



BRADWELL SITE

SPECIFIC EBB TIDE DESCRIPTION (FED A1 OT4)

BRAD/EN/REP/186

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1. Purpose

This document is in response to a request by the Environment Agency to provide an operating technique to meet condition 2.3 "A1 OT4 Specific Ebb Tide description" for the Bespoke FED Permit EPR/DP31278XB¹. It describes the arrangements put in place to ensure FED discharges are made on a best endeavours basis i.e. ebbing tide that ensures that the next incoming tide will be in the hours of darkness whenever practicable.

2. Discharge Arrangements

To optimise dispersion and achieve predicted dilution factors, a modelling exercise was undertaken by HR Wallingford a specialist water management company, to inform the optimum period to make discharges. The report covering the findings of this work is presented in EN/REP/032².

Dissolved FED effluent is treated in the aqueous discharge abatement plant (ADAP) to reduce pollutants.

3. Effluent Monitoring and Final Discharge

The treated effluent once in the final monitoring delay tank 2 (FMDT 2) is subjected to a series of tests in a monitoring programme to confirm suitability for discharge. Once the treated effluent has passed a set discharge criteria, management control procedures are followed before final sign-off for discharge. In addition to the management controls, inadvertent discharge of unsuitable effluent will be prevented through engineering controls such as the use of a Castell Key system as described in EN/REP/194³.

A discharge of duration 30 minutes within the optimum discharge window (HW+1 to HW+2hrs) as prescribed in permit condition 2.1.1 will be selected and specified on a discharge certificate by an Appointed Suitably Qualified & Experienced Person (ASQEP). High Water tide time will be as produced from the Bellfield Software Version 5.8 for Bradwell Waterside Tide table. In setting the time to start emptying the FMDT 2, allowance of 1 hour 20 minutes will be made for the time taken for the discharge to pass through the culvert into the estuary.

The ASQEP will always select and specify an ebbing tide that ensures the next incoming tide will be in the hours of darkness where reasonably practicable. Examples of where this is not reasonably practicable include but are not limited to:

- occasions where the plant is at risk of becoming 'water locked'. This is when the abatement plant is approaching full capacity and cannot receive effluent from the FED dissolution plant resulting in suspension of operations or

- occasions when delaying discharge would invalidate necessary monitoring processes of the effluent such as laboratory analysis of samples. This is based on the Environment Agency's technical guidance document which states that effluent analysis involving particulates is only valid for 48-hours⁴.

Sunrise and sunset times will be as provided on <http://www.sun-up.co.uk/essex/bradwell-waterside> to provide a definition of hours of darkness.

Monitoring results for a sample is assessed against set criteria specified by an ASQEP.

In the event of selecting a sub-optimal discharge window for a discharge, an explanation will be recorded. Copies of all records will be kept with all the other management control documents.

REFERENCES

- 1 Environment Agency 2016. Treatment Facility Serving Bradwell Site Permit Number EPR/DP31278XB
- 2 BRAD/EN/REP032/FED May 2011. Fuel Element Debris Discharge Dispersion (Including HR Wallingford Report EX 6399)
- 3 EN/REP/194 August 2016. Dual Key Release and Pre-Discharge Analysis FED (A1 OT2)
- 4 Environment Agency November 2014. Technical Guidance (Monitoring) M18 Monitoring of Discharges to Water and Sewer