LINE SCHEDULE

LINE NUMBER	COLOR	FIELD ELEVATION	LENGTH (FT)
1	WHITE	3.6	115
2	RED	4.2	114
3	BLUE	4.8	114
4	ORANGE	5.6	114
5	WHITE	6.1	113
6	PINK	6.4	53
7	RED	6.7	113
8	YELLOW	7.0	111
9	BLUE	7.2	92
10	ORANGE	7.7	72

LOT 196 BELLS CROSSING SUBDIVISION

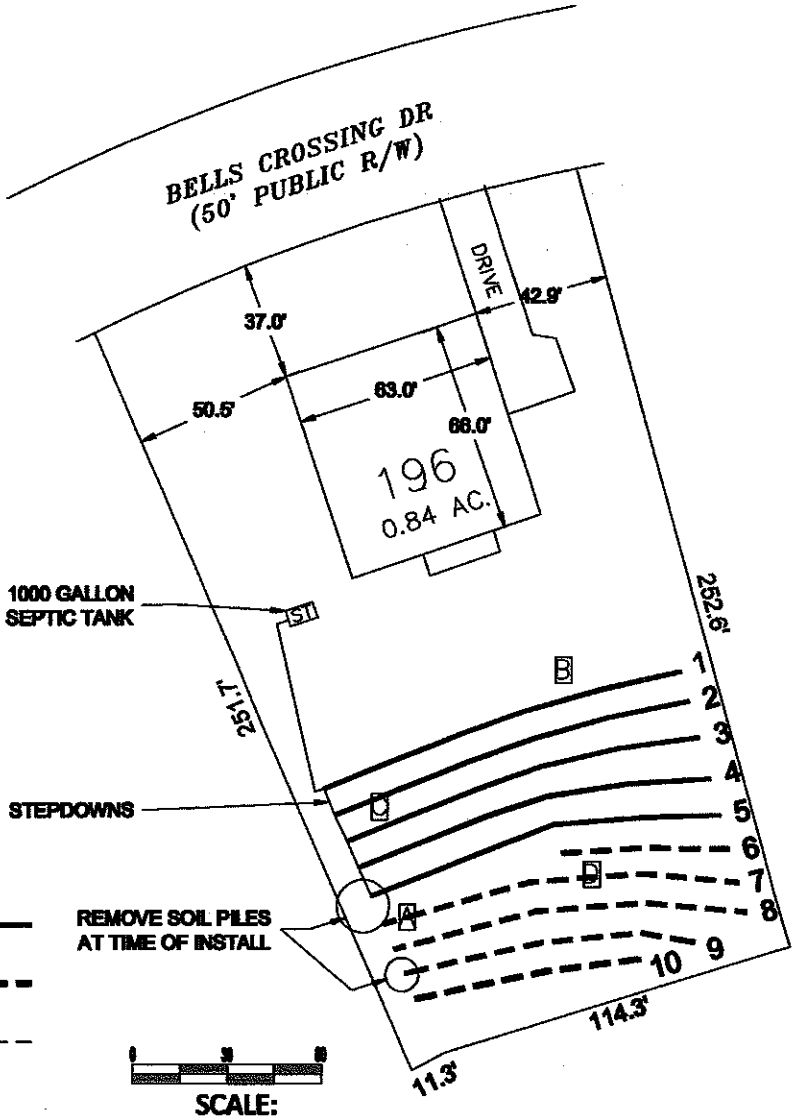
4-BEDROOM ACCEPTED STATUS GRAVITY SYSTEM
LINES 1-5 TOTAL 570 LINEAR FEET
EZFLOW OR CHAMBER
LTAR 0.225
25% REDUCTION
24" TRENCH DEPTH

4 BR ~~5-BEDROOM~~ LPP FED PANEL BLOCK REPAIR
LINES 6-10 (8' ON CENTER) TOTAL 441 LINEAR FEET
CHAMBER
LTAR 0.225
50% REDUCTION
28" TRENCH DEPTH

FOR GENERAL USE NOT A SURVEY
PRELIMINARY NOT FOR CONSTRUCTION

SOIL ANALYSIS PREVIOUSLY APPROVED BY IREDELL COUNTY ENVIRONMENTAL HEALTH

BK Tchd
APPROVED JUN 17 2015



PRIMARY SYSTEM ——————

REPAIR SYSTEM - - - - - -

REPAIR LINES (NOT USED) - - - - - -

PIT OR AUGER BORING [A]

0 30 60

SCALE:
1" = 60 ft.

Bateman Civil Survey Company
Engineers • Surveyors • Planners

CROSSLIN BUILDERS LLC

LOT 196
BELLS CROSSING SUBDIVISION
MOORESVILLE, NC
IREDELL COUNTY

DATE: 6/9/15 DRAWN BY: MDB CHECKED BY: TMB

ROLLANS *Soil & Environmental Services, Inc.*

470 N Broad Street, Suite D, Mooresville, NC 28115 Phone: (704) 658-1723 Fax: (704) 658-1724

Ashley Rollans, NC Licensed Soil Scientist
Mobile: (704) 746-5046
Email: rollans.ashley@yahoo.com

Brady Freeman, Registered Sanitarian
Mobile: (704) 746-6497
Email: bfree209@yahoo.com

Attached is a proposed design for a PPBPS Septic System with low pressure distribution for a 4 bedroom single family residence on Lot # 196 in BELLS CROSSING Subdivision, Iredell County, North Carolina.

Contents:

	Page
Information for the Installer	1
Design Information	
Design Specifications	2-3
Layout Specifications	4
System Tapsheet	5
Site Plan/System Plan	6-7
Calculations	8
Profile Descriptions	9

May 8, 2008
Project #: 01-1429
Design By: Rollans Soil & Environmental Services

INFORMATION FOR THE INSTALLER:

The permit should be read very carefully prior to bidding. The following are details that must be considered along with all other considerations.

- Tanks shall be approved by NC DENR, and certification supplied by the manufacturer.
- Tanks shall be water tested prior to installation.
- The installer shall be responsible to the owner for placement of the tanks and to insure that final grades are returned to the original natural grade, with exception of added structural features.
- The supply trench shall be compacted to eliminate cavities left during initial fill placement.
- Installation of the system shall be during dry conditions in order to protect the soil structure.
- All fittings shall be pressure rated fittings.
- All joints shall be cleaned with PVC pipe cleaner and a heavy bodied glue applied to weld all joints.
- Where required by the county health department, post installation inspections by the designer must be scheduled 5 week days in advance.
- Trenches shall be carefully excavated so the bottom is within 2" from the highest to . the lowest points of elevation within the trench. If the bottom elevation needs adjusting after it has been trenched, it will be done by removing high points rather than filling low points. It is extremely important to insure that trenches are not over excavated during initial trenching. All fine grading within the trench will be hand done with a shovel. No loose material will be left in the trench
- All pipe openings in the tanks shall be properly grouted. This also applies to the joints around the riser.
- All tanks shall be properly back filled and compacted to prevent slump at a later date.
- Earth dams, constructed of relatively impervious material, shall be installed at the beginning and end of each lateral.
- No heavy equipment shall be used on the field during or after installation. The use of a small loader (i.e. Bobcat) or a trencher (i.e. Ditch Witch 2300/2310) may be used for installation.
- Elevations at pinflag locations should be checked by the installer prior to beginning trenches.
- Pumptank riser should be 6" above grade, control panel should be 12" above grade.
- Design precludes foundation drains.
- Septic tank riser shall be a minimum of 6" above finished grade.
- System is specified as a PPBPS installation.
- Repair is specified as a PPBPS installation.
- Backfill 4 - 6" of material (County Approved) over panels, rake trench walls, lime side-walls, install trenches 36" wide and have no more than 1/4" fall in 10 feet.

LP PPBPS SYSTEM
FOR WASTEWATER TREATMENT

Owner/Applicant: Ryon-West Developers

Address: 127B Promenade Dr.
Mooresville, NC 28117

Phone: 704 361 1084

County: Iredell

Location: BELLS CROSSING LOT 196

Source of Wastewater Flow: 4 Bedroom Single Family Residence

Estimated Gallons Per Day Flow: 480

System Flow: 34.03

Design Specifications

Drainfield Size: 355

Loading Rate (gpd/ft.^{2}): 0.225

Depth of Gravel in Trench: NA (PPBPS)

Gravel Size: NA (PPBPS)

Trench Depth: ~~36 in.~~ 33 in

Trench Width: 36 in.

Septic Tank Size: 1000

Pump Tank Size: 1000

Estimated Supply Line Length: 17

Supply Line Diameter: 2 in. SCH 40 PVC

Supply Line Volume: 2.96

Dosing Volume: 200.20

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: 0.40

Elevation Head: 4.10

Total Dynamic Head: 7.48

Threaded Union: In Tank

Gate Valves: 1 in Tank
1 per lateral

Check Valves: In Tank

Anti-Siphon Hole: NA

Additional Comments: Soil suitability was performed by Rollans Soil & Environmental Services

BELLS CROSSING LOT 196

Project #: 01-1429

LAYOUT FOR 4 BEDROOM HOME

May 8, 2008

LINE #	FLAG COLOR	BS	HI	FS	ELEVATION	FLAGGED LINE LENGTH	DESIGN LINE LENGTH
TBM		7.8			100.00		
INSTR. 1			107.80				
HOUSE CNR				0.20	107.60		
P. TANK				1.50	106.30		
1	***RED***			***2.40***	***105.40***	***60***	***60***
2	***RED***			***2.40***	***105.40***	***60***	***60***
3	***ORANGE***			***2.70***	***105.10***	***60***	***60***
4	***ORANGE***			***2.70***	***105.10***	***60***	***60***
5	***BLUE***			***4.00***	***103.80***	***60***	***60***
6	***BLUE***			***4.00***	***103.80***	***55***	***55*** 355
7	PINK			4.90	102.90	118	118
8	RED			5.30	102.50	118	118
9	ORANGE			6.80	101.00	119	119
10	BLUE			7.60	100.20	96	96
					Total	**806**	**806**

	LINE LENGTH	LTAR GPD/FT2	SYSTEM TYPE	SOIL LTAR GPD/FT2	TRENCH SYSTEM	DISTRIBUTION
****System***	***355***	***0.225***	***MOD.***	***0.225***	***PPBPS***	***LOW PRESSURE***
Repair	451	0.225	MOD.	0.225	PPBPS	LOW PRESSURE

Notes:
** TBM located top of ground at EIP at corner of lot (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

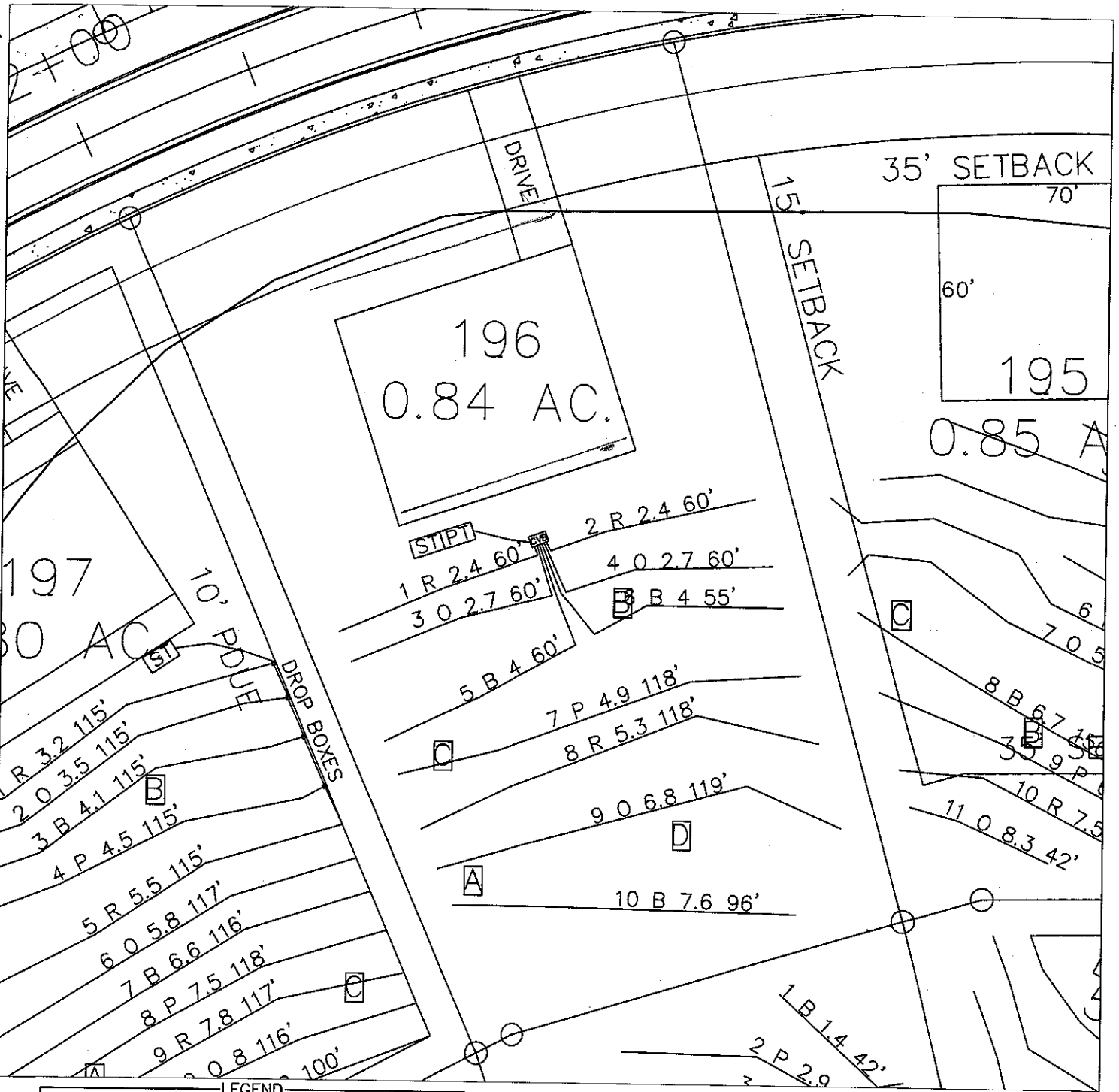
LP PPBPS TAPSHEET -BELLS CROSSING LOT# 196

SYSTEM

Line #	Color	Elevation	Length	Hole Size	Flow/hole	Trench Area	Number of Panels
1	***RED***	105.4	***60***	0.156	**0.41**	180	14
2	***RED***	105.4	***60***	0.156	**0.41**	180	14
3	***ORANGE***	105.1	***60***	0.156	**0.41**	180	14
4	***ORANGE***	105.1	***60***	0.156	**0.41**	180	14
5	***BLUE***	103.8	***60***	0.156	**0.41**	180	14
6	***BLUE***	103.8	***55***	0.156	**0.41**	165	13
							83
	total	**feet =**	**355**	**gal/min =**	**34.03**		

Des. Flow	**480**
Pump Run=	**5.88**
soil LTAR	**0.225**
LTAR +5%	**0.23625**
LTAR with mod.	**0.45**
LTAR with mod.. + 5%	**0.4725**

.156 equals 5/32 inch hole



LEGEND

House Box.

System lines.

Repair lines.

GRAPHIC SCALE
1" = 40'

40 0 40 80

FOR PRELIMINARY PLANNING PURPOSES ONLY. ALL LOTS WILL REQUIRE FINAL APPROVAL BY THE COUNTY HEALTH DEPARTMENT ON A LOT BY LOT BASIS. THIS MAP SHOULD BY USED AS A GENERAL GUIDE, SOME ADJUSTMENTS WILL BE NECESSARY IN THE FIELD DUE TO SOIL VARIABILITY AND COMPLEX TOPOGRAPHIC FEATURES. THIS MAP ONLY REFLECTS EXISTING SOIL SUITABILITY FOR ON-SITE SEPTIC TANK SYSTEMS.

PLEASE REFER TO ATTACHED SOIL REPORT FOR ADDITIONAL SITE SPECIFIC INFORMATION

ROLLANS SOIL & ENVIRONMENTAL SERVICES

470 NORTH BROAD STREET SUITE D
MOORESVILLE, NC 28115
PHONE: (704) 658-1723
FAX: (704) 658-1724

BRADY FREEMAN, R.S.
MOBILE: (704) 746 - 6497
EMAIL: BFREE2969YAHOO.COM

ASHLEY ROLLANS, NC LICENSED SOIL SCIENTIST
MOBILE: (704) 746 - 5066
EMAIL: ROLLANS@WINDSTREAM.NET

MAP TITLE: SITE PLAN & DRAINFIELD AREAS

PROJECT NAME: RYAN-WEST DEVELOPERS/ BELLS CROSSING

LOCATION/DATE: PERTH RD IREDELL COUNTY, NORTH CAROLINA JUNE 2008

JOB # : 01-1429
FILE: C:\JOBS\01-1429
PROJECT MGR.: C.B.F.
FIELD WORK: C.B.F., A.L.P. & M.D.B.
DRAWN BY: C.B.F. & M.D.B.

CALCULATIONS

Location BELLS CROSSING

Project Number 01-1429

Lot No: Lot 196

No. of Bedrooms 4

Design Flow 480 $^{gal}/_{day}$

LTAR 0.225 $^{gal}/_{ft^2\ day}$

PPBPS? (YES OR NO) YES

Supply Line Length 17 ft.

Supply Line Volume 2.958 gal.

Required Feet of Line 355.5556 ft.
Amount of Line from Layout 355 ft.

Gallons per Minute 34.03 $^{gal}/_{min}$

Required Septic Tank Capacity 1000 gal.
Minimum Standard Tank Size 1000

Panel Volume 3.6 gal.
# of Panels 83
Dosing Volume 200.20 gal. (224)

Note: Dosing Volume based on 67% of # of panels times 3.6 gal/panel

Tank Draw Down 9.5 *Generic Draw Down of 21 gal.per in.*

Pump Run Time 5.88 minutes

Elevation Head 4.1 ft.
Pressure Head 2 ft.
Friction Factor 2.37 ft./100 ft. *(From the interpolater.)*
Friction Head 0.40 ft.

Total Dynamic Head (+15%) 7.48 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

DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL HEALTH
ON-SITE WASTEWATER SECTION

Sheet ___ *of* ___
PROPERTY ID #: ___
COUNTY: Iredell

SOIL/SITE EVALUATION
for ON-SITE WASTEWATER SYSTEM

OWNER: Bells Crossing Lot 196 APPLICATION DATE ___
ADDRESS: see attached zoning DATE EVALUATED: ___
PROPOSED FACILITY: ___ PROPOSED DESIGN FLOW (.1949): ___ PROPERTY SIZE: ___
LOCATION OF SITE: ___ PROPERTY RECORDED: ___
WATER SUPPLY: ☐ Private ☑ Public ☐ Well ☐ Spring ☐ Other ___
EVALUATION METHOD: ☑ Auger Boring ☑ Pit ☐ Cut TYPE OF WASTEWATER: ☑ Sewage ☐ Industrial Process ☐ Mixed

PROFILE #	.1940 LANDSCAPE POSITION/ SLOPE %	HORIZON DEPTH (IN.)	SOIL MORPHOLOGY (.1941) .1941 STRUCTURE/ TEXTURE	.1941 CONSISTENCE/ MINERALOGY	OTHER PROFILE FACTORS .1942 SOIL WETNESS/ COLOR	.1943 SOIL DEPTH	.1956 SAPRO CLASS	.1944 RESTR HORIZ	PROFILE CLASS & LTAR
B 1 196 A	L/6-10%	0-32	BRcl wmsbk	Fr sssp SExP	-C[m n] -F YB's -F[m n] -C YB's -F sap	47			0.25
		32-47	RYC wmsbk	" " p "					
B 2 196 B	L/6-10%	0-10	Bcl wsbk	Frsssp SEXP	-C[m n] -F[m n] -C YB's	48			0.225-0.25
		10-21	BRC wmsbk	Frsssp SEXP					
		21-48	RYC wmsbk	" " " "					
P 3 196 C	L/0-5%	0-11	Bsl sr	Frsssp SEXP	-F[m n] -C[m n] -C YB's -C YB's -F sap clm2@45	48			0.225
		11-24	B scl wsbk	" " " "					
		24-34	BRSC wfsbk	" " p "					
		34-48	RC wmsbk/1BK	F " sp SExP					
P 4 196 D	L/6-10%	0-9	Bs/sr	Frsssp SEXP	-CM N -F YB's -F YB's -F[m m]	48			0.225
		9-30	BRcl wfsbk/1BK	" " " "					
		30-48	RBC wCA bk/1BK	" " " "					

DESCRIPTION	INITIAL SYSTEM	REPAIR SYSTEM
Available Space (.1945)	PS	PS
System Type(s)	PPBPS	PPBPS
Site LTAR	.225	.225

OTHER FACTORS (.1946): ___
SITE CLASSIFICATION (.1948): ___
EVALUATED BY: Rollers Soil and Environmental
OTHER(S) PRESENT: ___

COMMENTS: ___