

Stormwater
Management
Plan (SWMP)

**GRADING, EROSION AND
STORMWATER QUALITY CONTROL PLAN**
for
NEW WIDEFIELD PK-8 SCHOOL

Widefield, CO

May 2018

Prepared for:

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Contractor: _____

SWMP Administrator: _____

**GRADING, EROSION AND STORMWATER QUALITY CONTROL PLAN
NEW WIDFIELD PK-8 SCHOOL**

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1.0 STORMWATER QUALITY STATEMENT & OBJECTIVES

Stormwater quality best management practices shall be implemented to minimize soil erosion, sedimentation, increased pollutant loads and changed water flow characteristics resulting from land disturbing activity, to the maximum extent practicable, so as to minimize pollution of receiving waters.

Per Appendix A of the Colorado Department of Health, Water Quality Control Division's (the Division) "General Permit Application for Stormwater Discharge Associated with Construction Activities", the goal of the Stormwater Management Plan (SWMP) is:

"To identify possible pollutant sources that may contribute pollutants to stormwater, and identify Best Management Practices (BMPs) that, when implemented, will reduce or eliminate any possible water quality impacts. The SWMP must be completed and implemented at the time the project breaks ground, and revised if necessary as construction proceeds to accurately reflect the conditions and practices at the site."

This document is not intended to address training, site specific operational procedures, logistics, or other "means and methods" required to construct this project.

Drexel, Barrell & Co. has been retained to provide civil engineering services for the design of this project. Drexel, Barrell & Co. is not responsible for implementation and maintenance of the Stormwater Management Plan.

2.0 SITE DESCRIPTION

2.1 DESCRIPTION OF CONSTRUCTION ACTIVITIES

The project involves the development of a new PK-8 school site at the northeast corner of Fontaine Blvd. and Lamprey Dr. within the City of Widefield, Colorado. The proposed development is a two story building, a track & field, associated parking, driveways, sidewalk, utilities and landscaping.

The associated site work will include demolition, grading, utility and drainage work, asphalt and concrete paving, building construction and associated temporary construction BMP's.

2.2 EXISTING SITE CONDITIONS

The project area, (comprising approximately 25.1 acres), is located at the northeast corner of Fontaine Blvd. and Lamprey Dr. The majority of the site ground cover consists of native and non-native vegetation including primarily grasses along with some shrubs providing approximately 70% ground cover in the existing condition. The site generally slopes from east to west at slopes of approximately 2 to 18%. The majority of the site lies within the Jimmy Camp Creek Drainage Basin. There are no springs, streams, wetlands or other surface waters on the site.

Address ongoing overlot grading.

2.3 ADJACENT AREAS

The site is bound on the west and north by Lamprey Road, on the south by Fontaine Blvd. and on the east by an undeveloped lot to be developed as residential in the future. Also to the east of the site is a utility easement/open space.

2.4 SOILS

From the Natural Resources Conservation Service (NRCS), the site is underlain by Manzanst clay loam, a type 'C' soil and by Razor-Midway complex, a type 'D' soil. Runoff coefficients were selected based on type 'C' hydrologic soils for the developed condition. See soils map in the

no batch plants?

Address potential impacts upon discharge.

Appendix. Surface runoff and hazard of erosion is moderate for these soils types, but will be captured by installed BMP's before leaving the site so there will be very little, if any, sediment discharge.

2.5 AREAS AND VOLUME STATEMENT

The project area consists of approximately 25.1 acres, all of which will be disturbed. The overlot grading for this site has already been completed prior to the beginning of the project construction for this site. It is anticipated that there will be approximately 10,000 CY of earthwork yet to be performed for the fine grading of the site.

2.6 CONTROLS AND MEASURES DURING CONSTRUCTION

Stabilization activities are anticipated to begin in the Summer of 2018. A construction schedule will be prepared by the contractor prior to land disturbing activities. The general sequence of major construction activities is as follows:

1. Temporary Erosion Control Measures – Temporary erosion control measures, such as silt fence, straw bale check dams, inlet protection and construction of two vehicle tracking pads & staging area will be completed prior to any other large scale activity. The vehicle tracking pads will ensure a reduction of tracking of soil on and off the construction site. The staging area will house the construction trailer (if any), materials, petroleum product storage (if any), trash dumpster, sanitary facilities and hazardous spill clean-up areas. These are all potential pollutants that are not sediment related.
2. Trash and Debris Removal – Existing trash and debris shall be removed from the site and hauled to designated receiving facility.
3. Site Clearing – The remainder of the area to be disturbed for construction will be cleared and grubbed, as necessary to the perimeter of erosion control. The sequence of the areas to be

cleared and grubbed are subject to the contractor's means and methods of construction of the site.

4. Overlot Grading – Overlot grading has already occurred on the site to bring the site to the proposed sub-grade elevations in paved areas and to finished grade elevations in the landscape and detention areas. Excess dirt from the site has been removed from the site and hauled to the Lorson Ranch residential development to the north and west.
5. Utility Installation – Utility installation will consist of water, sanitary sewer, electric, telephone and natural gas service lines. Storm drain lines will also be installed. Utility locations will be obtained prior to commencement of construction activities.
6. Final Grading – The site will be brought to final elevations with the installation of the proposed concrete paving and final blending to existing grades on the perimeter of the improvement area.
7. Permanent Revegetation – All areas of disturbance will be re-vegetated by the contractor or owner per the landscape plans or on an as-needed basis. Vegetation and stabilization of soil will aid in the trapping of sediment and reducing soil erosion.
8. Removal of Temporary BMP's – Temporary erosion control measures may be removed once the site has achieved final 70 percent of pre disturbance levels and vegetation cover is capable of reducing soil erosion. All permanent BMPs shall be cleaned and functioning before any temporary BMPs are removed.
9. Housekeeping – The best BMP for a job site is good housekeeping around the site. Routine site trash pickup and routine BMP inspection and maintenance are paramount for keeping a job site clean and tidy. All petroleum storage areas in the staging area

should be checked daily for leaks. Any leaks shall be reported to the site foreman for clean up. All personnel on site for both the contractor and subcontractors should be briefed on spill cleanup and containment procedures. Employees shall also be briefed as to where the spill cleanup materials can be found if a spill should occur. The spill plan shall be produced by the general contractor for the project and remain onsite for the duration of the project. Contractor shall coordinate with City to obtain the necessary contacts in the case that a spill occurs.

The Site Superintendent will act as the point of contact for any spill that occurs at this jobsite. The project manager will be responsible for implementation of prevention practices, spill containment/cleanup, worker training, reporting and complete documentation in the event of a spill. The ECO shall immediately notify the Owner/Construction Manager, State and the Local Fire Department in addition to the legally required Federal, State, and Local reporting channels (including the National Response Center, 800-424-8802) if a reportable quantity is released to the environment.

2.7 POTENTIAL POLLUTION SOURCES

Any substances with the potential to contaminate either the ground or ground surface water shall be cleaned up immediately following discovery, or contained until appropriate cleanup methods can be employed. Manufacturer's recommended methods for cleanup shall be followed, along with proper disposal methods. All waste and debris created by construction at the site or removed from the site shall be disposed of in accordance with all laws, regulations and ordinances of the Federal, State and local agencies. The following is a summary of potential pollution sources and their associated measures intended to minimize the risk of pollution for this project.

- 1) Disturbed and stored soils: Straw waddles/fiber rolls, straw bale check dams and gravel bag check dams.
- 2) Vehicle tracking and sediments: VTC and Street Sweeping
- 3) Vehicle and equipment maintenance and fueling: Spill prevention procedures
- 4) Dust or particulate generation from earthmoving activities and vehicle movement: water trucks for site watering.
- 5) On site waste management of solid wastes (construction debris): Waste container placement, covering and disposal
- 6) Worker trash and portable toilets: Container placement, covering and disposal
- 7) Equipment repair or maintenance beyond normal fueling operations: Spill prevention procedures

The following items are not anticipated to be potential pollution sources for this phase of the project:

- 1) Management of contaminated soils
- 2) Outdoor storage of fertilizers, chemicals or potentially polluting construction material
- 3) Dedicated asphalt or concrete batch plants

2.8 NON-STORMWATER DISCHARGES

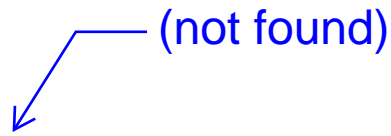
Non-stormwater discharges possibly encountered during construction may include: watering down of the site during high winds to minimize wind erosion and water utilized in soil compaction efforts. No groundwater or construction dewatering is anticipated.

2.9 RECEIVING WATER

Runoff generated by the proposed project will be routed to the proposed Extended Detention Basin (EDB) located at the northwest portion of the site and outfalls to the existing storm sewer system that eventually continues to the East Fork of Jimmy Camp Creek to the west. The EDB will provide for both stormwater detention and water quality for the site. Proposed inlets along Fontaine Boulevard to the south will feed the runoff into a 54" RCP pipe that carries the flows to the west to a detention and water quality facility before discharging to the East Fork of Jimmy Camp Creek as part of the Lorson Ranch Development. Proposed inlets along Lamprey Drive to the west will feed the runoff into a 48" RCP pipe that carries the flows to the west to a detention and water quality facility the East Fork of Jimmy Camp Creek as part of the Lorson Ranch Development.

3.0 SITE MAP

(not found)



Attached as part of this plan is a Site Map (See Appendix). The drawing identifies the following:

- 1) Project area boundary
- 2) Limits of ground surface disturbance
- 3) Area used for staging area
- 4) Location of erosion control facilities or structures (BMP's)
- 5) Boundaries of 100-year floodplains (if applicable)
- 6) Streamside Overlay Boundaries (if applicable)

The following items are not indicated on the attached drawings, but will be determined by the individual contractors and shown on the SWMP plan prior to and during construction activities:

- 1) Areas used for storage of construction materials, soils, or wastes
- 2) Location of portable toilets and waste receptacles
- 3) Location of additional BMP's that may become necessary as work progresses

These items shall be added to the Site Map by the Contractor.

4.0 BMP's FOR STORMWATER POLLUTION PREVENTION

Best management practices (BMPs) used throughout the site shall include: silt fence, vehicle tracking control, straw bale check dams, block and gravel bag curb inlet protection and a permanent EDB.

4.1 EROSION CONTROL – STRUCTURAL PRACTICES

The silt fence locations is shown on the Site Map and shall be in place before project grading begins and be added and repaired as necessary and remain in place through final stabilization.

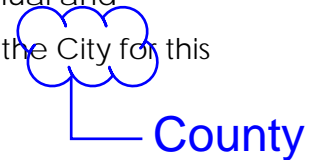
Two vehicle tracking areas will be used. One will be at the north bus access entrance off of Lamprey Dr. and the at the east entrance to the parking lot on the south side of the site off of Fontaine Blvd. to prevent mud from being tracked onto the roadway surface. Periodic clean up around the entrance area is expected nevertheless. Additional vehicle tracking installations may be utilized as site conditions dictate.

Block and gravel bag curb inlet protection will be installed at all proposed curb inlets, area inlets and existing inlets and shall remain in place through final stabilization.

Straw bale check dams will be installed at the locations shown on the Site Map and as needed during construction.

A concrete wash-out will be required for the anticipated concrete placement operations to take place on the site for curb and gutter, sidewalk, foundation, slabs and other improvements. The concrete wash-out shall be installed prior to any concrete paving or pouring operations taking place on the site and remain in place through the completion of site concrete work.

An EDB is proposed for the development of the site. The EDB will be located at the northwest portion of the site with an outfall pipe to the southwest that will connect with the existing storm drain system. A separate Inspection and Maintenance Procedure Manual and Stormwater Maintenance Agreement will be filed with the City for this permanent BMP.



4.2 EROSION CONTROL – NON-STRUCTURAL PRACTICES

Street sweeping around the construction site will be utilized when tracking of mud occurs on paved streets. The sweeping will be required after any significant tracking has occurred; significant meaning any visible amount that cannot be completely cleaned by hand. The adjacent drive surfaces will be cleaned at the end of each day of construction activities. Sweeping efforts will continue as necessary until construction operations are completed.

Site watering will be utilized on an as needed basis as a dust palliative to keep windblown sediment to a minimum. Seed and mulch shall be applied to any portions of the site where temporary or final stabilization/landscaping has not occurred within 30 days of earthwork disturbing activities.

4.3 MATERIALS HANDLING

Any waste material found on-site or generated by construction will be disposed of in a manner as to prevent pollutants in storm water discharges. In the event that waste is to be stored on-site, it shall be in an

area located a minimum of 100 feet from all drainage courses, whenever possible. Whenever waste is not stored in a non-porous container, it shall be in an area enclosed by a compacted earthen ridge. If the enclosed waste area is located on porous soil, the area shall be covered with a non-porous liner to prevent soil contamination. Whenever precipitation is predicted, the waste shall be covered with a non-porous cover, anchored on all sides to prevent its removal by wind, in order to prevent precipitation from leaching out potential pollutants from the waste.

Any designated fueling areas shall be located a minimum of 100 feet from all drainage courses, whenever possible. If the fueling area is located on porous soil, the area shall be covered with a non-porous lining to prevent soil contamination and any spillage shall be cleaned up immediately.

Whenever precipitation is predicted, any construction materials stored on site shall be covered with a non-porous cover, anchored on all sides to prevent its removal by wind, in order to prevent precipitation from leaching out potential pollutants from the materials.

Any chemical stored on site should be kept in an area with berms constructed around the perimeter in order to confine any spills or in a lockable storage container.

4.4 GROUNDWATER & STORMWATER DEWATERING

There is not expected to be any groundwater dewatering required as part of this project. In the event that stormwater enters an excavation and dewatering is necessary, a separate construction dewatering permit will be required.

5.0 TIMING SCHEDULE

The project is anticipated to begin construction in the summer of 2018 and be completed in the summer of 2019. The contractor shall be responsible

for producing a schedule that will show at a minimum: start and completion times including site grading operations, and the removal of the temporary erosion and sediment control measures.

6.0 FINAL STABILIZATION/LONG-TERM STORMWATER MANAGEMENT

Final stabilization shall not be considered complete until 70% of original vegetated cover is established on areas not to be hard-surfaced.

Temporary sediment and erosion control measures installed prior to the construction phase will remain in place until this time. Any sediment that collects within the site's drainage system is considered unstabilized soil and must be removed prior to the site being considered finally stabilized. All stabilization efforts shall conform to the specifications in the City/County Drainage Criteria Manual, Vol. 1 as amended and Vol. 2 as amended. See Landscape plans.

An extended detention basin (EDB) is to be installed in the northwest portion of the site and will provide long-term stormwater management for a majority of the site in addition to the site landscape and hardscape cover.

7.0 INSPECTION AND MAINTENANCE

A site inspection of all erosion control facilities will be conducted every 14 days and within 24 hours after every precipitation event. The entrances to the construction site shall be inspected daily and existing street cleaned, as necessary, of all materials tracked out of the site.

The construction site perimeter, disturbed areas, and areas used for material storage that are exposed to precipitation shall be inspected for evidence of, or the potential for, pollutants entering the drainage system. Erosion and sediment control measures identified in the SWMP shall be observed to ensure that they are operating correctly.

Based on the results of the inspection, the description of potential pollutant sources and the pollution prevention and control measures that are identified in this plan shall be revised and modified as appropriate as soon as practicable after such inspection. Modification to control measures shall be implemented in a timely manner, but in no case more than seven (7) calendar days after the inspection.

The operator shall be responsible for documenting inspections and maintaining records. Uncontrolled releases of mud or muddy water or measurable quantities of sediment found off the site shall be recorded with a brief explanation as to the measures taken to prevent future releases as well as any measure taken to clean up the sediment that has left the site. All signed inspection record/logs should be kept on site and made available to El Paso County or CDPHE personnel upon request. The SWMP and inspection log shall be kept together at the construction site at all times. All pertinent records must be kept for at least 3 years from the date the site is stabilized.

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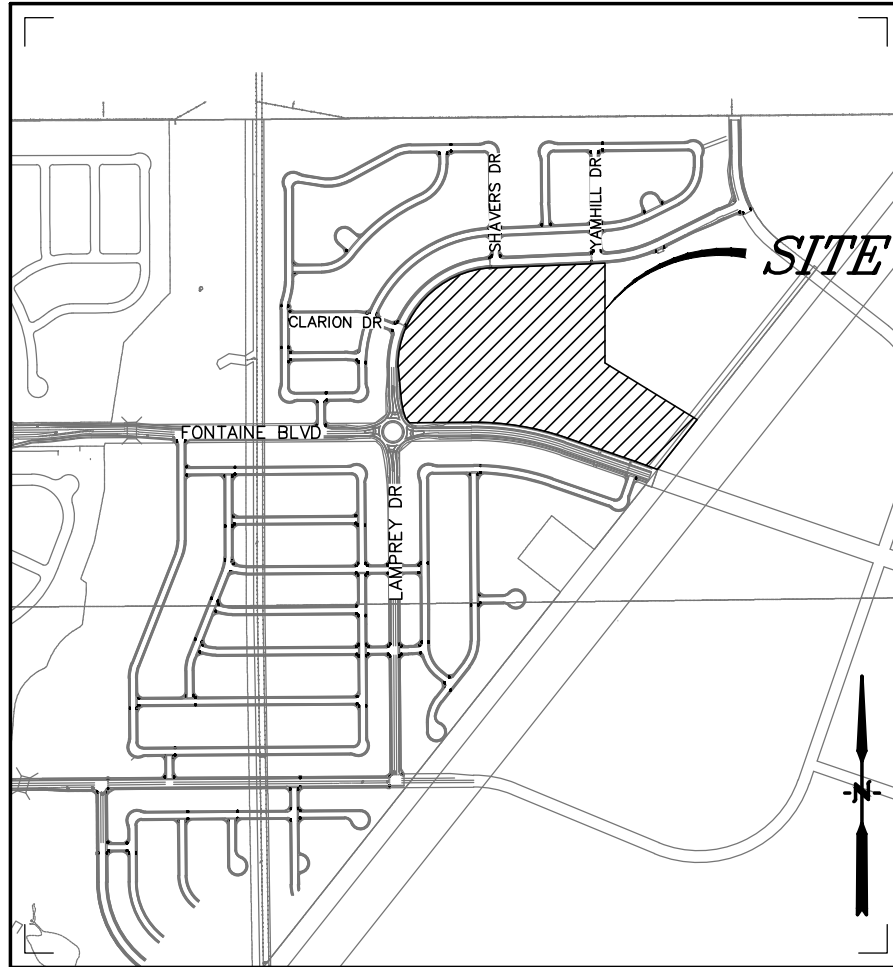
The SWMP Inspector and/or the site superintendent have the authority to add/subtract/revise BMP's as necessary to accommodate construction activities. However, the engineer should be notified when any major redirection of runoff, offsite runoff, pond modifications, or other substantial changes are made to this SWMP. All changes should be documented on the site SWMP plan.

All temporary and permanent erosion and sediment control facilities shall be maintained and repaired per manufacturer's specifications to assure continued performance of their intended function. Repairs should be completed within 24 to 48 hours of identifying the damage. Silt fences may require periodic replacement.

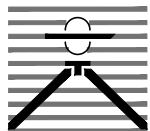
8.0 REFERENCES

- [1] General Permit Application and Stormwater Management Plan Preparation Guidance for Stormwater Discharges Associated with Construction Activities. Prepared by the Colorado Department of Health, Water Quality Control Division. Revised 7/2009.
- [2] City of Colorado Springs- Drainage Criteria Manual, Volume 1 and Volume 2, 2016.
- [3] NRCS Web Soil Survey, www.websoilsurvey.nrcs.usda.gov

APPENDIX



Vicinity Map
Not to scale



NEW WIDFIELD PK-8 SCHOOL
WIDFIELD, CO
VICINITY MAP

Drexel, Barrell & Co.
Engineers • Surveyors

DATE:

DWG. NO.

JOB NO:

21126-00CSCV

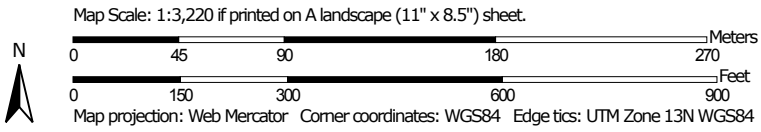
VMAP

SHEET 1 OF 1

Hydrologic Soil Group—El Paso County Area, Colorado
(New Widefield PK-8 school)




Soil Map may not be valid at this scale.



Hydrologic Soil Group—El Paso County Area, Colorado
(New Widefield PK-8 school)

MAP LEGEND

Area of Interest (AOI)









 Area of Interest (AOI)

Soils

Soil Rating Polygons





-  A
-  A/D
-  B
-  B/D
-  C
-  C/D
-  D
-  Not rated or not available

Soil Rating Lines

-  A
-  A/D
-  B
-  B/D
-  C
-  C/D
-  D
-  Not rated or not available

Soil Rating Points




-  A
-  A/D
-  B
-  B/D

-  C
-  C/D
-  D
-  Not rated or not available


Water Features

 Streams and Canals

Transportation

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

Background

 Aerial Photography

MAP INFORMATION

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

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

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

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 15, Oct 10, 2017

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Nov 7, 2015—Mar 9, 2017

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
52	Manzanst clay loam, 0 to 3 percent slopes	C	11.4	23.8%
75	Razor-Midway complex	D	36.4	76.2%
Totals for Area of Interest			47.8	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Markup Summary

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Stormwater Management Plan (SWMP)



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SWMP Administrator: _____



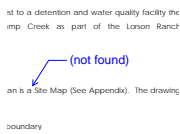
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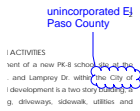
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unincorporated El Paso County



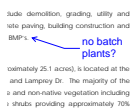
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no batch plants?



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be utilized when tracking
will be required after any

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County