



Project:

Jackson Meadow

North American Wetland Engineering



LOCATION

Marine on St. Croix, Minnesota

PROJECT TYPE

Residential Development

WASTE TYPE

Domestic

COMPLETION DATE

1999

DESIGN FLOW

21,000

TREATMENT

Subsurface Flow Wetland
with Forced Bed Aeration

NEED

Jackson Meadow is a 64 home community designed as a village, located in the historic settlement of Marine on St. Croix in Washington County, Minnesota. The homes are clustered on 40 acres, which allows conservation of 300 acres of land that is dedicated as permanent open space. Jackson Meadow reflects the settlement process in Marine on St. Croix developed over 160 years ago. It looks like an old urban neighborhood, complete with modest sized colonial Scandinavian homes. Picket fences, alleys and detached garages exhibit a friendly and attractive neighborhood. The greatest challenge was to provide onsite wastewater treatment on a small lot cluster development in an unsewered community without the pollution problems created by standard septic systems.

SOLUTION

Jackson Meadow rejected the standard septic system approach in favor of two high-efficiency constructed wetlands for wastewater treatment. Two NAWE wetland treatment systems, divided by the natural topographical setting, have been designed to treat and recycle a total of 11,000 gallons per day (gpd) of domestic sewage from a total of 64 two-and three bedroom homes. In Phase I, a time-actuated lift station will periodically dose effluent from the septic tanks into an 11,000 square foot wetland treatment cell. A dosing siphon will intermittently dose the treated water into the 7,600 square feet wetland infiltration cell for additional polishing, prior to releasing it to the subsurface soils. Phase 2 is a duplicate system selected to provide gravity flow from the homes to the septic tanks.

BENEFIT

In the environmental field, it is rare to have the opportunity to work on a project that has so many outstanding and nationally significant physical and social changes in the concept of community development. The model developed for Jackson Meadow suggests an alternative that offers hope for current problems surrounding rural, small community development. The wetland treatment system will fit into the landscape that consists of restored prairie, dashed with wetlands that mirror the wetland potholes that once existed across the state. As a result of implementing innovation, environmentally sound wastewater treatment technology, Jackson Meadow received funds from the Office of Environmental Assistance to provide education and demonstration of constructed wetland treatment technology.



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North American Wetland Engineering

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