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Stoughton City Landfill

Stoughton, Wisconsin

ENSR

Work and Field Sampling Plan for Additional Site Investigation as Part of the Remedial Investigation and Feasibility Study (Revision No. 1)

ENSR Consulting and Engineering

August 1991

Document Number 6885-002-881-R1

ENSR

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August 29, 1991

ENSR Ref. No: 6885-002-881-R1

Mr. Michael A. Valentino
Remedial Project Manager
U.S. Environmental Protection Agency
Mail Code 5HS-11
230 South Dearborn Street
Chicago, IL 60604

SUBJECT: Revised Draft Work and Field Sampling Plan for Additional Site Investigation - Stoughton City Landfill RI/FS

Dear Mr. Valentino:

As requested in your letter dated August 12, 1991, at the direction of the Stoughton City Landfill Steering Committee, I am forwarding three copies of the subject document. The following describes the events leading up to this submittal and the rationale for the scope of work it contains.

The request for additional RI work was outlined in your letter dated April 30, 1991. ENSR responded with a modified scope of work on behalf of the Stoughton City Landfill Potentially Responsible Parties (PRPs) on May 14, 1991. Your letter of August 12, 1991, stated the proposed modified scope of work was unacceptable. Since that time, both Mr. Mike Doran of Strand & Associates (Member, Stoughton City Landfill Steering Committee) and I have had conversations with you regarding an alternative scope of work that would meet the needs of both the agencies and the PRPs. This alternative scope of work is discussed below.

Central to the agencies' request for additional work is the need to assess seasonal variation of precipitation and groundwater levels, and the chemical effects that these may have on local groundwater and wetlands adjacent to the site. However, the PRPs believe the physical aspects of groundwater, and the associated interrelationship with surface water, are adequately documented by the existing data. Based on our review of both groundwater and surface water level data collected during the spring, summer, and fall months of 1989 (Table G-4 of Appendix G of the RI Report), only minor fluctuations of water levels were observed. Groundwater flow direction and, likely, the rate of groundwater flow, do not appear to vary seasonally to any appreciable degree. This is also evident on comparison of water level maps presented as Figures 3-6 and 3-6A in the RI Report. These maps also indicate that the locations of groundwater recharge and discharge do not change seasonally.

The PRPs believe that if three rounds of groundwater sampling from existing and new wells are to be conducted, as proposed by the agencies, analysis should be focused on those constituents that have exceeded, or may prove to exceed, applicable or relevant and appropriate requirements (ARARs). The PRPs propose that both the existing and new wells be sampled in the fall of 1991 for the full range of chemical constituents (TCL volatile and semi-volatile organics, TAL inorganics, and nonstandard VOCs). The results of the initial sampling round would be reviewed and samples would be collected during subsequent sampling rounds in the spring of 1992 and the summer of 1992. Analysis of these samples would be restricted to constituents that exceed either federal drinking water standards (MCLs) or state groundwater standards (enforcement standards and PALs). In this way, additional investigation would be focused on constituents of concern, saving time and money during the remedial action phase of this project. (A complete round of sampling and analysis, including sample collection, laboratory analysis, and data validation, costs approximately $50,000-$75,000).

The PRPs also intend to conduct three rounds of sampling and analysis of surface water and sediment within the vicinity of previous sampling locations SL-2 and SL-3. Because complete analyses are available for either of these sampling locations, and the results of the risk assessment show that there was no public health concern with respect to surface water and sediment, the PRPs believe that the analytical scope for wetland sampling should be restricted to metals characterized in U.S. EPA's ecological assessment of the site as "of concern."

In addition, the PRPs propose to sample and analyze groundwater from City of Stoughton Municipal Wells No. 3 and 6 for tetrahydrofuran (THF) during the fall of 1991. Should THF be detected during this sampling event, sampling will be performed in subsequent seasons as requested. As you know, the results of sampling and analysis outside the scope of the RI indicate that THF was not present at a detection limit equal to the PAL for this constituent from samples collected on July 26, 1991.

The enclosed revised draft work and field sampling plan outlines the details of implementing the scope of work discussed in this letter. The PRPs trust that the agencies will view the proposed scope of work in favorably light, such that we may commence the additional work as soon as possible.

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If you have any questions, please do not hesitate to contact me or any member of the Stoughton City Landfill Steering Committee.

Sincerely,

Lou Meschede

Louis H. Meschede
Project Manager

LHM/as

Reference No. 91-08-V221

cc: T. Wright/Jesup Group, Inc., Member, Landfill Steering Committee
M. Doran/Strand & Associates, Inc., Member Landfill Steering Committee
R. Kardasz/City of Stoughton, Member, Landfill Steering Committee
R. Schmidt/WDNR (1 copy)

Stoughton City Landfill

Stoughton, Wisconsin

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1.0 INTRODUCTION

The U.S. Environmental Protection Agency (U.S. EPA) and the Wisconsin Department of Natural Resources (WDNR) have requested that the Stoughton City Landfill Potentially Responsible Parties (PRPs) conduct additional remedial investigation (RI) work at the Stoughton City Landfill site. The PRPs submitted a work and field sampling plan for this additional work to U.S. EPA on June 14, 1991. The U.S. EPA subsequently requested that the PRPs revise their draft work plan and sampling plan (ENSR, 1991a). The PRPs propose herein an alternative scope of work addresses the concerns of U.S. EPA (EPA, 1991a).

The objectives of the scope of work presented herein are still to delineate the full vertical and horizontal extent of groundwater contamination and to determine the extent of the environmental impact to the wetlands adjacent to the site. The objectives of the revised work and field sampling plan are summarized as follows.

- Installation of a bedrock monitoring well at existing well cluster MW-3 designated as MW-3B.

- Installation of a three-well cluster downgradient of MW-3 designated as MW-7S, MW-7D, and MW-7B.

- One round of sampling and analysis during the fall of 1991 from new and existing monitoring wells for target compound list (TCL) organics and inorganics and non-standard volatile organic compounds (VOCs) previous analyzed as part of the RI.

- Two additional rounds of sampling and analysis during the spring of 1992 and summer of 1992, only at new or existing monitoring wells where compounds were detected at levels above their maximum concentration limits (MCLs) or state groundwater standards [preventative action limits [(PALs)] during the first-round sample analysis (Fall 1991). Samples collected during the second and third rounds would only be analyzed for compounds that exceeded their MCLs or PALs during the first round of sampling.

- Sampling and analysis of City of Stoughton Municipal Wells No. 3 and No. 6 for tetrahydrofuran (THF) in fall 1991. If THF is detected during this sampling event at either well, that well will be resampled in spring 1992 and summer 1992, and analyzed for TCL organics and inorganics and the non-standard VOCs. The sampling of these wells will be scheduled to coincide with monitoring well sampling events at the site.

- Three rounds of sampling and analysis of surface water and sediments during fall 1991, spring of 1992, and summer of 1992 at previous sampling locations SL-2 and SL-3. The surface water will be analyzed for water hardness and total recoverable metals, including copper, chromium, cadmium, lead, and zinc. Sediment analysis will be for total metals including copper, chromium, cadmium, lead, and zinc.

2.0 METHODS AND PROCEDURES

Methods and procedures for previous site investigation are outlined in ERM's "Sampling and Analysis Plan (ERM, 1988). These methods and procedures will be used as much as possible in conducting additional site work. Where not appropriate, additional methods and procedures are specified herein.

2.1 Monitoring Wells

2.1.1 Locations

A total of four additional monitoring wells will be installed. One of the wells (MW-3B) will be located at the MW-3 monitoring well cluster. This well will extend into the Cambrian sandstone bedrock in order to assess potential contamination at this location.

The remaining three wells will be designated as the MW-7 monitoring well cluster. These wells will be clustered in the same manner as MW-3. Two of wells (MW-7S and MW-7D) will be screened at the water table and approximately 70 to 80 feet below ground surface, respectively, as described in the existing Field Sampling Plan (FSP)(ERM, 1988). The third well (MW-7B) will extend into sandstone bedrock, located approximately 200 feet below ground surface. The MW-7 monitoring well cluster will also aid in determining the vertical, as well as horizontal extent of potential groundwater contamination at the site.

The PRPs intend that well cluster MW-7 be located at the point of standards application that would apply under Section NR 140.22 of the Wisconsin Administration Code. The PRPs realize that WDNR and U.S. EPA take the position that the appropriate point of standards is governed by the National Contingency Plan. The PRPs believe that it is appropriate, nonetheless, to place the new well cluster where state law would ordinarily treat as the point of standards application. The precise location of well cluster MW-7 would not be closer than 300 feet in a horizontal distance from the waste boundary on the west side of the facility, unless dictated by site conditions, but may be farther away depending on whether WDNR believes that a demilitarized zone (DMZ) has been established for this particular facility. The PRPs have been working with WDNR to try to resolve this question and will continue to do so prior to the actual construction of well cluster MW-7.

2.1.2 Overburden Monitoring Well Installation

The overburden monitoring wells (MW-7S and MW-7D) will be installed using nominal 6-inch-I.D. hollow-stem augers (HSA) (nominal 10-inch borehole diameter). The borehole for MW-7D may be advanced with a 5-5/8-inch mud rotary bit through the augers if HSA drilling becomes difficult with depth, as was encountered during the previous RI work. Soil samples will be collected using a 2-inch-diameter by 2-foot-long split-spoon sampler. The soils above the water table in MW-7S will be sampled continuously from the ground surface. Samples will be classified as described in the FSP. Soils below the water table will be sampled every 5 to 10 feet using a 2-inch-diameter split-spoon sampler for geologic classification during HSA drilling. If mud rotary drilling is used at MW-7D, drill cuttings brought to the surface with the drilling mud will be characterized in the field. Soil samples will not be collected for laboratory chemical analysis; therefore, the headspace procedure will not be employed. Instead, a photoionization meter (PID) will be used to screen soil samples.

A single soil sample will also be collected from the selected screen interval depth at the MW-7D location using the split spoon. This sample will be sent to a laboratory and analyzed for particle size distribution using ASTM Method D422. The overburden monitoring wells will be constructed in the manner specified in the FSP, as shown on Figure 2-1. As an exception to the previous monitoring well construction technique, 2 feet of fine sand will be installed above the filter pack. Also, granular bentonite will be used as the bentonite seal above the fine sand at MW-7S. Bentonite pellets may be used for the deeper monitoring well at MW-7D. The exceptions are made to satisfy new groundwater monitoring well regulations for Wisconsin (NR141).

Following installation, wells will be developed a minimum of 24 hours after their construction using bailers or submersible pumps. At least 10 well volumes will be removed from each well or until the groundwater appears free of silt or until pH, specific conductance, and temperature are stabilized.

2.1.3 Bedrock Monitoring Well Installation

The bedrock monitoring wells (MW-3B and MW-7B) will be installed using cable tool methods. A nominal 8-inch-diameter steel casing will be advanced ahead of a 7-7/8-inch drill bit in order to maintain borehole integrity through the overburden. Should the ENSR geologist judge that a potential confining clay layer has been encountered while drilling smaller-diameter (6-inch) casing shall be telescoped into the borehole and advancement of the borehole continued using a 5-5/8-inch diameter drill bit. The permanent 6-inch-diameter steel casing will be firmly seated into the bedrock surface to prevent vertical hydraulic communication via the borehole between the overburden and bedrock. The remaining bedrock will be drilled to an appropriate depth to

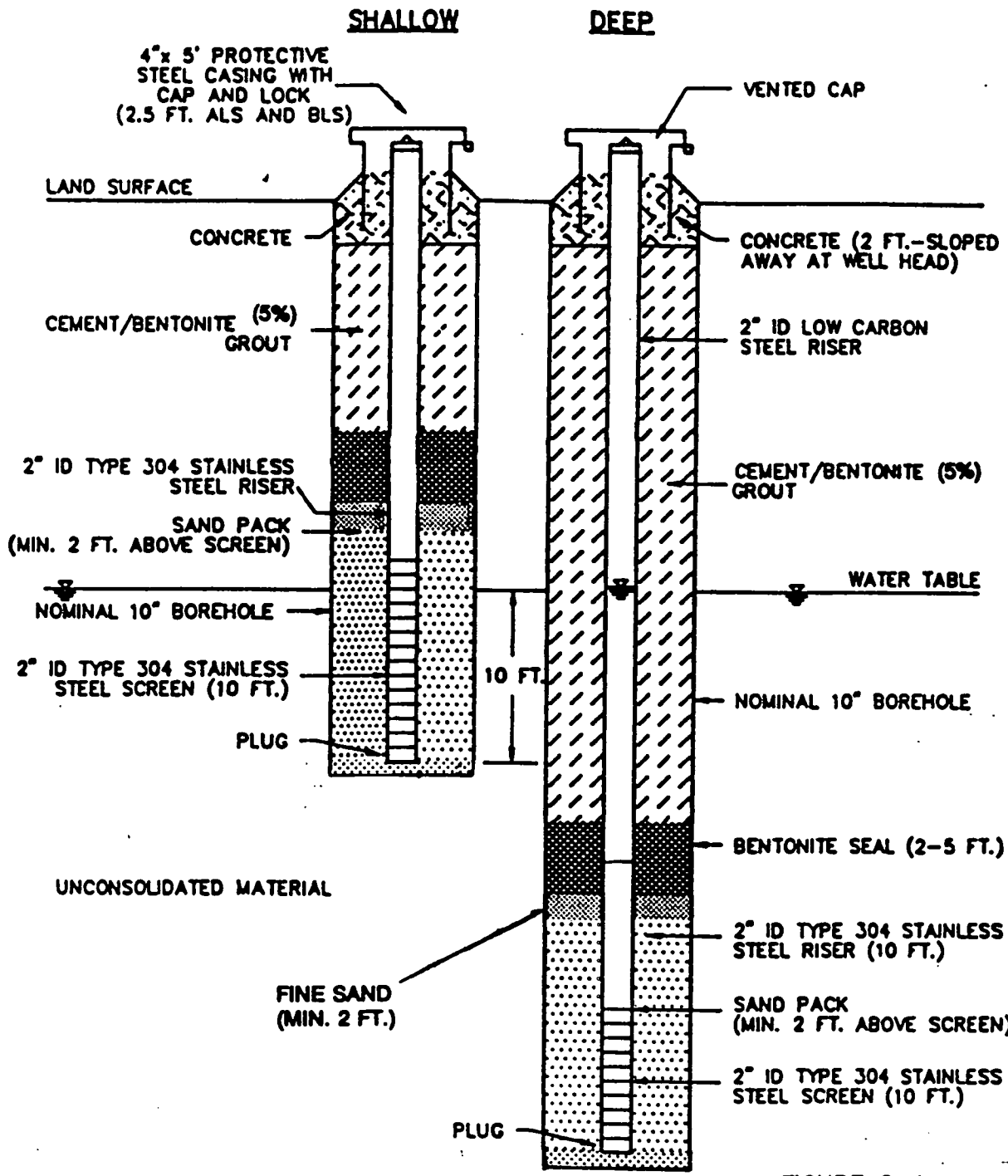

FIGURE 2-1

NOTE: NOT TO SCALE

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TYPICAL OVERBURDEN WELL CONSTRUCTION DIAGRAM
STOUGHTON CITY LANDFILL
STOUGHTON, WISCONSIN

DRAWN:	EDH	DATE: 8/29/91	NUMBER:	REV.
APPV'D:	TVA	REVISED: X	6885-002	0

allow placement of the well screen and annular space materials. Wells will be constructed as described above (Figure 2-2) and in the FSP.

Split-spoon soil samples will be collected every 10 feet starting at the ending depth of the deep overburden monitoring well (i.e. MW-3D or MW-7D) and continuing until the top of bedrock is reached or until the 2-inch diameter split-spoon can no longer be advanced after several blows from the hammer weight. Split-spoon samples will be logged and screened using a PID. Soil cuttings bailed from the borehole during drilling will also be used to characterize the lithology of the overburden and bedrock.

Decontamination in the form of high-pressure, hot-water cleaning will be performed on all drilling equipment between each bedrock and overburden monitoring well installation in the previously designated decontamination area. All field procedures will be performed in accordance with a Health and Safety Plan drafted for the performance of all on-site activities.

2.1.4 Groundwater Sampling and Analysis

2.1.4.1 New and Existing Monitoring Wells

One round of groundwater sampling and analysis will be performed on new and existing monitoring wells. Groundwater samples will be collected and analyzed for TCL organics and inorganics as well as the non-standard VOCs previously analyzed for. This sampling round is scheduled for the fall of 1991.

Two additional rounds of groundwater sampling and analysis will be performed only from new or existing monitoring wells where compounds were detected at levels above their MCLs during the first-round sample analysis (fall 1991).

2.1.4.2 City of Stoughton Municipal Wells No. 3 and No. 6

The City of Stoughton Municipal Wells No. 3 and No. 6 will be sampled at the same time as the new and existing monitoring wells (fall 1991). Samples will be collected and analyzed for THF. If THF is detected at either well, that well will be resampled in spring 1992 and summer 1992 and analyzed for TCL organics and inorganics and for non-standard VOCs previously analyzed as part of the RI.

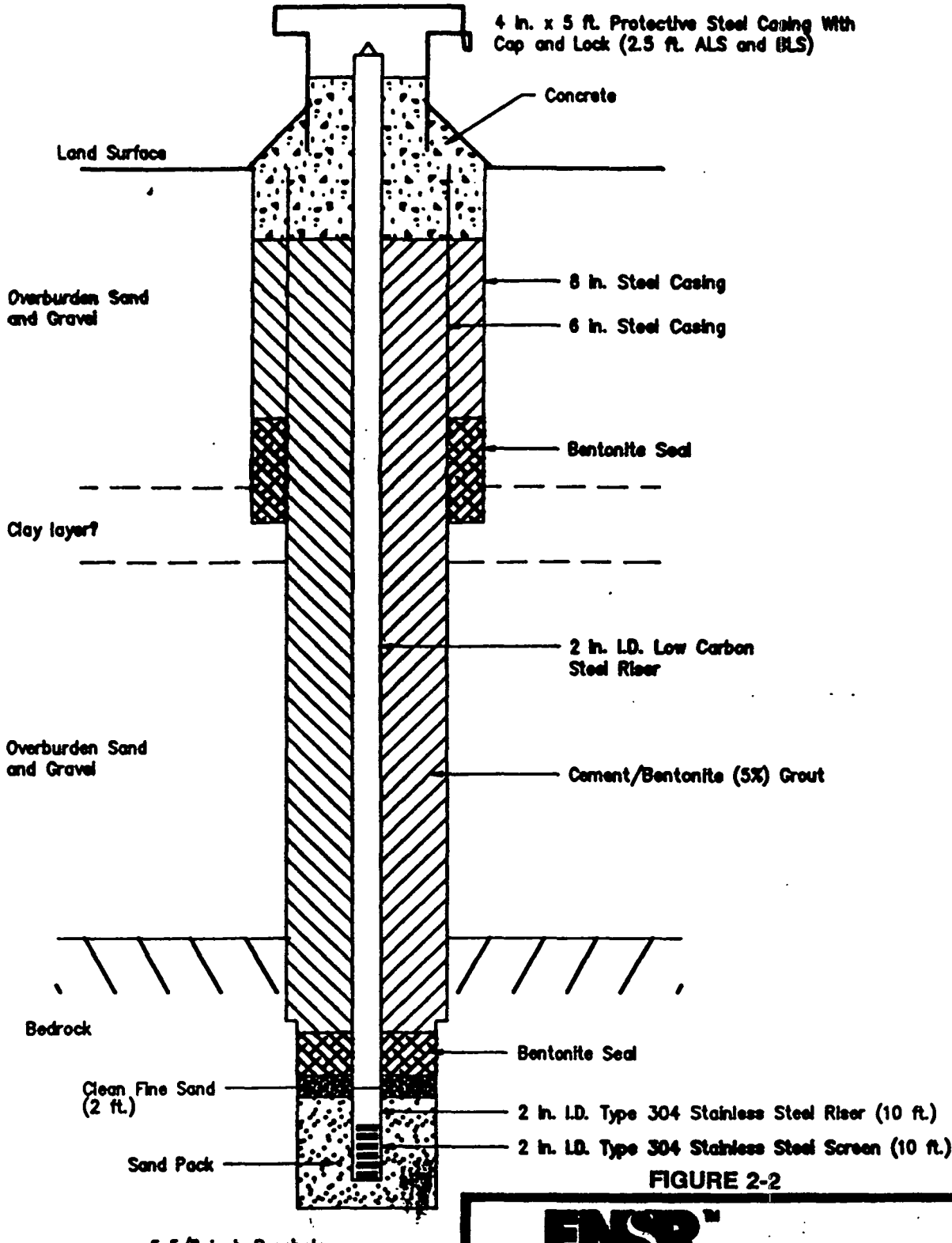

FIGURE 2-2

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TYPICAL BEDROCK WELL CONSTRUCTION DIAGRAM
STOUGHTON CITY LANDFILL
STOUGHTON, WISCONSIN

DRAWN:	EDH	DATE: 6/14/91	PROJECT NUMBER:	REV.
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ENSR proposes that Wadsworth/ALERT Laboratories, Inc., located in North Canton, Ohio, will perform all analyses for the TCL organics and inorganics and non-standard VOCs (THF, dichlorodifluoromethane, and trichlorofluoromethane) using standard Contract Laboratory Program (CLP) protocols and methods.

2.2 Surface Water/Sediment Sampling

Surface water samples and sediment samples will be collected from previous sampling locations SL-2 and SL-3. During each sampling round a total of two surface water samples and one duplicate sample will be collected by submerging the sample container. The container mouth and sampling personnel will be appropriately positioned so as not to stir up any sediment to adversely affect the sample. The surface water samples will be analyzed for water hardness and total recoverable metals including copper, chromium, cadmium, lead, and zinc. Hardness will be determined using methods described in Standard Methods (APHA, 1985). Total recoverable metals will be analyzed using EPA protocol (SW-846 Method 3005).

The sediment samples at SL-2 and SL-3 will be collected during each sampling round using a stainless steel trowel. The trowel will be decontaminated prior to and between sampling locations. A field quality control sample will be collected by running analyte-free deionized water over the decontaminated stainless steel trowel and into the appropriate containers. Trip blanks prepared by the laboratory will also be maintained and analyzed at the frequency of one per VOC shipment per shipping cooler. Sediment samples will be analyzed for total metals previously listed for surface water sample analysis.

Wadsworth/ALERT Laboratories, Inc., will also perform all analyses for the sediment and surface water samples using standard CLP protocols and methods or as described above.

3.0 REFERENCES

APHA, AWWA, WPCF, 1985. Standard Methods for the Examination of Water and Wastewater. 16th edition.

ENSR, 1991a. Draft Work and Field Sampling Plan for Additional Site Investigation as Part of the Remedial Investigation and Feasibility Study. ENSR Document No. 6885-002-881.

EPA, 1991a. Correspondence from Michael A. Valentino to Messrs. Wright and Kardasz, dated August 12, 1991.

ERM-North Central, 1988. Sampling and Analysis Plan for Remedial Investigation and Feasibility Study; Part I - Field Sampling Plan and Part II - Quality Assurance Project Plan. November 28, 1988.