

Soil and Site Evaluation For  
Wastewater Treatment and Dispersal  
Systems

Manns Chapel Road

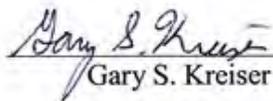
Pittsboro, NC

Chatham County

(Parcel #: 0072871)

Adjacent to 3038 Manns Chapel Road

November 5, 2025

  
Gary S. Kreiser



**Findings:** Based on the soil and site evaluation, there is a high degree of certainty that a conventional type of septic system could be installed, and the lot could be used for residential development.

No opinions are made regarding the following:

- Areas of the property not evaluated;
- Applicable zoning requirements;
- House location;
- Specific septic system layout/components; and
- Horizontal setbacks required from septic systems.

## **INTRODUCTION**

Soil & Septic Solutions performed an on-site subsurface wastewater system investigation on a 2.9 acre parcel (Parcel # 0072871) located adjacent to 3038 Manns Chapel Road in Pittsboro, Chatham County, North Carolina on November 1, 2025. The property was evaluated in accordance with 15A NCAC 18E "Wastewater Treatment and Dispersal Systems". The purpose of this investigation was to perform an analysis of parcel capacity for a residence.

At the time of the survey, the property was wooded. An approximate 40 foot strip of land along the eastern portion of the property will be combined with the parcel located at 3038 Manns Chapel Road and was not evaluated.

## **INVESTIGATION METHODOLOGY**

Soil borings were made with a hand-turned auger in the study area. Observations of the landscape (slope, drainage patterns, past use, etc.) as well as soil properties (depth, texture, structure, seasonal wetness, restrictive horizons, etc.) to a depth  $\geq$  48 inches when possible were recorded. Soil color was determined with a Munsell Soil Color Chart. From these observations, potentially suitable areas for wastewater disposal were identified.

A handheld global positioning system (GPS) with sub-meter accuracy was used to locate each soil boring as well as other pertinent site features.

## **FINDINGS**

On the day of the field investigation, eleven (11) hand auger borings were made on the property, logged, and their locations are shown in the Soil Boring Location Exhibit. Soil Boring logs are attached. The review area was along the ridge and side slope and generally had a slope between 3 and 10 percent. Large surficial rocks were common along the southern portion of the property. Other smaller rock areas were also present throughout the property.

Depth to saprolite and soil wetness were the limiting soil factors (See Soil Boring Logs). Borings that had at least 24 inches to saprolite, or wetness are considered suitable for a conventional type of system. An area of suitable soil was estimated to be 15,000 ft<sup>2</sup>. The borings in this area indicated a soil depth to at least 28 inches to a limiting factor. The typical texture of the soil was clay loam to clay. Based on the soil texture and depth to restrictive horizons, a long-term acceptance rate (LTAR) of 0.3 gpd/ft<sup>2</sup> is recommended.

In areas where the limiting factor was less than 24 inches, other types of systems may be used, including anaerobic drip. Drip systems require at least 18 inches to the limiting factor. In the area of borings 8, 9 and 10 the depth to saprolite was 22 inches. It is estimated that this area is 11,000 ft<sup>2</sup>. This area had small surface rocks, but it appears that these rocks could be removed without too much soil disturbance. The typical soil texture in this area was clay loam. An LTAR of 0.2 gpd/ft<sup>2</sup> is recommended.

The areas with large surficial rocks were considered unsuitable for septic systems due to the amount of ground disturbance needed to remove these rocks.

## **GENERAL DESIGN AND INSTALLATION CRITERIA**

Wastewater systems can be used when there is at least 12 inches of naturally occurring soil between the bottom of the trench and the limiting condition.

For a 4 bedroom system, the design flow is 480 gallons per day (gpd). When the design flow is divided by the LTAR (using 0.3), the area of trench bottom can be calculated, which is 1,600 ft<sup>2</sup>. The total length of trenches can be calculated by dividing the trench bottom area by 3 feet (which is the maximum trench width). Using these calculations, a 4 bedroom home would need 533 linear feet of trench.

Based on the depth to a limiting condition in the suitable soil area and the slope in this area, there is enough soil depth to install a conventional septic system. Due to the shallower nature of the soil a shallow place system (at grade) would be required. These shallow systems will require the use of a soil cap. Exact depth of trenches would be dependent on location of the system.

Traditional trenches are laid on contours 9 feet from the center. Assuming 6 - 89 foot lines, the minimum area need is approximately 3,500 ft<sup>2</sup>. This area assumes an even linear slope with parallel septic lines. Additionally, septic systems need a designated repair area. At a minimum there needs to be at least 7,000 ft<sup>2</sup> for both the initial and repair area for each home. This area could be reduced by using approved systems that allow for a 25% reduction in trench length.

Drip systems are sized by the design flow (480 gpd) divided by the LTAR (0,2 gpd/ft<sup>2</sup>) to determine the minimum drip field area required (2,400 ft<sup>2</sup>). The minimum amount of tubing is divided by 2 feet (spacing of the drip tubes) for a total of 1,200 feet of tubing.

Other required horizontal setbacks (wells, property lines etc.,) were not considered in the soil that could be used for a septic system. These setbacks will affect the overall area that can be used.

Permitting of the septic system may be done through the County Environmental Health Department or through the private permitting option. It is recommended that a site layout be performed to verify that there is enough space for the septic and repair system. Additionally, careful placement of the houses and other improvements will need to be considered as to maximum the area of soil that can be used for septic.

## **CONCLUSIONS**

Depth to saprolite and wetness were the limiting soil condition. There are areas of large surficial rocks that would be considered unsuitable. There is an area of soil that has enough depth to a limiting condition that corrects for slope and still maintains the required 12 inch vertical separation and is approximately 15,000 ft<sup>2</sup>. For a 4 bedroom home the minimum required area would be approximately 7,000 ft<sup>2</sup>. Potential types of septic systems that could be used would be an at grade trench system. The at grade system would require the use of a soil cap. Additionally an area of approximately 11,000 ft<sup>2</sup> was determined to be suitable for a drip system. Based on the estimated LTAR, a drip system would require approximately 2,400 ft<sup>2</sup>. Potentially, the initial system could be a shallow place system and a drip system could be used as repair.

The exact location of the system and potential layout as well as house locations and horizontal setbacks, were not calculated or defined. Careful consideration as to house locations and other improvements will need to be evaluated to maximize the potential septic area.

The findings presented herein represent Soil & Septic Solutions' soil and site evaluation and knowledge of the current laws and regulations governing on-site wastewater systems in North Carolina. This report discusses the general location of suitable soils and

site conditions that are favorable for septic systems and does not constitute or imply any approval or permit as needed from the County Health Department.

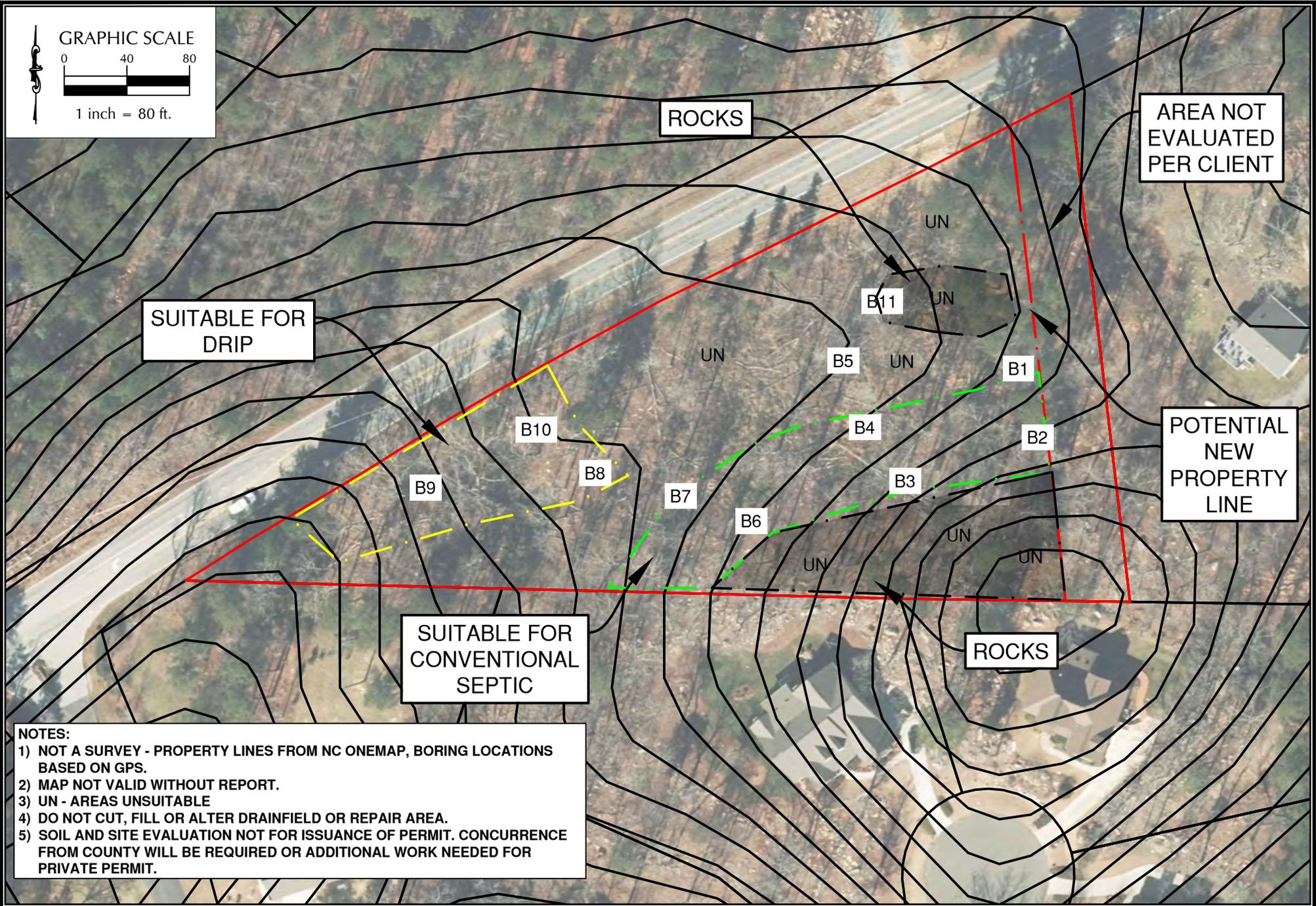
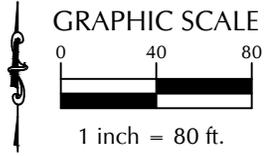
It is Soil & Septic Solutions' professional opinion that this lot can be used for residential development. Any concurrence with the findings of this report would be made during the County's site evaluation. Additionally, do not clear or grub any land until the County has granted the appropriate approvals.

Sincerely,

A handwritten signature in black ink that reads "Gary Kruse". The signature is written in a cursive style with a horizontal line under the name.

Attachments:

- 1) Soil boring Location Exhibit
- 2) Soil Boring Logs



**NOTES:**  
 1) NOT A SURVEY - PROPERTY LINES FROM NC ONEMAP, BORING LOCATIONS BASED ON GPS.  
 2) MAP NOT VALID WITHOUT REPORT.  
 3) UN - AREAS UNSUITABLE  
 4) DO NOT CUT, FILL OR ALTER DRAINFIELD OR REPAIR AREA.  
 5) SOIL AND SITE EVALUATION NOT FOR ISSUANCE OF PERMIT. CONCURRENCE FROM COUNTY WILL BE REQUIRED OR ADDITIONAL WORK NEEDED FOR PRIVATE PERMIT.

MANN'S CHAPEL ROAD  
 (PARCEL#: 0072871)  
 PITTSBORO CHATHAM COUNTY NORTH CAROLINA

SOIL BORING LOCATIONS

SOIL & SEPTIC SOLUTIONS

**SOIL/SITE EVALUATION for ON-SITE WASTEWATER SYSTEM**  
 (Complete all fields in full)

OWNER: \_\_\_\_\_ DATE EVALUATED: 11/1/25  
 ADDRESS: Manns Chapel Road  
 PROPOSED FACILITY: \_\_\_\_\_ PROPOSED DESIGN FLOW (.0400): \_\_\_\_\_ PROPERTY SIZE: \_\_\_\_\_  
 LOCATION OF SITE: \_\_\_\_\_ PROPERTY RECORDED: \_\_\_\_\_  
 WATER SUPPLY:  Public  Single Family Well  Shared Well  Spring  Other \_\_\_\_\_ WATER SUPPLY SETBACK: \_\_\_\_\_  
 EVALUATION METHOD:  Auger Boring  Pit  Cut TYPE OF WASTEWATER:  Domestic  High Strength  IPWW

P R O F I L E  #	.0502 LANDSCAPE POSITION/ SLOPE %	HORIZON DEPTH (IN.)	SOIL MORPHOLOGY		OTHER PROFILE FACTORS				.0509 PROFILE CLASS & LTAR*	.0502(d) SLOPE CORRE CTION
			.0503 STRUCTURE/ TEXTURE	.0503 CONSISTENCE/ MINERALOGY	.0504 SOIL WETNESS/ COLOR	.0505 SOIL DEPTH	.0506 SAPRO CLASS	.0507 RESTR HORIZ		
1	L 3-5%	0-15	SBK/SCL	FR/SS/SP/SEXP	10YR 4/6	S	-	-	S 0.3	1.1-1.8
		15-36+	SBK/CL	FI/SS/SP/SEXP	10YR 6/6					
					@ 33" 10YR					
					6/2					
2	L 5-10%	0-14	SBK/SCL	FR/SS/SP/SEXP	10YR 4/6	S	U	-	S 0.3	1.8-3.6
		14-33	SBK/CL	FI/SS/SP/SEXP	7.5YR 5/8					
		33-40+	M/CL	FI/SS/SP/SEXP						
3	L 5-10%	0-6	SBK/SCL	FR/SS/SP/SEXP	10YR 6/6	S	U	-	S 0.3	1.8-3.6
		6-33	SBK/CL	FI/SS/SP/SEXP	7.5YR 5/8					
		33-40+	M/CL	FI/SS/SP/SEXP						
4	L 3-5%	0-14	SBK/SCL	FR/SS/SP/SEXP	10YR 6/6	S	U	-	S 0.3	1.8-3.6
		14-33	SBK/CL	FI/SS/SP/SEXP	7.5 YR 5/8					
		33-40+	M/CL	FI/SS/SP/SEXP	10YR 4/6					

DESCRIPTION	INITIAL SYSTEM	REPAIR SYSTEM	SITE CLASSIFICATION (.0509): _____ EVALUATED BY: <u>GARY KREISER</u> OTHER(S) PRESENT: _____
Available Space (.0508)			
System Type(s)			
Site LTAR			
Maximum Trench Depth			

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

# LEGEND

LANDSCAPE POSITION	SOIL GROUP	SOIL TEXTURE	CONVENTIONAL LTAR (gpd/ft <sup>2</sup> )	SAPROLITE LTAR (gpd/ft <sup>2</sup> )	LPP LTAR (gpd/ft <sup>2</sup> )	MINERALOGY/ CONSISTENCE		STRUCTURE		
						MOIST	WET			
CC (Concave slope)	I	S (Sand)	0.8 - 1.2	0.6 - 0.8	0.4 - 0.6	<b>MOIST</b>	<b>WET</b>	SG (Single grain)		
CV (Convex Slope)		LS (Loamy sand)		0.5 - 0.7		Lo (Loose)	NS (Non-sticky)	M (Massive)		
D (Drainage way)	II	SL (Sandy loam)	0.6 - 0.8	0.4 - 0.6	0.3 - 0.4	VFR (Very friable)	SS (Slightly sticky)	GR (Granular)		
FP (Flood plain)		L (Loam)		0.2 - 0.4		FR (Friable)	S (Sticky)	SBK (Subangular blocky)		
FS (Foot slope)	III	SiL (Silt loam)	0.3 - 0.6	0.1 - 0.3	0.15 - 0.3	FI (Firm)	VS (Very sticky)	ABK (Angular blocky)		
H (Head slope)		SCL (Sandy clay loam)		0.05 - 0.15**		VFI (Very firm)	NP (Non-plastic)	PR (Prismatic)		
L (Linear Slope)		CL (Clay loam)		None		0.15 - 0.3	EFI (Extremely firm)	SP (Slightly plastic)	PL (Platy)	
N (Nose slope)		SiCL (Silty clay loam)					P (Plastic)	VP (Very plastic)		
R (Ridge/summit)		Si (Silt)								
S (Shoulder slope)	IV	SC (Sandy clay)	0.1 - 0.4	0.05 - 0.2	SEXP (Slightly expansive)					
T (Terrace)		SiC (Silty clay)			EXP (Expansive)					
TS (Toe Slope)		C (Clay)								
		O (Organic)	None							

\* Adjust LTAR due to depth, consistence, structure, soil wetness, landscape, position, wastewater flow and quality.

\*\*Sandy clay loam saprolite can only be used with advanced pretreatment in accordance with 15A NCAC 18E .1200.

*HORIZON DEPTH* In inches below natural soil surface

*DEPTH OF FILL* In inches from land surface

*RESTRICTIVE HORIZON* Thickness and depth from land surface

*SAPROLITE* S(suitable) or U(unsuitable); Evaluation of saprolite shall be by pits.

*SOIL WETNESS CLASSIFICATION* Inches from land surface to free water or inches from land surface to soil colors with chroma 2 or less - record Munsell color chip designation

S (Suitable) or U (Unsuitable)

**Show profile locations and other site features (dimensions, reference or benchmark, and North).**

**SOIL/SITE EVALUATION**  
(Continuation Sheet-Complete all field in full)

DEPARTMENT OF HEALTH AND HUMAN SERVICES  
DIVISION OF PUBLIC HEALTH  
ENVIRONMENTAL HEALTH SECTION  
ON-SITE WATER PROTECTION BRANCH

PROPERTY ID #: \_\_\_\_\_  
DATE OF EVALUATION: \_\_\_\_\_  
COUNTY: \_\_\_\_\_

P R O F I L E  #	.0502 LANDSCAPE POSITION/ SLOPE %	HORIZON DEPTH (IN.)	SOIL MORPHOLOGY		OTHER PROFILE FACTORS				.0509 PROFILE CLASS & LTAR*	.0503 SLOPE CORRE CTION
			.0503 STRUCTURE/ TEXTURE	.0503 CONSISTENCE/ MINERALOGY	.0504 SOIL WETNESS/ COLOR	.0506 SOIL DEPTH	.0507 SAPRO CLASS	.0508 RESTR HORIZ		
5	L 3-5%	0-24	SBK/CL	FI/SS/SP/SEXP	10YR 4/6	S	-	-	UN	-
					@18"					
					10YR 6/2					
6	L 3-5%	0-12	SBK/SCL	FR/SS/SP/SEXP	10YR 6/6	S	U	-	S 0.3	1.1-1.8
		12-28	SBK/CL	FI/SS/SP/SEXP	10YR 5/8					
		28-36+	M/CL	FI/SS/SP/SEXP						
7	L 3-5%	0-14	SBK/SCL	FR/SS/SP/SEXP	10YR 6/6	S	U	-	S 0.3	1.1-1.8
		14-28	SBK/CL	FI/SS/SP/SEXP	10YR 5/8 @30" 10YR 6/2					
		28-36+	M/C	FI/SS/SP/SEXP						
8	L 3-5%	0-12	SBK/SCL	FR/SS/SP/SEXP	10YR 6/6	U	U	-	U - DRIP 0.2	
		12-22	SBK/CL	FI/SS/SP/SEXP						
		22-36+	M/CL	FI/SS/SP/SEXP						
9	L 3-5%	0-12	SBK/SCL	FR/SS/SP/SEXP	10YR 4/4	U	U	-	U -DRIP 0.2	
		12-22	SBK/CL	FI/SS/SP/SEXP	10YR 5/8					
		22-30+	M/CL	FI/SS/SP/SEXP						

COMMENTS: \_\_\_\_\_  
\_\_\_\_\_

