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THARATHEP KULPANICH : THE EFFECT OF CONSTITUENTS IN CONSTRUCTED WETLANDS ON THE PHOSPHOROUS REMOVAL : A CASE STUDY OF THE SAHA GROUP INDUSTRIAL PARK-SRIRACHA, CHONBURI PROVINCE. THESIS ADVISORS : PIYAKARN TERATISUP, M.Sc., CHUMLONG ARUNLERTAREE, Ph.D., AMPON SARANYAJAYA, M.Sc., M.S., JARUWAN HAWAHSUWAN, M.Sc. 119 p. ISBN 974-662-039-8

The objective of research is to investigate effect of constituents in constructed wetlands on the total phosphorous load removal. Result can be used as technical data for determining an effectiveness of constructed wetlands on removal of total phosphorous load from various industrial effluent within Saha Group Industrial Park – Sriracha, Chonburi province. The research was carried out by using field experiment. The experiment had been made for 12 weeks continuously. Raw data obtained from the research was analyzed by multiple linear regression, multiple semilogarithmic regression, multiple doublelogarithmic regression and multiple hyperbolic regression. The multiple hyperbolic regression showed best fit for relationship between constituents in constructed wetlands of Saha Group Industrial Park – Sriracha, Chonburi province and total phosphorous load removal. Biomass of morning glory (X_1), number of phytoplankton (X_2), heavy metal concentration in bottom sediment (X_3), pH of water (X_4) and difference of weekly average dissolved oxygen concentration (X_5) affect the total phosphorous load removal ($-\Delta P$). The following equation explains their relationship.

$$-\Delta P = -121.778 + 4662.986 / X_1 + 258545 / X_2 + 735.431 / X_3 + 372.556 / X_4 - 0.119 / X_5$$

$$(57.521)^* \quad (5089.776) \quad (1327883) \quad (193.327) \quad (375.752) \quad (0.134)$$

* The number in () is residual statistic.

According to the equation, the degradation of total phosphorous load is directly proportional to changes of weekly average dissolved oxygen concentration.