ROLLANS *SOIL & ENVIRONMENTAL SERVICES*

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**Attached is a proposed design for a PPBPS Septic System with low pressure distribution for a 4 bedroom single family residence on CL&T SEC 6 LOT 509 GAINSWOOD**

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8/23/05

**August 22, 2005**
**Design by : Rollans Soil & Environmental Services**

- Fill gulley/retaining wall cut properly noted on site plan.
- ***WELL TO BE ABANDONED PROPERLY LOCATED ON SITE PLAN***

# PPBPS SYSTEM
# FOR WASTEWATER TREATMENT

| | |
|---|---|
| **Owner/Applicant:** | ALICE REEVES |
| | Attn: Laura Tomzcak |
| **Address:** | 1012 Winbledon Dr. |
| | Charlotte, NC 28209 |
| **Phone:** | 704-662-0095 |
| **County:** | Iredell |
| **Location:** | CL&T sec 6 lot 509 |

| | |
|---|---|
| **Source of Wastewater Flow:** | 4 Bedroom Single Family Residence |
| **Estimated Daily Wastewater Production:** | 480 gpd |
| **System Flow:** | 25.83 |

## Design Specifications

| | |
|---|---|
| **Drainfield Size:** | 275' |
| **Loading Rate:** | 0.3 gpd/ft.$^2$ |
| **Depth of Gravel in Trench:** | NA (PPBPS ) |
| **Gravel Size:** | NA (PPBPS ) |
| **Trench Depth:** | 36 in. |
| **Trench Width:** | 36 in. |
| **Septic Tank Size:** | 1000 |
| **Pump Tank Size:** | 1000 |

| | |
|---|---|
| **Estimated Supply Line Length:** | 125' |
| **Supply Line Diameter:** | 2 in. SCH 40 PVC |
| **Supply Line Volume:** | 21.75 |
| **Dosing Volume:** | 151.00 |
| **Supply Manifold:** | N/A |
| **Supply Manifold Length:** | N/A |
| **Supply Manifold Volume:** | N/A |

| | |
|---|---|
| **Recommended Float Controls:** | SJE Sensor Float Control Switches as Required for Control Panel or County Approved Equivalents |
| **Recommended Control Panel:** | SJE-Rhombus Model 112 (NEMA 4x) Control Panel or County Approved Control Panel. |

| | |
|---|---|
| **Pressure Head:** | 2 ft. |
| **Friction Head:** | 2.23 |
| **Elevation Head:** | 16.40 |
| **Total Dynamic Head:** | 23.72 |

| | |
|---|---|
| **Threaded Union:** | In Tank |
| **Gate Valves:** | 1 in Tank |
| | 1 per lateral (4) |
| **Check Valves:** | In Tank |
| **Additional Comments:** | Soil suitability was performed by Rollans Soil & Environmental Services |

# CL&T SEC. 6 LOT 509
## LOW PRESSURE PPBPS DESIGN

| | |
|---|---|
| **DESIGN FLOW:** | 480 |
| **SOIL APPLICATION RATE:** | 0.3 gpd/ft.$^2$ |
| **TOTAL AREA TRENCH BOTTOM:** | 570 |
| **TOTAL LATERAL LENGTH:** | 275 |
| **NUMBER OF FIELDS:** | 1 |
| **LATERAL LENGTH REQUIRED PER FIELD:** | 267 |
| **SUPPLY LINE LENGTH:** | 125 |
| **TOTAL DYNAMIC HEAD:** | 23.72 |
| **MANIFOLD SIZE:** | N/A |
| **DOSING VOLUME:** | 151.00 |
| **PUMP TANK DRAW DOWN*:** | 7.2 |
| **SEPTIC TANK SIZE:** | 1000 |
| **PUMP TANK SIZE:** | 1000 |

**Pump tank draw down based on a volume basis of 21 gallons per inch. Draw down may vary among pump tank manufacturers.*

FOR 4 BEDROOM HOME August 22, 2005

| LINE # | FLAG COLOR | BS | HI | FS | ELEVATION | FLAGGED LINE LENGTH | DESIGN LINE LENGTH |
|---|---|---|---|---|---|---|---|
| TBM | | 4.0 | | | 100.00 | | |
| INSTR. 1 | | | 104.00 | | | | |
| HOUSE CNR | | | | 10.70 | 93.30 | | |
| P. TANK | | | | 15.30 | 88.70 | | |
| *1* | ***ORANGE*** | | | ***4.20*** | ***99.80*** | ***45*** | ***45*** |
| *2* | ***BLUE*** | | | ***6.10*** | ***97.90*** | ***60*** | ***60*** |
| *3* | ***PINK*** | | | ***7.20*** | ***96.80*** | ***80*** | ***80*** |
| *4* | ***ORANGE*** | | | ***8.30*** | ***95.70*** | ***90*** | ***90*** |
| | | | | | Total | 275 | 275 |

| | LINE LENGTH | LTAR GPD/FT2 | SYSTEM TYPE | SOIL LTAR GPD/FT2 | TRENCH SYSTEM | DISTRIBUTION |
|---|---|---|---|---|---|---|
| ** System* | *275* | *0.3* | *MOD.* | *0.30* | *PPBPS* | ***LOW PRESSURE*** |
| Repair | NOT REQUIRED | | | | NOT REQUIRED | |

**TBM located on EIP noted on site plan

**TBM is assumed to be 100'

**All measures in feet

**Nitrification lines are demonstrated on contour via colored pin flags

**BS, HI, and FS indicate rod readings

***** Repair not required deeded before 1983***

# LP PPBPS SEC 6 LOT 509 CL&T
## SYSTEM

| Line # | Color | Elevation | Length | Hole Size | Flow/hole | # of holes |
|---|---|---|---|---|---|---|
| 1 | ORANGE | 99.8 | **90** | .156 | **0.41** | 20.00 |
| 2 | BLUE | 97.9 | **80** | .156 | **0.41** | 19.00 |
| 3 | PINK | 96.8 | **60** | .156 | **0.41** | 14.00 |
| 4 | ORANGE | 95.7 | **45** | .156 | **0.41** | 10.00 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | **total** | **feet =** | **275** | **gal/min =** | **25.83** | |
| | | | **Des. Flow** | **480** | | |
| | | | **Pump Run=** | **6.58** | | |
| | | | **soil LTAR** | **0.3** | | |

**.156=5/32 in. hole**

**# of holes represents number of panels**

## CALCULATIONS

Location : CL&T sec6 lot 509

| | | |
|---|---|---|
| Lot No: | | |
| No. of Bedrooms | 4 | |
| Design Flow | 480 | $^{gal}/_{day}$ |
| LTAR | 0.3 | $^{gal}/_{ft^2\ day}$ |
| PPBPS? (YES OR NO) | YES | |
| Supply Line Length | 125 | ft. |
| Supply Line Volume | 21.75 | gal. |
| Required Feet of Line | 267 | ft. |
| Amount of Line from Layout | 275 | ft. |
| Gallons per Minute | 25.83 | $^{gal}/_{min}$ |
| Required Septic Tank Capacity | 1000 | gal. |
| Minimum Standard Tank Size | 1000 | |
| Panel Volume | 3.6 | gal. |
| # of Panels | 64 | |
| Dosing Volume | 151.00 | gal. |

*Note: Dosing Volume based on # of panels times 3.6 gal/panel*

| | | |
|---|---|---|
| Tank Draw Down | 7.2 | *Generic Draw Down of 21 gal.per in.* |
| Pump Run Time | 5.85 | minutes |
| Elevation Head | 16.4 | ft. |
| Pressure Head | 2 | ft. |
| Friction Factor | 1.78 | ft./100 ft. *(From the interpolater.)* |
| Friction Head | 2.23 | ft. |
| Total Dynamic Head (+15%) | 23.72 | ft. |

FRICTION FACTOR INTERPOLATER
2" SCH 40 PVC

| GPM | *f* |
|---|---|
| 20 | 0.84 |
| | -0.88 |
| 25 | 1.27 |
| | -1.28 |
| 30 | 1.78 |
| | -1.76 |
| 35 | 2.37 |
| | -2.25 |
| 40 | 3.03 |
| 43.07 | 3.48 |
| 45 | 3.77 |
| 48.14 | 4.28 |
| 50 | 4.58 |
| 57.11 | 5.89 |
| 60 | 6.42 |