Petroleum Cleanup Program

REMEDIAL ACTION PLAN GUIDELINES

BUREAU OF PETROLEUM STORAGE SYSTEMS

History: New 9/10/93, Revised 5/1/98

Identification No.: BPSS-3

Topic of Guideline: Design Requirements and Procedures for NPDES Discharges

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Signature and Date PE ADMINISTRATOR	Signature and Date BUREAU CHIEF

A commonly used remediation system disposal option for treated groundwater at petroleum cleanup sites is surface water discharge. These discharges are regulated under the State of Florida Department of Environmental Protection Generic Permit for Discharges from Petroleum Contaminated Sites. A copy of the Generic Permit is attached. This Generic Permit allows a faster process for obtaining coverage under the NPDES discharge program than the alternative of applying for an individual permit for each site. This generic permit is applicable to petroleum contaminated sites only. Sites with other non-petroleum contamination sources, either separate or commingled with petroleum contamination, may not be eligible for this generic permit.

The NPDES generic permit analysis parameters are based on an assumption that the site is contaminated with petroleum constituents only. If a surface water discharge is anticipated when developing the RAP it will be necessary to perform additional groundwater analysis to demonstrate that other non-petroleum surface water quality standards will not be exceeded by the discharge. One background representative groundwater sample should be obtained and analyzed for the parameters listed in Table 4 of the generic permit. Based on the analysis results, the RAP must demonstrate that the surface water standards for the proposed receiving water body will not be exceeded. If any of the surface water standards are exceeded in the groundwater analytical results, an assessment of the appropriate water quality based effluent limitations may be necessary.

NPDES discharge permits are required in all instances where the likelihood of a surface water discharge could exist. All sites with a discharge to land surface or a water body must provide an analysis of an engineered system for the purpose of demonstrating that no run-off or contamination resulting from the discharge will impact a surface water body by methods such as run-off, migration due to rainwater, or any other transport mechanism. Furthermore, an engineering analysis which considers the rainfall intensity and drainage basin dimensions must be performed in cases where no NPDES permit is requested for the infiltration in retention pond(s) originally designed for purposes other than infiltration of remediation system effluent.

One of the provisions of the Bureau of Petroleum Storage Systems' agreement with the Division of Water Facilities is a necessity to ensure that discharge standards are continuously met. The manner in which the Department has historically chosen to ensure compliance with this requirement without the need for continuous monitoring is to require activated carbon polishing following a conventional treatment system (e.g. air stripping). This policy was originally instituted to ensure that discharge standards would be continuously met in the event of equipment fouling, variable influent concentrations not anticipated in the system design, or other malfunctions affecting system performance or efficiency. Normally two carbon units in series with a sampling port between have been required so that if breakthrough of the first carbon unit has occurred between maintenance visits, the second carbon unit will provide adequate treatment until corrective action can be taken.

With many remediation systems now operating in Florida, it is becoming apparent that this design requirement may be too narrowly specified and may be counter productive to the overall goal of efficient and effective cleanup of contaminated sites. Some activated carbon polishing systems have reportedly resulted in significant maintenance problems and costs, and have in fact had a negative affect on the overall progress of site cleanup due to frequent shutdowns and maintenance problems. Operational data on many of these sites has demonstrated that the primary treatment process has consistently met effluent standards, making the carbon polishing unnecessary. In light of this information we have determined that our current policy of mandating carbon polishing through the life of the site cleanup is not appropriate.

The Department intends to maintain our current policy of holding sites with surface water discharges to a higher standard than some of the other disposal options, however, it is clear that a more flexible policy to accomplish this goal is in order. Any one of the following will now be considered adequate for

demonstrating the additional assurances that discharge standards will be continuously met.

(a) The system design may include carbon polishing consisting of two canisters in series, with a sampling port between, following a primary treatment process (e.g. air stripper) that is designed to achieve applicable effluent standards. The carbon polishing system must be used initially. However, the system may be bypassed or eliminated upon authorization from the Department. To justify bypass of the carbon, documentation must be provided after a minimum of six months of operation which demonstrates the primary treatment process has consistently met the required effluent quality requirements and that there have been no significant operational problems with the primary treatment process. The minimum frequency of data must include weekly sampling for the first month of operation followed by monthly sampling for the next five months. The system should be designed to allow the bypassing or removal of carbon canisters without significant system modification or downtime.

(b) The following design factors may be incorporated into the system design to ensure the effluent standards are continuously met:

(1) An increase in the air stripper design safety factor from the current 25% to a minimum of 50% must be provided, and

(2) Telemetric monitoring of the pressure drop across the air stripper must be provided to notify the person responsible for conducting site cleanup of fouling or blower malfunction, and

(3) A separate secondary fail-safe circuit must be provided for the primary treatment unit (in addition to the one required on all VOC treatment units) to shut the system down in the event of blower failure.

(c) A secondary diffused aerator or air stripper with a minimum of 90% removal efficiency may be provided to treat hydrocarbons which may pass through the primary treatment unit. The primary treatment unit must be designed to meet the effluent standards alone based on appropriate design assumptions for influent concentrations.

(d) Ozonation may be proposed as an alternative to activated carbon polishing if it is demonstrated to be appropriate

and cost effective for the site design considerations including flow rate and O&M schedule.

(e) Alternate proposals to the above will be considered by the Department (or contracted local program) on a case by case basis. Such a proposal must demonstrate a basis for ensuring discharge standards will be continuously met and that the proposal is cost-effective considering the cost of equipment as well as O&M.

Modifications of existing systems may be proposed based on historical operating data. A demonstration of decreased influent concentrations may be used to demonstrate compliance with the design factor option of (b)(1) above.

The RAP or RAP modification must include an evaluation of the cost effectiveness of alternate measures and discussion of O&M considerations to support the recommended method of meeting this requirement. Factors which will affect the approval of alternate methods of ensuring consistent effluent quality include the reliability of assumptions used to predict expected influent concentrations and the availability of groundwater chemistry information which may be used to determine potential for system fouling due to precipitation of inorganic compounds or biological growth.

NPDES Program Administration

The NPDES program for surface water discharges from petroleum contaminated sites has been delegated to the Department of Environmental Protection and is administered by the Division of Water Facilities. The oversight of NPDES discharge applications and monitoring reports will be conducted by the FDEP. Permit application materials should be submitted to the FDEP District Office holding jurisdiction over that site. The FDEP District Office will also perform periodic inspections for compliance with EPA's NPDES program requirements. Discharge Monitoring reports should be submitted to the Division of Water Facilities, located in Tallahassee at the following Address:

NPDES Discharge Monitoring Report
Division of Water Facilities
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Questions pertaining to Permit Applications should be forwarded to the nearest FDEP District Office holding jurisdiction.

Questions regarding NPDES Discharge Monitoring Report Requirements that should be forwarded to James M. Bottone.

TC/tc

Attachment