CE Group, inc.

LAND USE EVALUATION
CIVIL ENGINEERING
CONSTRUCTION MANAGEMENT

June 11, 2004

Newland Communities
Attn: Mitch Barron
PO Box 1486
Pittsboro, North Carolina 27312

Hand Delivery

Briar Chapel Community, Chatham County
Reclaimed Water Storage and Utilization

Dear Mr. Barron:

We have completed our preliminary evaluation of the reclaimed water reuse program for the above-mentioned project. The attached overall illustrative plan represents the basis for development of this infrastructure. Our development approach is based upon technical information provided by the following consultants:

S&EC	Soils Mapping and Field Hydraulic Loading Evaluation
Eagle Resources	Hydrogeologic Review and Annual Water Balance Determination
Soil, Water, & Environment Group	Agronomic Loading Analysis
Fleming Engineering	Wastewater Treatment Design
John R. McAdams Co.	Wastewater Generation Calculations for the Development

Given the size of the project and the timeframe to complete the development, we feel that redundancy and ease of operation are paramount for successful utilization of these facilities. With this in mind, the reclaimed water system will be divided into essentially (3) redundant operating systems within the project:

Central Reuse District (+/- 191 AC of Irrigatable Area)
The central reuse district will include the wastewater reclamation facility. This area will include (3) 0.25 MG treatment facilities built in phases to complete a 0.75 MG plant upon project completion. Adjacent to the water reclamation facility will be an upset storage pond with a capacity of at least 3.75 MG. One of the (3) inclement weather storage ponds will also be sited in the central location for the project. The irrigation pump station at this central pond will be capable of delivering irrigation supply to the sprayable acreage within the central district as well as the storage facilities located in the adjacent districts. A central maintenance and operations facility will also be located adjacent to the water reclamation facility. This location will house a project irrigation management office with a central management software. An on-site weather station providing continuous monitoring of weather conditions, rainfall events, ET, etc will be located adjacent to the operations center.

West Side Reuse District (+/- 165 Ac of Irrigatable Area)
The west side reuse district is similar in scale to many other reuse irrigation systems in operation within the County. This district can operate independent of the remainder of the project by virtue of having independent storage and pumping capacity. A transmission main from the central storage pond running adjacent to the existing Duke Power Overhead Transmission corridor will furnish reclaimed water to both the west side and east side storage pond. The irrigation areas within this district are generally more concentrated with less isolated pockets of irrigation.

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East Side Reuse District (+/- 94 AC of Irrigatable Area)
The east side district is similar to the west side in that this district can also operate independent of the central district. Most of the sprayable areas are massed for ease of operation and monitoring.

All of the storage ponds are located centrally within the project and away from existing adjacent residential homesites.

Irrigation Operation and Monitoring
A full time grounds crew and management team will be employed to operate and maintain the system. Maintenance staff will be on property at all times that the reuse irrigation system is in operation. Flow monitoring equipment will be installed through out the system to measure transmission rates in comparision to actual programmed rates. Any variances will automatically be identified at the central programming unit in the operations center. All irrigation facilities will be visually inspected daily and through out periods of irrigation operation.

The annual average irrigation-loading rate for the project is 23.4". All irrigation applications will be limited to a 0.1" dose regardless of the season. During inclement months, the dosing rate will be reduced and in some locations discontinued. During optimum irrigation seasons multiple dosing cyles may be planned providing an adequate soak cycle. A series of satellite controllers will be utilized to control spray application within given fields and zones. The irrigation system will be constructed in a fashion that individual application rates may vary within a field given topographic constraints or weather conditions. Adequate buffers that exceed both the State and County minimum requirements are provided. The anticipated sprayable footprint is 450 acres. Additional land suitable for irrigation is available within the project (landscaped areas within commercial and non-residential areas) and may be utilized once definitive site plans are completed. Total inclement weather storage is planned to exceed 110 days at the permitted rate.

All proposed reuse improvements will be in compliance with State Reuse Regulations (15A NCAC 2H.0219 (k)) and County mandated buffers. The proposed water reclamation and reuse strategy employed for the Briar Chapel community provides an excellent opportunity to utilize a valuable resource while reducing potable water demand constraint upon the County.

Sincerely,

Mark P. Ashness, PE

Enclosures
IR-1 Concept Reuse, Storage, and Irrigation Plan
IR-2 Concept Irrigation Plan & Irrigation Details
IR-3 Concept Water Reclamation Site Plan with Central Storage