UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND
1 CONGRESS STREET, SUITE 1100
BOSTON, MASSACHUSETTS 02114-2023

FACT SHEET

DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE TO WATERS OF THE UNITED STATES.

NPDES PERMIT NO.: **MA0032433**

NAME AND ADDRESS OF APPLICANT:

Oak Point Property I, LLC
200 Oak Point Drive
Middleborough, MA 02346

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Oak Point Retirement Community
River Street
Middleborough, MA 02346

RECEIVING WATER: **Taunton River (Taunton River Watershed - MA62-01)**

CLASSIFICATION: **Class B - Warm Water**

I. PROPOSED ACTION

The above named applicant has applied to the U.S. Environmental Protection Agency for re-issuance of their National Pollutant Discharge Elimination System (NPDES) permit to discharge into the designated receiving water. The current permit expired on December 19, 1994. An application was submitted on May 11, 1994 and an updated application was submitted July 23, 2001 requesting a name change and increase in flow. This permit, after it becomes effective, will expire four (4) years from the effective date. The four year permit term makes this permit expiration coincide with other NPDES facilities in the Taunton River Watershed.

II. TYPE OF FACILITY, AND DISCHARGE LOCATION

The facility is engaged in the collection and treatment of wastewater from a mobile home retirement community. The discharge is from a tertiary wastewater treatment system with ultraviolet light disinfection. The effluent is discharged to the Taunton River (See Figure 1).

The facility's discharge outfall is listed below:

Outfall	Description of Discharge	Outfall Location
001	Treated Effluent	Taunton River

III. DESCRIPTION OF THE DISCHARGE

A quantitative description of the effluent parameters based on recent discharge monitoring reports (DMRs) is shown on Attachment A of this fact sheet.

IV. LIMITATIONS AND CONDITIONS

The effluent limitations and monitoring requirements may be found in the draft NPDES permit.

V. PERMIT BASIS AND EXPLANATION OF EFFLUENT LIMITATION DERIVATION

A. PROCESS DESCRIPTION

Wastewater from the Oak Point Retirement Community is pumped to four 36,000 gallon pre-treatment tanks for primary treatment (See Figure 2). Wastewater then flows to a set of two flow equalization tanks. The equalization tanks are interconnected allowing them to function as a single unit. Flow from the equalization tanks to three rotating biological contactors (RBCs) is controlled by a series of float switches and pumps. Sodium Bicarbonate is added just prior to the aerobic RBCs for pH control. Primary effluent is pumped to the RBCs at a relatively constant rate, therefore, making the treatment process more efficient. Secondary clarifiers are next in the treatment train. These tanks provide for the settling of biological solids which are sheared from the RBCs. The solids are pumped back to the pre-treatment tanks for storage. Secondary effluent is then pumped to the tertiary filters to remove additional suspended solids. Effluent from the tertiary filter then flows through a ultraviolet disinfection unit. Prior to discharge the effluent is aerated to drive off the nitrogen gas produced in the denitrification process and to raise the dissolved oxygen.

Sludge accumulations are removed from the pre-treatment tanks approximately twice per year by a licensed septage hauler. The wastes are disposed of off-site at an approved facility.

The permittee has requested an increase in flow from 143,000 gallons per day (gpd) to 185, 000 gpd to allow for the development of 450 additional mobile home units. The proposed modifications to the facility are to replace the existing media in the third and fourth stages of the existing RBCs with a new high density surface media. The design will allow for four stages in each of the three (3) RBCs with 26,600 square feet of media in stages one (1) and two (2) and 33,300 square feet of new high density media in stages three (3) and four (4). MADEP has conditionally approved the conceptual design for the flow increase pending the issue of a modified NPDES permit. The proposed increase has also been reviewed through the Massachusetts Environmental Policy Act (MEPA) process.

B. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. Overview of Federal and State Regulations

EPA is required to consider technology and water quality requirements when developing permit effluent limits. Technology based treatment requirements represent the minimum level of control that must be imposed under Sections 402 and 301(b) of the Act (see 40 CFR 125 Subpart A) to meet Best Practicable Control Technology Currently Available (BPT), Best Conventional Control Technology (BCT) for conventional pollutants and Best Available Technology Economically Achievable (BAT) for toxic pollutants.

EPA regulations require NPDES permits to contain effluent limits more stringent than

technology-based limits where more stringent limits are necessary to maintain or achieve federal or state water quality standards.

Under Section 301(b)(1)(C) of the Clean Water Act (CWA), discharges are subject to effluent limitations based on Water Quality Standards. The Massachusetts Surface Water Quality Standards include the requirements for the regulation and control of toxic constituents and also require that EPA criteria established pursuant to Section 304(a) of the CWA shall be used unless site specific criteria are established. The State will limit or prohibit discharges of pollutants to surface waters to assure that surface water quality standards of the receiving waters are protected and maintained or attained.

In the absence of technology-based guidelines, EPA is authorized to use Best Professional Judgement (BPJ) to establish effluent limitations, in accordance with Section 402 (a)(1) of the CWA and 40 CFR Section 125.3.

The permit must limit any pollutant or pollutant parameter (conventional, non-conventional, toxic, and whole effluent toxicity) that is or may be discharged at a level that caused, has reasonable potential to cause, or contributes to an excursion above any water quality criterion [40 CFR §122.44(d)]. An excursion occurs if the projected or actual instream concentrations exceed the applicable criterion. In determining reasonable potential, EPA considers existing controls on point and non-point sources of pollution, variability of the pollutant in the effluent, sensitivity of the species to toxicity and, where appropriate, the dilution of the effluent in the receiving water.

2. Water Quality Standards; Designated Uses; Outfall 001

The receiving water, the Taunton River, is classified as Class B - Warm Water in the Massachusetts Surface Water Quality Standards, 314 CMR 4.05(4)(a). Class B waters are designated as a habitat for fish, other aquatic life, and wildlife, and for primary and secondary contact recreation. They shall be suitable for irrigation and other agricultural uses and for compatible industrial cooling and process uses. The waters should have consistently good aesthetic value.

A warm water fishery is defined in the Massachusetts Surface Water Quality Standards (314 CMR 4.02) as waters in which the maximum mean monthly temperature generally exceeds 20° Celsius during the summer months and are not capable of supporting a year-round population of cold water stenothermal aquatic life.

Section 303(d) of the Federal Clean Water Act (CWA) requires states to identify those waterbodies that are not expected to meet surface water quality standards after the implementation of technology-based controls and, as such require the development of total maximum daily loads (TMDL). The Massachusetts Year 2002 Integrated List of Waters (Section 303(d) List), lists this segment, MA62-01, of the Taunton River as unassessed.

Available Dilution

Water quality based limitations are established with the use of a calculated available dilution. Title 314 CMR 4.03(3)(a) requires that effluent dilution be calculated based on the receiving water 7Q10. The 7Q10 is the lowest observed mean river flow for 7 consecutive days, recorded over a 10-year recurrence interval. Additionally, the 7Q10 flow is used to calculate available effluent dilution.

The original design flow was 143,000 gallons per day (gpd)(0.143mgd) or 0.22 cubic feet per second (cfs). The proposed revised design flow will be 185,000 gpd or 0.29 cfs. According to a memo dated October 30, 1989 from the MA-DEP Technical Services Branch the estimated 7Q10 is 27.4 cfs. Given the revised design flow, the dilution is 95:1.

$$\frac{\text{River flow (7Q10)+ Daily average design effluent flow}}{\text{Daily average design effluent flow}} = \text{Dilution}$$

$$\frac{27.4 \text{ cfs} + 0.29 \text{ cfs}}{0.29} = 95$$

FLOW

The revised design flow rate for the facility is 185,000 gpd (0.185 mgd). The draft permit proposes increasing the average monthly flow limit from 143,000 gallons per day to 185,000 gallons per day.

OUTFALL 001 - CONVENTIONAL POLLUTANTS

Biological Oxygen Demand (BOD_5) - The discharge is similar to a Publically Owned Treatment Works (POTWs) which are subject to the secondary treatment requirements set forth at 40 CFR 133.102 (b)(1), (2) and 40 CFR 122.45 (f). In the absence of specific national standards for non-POTW secondary treated domestic wastewater discharges, limitations may be established on a case-by-case basis using Best Professional Judgement (BPJ) pursuant to Section 401 (a) (1) of the CWA. The secondary treatment limitations are monthly average BOD_5 concentration of 30 mg/l, and a weekly average concentration of 45 mg/l. However, the previous permit included an average monthly limit of 15 mg/l, an average weekly limit of 22.5 mg/l and a daily maximum of 30 mg/l, therefore, based on anti-backsliding provisions (CWA § 402 (o)), the limits from the previous permit are carried forward.

In order to increase the flow and still comply with anti-backsliding provisions, the mass limitations for BOD_5 are based on the previously permitted 143,000 gallon per day design flow.

Total Suspended Solids (TSS) - The discharge is similar to a Publically Owned Treatment Works (POTWs) which are subject to the secondary treatment requirements set forth at 40 CFR 133.102 (b)(1), (2) and 40 CFR 122.45 (f). In the absence of specific national standards for non-POTW secondary treated domestic wastewater discharges, limitations may be established on a case-by-case basis using Best Professional Judgement (BPJ) pursuant to Section 401 (a) (1) of the CWA. The secondary treatment limitations are monthly average TSS concentration of 30 mg/l, weekly average concentration of 45 mg/l. However, the previous permit included an average monthly limit of 15 mg/l, an average weekly limit of 22.5 mg/l and a daily maximum of 30 mg/l, based on anti-backsliding provisions (CWA § 402 (o)) the limits from the previous permit are carried forward.

In order to increase the flow and still comply with anti-backsliding provisions, the mass limitations for TSS are based on the previously permitted 143,000 gallon per day design flow.

BOD_5 and TSS Mass Loading Calculations:

Calculations of maximum allowable loads for average weekly, and average monthly BOD_5 and TSS are based on the following equation:

L = C x DF x 8.34 or L = C x DF x 3.79 where:

L = Maximum allowable load in lbs/day.
C = Maximum allowable effluent concentration for reporting period in mg/l. Reporting periods are average monthly and average weekly.
DF = Design flow of facility in MGD.
8.34 = Factor to convert effluent concentration in mg/l and design flow in MGD to lbs/day.
3.79 = Factor to convert effluent concentration in mg/l and design flow in MGD to kgs/day.

(Concentration limit) [15] X 8.34 (Constant) X 0.143 (design flow) = 17.9 lb/day

(Concentration limit) [15] X 3.79 (Constant) X 0.143 (design flow) = 8.13 kg/day

(Concentration limit) [22.5] X 8.34 (Constant) X 0.143 (design flow) = 26.8 lb/day

(Concentration limit) [22.5] X 3.79 (Constant) X 0.143 (design flow) = 12.19 kg/day

(Concentration limit) [30] X 8.34 (Constant) X 0.143 (design flow) = 35.8 lb/day

(Concentration limit) [30] X 3.79 (Constant) X 0.143 (design flow) = 16.2 kg/day

Eighty-Five Percent (85%) BOD_5 and TSS Removal Requirement - the provisions of 40 CFR §133.102(3) requires that the 30 day average percent removal for BOD and TSS be not less than 85%.

pH - The draft permit includes proposed pH limitations which are required by state water quality standards, and are at least as stringent as pH limitations set forth at 40 CFR 133.102(c). Class B waters shall be in a range of 6.5 through 8.3 standard units and not more than 0.5 standard units outside of the background range. There shall be no change from background conditions that would impair any use assigned to this class.

Fecal Coliform Bacteria - The numerical limitations for fecal coliform are based on state certification requirements under Section 401(a)(1) of the CWA, as described in 40 CFR 124.53 and 124.55. These limitations are also in accordance with the Massachusetts Surface Water Quality Standards 314 CMR 4.05 (3)(b) 4.

The proposed limits in the draft permit are 200 colony forming units (cfu)/100 ml average monthly and 400cfu/100 ml maximum daily. The monitoring frequency for fecal coliform continues at twice (2) per month. Samples shall be collected, immediately downstream of the UV banks and prior to commingling with other sources.

Settleable Solids - The monitoring requirements for settleable solids have been removed from this permit. They are no longer required as a condition for state certification under Section 403 of the CWA.

OUTFALL 001 - NON-CONVENTIONAL POLLUTANTS

Nutrients - The mouth of the Taunton River is on the Massachusetts 303(d) list for organic enrichment/low dissolved oxygen. In marine systems, discharges of nitrogen are typically the cause of such conditions. The monitoring data collected by the permittee, along with data from other discharges to the Taunton River are necessary for the future completion of a Total Maximum Daily Load (TMDL)Study. Nitrogen limits may be possible in future permits.

Total Phosphorus - The Massachusetts Surface Water Quality Standards (314 CMR 4.00) do not contain numerical criteria for total phosphorus. The criteria for nutrients is found at 314 CMR 4.05(5)(c), which states that nutrients "shall not exceed the site specific limits necessary to control accelerated or cultural eutrophication". The Water Quality Standards also require that "any existing point source discharges containing nutrients in concentrations which encourage eutrophication or the growth of weeds or algae shall be provided with the highest and best practicable treatment to remove such nutrients (314 CMR 4.04). MADEP has established that a monthly average total phosphorus limit of 0.2 mg/l represents highest and best practical treatment for POTWs.

EPA has produced several guidance documents which contain recommended total phosphorus criteria for receiving waters. The 1986 Quality Criteria of Water ("the Gold Book") recommends in-stream phosphorus concentrations of 0.05 mg/l in any stream entering a lake or reservoir, 0.1 mg/l for any stream not discharging directly to lakes or impounds, and 0.025 mg/l within the lake or reservoir.

More recently, EPA has released "Ecoregional Nutrient Criteria", established as part of an effort to reduce problems associated with excess nutrients in water bodies in specific areas of the country. The published criteria represent conditions in waters in each specific ecoregion which are minimally impacted by human activities, and thus representative of waters without cultural eutrophication. West Bridgewater is within Ecoregion XIV, Eastern Coastal Plains. The total phosphorus criteria for this Ecoregion XIV is 24 ug/l (0.024 mg/l) and can be found in the Ambient Water Quality Criteria Recommendations, Information Supporting the Development of State and Tribal Nutrient Criteria, Rivers and Streams in Ecoregion XIV, published in December 2000.

Instream water quality information for this segment of the Taunton River is scarce. In 2001 and 2002, the Taunton River Watershed Alliance (TRWA) collected water quality samples throughout the Taunton River Watershed. The nearest downstream site was at the Sturtevant Bridge, Green Street, Middleborough/Bridgewater. Results of the sampling can be found in the documents: Annual Water Quality Report for the City of Taunton, Taunton River and Tributaries, 2001 (Domingos, January 2002) and Annual Water Quality Report for the City of Taunton, Taunton River and Tributaries, 2002 (Domingos, January 2003). Instream total phosphorus concentrations ranged from 0.09 mg/l to 0.39 mg/l. All of the samples exceeded the ecoregion criteria of 0.024 mg/l and all but one sample exceeded the less stringent "Gold Book" criteria of 0.1 mg/l.

The draft permit includes a monthly average limit of 1 mg/l. At this concentration the discharge would be expected to contribute about 10 ug/l to the instream concentration of phosphorus (1 mg/l/DF=1/95+0.01 mg/l). If, in the future, the state should adopt numeric criteria, or water quality monitoring should show the need for a more stringent limit, this permit may be re-opened and modified.

OUTFALL 001 - WHOLE EFFLUENT TOXICITY (WET)

Under Section 301(b)(1)(C) of the CWA, discharges are subject to effluent limitations based on water quality standards. The Massachusetts Surface Water Quality Standards include the following narrative statement and requires that EPA criteria established pursuant to Section 304(a)(1) of the CWA be used as guidance for interpretation of the following narrative criteria: All surface waters shall be free from pollutants in concentrations or combinations that are toxic to humans, aquatic life or wildlife.

National studies conducted by the EPA have demonstrated that domestic sources contribute toxic constituents. These constituents include metals, chlorinated solvents, aromatic hydrocarbons and others. The Region's current policy is to include toxicity testing requirements in all permits, while Section 101(a)(3) of the CWA specifically prohibits the discharge of toxic pollutants in toxic amounts.

Based on the potential for toxicity resulting from domestic sewage, and in accordance with EPA national and regional policy, the draft permit includes chronic and acute toxicity limitations and monitoring requirements. (See e.g. "Policy for the Development of Water Quality-Based Permit Limitations for Toxic Pollutants", 50 Fed. Reg. 30,784 (July 24, 1985); see also, EPA's "Technical Support Document for Water Quality-Based Toxics Control", September, 1991.)

The Commonwealth of Massachusetts has a current toxics policy, Implementation Policy for the Control of Toxic Pollutants in Surface Waters, February 23, 1990, which requires toxicity testing for all dischargers with dilutions less than or equal to 100.

Pursuant to EPA Region I policy, a minor POTW discharge having a dilution between 20:1 and 100:1 requires acute toxicity testing once (1) per year. The principal advantages of biological techniques are: (1) the effects of complex discharges of many known and unknown constituents can be measured only by biological analyses; (2) bioavailability of pollutants after discharge is best measured by toxicity testing including any synergistic effects of pollutants; and (3) pollutants for which there are inadequate chemical analytical methods or criteria can be addressed. Therefore, toxicity testing is being used in conjunction with pollutant specific control procedures to control the discharge of toxic pollutants.

The draft permit requires that the permittee conduct acute WET testing for the Outfall 001 effluent once (1) per year (annually) and that each test include the use of two species, Ceriodaphnia and Pimephales promelas, in accordance with EPA Region I protocol to be found in permit Attachment A.

As a condition of this permit, the testing requirements may be reduced if certain conditions are met. The permit provision anticipates that the permittee may wish to request a reduction in the WET testing. After a year of WET tests, demonstrating compliance with the permit limits for whole effluent toxicity, the permittee may submit a written request to the EPA seeking a review of toxicity test results. The EPA will review the test results and pertinent information to make a determination. The permittee is required to continue testing at the frequency and species specified in the permit until the permit is either formally modified or until the permittee receives a certified letter from the EPA indicating a change in the permit conditions.

VI. SLUDGE CONDITIONS

Section 405(d) of the CWA requires that EPA develop technical regulations regarding the use and disposal of sewage sludge. These regulations are found at 40 CFR part 503 and apply to any

facility engaged in the treatment of domestic sewage. The CWA further requires that these conditions be implemented through permits.

Sludge from the treatment processes are stored in the four 36,000 gallon pretreatment tanks (septic tanks). Each of the tanks are pumped semi-annually. The septage is trucked off-site for disposal at an approved location.

VII. ANTI-BACKSLIDING

Anti-backsliding as defined at 40 CFR §122.44(l)(1) requires reissued permits to contain limitations as stringent or more stringent than those of the previous permit unless the circumstances allow application of one of the defined exceptions to this regulation. Anti-backsliding does not apply when changes to limits are based on new information not available at the time of the previous permit reissuance [40 CFR §122.44(l)(2)(i)(B)(1)] or when limits are changed as a result of material and substantial additions or alterations to the permitted facility which occurred after permit issuance which justify the application of less stringent limitations, as defined at 40 CFR § 122.44(l)(2)(i)(A).

VIII. ANTI-DEGRADATION

The Massachusetts Anti-degradation Policy is found at Title 314 CMR 4.04. All existing uses of the Taunton River must be protected. This draft permit has discharge limits as or more stringent than the current permit with the exception of an increased flow however, the loading has been held at previous levels and the limit for settleable solids which has been eliminated from the permit because MADEP no longer requires it as a condition for obtaining state certification. There has been no change in the outfall location.

IX. STATE PERMIT CONDITIONS

The NPDES Permit is issued jointly by the U. S. Environmental Protection Agency and the Massachusetts Department of Environmental Protection under federal and state law, respectively. As such, all the terms and conditions of the permit are, therefore, incorporated into and constitute a discharge permit issued by the MADEP Commissioner who designates signature authority to the Director of the Division of Watershed Management pursuant to M.G.L. Chap. 21, §43.

X. STATE CERTIFICATION REQUIREMENTS

The staff of the Massachusetts Department of Environmental Protection ("MADEP") has reviewed the draft permit. EPA has requested permit certification by the State pursuant to 40 CFR § 124.53 and expects that the draft permit will be certified.

XI. PUBLIC COMMENT PERIOD AND PROCEDURES FOR FINAL DECISION

All persons, including applicants, who believe any condition of the draft permit is inappropriate must raise all issues and submit all available arguments and all supporting material for their arguments in full by the close of the public comment period, to the U.S. EPA, Office of Ecosystem Protection, MA Unit, One Congress Street, Suite-1100, Boston, Massachusetts 02114. Any person, prior to such date, may submit a request in writing for a public hearing to consider the draft permit to EPA and the State Agency. Such requests shall state the nature of the issues proposed to be raised in the hearing. Public hearings may be held after at least thirty days public notice whenever the Regional Administrator finds that response to this notice indicates a significant public interest. In reaching a final decision on the draft permit, the Regional Administrator will respond to all significant comments and make these responses available to the public at EPA's Boston office.

Following the close of the comment period and after a public hearing, if such a hearing is held, the Regional Administrator will issue a final permit decision and forward a copy of the final decision to the applicant and each person who has submitted written comments or requested notice.

XII. EPA CONTACT

Additional information concerning the draft permit may be obtained between the hours of 9:00 a.m. and 5:00 p.m., Monday through Friday, excluding holidays from:

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October 21, 2004
Date

Linda M. Murphy, Director
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