

STATEMENT OF BASIS

PERMITTEE: United States Department of the Army

FACILITY: Fort Carson, Colorado - Landfill No. 5

PERMIT NO.: CO-0034771

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PERMIT TYPE Minor Federal Facility, Permit Renewal

This Statement of Basis (SOB) is for the renewal of the National Pollutant Discharge Elimination System (NPDES) permit for the discharge of seepage from Landfill No. 5 to B Ditch at Fort Carson, Colorado.

Background Information:

Fort Carson is an active army post located just to the south of the City of Colorado Springs in El Paso County, Colorado. The previous permit authorized the discharge of seepage water from Landfill No. 5, which has been closed and has a final cover. The discharge points and the vast majority of Landfill No. 5 are located in the Southwest ¼ Section 10, Township 15S, Range 66W. A small portion of the landfill is located in the SE ¼ of section 10. Landfill No. 5 is located at the east end of O'Connell Blvd. at Fort Carson. The western end of the landfill has been paved and is used as a motorpool area. Landfill No. 5 is considered a solid waste management unit (SWMU) in Fort Carson's Hazardous Waste Permit issued by the Colorado Department of Public Health and Environment.

Based on the information provided by the permittee, discharge from the landfill is considered intercepted groundwater and does not contain leachate from the landfill.

The previous NPDES permit (effective April 1, 2006) authorized a discharge of groundwater seepage from the landfill via a 4" polyethylene drain pipe that discharged to B Ditch. Based on the SOB for the previous permit, the seep was created during subgrade preparation associated with a final landfill cap installation. According to the permittee, the discharge point is located at latitude 38° 45' 12" N, longitude 104° 45' 56" W. It was assigned Outfall Number 006.

The previous permit authorized a second discharge of groundwater seepage from the landfill at a point approximately 600 feet to the west of Outfall 006 and discharged to B Ditch. This outfall was assigned Outfall Number 007. The assumption was made that groundwater was seeping into the gas condensation

collection system under the Motorpool cap on Landfill No. 5 and draining to a condensation vault from which direct discharge to B Ditch would occur.

The effluent limitations in the previous permit consisted of 30 mg/L (30-day average) and 45 mg/L (7-day average) on BOD₅ and total suspended solids (TSS), a pH limitation of 6.5 to 9.0, and a 10 mg/L limitation on oil and grease. The pH limitation was based on water quality standards and the other limitations were based on the State of Colorado's Regulations for Effluent Limitations (Colorado Regulation No. 62).

The analysis for oil and grease was only required if a visual sheen was observed. In the previous permit, specific conductance had been added to the list of effluent characteristics to monitor as a check on the salinity levels of the discharges.

The self-monitoring data for June 2006 to December 2010 submitted during the DMR reporting periods and with this permit renewal application are listed in Table 1. These data indicate that the discharge was in compliance with the permit limitations during that period with the exception of one TSS reading during the 12/31/06 reporting period.

TABLE 1
Self-Monitoring Data – Outfall 006
 Fort Carson Landfill No. 5 – June 2006 to December 2010

Monitoring Date	Flow (gpd)	pH (s.u.)	O&G (visual)	BOD5 (mg/L)	TSS (mg/L)	SO4 (mg/L)	O&G (mg/L)	CONDUCT. (Micromhos/cm)
6/30/06	1100	7.40	No	0.33	1.4	6200	NA	9840
12/31/06	1278	7.63	No	0.43	170.4	5300	NA	9870
6/30/07	1287	7.46	No	0.35	5.4	5540	NA	9690
12/31/07	1400	7.30	No	0.14	2.4	5700	NA	5700
6/30/08	1141	7.24	No	0.70	3.4	6100	NA	1030
12/31/08	63	7.70	No	ND*	ND*	5900	NA	10110
6/30/09	ND	ND	ND	ND	ND	ND	ND	ND
12/31/09	111	7.40	No	0.80	3.0	5700	NA	9680
6/30/10	ND	ND	ND	ND	ND	ND	ND	ND
12/31/10	ND	ND	ND	ND	ND	ND	ND	ND
Avg.	911	7.45	-	0.39	3.1	5777	-	7989
Min.	63	7.24	-	0.14	1.4	5300	-	1030
Max.	1400	7.70	-	0.80	5.4	6200	-	10110

Footnotes: NA - Not Applicable - Test Not Required (no visual sheen observed)
 ND - No Discharge
 ND* - No Discharge- Insufficient Flow for Sampling

Self-Monitoring Data – Outfall 007
 Fort Carson Landfill No. 5 – June 2006 to December 2010

No discharge has been observed from Outfall 007 during the monitoring period from June 2006 to December 2010.

In this permit renewal application, the permittee has requested to add a third direct discharge point to B Ditch, assigned as Outfall Number 008. Outfall 008 is located approximately 300 feet west of Outfall

006. Currently, any seepage collected in an existing french drain, is conveyed and stored in an above ground storage vault, then transported to and treated at the Fort Carson Industrial Wastewater Treatment Plant. The volume of water to be discharged is estimated to average approximately 10,000 gallons over an 8 month period (42 gpd). Based on analyses of this water, it is the opinion of the permittee that the water is from a groundwater seep under the landfill and is not leachate from the landfill. As per the current permit application documents, no flow for Outfall 008 has been observed since August 2010.

The current permit application contained data on the analytical results from a sample collected from the vault. Table 2 below contains the results for the analyses for nitrate, metals, and grease.

TABLE 2

Nitrate, Metals and Grease Data from Analytical Data Collected from Groundwater Contained in Storage Vault (Outfall 008 Area Data). Information submitted with application for permit renewal.

(Units: mg/L)

Analyte	Sample Date
	November 2009
Nitrate as N	ND
Aluminum	0.1
Antimony	0.013
Arsenic	0.002
Barium	0.05
Beryllium	< 0.002
Boron	NA
Cadmium	< 0.0025
Chlorine	NA
Chromium	0.004
Cobalt	< 0.005
Copper	0.003
Iron	< 0.1
Lead	< 0.005
Magnesium	15.4
Manganese	0.028
Mercury	< 0.0004
Molybdenum	NA
Nickel	0.02
Phosphorous	NA
Radium	NA
Selenium	0.005
Silver	< 0.005
Thallium	0.0003
Tin	NA
Titanium	NA
Zinc	< 0.125
Grease	ND

NA: Not analyzed. ND: Not detected

As part of the Form 2C permit application documentation, various organic compounds including pesticides were analyzed in addition to the analyses for nitrates, metals, and grease. A total of 103 compounds were included in the analyses. All but four (4) (Barium, Magnesium, Manganese, Zinc) of the analytical results were less than the method detection levels. Based on the dilution factor occurring within Fountain Creek, the detected concentrations of the four metals were determined as not having a potential significant effect on ambient water quality.

Receiving Waters

B Ditch appears to be a naturally occurring drainageway that is tributary to Fountain Creek. The existing discharge point, Outfall 006, is approximately 0.6 of a mile upstream of the confluence of B Ditch with Fountain Creek. Fountain Creek is a tributary of the Arkansas River. The last tri-annual review of the water quality standards for the Arkansas River Basin occurred in 2010, with an approval date of January 10, 2011, and an effective date of June 30, 2011. In terms of stream classification by the Colorado Water Quality Control Commission, B Ditch is in Segment 4 of the Fountain Creek Basin (COARFO04), which includes all tributaries to Fountain Creek which are not within the boundaries of the National Forest or Air Force Academy lands, including all wetlands, lakes and reservoirs, from a point immediately above the confluence with Monument Creek to the confluence with the Arkansas River, except for the specific listings in segments 5, 6 and 7. Segment 4 is designated "use protected" and is classified Warm Water Aquatic Life Class 2, Class E Recreation and Agriculture. The numeric standards are given below.

Physical and Biological:	Dissolved Oxygen = 5.0 mg/L minimum pH = 6.5-9.0 E. Coli = 126/100mL
Inorganic, mg/L:	Free Cyanide (ac) = 0.2 Boron (ch) = 0.75 Nitrite = 10 Nitrate = 100
Metals, ug/L:	Arsenic (ch) = 100(Trec) Beryllium (ch) = 100(Trec) Cadmium (ch) = 10(Trec) Chromium(+3) (ch) = 100(Trec) Chromium(+6) (ch) = 100(Trec) Copper (ch) = 200(Trec) Lead (ch) = 100(Trec) Nickel (ch) = 200(Trec) Selenium (ch) = 20(Trec) Zinc (ch) = 2000(Trec)

Abbreviations: (ac) = acute (1-day), (dis) = dissolved, (ch) = chronic (30-day), (Trec) = total recoverable.

Note: The standards for inorganics and metals are based on the agricultural classification.

The main stem of Fountain Creek from a point immediately above the confluence with Monument Creek to a point immediately above the State Highway 47 Bridge (near Pueblo) is Stream Segment 2a of the Fountain Creek Basin (COARFO02a). Segment 2a is undesignated and is classified Warm Water Aquatic Life Class 2, Class E Recreation, Agriculture, and Water Supply. The numeric standards are given below.

Physical and Biological: Dissolved Oxygen = 5.0 mg/L minimum
pH = 6.5-9.0
E. Coli = 126/100mL

Inorganic, mg/L: Un-ionized ammonia(ac) = TVS, Un-ionized ammonia (ch) = TVS
Chlorine (ac) = 0.019, Chlorine (ch) = 0.011
Free Cyanide (ac) = 0.005
Sulfide (ch) = 0.002
Boron (ch) = 0.75
Nitrite = 1.0
Nitrate = 10
Chloride = 250
Sulfate = 330

Metals, ug/L: Arsenic (ch) = 0.02-10 (Trec),
Cadmium (ac/ch) = TVS
Chromium (+3) (ac) = 50 (Trec)
Chromium (+6) (ac/ch) = TVS
Copper (ac/ch) = TVS
Iron (ch) = WS (dis), Iron (ch) = 1000 (Trec)
Lead (ac/ch) = TVS
Manganese (ac/ch) = TVS, Manganese (ch) = WS (dis)
Mercury (ch) = 0.01(tot)
Nickel (ac/ch) = TVS
Selenium (ac) = TVS, Selenium (ch) = 8
Silver (ac/ch) = TVS
Zinc (ac/ch) = TVS

Abbreviations: (ac) = acute (1-day), (dis) = dissolved, (ch) = chronic (30-day), (Trec) = total recoverable, TVS = table value standard, WS = surface water with an actual water supply use.

Notes: The point of compliance for the water quality standard for dissolved manganese in Segment 2a is at the Pinello Ranch Clear Well in NW ¼ of SW ¼ of Section 11, Township 15 S, Range 66 W. This point is located slightly upstream of the confluence of B Ditch with Fountain Creek.

The water quality standard for dissolved iron in Segment 2a is 300 ug/L and is a chronic standard.

Water Quality Considerations and Antidegradation Criteria Evaluation

Based upon available data, it appears that the existing discharges (Outfall 006 and Outfall 007) and the proposed discharge (Outfall 008) will not cause a violation of the water quality standards of either B Ditch or Fountain Creek. Although the concentrations of sulfates in the discharge from Outfall 006 have been high (5300 to 6100 mg/L), the maximum recorded rate of discharge is very low (1400 gpd) resulting in an approximate 25,000 to 1 dilution provided by Fountain Creek (30E3= 55cfs measured at Security, Colorado). The water quality standard for sulfates in Segment 2a of Fountain Creek is 330 mg/L and the maximum sulfate concentration in 80 samples at the USGS Gaging Station (07105800) at Security, Colorado is 250 mg/L.

Fountain Creek is referred to as “undesigned and reviewable”, however, due to this dilution factor with respect to the antidegradation criteria (<100:1 dilution), no further evaluation is required.

Effluent Limitations

The effluent limitations for the existing Outfall 006, Outfall 007 and new Outfall 008 will be the same as the effluent limitations for Outfall 006 and Outfall 007 in the previous permit and are shown below. The pH limitation is based on water quality standards and the other limitations are based on the State of Colorado's Regulations for Effluent Limitations (Colorado Regulation No. 62). Each outfall must comply with the effluent limitations.

Effluent Characteristic	Effluent Limitation		
	30-Day Average <u>a/</u>	7-Day Average <u>a/</u>	Daily Maximum <u>a/</u>
BOD ₅ , mg/L	30	45	N/A
Total Suspended Solids, mg/L	30	45	N/A
Monitoring for a "visual sheen" will be required. Where a visual sheen is detected, the discharger will be required to collect a grab sample and have it analyzed for oil and grease. The concentration of oil and grease shall not exceed 10 mg/L in any sample			
The pH of the discharge shall not be less than 6.5 or greater than 9.0 at any time.			

a/ See Permit Definitions, Part 1.1., for definition of terms.

Self-Monitoring Requirements

The routine self-monitoring requirements are given below.

Effluent Characteristic	Frequency	Sample Type <u>a/</u>
Total Flow, gpd <u>b/</u>	Quarterly <u>d/</u>	Instantaneous
Total BOD ₅ , mg/L	Semiannually <u>d/</u>	Grab
Total Suspended Solids, mg/L	Semiannually <u>d/</u>	Grab
pH, units	Quarterly <u>d/</u>	Instantaneous or Grab
Oil and grease, visual <u>c/</u>	Quarterly <u>d/</u>	Visual <u>c/</u>
Sulfate, mg/L	Semiannually <u>d/</u>	Grab
Specific Conductance, micromhos/cm at 25 ⁰ C	Semiannually <u>d/</u>	Grab

a/ See Permit Definitions, Part 1.1., for definition of terms.

b/ Flow measurements of effluent volume shall be made in such a manner that the permittee can affirmatively demonstrate that representative values are being obtained. The average flow rate (in gallons per day) during the reporting period and the maximum flow rate observed (in gpd) shall be reported.

c/ A quarterly visual observation is required. If a visible sheen is detected, a grab sample shall be taken and analyzed immediately. The concentration of oil and grease shall not exceed 10 mg/L in any sample.

d/ Quarterly monitoring is to be done at approximately 3 month intervals and semiannual monitoring is to be done at approximately 6 month intervals.

Monitoring must be conducted according to test procedures approved under 40 CFR Part 136. As part of the standard testing methods described under Part 136, the following specific testing methods shall be used, if required and at the time of future permit renewal:

- Metals – EPA Method 200.7 “Determination of Metals and Trace Elements in Water and Wastes by Inductively Coupled Plasma-Atomic Emission Spectrometry”; MDL values can be located in Table 4 (Aqueous).
- Mercury – EPA Method 1631, Revision E
- Pesticides – EPA Method 608

As outlined in the Colorado Department of Public Health and Environment “Practical Quantitation Limitation (PQL) Guidance Document”, July 2008, the statewide PQL minimum is derived by multiplying the detection limit as identified in this document, by a factor of 10.

Endangered Species Act (ESA) Requirements

Section 7(a) of the Endangered Species Act requires federal agencies to insure that any actions authorized, funded, or carried out by an agency are not likely to jeopardize the continued existence of any federally-listed endangered or threatened species or adversely modify or destroy critical habitat of such species. Federally listed threatened, endangered and candidate species found in El Paso County, Colorado include:

<u>Species</u>	<u>Status</u>
Whooping Crane (<i>Grus americana</i>)	EX
Piping Plover (<i>Charadrius melodus</i>)	T
Mexican spotted owl (<i>Strix occidentalis lucida</i>)	T
Least tern (<i>Sterna antillarum</i>)	E
Greenback cutthroat trout (<i>Oncorhynchus clarki stomias</i>) *	T
Arkansas Darter (<i>Etheostoma cragini</i>)	C
Gunnison's prairie dog (<i>Cynomys gunnisoni</i>)	C
Preble's meadow jumping mouse (<i>Zapus hudsonius preblei</i>)	T
Ute ladies'-tresses (<i>Spiranthes diluvialis</i>)	T

* Recent genetic tests identified cutthroat population as GB lineage, therefore, consultation is an interim measure until genetic and taxonomic issues are resolved.

- T Threatened
- E Endangered
- EX Experimental population, Non-essential
- C Candidate

The discharges from the three outfalls identified in this permit are believed to be solely a collection of groundwater and not leachate from the landfill. Continued monitoring of all waters collected in the vicinity of the landfill through this permit and the Resource Conservation and Recovery Act program will identify potential pollutant impacts should they occur. The EPA finds that this permit is not likely to Adversely Affect any of the species listed by the U. S. Fish and Wildlife Service under the Endangered Species Act due to the water quality of the discharge, the minimal volume being discharged from the facility and the dilution factor occurring within and downstream of Fountain Creek.

National Historic Preservation Act (NHPA) Requirements

Section 106 of the National Historic Preservation Act (NHPA), 16 U.S.C. § 470(f) requires that federal agencies consider the effects of federal undertakings on historic properties. The EPA has evaluated its planned reissuance of the NPDES permit for the Ft. Carson Landfill No. 5 facility to assess this action's potential effects on any listed or eligible historic properties or cultural resources. The EPA does not anticipate any impacts on listed/eligible historic properties or cultural resources because this permit is a renewal and will not be associated with any new ground disturbance or significant changes to the volume or points of discharge.

Miscellaneous

The effective date and the expiration date of the permit will be determined at the time of permit issuance. The intention is to renew the permit for a period of approximately five years, but not to exceed 5 years.

Permit drafted by Craig Jorgenson, SEE, 8P-W-WW, March 20, 2011.

Permit reviewed by Robert Shankland, SEE, 8P-W-WW, March 28, 2011

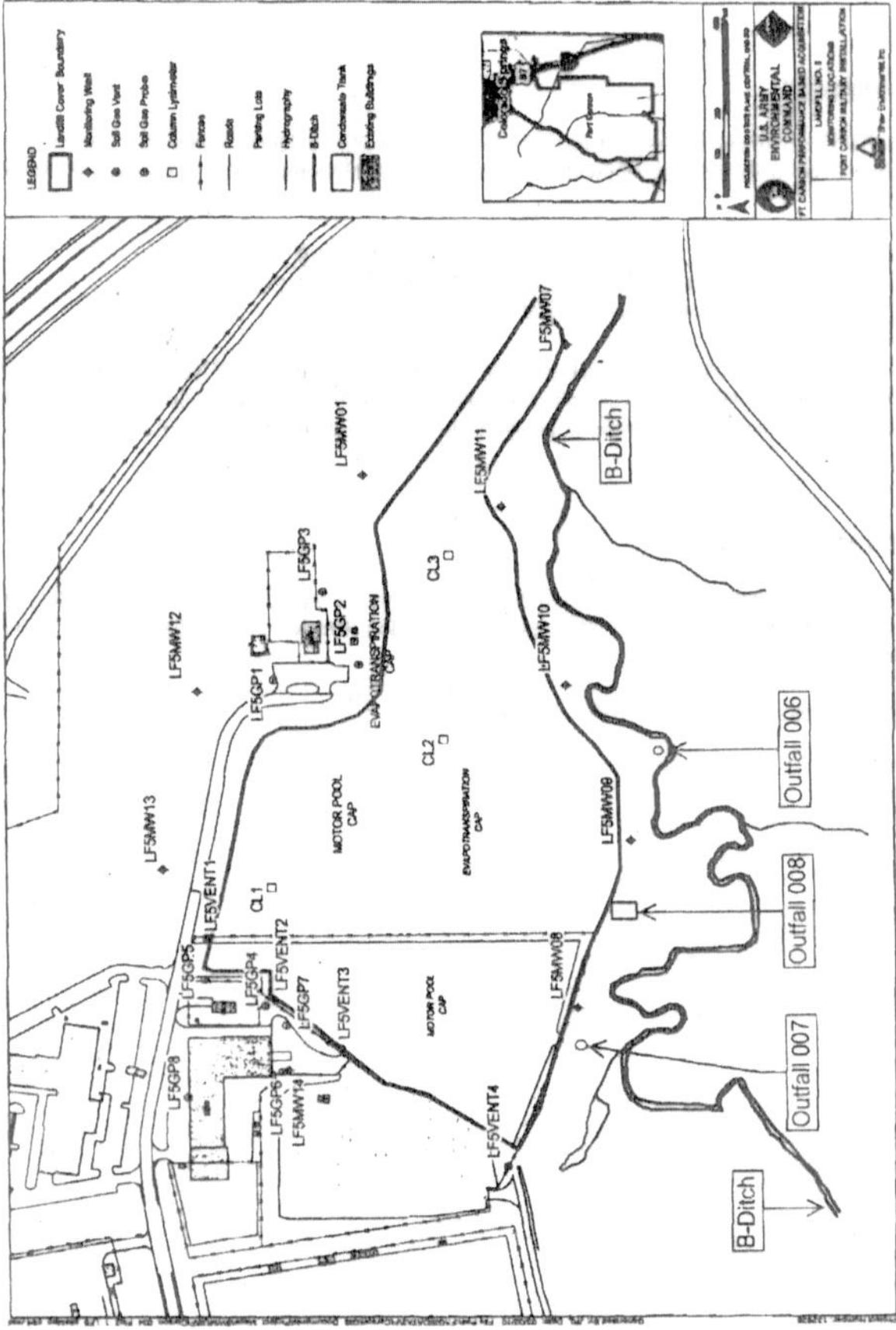
Permit reviewed by Bruce Kent, 8P-W-WW, April 1, 2011

As a reminder to the Permittee at the time for renewal of this permit in 5 years, analyte testing for metals and pesticides for all 3 outfalls should occur and submitted as part of the application documentation. This specific testing should be for all analytes believed to be present in the discharge.

Addendum

No comments were received during public notice and the permit is being issued as public noticed. The effective date will be September 01, 2011 and the expiration date will be June 30, 2016 for a five year permit.

Craig Jorgenson, SEE, 8P-W-WW, June 28, 2011.



FORT CARSON LANDFILL NO. 5
 FIGURE 2