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NSA MID SOUTH
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STATEMENT OF BASIS SOLID WASTE MANAGEMENT UNIT 59 PESTICIDE STORAGE
FACILITY MILLINGTON SUPPACT TN

**Statement of Basis
Solid Waste Management Unit 59
Pesticide Storage Facility
Naval Support Activity Mid-South
Millington, Tennessee**

INTRODUCTION

This Statement of Basis contains a summary of the location, operating history, contaminants detected, and remedy selected for Solid Waste Management Unit (SWMU) 59, Pesticide Storage Facility, Naval Support Activity Mid-South, Millington, Tennessee. It should be noted that all analytical data for soils was compared to EPA Region III Risk Based-Screening Criteria (RBCs). Groundwater analytical data was compared to Maximum Contaminant Levels (MCLs). Where there was no groundwater MCL, RBC's were used for comparison.

SPECIFIC SITE INFORMATION

West of First Avenue on NSA Mid-South's Southside, SWMU 59 consists of Building S-335, a wood-framed, sheet metal exterior structure (Figure 1). An asphalt parking lot surrounds the building on the north, south, and west sides. Building S-335 is an estimated 30 years old and reportedly stored pesticides and fertilizers. The area slopes gently to the east, with runoff flowing toward a storm drain and under First Street to an outfall at SWMU 38. Little historical information is available regarding SWMU 59 operations, as employees associated with the SWMU 59 pesticide operation are no longer at NSA Mid-South.

SWMU 59 is part of the remaining NSA Mid-South property. According to the 1990 *RCRA Facility Assessment Report* (RFA; ERC/EDGE, 1990a), the site warranted further investigation because pesticides were reported to have been stored at Building S-335, SWMU 59, including chlordane, dieldrin, and DDT. Arsenic, a common component of early pesticide formulations, was also noted as a possible contaminant in the 1990 RFA report.

SUMMARY OF CONTAMINANT EVALUATION

Throughout the course of the RFI, 23 surface soil and 34 subsurface soil samples were collected to characterize possible impacts to site soil. As part of the groundwater characterization, two groundwater units were sampled: three monitoring wells were constructed in loess (clays and silts) at a depth of approximately 20 feet, and two groundwater samples were collected from the deeper fluvial sand and gravel unit at a depth of approximately 54 feet. Soil and groundwater sample locations are shown in Figures 2 and 3, respectively.

Soil

Table 1 lists the maximum chemical concentrations in soil that were detected above the U.S. Environmental Protection Agency's (USEPA) risk-based screening concentrations. Chlordane

was detected in boring SS3 at 279,719 ug/kg, which is above the industrial RBC of 16 ug/kg. Dieldren, Technical Chlordane and Lead were detected in boring 059S0011. Dieldrin was detected at 1800 ug/kg, which is above the industrial RBC of 360 ug/kg, technical chlordane was detected at 52000 ug/kg, which is above the industrial RBC of 16000 ug/kg, and lead was detected at 625 milligrams per kilogram (mg/kg), which is above the residential EPA Region IV residential clean-up number of 400 mg/kg but below the EPA Region IV clean-up number of 800 mg/kg for industrial sites. Aroclor-1260, benzo(a)fluoranthene, benzo(a)pyrene and 4,4-DDT were detected in boring 059S0012. Aroclor 1260 was detected at 5,400 ug/kg, which is above the industrial RBC of 2900 ug/kg, benzo(a)fluoranthene was detected at 1200 ug/kg, which is above the RBC for soils at residential sites of 1200 ug/kg but below the industrial RBC of 7800 ug/kg, benzo(a)pyrene was detected in boring 059S0012 at 950 ug/kg, which is above the industrial RBC of 780 ug/kg, and 4,4-DDT was detected in boring 059S0012 at 4000 ug/kg, which is above the residential RBC of 1900 but below the industrial RBC of 17 ug/kg. Aldrin, heptachlor epoxide and 4,4-DDE were detected in boring 059S02LS. Aldrin was detected in boring 059S02LS at 33 ug/kg, which is above the industrial RBC of 840 ug/kg, heptachlor epoxide was detected at 2200 ug/kg which is above the industrial RBC of 630 ug/kg, 4,4-DDE was detected at 2500 ug/kg which, is above the residential RBC of 1900 ug/kg but below the industrial RBC of 17000 ug/kg. No chemicals of concern were identified in subsurface soils (greater than 2 feet below ground surface).

Table 1
Soil Contaminants Exceeding Risk-Based Screening Criteria
(maximum detections in ppb) ^a

Sample Location (depth)	Analyte	Result	RBC Res.	RBC Ind.
SS3 (0-1')	<i>Chlordane</i>	279,719	1,800	16,000
059S0011 (0-6")	Dieldrin	1,800	40	360
059S0011 (0-6")	Technical Chlordane	52,000	1,800	16,000
059S0011 (0-1')	<i>Lead</i>	625 ^b	400 ^{b,c}	800 ^{b,c}
059S0012 (0-6")	Aroclor-1260	5,400	320	2,900
059S0012 (0-6")	Benzo(a) fluoranthene	1,200	870	7,800
059S0012 (0-6")	Benzo(a) pyrene	950	87	780
059S0012 (0-6")	4,4-DDT	4,000	1,900	17,000
059S02LS (0-2')	Heptachlor epoxide	2,200	70	630
059S02LS (0-2')	<i>Aldrin</i>	840	38	340
059S02LS (0-2')	4,4-DDE	2,500	1,900	17,000

Notes: ^a parts per billion (ppb)

^b Lead concentrations are in units of parts per million (ppm).

^c No RBC exists for lead; EPA Region 4 remediation numbers for residential and industrial soil are used for comparison.

RBC Risk-based concentration

Building S-335 was demolished in 1999 and contaminated soils were excavated through a Voluntary Corrective Action (VCA). At the conclusion of the VCA, approximately 374 cubic yards of contaminated soil were removed from an area surrounding Building S-335 (excavation area shown on Figures 2 and 3 and included the area of impacted monitoring well 059G02LS. Effectiveness samples collected from the bottom of the excavation indicated that all constituents detected above relevant action levels had been removed.

Groundwater

Groundwater sampling showed pesticides, TPH, and lead were present in groundwater from the loess above their respective screening level; however, these contaminants were absent in groundwater from the fluvial deposits. Monitoring well 059G02LS, located in the same area where pesticides were detected in soil, was the most impacted of the three monitoring wells. Table 2 lists the maximum chemical concentrations in groundwater that were detected above their respective screening levels.

**Table 2
Groundwater Contaminants Exceeding Risk or Regulatory Based Screening Criteria
(maximum detections in ppb)^a**

Sample Location	Analyte	Result	Tap Water RBC	MCL	RC
059G02LS	TPH-DRO	160	100 ^b	100 ^b	NA
059G02LS	Dieldrin	0.052	0.0042	NA	NA
059G01LS	Lead	30.6	15 ^c	15 ^c	17.5

Notes: ^a parts per billion (ppb)

^b TPH does not have an RBC or MCL. The TDEC groundwater cleanup standard of 100 ppb for drinking water has been used for comparison.

^c Lead does not have an RBC or MCL; therefore, the USEPA treatment technique action level of 15 ppb has been substituted for screening purposes.

NA: denotes that no MCL or background RC is available for this organic compound.

ppb: parts per billion (ppb)

MCL: Maximum contaminant level

The VCA report (EnSafe, 1999) recommended that additional groundwater monitoring be conducted to verify the absence of the previously identified groundwater contaminants. Two additional sampling events were conducted at SWMU 59. All constituents were below relevant action levels.

SELECTED REMEDY

Investigations and voluntary corrective actions at SWMU 59 indicate no release of contaminants above relevant action levels remain. Based on the available information, the proposed remedy is no further action (NFA).

REFERENCES

- EnSafe Inc. (1999). *Voluntary Corrective Action Report; SWMU 59 — Old Pesticide Shop. Revision 2*. Memphis, Tennessee.
- EnSafe Inc. (2000, October 6). *RCRA Facility Investigation Report (RFI) Assembly E — SWMUs 2, 9, 14, 38, 59, and 65 NSA Mid-South, Millington, Tennessee Revision 2*. Memphis, Tennessee.
- EnSafe/Allen and Hoshall. (1998). *Assembly E RFI Report. Revision 1*. Memphis, Tennessee.
- ERC/EDGE. (1990a, September). *RCRA Facility Assessment (RFA), NAS Memphis*. Nashville, Tennessee.
- ERC/EDGE. (1990b, April). *Visual Site Inspection Report — NAS Memphis*. Millington, Tennessee. Nashville, Tennessee.
- ERC/EnSafe. (1990, October). *RCRA Facility Investigation Report, NAS Memphis Site No. 59 (Building No. S-335, Former Pesticide Storage Facility), NAS Memphis*. Knoxville, Tennessee.

FIGURES FOR SWMU 59

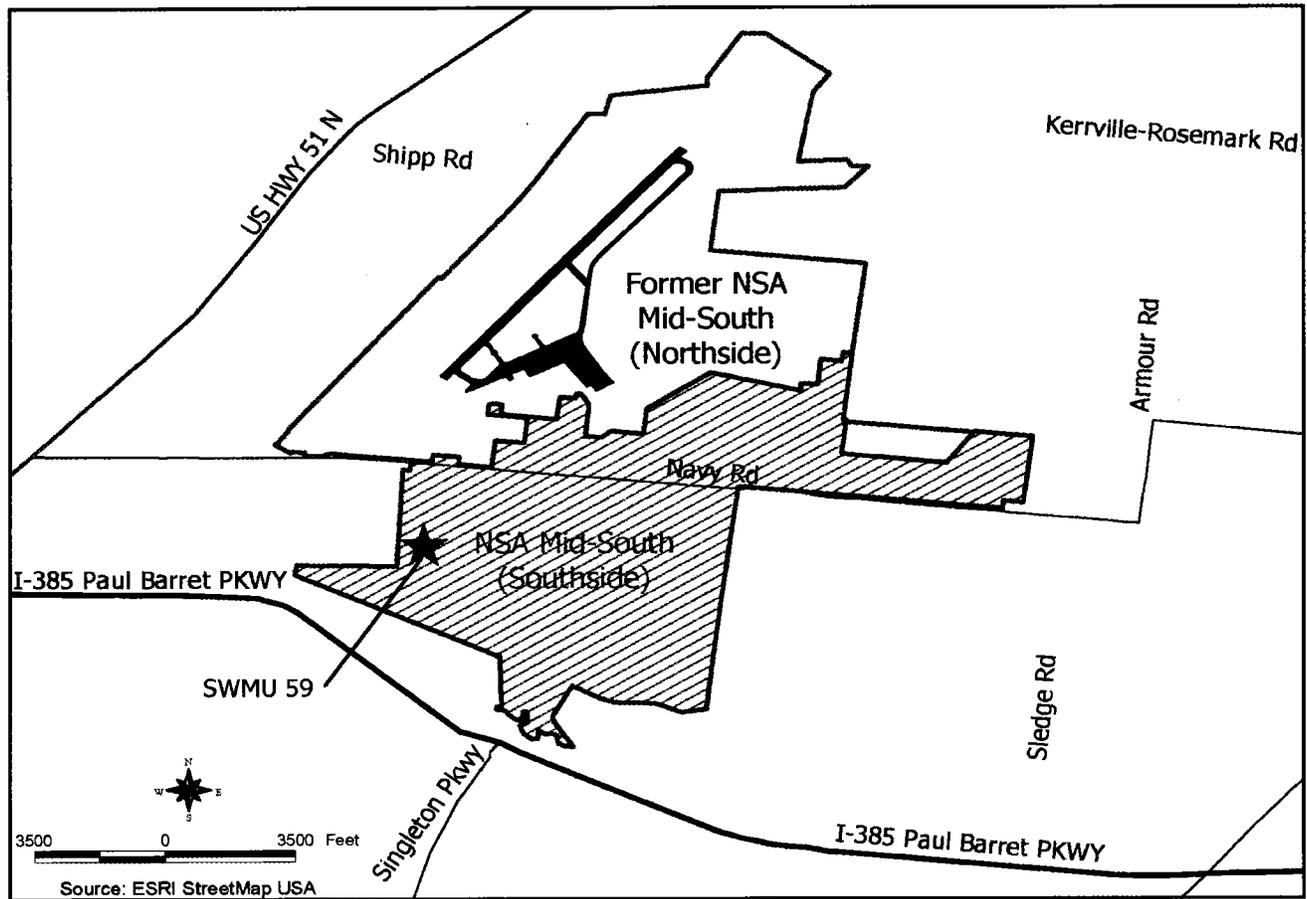
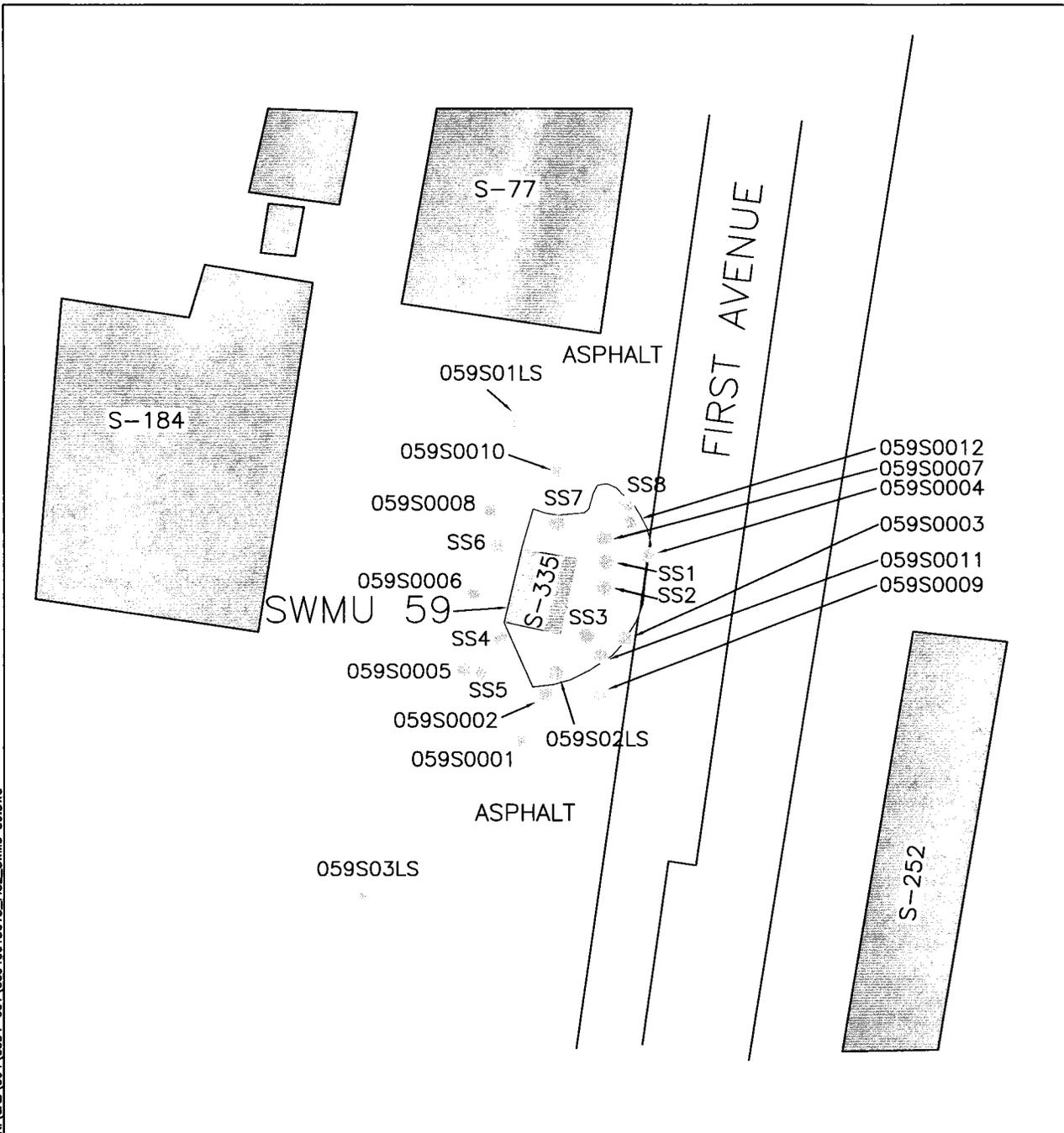


Figure 1: SWMU 59 Location at NSA Mid-South, Millington, Tennessee
Pesticide Storage Facility

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- LEGEND**
- SS2 - 1990 RFI SOIL SAMPLE LOCATION
 - 059S0005- 1997 RFI SOIL SAMPLE LOCATION
 - 059S03LS- 1997 RFI SOIL SAMPLE LOCATION
 - [Hatched Box] - AREA EXCAVATED DURING VCA
 - [Thick Line] - NSA MID-SOUTH BOUNDARY
 - [Thin Line] - AREA OF INVESTIGATION
 - [Stippled Box] - BUILDING

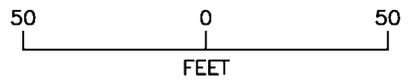
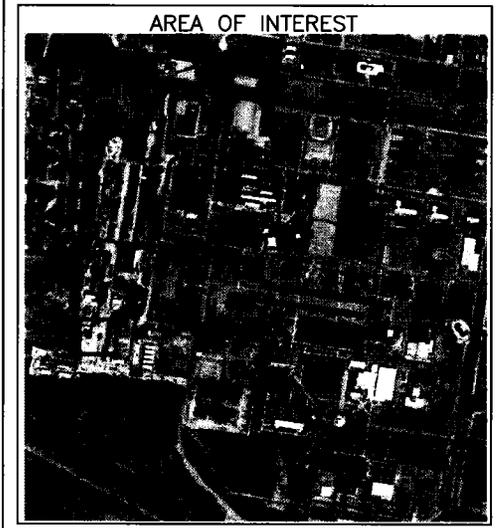
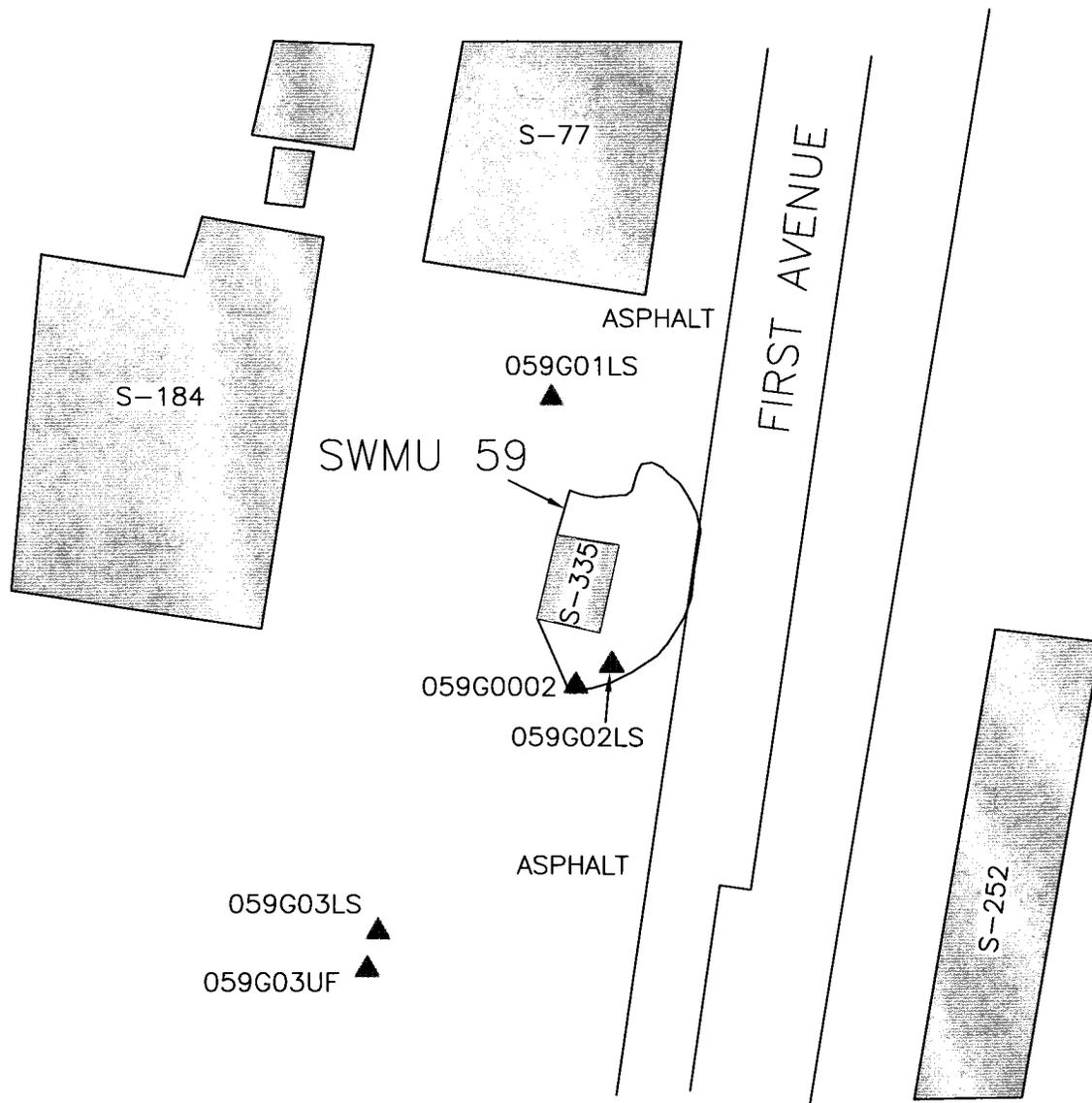


FIGURE 2
 SWMU 59 STATEMENT OF BASIS
 SOIL SAMPLE LOCATIONS

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LEGEND

- ▲ - GROUNDWATER SAMPLE LOCATION
- 059G0002 - DPT GROUNDWATER SAMPLE DESIGNATION
- 059G03LS - LOESS MONITORING WELL GROUNDWATER SAMPLE DESIGNATION
- 059G03UF - UPPER FLUVIAL GROUNDWATER SAMPLE DESIGNATION
- - AREA EXCAVATED DURING VCA
- — — - NSA MID-SOUTH BOUNDARY
- ▭ - AREA OF INVESTIGATION
- ▭ - BUILDING

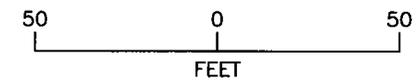


FIGURE 3
 SWMU 59 STATEMENT OF BASIS
 GROUNDWATER SAMPLE LOCATIONS