# ROLLANS *SOIL & ENVIRONMENTAL SERVICES*

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**Attached is a proposed design for a PPBPS Septic System with low pressure distribution for a 3 bedroom single family residence on Lot #39 in Carlyle Farms Subdivision, Iredell County, North Carolina.**

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5-17-06 OK

LICENSED SOIL SCIENTIST Samuel A. Rollans 1231 STATE OF NORTH CAROLINA

5/16/06

**May 12, 2006**
**Project No. 01-1234**
**Design By: Rollans Soil & Environmental Services**

# LP PPBPS SYSTEM
# FOR WASTEWATER TREATMENT

**Owner/Applicant:** Corinthian Development LTD

**Address:** P.O. Box 3421
Mooresville, NC 28117
**Phone:** 704-664-4822
**County:** Iredell
**Location:** Carlyle Farms Subdivision Lot #39

**Source of Wastewater Flow:** 3 Bedroom Single Family Residence
**Estimated Daily Wastewater Production:** 360 gpd
**System Flow:** 22.80230769

## Design Specifications

**Drainfield Size:** 241
**Loading Rate:** 0.25 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:** 117
**Supply Line Diameter:** 2 in. SCH 40 PVC
**Supply Line Volume:** 20.36
**Dosing Volume:** 134.14
**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:** 1.49
**Elevation Head:** 5.80
**Total Dynamic Head:** 10.68

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

## Carlyle Farms Lot 39
## LP PPBPS

| | |
|---|---|
| **DESIGN FLOW:** | 360 |
| **SOIL APPLICATION RATE:** | 0.25 gpd/ft² |
| **TOTAL AREA TRENCH BOTTOM:** | 723 |
| **TOTAL LATERAL LENGTH:** | 241 |
| **NUMBER OF FIELDS:** | 1 |
| **LATERAL LENGTH REQUIRED PER FIELD:** | 240 |
| **SUPPLY LINE LENGTH:** | 117 |
| **TOTAL DYNAMIC HEAD:** | 10.68 |
| **MANIFOLD SIZE:** | N/A |
| **DOSING VOLUME:** | 134.14 |
| **PUMP TANK DRAW DOWN*:** | 6.4 |
| **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.*

# Carlyle Farms Lot 39

Project #: 01-1234

LAYOUT FOR 3 BEDROOM HOME — January 19, 2006

| LINE # | FLAG COLOR | BS | HI | FS | ELEVATION | FLAGGED LINE LENGTH | DESIGN LINE LENGTH |
|---|---|---|---|---|---|---|---|
| TBM | | 6.8 | | | 100.00 | | |
| INSTR. 1 | | | 106.75 | | | | |
| HOUSE CNR | | | | 4.10 | 102.65 | | |
| P. TANK | | | | 4.00 | 106.00 | | |
| *1* | *ORANGE* | | | *3.20* | *103.55* | *40* | *40* |
| *2* | *PINK* | | | *3.40* | *103.35* | *56* | *56* |
| *3* | *RED* | | | *3.60* | *103.15* | *75* | *75* |
| 4 | PINK | | | 3.80 | 102.95 | 36 | 36 |
| *5* | *BLUE* | | | *4.10* | *102.65* | *70* | *70* |
| 5 | BLUE | | | 4.10 | 102.65 | 36 | 36 |
| 6 | ORANGE | | | 4.40 | 102.35 | 87 | 87 |
| 7 | PINK | | | 4.80 | 101.95 | 47 | 47 |
| 8 | BLUE | | | 5.00 | 101.75 | *35* | *35* |
| | | | | | Total | 482 | 482 |

| | LINE LENGTH | LTAR GPD/FT2 | SYSTEM TYPE | SOIL LTAR GPD/FT2 | TRENCH SYSTEM | DISTRIBUTION |
|---|---|---|---|---|---|---|
| ** System* | *241* | *0.25* | *MOD.* | *0.25* | *PPBPS* | *LOW PRESSURE* |
| Repair | 241 | 0.25 | MOD. | 0.25 | PPBPS | LOW PRESSURE |

5" to then 1 Sch 40 PVC

Notes:
** TBM located top of ground (see 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

# LP PPBPS TAPSHEET - CARLYLE FARMS LOT 39

## SYSTEM

| Line # | Color | Elevation | Length | Hole Size | Flow/hole | Trench Area | Number of Panels |
|---|---|---|---|---|---|---|---|
| 1 | *ORANGE* | 103.55 | *40* | 0.156 | **0.41** | 120 | 9 |
| 2 | *PINK* | 103.35 | *56* | 0.156 | **0.41** | 168 | 13 |
| 3 | *RED* | 103.15 | *75* | 0.156 | **0.41** | 225 | 17 |
| 5 | *BLUE* | 102.65 | *70* | 0.156 | **0.41** | 210 | 16 |

| | | | | |
|---|---|---|---|---|
| **total** | **feet =** | **241** | **gal/min =** | **22.802308** |
| | | **Des. Flow** | **360** | |
| | | **Pump Run=** | **5.88** | |
| | | **soil LTAR** | **0.25** | |
| | | **LTAR +5%** | **0.2625** | |
| | | **LTAR with mod.** | **0.5** | |
| | | **LTAR with mod.. + 5%** | **0.525** | |

**.156 equals 5/32 inch hole**

## CALCULATIONS

Location Carlyle Farms

Project Number 01-1234

Lot No: Lot 39

| | | |
|---|---|---|
| No. of Bedrooms | 3 | |
| Design Flow | 360 | $^{gal}/_{day}$ |
| LTAR | 0.25 | $^{gal}/_{ft^2\ day}$ |
| PPBPS? (YES OR NO) | YES | |
| Supply Line Length | 117 | ft. |
| Supply Line Volume | 20.358 | gal. |
| Required Feet of Line | 240 | ft. |
| Amount of Line from Layout | 241 | ft. |
| Gallons per Minute | 22.80231 | $^{gal}/_{min}$ |
| | *Note:* | *Flow/hole (.41gpm) x # of panels (65)* |
| Required Septic Tank Capacity | 1000 | gal. |
| Minimum Standard Tank Size | 1000 | |
| Panel Volume | 3.6 | gal. |
| # of Panels | 56 | |
| Dosing Volume | 134 | gal. |
| | *Note:* | *Dosing Volume based on 67% of # of panels times 3.6 gal/panel* |
| Tank Draw Down | 6.4 | *Generic Draw Down of 21 gal.per in.* |
| Pump Run Time | 5.88 | minutes |
| Elevation Head | 5.8 | ft. |
| Pressure Head | 2 | ft. |
| Friction Factor | 1.27 | ft./100 ft. *(From the interpolater.)* |
| Friction Head | 1.49 | ft. |
| Total Dynamic Head (+15%) | 10.68 | 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 |