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WHC-SD-W370-ER-001, REV. 0 "RECOMMENDATIONS FOR SANITARY WASTE WATER SYSTEM REPLACEMENT 222-S"		ECN No. N/A

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1	WHC-SD-W370-ER-001		0	Recommendations for Sanitary Waste Water System Replacement, 222-S	E	1		

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1	1	Cog. Eng. F. M. Simmons	<i>F. M. Simmons</i>	5/20/94		Engineering R. L. Robertson	<i>R. L. Robertson</i>	5/20/94		1	1
1	1	Cog. Mgr. S. M. Joyce	<i>S. M. Joyce</i>	5/20/94		Engineering L. Goodwin	<i>L. Goodwin</i>	5/20/94		1	1
		QA									
		Safety									
1		Env. K. A. Gioia	<i>K. A. Gioia</i>	5/20/94							
1	1	Landlord D. Danch	<i>D. Danch</i>	5/24/94							
1	1	Operations D. M. Thornton	<i>D. M. Thornton</i>	5/23/94							

18. Signature of EDT Originator <i>F. M. Simmons</i> Date: 5/20/94	19. Authorized Representative Date for Receiving Organization <i>S. M. Joyce</i> Date: 5/20/94	20. Cognizant/Project Engineer's Manager <i>S. M. Joyce</i> Date: 5/20/94	21. DOE APPROVAL (if required) Ltr. No. <input type="checkbox"/> Approved <input type="checkbox"/> Approved w/comments <input type="checkbox"/> Disapproved w/comments
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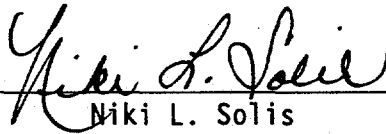
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11/16/94

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**SUPPORTING DOCUMENT**

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Recommendation for Sanitary Waste Water System Replacement, 222-S

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Name: **F. M. SIMMONS**

Signature

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7. Abstract

The 2607-W6 septic system is not approved by the Washington State Department of Health. The system is over 40 years old and is operating at greater than 200% capacity. Under these conditions the system is subject to imminent failure and is not adequately treating the septic waste. This poses a potential personnel health risk. It is recommended that this system be upgraded by installation of a new drain field similar to the modification of the 2607-W1 system.

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LETTER REPORT  
WHC-SD-W370-ER-001, Rev. 0

RECOMMENDATIONS FOR SANITARY WASTEWATER SYSTEM REPLACEMENT, 222-S LABORATORIES

W-370

**INTRODUCTION**

This letter report addresses alternatives for upgrading the 222-S sanitary sewer. Upgrading is necessary because of the following:

The existing system (2607-W6) is not in compliance with current Washington State Department of Health (WSDOH) requirements, specifically Washington Administration Code (WAC) 246-272.

The existing drain field is operating at 200% capacity (WHC-SD-LL-ES-020).

The existing drain field is allowed to operate without upgrades as long as the headcount is not increased or new projects are not added which will increase the flow to the system (2607-W6). Additional office facilities and staff increases are planned at the 222-S complex.

The existing system is over 40 years old and subject to imminent failure.

The system is currently handling existing flows. There is no apparent subsurface failure, but very high potential for failure due to the age and capacity of the system.

**SUMMARY CONCLUSIONS, AND RECOMMENDATIONS**

The system flow rate is approximately 5,200 gallons per day (GPD) and the system is designed to handle 2,600 GPD. The system is subject to imminent failure as the drain field is severely undersized. It is also possible that the system is not capable of adequately treating the septic waste because the soil drains excessively, even though it is able to dispose of the large volume of flow. This poses a potential personnel health risk.

The following alternatives were considered.

Alternative 1:

Do nothing.

Alternative 1 is unacceptable because it does not meet WSDOH requirements, and the current system poses a potential public health risk. This alternative does not support an additional 30 years of continued 222-S complex operations to support the cleanup mission.

Alternative 2:

Modify the existing system with the addition of a dosing tank which can be pumped out.

Alternative 2 is not cost effective. This method is currently being done elsewhere on site, specifically 2750E, where the capacity of the system has also been exceeded. The current flowrate of 6,500 gallons per day requires 18-20 pumpout loads per week at a cost of \$110,000 per year. The pump out costs are bid per year and are a function of the number of loads (2,500 gallons per load) per week. The current daily input (WHC-SD-LL-ES-020, Rev. 0) is 5215 gallons. This equates to 15 loads per week. The cost per year would be similar to the cost for 2750E. There is also an increased risk involved with transportation for spillage and accidents. The disposal lagoon is not permitted by the state. Because approximately 400,000 gallons per year are being disposed of in the lagoon, there is concern about additional disposal to the lagoon.

Increased environmental restrictions have the potential to increase the cost of alternative 2. Therefore it is prudent to replace the existing 2607-W6 system as an interim measure versus the continual pumping of the existing system.

Alternative 3:

Install a new tile field and dosing tank. The cost would be from \$500,000 to \$700,000 as this is similar to work that has been done previously in other areas such as the upgrade to 2607-W1, Project L-169, (L169LR, ER2929).

Alternative 3 is recommended. Since this drainfield will handle the same flowrate as L-169, preliminary design calculations and estimated costs are assumed to be the same. Soil samples have already been taken and the septic tank has been inspected. The existing septic tank will be used as the primary chamber. A second tank will be required in series to provide the necessary liquid capacity and the required two compartments. A new sand bed pressure drain field will be installed adjacent to the existing drain field. A minimum imported 2-ft. thick sand bed is required when constructing soil absorption systems in Type 1 soil. These requirements are sited in WAC 246-272-080 and further detailed in "Design Guidelines for Larger On-Site Sewage Systems."

Alternative 4

Wait for Project L-116 completion. The Landlord Program is funding a FY 1996 Line Item Project L-116 to install a centralized 200 Area sanitary sewer system which includes tie-in of the 222-S facilities. The Project L-116 system will not be operational until the middle of the year 2000 at it's current support level.

Alternative 4 is not viable since it does not allow any increase in manpower at the 222-S complex until FY 2000. Project L-116 is not yet funded.

**REFERENCES**

1. Washington State Department of Social and Health Services
  - "Guidelines for Pressure Distribution Systems," 1984
  - "Guidelines for Sand Filters," 1989
  - "Design Guidelines for Larger On-Site Sewage Systems." 1987
2. Washington Administrative Code 246-272, "On-Site Sewage System."
3. U.S. Department of Energy Order 6430.1A, "General Design Criteria"
4. Letter Report L169LR; ER2929
5. WHC-SDE-LL-ES-020, REV 0, "200 AREAS SANITARY WASTE MANAGEMENT STUDY"