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Comprehensive Sampling/Analysis Plan
To Determine the Extent of
Chemical Contamination at Spill Site(s)
Located at Bassick-Sack Division,
Winston-Salem, North Carolina

Prepared For:

Stewart-Warner Corporation
Bassick-Sack Division
2941 Indiana Avenue
Winston Salem, North Carolina 27105

Prepared By:

Reserach & Analytical Laboratories, Inc.
106 Short St.
Kernersville, North Carolina 27284
(919) 996-2841



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1.0 Introduction

In response to the notice of violation (Docket # 87-468) letter dated May 21, 1987 from the North Carolina Solid and Hazardous Waste Management Branch pertaining to plating solution spill at Stewart Warner Corporation - Bassick-Sack Division (Winston-Salem, NC) a comprehensive sampling/analysis plan has been developed in the following sections of this report which will characterized soil contamination at and beyond the spill site(s). In addition to the plating solution spill investigation on March 2, 1987 by Mr. Steve Phibbs (Waste Management Specialist) another spill involving treated effluent wastewater from wastewater treatment plant (WWTP) was reported to Mr. Steve Phibbs on May 1987. Both the above mentioned spills will be included in this plan of action with remedial action schedule for the removal of contaminated soils. The following sections of this plan submitted for approval to the North Carolina Solid and Hazardous Waste Management Branch include:

- 1) Site Plan Development of Spill Areas
- 2) Location of any Water Supplies in the Area
- 3) Soil Sampling and Location Procedures
- 4) Determination of Soil Sampling Depths to Assess the Horizontal and Vertical Extent of Contamination.
- 5) Analytical Testing Criteria and Methodology
- 6) Remedial Activities

2.0 Plan of Action

The following sampling/analysis plan describes the comprehensive soils evaluation procedures pertaining to the aforementioned spill sites at Bassick-Sack Division and will be implemented immediately upon approval by the North Carolina Solid and Hazardous Waste Management Branch. Preliminary investigations have already been completed at both spill sites to determine approximate severity and clean-up strategies necessary for compliance with applicable environmental regulations. It is the intent of Stewart Warner Corporation to do all that is necessary to comply with these regulations in the most expeditious way possible.

2.1 Site Plan Development

A site plan will be developed during these investigations showing spill site locations, soil sampling locations, water supplies (if any), and any reference buildings within the study area pertinent to this investigation. This site plan will be submitted to the solid and hazardous waste regulatory authorities as a part of the (final) report.

2.2 Location of Water Supplies

The site plan will identify any water supplies that exist in or near the spill sites. Specifically, all water supplies within a 1000 feet radius of spill sites will be identified including ground water supplies.

2.3 Soil Sampling and Location Procedures

Representative soil samples will be collected by dividing spill sites into quadrants and collecting five (5) core samples in each section. The core samples collected from each section will be composited resulting in four (4) separate composite samples from each quadrant. Each quadrant will be kept separate with respect to soil samples collected at other quadrants. Core samples collected from each quadrant will be taken at four depth intervals down to one (1) foot. Only core samples at the same depth interval will be composited

so that the vertical extent of the contamination can be determined. Sampling points for cores within each quadrant will be selected using an imaginary grid and random number table. If quadrants exceed 150 feet by 50 feet then the spill site(s) will be divided into larger number of smaller sections.

Soil samples will be collected using a stainless steel auger with four (4) inch diameter bucket. Procedures for cleaning auger after each sample collection includes the following:

- 1) Phosphate - free soap and tap water wash
- 2) Tap water rinse
- 3) Distilled water rinse
- 4) Air dry

Isopropyl alcohol rinse was not considered necessary since organics were not applicable for testing. Auger was wrapped in aluminum foil to prevent contamination before use.

In addition, soil sampling procedures will include the following information:

- 1) Name(s) of people present
- 2) Date(s) for each sampling event
- 3) Sample number and analytical test parameter
- 4) Weather conditions
- 5) Comments
- 6) Chain of Custody Documentation

2.4 Determination of Soil Sampling Depths to Assess the Horizontal and Vertical Extent of Contamination

Procedures for the determination of the vertical extent of soil contamination at both spill sites have been identified in Section 2.3. Horizontal determination of soil contamination will be evaluated in conjunction with background samples collected within 50 feet outside the perimeter of the spill

sites. Surface samples to the three (3) inch depth outside the area of contamination will be collected and analyzed for the same chemical constituents tested within the spill sites. A radius of 50 feet intervals and 50 feet outside the spill sites will be used to determine horizontal sampling for soil contaminants. The same procedures used for vertical sampling within spill sites will be used should background samples show contamination.

2.5 Analytical Testing Criteria and Methodology

The analytical tests selected for this investigation represent all known chemical constituents found to be significant with respect to the industrial process solutions and/or treated wastewater which was reported to be spilled at the two (2) sites currently under investigation. The parameters selected for soils testing include the following:

- 1) Total Chromium
- 2) Total Copper
- 3) Total Nickel
- 4) Total Zinc
- 5) Total Cyanide
- 6) pH
- 7) Total Residue
- 8) E.P. Toxicity

The methodology utilized in the analytical testing include the following:

- 1) EPA Test Methods for Evaluating Solid Waste Volume 1A: Laboratory Manual, Physical/Chemical Methods - Methods 3050 (metals), 9010 (cyanide), and 9045 (pH).
- 2) Total Residue - Standard Methods for the Examination of Water and Wastewater - 15th Edition (method 208).

2.6 Remedial Activities

Upon approval of this plan a comprehensive investigation will commence immediately to assess the horizontal and vertical

extent of contamination. It is only after that study has been completed can Bassick-Sack determine the volume of soil that will need to be removed and the approximate length of time it will take to remove it. It is Bassick-Sack's intent, however, to contract with an approved hazardous waste removal company and dispose of contaminant soil in an EPA approved landfill. The study findings will be used to determine the best approach to take for disposal, so that complete remedial activities can be met within the target date of 30 days after program plan approval.