 tons/acre	=	2.14 tons total
Lime Rate =	125.29 cy/acre	=	3.38 cy total
		Depth of Lime to be Applied =	0.9 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-27-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: QP-8

POLYGON CHARACTERISTICS

Net Application Rate	30	tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00%	%
% Rock	10.00%	% ✓
Total Area	0.024	acres ✓

Average Depth Calculation

Depth (inches)		% of Total Area		
30 ✓	X	100.00%	=	30
	X		=	
	X		=	
	X		=	
		Average Depth		30 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence			82.20%	%
Percent Moisture			29.00%	%
Bulk Density	0.75 grams/cc	=	0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate =	254.55 tons/acre	=	6.11 tons total
Lime Rate =	402.72 cy/acre	=	9.67 cy total
		Depth of Lime to be Applied =	3.0 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-27-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **QP-9**

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	15.00% % ✓
Total Area	0.039 acres ✓

Average Depth Calculation

Depth (inches)		% of Total Area		
36 ✓	X	100.00%	=	36
	X		=	
	X		=	
	X		=	
		Average Depth		36 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1 =	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5 =	0.04%	(B)
Percent < 60 mesh	99.92%	X 1 =	99.92%	(C)
Lime Reactivity		=	99.96%	A+B+C

Calcium Carbonate Equivalence			82.20% %
Percent Moisture			29.00% %
Bulk Density	0.75 grams/cc	=	0.63 tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate =	288.49 tons/acre	=	11.25 tons total
Lime Rate =	456.41 cy/acre	=	17.80 cy total
		Depth of Lime to be Applied =	3.4 inches

Signature: [signature]

Date: 4/26/09

Signature: [signature]

Date: 07-27-09

FILE MEMO

Regarding: Lime Compost (Fertilizer) Mulch Seed Other

Fluvial Deposit ID: QP **Irrigated Meadow ID:** ~~_____~~

Acreage: See Below

Target Application: See Below

Amount Applied: (Below)

Comments:

QP1:	.073 acres	x 153 lbs/acre x 2 (6-inch) =	22.3 lbs ≈	0.45 bags	
QP2:	.106	x 153 x 5 (6-inch) =	81 lbs ≈	1.6 bags	
QP3:	.079	x 153 x 4 (6-inch) =	48 lbs ≈	1 bag	
QP4:	.054	x 153 x 5 (6-inch) =	41 lbs ≈	0.8 bags	
QP5:	.13	x 153 x 1 (6-inch) =	20 lbs ≈	0.4 bags	
QP6:	.065	x 153 x 5 (6-inch) =	49.7 ≈	1 bag	
~~QP7:~~	~~.027~~	~~x 153~~ x 2 (6-inch) =	8.3 lbs		
QP8:	.024	x 153 x 5 (6-inch) =	18.4 lbs		
QP9:	.039	x 153 x 6 (6-inch) =	36 lbs ≈	0.7 bags	

[signature]

Signature

08-19-09

Date

Confirmed Fertilizer Label 0:45:00

FESI weighing amounts in field, hand broadcasted approx. target amounts

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: QP

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	HCl Reaction
QP4 0-6	7.0			None	Yes
QP4 6-12	7.0			None	Yes
QP4 12-18	7.0			None	Yes
QP4 18-24	7.0			None	Yes
*QP4 24-30	6.5			None	No *
QP3 0-6	6.7	6.5	7.0	None	Yes
QP3 6-12	6.7	6.5	7.0	None	Yes
QP3 12-18	6.7	6.5	7.0	None	Yes
QP3 18-24	6.7	6.5	7.0	None	Yes
QP2 0-6	7.0			None	Yes
QP2 6-12	7.0			None	Yes
QP2 12-18	7.0			None	Yes
QP2 18-24	7.0			None	Yes
**QP2 24-30	6.7	6.5	7.0	None	No **
QP1 0-6	7.5			None	Yes
QP1 6-12	7.5			None	Yes

Name/Signature: [signature] **Date:** 08-26-09

* Appeared untreated (reddish brn oxidized gravel) Insitu field test indicates 6.5, no Hcl Reaction

** Appeared untreated (black wet silt) Insitu test indicates 6.5 to 7.0 pH

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record QP

Fluvial Deposit/Irrigated Meadows Polygon:

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
QP4 0-6	Tare	14.2	14.6	7.6
" 6-12		16.6	16.2	7.4
" 12-18		19.5	19.0	7.6
" 12-18 Rpt		17.9	16.5	7.5
" 18-24		14.7	16.2	7.6
* " 24-30		18.3	17.3	8.2
QP3 0-6		17.8	16.2	7.1
" 6-12		17.9	17.5	7.1
" 12-18		17.3	17.7	7.2
" 18-24		18.9	17.2	7.1
QP2 0-6		17.8	17.0	6.9
" 6-12		18.9	17.8	7.0
" 12-18		15.7	14.5	7.2
" 18-24		19.8	20.6	7.1
" 24-30		18.0	17.9	7.5
QP1 0-6		15.6	15.3	7.4
QP1 6-12	↓	16.3	16.8	7.3

Name/Signature: Rob Broam **Date:** 8-10

Note: QP4 (24-30") - Reddish Brn Gravel and QP2 (24-30") - Black Organic Silt appeared untreated and were @ groundwater conditions

pH meter calibrated using known standards

0

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: QP-6

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	HCL Reaction?
QP6 0-6	6.5	6.0	7.0	0%	Yes
QP6 6-12	6.5	6.0	7.0	0%	Yes
QP6 12-18	6.5	6.0	7.0	0%	Yes
QP6 18-24	6.5	6.0	6.5	0%	Yes
QP6* 24-30	6.3	6.0	6.5	0%	No *
QP7 0-6	7.0	6.5	7.5	0%	Yes
QP7 6-12	7.0	6.5	7.5	0%	Yes

* Note 24-30" Depth appears untreated, although In Situ indicats pH > 6.0 (Sampled for paste test)

Name/Signature: John A Hudi & R. Brown **Date:** 08-26-09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record QP

Fluvial Deposit/Irrigated Meadows Polygon: _____

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
QP6 0-6"	Tare @ 0.0	20.0	20.0	7.0
QP6 6-12"		20.0	20.0	6.9
QP6 12-18"		20.0	19.9	6.9
QP6 18-24"		20.0	20.0	7.2
QP6 24-30"		20.0	20.0	7.1
QP7 0-6"		20.0	20.0	7.1
QP7 6-12"		21.5	21.5	7.2

Note: 24-30". Saturated Conditions, appeared not to have lime flakes (oxidized, red-brown) and no HCL Reaction; however, paste test untreated resulted in 7.1 pH

Name/Signature: _____ **Date:** 08-26-09

3 Point Calibration on Probe using 4.0, 10.0, & 7.0 Buffers

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: QP8

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	HCl reaction?
QP8 0-6"	6.5	6.0	7.0	0%	yes
QP8 6-12"					
QP8 12-18"					
QP8 18-24"					
QP8 24-30"					
Dupe QP8 24-30"					
QP9 0-6"					
QP9 6-12"					
QP9 12-18"					
QP9 18-24"					
QP9 24-30"					
Dupe QP9 24-30"					
~~QP9 30-36"~~					
~~QP6 0-6"~~		TCS			
QP6 6-12"					
~~QP6 12-18"~~					
~~QP6 18-24"~~					
~~QP6 24-30"~~					

Name/Signature: Robin Dow **Date:** 8-24-09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record QP

Fluvial Deposit/Irrigated Meadows Polygon:

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
QP8 0-6"	Tare @ 0.0	20.0	20.0	6.8
QP8 6-12"		20.0	20.0	7.1
QP8 12-18"		20.0	20.1	7.2
QP8 18-24"		20.0	20.0	7.3
QP8 24-30"		20.0	20.1	7.1
Dup of QP8 24-30"		20.0	20.2	7.2
QP9 0-6"		20.1	19.9	7.1
QP9 6-12"		20.0	20.1	7.1
QP9 12-18"		20.0	20.1	6.8
QP9 18-24"		20.0	20.0	7.1
QP9 24-30"		20.0	20.0	7.1
Dup of QP9 24-30"		20.0	20.0	7.1
QP9 30-36"		20.0	20.0	7.1

Name/Signature: Rob Brown **Date:** 8-24-09

pH meter was calibrated using known standards on 8-24-09.

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: QP-1

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)		1.50%	%
Treatment Depth (Full treatment depth up to 12")		12	inches
% Rock		50%	
Treatment Area		0.073	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon		15.79%	%
Percent Moisture		29.63%	%
Wet Bulk Density	=	0.687	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 135.00 tons/acre = 9.85 tons

Compost Rate = 196.50 cy/acre = 14.34 cy

Depth of Compost to be Applied = 1.5 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-05-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **QP 2&3**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	5%	
Treatment Area	0.185	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 256.49 tons/acre = 47.45 tons

Compost Rate = 373.35 cy/acre = 69.07 cy

Depth of Compost to be Applied = 2.8 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-05-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **QP-4**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	25%	
Treatment Area	0.054	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 202.49 tons/acre = 10.93 tons

Compost Rate = 294.75 cy/acre = 15.92 cy

Depth of Compost to be Applied = 2.2 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-05-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **QP-5**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	6	inches
% Rock	10%	
Treatment Area	0.130	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 121.50 tons/acre = 15.79 tons

Compost Rate = 176.85 cy/acre = 22.99 cy

Depth of Compost to be Applied = 1.3 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-08-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **QP-6**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	15%	
Treatment Area	0.065	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 229.49 tons/acre = 14.92 tons

Compost Rate = 334.05 cy/acre = 21.71 cy

Depth of Compost to be Applied = 2.5 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-08-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **QP 7 & 9**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	20%	
Treatment Area	0.066	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * \text{1000 tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 215.99 tons/acre = 14.26 tons

Compost Rate = 314.40 cy/acre = 20.75 cy

Depth of Compost to be Applied = 2.3 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-08-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **QP-8**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	10%	
Treatment Area	0.024	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 242.99 tons/acre = 5.83 tons

Compost Rate = 353.70 cy/acre = 8.49 cy

Depth of Compost to be Applied = 2.6 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-08-09

FILE MEMO

Regarding: Lime Compost Fertilizer Mulch (Seed) Other

Fluvial Deposit ID: QP **Irrigated ~~Meadow~~ ID:** _____

Acreage: 0.597

Target Application: 0.597 x 11.4 PLS/Acre x 2 (Double Rate) = 13.6 lbs

Amount Applied: 14 lbs

Comments: Confirmed FD Seed Mix;
Weighed ~ 14 lbs, Broadcasted with wheel-mounted flail set @ 11.4 lbs/acre setting

[signature]
Signature

10-08-09
Date

Polygon Completion Form
Fluvial Deposits

Fluvial Deposit Polygon Name/ID: QR

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
09-01-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.3. **Comments/Deviations:**
09-02-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.4. Pre Till w/315 epcv concurrent w/ line placem 09-02-09 **Comments/Deviations:**
09-02-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Section 3.6A through 3.6E. Fertilized and applied lime 09-02-09 **Comments/Deviations:** Mixed w/ Rotov on 09-02-09
09-24-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.6F through 3.6I. Started Compost Placement on 09-03 **Comments/Deviations:** Incorp w/315
NA	NA	Completed replacement of erosion channels in accordance with Specification Section 3.7. **Comments/Deviations:**
10-08-09	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.8. **Comments/Deviations:** Seedbed prep during compost incorp 09-24-09 Seeded 10-08-09
10-26-09	✓	Completed mulching in accordance with Specification Section 3.9. **Comments/Deviations:** Mulch & Crimp 10-26-09
NA	NA	Completed reinstallation of fencing in accordance with Specification Section 3.10. **Comments/Deviations:**
11-03-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.14. **Comments/Deviations:**

Quantity of Work Estimated in Proposal: NA Addressed in Invoice Docs
Quantity of Work Performed:

[signature] 11-06-09
Signature of Subcontractor Date

[signature] 11-03-09
Signature of Contractor Date

- Complete -

Fert. Complete: 9.0 lbs
Lime Complete: 5.31 CY, 5.1 target
Compost: 4.62 tons
Seed: 0.41b

QR1
0.018 ACRES
20"

Mulch Complete: (160 lbs., 4 bales)

Lime Complete: 4CY, 3.88 target
Compost:
5.86 tons
Fert. Complete: 9.48 lbs
Seed: 1.4 lbs

QR2
0.062 ACRES
6"

SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 6-24-09 26626 L. AND P. L. S.

Duane D. Fehringer P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
48841 US HWY 6&24, SUITE 203 BOX 978 AVON, CO 81620 PH: (970)949-5072
6551 S. REVERE PARKWAY, SUITE 106 CENTENNIAL, CO 80121 PH: (303)858-8220

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QR
CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=30'
DATE ISSUED:	6-23-09
PROJECT NO.	08-0032
DWGNO:	

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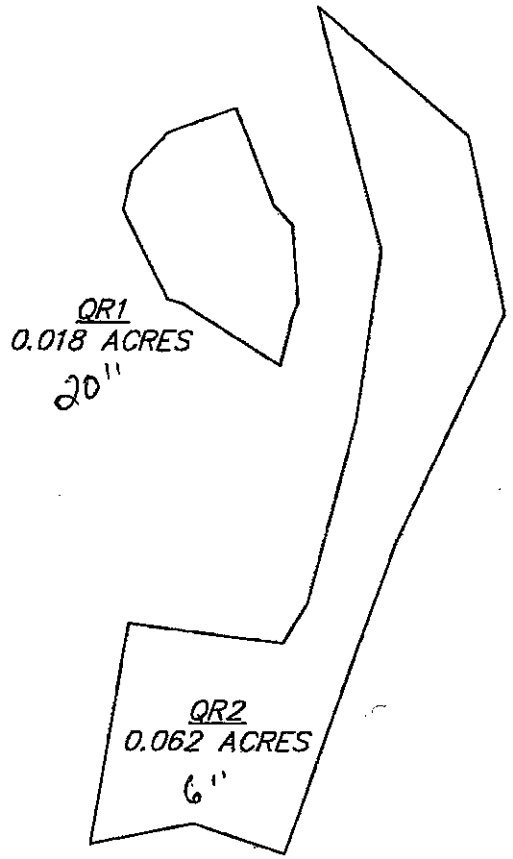

SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO L.S. DUANE D. FEHRINGER 6-24 26626 P.E. AND P.L.S.

Duane D. Fehringer P.E. & P.L.S. 26626

J:\projects\80072s\dwg\OU-11 Areas.dwg

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
40501 US HWY 6&24, SUITE 203 BOX 978 AVON, CO 81620 PH: (970)949-5072
6551 S. REVERE PARKWAY, SUITE 106 CENTENNIAL, CO 80111 PH: (303)948-6220

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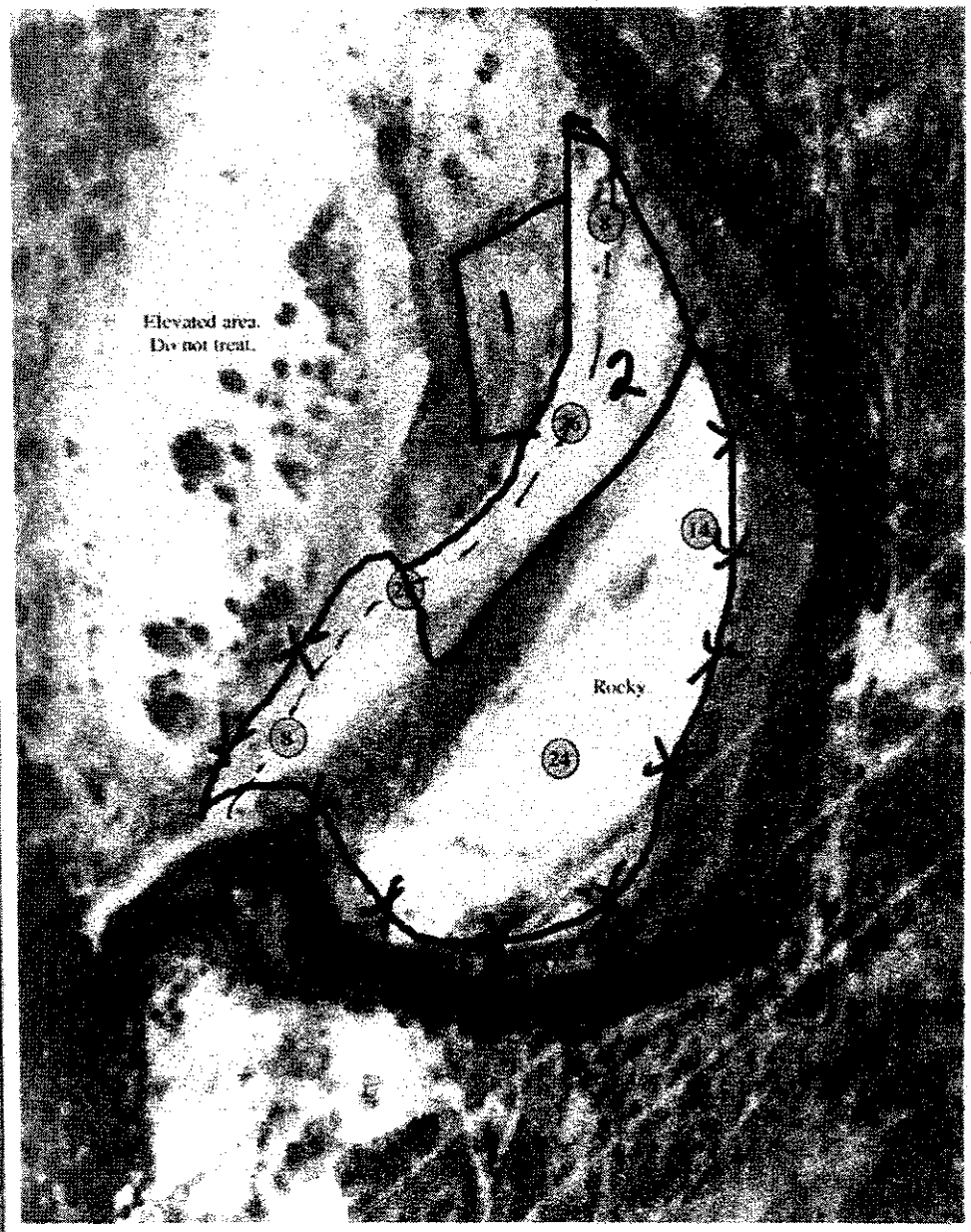
QR

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=30'
DATE ISSUED:	6-23-09
PROJECT NO.	08-0032
CHKD:	



FLUVIAL DEPOSIT QR

1 Treat to 20" 5% Rock Blue
2 6" 30% Orange

--- current water channel
4/11/09

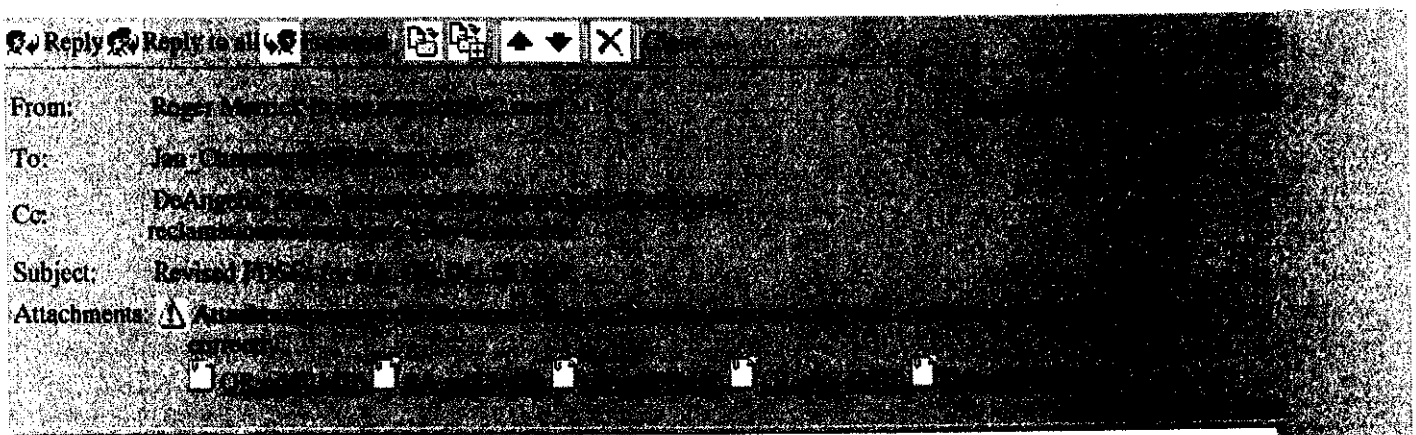
Fill with culled rock from #2

Fluvial Deposit Outline

Rock Stabilization Location

Depth of mine waste (inches)

Note: Figure not to scale
Locations and treatment depths estimated
All treatment locations will be confirmed and marked prior to initiation of construction



Jan,

Here are the revised FDSSs for the subject polygons. The revisions are based on our telephone conversations and our field observations and are as follows:

PA - #'s 2 & 3 were combined since they were contiguous and the same depth & % rock (this also changed the numbering). The new #4 (old 5) was expanded based on the pH and the fact that the fragile carex would be tracked over multiple times to get to the smaller treatment area.

QF - The instructions to replace the large channel was replaced with "fill and level" since we can berm up the two low spots east of #'s 3 & 4 to keep the overflow channel from draining into the polygon.

QL - the polygon just south of the road was added in as #5.

QO - We walked the access road path with Clay and figured out where he'd be adding a cobble road "cap" and where he'd just drive over the polygon. With that and the water level being down since you left, I expanded polygon 4 and 2 (slightly to the north) to add in some obvious tailings that must have been under water when you were here last week.

QR - Just added a note to fill the overflow channel with culled rock from the 6" area based on my walk with Clay.

We'll try to get QH and PJ next week if the water drops low enough.

Roger

Roger A. Merrick
E2 Consulting Engineers, Inc.
450 E 17th Avenue, Suite 200
Denver, CO 80203
(720) 279-7638 direct
(303) 434-3605 cell
(303) 238-8972 fax
www.e2.com

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: QR-2

POLYGON CHARACTERISTICS

Net Application Rate				30	tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)				10.00%	%
% Rock				30.00%	%
Total Area				0.062	acres

Average Depth Calculation

Depth (inches)		% of Total Area		
6	X	100.00%	=	6
	X		=	
	X		=	
	X		=	
		Average Depth		6 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20%	%
Percent Moisture		29.00%	%
Bulk Density	0.75 grams/cc =	0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate =	39.60 tons/acre	=	2.45 tons total
Lime Rate =	62.64 cy/acre	=	3.88 cy total
		Depth of Lime to be Applied =	0.5 inches

Signature: [signature]

Date: 6/24/09

Signature: [signature]

Date: 07-28-09

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: QR

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0
QR-2 0-6"	6.8	6.5	7.6	0%
QR-7 6-12"	↓	↓	↓	↓
QR-7 12-20"	↓	↓	↓	↓
QR2 0-6"	6.5	6.0	7.0	0%

HCl Yes ↓

RS

Name/Signature: Rob Sm

Date: 9-3-09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record QR

Fluvial Deposit/Irrigated Meadows Polygon:

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
QR-1 0-6"	Tare @ 0.0	19.9	19.9	7.5
QR-1 6-12"	↓	20.0	20.0	7.7
QR-1 12-20"	↓	20.3	20.3	7.6
QR2 0-6"	↓	19.8	20.0	6.8
		RB		

Name/Signature: Rob Brown **Date:** 9.3.09

pH meter calibrated using Known standards

FILE MEMO

Regarding: Lime Compost (Fertilizer) Mulch Seed Other

Fluvial Deposit ID: QR **Irrigated Meadow ID:** _____

Acreage: Below

Target Application: QR1: 0.018 acres × 153 lbs/acre × 3 (c-rich) = 8.3 lbs
QR2: 0.062 × 153 × 1 (c-rich) = 9.5 lbs

Amount Applied: —

Comments:
Confined 0:45:0 fertilizer, weighed in field and applied approx amounts per areas above using hand broadcaste.

[signature]
Signature

09-03-09
Date

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **QR-1**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	5%	
Treatment Area	0.018	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 256.49 tons/acre = 4.62 tons

Compost Rate = 373.35 cy/acre = 6.72 cy

Depth of Compost to be Applied = 2.8 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-08-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **QR-2**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	6	inches
% Rock	30%	
Treatment Area	0.062	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 94.50 tons/acre = 5.86 tons

Compost Rate = 137.55 cy/acre = 8.53 cy

Depth of Compost to be Applied = 1.0 inches

Signature: Barb A. Nunn

Date: 6/26/09

Signature: [illegible]

Date: 07-08-09

FILE MEMO

Regarding: Lime Compost Fertilizer Mulch (Seed) Other

Fluvial Deposit ID: QR **Irrigated Meadow ID:** _____

Acreage: _____

Target Application: _____ } Below

Amount Applied: _____

Comments:

QR 1: 0.018 acres × 11.44 lbs × 2 (Double Rate) = 0.4 lbs

QR 2: 0.062 " × " × " = 1.4 lbs

Pre-Contract Subcontractor using FD Mix and weighing, broadcasting w/ flail spreader

_____ 10-08-09

Signature **Date**

Polygon Completion Form
Fluvial Deposits

Fluvial Deposit Polygon Name/ID: QV

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
07-20-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.3. **Comments/Deviations:**
07-20-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.4. **Comments/Deviations:**
07-22-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Section 3.6A through 3.6E. Starter Line Appl. 07-21-09; Apply Fert 07-21 **Comments/Deviations:**
07-24-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.6F through 3.6I. Apply & Incorp Compost 07-24-09 **Comments/Deviations:**
NA	NA	Completed replacement of erosion channels in accordance with Specification Section 3.7. **Comments/Deviations:**
10-05-09	✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.8. **Comments/Deviations:** Seedbed prepped w/ compost incorp 07-24-09 Seeded on 10-05-09 ; Drag roller
10-19-09	✓	Completed mulching in accordance with Specification Section 3.9. **Comments/Deviations:** Mulched & Crimped 10-19-09
NA	NA	Completed reinstallation of fencing in accordance with Specification Section 3.10. **Comments/Deviations:**
10-30-09	✓	Completed final inspection and Acceptance of Work in accordance with Specification Section 3.14. **Comments/Deviations:**

Quantity of Work Estimated in Proposal: NA Addressed in Invoice Docs
Quantity of Work Performed:

Signature of Subcontractor — Date: 11-06-09

Signature of Contractor — Date: 10-30-09

Lime Complete: 5.85 CY, Target: 5.64 CY
Fertilizer Complete: 9.63 lbs.
Compost Complete: 8.25 CY, Target: 8.25 CY
Seeding Complete: 0.5 lbs

* Pre-tilled

— COMPLETE —

QV-2
0.021 ACRES
18"

QV-1
0.123 ACRES
18"

LIME Complete: 32.5 CY, Target: 33.02 CY
Fertilizer Complete: 50.45 lbs.
Compost Complete: 48.5 CY, Target: 48.33 CY
Seeding Complete: 2.8 lbs

Mulch Complete: (280 lbs, 7 bales)

SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 7-13-09 26626 P.E. AND P.L.S.

Duane D. Fehringer P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
40981 US HWY 6&24, SUITE 203 BOX 978 AVON, CO 81620 PH: (970)949-5872
6551 S. REVERE PARKWAY, SUITE 106 CENTENNIAL, CO 80111 PH: (303)948-4220

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QV

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=20'
DATE ISSUED:	7-13-09
PROJECT NO.	08-0032
EXHIBIT	

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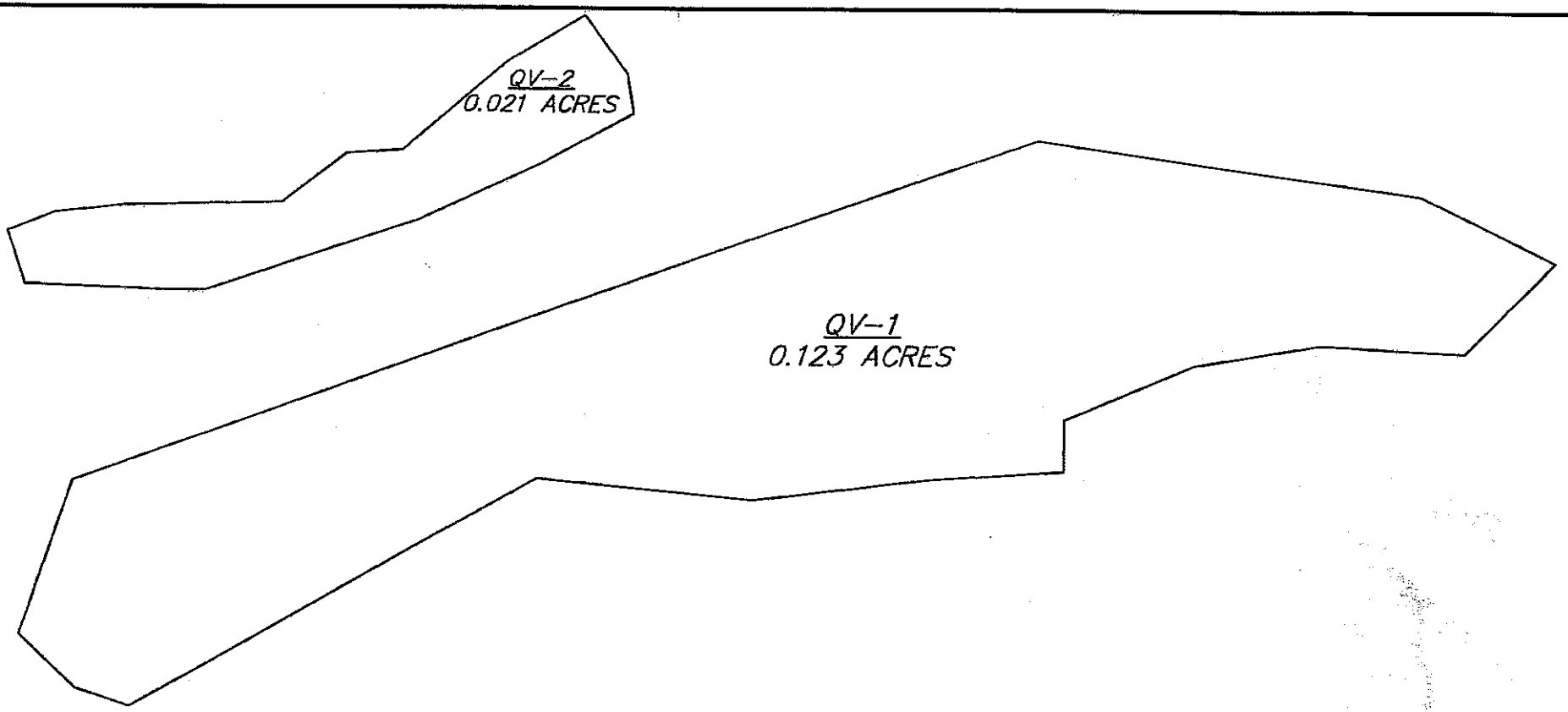

SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and related calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 7-13-09 26626 L.S. AND P.L.S.

Duane D. Fehringer P.E. & P.L.S. 26626

Inter-Mountain ENGINEERING
Civil Engineers & Surveyors
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6551 S. REVERE PARKWAY, SUITE 106 CENTENNIAL, CO 80111 PH: (303)948-6220

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QV

CALIFORNIA GULCH CERCLA SITE
OPERABLE UNIT NUMBER 11
LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=20'
DATE ISSUED:	7-13-09
PROJECT NO.	08-0032
EXHIBIT	

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Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **QV-1** (west side by Hwy 24)

POLYGON CHARACTERISTICS

Net Application Rate	30 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	0.00% %
Total Area	0.123 acres

Average Depth Calculation

Depth (inches)		% of Total Area		
18	X	100.00%	=	18
	X		=	
	X		=	
	X		=	
		Average Depth		18 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1 =	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5 =	0.04%	(B)
Percent < 60 mesh	99.92%	X 1 =	99.92%	(C)
Lime Reactivity		=	99.96%	A+B+C

Calcium Carbonate Equivalence			82.20% %
Percent Moisture			29.00% %
Bulk Density	0.75 grams/cc	=	0.63 tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
/ (Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 169.70 tons/acre = 20.87 tons total

Lime Rate = 268.48 cy/acre = 33.02 cy total

Depth of Lime to be Applied = 2.0 inches

Signature: [signature]

Date: 7/21/09

Signature: [signature]

Date: 07-21-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: QV-2 (eastside by river)
Level out mounds as part of pre-till step

POLYGON CHARACTERISTICS

Net Application Rate	30	tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00%	%
% Rock	0.00%	%
Total Area	0.021	acres

Average Depth Calculation

Depth (inches)		% of Total Area		
18	X	100.00%	=	18
	X		=	
	X		=	
	X		=	
		Average Depth		18 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20%	%
Percent Moisture		29.00%	%
Bulk Density	0.75 grams/cc =	0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
/ (Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 169.70 tons/acre = 3.56 tons total

Lime Rate = 268.48 cy/acre = 5.64 cy total

Depth of Lime to be Applied = 2.0 inches

Signature: [signature]

Date: 7/21/09

Signature: [signature]

Date: 07-21-09

FILE MEMO

Regarding: Lime Compost (Fertilizer) Mulch Seed Other

Fluvial Deposit ID: QV 1+2 **Irrigated Meadow ID:** _____

Acreage: _____ QV1: 0.123 acre
QV2: 0.021 acre

QV1: 153 lbs x .123 x 3 (18-inch) = 56.5 lbs

Target Application: _____ QV2: 153 lbs x .021 x 3 (18-inch) = 9.6 lbs

Amount Applied: _____

Comments:
0:45:0 Hand - Broadcasted

_____

_____ 07-24-07

Signature **Date**

_____

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: QV

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0
QV-6"	6.5	6.5	6.5	0%
QV-12"	6.5	6.5	6.5	0%
QV-18"	6.5	6.5	6.5	0%

HCL reaction Yes ↓

Name/Signature: Robert Bruce **Date:** 7-23-09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record QV

Fluvial Deposit/Irrigated Meadows Polygon:

Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
QV-6"	Tare@0.6	20.7	21.3	7.2
QV-12"	↓	21.6	21.9	7.0
QV-18"	↓	21.2	21.8	7.0

Name/Signature: [signature]

Date: 7-23-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **QV-1 (West side)**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	0%	
Treatment Area	0.123	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 269.99 tons/acre = 33.21 tons

Compost Rate = 393.00 cy/acre = 48.34 cy

Depth of Compost to be Applied = 2.9 inches

Signature: [signature]

Date: 7/29/09

Signature: [signature]

Date: 07-29-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **QV-2 (East side)**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	0%	
Treatment Area	0.021	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	= 0.687		tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC * depth * 1000 tons/acre/6" * (1-\%rock/100)}}{\text{Compost \% OC * (1- \%Moisture/100)}}$$

Compost Rate = 269.99 tons/acre = 5.67 tons

Compost Rate = 393.00 cy/acre = 8.25 cy

Depth of Compost to be Applied = 2.9 inches

Signature: [signature]

Date: 7/29/09

Signature: [signature]

Date: 07-29-09

FILE MEMO

Regarding: Lime Compost Fertilizer Mulch (Seed) Other

Fluvial Deposit ID: QV **Irrigated Meadow ID:** _____

Acreage: _____

Target Application: _____ See Below

Amount Applied: _____

Comments:

QV1: 0.123 acres × 11.44 lbs × 2 (Double Rate Seed) = 2.8 lbs

QV2: 0.021 × " × " = 0.5 lb

Confirmed Subcontractor using FD Seed Mix, weighing seed and broadcasting w/ flail.

_____ 10-05-09

Signature **Date**

Polygon Completion Form
Fluvial Deposits

Fluvial Deposit Polygon Name/ID: QX

Activities Verified As Completed (indicate NA if appropriate)

Date Completed	(√) ?	
07-06-09	✓	Completed Pre-Remediation site walk and final delineation of remediation boundaries in accordance with Specification Section 3.3. **Comments/Deviations:**
07-06-09	✓	Completed Clearing, Grubbing, Pre-Tilling and Grading in accordance with Specification Section 3.4. **Comments/Deviations:**
07-22-09	✓	Completed Application and Tilling of Lime and Fertilizer in accordance with Specification Section 3.6A through 3.6E. Start Lime Appl. 07-21-09, Fertilize 07-21-09 **Comments/Deviations:**
07-24-09	✓	Completed Application and Tilling of Organic Amendment in accordance with Specification Section 3.6F through 3.6I. Apply Compost 07-23-09 **Comments/Deviations:**
N/A	N/A	Completed replacement of erosion channels in accordance with Specification Section 3.7. **Comments/Deviations:**
09-30-09 10-05-09	✓ ✓	Completed Seedbed Preparation and Seeding in accordance with Specification Section 3.8. **Comments/Deviations:** Seedbed Prep - Regraded Bank on 09-30-09 Seeded on 10-05-09; Drag-Raked 10-05
10-19-09	✓	Completed mulching in accordance with Specification Section 3.9. **Comments/Deviations:** Mulched & Crimped 10-19-09
NA	NA	Completed reinstallation of fencing in accordance with Specification Section 3.10. **Comments/Deviations:**
10-30-09		Completed final inspection and Acceptance of Work in accordance with Specification Section 3.14. **Comments/Deviations:**

Quantity of Work Estimated in Proposal: NA Addressed in Invoice Docs

Quantity of Work Performed:

[signature] 11-06-09
Signature of Subcontractor Date

[signature] 10-30-09
Signature of Contractor Date

*Pre-tilled

Lime Complete: 58.5 CY, Target: 57.28 CY — COMPLETE

Fertilizer Complete: 1 bag (49lbs.)

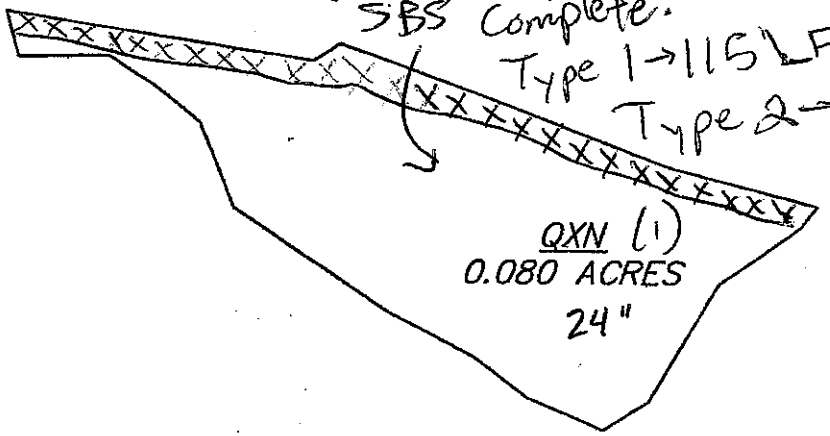
Compost Complete: 30.87 CY, Target: 31.44 CY

Seeding Complete: 1.8 lbs

SBS Complete:

Type 1 → 115 LF

Type 2 → 18 LF

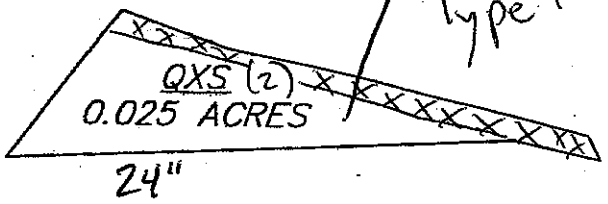


* Streambank Stabilization:

SBS Complete:

Type 3 → 30 LF

Type 1 → 40 LF

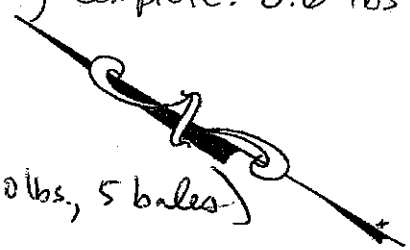


Lime Complete: 17.87 CY, Target: 17.9 CY

Fertilizer Complete: 15 lbs.

Compost Complete: 9.75 CY, Target: 9.83 CY

Seeding Complete: 0.6 lbs



Mulch Complete: (200 lbs, 5 bales)

SURVEYOR'S CERTIFICATE

I, Duane D. Fehringer, a duly registered land surveyor in the State of Colorado, do hereby certify that the survey shown hereon was done by me or under my direct supervision and the horizontal information and area calculations are accurate to the best of my knowledge and belief.

COLORADO REGISTERED DUANE D. FEHRINGER 6-24 26626 AND P.L.S.

Duane D. Fehringer P.E. & P.L.S. 26626

*Pre-Filled

Inter-Mountain ENGINEERING

Civil Engineers & Surveyors

44801 US HWY 6&24, SUITE 203 BOX 978 AVON, CO 81620 PH: (970)949-5872

8555 S. REVERE PARKWAY, SUITE 104 CENTENNIAL, CO 80112 PH: (303)948-6220

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QX

CALIFORNIA GULCH CERCLA SITE

OPERABLE UNIT NUMBER 11

LAKE COUNTY, COLORADO

DRAWN BY:	SPF
SCALE:	1"=30'
DATE ISSUED:	6-23-09
PROJECT NO.	08-0032
EXHIBIT	

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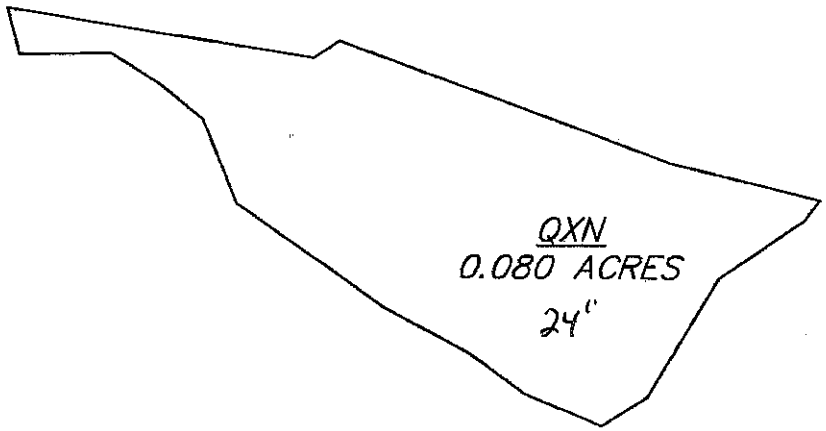

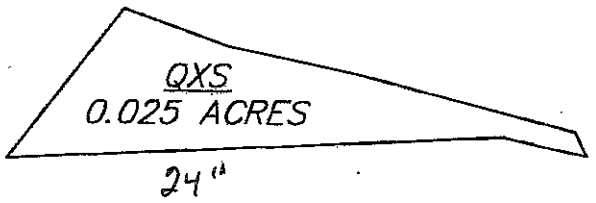

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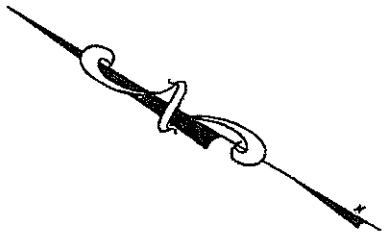
COLORADO REGISTERED DUANE D. FEHRINGER 6-24 26626 AND P.L.S.

Duane D. Fehringer P.E. & P.L.S. 26626



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QX

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OPERABLE UNIT NUMBER 11
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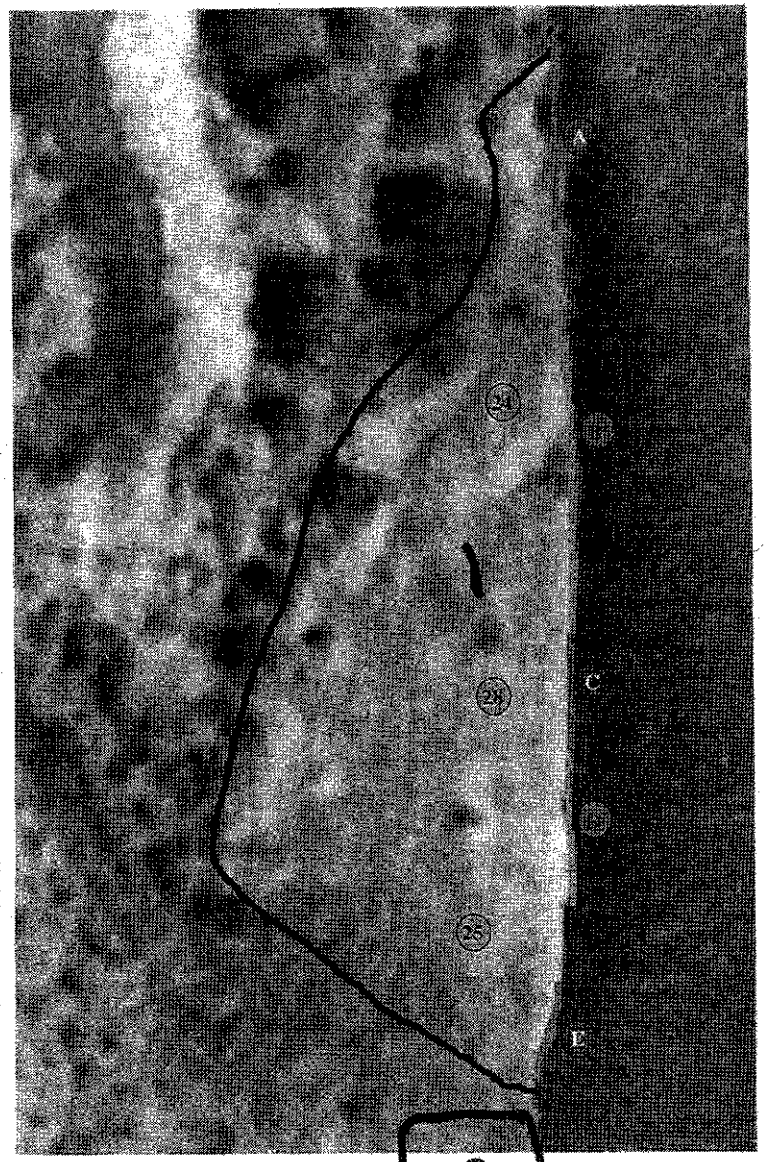

FLUVIAL DEPOSIT QX

Bank Stabilization

Bank A: 40' Type 2 stabilization.

Bank B: 60' Type 1 stabilization

Bank C: 30' Type 3 stabilization. Plant mature willows behind existing grasses.

Bank D: 30' Type 1 stabilization

Bank E: 10' Type 1 stabilization.

Banks are approximately 3'high.

1 Treat to 24" 0% Rock
2 24" 0%

Fluvial Deposit Outline
Bank Stabilization Location
(28) Depth of riprap stone (inches)

Note: Figure not to scale.
Locations and streambank lengths estimated.
All treatment locations will be confirmed and marked prior to initiation of construction.

2

06/15/2009 04:56:54 PM https://mail.pwt.com/exchange/jdeangelis/Inbox/FDSS3.EML/1_multipart_xF8FF_2...

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **QX-1 (QXN on IME Survey)**

POLYGON CHARACTERISTICS

Net Application Rate	60	tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00%	%
% Rock	0.00%	%
Total Area	0.08	acres

Average Depth Calculation

Depth (inches)		% of Total Area		
24	X	100.00%	=	24
	X		=	
	X		=	
	X		=	
		Average Depth		24 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1	=	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5	=	0.04%	(B)
Percent < 60 mesh	99.92%	X 1	=	99.92%	(C)
Lime Reactivity			=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20%	%
Percent Moisture		29.00%	%
Bulk Density	0.75 grams/cc	0.63	tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
(Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate =	452.53 tons/acre	=	36.20 tons total
Lime Rate =	715.94 cy/acre	=	57.28 cy total
		Depth of Lime to be Applied =	5.3 inches

Signature: [signature]

Date: 6/24/09

Signature: [signature]

Date: 07-20-09

Lime Application Rate Calculation Form
Fluvial Deposits

Fluvial Deposit ID: **QX-2 (QXS on IME Survey)**

POLYGON CHARACTERISTICS

Net Application Rate	60 tons/1000 tons
Mixing Safety Factor (revised to 10% on 5/14/09 by Jennings)	10.00% %
% Rock	0.00% % ✓
Total Area	0.025 acres ✓

Average Depth Calculation

Depth (inches)		% of Total Area		
24 ✓	X	100.00%	=	24
	X		=	
	X		=	
	X		=	
		Average Depth		24 inches

LIME CHARACTERISTICS

Lime Reactivity

Percent >10 mesh	0.00%	X 0.1 =	0.00%	(A)
Percent 10 - 60 mesh	0.08%	X 0.5 =	0.04%	(B)
Percent < 60 mesh	99.92%	X 1 =	99.92%	(C)
Lime Reactivity		=	99.96%	A+B+C

Calcium Carbonate Equivalence		82.20% %	
Percent Moisture		29.00% %	
Bulk Density	0.75 grams/cc	=	0.63 tons/cy

CALCULATE LIME RATE

Lime Rate = Net Application Rate *(1+ Mixing Factor/100)* (1 - % Rock/100) * Depth
/ (Lime Reactivity) * (Calcium Carbonate Equivalence/100) * (1 - % Moisture/100)

Lime Rate = 452.53 tons/acre = 11.31 tons total

Lime Rate = 715.94 cy/acre = 17.90 cy total

Depth of Lime to be Applied = 5.3 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-20-09

FILE MEMO

Regarding: Lime Compost **Fertilizer** Mulch Seed Other

Fluvial Deposit ID: QX **Irrigated Meadow ID:** _____

Acreage: QXN: 0.08 acres x 4(6-inch) x 153 lbs = 49 lbs ≈ 1 bag
QXS: 0.025 x 4(6 inch) x 153 = 15 lbs

Target Application: _____

Amount Applied: 1 bag @ QXN
15 lbs @ QXS

Comments:

0:45:00 – Hand Broadcasted

_____ 07-21-09

Signature **Date**

IN SITU PH

- Spread colorimetric pH indicator on soil in test pit wall.
- Compare color of indicator to colors on pH indicator solution. Estimate pH to within 1 standard unit along entire depth profile.
- Record pH in logbook and/or field form.
- Retain one copy of field form. Provide second copy to construction contractor for tracking purposes.

In Situ pH Record

Fluvial Deposit/Irrigated Meadows Polygon: QX

Location	Average pH	Minimum pH	Maximum pH	% of Depth Range < 5.0	HCl reaction
QXS 0-6"	7.0			0%	Yes
QXS 6-12"	7.0				
QXS 12-18"	7.6				
QXS 18-24"	7.0				
QXS 24-30"	7.0				

Stream bank put on top of 24" Treatment Area

RTS

Name/Signature: RobTS **Date:** 07-22-09

PASTE PH

- pH meter must be calibrated each morning and halfway through the work day.
- Tare container.
- Measure 10-20 grams of soil into container. Weigh sample to nearest 0.1 gram.
- Add an equal portion of deionized water.
- Shake or stir thoroughly. Let sit 5 minutes. Stir. Measure pH when solution settles.
- One duplicate per 20 samples.

Paste pH Record QX

Fluvial Deposit/Irrigated Meadows Polygon:

	Location	Container Weight (g)	Soil Weight (g)	Water Weight (g)	pH
QXS	0-6"	Tare @ 0.0	21.2	21.2	6.7
QXS	6-12"		22.2	22.5	6.9
QXS	12-18"		23.9	24.2	6.7
QXS	18-24"		21.2	21.6	6.8
*QXS	24-30"		20.4	20.5	6.9

Name/Signature: [signature]

Date: 07-22-09

*- 24-30" Sample Taken because treated streambank was Draught back and put on top of treated depths

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **QX-2 (South)**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)		1.50%	%
Treatment Depth (Full treatment depth up to 12")		12	inches
% Rock		0%	
Treatment Area		0.025	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon		15.79%	%
Percent Moisture		29.63%	%
Wet Bulk Density	=	0.687	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 269.99 tons/acre = 6.75 tons

Compost Rate = 393.00 cy/acre = 9.83 cy

Depth of Compost to be Applied = 2.9 inches

Signature: [signature]

Date: 6/26/09

Signature: [signature]

Date: 07-08-09

Compost Application Rate Calculation Form
Fluvial Deposits

Irrigated Meadow Polygon Name/ID: **QX-1 (North)**

POLYGON CHARACTERISTICS

Target % Organic Carbon (revised to 1.5% for 2009 work)	1.50%	%
Treatment Depth (Full treatment depth up to 12")	12	inches
% Rock	0%	
Treatment Area	0.080	acres

COMPOST CHARACTERISTICS

Percent Organic Carbon	15.79%		%
Percent Moisture	29.63%		%
Wet Bulk Density	0.687	=	tons/cy

CALCULATE COMPOST APPLICATION RATE

$$\text{Compost} = \frac{\text{Target \% OC} * \text{depth} * 1000 \text{ tons/acre/6"} * (1 - \%\text{rock}/100)}{\text{Compost \% OC} * (1 - \%\text{Moisture}/100)}$$

Compost Rate = 269.99 tons/acre = 21.60 tons

Compost Rate = 393.00 cy/acre = 31.44 cy

Depth of Compost to be Applied = 2.9 inches

Signature: [signature]

Date: 4/24/09

Signature: [signature]

Date: 07-08-09

FILE MEMO

Regarding: Lime Compost Fertilizer Mulch (Seed) Other

Fluvial Deposit ID: QX **Irrigated Meadow ID:** _____

Acreage: _____

Target Application: _____

Amount Applied: _____

Comments:

QX N: 0.08 acres × 11.44 lbs × 2 (Double Rate) = 1.8 lbs

QX S: 0.005 × " × " = 0.1 lbs

Confirmed that FD Seed Mix used; observed FESI weighing seed for application via broadcaster.

_____ 10-05-09

Signature **Date**