

DRAFT ATTACHMENT F**ACTIVE TREATMENT SYSTEM REQUIREMENTS****NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
GENERAL PERMIT FOR STORMWATER DISCHARGES
ASSOCIATED WITH CONSTRUCTION AND LAND DISTURBANCE ACTIVITIES****A. General Active Treatment System Requirements**

1. The discharger choosing to implement an active treatment system (ATS) on their site shall comply with all the requirements in this Attachment F.
2. Active treatments systems are treatment systems that employs chemical coagulation, chemical flocculation, or electrocoagulation to aid in the reduction of turbidity caused by fine suspended sediment and relies on enclosed computerized systems with pumps, filters, and real-time controls.
3. The discharger shall assign a lead person (or project manager) who has either a minimum of five years construction stormwater experience or who is a licensed contractor specifically holding a California Class A Contractors license¹ to oversee operation of the ATS.
4. An ATS may be bypassed if the discharger has met one of the following conditions:
 - a. All discharges from the watershed area that the ATS was designed to treat demonstrate compliance with the numeric action levels and receiving water limitations established by this General Permit through the applicable monitoring requirements in Attachments A, C, D, or E; and,
 - b. The dewatering requirements in Attachment J if pumping from a storage pond, tank, or other stormwater containment.
5. The discharger shall comply with any pre-treatment requirements applicable for that system if ATS effluent is authorized to discharge into a sanitary sewer

¹ [Business and Professions Code Division 3, Chapter 9, Article 4](http://www.cslb.ca.gov/About_Us/Library/Licensing_Classifications/A_-_General_Engineering_Contractor.aspx), Class A Contractor: A general engineering contractor is a contractor whose principal contracting business is in connection with fixed works requiring specialized engineering knowledge and skill. Web. <http://www.cslb.ca.gov/About_Us/Library/Licensing_Classifications/A_-_General_Engineering_Contractor.aspx>. [as of May 20, 2021].

system. The discharger shall include proof of authorization and any specific criteria required by the sewer agency in the ATS Plan.

B. ATS Design Criteria and Specifications

1. Design Criteria

- a. The ATS shall be designed by a Certified Professional in Erosion and Sediment Control (CPESC), a Certified Professional in Storm Water Quality (CPSWQ), or a California licensed professional civil engineer.
- b. The ATS shall be designed to preclude the discharge of treatment chemicals or settled floc² from flocculation pumping or related operations.
- c. The discharger shall design outlets to dissipate energy from concentrated flows.

2. Treatment Chemicals for Coagulation and Flocculation

- a. The discharger shall select, for use within the ATS, treatment chemical(s) capable of complying with the technology-based numeric effluent limitations by using one of the following methods:
 - i. The discharger shall conduct, at minimum, six site-specific jar tests (per treatment chemical with one test serving as a control) for each site to determine the proper treatment chemical and dosage levels for their ATS. The discharger shall conduct these jar tests using water samples that represent typical site conditions and in accordance with ASTM D2035-08 (2003); or
 - ii. Single field jar tests may also be conducted during a project if conditions warrant; for example, if construction activities disturb changing types of soils, which consequently cause change in stormwater and runoff characteristics.

3. Filtration

- a. The ATS shall include a filtration step between the coagulant treatment train and the effluent discharge. This is commonly provided by sand, bag, or cartridge filters, which are sized to capture suspended material that might pass through the clarifier tanks.

² Floc is defined as a clump of solids formed by a chemical action.

- b. The discharger shall remove, dispose of, or recirculate (to the beginning of the treatment process) all backwash water;
4. Instrumentation
 - a. The ATS shall be equipped with instrumentation that automatically measures and records effluent water quality data and flow rate.
 - b. The minimum data recorded shall be consistent with the Monitoring and Reporting requirements below, and shall include:
 - i. Influent Turbidity;
 - ii. Effluent Turbidity;
 - iii. Influent pH;
 - iv. Effluent pH;
 - v. Residual Chemical;
 - vi. Effluent Flow rate; and,
 - vii. Effluent Flow volume.
 - c. Systems shall be equipped with a data recording system, such as data loggers or webserver-based systems, which records each measurement on a frequency no longer than once every 15 minutes.
 - d. Cumulative flow volume shall be recorded daily. The data recording system shall have the capacity to record a minimum of 7 days continuous data.
 - e. Instrumentation systems shall be interfaced with system control to provide auto shutoff or recirculation in the event that effluent measurements exceed turbidity or pH numeric action levels or numeric effluent limitations.
 - f. The system shall also assure that upon system upset, power failure, or other catastrophic event, the ATS will default to a recirculation mode or safe shut down.
 - g. Instrumentation (flow meters, probes, valves, streaming current detectors, controlling computers, etc.) shall be installed and maintained per manufacturer's recommendations, which shall be included in the QA/QC plan.
 - h. The QA/QC plan shall also specify calibration procedures and frequencies, instrument MDL or sensitivity verification, laboratory duplicate procedures, and other pertinent procedures.

- i. The instrumentation system shall include a method for controlling coagulant or flocculant dose, to prevent potential overdosing. Available technologies include flow/turbidity proportional metering, periodic jar testing and metering pump adjustment, and ionic charge measurement controlling the metering pump.

C. ATS Maintenance Requirements

1. Operation and Maintenance

- a. The discharger shall operate and maintain the ATS in accordance with the site-specific Operation and Maintenance Manual.
- b. The Operation and Maintenance Manual shall only be used in conjunction with appropriate site-specific design specifications that describe the system configuration and operating parameters.

2. Residuals Management

- a. Sediment shall be removed from the storage or treatment cells as necessary to ensure that the cells maintain their required water storage, sediment storage, and settling zone capacity.
- b. Handling and disposal of all solids generated during ATS operations shall be done in accordance with all local, state, and federal laws and regulations.

D. ATS Monitoring Requirements

1. Visual Observations

- a. The discharger shall visually observe the ATS for proper performance during each day of operation, including but not limited to:
 - i. All instrumentation; and
 - ii. Filter loading to confirm that the final filter stage is function properly;
- b. The discharger shall visually observe the ATS through either of the following two options:
 - i. A designated responsible person who is on-site at all times during treatment operations to visually observe all portions of the ATS.

OR
 - ii. An operator continuously monitoring the ATS off-site. The ATS system must be able to conduct a safe shut down autonomously

when the operator connection is lost and/or the system is discharging above levels specified by this Attachment. The ATS shall have redundant monitoring of dosing amounts, influent, and effluent pollutant monitoring. The system shall be able to perform self-diagnostics for safe system shut down when one or more sensors is not performing as desired. All data relevant to system operation shall be collected, monitored, and recorded.

2. Water Quality Monitoring

- a. The discharger shall continuously monitor and record flow at not greater than 15-minute intervals for total volume treated and discharged.
- b. The discharger shall continuously monitor and record influent and effluent pH at not greater than 15-minute intervals.
- c. The discharger shall continuously monitor and record influent and effluent turbidity (expressed in NTU) at not greater than 15-minute intervals.
- d. The discharger shall monitor and record the type and amount of chemical used for pH adjustment, if any.
- e. The discharger shall monitor and record the dose rate of chemical used in the ATS system (expressed in mg/L) 15-minutes after startup and every 8 hours of operation.
- f. The discharger shall monitor the effluent for residual chemical and/or additive levels, performing monthly laboratory duplicates for residual coagulant analysis.

3. Residual Chemical and Toxicity Monitoring

- a. The discharger shall utilize a residual chemical test method that has a method detection limit (MDL) of 10 percent or less than the maximum allowable threshold concentration³ (MATC) for the specific coagulant in use and for the most sensitive species of the chemical used.

³ The Maximum Allowable Threshold Concentration (MATC) is the allowable concentration of residual, or dissolved, coagulant/flocculant in effluent. The MATC shall be coagulant/flocculant-specific, and based on toxicity testing conducted by an independent, third-party laboratory. A typical MATC would be:

The MATC is equal to the geometric mean of the NOEC (No Observed Effect Concentration) and LOEC (Lowest Observed Effect Concentration) Acute and Chronic

- b. The discharger shall utilize a residual chemical test method that produces a result within one hour of sampling.
- c. The discharger shall have a State Water Board Environmental Laboratory Accreditation Program (ELAP) certified laboratory validate the selected residual chemical test. Specifically, the laboratory will review the test protocol, test parameters, and the detection limit of the coagulant or flocculant. The discharger shall electronically certify and submit this documentation as part of the ATS Plan through SMARTS.
- d. The discharger shall operate the ATS in batch treatment mode if the discharger cannot utilize a residual chemical test method that meets the requirements above, Section D.3.a through D.3.c.
- e. The discharger shall not cause adverse physical impacts on receiving waters through the use of ATS batch storage and treatment, including but not limited to, inadequate storage volume, sudden released of the batches, and improperly designed discharge points.
- f. The discharger operating in batch treatment mode shall perform toxicity testing in accordance with the following:
 - i. The discharger shall initiate acute toxicity testing on effluent samples representing effluent from each batch prior to discharge.⁴ All bioassays shall be sent to a laboratory certified by the State Water Board Environmental Laboratory Accreditation Program. The required Field of Testing (FOT) for Whole Effluent Toxicity (WET) testing is E113.⁵
 - ii. Acute toxicity tests shall be conducted with the following species and protocols. The methods to be used in the acute toxicity testing shall be those outlined for a 96-hour acute test in “Methods for Measuring the Acute Toxicity of Effluents and Receiving Water to Freshwater and Marine Organisms, U.S. EPA-821-R-02-012” for Fathead

toxicity results for most sensitive species determined for the specific coagulant. The most sensitive species test shall be used to determine the MATC.

⁴ This requirement only requires that the test be initiated prior to discharge.

⁵ Information on [ELAP](https://www.waterboards.ca.gov/drinking_water/certlic/labs/)'s <https://www.waterboards.ca.gov/drinking_water/certlic/labs/> [ELAP Application and FOT Forms](https://www.waterboards.ca.gov/drinking_water/certlic/labs/fot_forms.html): https://www.waterboards.ca.gov/drinking_water/certlic/labs/fot_forms.html. [as of May 20, 2021].

minnow, *Pimephales promelas* or Rainbow trout *Oncorhynchus mykiss* may be used as a substitute for fathead minnow.

- iii. All toxicity tests shall meet quality assurance criteria and test acceptability criteria in the most recent versions of the U.S. EPA test method for WET testing⁶ as well any toxicity provisions adopted by the State Water Board.
- iv. All toxicity tests and analysis shall be consistent with the toxicity provisions of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California.

4. ATS Numeric Effluent Limitation Requirements

- a. ATS effluent shall comply the technology-based numeric effluent limitations (NEL) established for ATS.
- b. NELs for discharges from an ATS are listed below and in Table 1:
 - i. pH of all ATS discharges shall be within the range of 6.0 to 9.0.
 - ii. Turbidity of all ATS discharges shall be less than 10 NTU for daily flow-weighted average of all samples and 20 NTU for any single sample.
 - iii. Residual Chemical shall be < 10 percent of MATC⁷ for the most sensitive species for the chemical used.

⁶ [U.S. EPA. Whole Effluent Toxicity \(WET\)](https://www.epa.gov/npdes/whole-effluent-toxicity-wet). Web. <<https://www.epa.gov/npdes/whole-effluent-toxicity-wet>>. [as of May 20, 2021].

⁷ The Maximum Allowable Threshold Concentration (MATC) is the allowable concentration of residual, or dissolved, coagulant/flocculant in effluent. The MATC shall be coagulant/flocculant-specific, and based on toxicity testing conducted by an independent, third-party laboratory. The MATC is equal to the geometric mean of the NOEC (No Observed Effect Concentration) and LOEC (Lowest Observed Effect Concentration) Acute and Chronic toxicity results for most sensitive species determined for the specific coagulant. The most sensitive species test shall be used to determine the MATC.

Table 1 – Numeric Effluent Limitations, Test Methods, Detection Limits, and Reporting Units for Active Treatment System Discharges

Parameter	Test Method	Method Detection Limit	Units	Numeric Effluent Limitation
pH	Field test with calibrated portable instrument	0.2	pH Units	Lower NEL = 6.0 Upper NEL = 9.0
Turbidity	EPA 0180.1 and/or field test with a calibrated portable instrument	1	NTU ⁸	10 NTU for Daily Flow-Weighted Average & 20 NTU for Any Single Sample
Residual Chemicals	U.S. EPA-approved test method for the specific pollutant parameter	Less than 10 percent of MATC for most sensitive species of the chemical used	Dependent on the test method	Less than 10 percent of MATC for most sensitive species of the chemical used

1. If an analytical effluent sampling result is outside the range of pH NELs (i.e., is below the lower NEL for pH or exceeds the upper NEL for pH), exceeds the turbidity NEL, or exceeds the residual chemical NEL, the discharger shall comply with the reporting requirements in Section E.3 of this Attachment.
2. Compliance Precipitation Event Exemption
 - a. Discharges of stormwater from ATS shall comply with applicable NELs (above) unless the precipitation event causing the discharges is determined after the fact to be equal to or larger than the compliance precipitation event (expressed in inches of rainfall). The compliance precipitation event for ATS discharges is the 10-year, 24-hour storm, as determined using the National Weather Service's Hydrometeorological Design Studies Center Precipitation Frequency Data Server⁹ or equivalent.
 - b. The compliance precipitation event exemption above is dependent on the certification and submission of rain gauge data through SMARTS verifying

⁸ Nephelometric Turbidity Unit

⁹ [NOAA's National Weather Service](https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html). Web. <https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html>. [as of May 20, 2021].

the precipitation event is equal to or larger than the compliance precipitation event.

E. ATS Reporting Requirements

1. ATS Plan

- a. The discharger shall prepare an ATS Plan that combines the site-specific data and treatment system information required to safely and efficiently operate an ATS. At a minimum, the ATS Plan shall include:
 - i. Contact information of all personnel responsible for monitoring and maintaining the ATS system
 - ii. A map depicting the watershed area treated by the ATS, shown in acres;
 - iii. Specifications of any storage ponds, tanks, or other stormwater containment associated with the ATS;
 - iv. The treatment capacity of the ATS, defined as the number of hours needed to treat the captured volume from a given design storm (e.g., 5-year, 24-hour) using a watershed runoff coefficient of 1.0;
 - v. An ATS Operation and Maintenance Manual for All Equipment that at minimum:
 1. Covers the procedures required to install, operate, and maintain the ATS;¹⁰
 2. Includes information for specific pumps, generators, control systems, and other equipment used to operate the ATS. Specific procedures for monthly laboratory duplicates for
 3. Includes a failure plan that gives procedural details on when (failure indicators) and how to shut the system down (procedure), and who at the Regional Water Board to contact
 - vi. A monitoring and sampling plan, including quality assurance and quality control documentation that at minimum specifies:
 1. Calibration methods and frequencies for all system and field measurement instruments;

¹⁰ The manual is typically in a modular format covering generalized procedures for each component that is utilized in a particular system.

2. The methods for determining method detection limits shall be specified for each residual coagulant measurement method. Acceptable minimum method detection limits for each method, specific to individual coagulants; and,
 3. Specific procedures for monthly laboratory duplicates for residual coagulant analysis.
 - vii. An ATS Health and Safety Plan; and,
 - viii. An ATS Spill Prevention and Response Plan;
2. Visual Observations
- a. The discharger shall keep all completed inspections checklists and related documentation with the SWPPP on-site or electronically.
3. Water Quality Monitoring
- a. At a minimum, every 30 days a Legally Responsible Person representing the discharger shall electronically certify and submit ATS field data through SMARTS.
 - b. The discharger shall report any indications of toxicity or other violations of water quality objectives to the appropriate regulatory agency as required by this General Permit.
 - c. The system operator shall immediately report any measurements exceeding water quality standards to the discharger, who shall notify the Regional Water Board.
 - d. Dischargers in violation of any of the ATS NELs shall electronically certify and submit through SMARTS the analytical results within 24-hours of obtaining the results.
 - e. The discharger shall electronically certify and submit an NEL Violation Report in SMARTS with 14 days after the NEL exceedance has been identified for any monitoring data exceeding an applicable NEL in this General Permit.
 - f. The discharger shall include in the NEL Violation Report:
 - i. The analytical method(s), method reporting unit(s), and MDL(s) of each analytical parameter (analytical results that are less than the MDL shall be reported as “less than the MDL”);
 - ii. The date, place, time of sampling, visual observation (inspections), and/or measurements, including precipitation;

- iii. An assessment of what caused the ATS to exceed the NEL, and the proposed corrective actions taken to prevent future exceedances; and,
- iv. The ATS dischargers shall report the on-site rain gauge reading and nearby governmental rain gauge readings for verification if an applicable NEL has been exceeded during a precipitation event equal to or larger than the compliance precipitation event.

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