

Statement of Basis

PERMITTEE: United States Department of the Air Force, 460th Space Wing

FACILITY: Buckley Air Force Base (AFB) Municipal Separate Storm Sewer System (MS4) located at 39° 42' 30" N and 104° 45' 30" W

PERMIT NO.: CO-R042003

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Facility Background Information:

Buckley Air Force Base (Buckley AFB) is an Air Force Space Command base. During 2000, base-operating responsibilities changed from the Colorado Air National Guard (COANG) to the U.S. Air Force (USAF) and ultimately the 460th Space Wing (460 SW) became the host unit at Buckley AFB.

The 460 SW's mission is to provide combatant commanders with expeditionary warrior Airmen, and deliver global infrared surveillance, tracking, and missile warning for theater and homeland defense. Also, the 460 SW provides infrastructure and organizational support for approximately 77 tenant organizations who have facilities and operations located on Buckley AFB including the 140th Wing (140 WG) of the COANG, the Colorado Army National Guard (COARNG), the Navy Operational Support Center, Marines Corps, and Coast Guard, and reserve components of these forces.

Prior to the issuance of this permit, stormwater discharges from the Buckley AFB MS4 were regulated under EPA's General Permit for Storm Water Discharges from Federal Facility Small Municipal Separate Storm Sewer Systems in Colorado (COR42000F). This permit was issued on June 23, 2003 and expired on June 22, 2008. This general permit was not reissued. The eight facilities covered under the general permit have been or will be issued individual permits for discharges from their MS4s. This approach is being taken so that terms specific to the operations, industrial activities, and receiving water conditions of each facility can be included in each individual permit. It is believed that this approach will result in a permit with more streamlined conditions specifically tailored to the goal of reducing pollutant loading in stormwater runoff.

EPA-BAFB-000024

As part of the process of issuing an individual permit for stormwater discharges from the Buckley AFB MS4, representatives from EPA Region 8 conducted a facility audit of the MS4 program at Buckley AFB. The audit team reviewed contracts, regulations, annual reports from the previous permit, and facility operating procedures. Oversight inspections of industrial activities and interviews of program staff were also performed. A summary of the significant findings from this audit are as follows:

- Buckley AFB has a strong program to address stormwater discharges from “municipal” and industrial facilities. This is likely due to a strong education program with annual training on several topics and oversight in the form of base-wide inspections and regional Air Force oversight;
- New facilities at Buckley AFB are very well designed with separation of areas exposed to industrial activities and large secondary containment features;
- Development at Buckley AFB includes detention structures but does not currently reflect low impact development practices. Implementation of a design standard which mimics pre-development hydrology will require changes in how contracts for new construction are created and managed.
- Contracting of small construction sites is a concern as violations of the construction general permit were noted during the audit. The ability to influence contractors through either contractor performance appraisals and daily quality assurance evaluations is not very effective as it is currently being implemented.
- Buckley AFB maintains a mostly daylighted storm sewer system with maintained detention structures, so visible degradation from high flows in receiving waters is not very evident. Pollutants leaving the base are likely minimal due to the strong “municipal” and industrial sites program and a commitment to tracking and properly disposing of all potentially hazardous chemicals.
- Future development in the surrounding watershed will affect East Tollgate Creek and how the stormwater conveyance system at Buckley AFB needs to be managed. Communication with the City of Aurora regarding newly proposed projects is important.

Recommendations from the facility audit were used to develop specific permit conditions for Buckley AFB. This audit is available as part of the administrative record for this permit. A summary of the recommendations from the Buckley AFB MS4 audit is as follows:

- Buckley AFB should continue to include training on an annual basis for “municipal” and industrial operators;

- The contracting process for new construction projects will need to be modified to include a line item for the cost of permanent stormwater control measures. Environmental staff will need to review proposed projects to ensure that permanent stormwater control measures can meet hydrologic endpoints and can be maintained. Once installed, it will be necessary to retain designs and determine mechanisms so that permanent stormwater control measures are maintained to meet pollutant removal and detention/retention/infiltration goals over time;
- The contracting process for small construction projects needs to be re-evaluated so that there is more incentive to comply with the terms of the construction stormwater permit; and

A monitoring program should be initiated to ascertain receiving water quality and to evaluate the effectiveness of the MS4 program.

Each of these recommendations, as well as more specific findings from the facility MS4 audit are included as permit conditions in this permit. These supplement the previous conditions laid out in EPA's General Permit for Storm Water Discharges from Federal Facility Small Municipal Separate Storm Sewer Systems in Colorado (COR42000F).

Receiving Waters:

All surface water runoff within Buckley AFB is intermittent and occurs only in response to precipitation events. This runoff is controlled and managed on base by the Buckley AFB stormwater drainage system, a man-made system covered under Buckley AFB's MS4 permit. Runoff from facilities on base discharges into this MS4 system and discharges at outfalls into natural drainage channel receiving waters. The receiving waters, also intermittent drainages, are East Toll Gate Creek (a natural drainage channel) and Granby Ditch (a natural channel, largely improved by man, and a component of the City of Aurora's MS4 drainage system). However, construction in the City of Aurora appears to be moving East Toll Gate Creek toward more perennial flow. Based on topography, surface water drains from the eastern side of the base via either an unnamed tributary to Murphy Creek or an unnamed tributary to Sand Creek. However, this part of the Base is well vegetated, most runoff occurs as overland flows, and therefore actual runoff discharges at outfalls are rare.

Surface drainage from Buckley AFB and the surrounding area is generally from southeast to northwest. Sand Creek, the primary surface drainage feature in the area, is located to the north-northeast of the base; Murphy Creek is tributary to Sand Creek. East Toll Gate Creek crosses the southern part of the base and is tributary to Toll Gate Creek about 1.4 miles to the northwest, at its confluence with West Toll Gate Creek. Toll Gate Creek is tributary to Sand Creek where it joins about 3.3 miles further downstream, southwest of the I-225 and I-70 interchange. Sand Creek is tributary to the South Platte River approximately 12 miles northwest of Buckley AFB. This portion of the South Platte is designated as the U.S. Geological Survey's (USGS's) Middle

South Platte-Cherry Creek watershed with the hydrologic unit code 10190003. The named drainages are all classified as Waters of the United States.

East Toll Gate Creek is the only receiving water or drainage basin that has any drainage area occurring upstream of the Base, so activities which may impact water quality entering the base are limited to this drainage. The total area of the East Toll Gate Creek drainage basin is 11.1 square miles (7,100 acres). The part of the East Toll Gate Creek drainage basin located on Buckley AFB is about 20 percent of the entire basin. The upstream drainage area, which enters (runs onto) the base at two points along the southern boundary, is about 40 percent of the entire basin, or twice the size of the on-base drainage area. Therefore, a significant volume of runoff flows onto the base in response to major precipitation events. The upstream drainage area, located within the limits of the City of Aurora and in unincorporated Arapahoe County, is partially developed with several commercial and residential developments currently under construction. East Toll Gate Creek, located both immediately upstream and downstream of the Base, is designated by the State of Colorado as impaired, as follows:

WBID: COSPUS16c,

Segment Description: Tributaries to S. Platte River, Chatfield Reservoir to Big Dry Creek except specific listings

Portion: East Toll Gate Creek, West Toll Gate Creek, Toll Gate Creek,

Pollutant of concern: Selenium.

In addition, Sand Creek, which is a possible receiving water downstream of the base, is designated as impaired by the State of Colorado, as follows:

WBID: COSPUS16a,

Segment Description: Sand Creek,

Portion: all,

Pollutants of concern: Selenium and *Escherichia Coli* (*E.coli*). There are no TMDLs in place for waters on Base or immediately downstream.

The major soil-mapping units present on Buckley AFB include the Fondis-Weld, Alluvial Land-Nunn, and Renohill-Buick-Little associations. The Fondis-Weld association, composed of the Fondis and Weld soil series, covers the most surface area at Buckley AFB. The Fondis soils have moderately slow permeability (< 0.63 inches per hour). The Alluvial Land-Nunn association consists of soils that have moderate permeability (0.63 inches per hour). The most common soil series within the Renohill-Buick-Little association are the Renohill-Little complex and the Renohill-Buick loam. Renohill soils are characterized as moderately slow to slow permeability (less than 0.63 inches per hour).

Endangered Species

Coverage under this permit is available only if the stormwater discharges, allowable non-storm water discharges, and discharge-related activities are not likely to:

- Jeopardize the continued existence of any species that are listed as endangered or threatened ("listed") under the ESA or result in the adverse modification or destruction of habitat that is designated as critical under the ESA ("critical habitat"); or
- Cause a prohibited "take" of endangered or threatened species (as defined under Section 3 of the Endangered Species Act and 50 CFR 17.3), unless such takes are authorized under sections 7 or 10 of the Endangered Species Act.

"Discharge-related activities" include activities which cause, contribute to, or result in stormwater point source pollutant discharges and measures to control stormwater discharges; including the citing, construction, and operation of Best Management Practices (BMPs) to control, reduce, or prevent stormwater pollution.

Upon its initial certification for MS4 permit coverage in 2004, Buckley AFB, working with the U.S. Fish and Wild Life Service (FWS) and the State of Colorado, certified in its Notice of Intent (NOI) application, that stormwater discharges and discharge-related activities from the Buckley AFB MS4 would not jeopardize the continued existence of any species that are listed as endangered or threatened ("listed") under the ESA or result in the adverse modification or destruction of habitat that is designated as critical under the ESA ("critical habitat"). Buckley AFB continues to work with FWS and the State to update its endangered species lists and is required to evaluate the potential affects of every new construction project through a formal impact analysis. These analyses require that all new projects are designed and maintained such that the existence of listed species cannot be jeopardized and critical habitat cannot be adversely modified or destroyed.

No species that are federally-listed as endangered or threatened ("listed") under the Endangered Species Act (ESA) have been found or are expected to be present on Buckley AFB. According to the U.S. Fish & Wildlife Service there is no critical habitat designated on or near Buckley AFB. Therefore, plans to address impacts from stormwater discharges are not applicable. The burrowing owl is a state species of concern.

Historic Properties

Coverage under this permit is available only if the stormwater discharges, allowable non-stormwater discharges, and discharge-related activities are:

- Not likely to affect a property that is listed or is eligible for listing on the National Register of Historic Places as maintained by the Secretary of the Interior; or
- In compliance with a written agreement with the State Historic Preservation Officer (SHPO) that outlines all measures the MS4 operator will undertake to mitigate or prevent adverse effect to the historic property.

Upon its initial certification for MS4 permit coverage in 2003, Buckley AFB, working with State Historic Preservation Officers (SHPOs), certified in its Notice of Intent (NOI) application, that stormwater discharges and discharge-related activities from the Buckley AFB MS4 would not affect a property that is listed or is eligible for listing on the National Register of Historic Places as maintained by the Secretary of the Interior. Buckley AFB continues to work with SHPOs to update its listing of historic properties and any other archeological areas of significance and is required to evaluate the potential affects of every new construction project through a formal impact analysis. These analyses require that all new projects are designed and maintained such that properties listed or eligible for listing on the National Register of Historic Places are not affected.

Numerous surveys, studies, and inventories have been conducted on Buckley AFB to identify historic or cultural features, sites or items. Six buildings, which date to the Cold War era, have been determined by Buckley AFB, with the concurrence of the Colorado State Historic Preservation Office, to be individually eligible for the National Register of Historic Places (NRHP). These buildings are two hangars and the exteriors of four of the radomes. No archaeological sites eligible for inclusion in the NRHP have been identified on Buckley AFB and no Indian sacred sites, traditional cultural properties, Native American human remains, or cultural items have been identified, or inadvertently discovered or reported on Buckley AFB.

The Integrated Cultural Resources Management Plan (ICRMP) for Buckley AFB provides guidance and establishes standard operating procedures for the management of culturally significant resources on the base. The ICRMP contains compliance procedures including Native American concerns, consultation procedures, and Section 106 review guidelines. The ICRMP is consulted prior to any proposed project to ensure that there are no new cultural resources constraints associated with a proposed action.

Technology Based Effluent Limits

NPDES permit coverage for these discharges is required in accordance with the 1987 Amendments to the Clean Water Act (CWA) and final EPA regulations for Phase II stormwater discharges (64 FR 68722, December 8, 1999). The 1987 Water Quality Act (WQA) amended the Clean Water Act (CWA) by adding section 402(p) which requires that NPDES permits be issued for various categories of storm water discharges. Section 402(p)(2) requires permits for the following five categories of storm water discharges:

1. Discharges permitted prior to February 4, 1987;
2. Discharges associated with industrial activity;
3. Discharges from large municipal separate storm sewer systems (MS4s) (systems serving a population of 250,000 or more);
4. Discharges from medium MS4s (systems serving a population of 100,000 or more, but less than 250,000); and
5. Discharges judged by the permitting authority to be significant sources of pollutants or which contribute to a violation of a water quality standard.

The five categories listed above are generally referred to as Phase I of the stormwater program. In Colorado, Phase I MS4 permits have been issued by the Colorado Department of Public Health and Environment (CDPHE) to the cities of Denver, Lakewood, Aurora, Colorado Springs, and the highway system operated by the Colorado Department of Transportation within those cities. In Colorado, NPDES permitting authority for Federal Facilities has not been delegated to CDPHE. Therefore, EPA maintains NPDES primacy for those facilities.

Phase II stormwater regulations were promulgated by EPA on December 8, 1999 (64 FR 68722). These regulations set forth the additional categories of discharges to be permitted and the requirements of the program. The additional stormwater discharges to be permitted include:

1. Small MS4s;
2. Small construction sites (i.e., sites which disturb one to five acres); and
3. Industrial facilities owned or operated by small municipalities which were temporarily exempted from the Phase I requirements in accordance with the provisions of the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991.

The 1987 CWA amendments clarified the fact that industrial storm water discharges are subject to the best available technology (BAT) / best conventional technology (BCT) requirements of the CWA, and applicable water quality standards. For MS4s, the CWA specifies a new technology-related level of control for pollutants in the discharges - control to the maximum extent practicable (MEP). However, the CWA is silent on the issue of compliance with water quality standards for MS4 discharges. In September 1999, the Ninth Circuit Court addressed this issue and ruled that water quality standards compliance by MS4s is discretionary on the part of the permitting authority (*Defenders of Wildlife v. Browner*, No. 98-71080).

The technology based effluent limits for this permit are largely based on the implementation of a Stormwater Management Program (SWMP) which addresses six minimum measures. The SWMP and additional measures included in this permit are the means through which Buckley AFB complies with the CWA's requirement to control pollutants in the discharges to the maximum extent practicable (MEP) and comply with the water quality related provisions of the CWA. EPA considers MEP to be an iterative process in which an initial SWMP is proposed and then periodically upgraded as new BMPs are developed or new information becomes available

concerning the effectiveness of existing BMPs (64 FR 68754). The Phase II regulations at 40 CFR §122.34 require the following six minimum pollution control measures to be included in SWMP:

1. Public Education and Outreach on Storm Water Impacts;
2. Public Involvement/Participation;
3. Illicit Discharge Detection and Elimination;
4. Construction Site Storm Water Runoff Control;
5. Post-Construction Storm Water Management in New Development and Redevelopment; and
6. Pollution Prevention/Good Housekeeping for Municipal Operations.

The regulations specify required elements for each minimum measure and also include guidance which provides additional information recommended for an adequate program. The permit includes nearly verbatim the required program elements for each minimum measure. The permit also includes a number of additional requirements for each minimum measure which were derived from the recommendations of the regulations and from findings recognized during the facility audit which could affect the implementation of an effective stormwater program.

A summary of technology based effluent limits and a rationale for these limits follows:

General Requirements

- Buckley AFB must continue to develop, implement, and enforce a SWMP. The SWMP must include management practices, control techniques, system design, engineering methods, and other provisions the permittee or EPA determines appropriate for the control of pollutants in discharges from the MS4;
- Buckley AFB must fully implement the SWMP; including meeting its measurable goals. Implementation should take place in approximate equal intervals throughout the permit and progress will be tracked in the annual report;
- The SWMP must include each of the minimum control measures; and
- Buckley AFB must conduct an annual review of the SWMP in conjunction with preparation of the annual report.

Fundamental to these general requirements is a need to develop a Stormwater Management Program. The purpose of this SWMP is to meet the goals of this permit and to prevent deleterious effects to downstream resources from stormwater runoff. These goals should not be mutually exclusive. If they start to become mutually exclusive, the permit should be re-evaluated upon reissuance to incorporate more effective conditions.

Nowhere in the permit is there a specific requirement to create a formal stormwater management plan. This was not written into the permit as there is a concern that a formal stormwater management plan could be contracted out and written into a formal document which may not always be kept current. Buckley AFB is encouraged to develop a stormwater management plan or aggregation of products (e.g., a database which documents existing activities with reporting functions) to provide a place where both EPA and stormwater management personnel at Buckley AFB can show what activities are taking place to prevent deleterious effects to downstream water resources from stormwater runoff. The most important goal is that the stormwater management program is effective and necessary activities are taking place. A static document which meets all of the permit conditions when developed, but does not allow for changes to the program to be readily addressed, does not meet that goal.

It is expected that the SWMP should be an evolving program which changes over time to include new Best Management Practices (BMPs), contracting mechanisms, and training protocols. Outside of the annual report requirements in this permit, how Buckley AFB chooses to document the activities of this program is best left to their own judgment.

Public Education and Outreach on Stormwater Impacts

There are three target audiences for public education and outreach at Buckley AFB:

1. Base residents in housing and dormitories;
2. Shoppers utilizing support facilities including the base exchange, commissary, car wash, and gas station; and
3. Military and civilian populations working on base.

Compared to a traditional MS4 (i.e., a "city"), Buckley AFB maintains strict controls over what can be purchased, used, and disposed of within the boundaries of the base. These controls are very effective, provided that people have the training and knowledge to employ the existing practices successfully. Therefore, the focus of public education and outreach activities is to continue existing practices which have been recognized so far. These include providing all new occupants in employee housing with a new resident packet and quarterly training for contractors/employees/tenants on topics such as construction stormwater, industrial stormwater, oil/water separator maintenance, spill containment, and hazardous waste management. In addition, continued outreach in the more traditional fashion should occur utilizing outlets such as the base paper, the base web site, the military component of the City of Aurora paper titled "The Guardian," and outreach materials adopted from the Keep it Clean Partnership.

During the facility audit, it was noted that every facility with materials or activities that could impact stormwater quality has a facility environmental manager. This person serves as the single point of contact through which all environmental training and practices can be coordinated. This practice is encouraged as it both provides a level of accountability at every facility and empowers facility environmental managers to employ innovative or economical practices for pollution

prevention given their knowledge and day-to-day responsibility.

Permit conditions require that Buckley AFB must:

- Continue an education and outreach program for Buckley AFB which targets project managers, contractors, tenants, residents, and environmental staff in an effort to provide education and outreach about the impacts of stormwater discharges on local water bodies and the steps that can be taken to reduce pollutants in stormwater runoff;
- At a minimum, produce and disseminate informational material to inform the public (i.e., project managers, contractors, tenants, residents, and environmental staff) of the effects of erosion and runoff on water quality. Informational materials shall be updated and distributed as necessary throughout the duration of this permit, and should provide a location where all annual reports and/or SWMP updates as required by this permit may be viewed;
- For new residents in on-base housing, update new resident packets or provide information through alternative sources to educate new residents with information on household hazardous waste collection and disposal and information on the potential impacts of stormwater runoff;
- Provide and document training to appropriate 460th Space Wing personnel, for example, environmental, engineering and planning staff, and contracting officers to communicate the specific requirements for post-construction control as specified in this permit. Such training will be made available to tenant unit personnel, within the context of current contracts or inter-service support agreements; and
- Document education and outreach activities, including documents created for distribution and a training schedule which notes the dates that trainings occurred and the target audiences reached.

The permit requires additional training on the topic of Low Impact Development (LID). This additional requirement is included in the permit because there is a new requirement in the permit to design, build, and maintain newly developed impervious surfaces in a manner which mimics pre-development hydrology. For this requirement to be met, it will be necessary for all the people involved in overseeing contracts, developing contracts, and maintaining permanent stormwater control features to have a basic understanding of why and how to implement LID practices.

Public Involvement and Participation

Public involvement and participation at Buckley AFB is very strong when considering the applicability to these target audiences. There are several mechanisms by which employees are

involved in decision making processes which can impact environmental resources. It is not necessary to create new internal processes for environmental review. However, documenting the existing processes to ensure that they meet the goals of this permit and educating employees and contracting officials to recognize the goals of the MS4 program will be critical to ensuring that pollutants in stormwater runoff are minimized.

The city of Aurora is generally receptive in communication with the base, but there have been times where the city has not been responsive in cleaning out upstream trash or notifying the base when there is a new upstream discharge which could affect the stormwater conveyance system. Therefore, one additional requirement has been added to create and document a mechanism by which Aurora and Buckley AFB communicate to discuss new decisions which may impact East Tollgate Creek. A similar notification requirement will be proposed during the public notice period for the Aurora MS4 permit when it is reissued.

Permit conditions require that Buckley AFB must:

- Comply with applicable public notice requirements when implementing a public involvement and participation program;
- Make all relevant annual reports available on the permittee web site or provide links to all relevant annual reports posted on the EPA Region 8 web site in a locally available publication;
- Maintain a log of public participation and outreach activities performed;
- Document efforts to meet at least annually with the City of Aurora to discuss development, maintenance, and new discharges to East Toll Gate Creek; and
- Document volunteer activities to actively engage residents and personnel at Buckley Air Force Base in understanding water resources and how their activities can affect water quality.

Illicit Discharge Detection and Elimination

An illicit discharge is any discharge to a MS4 that is not composed entirely of stormwater. The permit authorizes several non-stormwater discharges and provides requirements to detect, eliminate, and prevent illicit discharges.

In general, Buckley AFB maintains strict control over oil and hazardous wastes through actions independent of its MS4 permit. These include a facility-wide hazardous waste collection and disposal permit, Spill Prevention Control and Countermeasure (SPCC) plans, and tracking of potentially hazardous waste from cradle-to-grave using computerized maintenance management systems. Consistent training helps ensure the success of these programs and other programs like

it. Therefore, it is not necessary to create an illicit discharge detection and elimination program independent of the MS4 permit. The MS4 permit contains permit conditions which enhance existing activities without a significant burden. These include requirements to address illicit discharges within a certain timeframe and maintain an illicit discharge database. It is expected that through more active tracking of illicit discharges, it will be possible to determine if there are specific trends which need to be addressed. The requirement to conduct annual dry weather screening annually has been retained despite the fact that illicit discharges have not been detected in the past during these screenings. This is because annual dry weather screening will provide environmental staff with a continued connection to the receiving water. If illicit discharges are not detected, it will still be possible to determine if there is significant erosion from outfall discharges or noticeable debris or trash which needs to be addressed.

Permit conditions require that Buckley AFB must:

- Implement a program to detect and eliminate illicit discharges into its MS4. The program shall include procedures for detection, identification of sources, and removal of non-stormwater discharges from the storm sewer system. This program shall address illegal dumping into the storm sewer system, and include training for staff on how to respond to reports of illicit discharges;
- Effectively prohibit, through ordinance or other regulatory mechanism available under the legal authorities of the MS4, non-stormwater discharges into the storm sewer system and implement appropriate enforcement procedures and actions;
- Provide a mechanism for reporting of illicit discharges and provide this number on any outreach materials as appropriate;
- Investigate any illicit discharge within fifteen (15) days of its detection, and take action to eliminate the source of the discharge within forty five (45) days of its detection (or obtain permission from EPA for such longer periods as may be necessary in particular instances);
- Maintain an information system which tracks dry weather screening efforts, illicit discharge reports, and the location and any remediation efforts to address identified illicit discharges;
- Conduct dry weather screening annually at each of the major outfalls for the presence of non-stormwater discharges and to determine if there are significant erosion issues which need to be addressed. If an illicit discharge is detected, an assessment of that discharge shall be made. For example, sampling could include field tests of selected chemical parameters as indicators of discharge sources where dry weather flows are detected. Screening level tests may utilize less expensive "field test kits" using test methods not approved by EPA under 40 CFR Part 136, provided the manufacturer's published

detection ranges are adequate for the illicit discharge detection purposes;

- Address the categories of non-stormwater discharges or flows listed in **Part 1.3.2** and require local controls or conditions on these discharges as necessary to ensure that they are not significant contributors of pollutants to the small MS4. If the permittee identifies any of these non-stormwater discharges as a significant contributor of pollutants, the permittee must include the category as an illicit discharge and implement a plan of action to minimize or eliminate the illicit discharge as soon as practicable; and
- Update the complete storm sewer system map in the Buckley AFB GIS prior to the end of year three of the permit.

Construction Site Stormwater Runoff Control

At a military installation, construction plans, specifications, inspections, and day-to-day activities are largely driven by contracts. Government construction contracts require that all applicable regulations be followed, and noncompliance with contracts results in a stoppage of work. There are several mechanisms by which Buckley AFB can oversee construction projects in terms of environmental performance and adherence with the construction stormwater general permit (i.e., the CGP). First, construction project plans are reviewed by environmental staff for compliance with the terms of the permit and to review whether BMPs to filter and detain stormwater are likely to be effective. Second, environmental staff independently evaluate construction sites for compliance with the terms of the permit. Third, contracting office technical representatives visit construction sites daily to review whether all terms of the contract, including stormwater permit compliance, are being adhered to. And finally, all construction site contractors are provided with an evaluation at the end of the project which affects whether contractors can be given repeat contracts.

Permit conditions have been designed to specifically address each of these mechanisms. A requirement to provide training to contracting representatives who perform daily Quality Assurance Evaluations (QAEs) was included, since these people are consistently involved in every construction project and have an enhanced presence. During the facility audit in 2009, one site was recognized as having deficient stormwater controls. Given that QAEs were being performed on a daily basis without recognition of these deficiencies, training on what to look for seems necessary.

One condition which is new to MS4 permits requires environmental staff to be provided with CCAS (Construction Contract Appraisal Support System) rating sheets where there has been documented non-compliance. This has been included to ensure that contractors are not given additional contracts for new construction without considering their record for complying with construction stormwater requirements. In addition, this will help validate whether contract representatives performing QAEs are adequately assessing whether there is compliance with stormwater regulations. Compliance with stormwater regulations is a condition of contract

performance similar to structural building requirements (e.g., stud spacing, electrical wiring) and should not be viewed as being of lesser importance.

A requirement to maintain and utilize a Notice of Termination (NOT) form specific to Buckley AFB is provided to serve a dual purpose. Having Buckley AFB ensure that 70% vegetative cover has been met on all areas of the site will help assure that vegetation is adequately established. The NOT form will also provide a specific time and place where environmental staff can ensure that they have access to design specifications and operation and maintenance requirements for permanent stormwater control measures installed at site prior to the contractor walking away from the project.

Permit conditions require that Buckley AFB must:

- Develop, implement, and enforce a program to reduce pollutants in stormwater runoff from construction activities;
- Use an ordinance or other mechanism available under the legal authorities of the permittee to require erosion and sediment controls with sanctions for compliance to ensure compliance with the terms of the NPDES General Permit for Stormwater Discharges for Construction Activity in Colorado, COR10000F (i.e., the Construction General Permit or “CGP”);
- Provide information on construction site BMPs with criteria for maintenance and installation. This may reference or incorporate documents which define how to install and maintain BMPs such as the Urban Drainage and Flood Control District Criteria Manual;
- Implement procedures for site plan review which incorporate consideration of potential water quality impacts, and review the Scope of Work for Buckley AFB projects to ensure that effective construction stormwater BMPs are proposed;
- Maintain a list of policies and procedures which can be used to enforce construction site compliance within Buckley AFB independent of EPA staff directly enforcing the CGP;
- Implement an inspection plan and keep a copy of that plan which provides inspection triggers, a priority for order of inspections, and a required timeframe upon which construction sites must be inspected by Buckley AFB. All construction sites within Buckley AFB must be inspected at a minimum semi-annually, and all sites must be inspected prior to construction stormwater permit termination to verify that 70% vegetative cover has been met on all areas of the site;
- Maintain a site inspection form for use by Buckley AFB stormwater managers at sites;

- Provide training to contracting officials which perform daily QAEs (Quality Assurance Evaluations) annually regarding the maintenance and installation of BMPs for construction stormwater control and the terms of the construction stormwater permit; and
- Upon the closeout for construction projects where there has been documented non-compliance with the construction stormwater permit, provide information to the appropriate contracting authority for their action to document incidences of non-compliance;

Post-construction Stormwater Management for New Development and Redevelopment

Controls for stormwater runoff from new developments and redevelopments are included for most projects at Buckley AFB. However, these controls are limited to detention facilities which would not be considered to be low impact development designs. From a visual inspection during the audit, there is minimal visible downcutting and erosion in the banks of receiving waters. This is likely due to the use of detention facilities for the purpose of minimizing sediment loads, active maintenance of detention facilities, a low degree of impervious cover in the immediate watershed, and a predominantly daylighted stormwater conveyance system. As the base and the surrounding urban area are developed, the flow and water quality in East Tollgate Creek could be more significantly impacted.

One significant permit condition which addresses new development requires Buckley AFB to ensure develop Form 1391 Military Construction Project Data Sheets or other equivalent documents for all new construction projects disturbing 1+ acre to include a requirement to design for and provide funding for the installation of permanent post-construction stormwater control measures designed to retain, detain, infiltrate, or treat runoff from newly developed impervious surfaces in a manner which mimics pre-development hydrology. This is a very significant requirement, however, a design standard (e.g., retaining the 2-yr., 24-hour event on-site) is not specified in the permit. This permit does offer flexibility to use Regional methods for mimicking pre-development hydrology such as Peak Flow Control for Full Spectrum Detention as specified by the Urban Drainage and Flood Control District. Regardless of the method and assumptions used to design, build, and maintain sites to mimic pre-development hydrology, it will be necessary to document the assumptions used in reviewing and requiring contracts with a hydrologic performance standard.

During the 2009 facility audit, great lengths were taken to determine each of the activities which affect how new development addresses stormwater runoff and how new practices and control measures are planned for and maintained. Applicable permit conditions address several areas such as master planning, environmental evaluations, long-term maintenance, and contracting procedures. The conditions provided in this permit provide a framework which breaks down the barriers to installing and maintaining stormwater controls and development practices which mimic pre-development hydrology utilizing the contracting, planning, review, and maintenance procedures already in existence at Buckley AFB. Of particular importance, this permit places a

more significant burden on contracting officers to develop, maintain, and enforce contract conditions which relate to runoff quality and quantity.

Permit conditions require that Buckley AFB must:

- Develop Form 1391 Military Construction Project Data Sheets or other equivalent documents for all new construction projects disturbing 1+ acre to include a requirement to design for and provide funding for the installation of permanent post-construction stormwater control measures designed to retain, detain, infiltrate, or treat runoff from newly developed impervious surfaces in a manner which mimics pre-development hydrology. A line item needs to be included in every new proposal (e.g., Department of Defense Form 1391) to ensure that performance-based or design-based post-construction stormwater requirements for new developments and re-developments are provided. This should include a line item for costs associated with the installation and design of permanent stormwater control measures which presumptively meet the performance-based or design-based runoff criteria;
- Prior to the end of year 3 of the permit, incorporate LID designs provided for use in Simplified Acquisition Base Engineering Requirements (SABER) or other equivalent projects for the design and maintenance of new parking lots exceeding one acre in size such that they will significantly reduce, retain, and treat stormwater onsite;
- As part of the design review process for new construction projects disturbing equal to or greater than one acre, review all projects to ensure that they include permanent post-construction stormwater control measures designed to retain, detain, infiltrate, or treat runoff from newly developed impervious surfaces in a manner which mimics pre-development hydrology;
- When updated, include hydrologic performance specifications and information related to the design and maintenance of permanent stormwater control measures in natural resource plans;
- Include post-construction BMP "as-builts" for all newly installed permanent stormwater control measures in a georeferenced data management system;
- Ensure that all newly installed post-construction stormwater control measures are working as designed prior to closing out contracts;
- Upon closeout of new construction projects, include maintenance requirements for newly installed permanent post-construction stormwater control measures into a long-term maintenance plan (e.g., the recurring work program); and

- Ensure that permanent post-construction stormwater control measures are included in any applicable warranty reviews.

For permanent stormwater control measures to be effective, they must be adequately planned for, installed, and maintained. This permit contains what could be considered cradle-to-grave management of permanent stormwater controls. It can be possible to maintain traditional stormwater controls such as detention ponds over the long-term without significant recordkeeping or analysis. This is because they are readily visible, and the hydrologic capacity of a pond can often be modified or maintained after the fact without significant information. This is not the case for stormwater control measures which incorporate low impact development practices such as soil modifications, planned undisturbed areas, and bioinfiltration. It is for this reason that this permit addresses each phase including long-term planning, contract development, evaluation of newly developed contracts, contacting procedures, and tracking and maintenance of permanent stormwater controls. This process should allow Buckley AFB to address hydrologic endpoints effectively. For any new construction project, it should also be possible to determine whether the terms of the permit were met by answering questions such as:

1. Did the 1391 Military Construction Project Data sheet or other equivalent mechanism contain a budget for permanent control measures and an appropriate performance-based or design-based standard for runoff controls?
2. Did the NEPA process, if applicable, include a review of these runoff controls?
3. Prior to terminating the contract for construction, did Buckley AFB receive design and maintenance specifications from the contractor?
4. Did these design and maintenance specifications get included in a georeferenced data management system?
5. Is there a mechanism by which maintenance is being performed through an existing program such as the Recurring Work Program?
6. Has maintenance occurred through the existing program consistent with the maintenance specifications provided by the contractor or have modifications been necessary to allow for better performance?

Pollution Prevention and Good Housekeeping for Municipal Operations

For the purposes of this permit, Buckley AFB has several types of "municipal operations" operated through several tenants. Municipal operations are operated through tenants including the US Marine Corps and the Army National Guard, and municipal operations are also operated by the Air Force. While there are slight differences between facilities operated by the U.S. Marines, the National Guard, and the 140th, consolidation of training and contracted maintenance/recycling/waste transport activities does occur under the umbrella of the 140th as a

whole.

Municipal activities include grounds/park maintenance, fleet maintenance, maintenance of the flight line, vehicle washing operations, building maintenance, stormwater system maintenance, street cleaning, materials storage, hazardous materials storage, used oil recycling, and winter road maintenance.

In general, "municipal operations" at Buckley Air Force Base are very well maintained and operated. This is due to several base-wide initiatives which garner certain behaviors (e.g, site-wide SPCC plan, hazardous waste permit). This is also due to a well-established training program. Annual internal evaluations and triennial external evaluations (ESOCAMPs) are also effective in evaluating pollution control measures at all municipal operations. For this purpose, this permit does not contain prescriptive permit conditions which would duplicate or minimize the effectiveness of these existing processes.

Permit conditions require that Buckley AFB must:

- Provide and document annual training for operators at all fleet maintenance facilities and civil engineering shops covering the topics of stormwater runoff impacts and controls and the maintenance of onsite pollution control measures. These trainings can be provided to a single point of contract for each facility for further distribution;
- Consider deicing training if available to minimize the use of and runoff from chemical deicers and traction aggregates;
- Evaluate options for consolidated areas to wash large equipment where practicable;
- Develop and implement a schedule for cleanout of storm sewer inlets in a manner which prevents significant deposition of sediment or other debris to receiving waters;
- Develop and implement a schedule for sweeping streets in a manner which prevents significant deposition of sediment or other debris to receiving waters and provide data or a description of this schedule and its implementation in the SWMP for the facility;
- Include in recurring work contracts (e.g., the recurring work program (RWP)), specifications for maintenance of instream BMPs (e.g., sediment basins, drop structures, trash racks); and
- Include maintenance activities for all permanent stormwater control measures in the Integrated Wastewater Information Management System (IWIMS) or another suitable application when turned over (as-builts, specifications, etc.) to the 460th Civil Engineer Squadron.

The SWMP and additional measures included in this permit are the means through which Buckley AFB complies with the Clean Water Act requirement to control pollutants in the discharges to the maximum extent practicable (MEP) and comply with the water quality related provisions of the CWA. It is expected that compliance with the conditions in this permit, including the technology based effluent limits, will result in discharges that are controlled as necessary to meet applicable water quality standards. Part 1.3.5 of the permit includes eligibility restrictions for discharges to water quality impaired waterbodies. As written in Part 1.3.5 of the permit, EPA will notify MS4 operators whose discharges are likely to cause or contribute to a water quality impairment, or whose discharges contribute directly or indirectly to a 303(d) listed waterbody. If EPA determines that discharges from the MS4 are causing or contributing to a water quality impairment, that MS4's SWMP must include a section describing how the program will control the discharge of the pollutants of concern and ensure discharges from the MS4 will not cause or contribute to instream exceedances of the water quality standards. This documentation must specifically identify measures and BMPs that will collectively control the discharge of the pollutants of concern.

Monitoring

The Phase II stormwater regulations at 40 CFR §122.34(g) require that small MS4s evaluate program compliance, the appropriateness of the BMPs in their SWMPs and progress towards meeting their measurable goals. Monitoring and assessment activities are included as part of each of the minimum measures of the permit. In addition, Buckley AFB is required to implement a monitoring program which can be used to assess the effectiveness of the MS4 program as whole. The terms of the monitoring program are left open-ended so that Buckley AFB can work with existing internal programs or external programs developed by Aurora or the Urban Drainage and Flood Control District to leverage resources.

Permit conditions require that Buckley AFB must:

- Not later than the end of year three of the permit term, develop a program to evaluate the water quality in East Tollgate Creek, and if deemed necessary by the permittee, Granby Ditch, as it both enters Buckley AFB and leaves Buckley AFB. This program shall at a minimum include evaluations of streambank stabilization, and water quality. The water quality monitoring program may include indicators such as chemical monitoring, assessment of macroinvertebrates or other aquatic life, or watershed assessment of river stability and sediment supply, provided that the monitoring program provides meaningful data to evaluate the effectiveness of the stormwater management program. The permittee is responsible for evaluating data for analysis of trends; and
- Send a description of the water quality monitoring program to EPA with the Annual Report for year 3 of this permit term. Programs will be assessed by EPA Region 8 to determine whether the program meets the goals of this permit and whether the data is

being collected and reported in compliance with EPA test procedures approved under 40 CFR Part 136.

Administrative Record

The administrative record for this permit may be obtained upon request by contacting Amy Clark at 303-312-7014 or clark.amy@epa.gov or by writing or E-mailing to the address listed below:

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