

WORK PLAN FOR PHASE II of the REMEDIAL INVESTIGATION/FEASIBILITY STUDY at the TOMAH MUNICIPAL SANITARY LANDFILL TOMAH, WISCONSIN June 13, 1995

# DAMES & MOORE



WORK PLAN FOR PHASE II of the REMEDIAL INVESTIGATION/FEASIBILITY STUDY at the TOMAH MUNICIPAL SANITARY LANDFILL TOMAH, WISCONSIN June 13, 1995

# DAMES & MOORE

Dames & Moore Proj. No. 27504-003

### PHASE II REMEDIAL INVESTIGATION/FEASIBILITY STUDY TOMAH MUNICIPAL SANITARY LANDFILL TOMAH, WISCONSIN

June 13, 1995

David P. Trainor Dames & Moore Project Director/Project Manager	 Date
Dames & Moore QA Officer	  Date
Laboratory QA Manager	 Date
Wendy Anderson State DNR Project Manager	Date
Matthew Mankowski USEPA Remedial Project Manager	  Date

USEPA Central Regional Laboratory Director	Date	
USEPA Quality Assurance Manager		Date

# TABLE OF CONTENTS

Page	No.
------	-----

1.0 INTRODUCTION   1     1.1 Site Background   1     1.2 Results of the Phase I Remedial Investigation   1     1.3 Phase I Recommendations   2
2 0 SCOPE OF WORK
2.1 Evaluation of Private Well Logs and Selection of Wells for Sampling
2.1 2 Evaluation of Private Wells
$2.1.2  \text{Evaluation of Trivate Wells}  \dots  \dots  \dots  \dots  \dots  \dots  \dots  \dots  \dots  $
2.1.2 Recommendations
2.2 Instantation of Additional Monitor Wells, Adandonment of DH Series Wells 7
2.2.1 Additional Monitor Wells
2.2.3 Monitor Well Construction
2.2.4 Groundwater Sampling
2.3 Installation of Additional Landfill Gas Probes
2.4 Laboratory Analyses of Groundwater Samples - Reduced List of Parameters . 11
2.5 Groundwater Level and Landfill Gas Monitoring
2.6 Groundwater Modeling
2.7 Phase II RI Report
3.0 PROJECT SCHEDULE
4.0 PROJECT STAFF

### LIST OF FIGURES

- 1 Locations and Owners of Private Wells
- 2 Existing Site Monitoring Features
- 3 Proposed Site Monitoring Features
- 4 Vertical Groundwater Gradients September 1994
- 5 Vertical Groundwater Gradients October 1994
- 6 Vertical Groundwater Gradients November 1994
- 7 Vertical Groundwater Gradients December 2, 1994
- 8 Vertical Groundwater Gradients December 29, 1994
- 9 Vertical Groundwater Gradients April 1995
- 10 Water Table September 1994
- 11 Water Table October 1994
- 12 Water Table November 1994
- 13 Water Table December 2, 1994 (Includes Data From GP-2)
- 14 Water Table December 2, 1994 (Does Not Include Data From GP-2)
- 15 Water Table December 29, 1994
- 16 Water Table April 1995
- 17 Potentiometric Surface September 1994
- 18 Potentiometric Surface October 1994
- 19 Potentiometric Surface November 1994
- 20 Potentiometric Surface December 2, 1994
- 21 Potentiometric Surface December 29, 1994
- 22 Potentiometric Surface April 1995
- 23 Anticipated Project Schedule
- 24 Organizational Chart

#### LIST OF TABLES

- 1 Summary of Private Well Depths
- 2 Summary of Groundwater and Landfill Gas Sample Locations
- 3 Summary of Contract Required Quantitation and Detection Limits Exceeding NR 140 Wisconsin Administrative Code Public Health Groundwater Standards

#### APPENDICES

- A Private Well Logs
- B Logs of DH Series Wells
- C NET Quality Assurance Plan/Statement of Qualifications
- D Standard Operating Procedure for Field Gas Chromatograph
- E Resumes of New Project Members

#### **1.0 INTRODUCTION**

#### 1.1 Site Background

The City of Tomah owns and formerly operated a solid waste sanitary landfill in the SW 1/4 of the NE 1/4 of Section 32, Town 18 North, Range 1 West, Tomah, Wisconsin. The landfill occupies approximately 18 acres of a 40-acre parcel, bounded by residential property to the east and south, and rural property to the west and north, with wetlands adjacent to the landfill to the north. Refuse deposited in the landfill consisted of municipal, industrial, commercial and residential waste, ranging in thickness from 7 to 20 feet. Cover material ranges from poorly graded sand to silty sand.

Local subsurface conditions consist of thin sands overlying sandstone bedrock. The unconsolidated deposits in the immediate vicinity of the site range in thickness from less than 1 to approximately 20 feet. Groundwater flow at the site is primarily northeasterly; however, a slight southwest-to-northeast groundwater ridge is present, resulting in semi-radial flow from the northeastern portion of the site to the north, northeast and east. Vertical groundwater gradients are variable, likely due to the nearby surface water features.

This work plan has been developed as a supplement to the Phase I Work Plan, dated March 10, 1994, and the Phase I Work Plan Addendum, dated June 18, 1994. The components of those plans and the procedures described in them remain in effect for the Phase II Work Plan.

#### 1.2 Results of the Phase I Remedial Investigation

The first phase of a remedial investigation (RI) was completed with the submittal of a draft report in February 1995 (Dames & Moore). The scope of this investigation included the installation and sampling of 12 groundwater monitor wells, including 7 water table wells and 5 piezometers, and the installation of 7 landfill gas probes. Additionally, several test pits were excavated and logged to determine the actual limits of waste. The new monitor wells were

sampled and analyzed for the approved list of analytes and compounds. Several surface water and sediment samples were also collected and analyzed from a nearby stream and wetland.

The sample analyses indicated the presence of several regulated compounds in the groundwater at the site. Wisconsin Administrative Code ch. NR 140 Enforcement Standards (ESs) were exceeded for benzene and vinyl chloride in samples north and east of the site; the ES for vinyl chloride was also exceeded in a sample collected from a well immediately southeast of the site. Landfill gas monitoring indicates that the landfill is generating gas.

#### 1.3 Phase I Recommendations

Based upon the conclusions presented in the Phase I RI report, the following recommendations were made:

- 1. A Phase II groundwater investigation should be performed at the landfill. The purpose of the investigation will be to expand the understanding of groundwater flow conditions developed from the Phase I data and evaluate the nature and extent of potential groundwater impacts downgradient of the landfill.
- 2. The groundwater investigation should include the installation of additional monitoring well nests to determine contaminant concentration gradients with depth. The investigation should determine groundwater flow conditions northeast of the landfill and the potential for contaminant migration below the Creek.
- 3. Monthly water levels should be collected from the water table observation wells, piezometers, and gas probes. These data will be used to determine temporal and/or seasonal variation in groundwater flow conditions and evaluate groundwater levels relative to the landfill waste for purposes, among others, of determining the efficacy of a possible gravity drainage trench, which is proposed as a possible method to lower the water table below the waste.

- 4. A revised groundwater monitoring program should be developed using the analytical data obtained during the Phase I Investigation. This sampling program should include only the parameters of interest as defined during this investigation. As a result, pesticides, herbicides, dioxin and PCBs will be removed from the list of parameters.
- 5. Gas monitoring probes should be installed south of the landfill property to monitor potential off-site migration of combustible gas toward private residences. Private residences located adjacent to the south landfill property boundary should also be monitored for the presence of combustible gases. Gas concentrations should be measured monthly at the same time that water level measurements are collected.
- 6. Gas monitoring probes should also be installed outside the east property boundary to evaluate gas migration conditions in that direction.
- 7. Private water supply wells south and east of the landfill property should be evaluated for use in the groundwater investigation. Private wells determined not to be useful to the investigation (and are inactive) should be abandoned in accordance with NR 112 Wis. Adm. Code. Included are the wells in the Sunnyvale subdivision located south of the landfill, which are not being used for potable water following the extension of the municipal water system to this area.
- 8. The lack of detection of contaminants in surface water and sediments collected during the Phase I investigation indicate that surface water and sediment sampling should be eliminated from the Phase II investigation.

This document presents a work plan for the completion of the recommendations made above, as amended pursuant to the comments provided by the USEPA and the WDNR.

iii

#### 2.0 SCOPE OF WORK

Seven tasks are proposed to address the recommendations presented in Section 1. These tasks are proposed with the intent to obtain data which will more completely define the hydrogeologic conditions at the site, define the nature and extent of landfill gas, and enhance the monitoring network for the implementation of a remedial action. The 7 tasks proposed are as follows:

Task 1:	Evaluation of Private Well Logs and Selection of Wells for Sampling
Task 2:	Installation of Additional Monitor Wells, Abandonment of DH Series Wells
Task 3:	Installation of Additional Landfill Gas Probes
Task 4:	Laboratory Analyses of Groundwater Samples - Reduced List of Parameters
Task 5:	Groundwater Level and Landfill Gas Monitoring
Task 6:	Groundwater Modeling
Task 7:	Phase II RI Report

These tasks are summarized in the following sections.

#### 2.1 Evaluation of Private Well Logs and Selection of Wells for Sampling

#### 2.1.2 Evaluation of Private Wells

Dames & Moore has obtained copies of all private well logs on file with the Wisconsin Geologic and Natural History Survey, which are located within the quarter sections falling within the limits of the <sup>1</sup>/<sub>2</sub>-mile radius circle, indicated on Figure 6.2 of the Phase I Remedial Investigation report. In this effort, a total of 56 well logs were obtained, including 5 of the 6 logs indicated on Ms. Wendy Anderson's April 26 fax to the Dames & Moore office. The logs are included in Appendix A of this document. The well depths are summarized in Table 1.

		TABLE 1		
SUMMARY	OF	PRIVATE	WELL	DEPTHS

RANGE OF DEPTHS	NUMBER OF WELLS
50 feet or less	0
51 to 60 feet	11
61 to 70 feet	6
71 to 80 feet	21
81 to 90 feet	12
91 to 100 feet	3
Greater than 100 feet	3
TOTAL NUMBER OF WELLS	56

Logs for whom current property owners could be identified include the following:

Thomas Schmidt; Frank Bialek (currently the Nielsen residence); John Pleuss; Tom Pleuss; and Jesse Schultz.

The locations of the five wells listed above are shown on Figure 1. A log for a well owned by "Henry" is also included; however, no first name is listed, and the site information is not such that a location can be determined.

The Bialek well is immediately upgradient from the southeastern portion of the landfill (see Figure 1). As such, its location makes it suitable for sampling. The depth of the well is 185 feet, with casing to 150 feet. Consequently, it would yield water quality data for a production zone much deeper than the current monitoring network; however, there is concern about the possibility of deep aquifer migration of contaminants to the south of the landfill. The water level

data to be obtained from this well would not be such that they could be correlated to other site data; therefore, water level data from this well would not provide significant information with respect to groundwater flow conditions.

The Thomas Schmidt well is located immediately southeast of the landfill. Its well depth is 55 feet. Consequently, this well is comparable in depth to the "B" wells (the existing piezometers) in the monitoring network. This well has an open hole interval of 27 feet. Although this is considerably more than the 5-foot screens in the "B" wells, it is typical for a water supply well to have a large open interval. As a result, the water quality and water level data to be obtained from this well would be comparable to a composite of the "A" and "B" wells.

Several of the wells are downgradient from the landfill, including the Pleuss wells and the Schultz well. The Schultz well is 80 feet deep, whereas the Pleuss wells are 65 feet (John Pleuss) and 60 feet (Tom Pleuss). Although the Schultz well is deeper than the wells in the monitoring system, the Pleuss wells are comparable in total depth to the "B" wells. Because the John Pleuss well is cased to 60 feet with a 5-foot open interval, it would not provide a composite type of a sample, as the Schmidt and the Tom Pleuss wells (20-foot open interval) would.

#### 2.1.2 Recommendations

The well depth frequency analysis suggests that very few of the private wells can provide data comparable to the data within the existing monitoring network. As indicated above, the Bialek well could provide useful information pertaining to the potential of contaminant migration to the south of the landfill, at depth within the aquifer. It is therefore recommended that this well be sampled. Several of the wells can provide data which could be correlated to the "B" wells, or a composite of the "A" and "B" wells. We recommend that the Schmidt and Pleuss (both) wells be sampled. The open interval of the John Pleuss well is comparable to that of the "B" wells, in terms of both water quality and water level information. With respect to the existing monitoring network, however, it would not provide reliable water level data due to the existence

of a large discharge area (wetland) between the well and the existing monitoring network. The construction of the proposed three-well nest northeast of the landfill, however, may provide data which could be correlated to the John Pleuss well. It is therefore recommended that water level data be obtained from this well, provided that access can be obtained.

#### 2.2 Installation of Additional Monitor Wells, Abandonment of DH Series Wells

#### 2.2.1 Abandonment of DH Series Wells

Three existing monitor wells will be abandoned. DH-1, 2 and 3 were installed as part of the original site monitoring program in 1975 (see Figure 2). These wells were not constructed in accordance with Wisconsin Administrative Code ch. NR 141 requirements (see logs in Appendix B). A Dames & Moore hydrogeologist will supervise the abandonment of these wells, and will provide the appropriate documentation.

#### **2.2.2 Installation of Additional Monitor Wells**

Monitoring conducted during the Phase I RI provided significant information with respect to groundwater flow and quality at the Tomah Municipal Sanitary Landfill (TMSL). However, an analysis of the data also showed several areas requiring further resolution:

- Deep aquifer flow and quality;
- Groundwater flow and quality northeast of the landfill; and
- Groundwater flow conditions with respect to the wetlands north of the landfill.

As discussed in Section 2.2.1, three wells used for the Phase I RI will be abandoned. Well DH-3 is upgradient of the landfill, and is not in a location of strategic significance, and will not be replaced. DH-2 is located near the MW-1 well nest. Groundwater flow and quality data from the two locations indicate that DH-2 does not provide significant data to compliment the data collected from the MW-1 wells; consequently, this well will not be replaced. Well DH-1, however, is immediately within the eastern boundary of the fill. Groundwater flow data indicate this to be a downgradient location. Flow data also show this to be an area of relatively steep and variable groundwater gradients, requiring an increased level of resolution. Consequently, a water table monitor well is recommended to replace well DH-1. For several reasons, it is recommended that this well be placed on the east site of Noth Avenue, shown as MW-8A on Figure 3. It is anticipated that a cap may be placed on the landfill as part of the ultimate remedy; this cap would require the abandonment of well DH-1, regardless. Additionally, the existing wells DH-1, MW-7 and MW-3 are positioned linearly along the eastern perimeter of the landfill. The placement of a well to the east of Noth Avenue will allow the triangulation of data, thereby providing better definition of groundwater flow conditions in this area where additional data are needed. With respect to groundwater quality, the new well will yield groundwater quality data at a location downgradient from the fill material, rather than within the boundary. Due to the proximity of well MW-8A to the MW-3 nest, a piezometer is not recommended in this location.

The relationship of the groundwater and the wetlands is a concern, in that the wetlands provide a downgradient discharge area; however, the extent of these discharge conditions are not well defined. At this time, data from within the wetland area are provided at a single location (MW-5). Wells are recommended at two locations to augment the understanding of the hydrogeologic conditions associated with the wetlands. MW-10A is a water table monitor well proposed at the western perimeter of the wetlands (see Figure 3). In the event of the installation of a gravity drainage trench to the west of the landfill, proposed as part of a potential remedy, this well will also provide information with respect to the impacts resulting from that installation. Because vertical gradient data are provided by the nearby MW-4 and MW-5 well nests, no piezometer is recommended for this location.

The second location for the augmentation of the understanding of conditions associated with the wetlands is to the northeast of the landfill, near staff gauge SG-3 (see Figure 3). As indicated above, the wetlands signify an area of groundwater discharge. Figures 4 through 9 show the areal distribution of vertical groundwater gradients for the time period from September 1994

through April 1995, as determined from well nests at five locations. The groundwater gradients adjacent to the wetlands are predominantly upward, as determined from the MW-4 and MW-5 wells. However, the upward gradient in those locations is not strong. Additionally, the MW-3 well nest, also located near the wetland area, displays relatively strong downward gradients. Consequently, there is concern that contaminants from the wetland may flow through the wetland area, at depth. A three-well nest is therefore recommended, indicated as MW-9A, 9B and 9C on Figure 3. Well MW-9A will be a water table monitor well; MW-9B will be installed in the same horizon as the existing "B" series wells; MW-9C will be installed at a depth of 20 feet below MW-9B. These wells will provide additional data with respect to vertical and horizontal groundwater gradients, as well as groundwater quality data at three depths within the aquifer, at locations which may be immediately upgradient from private drinking water supply wells (see Section 2.1). Additionally, well MW-9B can be used in conjunction with groundwater elevations in the Pleuss wells (if these data can be obtained), to provide a definition of horizontal groundwater flow conditions in that area.

Two additional "C" series wells are recommended, at locations MW-5 and MW-3 (see Figure 3). As indicated above, concern exists with respect to the significance of the vertical groundwater gradients in these areas. The addition of wells MW-3C and MW-5C will provide an increased understanding of vertical groundwater flow and quality conditions in this area. The data obtained from these wells can also be used in conjunction with data from proposed well MW-9C, to obtain a general understanding of horizontal groundwater flow.

#### 2.2.3 Monitor Well Construction

Monitor wells will be drilled and constructed of 2-inch PVC in accordance with ch. NR 141, WAC, and in accordance with the procedures detailed in the Dames & Moore Standard Operating Procedure (SOP), included in the Phase I Work Plan.

#### **2.2.4 Groundwater Sampling**

ix

Upon completion of the installation and development of the new monitor wells, all site monitor wells and the selected private wells to which access can be attained will be sampled. The monitor wells will be purged dry, or a minimum of three casing volumes will be removed prior to sampling, in accordance with the SOP presented in the Phase I Work Plan. Private wells will be purged for a minimum of 15 minutes, through each tap. A sample will then be drawn from the tap nearest the well. If any on-site treatment system is used (e.g., a water softener), the sample will be drawn at a location prior to the treatment unit.

#### 2.3 Installation of Additional Landfill Gas Probes

Four landfill gas monitoring probes are proposed outside the waste limits on the south side of the landfill, as shown on Figure 3. These probes will be constructed of 1-inch PVC, and will be installed with 15-foot screens, which will intersect the water table, since it is relatively shallow at these locations (less than 20 feet). Additionally, two landfill gas monitoring locations are proposed outside the waste on the east side. One of these monitoring points, shown as GP-12 on Figure 3, will be constructed of 1-inch PVC, as described above. Proposed water table monitor well MW-8A will also be used as the second landfill gas probe on the east side of the landfill. This well will be constructed of 2-inch PVC, in accordance with ch. NR 141, W.A.C.; however, it will have a 15-foot screen. These sample locations will allow not only a determination of landfill gas concentrations and constituents, but also water levels.

Because the probes are proposed for installation on private property, access agreements with the property owners through the assistance of the WDNR may be required. All existing and proposed groundwater and landfill gas sample points are summarized in Table 2.

#### 2.4 Laboratory Analyses of Groundwater Samples - Reduced List of Parameters

National Environmental Testing, Inc. (NET) of Bartlett, Illinois will conduct laboratory analyses

for Phase II of the RI. NET's Quality Assurance Plan/Statement of Qualifications is included as Appendix C of this work plan. In accordance with the requirements by the USEPA for this project, NET will provide levels of detection or quantitation which:

- 1. Has a limit of detection and limit of quantitation below the Preventive Action Limit (PAL); or
- 2. Produces the lowest available limit of detection and limit of quantitation if the limit of detection and limit of quantitation are above the PAL.

The list of analytes and compounds for this phase of the RI will be reduced, based upon the parameters detected in Phase I analyses. To summarize, the list will include volatile organic compounds, semi-volatile organic compounds, metals, and selected inorganics. Removed from the list are pesticides, herbicides, dioxins and PCBs. The recommended revised list is presented in Table 2, which also presents the State of Wisconsin ESs, PALs, State and Federal groundwater standards, State and Federal surface water standards, and contract required quantitation and detection limits, which indicates the levels of detect or quantitation which to which NET will adhere. All analytical data will be validated pursuant to the procedures followed during the Phase I RI.

#### 2.5 Groundwater Level and Landfill Gas Monitoring

Between September 1994 and April 1995, six rounds of groundwater levels were measured. The Phase I RI report presented maps of the water table and the potentiometric surface from data collected on October 13, 1994, as representative of the flow conditions over the period of the investigation; the remaining data have been plotted, and are presented on Figures 10 through 22. Whereas these plots show the same general flow conditions, for both the water table and the "B" horizon, there is some localized variability. Additionally, most of the data presented on the plots are representative of times of typically low recharge conditions. Consequently, monthly water levels will be measured at all monitor wells and gas probes. To the extent possible, water levels will be measured at selected private wells, although access, in terms of owners' permission and possible physical obstructions have yet to be gained for private wells.

Monthly water level maps will be generated for the water table and the potentiometric surface. These maps will be included in monthly updates, presented in the same format as Figures 10 through 22.

The Phase I probes installed within the landfill, as well as the Phase II probes to be installed outside the limits of waste, will be monitored for landfill gas on the same monthly schedule as the groundwater level monitoring. Specifically, concentrations of methane will be measured with a combustible gas indicator. Total ionizable compounds (VOCs, and to some degree, SVOCs), will also be measured with a photoionization detector (PID). Where PID levels exceed 50 total instrument units, a portable gas chromatograph (GC) will be used to determine specific compounds. Because vinyl chloride has been a compound prevalent in groundwater, this compound will also be measured by the GC, along with its predecessor compounds, TCE and PCE. A standard operating procedure for the field GC is included in Appendix D.

In addition to landfill gas monitoring at the probes, the basements of the residences adjacent to the southern perimeter of the landfill will be monitored, to the extent that access can be attained. At the time of each monthly monitoring event, landfill gas measurements will be collected at these locations. For basements which are open, measurements will be taken in the ambient air of the basement, as well as along floor and wall joints. For homes with finished basements, these measurements will be taken in each room to the extent possible.

#### 2.6 Groundwater Modeling

The monitoring system as modified by the tasks presented above, will permit the accurate construction and calibration of a groundwater flow model. A three dimensional numerical groundwater model (U.S.G.S. modular model, MODFLOW) will be used to simulate groundwater flow conditions at the site. In conjunction with the flow model, a particle tracking program (PATH3D, S.S. Papadopulos & Associates, 1991) will be used to simulate potential

advective transport of contaminants. This model will be used as a tool to assess possible groundwater remediation methods and features, such as the implementation of a passive, gravity drainage trench. It can also be used to design and assess the efficiency of an active groundwater extraction system, as well as be used to assess the impacts of such a system on private water supply wells.

The model will consist of a minimum of two layers; however, should the "C" wells indicate the appropriateness, a third layer will be incorporated. The horizontal discritization will be variable, with smaller spacings in the vicinity of the landfill, for greater resolution. Hydraulic conductivity values determined during the Phase I and II investigations will be incorporated. Recharge will be determined through the process of calibration.

#### 2.7 Phase II RI Report

Upon completion of Phase II tasks 1 through 7, the final RI report will be prepared and submitted for Agency review. This document will detail the field and analytical activities performed, and will present the results, and our conclusions and recommendations.

The final RI report will consist of the compilation of the draft Phase I report, as well as a summary of the results of the Phase II investigation. The Phase I discussion will incorporate the comments and responses to the draft report, requested by the USEPA and discussed at a meeting of the parties on April 24, 1995.

xiii

#### **3.0 PROJECT SCHEDULE**

A project schedule has been developed based upon past experience with projects with similar scopes of work. The schedule is presented on Figure 23. Brief monthly updates will be provided as during the Phase I effort; this report will include the plots of groundwater contours and landfill gas measurements (Task 5). Consequently, the schedule presented does not include provisions for any reviews prior to the submittal of the Phase II report.

#### 4.0 PROJECT STAFF

The project staff for the second phase of the RI will be essentially the same as the first, with two primary exceptions. Dave Trainor, P.E., P.G., will assume the roles of both Project Director and Project Manager. Mr. Thomas Covilli, C.I.H., will assume the role of Health & Safety officer. Senior technical review will be provided by Mr. James Boddy. Resumes for Messrs. Covilli and Boddy are included in Appendix E.

## TABLE 1 IS PRESENTED ON PAGE 5 OF THE DOCUMENT

\_

----

TABLE 2 SUMMARY OF CONTRACT REQUIRED QUANTITATION AND DETECTION LIMITS EXCEEDING NR140 WISCONSIN ADMINISTRATIVE CODE PUBLIC HEALTH GROUNDWATER STANDARDS

	Star Ground Stands (NR )	c walcr Irds 40)	State Surface Water Standards (NR 105)	Federal Groundwater Standards	Federal Surface Water Standards	Contract F Quantit and Det Lim	tequired ation ection its
Substance	Enforcement Standard (μg/L)	Preventive Action Limit (μg/L)	Human Cancer Criteria (µg/L)	SDWA Maximum Contaminant Level (µg/L.)	SDWA Maximum Contaminant Level (rg/L.)	CRQL (µg/L)	CRDL (μg/L)
Arsenie	50	5		50	- 20		10
Barium	1,000	200		2,000	2,000		200
Benzene	2	0.067	45	\$	5	10	
Benzo(a)pyrene	0.003	0.0003	0 1	0.2	0 2	01	
Bromoform	4	0.44		< 100	< 100	10	
Cadmium	10	-	82'	10	5		\$
Carbon Tetrachloride	S	0.5	10	5	5	10	
Chloroform	¢	0.6		< 100	< 100	10	
Chromium	50	\$	9500/94	100	100		10
1,2-Dichloroethane	\$	0.05	170	5	\$	10	
1,1-Dichloroethene	7	0.024	15	7	7	01	
1,2-Dichloroethene (cis)	001	01	5,4001	70	70	10	
1,2-Dichloropropane	\$	0.5		\$	5	01	
Di(2 ethylhexyl)phthalate <sup>2</sup>	6	0.3	8,900'	9	Ŷ	01	
2,4-Dinitrotoluene	0.05	0.005				10	
2,6-Dinitrotolucac	0.05	0.005				10	
Lead	15	1.5	50	50	50		~

reports/tomah/tables/tomah.2\_1

-

# TABLE 2SUMMARY OF GROUNDWATERAND LANDFILL GAS SAMPLE LOCATIONS

}

MONITOR POINT	DESCRIPTION	LOCATION
Existing Samplir	ig Points:	
MW-1A & B	Shallow & intermediate groundwater monitor well nest.	Southwest corner of landfill.
MW-2A & B	Shallow & intermediate groundwater monitor well nest.	Southeast corner of landfill.
MW-3A & B	Shallow & intermediate groundwater monitor well nest.	Northeast corner of landfill.
MW-4A & B	Shallow & intermediate groundwater monitor well nest.	Northern perimeter of landfill.
MW-5A & B	Shallow & intermediate groundwater monitor well nest.	Wetlands, north of MW-4 well nest.
MW-6A	Shallow groundwater monitor well.	Approximately 500 feet south of MW-2.
MW-7A	Shallow groundwater monitor well.	Eastern perimeter of landfill.
GP-1 through 7	Landfill gas probes.	Within perimeter of waste area.
Proposed Sampli	ng Points:	
MW-3C	Deep groundwater monitor well.	Adjacent to existing MW-3 nest.
MW-5C	Deep groundwater monitor well.	Adjacent to existing MW-5 nest.
MW-8A	Water table monitor well/landfill gas probe.	East of existing well DH-1.
	Three-well groundwater monitor well nest.	
MW-9A, B & C	Landfill gas probe.	Northeast of landfill.
	Landfill gas probes.	
GP-8	Landfill gas probe.	Southwest corner of landfill.
GP-9, 10 & 11		Southern perimeter of landfill.
GP-12		East side of Noth Avenue.
Tentative Private	Wells for Sampling:	
T. Pleuss	Private water supply well.	Northeast of landfill.
J. Pleuss	Private water supply well.	Northeast of landfill.
Bialek	Private water supply well.	South of landfill.
T. Schmidt	Private water supply well.	Southeast of landfill.

----

TABLE 3 SUMMARY OF CONTRACT REQUIRED QUANTITATION AND DETECTION LIMITS EXCEEDING NR140 WISCONSIN ADMINISTRATIVE CODE PUBLIC HEALTH GROUNDWATER STANDARDS

	Stat Ground Standa (NR 1	ic water ards 40)	State Surface Water Standards (NR 105)	Federal Groundwater Standards	Federal Surface Water Standards	Contract I Quantia and Det Lim	tequired ation ection its
Substance	Enforcement Standard (µg/L)	Preventive Action Limit (μg/L)	Human Canccr Criteria (μg/L)	SDWA Maximum Contaminant Level (µg/L)	SDWA Maximum Contaminant Level (µ£/L)	CRQL (#g/L)	CRDL (µg/L)
Arsenic	50	2		50	50		10
Barium	1,000	200		2,000	2,000		200
Benzene	5	0.067	45	5	5	10	
Benzo(a)pyrene	0.003	0.0003	0.1	0 2	0.2	01	
Bromoform	4.4	0.44		< 100	< 100	10	
Cadmium	10	-	821	10	5		\$
Carbon Tetrachloride	5	0.5	10	5	5	01	
Chloroform	9	0.6		< 100	< 100	10	
Chromium	50	\$	9500/94	100	001		10
1,2-Dichloroethane	\$	0.05	170	- 2	5	10	
1, 1-Dichloroethene	7	0.024	15	7	7	01	
1,2-Dichloroethene (cis)	001	01	5,400'	70	70	10'	
1,2-Dichloropropane	S	0.5		5	5	10	
Di(2-ethylhexyf)phthalate <sup>2</sup>	C	0.3	8,900'	Q	6	10	
2,4-Dinitrotoluene	0.05	0.005				10	
2,6-Dinitrotoluene	0.05	0.005				10	
Lead	15	1.5	50	50	50		-

reports/tomah/tables/tomah.2\_1

\_

SUMMARY OF CONTRACT REQUIRED QUANTITATION AND DETECTION LIMITS EXCEEDING NR140 WISCONSIN ADMINISTRATIVE CODE PUBLIC HEALTH GROUNDWATER STANDARDS **TABLE 3** 

	Stat Ground Stands (NR 1	e water Irds 40)	State Surface Water Standards (NR 105)	Federal Groundwater Standards	Federal Surface Water Standards	Contract   Quanti and De Lirr	Required Lation tection
Substance	Enforcement Standard (µg/L)	Preventive Action Limit (μg/L)	Human Cancer Criteria (μg/L)	SDWA Maximum Contaminant Level (μg/L)	SDWA Maximum Contaminant Level (μ <u>β</u> /L)	CRQL (µg/L)	CRDL (μg/L)
Mercury	2	0.2	0.08	2	2		0.2
Napthalcnc	40	×				10	
Selenium	10	-	170'	50	50		5
Silver	50	10	430'	100	100		10
Tetrachloroethene	-	0.1	15	5	5	10	
1,1,2-Trichlorocthane	0.6	0.06	46	5	\$	01	
Trichloroethene	5	0,18	110	5	5	10	
Vinyl Chloride	0.2	0.0015		2	2	10	

٤.

<sup>1</sup> This CRQL corresponds to total 1,2-Dichloroethene, both cis and trans.
<sup>2</sup> Also known as bis(2-ethylhexyl)phthalate.
<sup>3</sup> Human Threshold Criteria
<sup>4</sup> Trivaleral/Hexavalent Chromium



MITS WERE OBTAINED FROM AYERS ASSOCIATES MAP EFERENCED ABOVE. ONITORING WELLS MW-1A/MW-1B THROUGH MW-/A USTALLED BY DAMES & MOORE IN AUGUST 1994. AS PROBES GP-1 THROUGH GP-7 INSTALLED BY AMES & MOORE IN AUGUST 1994. ONITORING WELLS DH-1, DH-2 AND DH-3 INSTALLED IN AYERS ASSOCIATES IN DECEMBER 1975.	LEGEND SG-2 STAFF GAUGE WM-5A WM-5A WM-5A WM-5A MM-5A MM-5A MM-5A MM-5A MM-5A MM-5A MM-5A MM-5A MM-5A CAS PROBE SG2 PROBE SG2 PROBE SG2 PROBE SG2 PROBE SG2 PROBE SG3 PROBE SG3 PROBE SG3 PROBE SG3 PROBE SG3 PROBE SG4 POWER LIME FENCE COERHEAD POWER LIME EXISTING RULDINGS (LOCATED) EXISTING RULDINGS (LOCATED) EXISTING RULDINGS (LOCATED) EXISTING RULDINGS (LOCATED)	PROJECT TOMALE MUNICIPAL SAN TARY LANDELL TOMALE WSCONST. TIME: FXISTING SITE MONITORING FEATURES PROJECT NO SITE MONITORING FEATURES PROVID RY 8504.5.1.5. DAMES & MOORE SITE MONITORING FEATURES PROJECT JUNE 1495. TOMINOVI1695. FGURE 7 DAMES & MOORE SITE MONITORING FEATURES
ΥΥΥΥΥΥΥΥΥΥΥΥΥΥΥΥΥΥΥΥΥΥΥΥΥΥΥΥΥΥΥΥΥΥΥΥΥ		scut: 1100
NOC+5		





1. 1. 1.



ner der leiten versteren de Britspielen bereiten bereiten. 2201 NTERNY JAK UNG JUME JI MADISON, WSJUNSN - MAJUA (808) 244-1788 PROPOSED STE MONITORING FLATURES WATER TABLE OBSERVATION WELL, AL WATER TABLE, BL "LTERMEDIATE; C. DEER. 1:00 %] - V OWW-10 PROPOSED OBSERVATION WFLL, A: WATER TABLE, B: INTERMEDIATE, C: DEEP. TOWAH MUNICIPAL SAMITARY LANDER "OMAH, WISCONS". OBSERVATION WELL TO BE ABANDONED DATE PRINTED JUN. 53 1 1955 SCALE EYSTMG BULDAGS (UNLOCATED) & MOORE EXISTING BUILDINGS (LCOATED) APPROXIMATE EDGE OF WASTE SCALE OVERHEAD POWER LINF PROPOSED GAS PROBE EXISTING GAS PROBE SECTION CORNER 1995 DAMES APPPOVED BY EXISTAGE ROADS CHECKED BY DUNAN BY STAFF CAUGE PROJECT PIE.20METER TILE FENCE ● DH--1 ф им- 58 ∆6P-13 ď  $\sim$ ▲ GP- 2 H 200 +++++ ⊙ SG MN 🚭 1 R SCALE: 1 -100 8 N00+2 00(+0. AT 9 O WW+8A Q .∆ GP-12 3 ť. Ę **8**00 ) H H H 100+2 Ż Ċ -0 •

F3







AND SEA WARD OF A DOGSTONED AND

CNEO I










































## FIGURE 23 ANTICIPATED PROJECT SCHEDULE

		M	ONTHS AI	FTER WO	RK PLAN	APPROVA	AL	
TASK	1	2	3	4	5	6	7	8
Task 1: Evaluation of Private Well Logs and Sellection of Wells for Sampling								
Task 2: Installation of Monitor Wells; Abandonment of DH Series Wells								
Task 3: Installation of Additional Landfill Gas Probes								
Task 4: Laboratory Analyses of Groundwater Samples								
Task S: Groundwater Level and Landfill Gas Monitoring	x	x	x	x	x	x	x	x
Task 6: Groundwater Modeling								
Task 7: Phase II RI Report								

1



APPENDIX A

\_\_\_\_

-----

PRIVATE WELL LOGS

WELL CONSTRUCTOR'S REPORT	WISCONSIN STAT	E BOARD OF HEALTH	Wei
1. COLNTY Marrie 2		AMP el	
- LOCATION (Number and Street or 1/ motion	ion township and range A	e city fa inanal	
Litte of Site Se	z 28 Ti	SN RIW	VEDUCTORYED
3. OWNER AT FIME OF DRILLING	Coleman	1/	WEG 22 1935
4. OWNER'S COMPLETE MAIL ADDRESS	mah 1	Nip Pli	Sama
5 Distance in feet from well to nearest: <sup>B</sup>	UILDING SANITARY SEV	VER FLOOR DRAIN FOUNDATION DRAIN	WASTE WATER DRAIN
(Record answer in appropriate block)		E C. I. TILE SEWER CONNECTED INDEPENDEN	TT C. I. TILE
CLEAR WATER DRAIN   SEPTIC TANK   PRIVY   S	SEEPAGE PIT ABSORPT	ION FIELD   BARN   SILO   ABANDONED WELL	SINK HOLE
C. I. TILE	74 -		
OTHER POLLUTION SOURCES (Give description #	uch as dump, quarry, drai	nage well, stream, pond, lake, etc.)	
6. Well is intended to supply water for:	Hongo		<u> </u>
	10-1112		
Dia. (in.)         From (ft.)         To (ft.)         Dia. (in.)	From (ft.) To (ft.)	Kind	From (ft.) To (ft.)
Surface 70		land	Surface 2
		land rack	28 70
8. CASING, LINER, CURBING, AND SCREET	N		
Dia. (in.) Kind and Weight	From (ft.) To (ft.)		
L St.	Surface 32		
Allt	~		
	1 )		
y. GROUT OR OTHER SEALING MATERIAL	From (ft.) To (ft.)		
noni	Surface		· -
		Well construction completed on $\mathcal{P}$ or	15 1925
11. MISCELLANEOUS DATA	<u></u>		above
Yield test: 4 Hrs.	at 12 GPM	Well is terminated 9 inches	below final grade
Depth from surface to normal water level	34 ft.	Well disinfected upon completion	Yes No
Depth to water level when pumping	4 <u>3</u> ft.	Well sealed watertight upon completion	Yes No
Water sample sent to Magno	m	laboratory on: Dec	21 1965
Your opinion concerning other pollution	hazards information	concerning difficulties encountered and d	ata relating to pearly

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, subsurface pumprooms, access pits, etc., should be given on reverse side.

SIGNATURE Roy Rush	Registered Well Dril	ler R.2. R	ADDRESS M. Diver	Falls wis
COLIFORM TEST RESULT	Please do no   GAS – 24 HPS. 	t write in space bel GA3 – 48 HRS.	ow CONFIRMED	REMARKS

WELL COM	NSTRUCTOR	S REPORT	Г	DEPARTA	AENT OF	RESOURCE DEVELOPMENT		We
CULNTY	,			CHECK	ONE	NAME		
•	Mas	$\sim 22$		🛛 Town	📋 Village	City La Grange	_	
2. LOCATIC	IN (Number a)	pol <sub>i</sub> Street or 3 Con 2	8 section, sect	100. township	and range. Ali - R. /	o give subdivision name, lot and block numbers when $W$ , $S$ , $W$ , $H$	available.)	
3. OWNER	AT TIME OF	DRILLING	m	31	2000			
4. OWNER	S COMPLETE	MAIL ADD	RESS			12		
E D'atana	- in fact for	)	<u>z k ľ</u>		LARY SEW	ELLOSE DEALN FOUNDATION DEALN	waste war	
S. Distanc		onriate block)	nearest: -	ا ہے	C. I.   TILE	C. I. TILE SEWER CONNECTED INDEPENDE	INT C. I.	TILE
(Necord =	ninet in epp.			Э				
CLEAR WAT C. I.	TER DRAIN TILE	septic tan 50	K PRIVY S	EEPAGE PIT	ABSORPTI	DN FIELD BARN SILO ABANDONED WELL	SINK HOLE	
OTHER POI	LUTION SOL	RCES (Give	description s	uch as dump,	quarry, drain	age well, stream, pond, laks, etc.)	<u> </u>	
A 147.11	J					•		
o. Well is	intended	to supply	water tor:	H	$\sim$			
7. DRILLHO	OLE			/ ¥		10. FORMATIONS		
Dia. (in.)	From (ft.)	To (ft.)	Die. (in.)	From (ft.)	To (ft.)	Kind	From (ft.)	To (ft.)
16_	Surface	33	6	33	~78	Clay & Bracks	Surface	Q
<b>~</b>						Sort Jand Bock	8	ि
8. CASINO	G, LINER, C	URBING, A	ND SCREEP	4	1			~~ ~
Dia. (in.)	K	ind and Weig	ht t	From (ft.)	To (ft.)	Land Seck		15
6	nes	<u>i ch</u>	14.45	Surface	33			
		T.C.		/				
						· · · · · · · · · · · · · · · · · · ·		
9. GROUT	OR OTHER	R	MATERIAL	<u>.</u>				
	Ki	nd		From (ft.)	To (ft.)	······		
Mic	it Ce	<u>- men</u>	<u></u>	Surface	33			
						Well construction completed on ALL	ly 16	196
11. MISCE Yield test:	LLANEOUS	DATA	Hrs.	at 8	GPM	Well is terminated S inches	X above below fir	nal grad
Depth from	n surface t	<del></del>	water level	41	ft	Well disinfected upon completion	— Xes	<u>م ا</u>
Depth to y	vater level	when pur	ipina	.54	ft.	Well sealed watertight upon completion	🔀 Yes	
Water sam	nple sent to	0	man	him	Wis	laboratory on: Suc	J 3	19 /
		ning other		hazarde i	nformation	concerning difficulties encountered and	data relating	to near

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to near wells, screens, seals, type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, su surface pumprooms, access pits, etc., should be given on reverse side.

SIGNATURE	arklunst 4. Registered Well	Driller COMPLETE M	rouf Wist	onam				
	Please do not write in space below							
COLLFORM TEST RESULT	GAS — 24 HRS.	GAS — 48 HRS.	CONFIRMED	REMARKS				

WELL	CONSTRUC	TOR'S R	FPORT	S	SEP 141	970		DEPARTM	STATE OF ENT OF N	*'SCONS	.N RESOURC	Es
Wel-6				WHITE GREEN Yello	COPY - DIV N COPY - DR CW COPY - O	ISION'S COPY ILLER'S COPY WNER'S COPY		м	Box : adison, Wis	450 Iconsin 53	3701	
1. COUNT	Yomm-			CHECK			ME	il.				
2. LOCATI	$\frac{11010}{\text{ON}}$	nd Street or 3	4 section, secti	ion, township	and range, Ale	o give subdivision	name, lot a	d block bur	bers when a	vailable.)		
3 OWNER	AT TIME OF	DRILLING	28	<u>T. 18 1</u>	<u>Y,-K,/</u>	W. 5	W. Vy	=	· · · · ·			
			mi	land	000	Erative						
4. OWNER	S COMPLETE	MAIL ADD	ress 1	mak	Illis	consin						
5. Distanc	ce in feet fro	om well to	nearest:   <sup>BI</sup>	UILDING SA	NITARY SEWI	C. I.   TILE	SEWER CO	UNDATION I	RAIN	WASTE T C. L	WATER D	RAIN
(Record )	answer in appro	priate block)		100								
CLEAR WA C. I.	TER DRAIN	SEPTIC TAN	K PRIVY S	EEPAGE PIT	ABSORPTI	ON FIELD BAF	IN SILO	ABANDON	ED WELL	SINK HOL	E	
OTHER PO	LLUTION SOU	RCES (Give	description et	sch as dump.	quarry, drain	age well, stream,	pond, lake, e	tc.)				
6. Well i	s intended	to supply	water for:	f jo-	<u>runper</u>	STT:						
7. DRILLH	IOLE			it Der	mer.	10. FORMAT	IONS					
Dia. (in.)	From (ft.)	To (ft.)	Die. (in.)	From (ft.)	To (ft.)		Kind			From (ft.	) <u> </u>	
10	Surface	37	6	_37	110	Jan	d			Surface	9	
						Dan	d no	ck		9		2
8. CASIN	G, LINER, CL	JRBING, A	ND SCREEN	From (ft.)	Te (ft.)							
6	Mui-	Stiel	J. 19.45	Surface	37		·					
	-	, <u></u> ,										
	-							<del></del> _		-		
9. GROU	T OR OTHER		MATERIAL									-
	Kir	nd		From (ft.)	To (ft.)							
- Mu	at lem	int		Surface	31			<u> </u>				
						Well constru	iction com	pleted on	Jul	41	19	6
11. MISC Yield test	ELLANEOUS	DATA	Hrs. a	nt 8	GPM	Well is term	inated	11	inches	above below	final gr	ade
Depth fro	om surface tr		water level	21	2 ft.	Well disinfe	cted upon	completio	n		Yes [	א (
Depth to	water level	when pur		48	ft.	Well sealed	watertight	upon con	npletion		Yes 🗌	] N
Water sai	mple sent to	» 9	nodico	n li	11.5		lab	oratory on	· ( <sup>2</sup> ) /	t h	19	B
Your opin wells, scr surface p	nion concerr reens, seals, sumprooms,	ning other type of access pite	pollution casing join a, etc., shou	hazards, ii its, method ild be give	nformation d of finishi en on reve	concerning d ing the well, rse side.	ifficulties amount o	encountere f cement	d, and d used in g	ata relati routing,	ng to n blasting,	eart su
SIGNATUR	EA		<u> </u>			COMPLETE M	ALL ADDRES	8				

Jim Parkhurst	Registered Well Dril	ller & hoy	Wis		
<i></i>	Please do no	t write in space be	low		
COLLFORM TEST RESULT	GAS - 24 HRS.	GAS - 48 HRS.	CONFIRMED	REMARKS	
REV. 11-68	1	ł	ł	ļ	

WELL CON	NSTRUCTOR	S REPOR	:т	wisco	NSIN STAT	E BOARD OF HEALTH		Wel
I. COUNTY	201			CHECK	ONE Village	NAME .		
2. LOCATIC	N refumber at	ad Street or	1/4 section, sect	ion, township :	and range. Als	o give subdivision name, lot and block	LUGGERS When MERCHIV	ED
3. OWNER	AT TIME OF	DRUMING	8. 11 4	Sec	- 28	118N FLW		
		(	arla	oles	nan		MAR 17	1966
4. OWNER	S COMPLETE	MAIL AD	DRESS M	mak	. IV L	Y RI	SANITA	ĩY
5. Distanc	e in feet fro	om well to	o nearest: B	UILDING SA	NITARY SEW C. I.   TILE	ERIFLOOR DRAIN FOUNDATIO	DN DRAIN WASTE V DIINDEPENDENT C. I.	VATER DRAIN
(Record a	nswer in appro	opriate bloci	k) -	5 2	20 -	20 - / /_		
CLEAR WAT C. I.	TER DRAIN	SEPTIC TA	NK PRIVY	SEEPAGE PIT	ABSORPTI	ON FIELD BARN SILO ABAN	DONED WELL SINK HOLE	
~	~	44		65			- ~	
OTHER POI	LUTION SOU	RCES (Giv	• description s	ruch as dump,	quarry, drain	age well, stream, pond, lake, etc.)		
6. Well is	intended	to supply	water for:	- h/-				
7 00014	015		<u> </u>	How	2			
Dia. (in.)	ULE From (ft.)	To (ft.)	Dis. (in.)	From (ft.)	To (ft.)	Kind	From (ft.)	To (ft.)
6	Surface	65				Sand	Surface	28
			_		·	Sand north litre	28	65
8. CASING	G, LINER, C	URBING,	AND SCREE	Ņ	· · · · · · · · · · · · · · · · · · ·			
Dia. (in.)		ind and Wei	ght	From (ft.)				
6	Slee	l		Surface	3/			
					-			
<u> </u>								_
9. GROUT	OR OTHE	R SEALIN	G MATERIA	L E (6+ )	T= (64.)			
Ma	<u>N</u>	nu		Surface	18 (II.)			
	$\gamma_{\ell}$					<u> </u>		
			<u></u>			Well construction completed	on March 8	1960
Yield test:	:	3	Hrs.	at 10	GPM	Well is terminated	inches 🚺 above	final grade
Depth from	m surface t	o normal	water level	28	- ft.	Well disinfected upon comple	etion H	es 🗌 No
Depth to	water level	when pu	mping	43	ft.	Well sealed watertight upon	completion Y	es 🗌 N
Water sar	nple sent t	° Ma	etina	<u>`~</u>		laboratory	on: March 11	1966
Your opin		ning oth	ar pollution	hazards i	nformation	concerning difficulties encour	tered and data relation	a to neart

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, subsurface pumprooms, access pits, etc., should be given on reverse side.

SIGNATURE Roy Bush	Registered Well Dri Please do no	t write in space bel	ADDRESS K River 7	fills wis
COLIFORM TEST RESULT	GAS — 24 HRS.	GAS — 48 HRS.	CONFIRMED	REMARKS

State of Wisconsin	NO	TE:	WELL CONST	RUCTOR'S R	EPORT
Department of Natural Resources W Box 7921 Gr	hite Copy reen Copy -	<ul> <li>Division's Copy</li> <li>Driller's Copy</li> </ul>	Form 3300-15	R.	w. 12-76
				<u> 201 19</u>	1974
Monree Town	NE: Villa	Nar age City	ne ta 21	rang	e
$\frac{2}{2} \frac{\text{Section}}{29} \frac{\text{Section}}{18} \frac{1}{8} \frac{1}{18} 1$	Range 1 W	ADDRESS	AGENI AT TIME OF	F DRILLING CH	IECK (A ONE
AND - If available subdivision name, lot & block No.		POST OFFICE	nal 2	lis	
4. Distance in feet from well Building Sanitary Blog, Drain to nearest: (Record in C.I. Other answer in appropriate in C.I. Other	C.I.	Bidg, Sewer Floor Dr. Connected Other C.I. Sewer Ot	ain Storm Bl To: Storm Bl ther Sewer C.I.	dg Drain S Other C	torm Blag. Sewer .1. Other
Street Sewer Other Sewers Foundation Drain Connected to	C.I. Oth	np Clearwater Septic H er Sump Tank T	Iolding Sewage Abso	rption Unit	· · · · · · · · · · · · · · · · · · ·
San, Storm C.I. Other Sewer 'Sump Clearwater Clearwater Dr. Sump	_	72	Seepage Bed Seepage Tren	ch SP	
Pricy Pet Pit: Nonconforming Existing Subsurface Pump Waste Well Nonconforming Pit Pump Tank	eroom B Existing Gu	arn Animal Animal Silo litter Barn Yard With P Pen	Glass Lined Silo Pit Storage w/o Facility Pit	Earthen Salage Storage Trend Pit	n Or
Temporary Watertight Solid Manure Subsurface Was Manure Liquid Manure Storage Gasoline or Diss Stack Tank Structure Oil Tank (Sp	te Pond or Lar posal Unit ecify Type)	nd Other (Give Description			
5. Well is intended to supply water for:		9. FORMATIONS			
DRILLHOLE		Kind /2		From (ft.)	<u>To (ft.)</u>
Dia. (in.) From (tt.) To (ft.) Dia. (in.) From (ft.)	To (ft.)	Star	d	Surface	30
les Surface 70		Sana	rock	30	70
7. CASING, LINER, CURBING AND SCREEN Material, Weight, Specification Dia. (in.) & Method of Assembly From (ft.) Blackfreef 1977 Culot - ASTH A-33 Surface	<u>To_(ft.)</u> <u>7_</u> 3	and a second and a			
mertakerne					
	1			,	
		10. TYPE OF DRILLING M	ACHINE USED	· · · · · · · · · · · · · · ·	
8. GROUT OR OTHER SEALING MATERIAL Kind From (ft.) Surface	To (ft.)	Cable Tool Rotary-air w/drilling mud Rotary-w/drilling mud	Rotary-hammer w/drilling mud & air Rotary-hammer & air Reverse Rotary	net []	ting with   Air   Water
		Well construction completed	on Oct	ى	19 <b>7</b> 8
11. MISCELLANEOUS DATA 	GPM	Well is terminated	inches	above final g below	Tade
Depth from surface to normal water level	Ft.	Well disinfected upon comple	tion 🔀	Yes 🗔 No	
Depth of water level when pumping <u>42</u> Ft. Stabilized X	Yes 🗆 No	Well sealed watertight upon c	ompletion 🔀	Yes 🗔 No	
Water sample sent to Madrim,		laborator	yon Dit	12	1978
Your opinion concerning other pollution hazards, information co finishing the well, amount of cement used in grouting, blasting, e	oncerning diffic tc., should be g	culties encountered, and data given on reverse side.	relating to nearby we	lls, screens, seals	, method of
Signature Poy Rusk Registered We	ell Driller	Complete Mail Address	Falls 9,	Jia (i	¥ 615-
	<u> </u>		<u> </u>		

WELL CONSTRUCTOR'S REPORT FORM 3300-15	FEB	7 1974 WHITE CO GREEN CO YELLOW C	NOT PY - DA PY - DF COPY - C	E IISIONIS IILLERIS IWNERIS	COPY SCOPY SCOPY	CEPA	STATE RIMENT Of Madison,	OF W SCONSIN FINATURAL RE Box 450 Wisconsini 5370	SOURCES
COUNTY	C	HECKONE				NAME	J X	7	<u>_</u>
Monop	<u> </u>	<u>/n</u>	Village		City	~	a XI	range	
2. LUCATION - Section Section	PN	Range I W	3. UVV	Jom		HILLING		ICo.	
R - Grid or street no Street nam	e		ADD	RESS	·				
i ND -1f available subdivision name, lot & block	: no.		POS	I OFFIC	<u> </u>	<u>ar</u>	erio	1 mg	
1 Distance in fact from well to persect:	BUILDING SA	NITARY SEWER	R FLOOR	DRAIN	FOU	NDATION	DRAIN	WASTE W	ATER DRAIN
Record answer in appropriate block i	5	C.I. TILE 3ユ	C. I.	TILE	EWER CON	NECTED	INDEPENDE	ENT C. I.	TILE
CLEAR WATER DRAIN SEPTIC TANK PRIV	Y SEEPAGE PIT	ABSORPTIO:	FIELD	BARN	SILO	ABAND	ONED WELL	SINK HOLE	1
51 Inte		77	7						
OTHER POLLUTION SOURCES (Give descript)	on such as dump.	quarry, drainage	well, stre:	im, pond	. lake, etc.)				
5. Well is intended to supply water for:	Horn	2							<u></u>
RILLHOLE			9. FO	RMATI	ONS /				
Dia, (in.) From (ft.) To (ft.) Dia.	(in.) From (ft.)	To (ft.)		-7	Kind			From (ft.)	To
Surface 90		· · · · · · · · · · · · · · · · · · ·		fai	A_		/	Surface	81
			,	Las	dr	ock		81	90
7. CASING, LINER, CURBING, AND SC	REEN		/						
Glack sted 19 - Threaded new	Surface	86							: : !
		<u>N. /</u>			00111				
8. GROUT OR OTHER SEALING MATE	From (ft.)	To-Ift.)		YPE OF	DRILLIN		INE USEL		arca Botary
	Surface			itary – ai drilling m	ir hud		tary — hamr rilling mud 8		ing with
			Wall a			eted on	G	<u> </u>	19 7
11. MISCELLANEOUS DATA Yield test:	at 1 il	GPM	Well is	termina	ated		inches	a lu gr above below	final grade
Depth from surface to normal water level	31	ft.	Well d	isinfecte	ed upon co	mpletion	n	<u>א</u> א	res 🔲 No
Depth to water level when pumping	41	ft.	Well se	aled wa	itertight u	pon com	oletion	X Y	es 🗌 No
Water sample sent to Marking	1.00				lab	oratory o	n: 7	in la	1974
Your opinion concerning other pollution h type of casing joints, method of finishing t be given on reverse side.	azards, informat he well, amount	ion concerning of cement use	g difficul d in grou	ties enc iting, bl	ountered, asting, sut	and data o-surface	relating to pumproom	nearby wells, is, access pits, i	screens, seais etc., should
SIGNATURE			COMPL	ETE MA		SS 	d 17 -	5-	4615
Loy Auch	Registered W	ell Driller	Blac	K()	five,	Fal	Les U.	is A	2
COLIFORM TEST RESULT	Ple GAS – 24 HR	S. GAS	- 48 HRS	ce delov S.	CONFIR	MED	REM	ARKS	

ł

WELL CONSTRUCTOR'S REPORT	PR 19 1974	WHITE CO GREEN CO YELLOW C	NOTE PY - DIVISION'S CO PY - DRILLER'S C OPY - OWNER'S CO	STAT DEPARTMENT OPY Madisc OPY	E OF WISCONSIN OF NATURAL RES Bax 450 ph. Wisconsin (5370)	SOURCES ,
1. COUNTY	СН	ECKONE		NAME	21	
116noe	Town			City Zag	<u>Change</u>	
2. LOCATION - "Section Section ]	I OW MISHIP	Kange	Jost	ME OF DRILLING		
PR - Grid or street no. Street name		<i></i>	ADDRESS /	11N Luperio	> ane	
ND - I fluvailable subdivision name, lot & block r	10.		POSTOFFICE	Tomal 2		
4. Distance in feet from well to nearest:	BUILDING SAN	ITARY SEWER	CFLOOR DRAIN	FOUNDATION DRAIN	DENT C. I.	TER DRAIN
Record answer in appropriate block)	4 3	2				ļ
CLEAR WATER DRAIN SEPTIC TANK PRIVY	SEEFAGE PIT	ABSORPTION	FIELD BARN	SILO ABANDONED WE	LL SINK HOLE	
OTHER POLLUTION SOURCES (Give description	n such as dump, qu	darry drainage	well, stream, pond, l.	ake, etc.)		
5. Well is intended to supply water for:	Ham					
6. DRILLHOLE	112 11		9. FORMATIO	NS		
Dia (in.) From ft ( To (ft ) Dia. (in	) From (ft.)	To (ft.)		Kind	From (ft.)	<u>;</u> <u>то</u> ::::.
Surface 90			Ja	nd	Surface	50
			Lan	rock	80	90
7. CASING, LINER, CURBING, AND SCR	EEN			· · · · · · · · · · · · · · · · · · ·		1
Dia in) Kind and Weight	Surface	To (ft.)				
i Apreacted new		رە				
·				л <sup>ус</sup> f		
			, A			
8. GROUT OR OTHER SEALING MATER	IAL		10. TYPE OF D	RILLING MACHINE US	ED	
Kind	From (ft.)	To (ft.)	🔀 Cable Tool	Direct Rotar	y C Rever	rse Rotary
	Surface		Rotary – air w/drilling muc	Botary – har with drifting mu	mmer Dettir d & air Ai	ng with ir 🗌 Water
			Well construction	n completed on a	cril 9	19 74
11. MISCELLANEOUS DATA Yield test:	at /2	GPM	Well is terminate	d S inchés	below	final grad
Depth from surface to normal water level	35	ft.	Well disinfected	upon completion	X Y	es 🗌 t
Depth to water level when pumping	44	ft.	Well sealed wate	rtight upon completion	Z Y	es 🗌 t
Water sample sent to Machine	in			laboratory on:	pril 17	7 1974
Your opinion concerning other pollution has type of casing joints, method of finishing the	zards, information well, amount of	on concerning of cement use	difficulties encou d in grouting, blass	intered, and data relating ting, sub-surface pumproc	to nearby wells, soms, access pits, e	creens, sea tc., should
SIGNATURE			COMPLETE MAIL	ADDRESS	.54	61.5
Noy Much.	Registered Wel	I Driller	Black	Piver Folk.	2 ic	R. 2
	Plea	se do not wri	te in space below		MARKS	

State of Wisconsin Department of Natural Resources Box 450	NC White Copy Green Copy	PTE: — Division's Copy — Driller's Copy	WELL CONSTRUCTOR'S REPORT Form 3300-15 Rev. 10-75
Madison, Wisconsin 53701	Yellow Copy	- Owner's Copy	SEP 1 5 1978
1. COUNTY CHECK	/) ONE:	Name	
$\frac{2 \text{ LOCATION}}{\text{OR} - \text{ Grid or Street No.}} \qquad $	Range	ADDRESS	GENT AT TIME OF DRILLING CHECK (A ONE
AND – If available subdivision name, lot & block No.		POST OFFICE TON	7-914 1611
4. Distance in feet from well Building Sanitary Bldg. D	rain Sanitary	Bidg, Sewer Floor Drain Connected T	Storm Bldg, Drain Storm Bldg, Sewer
to nearest: (Record C.F. O answer in appropriate $/\lambda'$	ther C.I.	$\mathcal{J}$ Other $\mathcal{J}$ Sewer Other $\mathcal{J}$	er Sewer C.I. Other C.I. Other
Street Sewer Other Sewers Foundation Drain Connecti	ed to: Sewage Sur	np Clearwater Septic Hol	ding Sewage Absorption Unit
San, Storm C.I. Other Sewer Sump Clearwater Clearwater Sump	U.I. U.I.	50	Seepage Bed
Privy Pet Pit: Nonconforming Existing Subsurface F Waste Pit Well Nonconform	Pumproom E hing Existing	larn Animal Animal Silo utter Barn Mard With Pil Pen	Glass Lined Silo Earthen Silage : Storage w/o Storage Trench Or Facility Pit Pit
Temporary Watertight Solid Manure Subsurface 'anure Liquid Manure Storage Gasoline or ck Tank Structure Oil Tank	Waste Pond or La Disposal Unit (Specify Type)	nd Other (Give Description)	·····
5. Well is intended to supply water for:		9. FORMATIONS	
Hon	ε	Kind	From (ft.) To (ft.)
6. DRILLHOLE Dia. (in.) From $(tt.)$ To $(ft.)$ Dia. (in.) From $(ft.)$	To (ft.)	SAND	Surface 17
P C KD	_	5 0 . 6 .	
$\int \frac{Surrace}{1} \frac{1}{2} \frac{S(r)}{2} \frac{S(r)}$		S AND STON	
CASING, LINER, CURBING AND SCREEN			· · · · · · · · · · · · · · · · · · ·
Material, Weight, Specification Dia. (in.) & Method of Assembly From (ft.) &	To (ft.)		
Jourgeton Deen	~ D		
	· · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	
			<u> </u>
		10. TYPE OF DRILLING MA	CHINE USED Botary-hammer
8. GROUT OR OTHER SEALING MATERIAL	· · · · · · · · · · · · · · · · · · ·		w/ariling mud & air Jetting with
Kind From (ft.)	To (ft.)	Rotary-air w/dritling mud	Rotary-hammer Air Lair Water
dRILL CUTTINES Surface	<u>P</u>	Rotary-w/drilling mud	Reverse Rotary
AFATSEMPANT P	40	Well construction completed o	5-3 1972
11. MISCELLANEOUS DATA 	<ul> <li>О GPM</li> </ul>	Well is terminated	above 
Depth from surface to normal water level 3	0 FL	Well disinfected upon completion	on Yes I No
Depth of water level 3 2 Ft. Stabilized	Yes I No	Well sealed watertight upon cor	npletion Z Yes No
Water sample sent to A 14 D c 5 01	·)	laboratory (	on SEPT (] 1972
Your opinion concerning other pollution hazards, informatic finishing the well, amount of cement used in grouting, blasti	on concerning diffing, etc., should be	culties encountered, and data re given on reverse side.	lating to nearby wells, screens, seals, method of
Signature		Complete Mail Address	
99 Tanne - Ton horn	d Well Driller	5) Parata a	J. 20.0. 24
			- margaria 1

WELL CONSTRUCTOR'S REPORT	MAR 1	5 1975 HAR 1	9 1975 STATE OF	W SCONS N	
PD=Y 3200-15	NOTE DEFAULTER COPY Box 450 CPY – DIVISIONS COPY Box 450 COPY – DRILLER S COPY Madison Wisconsin, 53701 COPY – CWNER S COPY				
1. COUNTY MOULDE CHE	.CK ONE		LAME COOL		
2. LOCATION - <sup>1</sup> Section Section Township F	lange	3. OWNER AT TIME O	FDRILLING	62	
$\frac{5 \xi 14}{CR - Grd or street no} = \frac{5 \xi 14}{Street name} \frac{7}{7} \frac{5N}{8}$	-16	ADDRESS	TEVENS		
		Toma	H, Wisc.		
		FUSTOFFICE	H Wisc.		
4. Distance in feet from well to nearest: BUILDING SANT Pecord answer in appropriate block 1 / Z Z	$\frac{1}{5}$	C.I. TILE SEWER	FOUNDATION DRAIN CONNECTED INDEPENDENT	C. I.	TER DRAIN
CLEAR WATER DRAIN SEPTIC TANK PRIVY SEEPAGE PIT	ABSORPTION	FIELD BARN SII	ABANDONED WELL SI	INK HOLE	·
30	60				•
OTHER POLLUTION SOURCES (Give description such as dump, qu.	arry, drainage :	vell, stream, pond, iake, e	12.,	<u> </u>	
5. Well is intended to supply water for: Home		· ····		<u>.                                     </u>	<u> </u>
6. DRILLHOLE		9. FORMATIONS		1 5	1
Q Surface (12)			<u>nd</u>	Surface	
		SAND		301120	$ \simeq /$
6 42 95		SANDST	ONE	21	95
Daling) Kind and Weight From (ft.)	To (ft.)	/			!
STANDARD STEEL Surface	42	<i>x</i>			
		· · · · · · · · · · · · · · · · · · ·			
		· · · · · · · · · · · · · · · · · · ·		; 	
- surface pipe used ST				· · · · · · · · · · · · · · · · · · ·	
installed by pushing		· · · · · · · · · · · · · · · · · · ·		[ 	
adapter used				/ 	·
8. GROUT OR OTHER SEALING MATERIAL Kind From (ft.)	To (ft.) /	Cable Tool		Bever	
DRILL CHITINGS Surface	8	Rotary – air w/d <del>eiling mud</del>	Hotary – nammer with drilling mud & air		y
NEAT CEMENT 8	42	Well construction cor	mpleted on APRIL	25	19 74
11. MISCELLANEOUS DATA	GPM	Well is terminated	10 inches	above	final grad-
Depth from surface to normal water level 35	ft.	Well disinfected upor	a completion	X Ye	es 🗌 ľ
Parth to water level when pumping 4/2	ft	Well sealed watertigh	t upon completion	X Ye	es 🔲 I
Water sample sent to Machine L.			laboratory on: 9/1	11	19 7
Your opinion concerning other pollution hazards, informatio type of casing joints, method of finishing the well, amount of	n concerning cement used	difficulties encountere in grouting, blasting,	ed, and data relating to nea sub-surface pumprooms, an	rby wells, s ccess pits, e	creens, sea tc., shoule
be given on reverse side.		COMPLETE MAIL ADD	DRESS		<u> </u>
		574 11	Au II.		
7-7 and Registered Well Please	Driller e do not writ	e in space below	TIVE, MILLSBO	Ro, WI	3C. 54635
COLIFORM TEST RESULT GAS - 24 HRS.	GAS -	- 48 HRS. CONF	IRMED REMAR	KS	

NELL CO FORM 3300-	NSTRUCT	TOR'S REI	PORT		RAM	NOTE PY - DIVIS		• <b>↓</b>	DEPART	STATE - MENT OF Mark con	CF WISCONS NATURAL Box 450	RESOU	P083
	HONR	0-C			GREEN CO YELLOW (	DPY - DRIL COPY - OW	LER'S COP NER'S COP	PY PV		viau sor	**'sconsin 35	701	
1 COUNTY	m			СН	ECK ONE				NAME	·····			*****
	11/02.	ROE	·······	S Town	<u> </u>	Village	Cr	<u>ty Z</u>	AGR	ANG	<u>ح</u>		
2. LOCATIC	$\sim$ $\sim$ $\sim$	ection Se	iction To	winship		3. OWNER				REF.	TOMAI	بر احرت چرک	FUE
R - Grid or	street no	- Stre	et name	T 18N]	1 / W	ADDRE T	ss Sman	4 /	1.50		LUME		
AND -Ifava	alable subdivis	sion name, lot	& block no	 ∧		POSTO	FFICE	<u> </u>	11				
4 Distance	in feet from	<u>407</u> a well to nea	rest:	D BUILDING ISAN	TARY SEWER	RIFLOOR DR	AIN	FOCNE	DATION E	DRAIN	WASTE	WATER	DRAIN
					. I. TILE	C. I.   TI	LE SEWE	R CONN	ECTEDIN	DEPENDE	NT C. I.	1	TILE
Reco	ord answer in .	appropriate b	ock)	10 2	5				-				
CLEAR WAT	TILE	SEPTIC TAN		SEEPAGE PIT	ABSORPTIO		SARN	SILO	ABANDUN	ED WELL	SINK HOLE	5	
		30			65					-			
OTHER POL	LUTION SOU	RCES (Give d	lescription	such as dump, q	uarry, drainage	well, stream.	pond, lak	e, etc.)			<u> </u>		
5. Well is in	ntended to si	upply water	for:	······									
			140	ME	<u> </u>	1					<u></u>		
DRILLH		1				9. FORM	MATIONS	S					<b>T</b> = 14
U-a. (in.)	From (ft.)	To (ft )	Dia. (in.)	From (ft.)	To (†t.)	+		Kind			+rom (f	t.)	
8	Surface	46	····-			5.An	סי				Surfac	e /	5
6	46	95				SAN	'S 5'	TON	É		15		75
7. CASING	, LINER, C	URBING, AI	ND SCRE	EN	1			7					
Dia lin.)	K	und and Weigh	it	From (ft.)	To (ft.)	ļ	/	<u> </u>			<u>_</u>		<u> </u>
1	STAND.	ARO S		Surface	46								
_@		18.9	7				/					1	
0.		-		1									
) su	yace,	pipe u	sed to	13		/							
<u></u>	; • • • • • • • • • • • • • • • • • • •	<u> </u>											
												:	
ø. GROUT	OR OTHER	RSEALING	MATERI	AL		10. TYP	EOFDR	ILLING	MACHI	NE USED	)		·
	Kır	nd		From (ft.)	To Ift.1	Cable	Τοοι		Direc	t Rotary	R	everse P	lotary
70.1			_	Surface	111	Rotar	v – arr		🗌 Rota	ry – hamm	ner 🗔 Je	tting w	th
DKILL	<u> </u>	7/N65			/7	w/dm	ing mud		with dril	ling mud &	air C	] <u>Air</u> [	Wate
NEAT	CEME	ミルナ		114	46	Well cons	truction	complet	ed on	JUL	1 11	′ 19	74
11. MISCE	LLANEOUS	DATA		1 15		Well is to	rminated		in in	ches	above 2	fin	alorad
Yield test:		2	Hrs. at	[12	GPM	wen is te		/	0	- <u> </u>	below		
Depth from	surface to r	normal water	level	40	ft.	Well disir	fected up	pon com	pletion		×	Yes	
Depth to w	ater level wh	ien pumping		48	ft.	Well seale	ed watert	ight upo	n comple	etion	8	Yes	<u> </u>
Water samp	le sent to	MADI	SON	4/150	٢.			labor	atory on	21	///		1975
Your opinic type of casi	on concernin ng joints, mi	g other pollu ethod of fini	ution haza shing the	rds, informati well, amount	on concernin of cement use	g difficultie ed in groutii	s encoun ng, blastir	tered, ar ng, sub-s	nd data re urface pu	elating to improom	nearby well s, access pits	s, scree ;, etc.,	ns, sea shouic
SIGNATURE	E	, 				COMPLET	TE MAIL A	DDRES	<u>s</u>	- <u></u>			
40							,	^	,	,		1	
7'1a	<u> </u>	To	R	Registered We	II Driller	578 6	JATER	<u>Hv</u>	6. H	11138	TORO, G	113	<u>c.</u>
COLIFORM	TEST RESUL			Plea GAS – 24 HRS	ase do not wr	ite in space - 48 HRS.	below CC	ONFIRME	D	REM	ARKS	639	/

			NOV UT SE	œ		· · · · ·
State of Wisconsin	NO	TE:	ŴĔ	LL CONST	RUCTOR'S	REPORT
Box 450 Madison, Wisconsin 53701	Green Copy Green Copy Yellow Copy	<ul> <li>Division's Copy</li> <li>Driller's Copy</li> <li>Owner's Copy</li> </ul>	y For Rev	m 3300-13 10-75	SEP	1 5 1978
1. COUNTY / CHECK (	) ONE:		Name			<u> </u>
ADNROE Brown		age 🗌 Ci	ity XX	GRN	NGE	
2. LOCATION $S = \frac{1}{2}$ $J = \frac{1}{2}$ OR - Grid or Street No. Street Name	Range	ADDRESS	SWNER DAGENT	AT TIME OI	DRILLING	
AND – If available subdivision name, lot & block No. $\angle O \supset \Im$		POST OFFICI	TOAN	A V	$\Delta I$	<u> </u>
4. Distance in feet from well' Building Sanitary Bldg. Di	rain Sanitary E	Bldg. Sewer	Floor Drain Connected To:	Storm Bl	dg. Drain	Storm Bldg, Sewer
to nearest: (Record C.I. O answer in appropriate Diock)	ther C.I.	Other C.I	. Sewer Other Sew	ver C.I.	Other	C.I. Other
San. Storm C.I. Other Sewer Sundation Drain Connecte	C.1. Oth	er Sump	Tank Tank	Seepage Pit		
Clearwater Clearwater Dr. Sump	<u> </u>		40	Seepage Bed Seepage Tren	ch G	ð
Privy Pet Pit: Nonconforming Existing Subsurface P Waste Pit Well Nonconform Pump Tank	umproom B ing Existing Gu	arn Animal Ani utter Barn   Ya Pen	mat Silo Glas rd With Pit Stor Faci	s Lined Silo age w/o lity Pit	Earthen Sil Storage Tre Pit	age ench Or
Temporary Watertight Solid Manure Subsurface Manure Liquid Manure: Storage Gasoline or Stack Tank Structure Oil Tank	Waste Pond or Lar Disposal Unit (Specify Type)	nd Other (Give (	Description)			
5. Well is intended to supply water for:		9. FORMATION	is			
		· · · · · · · · · · · · · · · · · · ·	Kind		From (ft.)	To (ft.)
Dia. (in.) From (tt.)  To (ft.) Dia. (in.) From (ft.)	To (ft.)	<u> </u>	sof		Surface	15-
Surface 40		frank.			15	P5
6 40 85	,	and the second se			·····	1
7. CASING, LINER, CURBING AND SCREEN Material, Weight, Specification						
STeel 17.57	KO	<u>    .                                </u>				
405 B GLER DER Suitace						
		10. TYPE OF DI	RILLING MACHIN	E USED		·
8 GROLT OR OTHER SEALING MATERIAL	, <u> </u>	Cable T		uary≕nammer drilling id & air		letting with
Kind From (ft.)	To (ft.)	w/millio		tary-hammer		Air
Exill Cutting Surface	8	Rotary- mud	w/drilling	verse Rotary		Water
Mear Cement 8	40	Well construction	completed on	5-	5	1972
11. MISCELLANEOUS DATA 	<u>/``,</u> GPM	Well is terminated	_/d ind	$\frac{Z}{1}$ :	ibove fina pelow	l grade
Depth from surface to normal water level $\mathcal{Z}$	FL FL	Well disinfected up	oon completion	X ·	Yes 🗆 No	
Depth of water level when pumping Ft. Stabilized	Yes D No	Well sealed waterti	ight upon completio	on 🔊	Yes 🗆 No	
Water sample sent to Made	20m		laboratory on	9-	(3	1978
Your opinion concerning other pollution hazards, informatio finishing the well, amount of cement used in grouting, blastin	n concerning diffic ig, etc., should be j	culties encountered given on reverse sid	l, and data relating le.	to nearby wel	ls, screens, sea	ils, method of
Signature		Complete Mail Ad	ldress	•		
TT CTAMER Sperf Bogisterer	1 Well Driller	578 Wat	nan -	Hel	short	au 5463

Stare of Wisconsin NO Department of Natural Resources White Copy Private Water Supply Green Copy Box 7921 Green Copy Madison, Wisconsin 53707 Yellow Copy	OTE:     WELL CONSTRUCTOR'S REPORT       - Division's Copy     Form 3300-15       - Driller's Copy     2200 12       - Owner's Copy     -
Town The Charge Town The Ville	non Name
A Section of Gov't. Lot Section Township Range	3. NAME DOWNER AGENT AT TIME OF DRULLING CHECK LA ONE
LI LOCATION SEL 24 IN IN	Hist was Hist of Britering Check in one
OR - Grid or Street No. Street or Road Name	ADDRESS
	post office 1
$A \otimes D^{-} = -1$ , available subcivision name, lot & block No.	POST OFFICE ZIP CODE
4. Distance in feet from well Building San tary Blog. Drain - Sanitary	Bidg, Sewer Floor Drain Storm Bidg, Drain Storm Bidg, Sew
to nearest: (Record C.I. Other C.I.	Other C.J. Sewer Other Sewer C.J. Other C.J. Other
San. Storm C.I. Other Sewers Foundation Dran Contected of Sewage Su Cla Other Sewer Sump Clearwater Clearwater Or. Sump	her Sump Tank Tank Seebage Bed (1) Seebage Trench
Privy Pet Pit: Nonconforming Existing Subsurface Pumproom E Waste G	Barn Animal Animal Silo GlassLined Silo Earthen Slage Earthen utter Barn Yard With Pit Storage w/o Storage Trench Manure Bas
Pit Well Nonconforming Existing Pump	Pen Facility Pit Or Pit
Tank Temporary Manure, Watertight Liquid, Manure, Subsurface, Waste Pond ( Stack or Platform, Manure Tank or, Pressure, Gasoline or, Disposal Uni Basin, Pipe, Oil Tank, (Specify Ty	pr Land Manure Storage Basin (Describe) t Concrete Floor Only ( Concrete Floor and
5 Well is intended to supply water for:	Partial Concrete Walls
home.	Kind From (ft.) - To (ft.)
6 DRILLHOLE	
Dia. (in.) From (tt.) To (ft.) Dia. (in.) From (ft.) To (ft.)	Sand Surface 18
8 Surface #2	Sindation 18 75
	Janasiene 10 15
6 42 75	
7. CASING, LINER, CURBING AND SCREEN Material, Weight, Specification	
Diz. (in.) Mfg. & Method of Assembly From (ft.) To (ft.)	
1. Structure Stript 1857 Surface U.Z.	
	. I
	10. TYPE OF DRILLING MACHINE USED
	Rotary-hammer — w/drilling
5. GROUT OR OTHER SEALING MATERIAL Kind From (ft.) To (ft.)	Rotary-air Rotary-hammer Air
	Botaryw/drilling
duril cuttings Surface 7	mud Reverse Rotary
reduced 7 42	Wall construction completed on TUDE 3.0 19 77
H. MISCELLANEOUS DATA	$\frac{19 - 1}{2}$
Yield Test: Hrs. at GPM	Well is terminated inches below final grade
Depth from surface to normal water level Ft.	Well disinfected upon completion IS Yes INO
Depth of water level 40 Ft. Stabilized Yes No	Well sealed water tight upon completion 🖸 Yes 🗆 No
Water sample sent to Madi Sa C	laboratory on <u>Hugust</u> 3 19 77
Your opinion concerning other pollution hazards, information concerning diff finishing the well, amount of cement used in grouting, blasting, etc., should be	culties encountered, and data relating to nearby wells, screens, seals, method of given on reverse side.
Signature Kouba Well Drilling, Inc.	Business Name and Complete Mailing Address
Lain Ka La Dia province Wall Dulla	578 Water ave Hillsborg, WZ.
Contra provide Registered weu Driter	

State of Wisconsin	NO <sup>-</sup>	TE:		WELL C		: 0 1973 R'S REPO	RT
Box 1921 Madison, Wisconsin 53707	A hite Copy - Green Copy - Yellow Copy -	Division's Co Driller's Cop Owner's Cop	opy yy py	Form 350	10-10	Rev. 12	)- '6
1. COUNTY CHECK (1) C M STURAR IT TOWN	DNE:	ge		me Grane	<u>A</u>		
2. LOCATION SM 29 /SN	Range 3	NAME D	owner An Pr	AGENT AT Ì	ME OF DRILL	NG CHECK	( I A ONE
OR - Grid or Street No. Street Name	RIW	ADDRESS	RR			· · · · · · · · · · · · · · · · · · ·	
AND - If available subdivision name, lot & block No.		POST OFF	ice tom	ah wm	, 0		
4. Distance in feet from well Building Sanitary Bidg. Drai to nearest: (Record C.I. Othe answer in appropriate plock)	n Sanitary B ar C.I.	ldg, Sewer Other	Floor Dr Connected C.I. Sewer O	ain S To: S ther Sewer	torm Bidg, Drain C.I. Other	Storm C.I.	Bidg, Sewer Other
Street Sewer Other Sewers Foundation Drain Connected	C.I. Cthe	p Clearwat sr Sump	er Septic – Tank	Tank Seepa	ge Absorption Un ge Pit	11	<u> </u>
Clearwater Clearwater Dr. Sump			28	Seepa Seepa	ge Bed ge Trench	50	
Privy Pet Pit: Nonconforming Existing Subsurface Pur Pit Well Nonconforming Pump Tank	nproom Ba Gu Existing Gu	irn Animal A tter Barn · Pen	Animal Siło Mard With	Glass Line Pit: Storage Facility	d Silo Earthe w/o Storagi Pit Pit	n Silage : Trench Or	
Temporary Watertight Solid Manure Subsurface Wa Manure Liquid Manure Storage Gasoline or Di Stack Tank Structure Oil Tank (S	aste Pond or Lan sposal Unit specify Type)	d Other (Giv	e Description	<b>)</b>			
5. Well is intended to supply water for:		9. FORMATH	ONS				
6. DRILLHOLE Dia (in) From (ft) To (ft) Dia (in) From (ft)	To (ft)	Dand	Kind	Grave	From (I	<u>t.}</u>	<u>40</u>
6 Surface 60		Day	Ro	ch	<u></u>	0	60
		and the second sec					
7. CASING, LINER, CURBING AND SCREEN Material, Weight, Specification Dia. (in.)] & Method of Assembly [From (ft.)]	To (ft.)	A CONTRACT OF THE OWNER			· · · · ·		
6 new Steel 1947 Surface	40 ,			_			
United Stel ASTM A-53						, 1	
	/						
				_		, İ	
		10. <b>TYPE OF</b>	DRILLING N	Rotary-h	ED ammer i		
8. GROUT OR OTHER SEALING MATERIAL	_	🕞 Cable	Tool	mud & ai		Jetting	with
Kind From (ft.)	To (ft.)		ry-air Iting mud ry-w/drilling	C & air	ammer		Vater
Larry 101malion - Surface	70	mud		Reverse F	Rotary		- 77
11. MISCELLANEOUS DATA		Well constructi	on completed	on	X above	final grade	9_/_1
Yield Test:/ Hrs. at	GPM	Well is t <del>ermina</del> t	ted <u>D</u>	inches	below		
Depth from surface to normal water level 20	Ft.  \	Well disinfected	upon comple	tion	X Yes	No	
when pumping Ft. Stabilized	Yes 🗌 No V	Well sealed wate	ertight upon c	ompletion	1 Yes 🗆	No	,
Water sample sent to MARLAN	oncerning diffic	ulties encounte	laborator	y on	uly 30	s, seals, mei	19 <u>77</u>
furshing the well, amount of cement used in grouting, blasting,	etc., should be g	iven on reverse	side.				
Signature Jim Ray Shuret Registered V	Vell Driller	Complete Mail	Address	wis			
			÷.			<u> </u>	

U

State of Wisconsin Department of National Revisions	NC	TE:	WELI		OR'S REPORT
Private Water Supply Box 7921	White Copy Green Copy	<ul> <li>Division's Copy</li> <li>Driller's Conv</li> </ul>	Form	3300-15	Rev. 2-79
Madison, Wisconsin 53707	Yellow Copy	- Owner's Copy		MAY 15 19	184
1. COUNTY CHECK	(V) ONE.		Name /	Grave	
- Section or Govit. Lot Section	Township Range	$\frac{age}{2. \text{ NAME } } \frac{1}{\sqrt{2}} 0$	WNER CAGENT A	T TIME OF DRIL	LING CHECK 1/ ONE
2. LOCATION $SW$ $29$	VIEN IW	denr	y Bett	hauser	•
OR – Grid or Street No. Street or Road Name		ADDRESS	, / , /		
AND – If available subdivision name, lot & block No.		POST OFFICE	The lat	ZIP	CODE H 34
4. Distance in feet from well Busiding Sanstary Bidg.	Drain Sanitary	Bidg. Sewer	Eloor Drain Connected To:	Storm Blog, Dra	in Storm Bidg, Sev
to nearest: (Record C.I. answer in appropriate 15	Other C.I.	Other C.I.	Sewer Other Sewer	Otri علم Otri . محمد مع	er C.I. Other
Street Sewer Other Sewers Foundation Drain Conner	cted to: Sewage Sur	no Clearwater	Septic Holding Se	wagerAbsorption U	Unit Manure Hopper
San, Storm C.I. Other Sewer Sewage Sump Clearwater Clearwat Dr. Sump	ter			epage Pit epage Bed epage Trench	Phuematic Tan-
Privy Pet Pit: Nonconforming Existing Subsurface Waste Nonconforming Existing Subsurface	e Pumproom E rming Existing	larn Animal Anir utter Barn Yar	mail Silo Giáss L d With Pit Storage	ined Silo Earth w/o Stora	nen Slage Earthen age Trench Manure Bas
Pump Tank			and the second		`
Temporary Manure Watertight Liquid Manure Subsu- Stack or Platform Manure Tank or Pressure Gasoli Basin Pipe Cil Ta	rface Waste Pondic ne or Disposal Uni nk (Specify Ty	pr Land Manure De) Concrete Concrete	Storage:Basin E Floor Only E Floor and	_ Other (Describe)	<u> </u>
5. Well is intended to supply water for:	·······	Partial C 9. FORMATION	onÉrete Walls	- <u></u>	
horne		ľ	Kind	From	(ft.) To (ft.)
6. DRILLHOLE Dia. (in.) From (tt.) To (ft.) Dia. (in.) From (ft.)	To (ft.)	, e	sand	Surfac	e 35
8 Surface (15		A A A A A	Sandal	ne -	1 75
		1			
CASING LINER CURRING AND SCREEN		1			
Material, Weight, Specification Dia. (in.) Mfg. & Method of Assembly 21 From (ft.)	To (ft.)	A Company of the second			
New Standard Steel					
C piche. 10:11 A53 Welded Surface	45				
		1			
			•		
					<u></u>
	1	10. TYPE OF DF	RILLING MACHINE Rotar	USED y-hammer	
S. GROUT OR OTHER SEALING MATERIAL	1	Cable T		lling & air	Jetting with
Kind From (ft.)	) / To (ft.)	Rotary-a w/dritter	air ig mud 🏹 & air	ry-hammer .	Water
drill cuttings   surface	7	Rotary-v mud	widnilling 🛄 Reve	rse Rotary	
head Comment	<u> </u>	Wall construction		at her	23 10 78
11. MISCELLANEOUS DATA		HEL CONSTRUCTION		above	Enal grade
Yield Test; 2 Hrs. at	12 GPM	Well is terminated	inche	es 🗖 below	
Depth from surface to normal water level	23 Ft.	Well disinfected up	oon completion	Sa Yes	] No
Depth of water level when pumping Ft. Stabilized	Yes I No	Well sealed waterti	ght upon completion	Yes 🗆	] No
Water sample sent to Madison			laboratory on	Decembe	2n 21, 19 78
Your opinion concerning other pollution hazards, informa finishing the well, amount of cement used in grouting, blas	tion concerning diff sting, etc., should be	culties encountered given on reverse sid	l, and data relating to le.	nearby wells, scre	ens, seals, method of
Signature Lois Kouba, secretary		Business Name and	d Complete Mailing A	ddress	
Komba Well Dulling , Ine , Regist	ered Well Driller	578 W	ater Gue	. Ninst	,oro, WI

WELL CONSTRUCTION REPO WISCONSIN STATE BOARD C WELL CONSTRUCTION DIVIS	ORT OF HEALTH SION 11 1942
Note: Section 31 of the Wisconsin Well Construction Code, having the force and effect of he tion of every well the driller shall submit a report covering all essential details of construction by the Board Owner	aw, provides that within thirty days after comple- to the State Board of Health on a form provided
Post Office Date Date Date Date Date Date Date Dat	The square below represents a section of land divided into 40 acre tracts. Mark the position of the premises in the section.
Describe further by subdivision, plat, district, lake, lot.	Twp. No. $18N$ Range $100$ E

See Well Construction Report bulletin. In making the diagram in the space below consider 10 ft. as the distance between lines. Be sure to indicate NORTH.

ees Pool

· · · · ·

- Ban

:

Additional copies of this form may be obtained in lots of 12 for 25c. Send remittance with order to State Board of Health, Well Construction Division, Madison, Wis.

. .

and the second | WELL CO                  | NSTRUCTOR         | S REPORT         | r                       | DEPARTN          | STA-          | E OF WISCONSIN<br>RESOURCE DEV | ELOPMENT                                  |                        | Wel       |
|--------------------------|-------------------|------------------|-------------------------|------------------|---------------|--------------------------------|---|------------------------|-----------|
| 1 COUNTY                 |                   |                  |                         | CHECK            | ONE           | NAME                           |   |                        |           |
|                          |                   | <u>m</u> rev     | -                       | Nor town         | Village       |                                | <u> </u>                                  | 2                      |           |
| 2. 100411                |                   | a show of a      |                         | > $T$ .          | 17  k/        | -RIU                           | and block sumbers when                    | JVallable.)            |           |
| 3. OWNER                 | AT TIME OF        | DRILLING         |                         | ~~               | <u> </u>      |                                |   | 1.2                    | 11        |
| CHINER:                  | COMPLETE          |                  | DECC                    |                  | rai~          | ner Wel                        | 2 Schaver                                 | er We                  |           |
| 4. UWNER                 | 5 COMPLETE        | MAIL ADD         | RESS                    |                  |               |                                | ji ka | ÷                      |           |
| 5. Distanc               | e in feet fro     | om well to       | nearest:   <sup>B</sup> | UILDING SA       | NITARY SEW    | ER FLOOR DRAIN                 | OUNDATION DRAIN                           | WASTE WA               | TER DRAI  |
| (Record a                | inswer in eppro   | opriate block)   |                         | S                |               | C. I. THE SEWER C              | CONNECTEDINDEPENDE                        | NT C. I.               | TILE      |
| CLEAR WA<br>C. I.        | TER DRAIN<br>TILE | septic tan<br>50 | K PRIVY S               | SEEPAGE PIT      | ABSORPTI      | ON FIELD BARN SIL              | O ABANDONED WELL                          | SINK HOLE              |           |
| OTHER POI                | LLUTION SOU       | JRCES (Give      | description s           | uch as dump,     | quarry, drain | age well, stream, pond, lake,  | etc.)                                     | I                      |           |
| 6. Weil is               | intended          | to supply        | water for:              | 7-               | Im            | <u>.</u>                       |   | <u> </u>               |           |
| 7. DRILLH                | OLE               |                  |                         |                  | <u></u>       | 10. FORMATIONS                 | ······································    |                        |           |
| Dia. (in.)               | From (ft.)        |                  | Dia. (in.)              | From (ft.)       | To (ft.)      | Kind                           |   | From (ft.)             | To (ft.)  |
| 10                       | Surface           | 35               | 6                       | 35               | 77            | Sandy (                        | lay                                       | Surface                | 15        |
|                          |                   |                  |                         |                  |               | Sand                           | Rock                                      | 15                     | 77        |
| 8. CASINO                | G, LINER, CI      | URBING, A        | ND SCREE                | N<br>  E         | To (51)       |                                |   |                        |           |
|                          | <u> </u>          | una ena weigi    | 19.45                   | C. f.            | <u>بہ</u>     |                                |   |                        |           |
|                          | Tim               | cino             | <u> </u>                | Surrace          | 35            |                                |   |                        |           |
|                          |                   | 0                |                         |                  |               |                                |   |                        |           |
|                          | ·!                |                  |                         |                  |               |                                | <u> </u>                                  |                        |           |
|                          |                   |                  |                         |                  |               |                                |   |                        |           |
|                          |                   |                  |                         |                  |               |                                |   |                        |           |
|                          |                   |                  |                         |                  |               |                                |   |                        |           |
| <u></u>                  |                   |                  |                         |                  |               |                                |   |                        |           |
| 9. GROUT                 | OR OTHER          | RSEALING         | MATERIA                 | L<br>I a carrier | • 16 · ·      |                                |   |                        |           |
|                          | Kir               | nd               |                         | From (ft.)       |               |                                |   |                        |           |
| 72                       | at C              | <u>eme</u>       | <u>~~</u>               | Surface          | 35            |                                |   |                        |           |
|                          |                   | <u></u>          |                         |                  |               | Well construction cor          | mpleted on M                              | ayzl                   | 196       |
| 11. MISCE<br>Yield test: | ELLANEOUS         | DATA             | j Hrs.                  | at 8             | GPM           | Well is terminated             | S inches                                  | ⊠ above<br>⊡ below fin | nal grade |
| Depth fro                | m surface to      | o normal v       | water level             | 47               | ft.           | Well disinfected upo           | n completion                              | 🔀 Yes                  | N         |
| Depth to v               | water level       | when pur         | ping                    | 56               | ft.           | Well sealed watertig           | ht upon completion                        | 🛛 Yes                  | N         |
| Water san                | nple sent to      | 0                | Made                    | son.             | 11, io.       | la                             | boratory on:                              | June 5                 | 19 6      |
| Your opin                | nion concerr      | ning other       | pollution               | hazards, in      | nformation    | concerning difficulties        | encountered, and                          | data relating          | to nearb  |

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to heart wells, screens, seals, type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, subsurface pumprooms, access pits, etc., should be given on reverse side.

Jim Jackhur	Registered Well Dril	ler Elico	ADDRESS					
	Please do not write in space below							
COLLFORM TEST RESULT	GAS - 24 HRS.	GAS - 48 HRS.	CONFIRMED	REMARKS				
· · ·		1	Į	l				

WELL CC	) NSTRUCI	TOR'S RE	PORT		MAR	1 3 1975 NOTE	j	DEPAR	STATE C TMENT OF	DE WISCONSIN NATURAL RE	- E\$OURCES
					WHITE CO GREEN CO YELLOW (	PY - DIVIS )PY - DRIL COPY - OW'	ION SICOPY LERISICOPY NERISICOPY		Madison, N	Wisconsin (537)	21
1. COUNTY	Mon	IROE	r	CH Towr	ECKONE	Village	City	NAME	CANE IS	 ,	
2. LOCATIO	<u>میں بر اور اور اور اور اور اور اور اور اور او</u>	ection Se	ction Tow	nship	Range -///	3. OWNER	R AT TIME OF	DRILLING			
GR Grid e	r street no	Str	eet name 7	ISN		ADDRE	ss on a u	11.			
AND If ava	nlable subdivis	sion name, lot	& block no.	. 9		POSTC	FICE	11			
4. Distance	in feet from	n well to nea	rest: BU	LLDING SAN	ITARY SEWER	C. I. TI	AIN: FO	UNDATION DNNECTED !	DRAIN NDEPENDE	WASTE W NT C. I.	ATER DRAIN
Pec:	ord answer in a	appropriate bi	ock)	10 3	5 -						
CLEAR WAT	TER DRAIN . TILE	SEPTIC TANI		EEFAGE PIT	ABSORPTIO:	N FIELD	Silo	ABANDO	NED WELL	SINK HOLE	<b>.</b>
OTHER POL	LUTION SOL	90 RCES (Give a	lescription su	chias dump, a	uarry dra.nage	well, stream	pond, lake, et.			ļ	
5. Well is in	ntended to su	upply water	for: Ho.	mΕ				.*			
6. DRILLH	IOLE			<u> </u>		9. FORI	MATIONS		···· · · · · · · · · · · · · · · · · ·		
<u> </u>	Surface	//2	Dia. (in.)	From (ft.)	- 10 (tt.) 	5	JAN, KY			Surface	
	117	- 75				54					15
7. CASING	173	75 URBING A			<u> </u>	SAN	DSTON	ve		/3	73
Dia (n.)	ĸ	ind and Weigh	1t	From (ft.)		×					
6	NEW + STAND	1RD ST	ND EEL	Surface	42						
0	<b>.</b>	18.97		· · · · · · · · · · · · · · · · · · ·	1			<u> </u>			
0.				1							
0 000	Mace	pipe u	sed to	1.15'	) 			<u> </u>			
	00.07.05			-	1		<u></u>				
8. GROUT			MATERIA	From (ft.)	To (ft.)	Cable	Tool		INE USED	Rev	erse Rotary
DRILL	L 547	TING	5	Surface	12		v – air Hirry-mud.	Rot with dr	ary – hamm	er Jett air D	ing with
NEAT	CEM	ENT		12	43	Well con:	struction com	pleted on	JUNG	<i>. 17.</i>	19 75
11. MISCE Yield test:	LLANEOUS	DATA	Hrs. at	15	GPM	Well is te	rminated	12.	nches	Delow	final grad
Depth from	n surface to r	normal water	level	38	ft.	Well disir	nfected upon	completion			les 🗌 I
Depth to w	ater level wh	ien pumping	4	17	ft.	Well seal	ed watertight	upon comp	letion	X	(es 🗌 i
Water samp	ole sent to	MA		[]	56.		la	aboratory o	n: ⊋⁄	111/	19 7:
Your opinic type of casi	on concernin ng joints, me	g other polle ethod of fini	ution hazard shing the we	ls, informati ell, amount o	on concernin of cement use	g difficultie d in groutie	s encountered ng, blasting, s	d, and data ub-surface p	relating to a pumprooms	nearby wells, , access pits,	screens, sea etc., shoul-
SIGNATURI	E					COMPLE	TE MAIL ADDI	RESS			
7.76	) Januar	- Ra	- le Re	gistered We	II Driller	578	WATER	AVE.	HILL	5BURO,	Wisc
	TECT DECUT	т		Plea	ise do not wri	te in space	below	RVED	REMA	ARKS	634
COLIFORM	ILSI KESUL	. 1		-13 - 1 <del>4</del> NK3		40 mm3.	Contr				

REV. 3-71

WELL COM	NSTRUCTOR	S REPOR	т	WISCO	NSIN STAT	E BOARD OF HE	ALTH			j Wel d
1. COLNTY				CHECK	ONE	NAME			1	
	Tonroe		<u> </u>	Town	Village	City The	Trang	1		
2. LOCATIC	N. (Number a	nd Street or	section, sect		and range. All	$\int \int $	e, lot and block	numbers when at	******IV	ED
3. OWNER	AT TIME OF	ADRILLING		Jec a		<u>/ / / / / / / / / / / / / / / / / / / </u>				
		1	Pobert	Boel	m			$\sim 10^{-6}$	JC <b>7</b> 28.	1965
4. OWNER	S COMPLETE	MAIL ADI	DRESS	1	1. (		<u> </u>		1	
			dona	n IV		FRIELOOR DRAIN	FOUNDATIO		SANITA	RY
5. Distanc	e in teet tr	om well to	o nearest: D		C. I.   TILE	C. I. TILE SE	WER CONNECTEI	INDEPENDENT	$\begin{bmatrix} \mathbf{WASTE} \mathbf{W} \\ \mathbf{C} \end{bmatrix} \mathbf{I}$	ATER DRAIN
(Record a)	nswer in appr	opriete block		4 3	25 -					
CLEAR WAL	TILE	SEPTIC TA	NK PRIVY S		ADSURPTI	UN FIELD BARN	SILU ABAN	JUNED WELL	INK HULE	
~	-	60	-	\$5	-	-		-		
OTHER POL	LUTION SOI	URCES (Give	e description su	uch as dump,	quarry, drain	age well, stream, pond	, lake, etc.)			
6. Well is	intended	to supply	water for:	Home	,					
7. DRILLHO	OLE					10. FORMATION	\$			
Dia. (in.)	From (ft.)	To (ft.)	Dis. (in.)	From (ft.)	<u>To (ft.)</u>	Ki	nd		From (ft.)	To (ft.)
,0	Surface	28				Sand			Surface	11
6	28	60				Clay			11	17
8. CASINO	G, LINER, C	URBING,	AND SCREEN	1		11.	b a pl	 ,	.~	- 0
Dia. (in.)		(ind and Weig	ght	From (ft.)	To (ft.)	sand roci	t o Clay			27
12	to	Ú		Surface	31	Pock-11	ter lea	ring	29	60
		<u> </u>								1
						 			<u></u>	
						<u> </u>				
	1			<u> </u>	<u> </u>					
9. GROUI		R SEALING	5 MATERIAL	From (ft )	To (ft )					
chi	1 //	<u>האו</u>		Surface	28			, <u>.</u> ,	,	
	an	7			~~				·	
<i></i>						Well constructio	n completed a	on Oct	20	1965
11. MISCE	LLANEOUS	DATA		0	-	Well is terminat	ed 17-	inches	above	final grade
Yield test:	7		Hrs.	at 7	GPM				below	
Depth from	n surface t	o normal	water level	26	ft.	Well disinfected	upon comple	tion	CT Ye	<b>:s</b> 🗌 Nc
Depth to v	water level	when pur	nping	39	ft.	Well sealed wa	tertight upon	completion	🗹 Ye	es 🗌 No
Water san	nple sent t	· War	lism				laboratory	on: Od	26	1965
					- f					

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearb wells, screens, seals, type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, sub surface pumprooms, access pits, etc., should be given on reverse side.

Joy Jush	Registered Well Dril	complete mail	ADDRESS Diver 7	falls wis
COLIFORM TEST RESULT	Please do noi   GAS - 24 HRS. 	Write in space belo GAS - 48 HRS.	ow '	REMARKS

WELL CONSTRUCTOR'S REPORT TO W See Instructions	VISCONSIN STATE BOARD OF HEALTH Wel 6 on Reverse Side
1. County Monoe	Village Ja Langt
2. Location Sec 32 - Town of Ja Name of street and sumper of premis	City Check one and give dame 
3. Owner X or Agent - Te Name or individual	pertnership or arm RECEWEI
4. Mail Address Ornak	LL dress required
5. From well to nearest: Building_2ft; sewer_	25_ft; drain_/2_ft; septic tank_3_SEP.1 8 1963
dry well or filter bed_5_6_ft; abandoned well?	SANITARY
6. Well is intended to supply water for:	NGINEER
7. DRILLHOLE: Dis. (in.) : From $(f_{L})$   To $(f_{L})$    Dis. (in.) + From $(f_{L})$   To $(f_{L})$	10. FORMATIONS:
	- Cara Coro
	- Watch, berune un
8. CASING AND LINER PIPE OR CORBING: Dia. (in) 1. Kind and Weight 1. From (ft.) 1. To (ft.)	
$\frac{1}{2}$	
9. GROUT:	
- / lor u	Construction of the wall was completed on:
	But a first and the second complete a first and the second complete a second comple
11. MISCELLANEOUS DATA:	
Yield test: Hrs. at GPM.	The well is terminated inches
Depth from surface to water-level:ft.	<b>LX</b> above, below [] the permanent ground surface.
Water level when numping: <b>30</b> ft	Was the well disinfected upon completion?
water-level when pumping.	YesX No
Water sample was sent to the state laboratory at:	Was the well sealed watertight upon completion?
Thadison on Aust 11 1963	YesX No
Signature find he dian	Merrillan Wis
Registered well Driller Please do not wi	tte in space below
Rec'd SEP 1 2 1963 No 40 3	10 ml 10 ml 10 ml 10 ml 10 ml
Ans'd	Gas-24 hrs.
Interpretation SAFE-BACTERIOLOGICALLY	48 hrs
-	Confirm
	B. Coli
	Examiner
	-

GNATURE		COMPLETE MAIL ADDRESS	5-4-
ells, screens, seals, type of casing jo rface pumprooms, access pits, etc., sh	ould be given on reve	ing the well, amount of cement used in erse side.	grouting, blasting, sub-
ater sample sent to Mast	ison		data salating to sant
epth to water level when pumping	<u>.3/ ft.</u>	well sealed watertight upon completion	
epth from surface to normal water leve	el <u>24</u> ft.		
ield test: 9 Hrs.	at /2 GPM	Wall disinfected upon completion	below tinal grade
I. MISCELLANEOUS DATA	<u> </u>	Well construction completed on Well is terminated	above final and
1 ucy (ensent			$- + 7 \cdot 7$
mind A	Surface 3 /		
GROUT OR OTHER SEALING MATERIA	AL From (ft.) To (ft.)		
▶			
		SEP 16:000	
		i	
6 Threading new		-	
Dia. (in.) Kind and Weight	From (ft.) To (ft.)		
CASING, LINER, CURBING, AND SCREI	EN	- Jul alp	
6 26 55		Land rock	9 35-
10" Surface 26		fand	Surface 9
RILLHOLE	From (ft.) To (ft.)	IU. FORMATIONS	From (ft.) To (ft.)
	Home		
. Well is intended to supply water for		· · · · · · · · · · · · · · · · · · ·	
THER POLLUTION SOURCES (Give description	such as dump, quarty, drain	iage well, stream, pond, lake, etc.)	
C. I. TILE 49	10.5		
TEAR WATER DRAIN I SEPTIC TANK IDDIVY	7 29	ON FIELD I BARN I SILO LABANDONED WET	LISINK HOTE
Distance in feet from well to nearest:	BUILDING SANITARY SEW C. I. TIL	ER FLOOR DRAIN C. 1. TILE SEWER CONNECTED INDEPEND	ENT C. I. TILE
OWNER'S COMPLETE MAIL ADDRESS	Tomal."	Talia.	
OWNER AT TIME OF DRILLING	mas des	mint	· · · · · · · · · · · · · · · · · · ·
Mit y L Lety	dec 32	T. IPN RIW	
THENING LOCATION (Number and Street on Windigs and	Town Village	City Ja han	nge Tentlahla
COUNTY L.	GREEN COPY - DR YELLOW COPY - C CHECK ONE	NLLER'S COPY Modison, V DWNER'S COPY NAME	Visconsin 53701
AELL CONSTRUCTOR'S REPORT	WHITE CORY - DIV	DEPARTMENT OF	NATURAL RESOURCES
		SEP 15 1971 STATE 0	

Roy Bush	Registered Well (	Driller Black	k Piner	Falla U	Lis P2
	Please do	not write in space	below		
LIFORM TEST RESULT	GAS - 24 HRS.	GAS 48 HRS.	CONFIRMED	REMARKS	
-V 11 cm	1		•	•	

-		2	٠.
State of Wisconsin Department of Natural Resources Private Water Supply	BL-041 NC White Copy	TE: WELL CON – Division's Copy Form 3300–	STRUCTOR'S REPORT
Box 7921 Madison, Wisconsin 53707	Gr <b>ee</b> n Copy Yellow Copy	<ul> <li>Driller's Copy</li> <li>Owner's Copy</li> </ul>	DCT 1 5 19251
I. COUNTY MANNER	CHECK (1) ONE:		
Section or Gov't. Lot	Section Township Range	3. NAME DOWNER AGENT AT TIM	E OF DRILLING CHECK (1) ONE
OR - Grid or Street No. Street or	Road Name	ADDRESS	
$\frac{360 \text{ SE}_1 \text{ Sec}, \text{ SA}}{\text{AND} - \text{ If available subdivision name}}$	lot & block No.	POST OFFICE	ZIP CODE
4. Distance in feet from well Building	Sanitary Bldg, Drain 🗉 Sanitary	Bidg, Sewer   Floor Drain Storn	n Bldg, Drain — Storm Bldg, Sew
to nearest: (Record answer in appropriate 30 plock)	C.I. Other C.I.	Other C.I. Sewer Other Sewer C.I.	Other C.I. Other
Street Sewer Other Sewers Foundati San, Storm C.I. Other Sewer	on Drain Connected to: Sewage Su Sewage C.I. Ott Sump	np Clearwater Septic Holding Sewage A Ser Sump Tank Tank Seepage F / (200 Seepage F	bsorption Unit Manure Hopper or Retention or Pnuematic Tank
Privy Pet Pit: Nonconforming Exist	Sump Sump Subsurface Pumproom E	Barn Animal Animal Silo Glass Lined S	ilo Earthen Silage Earthen
Waste Pit Well Pump Tank	Nonconforming Existing	utter Barn Yard With Pit Storage . Pen Facility , F	w/o Storage Trench, Manure Basir Plt Or Pit
Temporary Manure Watertight Liquid Stack or Platform Manure Tank or P Basin	Manure Subsurface Waste Pond ( Pressure Gasoline or Disposal Uni Pipe Oil Tank (Specify Ty	pe) Concrete Floor Only Concrete Floor Only Concrete Floor and Partial Concrete Walls	(Describe)
5. Well is intended to supply water for:		9. FORMATIONS	
6. DRILLHOLE Dia (in 1 From (tt.) To (ft.) Dia (i	$r_{1} = r_{2}$	Kind Sand	Surface
		Sindstani	11 185
10 Surface 150		Sanostone	<u> </u>
CASING, LINER, CURBING AND SCF Material, Weight, Specification	REEN	Sand Pecket (135-1.	38J
Dia. (in.) Mfg. & Method of Assembly New Standard Ster	From (ft.) To (ft.)		
6 Pl. and walded 18,97	Surface 150	-	I
		:	-
		, i i i i i i i i i i i i i i i i i i i	
		10. TYPE OF DRILLING MACHINE USED	ner
8. GROUT OR OTHER SEALING MATE		Cable Tool w/drilling mud & air	Jetting with
Kind	From (ft.) To (ft.)	Rotary-air Rotary-hami W/drilling mud	mer 🗌 Air
neat cement	- Surface / 57)	Rotary-w/drilling Reverse Rot	ary
,		Well construction completed on	August 15, 1986
11. MISCELLANEOUS DATA Yield Test:	- Hrs. at GPM	Well is terminated	above below final grade
Depth from surface to normal wate	r level 38 Ft.	Well disinfected upon completion	Yes I No
Depth of water level when pumping3 / I	Ft. Stabilized 🛱 Yes 🗋 No	Well sealed watertight upon completion	Y Yes D No
Water sample sent to Labo	natory 207	laboratory on Augu	st 25, 1986
Your opinion concerning other pollution finishing the well, amount of cement used	hazards, information concerning diff in grouting, blasting, etc., should be	iculties encountered, and data relating to nearby given on reverse side.	wells, screens, seals, method of
Signature Kouba, WLII D	willing, Inc.	Business Name and Complete Mailing Address	1-1 . 1.1. CA(-2)
Line Kunta	Are, Registered Well Driller	578 Water Uve. Aili	Sooro, WI SAPSA

WELL CONSTRUCTOR'S REPORT TO W See Instructions	ISCONSIN STATE BOARD OF HEALTH D <sup>6</sup> on Reverse Side
1. County Monral	Village - Ja Trange
2. Location Lec 32 TIEN P	(City Check one zda give nemd 2:4
3. Owner For Agent - Fe Bay Bfin	SANIIAPIN Partnership or firm
4. Mail Address Jomah Wis Complete add	ress required
5. From well to nearest: Buildingft; sewer_7	5ft; drain_15ft; septic tank_5ft;
dry well or filter bed_25ft; abandoned well/2	0214 ft.
6. Well is intended to supply water for: Mone	
7. DRILLHOLE:	10. FORMATIONS:
Dia. (in.)   From (ft.)   To (ft.)   Dia. (in.)   From (ft.)   To (ft.)	Kind From To
8 0 60	Sand 076
	Am Bart- Litan 3460
8. CASING AND LINER PIPE OR CURBING:	meng in form
Dia. (in.) Kind and Weight From (ft.) To (ft.)	
6 Steel 0 29	
9. GROUT:	
- Morre	Construction of the well was completed on:
11. MISCELLANEOUS DATA:	ag 14 1963
Viola tort . Hun at 7 CDM	The scall is terminated 12 inches
	$\square$ above, below $\square$ the permanent ground surface.
Depth from surface to water-level:ft.	Was the wall disinfected when completion?
Water-level when pumping:30ft.	was the wen disinfected upon completion :
Water sample was sent to the state laboratory at:	Yes No
- 10	Was the well sealed watertight upon completion?
On I9 I9	Yes No
12 P In	
Signature _ Wall Briller	Murrullen W is
Please do not wri	te in space below
Rec'd No No	10 ml 10 ml 10 ml 10 ml 10 ml
Ans'd	Gas-24 hrs
Interpretation	48 hrs
	Confirm
	B. Coli
	Examiner

----

\_

. . \_\_\_\_\_

1. COUNT MOUNT       CHECK (# 000:       Willing       Date       Market       Market         2. DOCTION FILL       Sector       Towning       Parket       D. NAME       Difference       Market         2. DOCTION FILL       Sector       Towning       Parket       D. NAME       Difference       Difference       Difference         2. DOCTION FILL       Sector       Sector       Towning       Parket       Difference       Difference <t< th=""><th>State of Wisconsin Department of Natural Resources Box 450 Madison, Wisconsin 53701 Madison, Wisconsin 53701</th><th>OTE:WELL CONSTRUCTOR'S REPORT- Division's CopyForm 3300-15- Driller's CopyRev. 10-75- Owner's Copy</th></t<>	State of Wisconsin Department of Natural Resources Box 450 Madison, Wisconsin 53701 Madison, Wisconsin 53701	OTE:WELL CONSTRUCTOR'S REPORT- Division's CopyForm 3300-15- Driller's CopyRev. 10-75- Owner's Copy
Control of the second of	1. COUNTY MANURA CHECK (1) ONE:	Name J
1. DOLATION 911 411 32         1.11         1.11         1.11           OR         - Ordo Strets No	<u> </u>	3. NAME OWNER AGENTAT TIME OF DRILLING CHECK (A ONE
OR     = Grid of Street No.     Street No.     POST OFFICE     POST OFFICE     POST OFFICE     Street No.       1     Dutance in feet from well     © Street No.     End of Street No.     POST OFFICE     Street No.     Street No.     Street No.       1     Dutance in feet from well     © Street No.     End of Street No.	2. LOCATION GIE STATE 32 18N IW	al. fimmion
AND - If valiable subdimines name, for & back No.       POST OFFICE       Start Beng Data       Start Beng Bata       S	OR – Grid or Street No. Street Name	ADDRESS P. 2
2. Distance in fact from out:       Bandary deg Daniella (Sandary deg Daniella)       Sandary deg Daniella (Sandary deg Daniella)       Sandary deg Daniella)       Sa	AND – If available subdivision name, lot & block No.	POST OFFICE Jornak Wis
Bits     Chi     Chi </td <td>4. Distance in feet from well' Building Sanitary Bidg, Drain Sanitary</td> <td>y Bidg, Sewer Floor Drain Storm Bidg, Drain Storm Bidg, Sewer</td>	4. Distance in feet from well' Building Sanitary Bidg, Drain Sanitary	y Bidg, Sewer Floor Drain Storm Bidg, Drain Storm Bidg, Sewer
Strete Stevery       Other Stevery       Strete	answer in abdropriate	Chief C.I. Sewer Other Sewer C.I. Other C.I. Other
Barry Control       Description         Prive Part of the construction of External Subject of Part of the Second Part	Street Sewer Other Sewers Foundation Drain Connected to: Sewage Si	ump Clearwater Septic Holding Sewage Absorption Unit ther Sump Tank Tank Seepage Pit
Prov.       Petty       One concentrating Existing       Status       Petty       Petty <t< td=""><td>Clearwater Clearwater Dr. Sump</td><td>4.5 Seepage Bed SI</td></t<>	Clearwater Clearwater Dr. Sump	4.5 Seepage Bed SI
Tank Bisse       Tank Willingthur Store       Solid Manuel Store       Solid Manuel	Privy Pet Pit: Nonconforming Existing Subsurface Pumproom Waste Well Nonconforming Existing Vonconforming Existing	Barn Animal Animal Silo Glass Lined Silo Earthen Silage Sutter Barn Yard With Pit Storage W/o Storage Trench Or Pen Facility Pit Pit
Start France or subjects       Sufface       Sufface       Sufface       Sufface         5. Well is intended to supply water for:	Tank Temporary Watertight Solid Manure Subsurface Waste Pond or L	and Other (Give Description)
5. Well is intended to supply water for:       9. FORMATIONS         Mell is intended to supply water for:       9. FORMATIONS         Dia. (in.)       From (fi.)       To (fi.)         Dia. (in.)       From (fi.)       To (fi.)         Job suface       4.5         Job suface       4.5         Job suface       Job suface         Job suface       4.5         Go the suface       Job suface         Job	Manure Liquid Manure Storage Gasoline or Disposal Unit Stack Tank Structure Oil Tank (Specify Type)	
Home       Kind       From (ft.)       To (ft.)         Da. (in.)       From (ft.)       To (ft.)       Surface       15"         Da. (in.)       From (ft.)       To (ft.)       Surface       15"         D. (in.)       From (ft.)       To (ft.)       Surface       15"         12       Surface       45       Surface       15"       60"         13       G. (J. Specification       From (ft.)       To (ft.)       Surface       15"       60"         14       Surface       15"       From (ft.)       To (ft.)       Surface       15"       60"         14       Surface       15"       To (ft.)       To (ft.)       To (ft.)       Surface       15"       60"         10.       TYPE OF DRILLING MACHINE USED       Rotary nammer       Batary nammer       Batary nammer       Batary nammer       Batary nammer       Batary nammer       Batary nammer       Weit andWeit construction completed on       Market       Watary nammer       Batary nammer       Watary nammer       Batary nammer       Watary nammer       Watary nammer       Watary nammer       Watary nammer       Batary nammer       Watary nammer       Watary nammer       Batary nammer       Watary nammer       Batary nammer       Watary nammer	5. Well is intended to supply water for:	9. FORMATIONS
6. ORILLINGE Dis. (in.) From (f:)   Dis. (in.) From (f:)   To (f:)   Surface   Surface   Surface   S /2   Surface   45   6 0     Surface   S   S   Surface   S   S   S   S   S   S   S   S   S		Kind From (ft.) To (ft.)
12       Surface       43       Jacksforder, K. 18       60         1       45       60       Jacksforder, K. 18       60         1       CASING LINER, CLERING AND SCREEN Material, weight: Specification       From (ft.)       To (ft.)       To (ft.)         1       Baterial, weight: Specification       Surface       43       Jacksforder, K. 18       Gaterial, Specification         1       Baterial, weight: Specification       Surface       43       Jacksforder, K. 18       Gaterial, Specification         1       Data (m)       A sterned of assembly       From (ft.)       To (ft.)       To (ft.)       To (ft.)         8. GROUT OR OTHER SEALING MATERIAL Kind       From (ft.)       To (ft.)       To (ft.)       Baterial, Specification       Air         9. Kind       Kind       From (ft.)       To (ft.)       To (ft.)       Baterial, Specification       Air         11. MISCELLANEOUS DATA Vieid Test:       Surface       His at       2       GPM       Well is terminated       Inches       below       final grade         11. MISCELLANEOUS DATA Vieid Test:       His at       2       GPM       Well is allower more to make a boter       Inal grade         12. Jepth of water level       J.P.       Ft.       Well is allower worin the oboer	6. DRILLHOLE Dia. (in.) From (tt.) $\exists$ To (ft.) Dia. (in.) From (ft.) $\exists$ To (ft.)	Jane surface 15
1       Mintee       1/2       0/2         1       4/2       6/2       0/2         7. CASING MINER (LERBING AND SCREEN       10. TO ft.)       10. TYPE OF DRILLING MACHINE USED         Dia (in)       2       2       1/2         1       2       2       1/2       1/2         1       2       2       1/2       1/2         10. TYPE OF DRILLING MACHINE USED       BOTALY ASTIM       1/2       1/2         8. GROUT OR OTHER SEALING MATERIAL       Image: Sealing multiple       BOTALY ASTIM       1/2         11. MISCELLANE MATERIAL       From (ft.)       To (ft.)       To (ft.)       BOTALY ASTIM         11. MISCELLANEOUS DATA       Surface       1/3       Well construction completed on       Image: Astic Price         11. MISCELLANEOUS DATA       Hits at       1/2       GPM       Well is reminated       Inches       below       final grade         Depth from surface to normal water level       2       Ft.       Well is reminated       Inches       below       final grade         Depth form surface to normal water level       2       Ft.       Well is all values on completion       Yes INO         Depth form surface to normal water level       2       Ft.       Well is all values and waterigh	12 5-5-	La claman 18 60
C. ASING KLINER (LERBING AND SCREEN Dia. (in.)	/ Surface 75	Jeep Jerry Jepp
Dia. (in.)       With Specification         Dia. (in.)       A Method Assembly         From (ft.)       To (ft.)         Image: Second Assembly       From (ft.)         To (ft.)       Surface         Image: Second Assembly       From (ft.)         Image: Second Assembly       From (ft.)         Image: Second Assembly       Surface         Image: Second Assembly       From (ft.)         Image: Second Assembly       From (ft.)         Image: Second Assembly       From (ft.)         Image: Second American Assembly       From (ft.)         Image: Second American Amer	CASING LINER CURRING AND SCREEN	
1       Bit for the form of the second	Material, Weight, Specification Dia. (in.) & Method of Assembly   From (ft.) ' To (ft.)	- And
6       Trick A S 1, 0 A - S Surface       13         6       Trick A S 1, 0 A - S Surface       13         7       Rotary-harmer       Rotary-harmer         8       GROUT OR OTHER SEALING MATERIAL       10. TYPE OF DRILLING MACHINE USED         8       GROUT OR OTHER SEALING MATERIAL       20         8       Group - A Surface       20         9       Cable Tool       model & arr         10       Rotary-harmer       Air         11       Misce LLANEOUS DATA       Reverse Rotary         11.       MISCELLANEOUS DATA       Well construction completed on       Image 21         11.       MISCELLANEOUS DATA       Well is reminated       Inches       below         11.       MISCELLANEOUS DATA       Yes and the set inches       below         11.       MISCELLANEOUS DATA       Yes and the set inches       below         11.       MISCELLANEOUS DATA       Yes and the set inches       below         11.       MISCELLANEOUS DATA       Yes and the set inches       below         12.       Yes       No       Well set environ completion       Yes no         13.       Met are inches       Pethod water level       Yes No       No         Well seated watertight upon compl	Elkysteel 1577	
8. GROUT OR OTHER SEALING MATERIAL       10. TYPE OF DRILLING MACHINE USED         8. GROUT OR OTHER SEALING MATERIAL       Rotary, harmmer         9. Cable Tool       Widtling         9. Cable Tool       Rotary, harmmer         10. MISCELLANEOUS DATA       Well construction completed on         Yield Test:       5. Hrs. at       2. CPM         9. Peth from surface to normal water level       2. P         9. FL <td><math display="block">\frac{\rho}{\mu} \frac{\mu}{\mu} \frac{\mu}{\mu} \frac{1}{\mu} \frac{1}</math></td> <td></td>	$\frac{\rho}{\mu} \frac{\mu}{\mu} \frac{\mu}{\mu} \frac{1}{\mu} \frac{1}$	
8. GROUT OR OTHER SEALING MATERIAL       10. TYPE OF DRILLING MACHINE USED         8. GROUT OR OTHER SEALING MATERIAL       Image: Cable Tool       Image: Cable Tool         8. GROUT OR OTHER SEALING MATERIAL       Image: Cable Tool       Image: Cable Tool       Image: Cable Tool         8. GROUT OR OTHER SEALING MATERIAL       Image: Cable Tool       Image: Cable Tool       Image: Cable Tool       Image: Cable Tool         9. Gray-hammer       Image: Cable Tool         9. Misciellance       From (ft.)       To (ft.)       Image: Cable Tool       Image: Ca		
8. GROLT OR OTHER SEALING MATERIAL       10. TYPE OF DRILLING MACHINE USED         8. GROLT OR OTHER SEALING MATERIAL       Cable Tool         Mind       From (ft.)       To (ft.)         9. Cable Tool       mud & air         9. Cable Tool       Well and the air         9. Cable Tool       Well for a cable and the air         10. MISCELLANEOUS DATA       Well construction completed on       Import 2 19 77         11. MISCELLANEOUS DATA       Well is terminated       Inches       below         9. Depth from surface to normal water level       2 9       Ft.       Well disinfected upon completion       Yes No         9. Depth of water level       2 9       Ft.       Well sealed watertight upon completion       Yes No         10. Well sealed water on completion       Xes No       Yes No       No         Water sample sent to       MacAdacor		
10. TYPE OF DRILLING MACHINE USED         8. GROUT OR OTHER SEALING MATERIAL         Kind         From (ft.)         To (ft.)         Botary-hammer         Widdling         Mind         From (ft.)         To (ft.)         Botary-hammer         Widdling         Plicat         Surface         His at         Well construction completed on         Well construction completion         Well sinfected upon completion         Well sealed water tight upon completion         Well of fullion hazard		
8. GROUT OR OTHER SEALING MATERIAL Kind From (ft.) To (ft.) <i>Rotary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hammer</i> <i>Botary-hamm</i>		10 TYPE OF DRILLING MACHINE USED
8. GROUT OR OTHER SEALING MATERIAL Kind From (ft.) To (ft.) Mind Early arr Botary-air Mind Early arr Botary- Mell construction completed on <u>April 2 2 19</u> 10 <u>77</u> 11. MISCELLANEOUS DATA Yield Test: <u>5</u> Hrs. at <u>72</u> GPM Well is terminated <u>1</u> inches <u>5</u> below Early above final grade Depth from surface to normal water level <u>2</u> <u>7</u> Ft. Well disinfected upon completion <u>2</u> Yes <u>No</u> Depth of water level when pumping <u>72</u> Ft. Stabilized <u>2</u> Yes <u>No</u> Well sealed watertight upon completion <u>2</u> Yes <u>No</u> Water sample sent to <u>Mind Addorn</u> Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby-wells, screens, seals, method of finishing the well, amount of cement used in grouting, blasting, etc., should be given on reverse side. Signature Complete Mail Address <u>5</u> 4615		Rotary-hammer w/drilling
Num       Hometer	8. GROUT OR OTHER SEALING MATERIAL	Cable Tool I mud & air I Jetting with Rotary-air Rotary-hammer Air
Image       Image <td< td=""><td>ALLER AL</td><td>Rotary-w/drilling Water</td></td<>	ALLER AL	Rotary-w/drilling Water
Well construction completed on	Illaf and Surface 73	mud Reverse Rotary
11. MISCELLANEOUS DATA       Yield Test:		Well construction completed on 19 77
Depth from surface to normal water level       2 P       Ft.       Well disinfected upon completion       Pres       No         Depth of water level when pumping       2 P       Ft.       Stabilized       Yes       No       Well sealed watertight upon completion       Pres       No         Water sample sent to       Machiner       Iaboratory on       Machiner       1977         Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, method of finishing the well, amount of cement used in grouting, blasting, etc., should be given on reverse side.       5746157         Signature       Complete Mail Address       5746157         Mory       Registered Well Driller       Dlack River Faills Twice       5746157	11. MISCELLANEOUS DATA 	Well is terminated inches below final grade
Depth of water level when pumping       Image: Stabilized       Yes       No         Water sample sent to       Mage: Stabilized       Yes       No         Water sample sent to       Mage: Stabilized       Yes       No         Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby-wells, screens, seals, method of finishing the well, amount of cement used in grouting, blasting, etc., should be given on reverse side.       Signature       Signature         Signature       Complete Mail Address       54615         Noy       Registered Well Driller       Dlack River Faills Twice R, 5	Depth from surface to normal water level 29 Ft.	Well disinfected upon completion 🛛 🏹 Yes 🗔 No
Water sample sent to Machiner         Water sample sent to       Machiner       Iaboratory on       Machiner       1977         Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby-wells, screens, seals, method of finishing the well, amount of cement used in grouting, blasting, etc., should be given on reverse side.       1977         Signature       Complete Mail Address       5-4615-         Registered Well Driller       Dlack River Falls Twice R.5-	Depth of water level when pumping Ft. Stabilized 🛛 Yes 🗆 No.	Well sealed watertight upon completion 🛛 🏹 Yes 🗔 No
Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, method of finishing the well, amount of cement used in grouting, blasting, etc., should be given on reverse side.         Signature       Complete Mail Address       5-4615-         Registered Well Driller       Dlack River Falls Twice R.5-	Water sample sent to Madison	laboratory on Mary 3 1977
Signature Roy Rusk Registered Well Driller Black River Falls This R.5-	Your opinion concerning other pollution hazards, information concerning diffinishing the well, amount of cement used in grouting, blasting, etc., should be	ficulties encountered, and data relating to nearby wells, screens, seals, method of e given on reverse side.
Noy Rusk Registered Well Driller Black River Falls This R.5-	Signature	Complete Mail Address 5-4615-
	Noy Rusk Registered Well Driller	Black River Falls This R. 5-

FELL (	CONSTRUCTO	R'S REPOR	T	wiscoi	NSIN STAT	BOARD OF HEAL	тн	RECENT	∵ Weló
COL	MANA	re		CHECK Town	ONE 🕅 Village	□ City _	a Gamar	DOT	0
LOCA	ATION (Number	und Street or	A Section, sect	ion, township a	ind range. Als	o give sabdivision name,	lot and block numbers	when availables 196	 ۲
OW.N	ER AT TIME OF	DRILLING	TV W	Show		lake 10.	man se	ENON ARY	·
	ER'S COMPLET		Jon	1_1_	131	dar		ERING	<u> </u>
04.4	ERS COMPLET			Box.	28	Tomah li	Veconer	if	
. Dist	ance in feet fr	om well to	nearest:   <sup>B</sup>	UILDING SAN	TARY SEWI	C. I.   TILE SEWE	FOUNDATION DRAIN	NDENT C. I.	ATER DRAIN
(Keco	rd answer in appi	ropriate block	)	811					AVED.
LÉAR C. I.	WATER DRAIN	SEPTIC TAI	NK PRIVY S	SEEPAGE PIT	ABSORPTI	ON FIELD BARN	SILO ABANDONED V	VELL SINK HOLE	1
		824		2001	-				<u> </u>
THER	POLLUTION SO	URCES (Give	description s	uch as dump,	quarry, drain	age well, stream, pond, i	ake, etd)	LUC	
. Wel	l is intended	to supply	water for:	h	ent	2	<u> </u>		
. DRII			<u> </u>	/1	<u>un r</u> ,	10. FORMATIONS	<u></u>	<u> </u>	
Dia. (ir	n.) From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	<u>To (ft.)</u>	Kind,		From (ft.)	To (ft.)
- 6	Surface	85				Char	1	Surface	6
						Danal	Ganel	6	70
. CAS	SING, LINER, C	URBING, A	AND SCREE	N		121 to	D. Prov	1 171	85
Die. (ir	1.)	Kind and Weig	<u>ht</u>	From (ft.)	To (ft.)	le mile	Jana 100		6 7
6		45 x1	ion	Surface	11_				
	r I								
			·····						
			·						
		<u> </u>				<u> </u>			ļ
9 GRC	OUT OR OTHE	R SEALING	MATERIA	From (ft.)	To (ft.)				
	acrino	Form	tim	Surface		<u></u>			
(	<u>ucong</u>	100114	UNER						!
11/101	SCELLANEOUS			J	]	Well construction	completed on	May 20	19 6-5
rield t	est:	t	Hrs.	at 🙎	GPM	Well is terminated	1/2 inche	s Delow	inal grade
Depth -	from surface	to normal	water level	Z	ft.	Well disinfected u	upon completion	🕅 Ye	s 🗌 No
Depth :	to water level	when pur	nping	20	ft.	Well sealed water	rtight upon complet	ion 🛛 Ye	s 🗌 No
Water	sample sent	to 97	adisi	m 9	Visco	nen	laboratory on:	May 24	19 65
Your c	pinion concer	ning othe	r pollution	hazards. ii	nformation	concernina difficul	ties encountered, a	nd data relating	to nearby
wells, surface	screens, seals pumprooms.	, type of access pit	casing join s, etc., sho	nts, method uld be aive	l of finish en on reve	ing the well, amou rse side.	int of cement used	in grouting, bl	asting, sub-
SIGNAT	URE	· ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	ΛΛ -	- 1/2		COMPLETE MAIL AL	DRESS	<i>. . . . . . . . . .</i>	<u> </u>

signature frin Fark	hurst fr Registered Well	Driller	B of /	57 Choy Was			
Please do not write in space below							
COLIFORM TEST RESULT	GAS — 24 HRS.	GAS - 49 HRS.	CONFIRMED	REMARKS			

WELL CONSTRUCTOR'S REPORT TO W	Hell ISCONSIN STATE BOARD OF HEALTH	16
See Instructions	on Reverse Side (Town Z 4 4	
1. County	Village Check one and sive name	
2 Location St. 4 A F. H. Sec. 3.2	TIN RIW - Lot 3	
Name of street and number of premise	or-Section, Town and Range numbers	
3. Owner D or Agent D Floyd James		
4. Mail Address Joman	R 2	
5. From well to nearest: Building4ft; sewer_s	3.C_ft; drainft; septic tank_5_0_ft;	
dry well or filter bed well	ft.	
C Minilia interded to sumply motor form. Hom		
7 DBILLHOLE.	10 FORMATIONS.	
Dia. (in.)   From (ft.)   To (ft.)    Dia. (in.)   From (ft.)   To (ft.)	From To	
$L \rightarrow QD$		
	Party 011	`
8 CASING AND LINER PIPE OR CURBING	Jana 11 Oct. 19 40	—
Dia. (in.)     Kind and Weight     From (ft.)     To (ft.)	TECEIVED	
6 Steel D 76		—
	NOV 17 1960	
9 GROUT.	E N C L R F A B	—
Kind   From (fL)   To (fL)		—
Mone		-
	Construction of the well was completed on:	
11. MISCELLANEOUS DATA:	non y 1960	2
Visit toot & Hunget 18 CDM	The well is terminated F inch.	•••
Yield test: Hrs. at GPM.	x above, below □ the permanent ground surfac	e.
Depth from surface to water-level:ft.	Was the well disinfected upon completion?	
Water-level when pumping:2_Lft.		
Water sample was sent to the state laboratory at:	ies/No	•-
madison most y 1960	Was the well sealed watertight upon completion	1?
On 196	YesX No	
Signature Rush Bus	merrillan Wis	
Registered well Driller Please do not wri	Complete Mail Address	
Rec'd NOV 81960 No 4120	C 10 ml 10 ml 10 ml 10 ml 10 m	ıl
Ans'd	Gas-24 hrs	
Interpretation SAFE-BACTERIOLOGICALL	48 hrs	
	Confirm	-
	B. Coli(/	
	Examiner	

WELL Wel-6	CONSTRUC	CTOR'S R	EPORT	WHITE GREEN YELLO	COPY - DIV COPY - DR COPY - DR	IL 13 1970 BION'S COPY ULLER'S COPY WNER'S COPY	STAT DEPARTMENT ( Madisor	E OF WISCONSIN DF NATURAL RES Box 450 n, Wisconsin 5370	SOURCES
1. COUNT	Mon	مر			one 🔲 Village		Fo. M		
2. LOCATI	ON (Number A	d Street any	a section, section	ion. to habip a	und range Als	o give subdivision nam	ie, lot and block sumbers w	her stallable.)	$\sim 11$
FOT 9	- Block	H T	U. T.F.	for the	fue.	32 T.18	N-RIW.	Jones (	Lala.
5. 00010 <b>2</b>			4	loyd	In	ed	سأ		
4. OWNER	S COMPLETE	MAIL ADD	RESS	67		9.1.		(	
5. Distant	e in feet fro	m well to	nearest:   <sup>B</sup>	UILDING SAN	TTARY SEWI	ER, FLOOR DRAIN	FOUNDATION DRAIN	WASTE WA	TER DRAIN
(Record	enswer in appro	opriete block)				C. I. TILE SE	WER CONNECTED INTEPE	NDENT C. I.	TILE
CLEAR WA	TER DRAIN ;	SEPTIC TAN	K PRIVY S		ABSORPTIO	DN FIELD   BARN	SILO ABANDONED W	ELL   SINK HOLE	<u> </u>
C. I.	TILE	57 TRCES (Give	description m	94 xch as dump,	quarry, drain	age well, stream, pond	, laks, etc.)		
						\			
6. Weil i	s intended	to supply	water for:	k	tomo	,			
DRILLH	IOLE	<u></u>	<u></u>	/_	<u>ve // v</u>	10. FORMATION	s		
<u>- Dia. (in.)</u>	From (ft.)	To (ft.)	Die. (in.)	From (ft.)	To (ft.)	Kir	nd	From (ft.)	To (ft.)
Ų	Surface	85				Ja	nel	Surface	70
							d a ith	70	8.1
8. CASIN	G, LINER, CI	JRBING, A	ND SCREEM	۱		Jur	9/04		
Die. (in.)	Dr. K	ind and Weigh	ht	From (ft.)	To (ft.)				
ĺa.	Place	e.s.c		Surface	77				
	- po	Junan							
<u></u>		<u> </u>							···
<u></u>							. <u></u>		
9. GROU	t or other Kii	R SEALING	MATERIAL	From (ft.)	To (ft.)				
	······			Surface					
			<u> </u>						. <u> </u>
						Well constructio	n completed on A	ly 6	1970
11. MISC	ELLANEOUS	DATA	Hrs.	at S	7 GPM	Well is terminat	ed /0 inche	s above f	inal grade
Depth fro	im surface to	o normal v	water level	/ _	9 ft.	Well disinfected	upon completion	X Ye:	No
Depth to	water level	when pum	ping	23	ft.	Well sealed wa	tertight upon completi	on 🔀 Ye	5 🗌 No
Water sa	mple sent to	· M	Tadi	for			laboratory on:	ly 14	19.70
Your opi wells, sci surface p	nion conceri reens, seals, umprooms,	ning other type of access pits	pollution casing joir s, etc., sho	hazards, in hts, method uld be give	nformation L of finish en on reve	concerning diffic ing the well, am rse side.	ulties encountered, se ount of cement used	id data relating in grouting, bla	to nearby isting, sub
SIGNATUR		~				COMPLETE MAIL	ADDRESS		5-4111
$\int$	Yoy (s	Just	Re	gistered W	eil Driller	Black (	Piner Fall	2 telis	R.2
	TEST RESULT	/		Please	do not w	rite in space bel		EMARKS	

\_\_\_\_

· · · •

COLLFORM	TEST	RESULT	

WELL CONSTRUCTOR'S REPORT	WHITE Green Yell(	COPY - DIV N COPY - DP DW COPY - C	IS:ON'S COPY ILLER'S COPY WNER'S COPY	STATE OF DEPARTMENT OF N Box Medison, Wi	F WISCONSI NATURAL R 450 isconsin 533	N ESOURCES 701
1. COLNTY Monroe	CHECK	ONE Village		Al a a		/
2. LOCATION (Number and Street or 1/2 section, section	on, township	and range. All	o give subdivision name, lot	and block numbers when	available	011
3. OWNER AT TIME OF DRILLING	J. J. J.	<u>f. E. 7</u>	fee 32 - 1, 1,	EN IT. (W.	topes (	idd,
Z	loyd	Jone	v		/	
. OWNER'S COMPLETE MAIL ADDRESS	ome	l q	1.0			
5. Distance in feet from well to nearest: <sup>B</sup>	UILDING SAL	NITARY SEW	ER FLOOR DRAIN F C. I.   TILE SEWER C	OUNDATION DRAIN	WASTE V	WATER DRAIN
(Record answer in appropriate block)	_ أ كو	31				
CLEAR WATER DRAIN SEPTIC TANK PRIVY S C. I. TILE	EEPAGE PIT	ABSORPTI	ON FIELD BARN SIL	ABANDONED WELL	SINK HOLE	
		();				
6. Well is intended to supply water for:	H	me				
7. DRILLHOLE			10. FORMATIONS			
	From (ft.)	To (ft.)	Kind		From (ft.)	· · · · · · · · · · · · · · · · · · ·
6 Surface 8.5			Sand	······	Surface	74
			dand r	ut le	74	PI
8. CASING, LINER, CURBING, AND SCREEN	l	·				
Dia. (in.) Kind and Weight	From (ft.)	To (ft.)				
6 Thread new	Surface					
					_	
					_	
9. GROUT OR OTHER SEALING MATERIAL		T = (4.)				
Kind	From (tt.)	<u> </u>				
					<u> </u>	
	-		Well construction co	mpleted on Oct	+ 21	6 1969
11. MISCELLANEOUS DATA Yield test:	, <i>G</i>	GPM	Well is terminated	10 inches	above helow	final grade
			Well disinfected upo	n completion	 771 Y	′es ∏ No
Depth from surface to normal water level		<del>ft.</del>			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
Depth to water level when pumping	21	ft.	wen seared waterfig			
Water sample sent to Mach	son		a	iboratory on: The	- 4	1969
Your opinion concerning other pollution wells, screens, seals, type of casing join surface pumprooms, access pits, etc., shou	hazards, in ts, method old be give	nformation I of finish en on reve	concerning difficulties ing the well, amount rse side.	encountered, and o of cement used in	data relatin grouting, b	ig to nearb blasting, sub

SIGNATURE Noy Jush	Registered Well 1	Driller Plack	All ADDRESS	alle this	54613 R2			
Please do not write in space below								
COLLFORM TEST RESULT	GAS - 24 HRS.	CAS - 48 HRS.	CONFIRMED	REMARKS				

		IAN - 5 1973	
AELL CONSTRUCTOR'S REPORT	WHITE CO GREEN CC XELL OW C	NOTE DEPARTMENT OF PY - DIVISION'S COPY PY - DRILLER'S COPY Mad son, V	F WISCONS N NATURAL RESOURCES ox 450 Visconsin 53701
COUNTY	CHECK ONE	NAME NAME	<del>97</del>
2. LOCATION - <sup>14</sup> Section Section T	ownship Range	Village City / City	range
MEJME 32	18N 14	John Pleus	4
R - Grid or street no. Street name		ADDRESS	
AND -If available subdivision name, lot & block no	Э.	POST OFFICE Tomak. To	lic
4. Distance in feet from well to nearest:	BUILDING SANITARY SEWER C. I. TILE	C.I. TILE SEWER CONNECTED INDEPENDE:	WASTE WATER DRAIN
CLEAR WATER DRAIN SEPTIC TANK PRIVY	SEEPAGE PIT Absorptio:	N FIELD BARN SILO ABANDONED WELL	SINK HOLE
C.I. THE 57	31		
OTHER POLLUTION SOURCES (Give description	such as dump, quarry, drainage	well, stream, pond, lake, etc.)	
5. Well is intended to supply water for:	Home	, second s	
DRILLHOLE		9. FORMATIONS	
<u>Promitt.</u> Io (tt.) Dia. (in	.) From (ft.) 10 (ft.)		From Int. / To hit
Gurrace 6.3		Jana,	Surface 200
		Sand rock	3565
7. CASING, LINER, CURBING, AND SCRE Dia (n.) EKingd and Weight	From (ft.) To (ft.)		
Black steel 19	Surface 60		
- many new			
8. GROUT OR OTHER SEALING MATERI	AL	10. TYPE OF DRILLING MACHINE USED	
Kind	From (ft.) Fo (ft.)	Cable Tool Direct Rotary	Reverse Rotary
	Surrace	Widrilling mud With drilling mud	air Air Water
1		Well construction completed on	- 27 1972
Yield test: 6 Hrs. a	t /2 GPM	Well is terminated 10 inches	below final grade
Depth from surface to normal water level	<u>22 ft.</u>	Well disinfected upon completion	🔀 Yes 🗌 N
Depth to water level when pumping	<i>31</i> ft.	Well sealed watertight upon completion	X Yes N
Water sample sent to Mague	Lon	laboratory on:	Edite Summer
Your opinion concerning other pollution haz type of casing joints, method of finishing the	ards, information concernin well, amount of cement use	g difficulties encountered, and data relating to r ed in grouting, blasting, sub-surface pumprooms	nearby wells, screens, seals , access pits, etc., should
SIGNATI-RE		COMPLETE MAIL ADDRESS	54613
May such	Registered Well Driller	Black Diver Falls	, Ulis Or. 2
COLIFORM TEST RESULT	Please do not wri GAS – 24 HRS. GAS	te in space below - 48 HRS. CONFIRMED REM/	ARKS
REV. 3-71			V

- \_\_\_\_\_

R										
WELL COM	NSTRUCTOR	'S REPORT		WISCO	NSIN STAT	E BOARD OF	HEALTH			Wei
1. COUNTY	mar	0		CHECK	ONE Village		ME		2/10	11,5
2. LOGATIC	N (Number an	nd Street 70r 4	action, secti	on pownship i	and range. Als	o give subdivision	name, lot and bi	lock minbers wh	HAR TVAILABLE L-11	<u> </u>
fort	II BZ	S.W	yof	EE'S	Sec	32 71	EN PI	$\mathcal{W}$ .	the ALLEN	لا من
3. OWNER	AT TIME OF	DRILLING	1 L	10-					- SEF 28	NT OF
4. OWNER	S COMPLETE	MAIL ADDI	RESS/		<u>uc</u>				DEPARIAN	KUE A.
			Jon	nal -	Wis	R.2.			DEVELO	PMENT
5. Distanc	e in feet fro	om well to	nearest: B	UILDING SA	NITARY SEW C. I.   TILI	ER <sub> </sub> FLOOR DRAIN E   C. I.   TILE	FOUND	ATION DRAIN CTED¦INDEPEN	DENT CC-I	ATER DRAL
(Record B	nswer in appro	opriate block)		4 3	6 -		-	1 -		+
CLEAR WAT	TER DRAIN TILE	SEPTIC TAN	K PRIVY S	eepage pit 75	ABSORPTI	ON FIELD BAR		BANDONED WE	ELL SINK HOLE	
OTHER POL	LUTION SOL	TRCES (Give	description a	ch as dump.	guarry, drain	age well, stream, j	pond, lake, etc.			
01111111101										
6. Well is	intended	to supply	water for:	Hon	re					
7. DRILLH	OLE			•	1	10. FORMATI	ONS			
Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	To (ft.)		Kind		From (ft.)	To (ft.)
6_	Surface	85				Sane	d		Surface	6
						Ports			68	85
8. CASINO	G, LINER, C	URBING, A	ND SCREEN	<u>'                                     </u>	<u>,                                     </u>	1-01				
Dia. (in.)		(ind and Weigh	<u>nt</u>	From (ft.)	To (ft.)	 				
6				Surface	78					
							· · · · · · · · · · · · · · · · · · ·			
			. <u></u> ,	 			······			
							· · · · ·			
9. GROUT	OR OTHE	R SEALING	MATERIAL	From (ft.)	To (ft.)					_
n	tna			Surface						
	~ <i>f_</i> ( <u>f</u>							0	k	,
11 44600	LANDOUC	DATA	<u></u>	<u> </u>	<u> </u>	Well construe	ction complete	ed on All	[24_	196.
Yield test:	LLANEOUS	DATA	Hrs.	at 10	GPM	Well is termi	inated 8	inches	above below	final grade
Depth from	m surface t	o normal v	water level	31	ft.	Well disinfec	ted upon con	npletion	Ľ Y	es 🗌 N
Depth to v	water level	when pum	ping	47	ft.	Well sealed	watertight up	on completic	on <i>f</i> y	es 🗌 N
Water san	nple sent t	· Men	disó	n			laborat	ory on: lep	F27	196.
Your opir	nion concer	ning other	pollution	hazards, i	nformation	concerning di	ifficulties enco	ountered, an	d data relating	g to neart

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearly wells, screens, seals, type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, su surface pumprooms, access pits, etc., should be given on reverse side.

SIGNATURE Roy Such	Registered Well Dri	Iler B2	ADDRESS	er Falle Vi
COLIFORM TEST RESULT	Please do no GAS — 24 HRS.	ot write in space bel   GAS - 48 HRS.	CONFIRMED	REMARKS

WELL CONSTRUCTOR'S REPORT	WISCONSIN STAT	E BOARD OF HEALTH	Wel
COUNTY	CHECK ONE	NAME	
Monal	Town Village	· City fa Tranal	
LOCATION (Number and Press or 1/2 pocu	on, section, township and range. Al	so give subdivision name, lot and block number	when available.)
WILLING OF DRILLING	e sub avorgen si	Ugot sich sie 3 Lillon	11114.202.122
1	loyd lones	/	PPT 28 1965
. OWNER'S COMPLETE MAIL ADDRESS	M IL with	Dh I	
	Joman W LA	THE ELONE DEVIN	C 3 MIT 3 RV
5. Distance in feet from well to near		C. I. TILE SEWER CONNECTED INDE	PENDENT ECT. TILE
(kecord answer in appropriate block)	9		
CLEAR WATER DRAIN SEPTIC TANK PF	UVY SEEPAGE PIT ABSORPTI	ON FIELD BARN SILO ABANDONED	WELL SINK HOLE
	/ _ / _		TECETVED
THER POLLUTION SOURCES (Give descri	ption such as dump, quarry, drain	lage weil, stream, pond laks, etc.)	
		$\lambda$	1907 4 1905
5. Well is intended to supply wate	r for: no line		SANITIRY
	100 pome	2	ENGINEERING
7. DRILLHOLE		10. FORMATIONS	Ecom (fs.) To (fs.)
			Prom (11.)
- 6 SUFFACE 80		Sand	Surrace 62
Ĵ l l l l l l l l l l l l l l l l l l l		la durch lin	69 72
2 CASING LINER CURRING AND S		sana rock form	
Disr(in.) Kind and Weight	From (ft.) To (ft.)	Sand rock	72 80
7, 01.0	Surface A		
_esuet		·	
9. GROUT OR OTHER SEALING MA	TERIAL		
Kind	From (ft.) To (ft.)		
None	Surface		
			4
		Well construction completed on (	00/19 1963
11. MISCELLANEOUS DATA	Hreat // GPM	Well is terminated & inc	hes helow final grade
	This of 74 OFM		
Depth from surface to normal water	level 19 ft.	Well disintected upon completion	Gr Yes 🗍 No
	28.	Well sealed watertight upon compl	etion Yes IN
Depth to water level when pumping	<u> </u>		
Water sample sent to Maria	son	laboratory on:	Oct 26 1963
	the bounds to formation		

Your opinion concerning other pollution hazards, information concerning difficulties encountered, and data relating to nearby wells, screens, seals, type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, subsurface pumprooms, access pits, etc., should be given on reverse side.

SIGNATURE Roy Que	Registered Well	Driller	All ADDRESS	Falls U	io
COLIFORM TEST RESULT	GAS - 24 HRS.	not write in space GAS 48 HRS.	CONFIRMED	REMARKS	, , , , , , , , , , , , , , , , , , ,

WELL CONSTRUCTOR'S REPORT

WISCONSIN	STATE	BOARD	OF	HEALTH
			- ·	

1.17	,		
- YY	e.	1 3	1

I COUNTY	CHECK ONE	NAME P 24	······································			
Monroe	Town Villag	e City Ja Trang	l			
2. LOCATION (Number and Street or % section.	section, township and range. A	Iso give subdivision name, lot and block numbers $\gamma + i \varphi W \qquad \bigcap I W$	when available.)			
3. OWNER AT TIME OF DRILLING	1 1					
HOUSERS COMPLETE MAIL ADDRESS	a jonas		RECEIVED			
. OWNER'S COMPLETE MAIL ADDRESS	Tomah W	A. P.				
5. Distance in feet from well to nearest	BUILDING SANITARY SEV	VER FLOOR DRAIN FOUNDATION DRAI	N JAASH AVALOG DRAIN			
(Record answer in appropriate block)	4		SANITARY			
CLEAR WATER DRAIN SEPTIC TANK PRIV	Y SEEPAGE PIT ABSORPT	ION FIELD BARN SLO ABANDONED	WELL SENGERS HUNG			
		-				
OTHER POLLUTION SOURCES (Give description	on such as dump, quarry, dra	nage well, stream pond, lake, etc.)				
			······································			
6. Well is intended to supply water	tor: $\mathcal{N}_{i} = 1 \neq 1$	a con				
7. DRILLHOLE		10. FORMATIONS				
	n.) Fram (ft.) To (ft.)	Kind	From (ft.) To (ft.)			
Surface 80		Sand	Surface 6-			
		Q 10 K	10 20			
A CASING LINER CURRING AND SCI		Sand FOCK	69 00			
Dia. (in.) Kind and Weight	From (ft.) To (ft.)					
	Surface 75					
	/~					
		-				
9. GROUT OR OTHER SEALING MATER	RIAL					
Kind	From (ft.) To (ft.)					
Mana	Surface					
		Λ	1 1			
		Well construction completed on Ve	14 14 1965			
Yield test: 4 Hi	rs. at 12 GPM	Well is terminated 8 Vinch	es below final grade			
Depth from surface to normal water le	vel /8 ft.	Well disinfected upon completion	Yes No			
Denth to water level when numping	19 #	Well sealed watertight upon comple	etion 🛃 Yes 🗌 No			
Weter complement to Que 1	<b>*</b> /		1 1 10/			
Water sample sent to Madiso	n		July: 2 "6			
Your opinion concerning other polluti wells, screens, seals, type of casing surface pumprooms, access pits, etc., s	ion hazards, informatior joints, method of finis should be given on rev	i concerning difficulties encountered, 4 ning the well, amount of cement used erse side.	and data relating to nearb in grouting, blasting, sub			
SIGNATURE COMPLETE MAIL ADDRESS						
Roy Aust	Registered Well Driller	Blk Piver H	allo 2/:			
	Please do not v	write in space below				
COLIFORM TEST RESULT	GAS - 24 HRS. G	AS – 48 HRS. CONFIRMED	REMARKS			

WELL CONSTRUCTOR'S REPORT	DEPARTMENT OF	RESOURCE DEVELOPMENT		Wei
I COLNTY MONTOS	CHECK ONE		, /	·····
2. LOCATION (Number and Street or 1/4 Artion, a	ction, township and range. A	to give subdivision mame, lot and block numbers when a	vallabio	··· <u>·</u> ································
Jowner at time of DRILLING	to the the	c32 T. ISN R. I.W. Jone	Riele	lition
(Hereit and States)	oyd Jones			
4. OWNER'S COMPLETE MAIL ADDRESS	21/1/2	, / .		
	BUILDING ISANITARY SEV	TREFLOOP DRAIN FOUNDATION DRAIN	. 11 5 CTT 11 5	TER DRAW
5. Distance in feet from well to nearest:	C. I. TIL	E C. I.   TILE SEWER CONNECTED INDEPENDE:	VT C. I.	
(Record answer in appropriate block)	5 31			
CLEAR WATER DRAIN SEPTIC TANK PRIVY C. I. TILE	SEEPAGE PIT ABSORPT	ION FIELD BARN SILO ABANDONED WELL	SINK HOLE	
OTHER POLLUTION SOURCES (Give description	such as dump, quarry, drai	nage well, stream, pond, laka, etc.)		
6. Well is intended to supply water fo	r:	·····		
		10 EORMATIONS		
Dia. (in.) From (ft.) To (ft.) Dia. (in.)	From (ft.) To (ft.)	, Kind	From (ft.)	To (ft.)
G Surface SO		Sand	Surface	69
		Aand rock	69	SC:
8. CASING, LINER, CURBING, AND SCRE	EN			
Dia. (in.) And and Weight	From (ft.) To (ft.)			   <del></del>
6 Threachit new	Surface 73			
				ł
9. GROUT OR OTHER SEALING MATERI	AL		-	
Kind	From (ft.) To (ft.)			
	Surface			
		Well construction completed on	71 0 1 9	7 10/25
11. MISCELLANEOUS DATA	, I		R above	<u> </u>
Yield test: 16 Hrs	. at 🖌 GPM	Well is terminated / inches	j below f	inal grade
Depth from surface to normal water lev	el /4/ ft.	Well disinfected upon completion	Z Ye	s 🗌 No
Depth to water level when pumping	2/ ft	Well sealed watertight upon completion	🔀 Ye	s 🗌 No
Water sample sent to Mad	son	laboratory on:	ne 2	1969
Your opinion concerning other pollutio wells, screens, seals, type of casing jo	n hazards, information bints, method of finis	n concerning difficulties encountered, and c hing the well, amount of cement used in	data relating grouting, bla	to nearb asting, sub

\_

SIGNATURE Noy Juch	Registered Well		All ADDRESS	Falls	5461s
	Please do	not write in space	below	JUN 3	1969
COLLFORM TEST RESULT	GAS - 24 HRS.	GAS - 48 HRS.	CONFIRMED	REMARKS	

WELL CO	NSTRUCTOR	S REPORT	ſ		STAT AFNT OF	E DE MISCO PESÓLIP		FIOPAS			Walt
COLATA	741			CHECK	ONE OF		NAME	72		·	
	- Men	ve	<u> </u>	🛛 Town	🗌 Villag	e 🗌 City	$\neg$	e ×	range	2	
LOCATIC S 1/-	ON (Number et	ad Street or 1	A section, so	ction, township $i$	and range. Al	D   U/		ot and block	BLOCK	available.)	10
3. OWNER	AT TIME OF	DRILLING	IT -	1		1.1.14	/=0/		<i>P</i> ~ <i>U</i> C/	· Jon	1 alla
	CONDUCTO	~	Hoya	for	es_		<u> </u>			<u> </u>	
4. UWNER	S COMPLETE	MALL ALAD	RESS /	Yon	a k	40/2	×		1		
5. Distanc	e in feet fro	om well to	nearest:	BUILDING SA	NITARY SEW	TER FLOOR DR	AIN LE SEWER	FOUNDATIC	N DRAIN	WASTE W	ATER DRAIN
(Record a	inswer in appr	opriate block)		6	3 /	30		CONNECTED			I ILE
CLEAR WA	TER DRAIN	SEPTIC TAN	K PRIVY	SEEPAGE PIT	ABSORPT	ION FIELD   P	ARN S	ILO ABAN	DONED WELL	SINK HOLE	
C. 1.	TILE	50		75							
OTHER POI	LUTION SOU	RCES (Give	description	such as dump,	quarry, draii	age well, stream	n, pond, iak	a, etc.)			<u> </u>
					. <u></u>						
6. Well is	intended	to supply	water foi	r: A	tme						
7. DRILLH	OLE			//		10. FORM	ATIONS				
Dia. (in.)	From (ft.)	To (ft.)	Dis. (in.)	From (ft.)	To (ft.)		Kind			From (ft.)	To (ft.)
6	Surface	80				La	nd			Surface	7.
							1	17		~,	
				<u> </u>		Da	na .	uck		/	50
	3, LINER, C	Gind and Weig	ht	From (ft.)	To (ft.)						
	Black.	Stul	1912	Surface	7,5						
	J.fre	eality /	nu			·]					-
	 						···				
9. GROUT	OR OTHER	R SEALING	MATERIA	AL							<u></u>
	Ki	nd	<u></u>	From (ft.)	To (ft.)			<u> </u>			
				Surface							
	<u></u>				' <u></u>				V	A 7	
		DATA		· · · · · · · · · · · · · · · · · · ·	l	Well const	ruction c	ompleted o	on se		1965
Yield test:		14	Hrs.	at S	GPM	Well is ter	minated	12	inches	below f	inal grade
	<i>t</i> .			1 7 1	£.	Well disin	fected up	on comple	tion	🔀 Ye	s 🗌 Na
Depth troi	m surface to	o normal v	water leve	17	TI,						
Depth to v	water level	when pur	ping	23	ft.	Well seale	d waterti	ght upon	completion	Ye Ye	s [] Nc
Water san	nple sent to	o M	Ind:					laboratory	on:	A-16	1960
			<u>ceus</u>	<u>e pr</u>			difficulti		and and	data valatian	de earrh
wells, scr	eens, seals,	type of	casing jo	ints, method	d of finish	ing the wel	ll, amoun	t of cemer	nt used in	grouting, bla	asting, sut
surface pu	mprooms,	access pits	s, etc., sho	ould be give	en on reve	erse side.					
SIGNATURE			 7			COMPLETE	MAIL ADD	BESS			5.411
15	n Jow		Som	edistand W	All Drillor	Blan	6	, Jun	, 7. 1	П. т.	
4	194	mant	<u> </u>	Please	do not v	vrite in space	• below	T	1 jac		~~~7
COLLFORM	TEST RESULT	r		GAS - 24 HRS.	. G/	S - 48 HRS.	COI	NFIRMED	REMA	RKS	

WELL CONSTRUCTOR'S REPORT TO W See Instructions	ISCONSIN STATE BOARD OF on Reverse Side	HEALTH **1 °
X	(Town X Partie	007 2 2 1863
1. County longe	City Check one and	rivo name
2. Location Ser. 4 of D. G. 4 Se	e. 32TISNRIW Lat	7 Black 2 /
Name of Arrest and number of premise	e or Section, Town and Range numbers	
3. Owner X or Agent []	partnership or firm	
4. Mail Address Somak Wisc	iress required	
5. From well to nearest: Buildingft; sewer	ft; drainft; septic tan	ft;ft;
dry well or filter bedft; abandoned well	ft	
6. Well is intended to supply water for:	, Home	
7. DRILLHOLE:	10. FORMATIONS:	
Dia. (in.)         From 'ft.)         To (ft.)         Dia. (in.)         From (ft.)         To (ft.)	Kind	From         To           (fr.)         (fr.)
<u> </u>	Sand	0 67
	Sand Rock	8 75
8. CASING AND LINER PIPE OR CURBING:		
Dia. (in.) Kind and Weight From (it.) To (it.)		
6 Deel 64	·····	
5. GROOI: Kind   From (fL)   To (fL)		
Done	··	
	Construction of the well was co	mpleted on:
11. MISCELLANEOUS DATA:	act. 8	19.6.3
Yield test: 3 Hrs. at 2 GPM.	The well is terminated	finches
Doubth from our food to ristor loval, 24 ft	above, below 🗆 the permane	ent ground surface.
	Was the well disinfected upon	completion?
Water-level when pumping:ft.	Yes	X No
Water sample was sent to the state laboratory at:	Was the well sealed watertigh	t upon completion?
Malleson on act. 14 1963	Yes	× No
Signature Registered Well Driller Please do not we	Merril Complete Mail Ad	dress
45487	10 ml 10 ml 10	ml 10 ml 10 ml
Rec'd-06715-1953		
Ans'd	Gas-24 hrs	$L \odot \delta$
Interpretation	48 hrs.	
UNSAFE-BACTERIOLOGICALLY	Confirm	T
	B. Coli 🥖	
	Examiner_	
	'. 75	

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH See Instructions on Reverse Side

-

1 County Monroe	2		(Town X Village	£n.	Gran	d l	
PAUL-LEX	laca	TIT I	(City	t p DA	Check one and	ive name	· · · /
2. Location A. M.Y. Name of st	rect and nun	ber of premise	e or Section, To	wn and Rai	nge nambers	auta	war
3. Owner 🕱 or Agent 🗖 🚽	nigd	fones	partnership or			/	
4. Mail Address Joma	h u	Complete add	R 2				
5. From well to nearest: Build	ing4	ft;sewer	ft; dra:	in	ft; septic tan	kf	;
dry well or filter bed	ft; abando	oned well	ft				
6. Well is intended to supply	water for:	nu	hom	L			
7. DRILLHOLE:			10. FOR	MATION	S:		
Dia. (in.) From (ft.) To .ft.) Dia. (in	.) From (fL)	To (ft.)		Kind		From (fL)	(ft)
6 0 75				lanc	4	0	68
	_		San	d R	ock	7	75
8. CASING AND LINER PIL	PE OR CU	<b>RBING</b> :					
Dia. (in.) Rind and Weight	From (ft.)	To (ft.)					
6 Sal	0	70			<u> </u>	1	<u>1.</u>
					.,	L	
					SEF	<b>)</b> <u>i</u> - ist	5
9. GROUT:		1					
Kind	From (fL)	To (fL)			5 M -		3
Ylone	-		Constant	tion of th	<u>~ ∾ },                                  </u>	malatad a	<b>~</b> .
					le wen was co	mpieted o	n:
11. MISCELLANEOUS DAT	Г <b>А</b> :		uu	7		·····	1963
Yield test: Hrs. at	?	GPM.	The well	is termin	nated	8	inches
Depth from surface to water-le	vel: 24	, ft.	🕱 above,	below 🗌	the permane	ent ground	l surface.
	33	, ,	Was the	well disir	ifected upon	completion	n ?
water-level when pumping:		IL.	1		Yes	X No	
Water sample was sent to the s	tate labor	atory at:	Was the	well seal	ed watertight	t upon cor	npletion?
City On Qu	ig 27	_ 19_ <i>k</i> -3			Yes	X No	
Signature Registered Well Di	3702 riller			Cor	nplete Mail Add	dress	12
<u>- Atig 20 1963</u>				101	10 ml 10 v		10 ml
Rec'd	No			10 m	10 mi 10 i		<b>1</b> 0 UII
Ans'd			G <b>as-24</b> hrs	5			
Interpretation			48 hrs	5			
			Confir	m			
	, <del>0¢+6<b>∧⊡</b></del>	<b>.</b> ¥	B. Coli		/		
					Examiner		

\_\_\_\_

1. County       Montol       Town       Town <th>WELL CONSTRUCTOR'S REPORT TO W See Instructions</th> <th>ISCONSIN STATE BOARD OF on Reverse Side</th> <th>HEALTH ×0. 6</th> <th>Wel 5</th>	WELL CONSTRUCTOR'S REPORT TO W See Instructions	ISCONSIN STATE BOARD OF on Reverse Side	HEALTH ×0. 6	Wel 5
2. Location       Subscription	1. County Monsoe	Village La gran	ig Z C	EIVED
3. Owner ∑ or Agent □       Implete Market Quick       SULT 253         3. Owner ∑ or Agent □       Implete Market Quick       SULT 253         4. Mail Address ✓       SAN IF ARY         4. Mail Address ✓       Complete Market Required       SAN IF ARY         5. From well to nearest: Buildingft; sewerft; drainft; septic tankft       IN GINE ERING         6. Well is intended to supply water for:       Market       To its]         7. DRILLHOLE:       Dist its] From (tb) To its]       10. FORMATIONS:         7. DRILLHOLE:       Intended to supply water for:       To its]         9. GROUT:       Stad and weet       From (tb) To (tb)         10. FORMATIONS:       Implete Market       To its]         11. MISCELLANEOUS DATA:       To (tb)       To (tb)         Yield test:	2. Location $5 \omega 4 \rho 5 \ell 4$ Name of strict) and number of premise	City Check one and g	$\frac{R}{M}$	
4. Mail Address S. Compare Lines Complete address required       NGINEERIN         5. From well to nearest: Building	3. Owner 🛛 or Agent 🗆 . Fr Loud Jo	partnership or firm	S A V	1 1903
<ul> <li>5. From well to nearest: Buildingft; sewerft; drainft; septic tankft;</li></ul>	4. Mail Address Jomah Wisc	ress required	NGIN	EERIN
dry well or filter bedft; abandoned wellft.         6. Weil is intended to supply water for:         7. DRILLHOLE:         0. dta)       From (fk)         4       0         4       0         7. DRILLHOLE:         0. dta)       From (fk)         4       0         4       0         4       0         5. CASING AND LINER PIPE OR CURBING:         0. GROUT:         10. FORMATIONS:         11. MISCELLANEOUS DATA:         Yield test:       6         12. Mind and Weekt       From (fk)         13. MISCELLANEOUS DATA:         Yield test:       6         9. dtatest       19.63         The well is terminated       inches         8 above, below □ the permanent ground surface.         Was the well disinfected upon completion?         YesXNo         YesXNo      <	5. From well to nearest: Buildingft; sewer	ft; drainft; septic tan	kft	,
6. Well is intended to supply water for:       CM DMML         7. DRILLHOLE:       Dis. (inc)       To (inc)       To (inc)         4       0       7.6         4       0       7.6         5. CASING AND LINER PIPE OR CURBING:       Frem (inc)       To (inc)         4       0       7.3         9. GROUT:       Frem (inc)       To (inc)         10. MISCELLANEOUS DATA:       Yield test:       From (inc)         Yield test:       Hrs. at       CPM.         Depth from surface to water-level:       25 fit.         Water sample was sent to the state laboratory at:       Was the well disinfected upon completion?         Yes	dry well or filter bedft; abandoned well	ft		
7. DRILLHOLE:       Dis. (la.)       From (lb.)       To (lb.)         4       0       7.6         4       0       7.6         5. CASING AND LINER PIPE OR CURBING:       Sind and Weets       From (lb.)       To (lb.)         4       dited       0       7.6         9. GROUT:       From (lb.)       To (lb.)       To (lb.)         Mone       0       7.3         11. MISCELLANEOUS DATA:       Yield test:       GPM.         Yield test:       Hrs. at       GPM.         Depth from surface to water-level:       2.5       ft.         Water sample was sent to the state laboratory at:       Was the well disinfected upon completion?         Yes_X       No.       Yes_X         Signature       Musth Buttor       Musth Buttor         Registered Well Driller       Press dn not write in space beior       Complete Mail Address         Illin 2.6.1963       No. 24/1/26       10 ml       10 ml       10 ml	6. Well is intended to supply water for:	me		
Date (ha)       From (fb)       To (fb)       To (fb)       To (fb) $4$ $0$ $76$ $67$ $4$ $0$ $76$ $67$ $4$ $0$ $76$ $67$ $2$ $667$ $67$ $3$ $667$ $67$ $3$ $667$ $67$ $4$ $667$ $67$ $4$ $667$ $67$ $4$ $667$ $67$ $4$ $667$ $67$ $4$ $667$ $67$ $4$ $667$ $67$ $4$ $667$ $67$ $4$ $667$ $67$ $4$ $676$ $76$ $4$ $676$ $76$ $670$ $76$ $67$ $760$ $76$ $76$ $10$ $76$ $76$ $10$ $76$ $76$ $76$ $76$ $76$ $76$ $76$ $76$ $76$ $76$ $76$ $76$	7. DRILLHOLE:	10. FORMATIONS:		
4 $0$ $76$ $3$ CASING AND LINER PIPE OR CURBING: $3$ $and$ $9$ $4$ $dtell$ $0$ $4$	Dia. (in.) From (ft.) To (ft.) Dia. (in.) From (ft.) To (ft.)	Kind	From ([L)	íL)
8. CASING AND LINER PIPE OR CURBING:         Data (h)       Sind and Weight         Perm (fL)       To (fL)         Vield and Weight       Prom (fL)         To (fL)       To (fL)         Vield and Weight       Prom (fL)         To (fL)       To (fL)         Nonce       Construction of the well was completed on:         II. MISCELLANEOUS DATA:       To (fL)         Yield test:       GPM.         Depth from surface to water-level:       GPM.         Depth from surface to water-level:       GPM.         Water sample was sent to the state laboratory at:       Maxalin for the well sealed watertight upon completion?         Yes	4 0 76	and	0	67
8. CASING AND LINER PIPE OR CURBING:         Da. (in.)       Kind and Weight         4       dittel       0         7       7         9. GROUT:       7         Mone       7         11. MISCELLANEOUS DATA:       To (fL)         Yield test:       6         9. GROUT:       Construction of the well was completed on:         11. MISCELLANEOUS DATA:       To (fL)         Yield test:       6         9. Grow surface to water-level:       25         9. Grow surface to water-level:       25         9. Water sample was sent to the state laboratory at:       Yes No         Water sample was sent to the state laboratory at:       Was the well sealed watertight upon completion?         Yes No       Yes No         Signature       Must Basson       Must the well sealed watertight upon completion?         Please do not write in space befor       Complete Mail Addfess         Please do not write in space befor       Complete Mail Addfess		Land Back	9	76
Dation       Rind and Weight       From (fc)       To (fc)         4 $dfeld$ 0       73         4 $dfeld$ 0       73         9. GROUT:	8. CASING AND LINER PIPE OR CURBING:	a contra ( o cre		
4 $dtell$ 0       73         9. GROUT:       Image: Standard Standar	Dia. (in.)         Kind and Weight         From (ft.)         To (ft.)			
9. GROUT:         None         11. MISCELLANEOUS DATA:         Yield test:       6         11. MISCELLANEOUS DATA:         Yield test:       7         Genth       6         Depth from surface to water-level:       9. ft.         Water-level when pumping:       9. ft.         Water-level when pumping:       9. ft.         Water sample was sent to the state laboratory at:       Yes.         Maximum on       9. ft.         Signature       Maximum on         Registered Well Driller       Please do not write in space befor         Pressed to not write in space befor       10 ml	4 stock 0 73			
9. GROUT:         None         11. MISCELLANEOUS DATA:         Yield test:       6         Hrs. at       7         GPM.         Depth from surface to water-level:       25         ft.         Water-level when pumping:       34         ft.         Water sample was sent to the state laboratory at:         Machiner         Machiner         Gray         Signature         Musch Bross.         Registered Well Driller         Please do not write in space below         10 ml       10 ml         10 ml       10 ml         10 ml       10 ml				
9. GROUT:         None         11. MISCELLANEOUS DATA:         Yield test:				
9. GROUT: Nind From ((L) To ((L) None 11. MISCELLANEOUS DATA: Yield test: Hrs. at GPM. Depth from surface to water-level: ft. Water-level when pumping: ft. Water sample was sent to the state laboratory at: Maximum on ft. Water sample was sent to the state laboratory at: Maximum on ft. Water sample was sent to the state laboratory at: Maximum on ft. Signature Muss B.M. Signature Muss B.M. Registered Well Driller Please do not write in space below Rec'd 10 ml 26.1963 Rec'd 10 ml 26.1963 Rec'd 10 ml 20 ml 10				
Kind       From (lt)       To (lt)         Mone       Image: Structure       Image: Structure       Image: Structure         11. MISCELLANEOUS DATA:       Construction of the well was completed on:       Image: Structure       Image: Structure         Yield test:       Image: Structure       Image: Structure       Image: Structure       Image: Structure         Yield test:       Image: Structure       Ima	9. GROUT:			
MondConstruction of the well was completed on:11. MISCELLANEOUS DATA: $May_2 = 20$ Yield test: $GPM$ .Yield test: $GPM$ .Depth from surface to water-level: $25$ $GPM$ . $May_2 = 20$ Depth from surface to water-level: $25$ $GPM$ . $May_2 = 20$ Water-level when pumping: $25$ $GPM$ . $May_2 = 20$ Water sample was sent to the state laboratory at: $May_2 = 20$ $Max_2 = 20$ $May_2 = 20$ $May_2 = 20$ $May_2 = 20$ Was the well disinfected upon completion? $Max_2 = 20$ $May_2 = 20$				
Construction of the well well well well well in the well well is terminated11. MISCELLANEOUS DATA: $May_2 = 20$ 19.63Yield test:6PM. $May_2 = 20$ 19.63Depth from surface to water-level:25ft.The well is terminatedinchesWater-level when pumping:34ft.Was the well disinfected upon completion?Water sample was sent to the state laboratory at:Yes_XNoMaximum on pumpi 19.63Was the well sealed watertight upon completion?Maximum on pumpi 19.63YesNoSignatureRegistered Well DrillerPlease do not write in space beforRec'd	Mone	Construction of the well was co	mpleted or	۰ ·
11. MISCELLANEOUS DATA:       19.000         Yield test:		May 20	inpicted of	
Yield test:Image: Second	11. MISCELLANEOUS DATA:		<u></u>	19_05
Depth from surface to water-level:ft. Water-level when pumping:ft. Water sample was sent to the state laboratory at: <u>Maaison on punct 19.63</u> Signature <u>Registered Well Driller</u> Registered Well Driller <u>Please do not write in space below</u> <u>Rec'dIIIN 2.6, 1963</u> <u>No/I/06</u> <u>Above, below the permanent ground surface.</u> Was the well disinfected upon completion? <u>YesNo</u> <u>Complete Mail Address</u> <u>10 ml 10 ml</u>	Yield test: Hrs. at GPM.	The well is terminated	8	_ inches
Water-level when pumping: <u>34</u> Water sample was sent to the state laboratory at: <u>Madison on June</u> 19_63 Signature <u>Registered Well Driller</u> Registered Well Driller <u>Registered Well Driller</u> Rec'd <u>10 M2 6, 1963</u> <u>10 ml 10 </u>	Depth from surface to water-level:ft.	🗙 above, below 🗌 the permane	nt ground	surface.
Water-level when pumping:II. Water sample was sent to the state laboratory at: <u>Madison</u> <u>June</u> 19.63 City Signature <u>Registered Well Driller</u> Registered Well Driller <u>Registered Well Driller</u> <u>Rec'd</u> <u>10 ml 26 1963</u> <u>No. 24/06</u> <u>Yes No</u> <u>10 ml 10 </u>		Was the well disinfected upon	completion	?
Water sample was sent to the state laboratory at:       Was the well sealed watertight upon completion?         Madision on punct 19_63       Was the well sealed watertight upon completion?         Signature       Registered Well Driller         Please do not write in space below       Complete Mail Address         Rec'd       No 24/06	Water-level when pumping:It.	Yes2	K No.	
Maaisonon June 19.63       Ves. No	Water sample was sent to the state laboratory at:	Was the well sealed watertight		npletion?
City     Yes_ZALL     No	Madisonon June 19.63			ipiceion.
Signature       Registered Well Driller       Merrillan, Wisc.         Rec'd       10 ml	City	I es2	NO.	
Rec'd 10 ml 10 ml 10 ml 10 ml 10 ml 10 ml	Signature Registered Well Driller Please do not write	Merrillan te in space below Complete Mail Add	1, (L	<u>liac</u>
	Rec'dJUN 26 1963 No_24106	10 ml 10 ml 10 :	ml 10 ml	10 ml
Ans'd Gas-24 hrs	Ans'd	Gas-24 hrs		
Internretation 18 hrs	Internretation	18 hrs		
CIER_BACTERIOLOGICALLY	ELEE BACTERIOLOGICALLY	Ty man		
Confirm	54FF	Confirm		
B. Coli		B. Coli		
1/5 Examiner		5 Examiner_		

•

WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH See Instructions on Reverse Side

1. County Montas	2		Village Sa S/	Earos	2		
2. Location $O(4) = A$	1 <b>3</b> . E	E Se	(City □ • Check one and 2 32 T-18-N R	REC	ENZO		
Name of At	rect and num	nber of premis	e or Section, Town and Range numbers	<b>đ</b> uo			
3. Owner $\underline{\mathbf{X}}$ or Agent $\underline{\square}$ $\underline{\square}$	Napo	e of individual.	, partnership or firm		2-8-1832		
4. Mail Address Soma	RU	Complete add	dress required	E N G I II			
5. From well to nearest: Buildi	ng4	.ft;sewer	ft; drainft; septic t	andft	· · · · · · · · · · · · · · · · · · ·		
dry well or filter bed	ft; aband	oned well	ft				
6. Well is intended to supply $v$	vater for:		eur Mome				
7. DRILLHOLE:		The life h	10. FORMATIONS:	From	To		
$\frac{D_{\text{ia.}}(\text{ib.})}{10} = \frac{100}{100} $	) From (IL)	10 ((t.)	Kind	([L])	(ft)		
	-		Sand		66		
			Sand rock	14	80 -		
8. CASING AND LINER PIP	E OR CL						
La Off al		701					
- JALL		100					
	+						
9 CROUT.		.L					
Kind	From (ft.)	To (ft)					
Done							
			Construction of the well was	completed or	1:		
11. MISCELLANEOUS DAT	A:		August 17		19.62		
Yield test:A Hrs. at	9	GPM.	The well is terminated	8	_ inches		
Depth from surface to water-lev	vel: <u>2</u>	6ft.	X above, below _ the perma	nent ground	surface.		
Water-level when pumping:	33	ft.	Was the well disinfected upon completion?				
Water sample was sent to the st	tate labor	atory at:	Uns the well sealed watertie	$-\frac{1}{2}$			
Madison on Qu	q 21,	19.6.2	YesX No				
	2		700 - 44	11.			
Signature Registered Well Dr	iller Ple	ase do not wr	Complete Mail &	Ullac.	1204 82		
AUG 221962	No	31598	10 ml 10 ml 1	.0 ml 10 ml	10 ml		
Ans'd			Ga3-24 hrs				
Interpretation			48 hrs				
SAFE-BACTER	RIOLOGI	CALLY	Confirm				
			B. Coli				
			Examine				

W	ELL CONSTRUCTO	R'S REP See I	ORT TO W	ISCONSIN STATE BOAR on Reverse Side	D OF HEALT	H <sup>Hel</sup>
1 Count	* Monroe	2		Village La Stran	al II	04
1. 00000	0,1	1 1 0	, 0	City Check of	e and give name	
2. Locati	ion Scill 14 0	88.	y She	-32 T/8N RIW		
	Name of A	treet and nu	mber of premise	e or Section, Town and Range numb	era	
3. Owne:	r 🕅 or Agent 🖂 🕅	yd j	of individual	Destructed or firm		/
	··· Mon	10	11	P 1		
4. Mail 4	Address	<u> </u>	Complete add	I / A		
5 From	well to nearest · Build	ing 4	ft:sewer	- ft: drain - ft: sent	ic tank —	ft·
				, <b>uu</b> m, bop		
dry w	ell or filter bed	ft; aband	loned well	ît		
6. Well i	s intended to supply	water for	: new 1	Some		
7. DRIL	LHOLE:			10. FORMATIONS:		
Dia. (in.)   F	rom (ft.) To (ft.) Dis. (ir	.) From (ft)	To (ft.)	Kind	From (IL)	To (fL)
6	0 85			Same	A	71
				Sadard		MM
0 0101				Non work		
Dia (in ) 1	Kind and Weight	FE UR U				
/ /	0FA		4 1			<u> </u>
_6	Sul					
					1995	
9. GROU	J <b>T:</b>			<u> </u>		
	Kind	From (ft.)	To (1L)	ENGLIE	EEING	
nor	rl				<u></u> l	
				Construction of the well	was completed	on:
11 MT	CELLANEOUS DA	ΓΑ.		may 2	<u>?</u>	196
		, <i>, ,</i>			5	100.
Yield test	:: Hrs. at	;	GPM.	The well is terminated		incl
Depth fro	m surface to water-le	vel:2	Ž ft.	M above, below [] the pe	amanent groui	id surfa
Wator los	al when numering.	36	£+	Was the well disinfected	upon completi	o <b>n</b> ?
mater-iev	ei when pumping:		16,		YesX N	0
Water sau	mple was sent to the s	state labor	ratory at:	Was the well sealed wat	ertight upon o	omoletic
Mad	ison on the	n15	1962_			
	City				1 es N	U
~.	Runkr	20.0		mar M-	Alim	
Signature	Registered Well D	riller		Complete M	lail Address	
		P!	ease do not wri	te in space below		
Rec'd		2 No.	11957	10 ml 10 ml	10 ml 10 i	nl 10
A? ]						
Ans'd				Gas—24 hrsJ		lan-
Interpretat	ionUNSAFE-BAC	TERIOLO	GICALLY	48 hrs	<u>'</u> ' <i>-</i> '	 /
				Confirm	1	<u> </u>
				B Coli 5		
						####
				<u>5</u> Exa	miner	

----

\_\_\_\_

WELL	CONSTRUCTOR'S	REPORT	TO	WISCONSIN	STATE	BOARD	OF	HEALTH	HeT 2
		See Instru	ictio	ns on Reverse	e Side				

Village D. La Grande Check one and Kive name 1. County Monrol 10/20 Town and Range numbers of premise or Section, Town and I 2. Location Name ft individual, partnership or firm 3. Owner Z or Agent 🗆 Ila Complete address require 4. Mail Address Jomas B 2 5. From well to nearest: Building\_\_\_\_\_ft; sewer\_\_\_\_ft; drain\_\_\_\_ft; septic tank\_\_\_\_\_ft; dry well or filter bed\_\_\_\_\_ft; abandoned well\_\_\_\_ft. 6. Weil is intended to supply water for: 7. DRILLHOLE: 10. FORMATIONS: To (ft.) || Dia. (in.) | From (ft.) | To (ft.) From (1L) To (IL) Dia. (in.) | From (ft.) | Kind 0 6 D 8. CASING AND LINER PIPE OR CURBING: Dia. (in.) Kind and Weight From (ft.) To (ft.) 0 /9 961 9. GROUT: Kind From (ft.) To (ft) Construction of the well was completed on: ular 196/ 11. MISCELLANEOUS DATA: Yield test: \_\_\_\_\_ Hrs. at \_\_\_\_\_ The well is terminated \_\_\_\_\_X\_ - GPM. \_\_\_\_\_ inches 🛛 above, below 🗋 the permanent ground surface. Depth from surface to water-level: \_\_\_\_\_ft. Was the well disinfected upon completion? Water-level when pumping: \_\_\_\_\_34\_\_\_\_ft. Yes\_X\_\_\_ No\_\_\_\_ Water sample was sent to the state laboratory at: Was the well sealed watertight upon completion? Madison ly 10 1961 \_ on . Yes\_\_\_\_\_ No\_\_\_\_\_ City Signature Kush Bros an Ml Registered Well Driller Complete Mail Address Please do not write in space below 10 ml 10 ml 10 ml 10 ml 10 ml Rec'd\_\_\_\_1961 No Gas-24 hrs. Ans'd 0 0 0 0Interpretation UNSAFE—BACTERIOLOGICALLY 48 hrs. Because of the presence of B. Coli in Confirm \_\_\_\_\_ one of the TO cc. portions of this sam-ple another examination is advisable. B. Coli

Examiner\_\_\_\_\_

WELL CONSTRUCTOR'S REPORT	DEPARTMENT OF	E OF WISCONSIN RESOURCE DEVELOPMENT	Wei
1 COLNTY	CHECK ONE	NAME P	
711onrol	Village	City Ja Linance	
The strength of the strength o		TIPN RIVE SUDDIVISION NAME, lot and block sumpersymbers a	Bland 3
J. OWNER AT TIME OF DRULING	H The sa	Son Son	es addition
4. OWNER'S COMPLETE MAIL ADDRESS	19 Jones	·	
	Iomak W-	12 Of 2	
5. Distance in teet from well to nearest: (Record answer in appropriate block)	5 2/	C. I. TILE SEWER CONNECTED INDEPENDEN	VASIE WATER DRAM
CLEAR WATER DRAIN SEPTIC TANK PRIVY C. I. TILE 3.5	SEEPAGE PIT ABSORPTI	ON FIELD BARN SILO ABANDONED WELL	SINK HOLE
OTHER POLLUTION SOURCES (Give description	a such as dump, quarry, drain	age well, stream, pond, lake, etc.)	
6. Well is intended to supply water fi	or: //		
	Home		
7. DRILLHOLE	) ] Erom (ft) ] To (ft)	10. FORMATIONS	
Surface 75		60	Surface C.P
		- Jung	(P 7 -
8. CASING, LINER, CURBING, AND SCR	EEN	tand lock	
Dia. (in.) Kind and Weight	From (ft.) To (ft.)		
_ L Steel 19. =	Surface 72		
P. GROUT OR OTHER SEALING MATER	IAL		
Kind	Surface		
flore			
		Well construction completed on frum	e 29 196,
11. MISCELLANEOUS DATA Yield test: / 8 Hrs	s. at & GPM	Well is terminated 10 inches	게 above ] below final grade
Depth from surface to normal water lev	rel 15 ft.	Well disinfected upon completion	Yes N
Depth to water level when pumping	2/ ft.	Well sealed watertight upon completion	Yes 🗋 No
Water sample sent to Mag	lison	laboratory on: Ju	ly 5- 192
Your opinion concerning other pollutic wells, screens, seals, type of casing j surface pumprooms, access pits, etc., s	on hazards, information oints, method of finish hould be given on reve	concerning difficulties encountered, and d ing the well, amount of cement used in g rse side.	ata relating to nearb prouting, blasting, sub
SIGNATURE	-	COMPLETE MAIL ADDRESS	
Roy R. A.	Registered Well Driller	RPA Prime Foll, 4.1	P, 54615
	Please do not w	rite in space below	
COLIFORM TEST RESULT	GAS - 24 HRS. GA	S - 48 HRS. CONFIRMED REMAI	RKS

WELL CONSTRUCTOR'S REPORT	wiscor	NSIN STAT	E BOARD OF HEALTH		i	. Wel
1. COUNTY	CHECK	ONE Village	NAME -	1~-	144 20	
2. LOCATION ONumber and Street or 4. section	a section, township a	nd range. Ale	o give subdivision name, lot ar	d block purphers when	vailable ) a	4.955
X. 21 401 8.8.4	811.3	2 11	SN PIW		SAL	20
3. OWNER AT TIME OF PRILLING	12/1-	<u></u>				LNG
4. OWNER'S COMPLETE MAIL ADDRESS	to force	2				<u> </u>
	omak W	is R.	2			
5. Distance in feet from well to neare	st: BUILDING SAN	ITARY SEW	ER FLOOR DRAIN FOU	INDATION DRAIN	WASTE WA	TER DRAIN
(Record answer in appropriate block)	4 3	30 -	- -	~	22	
CLEAR WATER DRAIN SEPTIC TANK PRI	VY SEEPAGE PIT	ABSORPTI	ON FIELD BARN SILO	ABANDONED WELL	SINK HOLE	
65 -	- 90	-	-   -   -	_		
OTHER POLLUTION SOURCES (Give descrip	tion such as dump,	quarry, drain	age well, stream, pond, lake, et	.)	·	·····
6 M/all := :============						
<ol> <li>well is intended to supply water</li> </ol>	Tor: Home					
7. DRILLHOLE			10. FORMATIONS		<u> </u>	
Dia. (in.) From (ft.) To (ft.) Dia.	(in.) From (ft.)	To (ft.)	Kind		From (ft.)	To (ft.)
6 Surface 90			Sand		Surface	6:
			Kand nock-	Lin	69	80
8. CASING, LINER, CURBING, AND SC	CREEN		- <del> </del>	70000		
Dia. (in.) Kind and Weight	From (ft.)	To (ft.)	—			
6 tol	Surface	7.5				
		/			-	
			· · · · · · · · · · · · · · · · · · ·			
					-	
			<u> </u>			
			<u></u>			
9. GROUT OR OTHER SEALING MAT	ERIAL	To (ft.)				
				·····		
none	Surrace					
			Well construction comp	oleted on Mary	15	1965
11. MISCELLANEOUS DATA		GPM	Well is terminated	5 inches	above fi	inal grade
11eiu 1esi: [7		GrM	Well disinfected upon	completion	Vei	
Depth from surface to normal water	level //	ft.				
Depth to water level when pumping	26	ft.	Well sealed watertight	upon completion	Z Yes	i 🗌 No
Water sample sent to Madic	on		lab	oratory on: May	17	1965
Your opinion concerning other pollu wells, screens, seals, type of casing surface numprooms, score nite ato	ution hazards, ir joints, method	nformation   of -finish	concerning difficulties ing the well, amount of	encountered, and d cement used in g	ata relating grouting, bla	to nearb sting, sub

SIGNATURE Ray Rush	Registered Well Dril	ler Block	ADDRESS River Fall	la relis R2
COLIFORM TEST RESULT	Please do no GAS – 24 HRS.	t write in space bel GAS – 48 HRS.	ow CONFIRMED	REMARKS

## WISCONSIN STATE BOARD OF HEALTH

WELL CON	ISTRUCTOR	'S REPORT		WISCON	NSIN STAT	E BOARD OF H	EALTH		Wel 5
1. COUNTY	The c			CHECK		NAMI	E //	<u> </u>	
2. LOCATIO	N (Number an	id Sureet or 3/	i section, secti	ion, township a	und range. Als	o give subdivision n	ame, lot and block num	bers when available.)	<u> </u>
Lat	2 3 Bl	al3	Sec. 33	$- t_{18}$	Ľ R	IW la	us lub	Rion	, É
3. OWNER	AT TIME OF	DRILLING	Le	ul Jas	ne	Ą	R2	ELVI	<u>ED</u>
. OWNERS	5 COMPLETE	MAIL ADDI	RESS	Lan	a h	Junio		JUL 1 9 19	 66
5. Distance	e in feet fro	om well to	nearest:   <sup>B</sup>	UILDING SAN	TITARY SEW	ER FLOOR DRAIN C. I.   TILE S	FOUNDATION D	RAIN WASTE W	ATER DRAIN
(Record as	nswer in appro	opriate block)		3 4	14 -	99 -		ANG MEETING	.
CLEAR WAT C. I.	TILE	SEPTIC TAN	K PRIVY S	EEPAGE PIT	ABSORPTI	ON FIELD BARN	SILO ABANDON	ED WELL SINK HOLE	
-		40	-	60		-			
OTHER POL	LUTION SOU	RCES (Give	description a	uch as dump,	quarry, drain	age well, stream, po	nd, lake, etc.)	·	<u></u>
6. Well is	intended	to supply	water for:	7/					
7. DRILLHO	OLE	<u> </u>		/00	me	10. FORMATIO	NS		
Dia. (in.)	From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	<u>To (ft.)</u>		Kind	From (ft.)	
_6	Surface	85				Jan	l	Surface	71
						Sandro	ek	71	85-
8. CASINO	G, LINER, CI	URBING, A	ND SCREE	N (fr)	T = (6+)				
Dia. (in.)	<u> </u>	and and Weigi	11	From (H.)	<u> </u>				
6		el_			76				
				-					
<u> </u>									
					<u></u>				
9. GROUT	OR OTHER	R SEALING	MATERIA	L					-
	Ki	nd		From (ft.)	To (ft.)		- <u></u>		-
No	nl			Jurrace	<u> </u>				
						Well construct	ion completed on	July 11	1966
11. MISCE Yield test:	LLANEOUS	DATA ろ	Hrs.	at 9	GPM	Well is termin	ated 9	inches below	final grade
Depth from	n surface to	o normal v	water level			Well disinfecte	ed upon completion	n 🛛 Ye	es 🗌 No
Depth to y	water level	when num	ning	9.7	f,	Well sealed w	vatertight upon con	npletion 2-Ye	es 🗌 No
Water can	nole sent t		<u>, , , , , , , , , , , , , , , , , , , </u>	<del></del>	•	<u> </u>	laboratory on	• • • • •	19//
		<u> </u>	adiso	n, Wi	×			· July 18	
Your opin wells, scr surface pu	ion concer eens, seals, umprooms,	ning other type of access pits	r pollution casing join s, etc., sho	hazards, i nts, method uld be give	nformation 1 of finish en on reve	concerning dif ing the well, a rse side.	ficulties encountere mount of cement (	d, and data relating used in grouting, bl	i to nearby asting, sub-
SIGNATURE		/	5-17	)		COMPLETE MAI	L ADDRESS		
$\square$	Poul	Au	Sh R	egistered V	/ell Driller	R2 (	Blk	Averta	-llsi
				~	J	Yes in the second second	1	(	

	Please do	not write in space	below	•	
COLIFORM TEST RESULT	GAS - 24 HRS.	GAS - 48 HRS.	CONFIRMED	REMARKS	
		1			
		1 I			
				1	

I

	17		
WELL CONSTRUCTO	R'S REPORT TO W	ISCONSIN STATE BOARD O	F HEALTH Hells
<i>Л</i> . <i>Л</i>	See Instructions	on Reverse Side	
1. County Monroe		Village	RECEIVED
2. Location Sation	3 lock 2	e or Section, Town and Range numbers	- JUL 10. 1964
3. Owner For Agent 🗆 🚽	Name of milividual	partnership or firm	SANITARY
4. Mail Address Joma	h Wig	freas required	
5. From well to nearest: Build	ling_1ft; sewer_	70_ft; drainft; septic t	ank 65 ft;
dry well or filter bed_90	.ft; abandoned well_ =	ft	
6. Well is intended to supply	water for: Mut	Home	
7. DRILLHOLE:	•	10. FORMATIONS:	
Dia. (in.)   From (ft.) To (ft.)   Dia. (in	n.) + From (ft.) To (ft.)	Kind	From To (fL) (fL)
6 0 80		Sand	0 66
		Sand Rock-Lu	in 14 80
8. CASING AND LINER PI	PE OR CURBING:	2	
Dia. (in.) Kind and Weight	From (ft.) To (ft.)		
6 Steel	0 73		
9. GROUT:			
Kind	From (fL)   To (fL)		
None			/
		Construction of the well was	completed on:
11. MISCELLANEOUS DAT	ГА:	July 1	19 <b>G</b> -4
Vield test: 5 His. at	GPM.	The well is terminated	inches
	18 4	🗗 above, below 🗌 the perma	nent ground surface.
Depth from surface to water-le	evel: J It.	Was the well disinfected upor	n completion?
Water-level when pumping:		Yes	U No
Water sample was sent to the s	state laboratory at:	Way the well cooled watertie	t upon completion?
Modición on la	les 8 1964	was the well sealed water ug	
City	1	Yes_	No
Signature Registered Well D	h-t-Bon- riller P'ease do not wri	Black Pitter Complete Mail A	Hall 11/12
		10 ml 10 ml 1	.0 ml 10 ml 10 ml
Rec'd	No		
Ans'd		Gas-24 hrs	
Interpretation		48 hrs	
		Confirm	
		B. Coli	
		Examine	<b>r</b>
		Examine	

WELL CONSTRUCTOR'S REPORT TO W See Instructions	VISCONSIN STATE BOARD OF HEALTH Wel 5 on Reverse Side
1. County Montal	Village fail range
Loty Rloop & Jones & 1	City Check one and give nem RECEIVED
2. Location Jet 7 Faces & forther of premis	e or Section. Town and Range numbers GCT 23 1964
3. Owner or Agent - Aloy Marre of Multividual	
4. Mail Address Jomah Mis	dress required
5. From well to nearest: Buildingft; sewer	38 ft; drainft; septic tank_48 ft;
dry well or filter bed_76ft; abandoned well_	ft.
6. Well is intended to supply water for: Home	2
7. DRILLHOLE:	10. FORMATIONS:
Dia. (in.) From (ft.) To (ft.) Dia. (in.) From (ft.) To (ft.)	Kind From To (It) (It)
6 0 90	Sana 0 66
	Pock 14 80
8. CASING AND LINER PIPE OR CURBING:	
Dia. (in.) Kind and Weight From (ft.) To (ft.)	
& Steel 0 75	
9. GROUT:	
Kind From (fL) To (fL)	
None	h
	Construction of the well was completed on:
11. MISCELLANEOUS DATA:	Oct 12 1964
Will have to 12 CDM	The well is terminated finches
field test: Hrs. at GFM.	$\square$ above, below $\square$ the permanent ground surface.
Depth from surface to water-level:ft.	Was the well disinfected upon completion?
Water-level when pumping:ft.	
Water sample was sent to the state laboratory at:	Yes No
Madine as sent to the state added	Was the well sealed watertight upon completion?
- 11 Wallston on 202 - 198-7- City	Yes No
Signature Roy Rush & Son Registered Well Driller Please do not write	Black River Halls Wie Complete Mail Address
Rec'd No	10 ml 10 ml 10 ml 10 ml 10 ml
Ans'd	Gas-24 hrs
Interpretation	48 hrs
	Confirm
	B. Coli
	Examiner

-

Well constructor	l No S REPO See In	- 2 DRT TO W	VISCONSIN S.	FATE BOARD OF	HEALTI	₩•1 6 <b>I</b>
1. County $Montoc.$ 2. Location $AW, Y = M$ Name of str 3. Owner $\Sigma$ or Agent $\Box$ $Jor$	eet and num	Sec. 3 aber of premis bmus of individual	(Town P Village (City 2/7) e or Section, Town	LA. Check one and Check one and N R I W and Range numbers	Cive name	
4. Mail Address Joma	h li	Complete add	dresa required			
5. From well to nearest: Buildin	ng_4	ft;sewer_	30_ft; drain.	ft; septic tan	ik_60_f	t;
dry well or filter bed_25_f	t; abando	ned well	<u>ft.</u>			
6. Well is intended to supply w	ater for:	How	<u>v</u>			
7. DRILLHOLE:			10. FORMA	TIONS:		
Dia. (in.) From (ft.) To (ft.) Dia. (in.)	From (ft.)	To (ft.)		Kind	From ([L)	To (ft.)
6 0 80			Sa	nd	0	BI
			Sand	mark	19	80
8. CASING AND LINER PIP	E OR CU	RBING:	Addres of the			
Dia. (in.) Kind and Weight	From (ft.)	To (IL)		CEIVED		
to Steel	0	67	RE			
				- 4004		<u></u>
			f	MAY 5 1901	ļ	<u> </u>
	<u>i</u>			TARY		
9. GROUT:	From (ft.)	To (ft.)	EN C	ANTERIN	G	<u> </u>
None				/	·	<u> </u>
			Construction	n of the well was co	mpleted o	on:
11 MISCELLANEOUS DAT	۱ ۱ ۸ •		apri	:/ 17		1961
2				T		
Yield test: Hrs. at	7	$\subseteq GPM.$	The well is	terminated $\dots A$		inches
Depth from surface to water-lev	el: <b>ス</b> _	ft. /		now i the permane	int ground	1 Bullace.
Water level when summing:	34	<u>ب</u> (	Was the we	ll disinfected upon	completio	n?
water-level when pumping:	¥-Y	16.		Yes	X No	)
Water sample was sent to the st	ate labor:	atory at:	Was the we	ll sealed watertight	t upon com	mpletion?
Madisan on ap	ri 21	2 19 /		V	Y N	_
City		·		I es	INC	·
Signature Rush B Registered Well Dri	Mon- ller Ple	ase do not wr	ite in space betom	Complete Mail Add	W A	1 2
Rec'd APR 28 1961	No	3307		10 ml 10 ml 10 m	ml 10 m	1 10 ml
Алв'd			Gas-24 hrs.			
Interpretation			48 hrs.			
SAFE-BACTERIO			CarA			
	LUDICA	•••¥	Connrm			
			B. Coli			
			1	Examiner		

WELL CONSTRUCTOR'S REPORT	
≈ORM 3300-15	

NOV 4 1977

FEB 2 8 1973

STATE OF WISCONSIN DEPARTMENT OF NATURAL RESOURCES Box 450 Madison, Wisconsin, 53701

PORM 3300-15	WHITE CO GREEN CO	NOTE DEPARTMENT OF NO PY – DIVISION'S COPY Box DPY – DRILLER'S COPY Madison, Wis	ATURAL RESI 450 consin 53701	OURCES
	YELLOW C	COPY - OWNER'S COPY		
monoe		Village City 24 grange		
2. LOCATION – <sup>3</sup> / <sub>4</sub> Section Section Tow H, E,   3a   /	vnship Range	3. OWNER AT TIME OF DRILLING		
OR - Grid or street no. Street name	E E	ADDRESS PP/		
AND -If available subdivision name, lot & block no.		POST OFFICE tom a line		
4. Distance in feet from well to nearest:	UILDING SANITARY SEWE	FLOOR DRAIN FOUNDATION DRAIN	WASTE WAT	TER DRAIN
Record answer in appropriate block)	15 0.1. 1112	C. I. THE SEWER CONNECTED INDEPENDENT	C. I.	TILE
CLEAR WATER DRAIN SEPTIC TANK PRIVY S	EEPAGE PIT ABSORPTION	FIELD BARN SILO ABANDONED WELL SI	NK HOLE	
30	30			
OTHER POLLUTION SOURCES (Give description su	ich as dump, quarry, drainage	well, stream, pond, lake, etc.)		
5. Well is intended to supply water for:	Home			
B. DRILLHOLE	// •	9. FORMATIONS	t	
Dia, (in.) From (ft.) To (ft.) Dia, (in.)	From (ft.) To (ft.)	Kind	From (ft.)	To (ft.)
6 Surface 60		Dand and Rock	Surface	20
		Black much	20	38
7. CASING, LINER, CURBING, AND SCREE	N From (ft.) To (ft.)	Same Rock	38	60
6 mun Steel T.C. 194	Surface 40			
6 mm	10	are		
<u>ASTMA55</u>				
Valley Steel				
			-	i 1
8. GROUT OR OTHER SEALING MATERIA		10. TYPE OF DRILLING MACHINE USED		_
	Surface 29	Cable Tool     Direct Rotary	Revers	e Rotary
Carring Folmation	Surrace 20	w/drilling mud with drilling mud & air		· With Water
		Well construction completed on July	<u>30</u>	19 27
Yield test: Hrs. at	8 gpm	Well is terminated /2 inches	below	final grade
Depth from surface to normal water level	21 ft.	Well disinfected upon completion	Ye:	s 🗔 N
Depth to water level when pumping	30 ft.	Well sealed watertight upon completion	Ye:	s 🗌 P
Water sample sent to Madu	m	laboratory on: 140	2	19 74
Your opinion concerning other pollution hazar type of casing joints, method of finishing the w be given on reverse side.	ds, information concernin ell, amount of cement use	g difficulties encountered, and data relating to near d in grouting, blasting, sub-surface pumprooms, a	arby wells, sc ccess pits, et	reens, seal c., should
SIGNATURE		COMPLETE MAIL ADDRESS		
Jum Parkhurst R	egistered Well Driller	Choy uns		

	Please do n	ot write in space below	/	
COLIFORM TEST RESULT	GAS - 24 HRS.	GAS - 48 HRS.	CONFIRMED	REMARKS
	I	1	1	1

## MAR 1 1972

WELL CONSTRUCTOR'S REPORT FORM 3300-15	WHITE COI GREEN CO YELLOW C	STATE NOTE DEPARTMENT O PY - DIVISION'S COPY PY - DRILLER'S COPY Madisor OPY - OWNER'S COPY	OF WISCONSIN F NATURAL RESOURCES Box 450 Wisconsin 53701
1. COUNTY	CHECK ONE	NAME	
2. LOCATION - <sup>3</sup> /4 Section Section	Township Range	3. OWNER AT TIME OF DRILLING	rge
NE 32	18N IW	- Henry	
OR - Grid or street no Street name		ADDRESS Tomah	Wis
AND -If available subdivision name, lot & block r	no.	POST OFFICE	<u></u>
4. Distance in feet from well to nearest:	BUILDING SANITARY SEWER	FLOOR DRAIN FOUNDATION DRAIN	WASTE WATER DRAIN
(Record answer in appropriate block)	6 20	C.I. THE SEWER CONNECTEDIADEPEND	ENI C.I. THE
CLEAR WATER DRAIN SEPTIC TANK PRIVY	SEEPAGE PIT ABSORPTION	FIELD BARN SILO ABANDONED WEL	L SINK HOLE
C.I. TILE 50		5	
OTHER POLLUTION SOURCES (Give description	n such as dump, quarry, drainage	well, stream, pond, lake, etc.)	<u> </u>
E. Well is intended to supply water for			
5. Well is intended to supply water for:	home		
6. DRILLHOLE		9. FORMATIONS	
Dia. (in.) From (ft.) To (ft.) Dia. (in	n.) From (ft.) To (ft.)	Kind	From (ft.) To (ft.)
S Surface 442		Sand	Surface 22
6 445 75		Sandstone	22 75
7. CASING, LINER, CURBING, AND SCR	EEN		
Dia. (in.) Kind and Weight	From (ft.) To (ft.)		
6 Standard Steel 18	97 Surface 44 2		
:			
8. GROUT OR OTHER SEALING MATER	IAL	10. TYPE OF DRILLING MACHINE USE	<b>D</b>
Kind	From (ft.) To (ft.)	Cable Tool Direct Rotary	Reverse Rotary
drill cuttings	Surface 10	Rotary – air w/thiling mud	mer Jetting with
me + compet	10 HHL		Air Water
11. MISCELLANEOUS DATA	10 112	wen construction completed on //	above
Yield test: 2 Hrs. a	at /2 GPM	Well is terminated 12 inches	below final grade
Depth from surface to normal water level	28 ft.	Well disinfected upon completion	🗴 Yes 🗌 N
Depth to water level when pumping	35 ft.	Well sealed watertight upon completion	📝 Yes 🔲 N
Water sample sent to Madi Ca	n lilis	laboratory on: 🖌	-eb, 29, 1972
Your opinion concerning other pollution has type of casing joints, method of finishing the	zards, information concerning e well, amount of cement used	difficulties encountered, and data relating to d in grouting, blasting, sub-surface pumproom	nearby wells, screens, seals ns, access pits, etc., should
SIGNATURE	<del></del>	COMPLETE MAIL ADDRESS	<b></b>
		578 Halaton al	ve. Hillsbe
-Janam Kont	Registered Well Driller Please do not writ	e in space below	
COLIFORM TEST RESULT	GAS – 24 HRS. GAS –	- 48 HRS. CONFIRMED REM	IARKS

State of Wisconsin Department of Natural Resources Box 7921 Madison, Wisconsin 53707	N White Copy Green Copy Yellow Copy	OTE: – Division's Copy – Driller's Copy – Owner's Copy	WELL CONST Form 3300-15	NOV 2	REPOR Rev. 12-7
1 COUNTY Minsol	CHECK (1) ONE:	Name Name	Ja z	Irang	L.
2. LOCATION $\mathcal{E} = \mathcal{H} \mathcal{L} $ $\mathcal{I} $	Township Range	3. NAME TOWNER TAG	ENTAT TIME OF	DRILLING	HECK I
		UT.	4		
AND – If available subdivision name,	lot & block No.	POST OFFICE Jor	rah .	z. i	L
4. Distance in feet from well' Building to nearest: (Record answer in appropriate 10 block)	Sanitary Bidg, Drain Sanitary C.I. Other C.I.	Bidg. Sewer Floor Drain Connected To Other C.I. Sewer Other	Storm Bli Sewer C.I.	dg. Drain Other	Storm B C.I.
Street Sewer Other Sewers Foundati San, Storm C.I. Other Sewer Clearwat	on Drain Connected to: Sewage Su Sewage C.I. O Sump er Clearwater	ump Clearwater Septic Hold ther Sump Tank Tan	rng Sewage Absor k Seepage Pit Seepage Bed	rption Unit	
Dr. Privy Pet Waste Pit <u>Vell</u> Pump	Sump ng Subsurface Pumproom Nonconforming Existing	Barn Animal Animat Silo Gutter Barn Yard, With Pit Pen	Seepage Tren Glass Lined Silo Storage w/o Facility Pit	ch Earthen Sila Storage Trei Pit	nch Or
Tank Temporary Watertight Solid Manu Manure Liquid Manure Storage Stack Tank Structure	re Subsurface Waste Pond or L Gasoline or Disposal Unit Oil Tank (Specify Type)	and Other (Give Description)			
5. Well is intended to supply water for:		9. FORMATIONS		From (ft.)	i Te
6. DRILLHOLE Dia. (in.) From (tt.) To (ft.) Dia. (ir	a.)   From (ft.) To (ft.)	land	- Carton Carton	Surface	19
10 Surface 45		Sandin	ick	19	60
6 45 60		and the second s			
CASING, LINER, CURBING AND SCR Material, Weight, Specification Dia. (in.) & Method of Assembly	EEN   From (ft.) ' To (ft.)				
6 Delth ASTM H-3	ZZ 3 Surface 47				
- Intertatione	•	· · · · · · · · · · · · · · · · · · ·			<u> </u>
				, 	
		10. TYPE OF DRILLING MA	CHINE USED	·	
S. GROUT OR OTHER SEALING MATE			- Rotary-hammer - w/drilling - mud & air		etting w
2. LOCATION ACTION Sector Towner OR       Rever OR       Rever OR       Towner OR       Rever OR       Towner OR         2. LOCATION ACTION SECTION TOWNER       AND       FILL INCLUDENCE TOWNER       DORUST       DORUST       Towner OR         3. NAME       Towner OR       AND       Fill A Stack No. Start Name       NDDRISS       Towner OR       AND         4. Outsteel Information       Barray Bag Danie Service Towner OR       Service Towner       Service Towner OR					
Mat coment	Mumber     Mumber     Mumber     Mumber     Mumber       10100     Mercing     Status     Status     Status     Status     Status       10100     Mercing     Status     Status     Status     Status     Status     Status       10100     Mercing     Status     Stat	***a			
		Well construction completed on	nor	- 11	19
11 MISCELLANEOUS DATA Yield Test;3	- Hrs. at GPM	Well is terminated	– inches 🗆	above fina below	l grade
Depth from surface to normal wate	level 27 Ft.	Well disinfected upon completio	n 23	Yes 🗀 No	
Depth of water level 3.7 F	t. Stabilized 🔏 Yes 🗆 N	o Well sealed watertight upon com	pletion Z	Yes 🔲 No	
Water sample sent to Me	adison	laboratory o	Mor.	28 æ	19
Your opinion concerning other pollution h finishing the well, amount of cement used	azards, information concerning dif in grouting, blasting, etc., should b	ficulties encountered, and data rel e given on reverse side.	ating to nearby we	ilis, screens, sea	us, metho
Signature	0	Complete Mail Address		-ى	46

\_\_\_\_\_

------

State of Wisconsin Department of Natural Resources Box 7921 Madison, Wisconsin, 63707

-

NOTE: White Copy – Division's Copy Green Copy – Driller's Copy Yellow Copy – Owner's Copy WELL CONSTRUCTOR'S REPORT Form 3300-1 PL 1 1. 184 12-76

1. COUNTY	CHECK (V) ONE:	Name Lage City La Grane	
LOCATION N. W 32	Township Range 18 N IW.	3. NAME OWNER DAGENT AT TIN	E OF DRILLING CHECK ( ) ONE
OR – Grid or Street No. Street Name		ADDRESS R.R.	÷
AND - If available subdivision name, lot Sunny View.	& block No. Sub.	POST OFFICE Tomah W.	i.
4. Distance in feet from well Building S to nearest: (Record answer in appropriate 6.11	anitary Blog. Drain Sanitary C.I. Other C.I.	Bidg. Sewer Floor Drain Connected To: Stor Other C.I. Sewer Other Sewer C.	m Bldg, Drain Storm Bldg, Sewe Other C.I. Other
Street Sewer Other Sewers Foundation	Drain Connected to: Sewage Su	mp Clearwater Septic Holding Sewage.	Absorption Unit 1001
San, Storm C.I. Other Sewer Clearwater Dr.	Sewage C.I. Ot Sump Clearwater Sump	her Sump Lank Lank Seedage 60 Seedage Seedage	Pit Bed Trench
Pricy Pet Pit Nonconforming Existing Waste Well Pit Pump	Subsurface Pumproom Nonconforming Existing	Barn Animal Animal Silo Glass Lined Lutter Barn Yard With Pit Storage Pen Facility	Silo Earthen Silage w/o Storage Trench Or Pit i
Temporary Watertight Solid Manure Manure Liquid Manure Storage Stack Tank Structure	Subsurface Waste Pond or La Gasoline or Disposal Unit Oil Tank (Specify Type)	and Other (Give Description)	
5. Well is intended to supply water for:	····	9. FORMATIONS	
		Kind	From (ft.) To (ft.)
6. DRILLHOLE <u>Dia. (in.)</u> From (tt.) (To (ft.) Dia. (in.)	From (ft.) To (ft.)	Sand	Surface 15
10 Surface 37 6	37 61	Dand Rock	15 61
CASING, LINER, CURBING AND SCREE Material, Weight, Specification D:a. (in.) & Method of Assembly	N   From ( <u>ft.)   To (</u> ft.)		
6 nur Stiel P.I.	Surface 37		
1200psi VSP	i		!
ASTM AIZO 15.97 p.T.			
			· · · · · · · · · · · · · · · · · · ·
		10. TYPE OF DRILLING MACHINE USED Rotary-ham w/drilling	mer
8. GROUT OR OTHER SEALING MATERIA		Botary-air Botary-han	Jetting with
Deat Cernent	Surface 37	Rotary-w/drilling C Reverse Ro	tary
		Well construction completed on	1987
11. MISCELLANEOUS DATA	Hrs. at GPM	Well is terminated inches	above below
Depth from surface to normal water le	vel <u>35</u> Ft.	Well disinfected upon completion	🗷 Yes 🗆 No
Depth of water level 40 Ft.	Stabilized 🎜 Yes 🗆 No	Well sealed watertight upon completion	□ Yes □ No
Water sample sent to9	naclisón	laboratory on	-/ 19.84
Your opinion concerning other pollution haza finishing the well, amount of cement used in	ards, information concerning diff grouting, blasting, etc., should be	ficulties encountered, and data relating to nearb e given on reverse side.	y wells, screens, seals, method of
Signature Ranklun		Complete Mail Address	<u> </u>
- Ann Jun and	' Kegistered well Driller	La Norganiz	

ELL CC JRM 33004	)NSTRUC –15	TOR'S RE	PORT	FEB	7 19 WGY	74 HITE COI REEN CO ELLOW C	NOT PY - DI PY - D	E VISION'S RILLER'S CWNER'S	S COPY S COPY S COPY	DEPA	STAT RTMENT Madisc	TE OF V OF NA Box 4 on, Wisc	VISCONSI TURAL F 150 onsin 531	N RESO( 701	URCES
COUNTY	Mon	rep		C Tov	HECK (	ONE	Village				P >	M.	A		
LOCATIO	ON - VAS	ection So	ection Tow	nship	Range	e /	3. OW	NERAT	TIMEOF	RILLAIG			J	<u> </u>	
R – Grid o	r street no.	Str	eet name	3/1	<u> </u>		ADI	DRESS	in a	Xa		- <u> </u>	<u>-</u>		
ND -If av:	ailabie subdivi	sion name, lot	& block no.	<u></u> .			POS	TOFFIC	EMM	wal	6 2	Lio	 's		
Distance	e in feet fron	n well to nea	irest: BI	UILDING SA	NITAR C. I.	Y SEWER	FLOOR C. I.	DRAIN	FOU FOU	NDATION	DRAIN	DENT	WASTE V C. I.	WATE	R DRAIN TILE
Rec	ord answer in	appropriate b	ock)	5 .	ک بخ										
LEAR WAT C. I.	TER DRAIN TILE	SEPTIC TAN	K PRIVY S	EEPAGE PI	T ABS	0891101 7/	FIELD	BARN	SILO	ABAND	ONED WE		K HOLE		
THER POL	LUTION SOL	RCES (Give o	lescription su	ch as dump,	quarry.	drainage	well, stre	i am, pond	l. lake, etc.,	<u> </u>					
. Well is in	ntended to s	upply water	for:												
				Hon	r										
DRILLE Dia, Kn.)	From (ft.)	To (ft.)	Dia, (in.)	From (ft.)	) то	5 (ft.)	9. FC	JRMATI	IONS Kind			i	From (fi	t.) <sup>1</sup>	To !ft
l	Surface	60						S	2 And 1			1	Surface		29
<b>t</b>			1	1				La	in the second se	~ ~ k	2		20	2	60
CASING	G, LINER, C	URBING, A	ND SCREE	N				- Ju	ng_	ug.	<b>.</b>				
Dia. (in )	Real	ind and Weig	1943	From (ft.)	) To	(ft.)									··
6	J.L.	acolig	new	Surface	3	3		<u>;</u>							
							į	<b>-</b>							
							1								
					1		/								
		······				1									
. GROUT	OR OTHER	RSEALING	MATERIA	! L	<u>`</u>	$\frac{1}{\sqrt{1}}$	10. T	YPE OF	DRILLIN	IG MACI	HINE US	ED			
. <u></u>	Kir	nd		From (ft.)	) <u>To</u>	(ft.) <u>/</u>	🔀 c	able Tool		ים 🛄 ו	rect Rotar	v	🗌 Re	verse	Rotary
				Surface	_		R W	otary – a /dritting n	ir nud	Ro with c	otary — ha frilling mu	mmer d & air	Jer 🗌	ting w Air	vith 🗍 Water
				<u> </u>			Well o	onstruct	tion comp	leted on	Ja	n.	30	19	74
1. MISCE Yield test:	LLANEOUS		Hrs. at	12		GPM	Well i	s termin	ated	ح	inches		above below	fi	nal grade
Depth from	n surface to i	normal wate	r level	26		ft.	Well c	lisinfecte	ed upon a	mpletio	n		X	Yes	No No
Depth to w	ater level wł	nen pumping	: بت	32		ft.	Well s	ealed wa	stertight u	pon com	pletion		X	Yes	<u> </u>
.Vater samp	ole sent to	m	a dis	in					lab	oratory		Rue	m	6	1974
Your opinio	on concernin ing joints, ma	ig other poll ethod of fini	ution hazard shing the w	ds, informa ell, amount	tion co t of cer	ncerning ment use	difficu d in gro	lties enc uting, bl	countered, lasting, sul	and data o-surface	relating pumproc	to near oms, ac	cess pits,	, scre , etc.,	ens, seals , should
JGN ATUR	E	·	$\overline{\mathcal{A}}$				COMP	LETE MA	AIL ADDR	ESS		<u> </u>	د	-7	615-
17	oy 1	Lush	R	egistered W	lell Dril	ller	Bla	ek (	Rive	n 70	Il.	' Je	is.	G	~~~
OLIFORM	TEST RESUL	T		Ple AS - 24 HR	ease do .S.	GAS	te in spa - 48 HR	s.	N CONFIR	MED	R	EMARK	S		

WELL CONSTRUCTO	R'S REPORT TO W See Instructions	ISCONSIN STATE BOAR on Reverse Side	D OF HEALTH	E					
1. County Monroe		Village	ne and give nemu						
2. Location Name of at Name of at	of Sec 33 Tlen	(Ulty Check one and give hame I							
3. Owner 🗃 or Agent 🗋 S	Sesse Schultz Name of Individual,	partnership or firm							
4. Mail AddressTomal	Complete add	Oute 2 dress required							
5. From well to nearest: Buildi	ng5ft; sewer	ft; drainft; sep	otic tank_25_f	t;					
dry well or filter bed	ft; abandoned well	ft							
6. Well is intended to supply v	vater for: <u>Ho</u>	u3 <b>2</b>							
7. DRILLHOLE:		10. FORMATIONS:	From	1					
Dia. (In.) From (It.) To (It.) Dia. (In.	From (fL) To (fL)	Kind	(fL)	(11)					
5 0 80		<u>Sand</u>	0	22					
		<u> </u>	22	24 -					
8. CASING AND LINER PIP	E OR CURBING:	Sand & stud	24	54					
Dia. (in.) Kind and Weight	From (ft.) To (ft.)		54	80					
<u>5" Steel</u>	Bradene 59	E							
	· · ·	<b></b>	REVEN	VED					
			00T 1 19	57					
9. GROUT:		E	VIRONM	ENTAL					
Kind	From (IL) To (IL)	· · · · · · · · · · · · · · · · · · ·	GANITAT	ION					
NONG									
		Construction of the well	was completed o	n:					
11. MISCELLANEOUS DAT	A:	August 16		<b>19</b> <u>57</u>					
Yield test: Hrs. at	20 GPM.	The well is terminated $\underline{\beta}$ inches							
Depth from surface to water-lev	rel: <u>lō</u> ft.	<ul> <li>above, below in the permanent ground surface.</li> <li>Was the well disinfected upon completion?</li> </ul>							
Water-level when pumping:	£Çft.								
Water sample was sent to the st	ate laboratory at:								
medison on Au	<u>z. 20 19 57</u>	was the well sealed watertight upon completion?							
City			1 es No						
Signature	Iller Please do not wri	TOMAN, Wisconsin Complete M	Route 3						
Rec'd	No	10 ml 10 ml	10 ml 10 ml	10 ml					
Ans'd		Gas-24 hrs							
Interpretation		48 hrs							
		Confirm							
		B. Coli							
		Exa	miner						

\_\_\_\_
Depar Mac	State of Wisc rtment of Nati Box 45 dison, Wiscon	consin ural Resour 0 sin 53701	ices NOV	281977	NO White Copy Green Copy Yellow Copy	DTE: – Division's Co – Driller's Cop; – Owner's Cop	р <i>у</i> у у	WELL Form 3 Rev. 10	CONSTRUC 300-15 -75	TOR'S	REPORT
1. COUN	TY	_		CHECK (	/) ONE:		Na				
	mon	<u>ol</u>		Town		lage	City	In Rel	lange		
2 1004	NW / Se	ction 1	Section	Township	Range	3. NAME 🕼	OWNER	AGENT AT	TIME OF DR	HLLING	CHECK () ONE
OR	- Grid or St	reet No.	Street Name	10 1		ADDRESS	No	war	19ccm	$\sim$	
							R-	- 2			
AND	- If availabl	e subdivisio	on name, lot	& block No.		POST OFFI	CE 7				
1 Distan	an in fact face	a malli - R	uildiga (S	nitary Rida C			Elogr Di	mah			
to near	rest: (Reco	nwent b	6 / E	C.I. O	ther C.I.	Other C	Connecte	d To: ther Sewer	C.I. O	ther .	C.I. Other
answer block)	r in appropriat	e	8			ч 3 1				:	
Street St	ewer Othe	Cther	Foundation I	Sewage	C.I. Oti	np Clearwate her Sump	er Septic H Tank	Holding Sew Tank See	age Absorptio	in Unit	· _ · · _ · · _ · · _ · · _ · · · · · ·
3411. 3			Clearwater	Sump Clearwater			1	See	oage Bed		
Privy P	et Pit: N	onconform	ing Existing	Sump Subsurface F	umproom f		nimal Silo	Glass Lir	ned Silo Ea	arthen Sil	age
P	Vaste Vit Well Pump Tank			Nonconform	ning Existing G	utter Barn N Pen	Yard With	Pitl Storage Facility	w/o St Pit Pi	t t	ench Or
Temporar Manure	ry Waterti Liquid	ght So Manure St	olid Manure lorage	Subsurface Gasoline or	Waste Pond or La Disposal Unit	nd Other (Give	e Description	ר)			
Tack	Tank	St	ructure	OH Tank ·	(Specity Type)						
5. Well is	intended to s	upply wate	r for:	1		9. FORMATIC	ONS			·	
		k	one				Kind		' Fro	om (ft.)	To (ft.)
6. DRIL	LHOLE						C 0		-		$\sim$
Dia. (in.)	) From (ft.)	To (ft.)	Dia. (in.)	From (ft.)	i To (ft.)		Jand		Sur	face	d/
10	Surface	50	6	-50	70		DA	- <i>l</i>		P	70
		~ ~ ~	· · · · · · · · · · · · · · · · · · ·			Jase		<u>-</u> a	I	-0	
							- <u></u>				· · · · · · · · · · · · · · · · · · ·
7. CASIN Dia. (in.)	NG, LINER, C Material, W ) & Meth	URBING A leight, Spec nod of Asse	ND SCREE offication mbly	N From (ft.)	To (ft.)				, 		
10	near	l To		Surface	50-61						4
	Alin		L' 200	Jurice	<u>, , , , , , , , , , , , , , , , , , , </u>				<u> </u>		· · · · · · · · · · · · · · · · · · ·
	Para		0								· ·
	<u>U.S.</u>	Sti	el		7					·	
		Tra									
	17, 0	ן אן א	7-2-5						SED		!
			Ň			10. THE OF	DRILLING	Rotary	hammer	1	
8. GROU	T OR OTHE	R SEALING	G MATERIA	L		Cable	T 001	mud &	air		Jetting with
	Ku	nd		From (ft.)	To (ft.)	Rotar w/dril	y-air ling mud	🔲 & air	-hammer		Air
	0.	. 4		Surface	C 1	Rotar	y-w/drilling	Reverse	Rotary	1	Water
	- Um	line	<u> </u>	Juidte							
<u> </u>						Well construction	on completed	ton	hovers	2	<u> </u>
11. <b>M</b>	IISCELLAN	EOUS	TA		<b>^</b>				2 abov	e fins	l grade
Yi	ield Test:	<u> </u>		<u>Hrs. at</u>	GPM GPM	Well is terminate	ed	inches	belo	w	<b></b>
De	epth from sur	face to nor	mal water lev	rel <u>14</u>	/ Ft.	Well disinfected	upon compl	etion	E Yes	□ No	
	epth of water when pumpin	level /	FL.	Stabilized	Erres 🗆 No	Well sealed wate	rtight upon	completion	Yes	🗆 No	<u>_</u>
w	ater sample se	ent to	Le	osse			laborato	ry on	noul.	<u>P</u>	19 <u>77</u>
Your opi finishing	the well, amo	ing other pount of cem	ollution haza ient used in g	rds, informatio routing, blasti	on concerning diff ng, etc., should be	given on reverse	rea, and data side.	relating to f	icaroy wells, s		
Signature	:	-1	nn.			Complete Mail	Address	nD			
74	omen	/\}~	xa	Registere	d Well Driller	4049	June 1	ر د رما			

						STAT	E OF W	ISCONSI	N				
WELL CON	NSTRUCTOR	S REPORT	г	DEPAR	IWEN	IT OF	RESO	URCE	DEVE	LOPM	ENT 🖓	.0. 8218	Wel
L COUNTY				CHEC	K ONE	5		NAMI	E				— <u></u>
	Monroe			Tow	n 📋	Village	🗆 Ci	ty La	Grange	e			
LOCATIC	N (Number at	ad Street or	4 section, s	ection, townshi	p and	range. Ale	o give sub	division n	me, lot	and block	numbers whe	n available.)	
N W	1/4 Sec_	33 <u>T18N</u>	RIW										
OWNER	AT TIME OF	DRILLING											
Cna	rles fle	ater	5 P.66			<u>_</u>						1	
4. OWNERS	S COMPLETE	MAIL ADD	RESS										
	<u> FD =1. T</u>	<u>oman W</u>	isconsi	n 54660	SANITA	ARY SEW	RELOOR	DRAIN	FC	UNDATI	ON DRAIN	I WASTE	WATER DRAD
5. Distanci	e in teer tro	om weil io	ilearesi:		C. I.	TILE	C. I.	TILE	EWER CO	ONNECTE	DINDEPENT	DENT C. I.	TILE
(Record a	nswer in appri	opriate Diock)	)	12	10		25				1		
CLEAR WAT	TER DRAIN	SEPTIC TAN	K PRIVY	SEEPAGE I	PITA	BSORPTI	DN FIELD	BARN	SILC	ABAN	DONED WEL	L SINK HOLE	
C. I.	TILE									!X -			
		25				20			,	-	-		-
OTHER POL	LUTION SOU	RCES (Give	description	such as dun	ap, qu	rry, drain	ige well, i	tream, por	nd, lake,	etc.)			
above	indicat	es none											
6. Well is	intended	to supply	water fo	or: Norr Bolgi	dara	~							
				New Year	uenc	=							·····
7. DRILLHO		<b>T</b> - ( <b>A</b> )			<b>、</b> [	T - (Ex.)	10. FO	RMATIO	N5				1 - 400
Dia. in.)	From (ff.)	10 (17.)	Die. (in.,	) From (11.	<u>/</u>	10 (11.)			lind			From (Ħ.)	
8-3/4	Surface	<u> </u>					Sa	nd				Surface	37
6	50	32					Sa	ndston	e			35-	82
8. CASINO	G, LINER, C	URBING, A	ND SCR	EEN									
Dia. (in.)	K	and and Weig	ht	From (ft.	.)	To (ft.)							
_				Surface									
<u>6</u>	New Std	. Black	Steel			50							
	   n n n n 2	07+											
	<u>  F.5. 10</u>	•9[#			¦				·				_!
										•			
9. GROUT	OR OTHER	R SEALING	MATERI	IAL									
	Ki	nd		From (ft.	)	To (ft.)							
Bentoni	te & cut	tings		Surfac	e	50 <sup>°</sup>							
							Well	onstructi	ion com		on 10/2	3	19.53
11. MISCE	LLANEOUS	DATA		1								M above	
Yield test:	· · · · · · · · · · · · · · · · · · ·		Hrs	i. at 20		GPM	Well is	termin	ated	12	inches	below	final grade
Depth fror	m surface t	o normal v	water lev	rel 5		ft.	Well d	isinfecte	ed upor	compl	etion	<u>_</u>	<b>'es 🗌</b> No
Depth to v	water level	when pur	nping	25		ft.	Well s	ealed w	atertigh	t upon	completior	ר צ	ies 🗌 Na
Water sample sent to			laboratory on: 10/28 19 6										
Water sam	nple sent t	0		N - 2 ·	_				lai	boratory	<b>' on:</b> 10/2	8	19.65

wells, screens, seals, type of casing joints, method of finishing the well, amount of cement used in grouting, blasting, sub surface pumprooms, access pits, etc., should be given on reverse side.

Signatione Berkhold	Registered Well Drill	COMPLETE Berkh	MAIL ADDRESS oltz Drilling Forest Lane	Co. Inc. Brookfield	Wisconsin	52:1
	Please do not	write in space	below			
COLLFORM TEST RESULT	GAS - 24 HRS.	GAS — 48 HRS.	CONFIRMED	REMARI FEIN SATE	12 3 2 2 1 2 7 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	J.

HOI GOL -WELL CONSTRUCTOR'S REPORT TO WISCONSIN STATE BOARD OF HEALTH See Instructions on Reverse Side (Town Z Village 🗌 1. County Manual /Citv Name of street and number of premise or Town and Range numbers m 3. Owner 4 or Agent 1 LA. Name of individual, partnership or firm 4. Mail Address 🛇 address required Complete 5. From well to nearest: Building dry well or filter bed\_\_\_\_\_ft; abandoned well\_\_\_\_\_ft. 6. Well is intended to supply water for: 7. DRILLHOLE: 10. FORMATIONS: Fmm ([L) Dia. (in.) | From (ft.) | Dia. (in.) | From (ft.) To (ft.) To ([노) To (ft.) || Kind 90 20 10 0 20 0 10 20 10 8. CASING AND LINER PIPE OR CURBING: 90 20 Kind and Weight Dia. (in.) ] From (ft.) To (ft.) 80 p =1005 ENVIRON 9. GROUT: RENTAL Kind From (fL) To (IL) lar 20 Construction of the well was completed on: 10 1957 MISCELLANEOUS DATA: 11. Yield test: 2. Hrs. at 5. GPM. The well is terminated \_\_\_\_\_ inches  $\square$  above, below  $\square$  the permanent ground surface. Depth from surface to water-level: \_\_\_\_3\_5\_ ft. Was the well disinfected upon completion? Water-level when pumping: \_\_\_\_\_\_ft. Yes\_\_\_\_\_ No\_\_\_\_\_ Water sample was sent to the state laboratory at: Was the well sealed watertight upon completion? latin City - on <u>5//6</u> 19-7 Yes\_\_\_\_\_ No\_\_\_\_\_ Signature 🖌 mis Registered Well Driller Complete Mail Address Please do not write in space below 10 ml 10 ml 10 ml 10 ml 10 ml Rec'd\_\_\_\_\_ No. Gas-24 hrs. Ans'd 48 hrs. Interpretation \_\_\_\_\_ ----Confirm B. Coli

Examiner\_\_\_\_\_

State of Wisconsin Department of Natural Resources Private Water Supply Whit	NOT! te Copy –	E: Division's Copy	WELL CONS Form 3300-15	TRUCTOR	S REPORT Rev. 2-79
Box 7921 Gree Madison, Wisconsin 53707 Yello	in Copy – low Copy –	Driller's Copy Owner's Copy		NOV	2 1983
1 COUNTY MONROL CHECK (1) ONE		Na City	me		
Section or Gov't. Lot     Section     Townsh       2. LOCATION     Sul     3'3     18       OR     - Grid or Street No.     Street or Road Name	ID Range 3.	NAME DOWNER La UZINE ADDRESS	LAGENTATTIME Baron		CHECK () ONE
AND – If available subdivision name, lot & block No.		POST OFFICE	<u>n, ki </u>	ZIPCOD	E ¶4/1
4. Distance in feet from well Building Sanitary Bidg, Drain to nearest: (Record 20 C.I. Other answer in appropriate 20	Sanitary Bli C.L	dg. Sewer Floor D Connecte Other C.I. Sewer C	rain Storm E d To: Storm E ther Sewer C.I.	Bidg, Deafn Other	Storm Bidg, Sew C.I. Other
Street Sewer         Other Sewers         Foundation Drain Connected to:           San, Storm C.I.         Other         Sewer         Sewage           Clearwater         Clearwater         Clearwater           Dr.         Sump	Sewage Sump C.J. Other	Clearwater Septic Sump Tank	→olding Sewage Abs Tank Seepage Pit Seepage Bec Seepage Tre	orption Unit	Manure Hopper or Retention or Phuematic Tank
Privy Pet Pit: Nonconforming Existing Subsurface Pumpro Waste Well Nonconforming Ex Pump Tank	oom Bar Gutt cisting	n Animal Animal Silo ter Barn Vard With Pen	Glass Lined Sill Pitistorage w/o Facility Pit	b Earthen S Storage T Or Pit	Hage Earthen rench Manure Bas
Temporary Manure, Watertight Liquid, Manure, Subsurface, W Stack or Platform, Manure Tank or, Pressure, Gasoline or, D Basin, Pipe, Oil Tank, 1	Vaste Pond or I Disposal Unit (Specify Type	Land Manure Storage B. Concrete Figdr Or Concrete Figdr Or Partial Concrete W	asinCther (1 nly d /alls	Describe}	
5. Well is intended to supply water for: $h \in \mathcal{M}$	à	FORMATIONS Kind		From (ft.)	To (ft.)
6. DRILLHOLE Dia. (in.) From (tt.) [To (ft.) Dia. (in.) From (ft.) = To	ə (ft.)	Sand		Surface	3
8 Surface 84		/ clay		3	12
6 84 105		Muc	κ	12	6 c
CASING, LINER, CURBING AND SCREEN Material, Weight, Specification Dia. (in.) Mfg. & Method of Assembly From (ft.) To New Standard Steel	<u>o (f:.)</u>	san	dstone	60	105
C (F. 1110- A 3.3 Wilded Surface				;	·····
	1	O TYPE OF DRILLING	MACHINE LISED		
8. GROUT OR OTHER SEALING MATERIAL Kind From (ft.) To	<u>)</u> <u>o (ft.)</u>	Cable Tool	Rotary-hamme w/drilling mud & air Rotary-hamme	r 🗆	Jetting with
drill cuttings Surface	10	Rotary-w/drilling mud	🗌 Reverse Rotary	·	U Water
next cement 10	84 u	Vell construction completed	Ion Nevem	bec 2	<u>19_79</u>
11. MISCELLANEOUS DATA 	GPMW	Vell is terminated	inches	above fir below	nal grade
Depth from surface to normal water levelH	Ft	ell disinfected upon compl	etion 🏹	Yes 🗆 No	0
Depth of water level <u>10</u> Ft. Stabilized <u>T. Ye</u>	esNo_W	ell sealed watertight upon	completion 💢	Yes 🗔 No	o —
Water sample sent to		laborator	ryon		19
Your opinion concerning other pollution hazards, information conc finishing the well, amount of cement used in grouting, blasting, etc.	erning difficu ., should be giv	ilties encountered, and data ven on reverse side.	relating to nearby w	ells, screens, s	eais, method of
Signature Koaba Well Nilling, Inc.	В	susiness Name and Complet $\kappa \sigma \sigma = 1 + 1 + 1$	e Mailing Address	Nillsb.	rc, WI 54
Lois Kunta sec. Registered Well	Driller	518 Waper			

							JUL	1 1 2 197	72			
WELL CO	NSTRUCT	OR'S RE	PORT				NOTE	• •	DEPART	STATE OF MENT OF NA	WISCONS N ATURAL RES	OURCES
=0RM 3300-	-15				WH GB	HTE COP		S COPY		Box Madison, Wis	450 consin 53701	
		- ·		, <u> </u>	YE	LLOW CC	PY - OWNER	SCOPY			2	
1. COUNTY	m	4		<b>N</b>	CHECK O						1	
2. LOCATIC	N - 1/50	ection S	Section I	ownship	Range		3. OWNER AT	T TIME OF L	DRILLING	10	ange	<u>&gt;</u>
OR - Grid or	street no.	S1	treet name	1011			ADDRESS	auru D	<u>, can</u>		agon	
AND -If ava	ilable subdivis	ion name, lo	t & block n	0.			POST OFFI	$\frac{\int \int \mathcal{F}}{\mathcal{C}E}$		/	/	
4 Distance	in feet from	well to ne	arest:	BUILDING	SANITARY	SEWER	FLOOR DRAIN	Fol	Make UNDATION D	RAIN	WASTE WA	TER DRAIN
(Reco	ord answer in a	appropriate I	block)	#	C. I. 39	TILE	C. I. TILE	SEWER CO	NNECTEDIN	DEPENDENT	C. I.	TILE
CLEAR WAT	ER DRAIN S	SEPTIC TAP	VK PRIVY	SEEPAGE	PIT ABS	DRPTION	FIELD   BAR		ABANDON	ED WELL SI	NK HOLE	
C. I.	TILE	51				87						
OTHER POL	LUTION SOU	RCES (Give	description	such as durr	ip, quarry, i	drainage w	ell, stream, por	nd, lake, etc.	)			
5. Well is in	itended to su	upply wate	r for:	Ho	me		<u> </u>					
DRILLH	IOLE						9. FORMA	TIONS				
- Dia. (in.)	From (ft.)	To (ft.)	Dia. (in	.) From (	ft.) To	(ft.)		Kind			From (ft.)	To (ft.)
6	Surface	60						lang	1		Surface	49
							A	and	rock		49	60
7. CASING	, LINER, CI	URBING,	AND SCRI	EEN								
Dia. (in.)	Dall	ind and Wei	ght	From (	<u>ft.) To</u>	(ft.)						1
6	J.S.	add	nin	Surfa	ce o	4						
				-			<b>_</b> _					
	+	<del></del>										
J. GROUT	OR OTHER	SEALING	MATER	IAL			10. TYPE O	FDRILLI	NG MACHI	NE USED		
	Kir	<u>nd</u>		From	ft.) To (	<u>ft.)</u>	Cable Too	ы	Direc	t Rotary	Rever	se Rotary
		, <b>-</b>		Surfa	ce		Botary - w/drilling	air mud	Rotar with dril	y — hammer ling mud & air	Jettin	g with r 🔲 Water
						, I	Well constru	ction comp	pleted on	June		1972
11. MISCE	LLANEOUS	DATA	Hre s	· /	<b>)</b>	GPM	Well is termi	nated	J. in	ches	above below	final gro e
				90	<b>C</b>	4	Well disinfed	ted upon c	ompletion		X Ye	es 🗌 N
Depth from	SUFTACE TO P	normal wat	er levsi	~		<u> </u>	Well cooled a			tion		
Depth to w	ater level wh	ien pumpir	ng A	76		ft.	wen seared w					
Water samp	ole sent to	YM2	schi	on		<u> </u>		lal	poratory on:	firs	<u>e</u> / 2	<u>, 19/7</u>
Your opinit type of casi be given on	on concernin ng joints, me reverse side	ig other po ethod of fi	nution has nishing the	e well, amoi	mation con unt of cerr	ncerning nent used	in grouting,	blasting, su	, and data fe b-surface pu	improoms, a	ccess pits, et	c., should
SIGNATUR	5		7			T	COMPLETE	MAIL ADDR	ESS		.5	461.
No	1 Su	isk		Registered	l Well Dril	ler	Black	dires	70	ali	ı G	P,#2
					Please do	not write	in space bel	ow				
COLIFORM	TEST RESUL	.T		GAS – 24	HRS.	GAS -	48 HRS.	CONFIR	IMED	REMAR	K2	
HEV (_71												

APPENDIX B

LOGS OF DH SERIES WELLS







\_\_\_\_\_

Ĵ.

# APPENDIX C

----

....

-----

# NET QUALITY ASSURANCE PLAN STATEMENT OF QUALIFICATIONS

Bartlett QAP Section 1 Revision 3 August 19, 1994 Page 1 cf 1

# NATIONAL ENVIRONMENTAL TESTING, INC. BARTLETT DIVISION

## QUALITY ASSURANCE PLAN AND STATEMENT

#### OF QUALIFICATIONS

Prepared by and property of:

National Environmental Testing, Inc. Bartlett Division 850 West Bartlett Road Bartlett, Illinois 60103

Robert N. Bucaro

Brian A. Wanner Division Manager Bartlett Division

Robert N. Bucaro NET Corporate Director of Data Quality

Quality Assurance Coordinator Bartlett Division

All information contained in this manual is proprietary NET, Inc. information. No part of this manual may be reproduced in any fashion without the expressed written consent of National Environmental Testing, Inc.

This is copy <u>141</u> of 200 copies.

Bartlett QAP Section 2 Revision 3 August 19, 1994 Page 1 of 1

-

## Table of Contents

\_\_\_\_

-

-----

Section	#	Contents	Revision	Date
SECTION	1	Title Page and Approval	3	08/19/94
SECTION	2	Table of Contents	3	08/19/94
SECTION	3	Project Description	2	09/12/94
SECTION	4	Organization and Responsibility	2	11/01/93
SECTION	5	QA Objectives for Measurement Data in Terms of Precision, Accuracy, Representativeness and Comparability	- 3	09/12/94
SECTION	6	Sampling Procedures	2	11/01/93
SECTION	7	Sample Custody	2	11/01/93
SECTION	8	Calibration Procedures and Frequency	2	09/12/94
SECTION	9	Analytical Procedures, Equipment and Facilities	2	08/19/94
SECTION	10	Data Reduction, Validation and Reporting	2	11/01/93
SECTION	11	Internal Quality Control Checks and Frequency. Personnel Training	2	05/05/94
SECTION	12	Performance and System Audits	5 2	11/01/93
SECTION	13	Preventative Maintenance Procedures and Schedules	2	11/01/93
SECTION	14	Specific Routine Procedures to be Used to Assess Data Precis Accuracy and Completeness of Specific Measurement Paramete	to 1 sion, ers	11/01/93
SECTION	15	Corrective Action	1	11/01/93
SECTION	16	Approval of Subcontract Laboratories	1	11/01/93
SECTION	17	Quality Assurance Reports to Management	2	09/12/94

Bartlett QAP Section 3 Revision 2 Sept. 12, 1994 Page 1 cf 2

#### SECTION 3

#### INTRODUCTION & SCOPE

#### INTRODUCTION

National Environmental Testing, Inc. (NET) currently operates many independent environmental laboratory divisions in the United States. Services consist primarily of multimedia analysis for metals, extractable and volatile organic compounds, and other conventional pollutants. These services are performed in support of various federal, state and local regulations and policies.

NET's National Quality Assurance Plan (NQAP) is based on the belief that quality is the key to maintaining leadership in the environmental analytical industry. The Corporate NQAP document provides the basic quality assurance framework and foundation that the Bartlett Division conforms to and builds upon.

Specific NQAP QA programs include:

- a Quality Assurance Plan (QAP) for each NET Division describing its capabilities, quality assurance objectives and the systems for meeting those objectives. In addition, Quality Assurance Project Plans (QAPPs) may be developed for specific client or project needs;

- Standard Operating Procedures (SOPs) for instrumentation, field services, analytical services and applicable administrative systems and,

- a consistent national quality control program which includes analysis of blanks, spikes, duplicates, the use of calibration verification standards and participation in NET's Interlaboratory Testing Program (ITP).

In addition to these programs, NET provides the following resources to support the Bartlett Division in our effort to deliver quality services:

- a Divisional and Corporate QA management structure;

- a laboratory information management system (LABSYS);

- laboratory facilities and instrumentation; and

- development and implementation of ongoing training programs.

Bartlett QAP Section 3 Revision 2 Sept. 12, 1994 Page 2 of 2

The Bartlett Division of NET is committed to providing our customers with consistently high quality services. The purpose of this document is to describe the essential elements of the Bartlett Division's quality assurance programs.

QUALITY ASSURANCE POLICY STATEMENT

NET subscribes to the following policies as its standard of quality in its analytical program:

- \* It is our policy to maintain the national QA program throughout all NET laboratories, thereby providing our clients with consistent data of high, known quality;
- \* It is our policy to communicate the scope and content of our QA program internally to our employees and to train each employee in the application of our program;
- \* It is our policy that no data will be reported to our clients that has not met our full QA requirements;
- \* It is our policy to remove from commercial offering any analysis offered by a NET laboratory when that laboratory fails to demonstrate that it can consistently perform that analysis to NET's high standard of quality based upon NET's Interlaboratory Testing Program; and
- \* It is our policy that any employee aware of misrepresentation of facts regarding analytical results is required to notify his/her immediate supervisor or, if this is not feasible, another representative of the management of the company immediately.

QUALITY ASSURANCE PLAN (QAP) REVIEW

The Divisional Quality Assurance Coordinator is responsible for reviewing this document. He or she shall revise the Divisional QAP as required.

Bartlett QAP Section 4 Revision 2 November 1, 1993 Page 1 cf 9

-

#### SECTION 4

#### Organization and Responsibility

National Environmental Testing, Inc. (NET) is a national network of high quality analytical laboratories. Each laboratory offers a wide variety of environmental testing services. The NET network has laboratories in 11 states. These laboratories are:

National Environmental Testing, Inc. Corporate Offices Bartlett, Illinois

#### California

Burbank Division, Burbank, CA Santa Rosa Division, Santa Rosa, CA

#### Illinois

Bartlett Division, Bartlett, IL Chicago Division, Chicago, IL Rockford Division, Rockford, IL

## Indiana

Indianapolis Division, Indianapolis, IN

#### Iowa

Cedar Falls Division, Cedar Falls, IA

#### Massachusetts

Cambridge Division, Bedford, MA

## Michigan

Auburn Hills Division, Auburn Hills MI

#### New Jersey

Thorofare Division, Thorofare, NJ

## Ohio

Dayton Division, Dayton, OH

## Oregon

Portland Division, Portland, OR

Bartlett QAP Section 4 Revision 2 November 1, 1993 Page 2 of 9

Texas

Austin Division, Austin, TX Dallas Division, Carrolton, TX

Wisconsin

Watertown Division, Watertown, WI

NET is a wholly-owned subsidiary of the Ocean Group, plc, an international corporation providing environmental services, distribution services and marine services. Figure 4.1 is an organizational chart for National Environmental Testing, Inc. with respect to international ties.

The Bartlett Division of NET, formerly Aqualab Inc., was acquired by NET, Inc. in 1986. Laboratory operations for the Bartlett Division are carried out at 850 West Bartlett Road, Bartlett, Illinois 60103. The Corporate headquarters are located at 850 West Bartlett Road, Bartlett, IL 60103.

The Bartlett Division (see Figure 4.2 for organizational structure) is dedicated to delivering analytical data of the highest quality in combination with excellent customer service. Specifically, the Bartlett Division strives to achieve its goals by providing:

- A full-service laboratory for a wide spectrum of environmental testing.
- Experienced technical staff, project managers and customer service representatives.
- Various Certifications and Accreditations
- Substantial laboratory capacity
- A nationally-coordinated Quality Assurance Program

#### CUSTOMER SUPPORT SERVICES

An integral part of NET's approach is a strong commitment to customer service. For every account, a dedicated, experienced project manager and the customer service department serve as the vital communication links between the client and the Bartlett Division. Project managers are the customer's in-house advocates, facilitating program scheduling and logistics. The Bartlett Division's project managers, in conjunction with the customer service representatives, are responsive and capable of dealing with diversity. In addition, each project manager and customer service representative attends NET's customer service training program.

Bartlett QAP Section 4 Revision 2 November 1, 1993 Page 3 of 9

The project management teams are organized as a unit separate from the laboratory operations. In this manner, project managers work with the operations staff to schedule and track the progress of all projects. Contracts requiring the capacity of more than one NET laboratory can be managed by one project manager, combining the benefits of laboratory capacity and location with the convenience of a single point of contact.

NET-Bartlett provides the following services through the project management staff:

- Prepared sample bottles with proper preservatives (when appropriate) and shipping containers

- Sample pickup and delivery
- Report delivery including electronic deliverables
- Expedited sample turnaround times
- Report interpretation and expert witness support

The pursuit of superior customer services requires commitment, the extent of which is judged by the number and quality of the individuals dedicated to this task, and by the structure of the organization. NET-Bartlett clearly demonstrates a high level of commitment, and will constantly strive to seek new ways of redefining customer service.

#### ANALYTICAL CAPABILITIES

The Bartlett Division provides the comprehensive range of analytical services demanded by the environmental marketplace of the 1990's. Act-specific methodologies available at NET Bartlett include:

- Clean Water Act (CWA). The Bartlett Division performs analyses required for National Pollutant Discharge Elimination System (NPDES) permit holders for effluent monitoring, Municipal Industrial Pretreatment Monitoring, Stormwater monitoring and other assessment programs.

- Resource Conservation and Recovery Act (RCRA). The Bartlett Division offers a full range of analytical procedures required by RCRA regulations. These include waste characterization and groundwater monitoring.

Bartlett QAP Section 4 Revision 2 November 1, 1993 Page 4 of 9

-

- Safe Drinking Water Act (SDWA). The Bartlett Division is certified by the Illinois EPA to perform analysis on potable water samples. NET-Bartlett personnel are certified for the analysis of SDWA parameters such as metals, other inorganics, volatile organics, herbicides, pesticides and total and fecal coliform.

This integration of capabilities in the analytical services field is of particular interest to regulated industries, consulting engineering firms, governmental agencies and municipalities that routinely operate in several of these market segments. The ability of this laboratory to perform this array of procedures under a single contract is a part of the Bartlett Division's definition of service.

#### TECHNICAL SERVICES

NET-Bartlett provides expert environmental sampling and field analysis services. Capabilities include direct experience with all equipment required for the sampling of groundwater, industrial effluents, surface water, and waste drums. The sampling staff manages routine monthly, quarterly and biannual monitoring in coordination with the project management staff. Selected field personnel have successfully completed an Occupational Safety and Health Administration (OSHA) approved 40 hour Safety Training Workshop which fulfills the requirements of 29 CFR 1910.120 which covers Hazardous Waste Operations.

IDENTIFICATION OF RESPONSIBILITIES

President of NET, Inc.

The ultimate responsibility and control of all company programs, including quality assurance, lies with the President of NET, Inc. The President is responsible for developing long-range plans and policies for the entire country.

General Manager

The General Manager act as a liaison between the Division Manager and the President of NET, Inc. The General Manager assists the President in developing long-range plans and policies.

Bartlett QAP Section 4 Revision 2 November 1, 1993 Page 5 of 9

•--

#### Director of Data Quality

Development, implementation and revision of the Quality Assurance (QA) Program, conducts system audits of NET Divisions, Manages the data quality audit program, Reviews NET SOPs, and monitoring of certification and accreditation status for NET Divisions are some of the responsibilities of the Director of Data Quality. The Director of Data Quality has the responsibility of developing long-range QA/QC programs and policies for the entire corporation.

#### Division Manager

The Division Manager is responsible for the operational, quality, financial, and human resource activities at the divisional level. In addition, the Division Manager is responsible for the growth and development of the division while assisting in the needs of other NET divisions.

#### Operations Manager

The Operations Manager is responsible for directing and monitoring analytical operations. These responsibilities include instituting of specific protocols with a strong commitment on quality, working through scheduling issues, evaluating and monitoring personnel, facilities, and equipment. The Operations Manager is also directly responsible for maintaining adequate personnel levels and directing training efforts.

#### Project Manager

The Project Manager is responsible for communicating the customer's needs to the divisional staff. These responsibilities include handling technical, contractual, pricing, and regulatory questions; coordinating of large projects; final data review, personnel supervision and report approval.

#### Department Supervisors

Supervisors provide support and direction of work flow to an assigned department on a routine basis. Each supervisor offers guidance, as necessary, in the selection of methodology, depth of analysis, and interpretation of results. They review completed work and monitor acceptance criteria for adherence. Each one assists in and directs orientation and training of new employees. They conduct performance appraisals and initiate personnel actions such as promotions. The Department supervisors provide first-line support of the quality assurance program.

Bartlett QAP Section 4 Revision 2 November 1, 1993 Page 6 of 9

#### Quality Assurance Coordinator

The Quality Assurance (QA) Coordinator monitors the overall performance of the laboratory, level of proficiency on performance evaluation samples (PE samples), certification status and method development/revision. The QA Coordinator implements the National and Divisional Quality Assurance Program at the divisional level. Internal audits, submission of PE samples, maintenance of current standard operating procedures and methods, and revision of method detection limit (MDL) studies are also some of the QA Coordinator's responsibilities.

Analyst

The analyst is responsible for implementing the quality assurance program in his/her normal schedule of analyses. The analyst is responsible for following the approved SOPs or methods, keeping the integrity of all records, notification to immediate supervisor of all out-of-control analyses and maintaining his/her respective instruments and equipment in appropriate working condition.

Field Service Personnel

Field service personnel are responsible for selecting/performing appropriate collection procedures, maintaining and calibrating equipment, keeping the integrity of all records, and following all established safety procedures to minimize hazards on the job.

Sample Manager

The Sample Custodian serves as a sample coordinator for the entire laboratory. The responsibilities of sample custodian include proper placement of samples within the laboratory and coordination of sample disposal while following proper handling of hazardous materials.

Clerical

Clerical personnel are responsible for accurately and promptly entering data to produce reports, documents and invoices.

Bartlett QAP Section 4 Revision 2 November 1, 1993 Page 7 of 9

•

Figure 4.1 Organization of National Environmental Testing, Inc.



Bartlett QAP Section 4 Revision 2 November 1, 1993 Page 8 of 9

Figure 4.2 Organization of NET, Inc. - Bartlett Division



Bartlett QAP Section 5 Revision 3 Oct. 10, 1994 Page 1 of 22

#### SECTION 5

#### QA Objectives for Measurement Data

The quality assurance objectives are to provide analytical data of known quality, to produce defensible analytical data and to produce data which meets the client's specific needs.

Data is assessed by precision, accuracy, representativeness and comparability. Data quality is also assessed by the analysis of Standard Reference Materials (SRMs) when available.

#### Precision

Precision is defined as the repeatability of a measurement. Precision is evaluated through the use of matrix spike/matrix spike duplicates or through duplicate analysis when matrix spiking is not possible. A matrix spike is a portion of sample which has a known quantity of analyte added to it. Matrix spikes also help assess the effects of the matrix on the analyte.

#### Accuracy

Accuracy is defined as how close an analysis is to the actual concentration of an analyte in the sample. Accuracy is evaluated through the use of matrix spike/matrix spike duplicates and/or through laboratory control samples especially when matrix spiking is not possible.

#### Representativeness

Representativeness is a measure of how closely a subsample of the original material reflects the distribution of the analyte originally present. For any project, sampling will be performed by the customer or the customer's contractors. Sample handling protocols (e.g., storage, preservation and transportation) have been developed to preserve the representativeness of the collected samples. Proper documentation will establish that protocols have been followed and sample identification and integrity assured. Every attempt will be made to ensure that the aliquots taken for analysis are representative of the samples received.

#### Comparability

The generation of comparable data is the goal of any analytical program. This characteristic implies strict adherence to published analytical protocols and use of standard reporting units. NET's QA/QC program is structured to ensure adherence to the proper analysis protocols and to fully document these procedures. The QA objective is that all data resulting from

Bartlett QAP Section 5 Revision 3 Oct. 10, 1994 Page 2 of 22

these analyses be comparable with other measurements made by NET or another organization.

#### Completeness

Completeness is measured as the percentage of requested analyses delivered without defect, meeting all regulatory requirements. While this is highly dependent on sample matrix, NET Bartlett's goal for completeness is >95%. Completeness is measured as a percentage according to the following formula:

# of analyses delivered without defect/total # of analyses x 100

The QA objectives for accuracy and precision as well as the QA objectives for other quality control samples are summarized for the most commonly analyzed methods in Tables 5.1 to 5.21. Control charts are maintained to assess accuracy for some of the quality control samples listed in Tables 5.1 to 5.21. The laboratory may use control chart derived acceptance limits, when available and with approval from the QA Coordinator, in place of the limits listed here. Control chart assessment is described in detail in Section 14 of this QAP. Definitions of the quality control samples are found in section 11. Method references for those methods indicated in the following Tables can be found in Section 9.

Bartlett QAP Section 5 Revision 3 Oct. 10, 1994 Page 3 of 22

-

## Table 5.1

Quality Assurance Objectives for Wet Chemistry Parameters

Quality Control Measure	Analyte	Control Limits				
Calibration Curve	All Possible	Correlation Coef. $\geq$ 0.995 (see also Sect. 8)				
Initial Calibration Verification (ICV)	All Possible	Accuracy* 90 - 110 %				
Reagent Blank	All Possible	< Reporting Limit				
Method Blank	All Possible	< Reporting Limit				
Continuing Calibration Verification (CCV)	All Possible	Accuracy** 90 - 110 %				
Laboratory Control Sample (LCS)	All Possible	Accuracy** 80 - 120 %				
Matrix Spike/		Accuracy 75 - 125 %				
(MS/MSD)	All Possible	Precision < 20 % RPD				
Duplicate	Parameters that cannot be spiked	Precision <u>&lt;</u> 20 % RPD				

\* The ICV accuracy acceptance limit is 90-110%. If statistics are supplied with the ICV, the control limit will be +/- 2SD from the mean. The mean is the average of the reporting laboratories.

\*\* The indicated accuracy statements are interim quidelines. Statistical control limits may be established at +/- 3 standard deviations from the mean.

Bartlett QAP Section 5 Revision 3 Oct. 10, 1994 Page 4 of 22

-

#### Table 5.2

\_\_\_\_\_

Quality Assurance Objectives for Metals

Quality Control Measure	Analyte	Control Limits
Calibration Curve	All	Correlation Coefficient > 0.995 (see also Sec. 8) (Not applicable to ICP)
Initial Calibration Verification (ICV)	All	Accuracy* 90 - 110 %
Reagent Blank	All	< Reporting Limit
Method Blank	A11	< Reporting Limit
Continuing Calibration Verification (CCV)	All	Accuracy** 90 - 110 % ICP 90 - 110 % Flame AA 90 - 110 % Hydride AA 90 - 110 % Furnace AA 85 - 115 % Cold Vapor
Laboratory Control Sample (LCS)	All	Accuracy** 80-120%
Matrix Spike/ Matrix Spike Duplicate (MS/MSD)	All	Accuracy Advisory limits 80-120% ** Precision 20 % RPD***
Reporting Limit Verification Standard (RLVS)	All	Accuracy Advisory limits 75-125% **
Interference Check Standard (ICS)	ICP elements only	Accuracy** 80-120%

\* The ICV accuracy acceptance limit is 90-110%. If statistics are supplied with the ICV, the control limit will be +/- 2SD from the mean. The mean is the average of the reporting laboratories.

\*\* The indicated accuracy statements are interim quidelines. Statistical control limits may be established at +/- 3 standard deviations from the mean.

\*\*\* RPD-- Relative Percent Difference - Defined in Section 14.

Bartlett QAP Section 5 Revision 3 Oct. 10, 1994 Page 5 of 22

+

#### Table 5.3

Quality Assurance Objectives for GC/MS Volatiles Method 624/8240

Quality Control Measure	Analyte	Control Limits
Holding Blank	All Analytes	< 5 X reporting limit for common lab contaminants. All others < RL.
Method Blank	All Analytes	< 5 X reporting limit for common lab contaminants. All others < RL.
Tune Check	Bromofluorobenzene	Must meet specific ion method specifications
Calibration Curve	Calibration Check Compounds (CCCs)	< 30% RSD
Initial Calibration Verification (ICV)	8240/624 analytes	Accuracy*
Continuing Calibration Verification (CCV)	CCCs	< 25% RPD of RF** from the initial calibration
Surrogates	l,2-Dichloroethane Toluene-d8 Bromofluorobenzene	Accuracy Water Soil -d4 76-114% 70-121% 88-110% 81-117% 86-115% 74-121%
Matrix Spike (MS) ***	1,1-Dichloroethyle Trichloroethylene Benzene Toluene Chlorobenzene	Water/Soil ne 1-234% 71-157% 37-151% 47-150% 37-160%
Matrix Spike Duplicate (MSD)		Precision < 20% RPD Advisory limits

\* Statistically determined control limits developed with accuracy being acceptable within +/- 2 standard deviaitons from the mean.

\*\* RF- Response Factor

\*\*\* An expanded list of spike recovery acceptance limits is available in NET SOP 8240.

Bartlett QAP Section 5 Revision 3 Oct. 10, 1994 Page 6 of 22

#### Table 5.4

Quality Assurance Objectives for GC/MS Volatiles Method 524.2

Quality Control Measure	Analyte	Control Limits					
Method Blank	All	< Reporting Limit*					
Tune Check	Bromofluorobenzene	Must meet the specific ion criteria set by the method					
Initial Calibration Verification (ICV)	524.2 analyted in standard	Accuracy**					
Continuing Calibration Verification (CCV)	All	< 30 % of RF from the initial calibration					
Surrogates	4-Bromofluorobenzene 1,2-Dichlorobenzene-d4	Accuracy 80-120% Accuracy 80-120%					
LCS	All 524.2 Target Compounds	Accuracy 80-120%					
Sample Duplicate	All 524.2 Calibrated Compounds	Precision <u>&lt;</u> 20% RPD Advisory					
* Common lab co	ntaminants such Methylen	e chloride and acetone are					

\* Common lab contaminants such Methylene chloride and acetone are commonly seen in blanks at anywhere from <RL to 5 X RL. Corrective action is taken to reduce as much as possible these contaminant levels.

\*\* Statistically determined control limits developed with accuracy being acceptable within +/-2 standard deviations from the mean.

Bartlett QAP Section 5 Revision 3 Oct. 10, 1994 Page 7 of 22

-

### Table 5.5

Quality Assurance Objective for GC/MS Semi-Volatiles Methods 625/8270

Quality Con Measure	trol	Analyte	Control Li	imits			
Method Blan	ĸ	A11	< Reportir	ng Limít			
Tune Check		DFTPP	Must meet the specific ion criteria set by the method				
Calibration	Curve	Calibration Check Compounds	< 30% RSD (CCCs)				
ICV	analyt	8270/625 tes in standard	Accuracy*	ccuracy*			
Continuing Calibration Verification	n (CCV)	CCCs	RF < 30% initial ca	F < 30% from the nitial calibration			
Surrogates	Nitrobenzene 2-Fluorobiph p-Terphenyl Phenol-d6 2-Fluorophen 2,4,6-Tribro	e-d5 nenyl nol pmophenol	Water 35-114% 43-116% 33-141% 10-94 % 21-110% 10-123%	Soil 23-120% 30-115% 18-137% 24-113% 25-121% 19-122%			
Matrix Spike (MS) and Laboratory Control Standard (LCS) **	1,2,4-Trichl Acenapthene 2,4-Dinitrot Pyrene n-Nitroso-di 1,4-Dichloro Pentachlorop Phenol 2-Chloropher 4-Chloro-3-r 4-Nitropheno	orobenzene oluene -n-propylamine obenzene ohenol nol methylphenol	Water/Soil 44-142% 47-145% 39-139% 52-115% 1-230% 20-124% 14-176% 5-112% 23-134% 22-147% 1-132%				
Matrix Spike Duplicate	8270/625 Cor	pounds	Precisic Water/ < 50% Ad	on (RPD) 'Soil lvisory			

\* Statistically determined control limits developed with accuracy being acceptable within +/- 3 standard deviations from the mean.

\*\* An expanded list of spike recovery acceptance limits is available in the NET 8270 SOP.

Bartlett QAP Section 5 Revision 3 Oct. 10, 1994 Page 8 of 22

-

#### Table 5.6

Quality Assurance Objectives for GC Pesticides and PCB's Method 608/8080

Quality Contr Measure	01	Analyte		Co	ntrol	. L:	imit	S		
Method Blank		All			<	Rep	port.	ing	, Lin	nit
Initial Calib Verification	ration (ICV)	A11			RI	r %I	Diff	ere	ence	<25%
Continuing Calibration Verification (CCV)		All			RI	7 %I	Diff	ere	ence	<15%
Surrogates	*TCMX *Decachloro	obipheny]		Aqueo 22 - 23 -	us 154% 154%		So: 31 - 29 -	il 12 12	88 88	
Laboratory Control Stand (LCS) (Single Component Pes and Matrix Spike/ Matrix Spike Duplicate - (Single compo Pesticides)	ard ticides) nent	Aldrin a-BHC b-BHC d-BHC Chlordar 4,4'-DDE 4,4'-DDE 4,4'-DDE 4,4'-DDT Dieldrir Endosulf Endosulf Endosulf Endosulf Endrin Heptach Heptach Heptach Toxapher *Methoxyc Aroclor Aroclor Aroclor Aroclor Aroclor	an I an I an S or E hlor 1016 1221 1232 1242 1254 1254	I ulfate poxide yde	2 37 17 32 45 30 25 45 30 25 45 30 25 45 30 25 45 30 25 45 30 25 45 30 25 45 30 25 45 30 25 45 30 25 45 30 25 45 30 25 45 30 25 30 30 25 30 30 25 30 30 25 30 25 30 25 30 25 30 30 25 30 30 30 30 30 30 30 30 30 30 30 30 30		1224 1347 1407 1445 1447 1445 1445 1445 1445 1445 144	<b>AC AC A</b>	Std. Std.	Dev Dev

\* The control limits for these QC samples are determined by control charting with mean +/- 3SD.
 \*\* To be determined by control chart ranges.

Bartlett QAP Section 5 Revision 3 Oct. 10, 1994 Page 9 of 22

•--

## Table 5.7

Quality Assurance Objectives for PCB's by EPA 608/SW-846;8080/ASTM D-4059

Quality Control Measure	Analyte	Control Limits
Method Blank	All	< Reporting Limit
Initial Calibration Verification (ICV)	Aroclor 1016 Aroclor 1221 Aroclor 1232 Aroclor 1242 Aroclor 1248 Aroclor 1254 Aroclor 1260	RF %Difference < 25%
Continuing Calibration Verification (CCV)	Aroclor 1016 Aroclor 1221 Aroclor 1232 Aroclor 1242 Aroclor 1248 Aroclor 1254 Aroclor 1260	RF %Difference < 15%
Surrogates	*TCMX *Decachlorobyp	Oil Wipes 31 - 128% 31 - 128% henyl 29 - 128% 29 - 128%
Matrix Spike (MS)	Aroclor 1242 Aroclor 1260	Accuracy 39-150% Accuracy 8-127%
Laboratory Control Standard (LCS)	Aroclor 1242 Aroclor 1260	Same as MS
Matrix Spike Duplicate Analysis (MSD)	Aroclor 1242 Aroclor 1260	Same as MS

\* The control limits for these QC samples are determined by control charting with mean +/- 3SD.

Bartlett QAP Section 5 Revision 3 Oct. 10, 1994 Page 10 of 22

••

#### Table 5.8

# Quality Assurance Objectives for GC Method 504

Quality Control Measure	Analyte	Control Limits
Method Blank	EDB*/DBCP**	< Reporting Limits
Initial Calibration Verification (ICV)	EDB/DBCP	RF %Difference <20% from initial calibration
Continuing Calibration Verification (CCV)	EDB/DBCP	RF %Difference <20% from
Low Level Verification	EDB/DBCP	Accuracy 60-140%
Laboratory Fortified Blank (LFB)	EDB/DBCP	Accuracy 60-140%
Laboratory Fortified Sample (LFS)	EDB/DBCP	Accuray ***

\* EDB - Ethylenedibromide
\*\* DBCP- Dibromochloropropane
\*\*\* To be determined by control charting.

Bartlett QAP Section 5 Revision 3 Oct. 10, 1994 Page 11 of 22

-

## Table 5.9

## Quality Assurance Objectives for BETX\* Method SW-846-8020/EPA 602

Quality Control Measures		Analyte	Control Limit
Method Blank		Benzene Ethyl Benzene Toluene Xylene	< Reporting Limit
Initial Calibrat Verification (IC	cion CV)	Benzene Ethyl Benzene Toluene Xylene	<25% RSD** from the true value
Continuing Calibration Verification (CCV)		Benzene Ethyl Benzene Toluene Xylene	RF %Difference <15% from initial calibration
Surrogate	1,4-Brom	ofluorobenzene	Aqueous Soil 84 - 122% 42 - 127%
MS/MSD		Benzene Ethyl Benzene Toluene Xylene	Aqueous Soil 78 - 121% 73 - 125% 80 - 121% 70 - 129% 77 - 122% 73 - 126% 75 - 122% 72 - 121%

\* BETX- Benzene, Ethyl Benzene, Toluene and Xylene

\*\* RSD - Relative Standard Deviation

Bartlett QAP Section 5 Revision 3 Oct. 10, 1994 Page 12 of 22

.

## Table 5.10

\_\_\_\_

Quality Assurance Objectives for Polynuclear Aromatic Hydrocarbons (PAHs) by Method 8310

Quality Control Measures		Analyte	Control 1	Control limit	
Method Blank		All	< Reporti	Ing Limit	
Initial Calibration Curve		All	<20% RSD to mean F	<20% RSD compared to mean RF <15% Diff for RF	
Continuing Calibration Verification		All	<15% Diff		
			Accu	iracy	
Surrogate*	2-Fluor	obiphenyl	Aqueous 37-122%	Non-Aqueous 43-125%	
			Accu	iracy	
LCS and MS/MSD*	Napthalene Acenapthylene Acenapthene Fluorene Phenanthrene Anthracene Fluoranthene Pyrene Benzo(a)Anthracene Chrysene Benzo(b)Fluoranthene Benzo(k)Fluoranthene Benzo(a)Pyrene Dibenzo(a,h)Anthracene Benzo(g,h,i)Perylene Indeno(1,2,3-cd)Pyrelene		Aqueous 23-139% 42-142% 39-150% 46-137% 69-129% 58-132% 79-124% 79-126% 79-131% 82-125% 79-124% 79-124% 74-124% 70-119% 73-128% e 78-123%	Non-Aqueous 32-137% 57-122% 53-151% 61-135% 54-171% 66-132% 41-179% 57-162% 62-155% 61-145% 58-135% 62-130% 59-141% 58-131% 60-139% 51-140%	

\* The control limits for these QC samples are determined by control charting, mean +/- 3SD.

Bartlett QAP Section 5 Revision 3 Oct. 10, 1994 Page 13 of 22

••

## Table 5.11

## Quality Assurance Objectives for Chlorinated Herbicides by Methods 509 B/SW-846 8150

Quality Control Measure	Analyte	Control Limits
Method Blank	All	< Reporting Limit
Initial Calibration Verification (ICV)	All	RF %Difference <25% from initial calibration
Continuing Calibration Verification (CCV)	All	RF %Difference <15% from initial calibration
Surrogate	*DCAA	Accuracy Waters: 23-131% Soils: 0-215%
Matrix Spike/ Matrix Spike Duplicate. (MS/MSD)	All	Accuracy Waters Soils 2,4-D 0-107% 0-145% 2,4,5-TP 0-113% 0-141%

\* Control limits to be determined by control charting.

Bartlett QAP Section 5 Revision 3 Oct. 10, 1994 Page 14 of 22

.

## Table 5.12

## Quality Assurance Objectives Herbicides Method EPA 515.1

Quality Control Measures	Analyte	Control Limit	
Laboratory Reagent Blank (LRB)	All	< Reporting Limit	
Initial Calibration Verification (ICV)	All	<20% RSD from the mean RF	
Continuing Calibration Verification (CCV)	All	Accuracy: 80-120% Recovery	
Surrogate	DCAA	Accuracy: 70-130% Recovery	
Laboratory Fortified Blank (LFB)	All	Accuracy*	
Laboratory Fortified Sample (LFS)	A11	Accuracy*	

\* To be determined by control charting.
Bartlett QAP Section 5 Revision 3 Oct. 10, 1994 Page 15 of 22

...

# Table 5.13

# Quality Assurance Objectives Carbamates Method EPA 531.1

Quality Control Measures	Analyte	Control Limit	
Laboratory Reagent Blank (LRB)	All	< Reporting Limit	
Initial Calibration Verification (ICV)	All	<20% RSD from the mean RF	
Continuing Calibration Verification (CCV)	All	RF %Difference <20% from initial calibration	
Laboratory Fortified Blank (LFB)	All	Accuracy: 70-130%	
Laboratory Fortified Sample (LFS)	All	Accuracy: 70-130%	
Monitoring Compound (Surrogate)	BDMC	Accuracy: 70-130%	

Bartlett QAP Section 5 Revision 3 Oct. 10, 1994 Page 16 of 22

-

# Table 5.14

Quality Assurance Objectives for Total Petroleum Hydrocarbons (TPH) by the GC TPH California Method

Quality Control Measures	Analyte	Control Limit < Reporting Limit		
Method Blank	All			
Initial Calibration Verification (ICV)	All	Accuracy: 90-110% Recovery		
Continuing Calibration Verification (CCV)	All	RF %Difference <10% from initial calibration		
MS/MSD and LCS	Gas Diesel	Aqueous Soil Accuracy Accuracy 10 - 155% 32 - 156% 10 - 173% 45 - 145%		

Bartlett QAP Section 5 Revision 3 Oct. 10, 1994 Page 17 of 22

••

# Table 5.15

# Quality Assurance Objectives for Pesticides/PCBs Method EPA 508

Quality Control Measures	Analyte	Control Limit
Method Blank	All	< Reporting Limit
Initial Calibration Verification (ICV)	All	%RSD < 20% from the mean RF
Continuing Calibration Verification (CCV)	All	Accuracy: 80 - 120% Recovery
Surrogate		Accuracy: 70 - 130% Recovery
Laboratory Fortified Blank (LFB)	All	Accuracy*
Laboratory Fortified Sample (LFS)	All	Accuracy*

\* To be determined by control charting.

----

Bartlett QAP Section 5 Revision 3 Oct. 10, 1994 Page 18 of 22

-

# Table 5.16

# Quality Assurance Objectives for PCB Screen Method EPA 508A

Quality Control Measures	Analyte	Control Limit
Method Blank	Decachloro- biphenyl (DCB)	< 0.025 mg/uL
Initial Calibration Verification (ICV)	All	%RSD < 6% from the mean RF, %RSD < 0.2% between standards
Continuing Calibration Verification (CCV)	All	RF < 20% Diff from the mean RF, RT = +/- 3SD from the mean RF
Laboratory Fortified Blank (LFB)	All	Accuracy*
Laboratory Fortified Sample (LFS)	A11	Accuracy*

\* To be determined by control charting.

Bartlett QAP Section 5 Revision 3 Oct. 10, 1994 Page 19 of 22

.

# Table 5.17

# Quality Assurance Objectives for Pesticides Method EPA 507

Quality Control Measures	Analyte	Control Limit		
Laboratory Reagent Blank (LRB)	All	< Reporting Limit		
Initial Calibration Verification (ICV)	All	<20% RSD from the mean RF		
Continuing Calibration Verification (CCV)	All	Accuracy: 80 - 120% Recovery		
Surrogate		Accuracy: 70 - 130% Recovery		
Laboratory Fortified Blank (LFB)	All	Accuracy*		
Laboratory Fortified Sample (LFS)	All	Accuracy*		

\* To be determined by control charting.

Bartlett QAP Section 5 Revision 3 Oct. 10, 1994 Page 20 of 22

••

## Table 5.18

Quality Assurance Objectives for the Determination of Fecal Coliforms Method 909C (SM 16th Edition)

Quality Control Measure	Analyte	Control Limits
Media pH Control with every media batch	All Media	+/- 0.2 pH units
Filtration Blanks every 20 samples	Fecal Coliforms	< 0 Colony/100 mL
Positive Control end of the day	Fecal Coliforms	Presence
Monthly Duplicate Count	Fecal Coliforms	+/- 10% Diff

### Table 5.19

Quality Assurance Objectives for the Determination of Total Coliforms Method 909A (SM 16th Edition)

Quality Control Measure	Analyte	Control Limits	
Media pH Control with every media batch	All Media	+/- 0.2 pH units	
Filtration Blanks every 20 samples	Total Coliforms	< 0 Colony/100 mL	
Positive Control end of the day	Total Coliforms	Presence	
Monthly Duplicate Count	Total Coliforms	+/- 10% Diff	

Bartlett QAP Section 5 Revision 3 Oct. 10, 1994 Page 21 of 22

••

### Table 5.20

Quality Assurance Objectives for the Determination of Standard Plate Counts Method 907 (SM 16th Edition)

Quality Control Measure	Analyte	Control Limits
Media pH Control with every media batch	All Media	+/- 0.2 pH units
Negative Blank one per day	Any Colony	Absence
Negative Air Blank one per day	Any Colony	Absence
Positive Control one per day	All	Presence
Monthly Duplicate Counts	All	+/- 10% Diff

### Table 5.21

Quality Assurance Objectives for the Determination of Total Coliform and Eschiricia Coli - Colilert\* Procedure

Quality Control Measure	Analyte	Control Limits
Positive Control per shipment lot	Each New Lot	Presence
Poitive Control daily - at the end of the day	Each Analysis	Presence
Negative Control daily - at the end of the day	Each Analysis	Absence

\* Colilert is a registered trademark of ENVIRONETICS, INC. Colilert is referred to as MMO-MUG by the EPA in the Federal Registry and as Chromogenic Substrate by Standard methods. Colilert is referred to as Autoanalysis Colilert Prescence-Abscence (AC P-A) method by the Illinois Pollution Control Board, Title 35, Subtitle F, Chapter 1, Section

Bartlett QAP Section 5 Revision 3 Oct. 10, 1994 Page 22 of 22

•

611. Appendix D, November 19, 1992.

The Bartlett Division of NET has quality assurance objectives for bacteriological analyses. For a description of the quality assurance objectives for Coliform analyses and Standard Plate Counts the <u>State of Illinois Rules and Regulations</u>, <u>Title 35:</u> <u>Environmental Protection</u>, <u>Subtitle F: Public Water Supplies</u>, <u>Chapter I: Pollution Control Board</u> microbiology sections should be consulted.

Bartlett QAP Section 6 Revision 2 November 1, 1993 Page 1 of 7

#### SECTION 6

### Sampling Procedure

A critical factor which may affect the final conclusions made from a sample is the type of procedure used for sample collection. To assure the reliability of the data, quality control measures are included in the field sampling completed by NET personnel. Result validity is aided by proper calibration, sampling, handling, identification of samples and chain-of-custody procedures.

Guidelines for a particular project are based upon site specific requirements. In most instances, the field personnel rely on Standard Operating Procedures (SOPs) for sampling with the client determining the sampling location. The field sampling SOPs detail the collection, maintenance and specific calibration procedures for sampling equipment.

Selection as to the type of sampling procedure to be used is dependent on the project. All sampling is performed to directly meet the needs of the client, account for the type of analysis being requested, and meet the EPA requirements. Background information is gathered to determine the type of project required and the safety risks (if any) involved in sampling. Information must be collected and documented as to the types of hazards that may be present during sample collection.

The material from which sampling equipment is constructed can affect analytical results. The material selected for sampling certain parameters must not contaminate or alter the sample being collected, and must be easily cleaned or disposed of so that samples are not cross-contaminated. Field personnel select equipment based upon the medium and parameters being sampled.

In the instance where NET personnel are not the individuals collecting the sample, instructions which are specific to the parameter being collected are submitted to the client for assistance. The types of instructions available range from organic volatiles to bacteriological collections.

NET recognizes that proper containers and appropriate preservatives are necessary for the collection of valid samples. In addition, the samples must be analyzed within a specified time frame for each parameter. The Sample Preservative Summary (Table 6.1) details recommended sample containers, preservatives, holding times and the volume of sample needed for aqueous samples. Consult the method for specific requirements. Consult the method or SW-846 for non-aqueous samples.

Bartlett QAP Section 6 Revision 2 November 1, 1993 Page 2 of 7

During the training period for new field personnel, the employee receives instruction on sample site selection, selection and preparation of equipment and materials, sample collection for various media, preservation, documentation, and sample handling.

Training of new field personnel includes completion of an Occupational Safety and Health Administration (OSHA) approved 40 hour Safety Training Workshop. Also Bartlett's OSHA approved Hazard Communication Program for field services includes client specific safety information where appropriate. Confined Space Entry training is received in conformance with all applicable OSHA requirements.

Bartlett QAP Section 6 Revision 2 November 1, 1993 Page 3 of 7

# Table 6.1 Sample Preservation Summary

-----

Parameter	Container [G=Glass] [P=Plastic]	Preser- vative	Recom- mended Holding Time	Minimum Volume
Bacteriological				<sup>_</sup>
Coliform, fecal	P,G (Sterile)	4°C Na25203	6 hr.	250 ml
Coliform, total	P,G (Sterile)	4°C Na2S2O3	30 hr.	100 ml
E. Coli	P,G (Sterile)	4°C Na2S2O3	6 hr.	250 ml
Physical Properties				
Color	P,G	4°C	2 days	500 ml
Hardness	P,G	4°C HNO3	6 mo.	150 ml
Hydrogen ion (pH)	P,G	None	Immed- iately	NA
Residue, total (TS)	P,G	4°C	7 days	250 ml
Residue, filterable (TDS)	P,G	4°C	7 days	250 ml
Residue, non- filterable (TSS)	P,G	4°C	7 days	250 ml
Residue, settleable (SS)	P,G	4°C	2 days	1 L
Residue, volatile (TVS	5) P,G	4°C	7 days	250 ml
Specific conductance	P,G	4°C	28 days	250 ml
Temperature	P,G	None	Immed- iately	NA
Turbidity	P,G	4°C	2 days	500 ml
Inorganic Non-Metallics				
Acidity	P,G	4°C	14 days	1 L

-

-

Bartlett QAP Section 6 Revision 2 November 1, 1993 Page 4 of 7

-

•

Table	6.1	(Cont.)	
Table	6.1	(Cont.)	

\_\_\_\_

Parameter	Container [G=Glass] [P=Plastic]	Preser- vative	Recom- mended Holding Time	Minimum Volume
Inorganic Non-Metallics (cont	)			
Alkalinity	P,G	4°C	14 days	l L
Ammonia	P,G	4°C H2SO4	28 days	l L
Bromide	P,G	None	28 days	150 ml
Chloride	P,G	None	28 days	250 ml
Chlorine, total residual	P,G	None	Immed- iately	1 L
Cyanide, total and amenable	P,G	4°C NaOH	14 days	l L
Fluoride	P	None	28 days	l L
Kjeldahl and organic Nitrogen	P,G	4°C H2SO4	28 days	1 L
Nitrate	P,G	4°C	2 days	250 ml
Nitrate-Nitrite	P,G	4°C H2SO4	28 days	250 ml
Nitrite	P,G	4°C	2 days	250 ml
Orthophosphorus	P,G	4°C	2 days	1 L
Phosphorus, total	P,G	4°C H2SO4	28 days	250 ml
Silica	P,G	4°C	28 days	250 ml
Sulfate	P,G	4°C	28 days	500 ml

Bartlett QAP Section 6 Revision 2 November 1, 1993 Page 5 of 7

-

-

Table 6.1 (Cont.)

Parameter	Container [G=Glass] [P=Plastic]	Preser- vative	Recom- mended Holding Time	Minimum Volume
Inorganic Non-metallics (cont.	)			
Sulfide	P,G	4°C zinc ac NaOH	7 days etate,	100 ml
Sulfite	P,G	4°C	Immed- iately	250 ml
Surfactants (MBAS)	P,G	4°C	2 days	l L
Metals				
Chromium VI	P,G	4°C	24 hrs.	250 ml
Mercury	P,G	HNO3	28 days	250 ml
Metals, except above	P,G	HNO 3	6 mos.	1 L
Organics				
Halogenated Volatiles (8240/624) Non-Halogenated Volatiles (8240/624	G НС. G НС. )	l, 4°C l, 4°C	14 days 14 days	1 X 40 ml 1 X 40 ml
Aromatic Volatiles	G HC	l, 4°C	14 days	1 X 40 ml
(8240/624) Volatile Organics	G HC	l, 4°C	14 days	1 X 40 ml
(8240/624) Drinking Water VOC's (Non-Chlorinated) - 5	G HC 24.2	l, 4°C	14 days	1 X 40 ml
Drinking Water VOC's (Chlorinated) - 524.2	G HCL	4°C ; Ascorbic	l4 days Acid	1 X 40 ml
Trihalomethanes (Chlorinated) - 524.2	G HCL	4°C ; Ascorbic	l4 days Acid	1 X 40 ml
Organochlorine Pesticides/PCBs (8080/608)	G Amber	4°C	7 days Pre 40 days Post	l L -Extraction t-Extraction

Bartlett QAP Section 6 Revision 2 November 1, 1993 Page 6 of 7

-

-

Table 6.1 (Cont.)

-----

-----

----

Parameter	Container [G=Glass] [P=Plasti	Preser- c] vative	Recom- mended Holding Time	Minimum Volume
Organics (Cont.)				
Organochlorine Pesticides/PCBs (508)	G Amber	4°C	7 days Pr 40 days Pc	1 L re-Extraction ost-Extraction
Nitrogen-Phosphorous Pesticides (507)	G Amber	4°C	14 days Pr 40 days Pc	1 L re-Extraction ost-Extraction
PCBs - Screening Only (508A)	G Amber	4°C	14 days Pr 30 days Pc	l L re-Extraction ost-Extraction
Chlorinated Herbicide (8150/509B)	s G Amber	4°C	7 days Pr 40 days Pc	1 L re-Extraction ost-Extraction
Herbicides (515.1)	G Amber	4°C	14 days Pr 40 days Pc	1 L re-Extraction ost-Extraction
Semivolatile Organics Acid/Base/Neutral Extractables (8270/625)	G Amber	4°C	7 days Pr 40 days Pc	1 L re-Extraction ost-Extraction
EDB and DBCP (504)	G Amber	HCl, 4°C	28 days	1 X 40 ml
Polynuclear Aromatic Hydrocarbons (8310)	G Amber	4°C	7 days Pi 40 days Po	l L re-Extraction ost-Extraction
Carbamates (531.1)	G Amber	4°C, mono- chloroacet acid	28 days tic	l X 40mL
TPH, GC (California Method)	G Amber	4°C	7 days Pi 40 days Po	l L re-Extraction ost-Extraction

Bartlett QAP Section 6 Revision 2 November 1, 1993 Page 7 of 7

-

-

Table 6.1 (Cont.)

\_\_\_\_\_

Parameter	Conta [G=G] [P=P]	ainer [ass] [astic]	Preser- vative	Re me - Ho Ti	com- nded lding me	Mi Vo	nimum lume
Other Organic							
Biochemical Oxygen Demano	P,	G	4°C	2	days	1	L
Biochemical Oxygen Demanc carbonaceous	P,	G	4°C	2	days	1	L
Chemical Oxyger Demand	n P,	G	4°C H2SO4	28	days	25	0 ml
Oil and Grease	G		4°C H2SO4	28 or HC	days l	1	L
Total Organic Carbon	Р,	G	4°C H2SO4	28	days	1	L
Phenols	G		4°C H2SO4	28	days	1	L
TCLP							
TCLP Extraction	G G		4°C			100	g
	From Field Collection to: TCLP Extraction	Fi TC Extra tc Prepa Deterr	rom CLP action D: arative mination	F Prep Extr Deter Ana	rom arative action o: minativ lysis	e To ve Ela T:	otal apsed ime
Volatiles Semivolatiles Herbicides Mercury Metals, except mercury	14 days 14 14 28 180	NA 7 7 NA NA	days days	14 40 40 28 18	days 0	28 63 50 30	3 days 1 1 5 50

Bartlett QAP Section 7 Revision 2 November 1, 1993 Page 1 of 4

#### SECTION 7

#### Sample Custody

### Introduction

Laboratory analyses are performed to produce data representative of the conditions under which the sample was obtained. To provide representative samples for analysis, both field and laboratory personnel must perform their activities well.

#### Chain of Custody Procedure

The purpose of the chain of custody is to supply a detailed record of the sample description, collection information, and any transfer of custody from sample collection through sample receipt into the laboratory.

When samples arrive at NET-Bartlett, the login personnel documents any observed problems with the shipping containers on the custody form. Sample label information is checked against the custody record and the condition of the samples noted. If a sample is outside holding time or is not preserved properly, a Customer Service Representative will contact the client. At that point, a decision will be made whether or not to proceed with sample analysis.

Samples are then logged into the laboratory data system which assigns a unique lab sample number. When sample login is complete, the system generates a bottle label which includes the unique lab sample number, the client identification, the sample description, and the date of collection. Lab sample labels are affixed to corresponding bottles and compared to the bottle identification for verification.

Once the sample login is complete, the sample custodian or designee is responsible for proper placement of samples within the laboratory. Samples will be stored under appropriate conditions prior to preparation and analysis. Sample access is limited to NET personnel. Furthermore, security of the laboratory is maintained by an electonic alarm system. In the instance where a sample is transferred to an outside laboratory, sample identification records are verified against the sample label and transfer documents maintained.

#### Field Collection and Shipping

The collection person first must consider the analyses to be performed so that proper sample containers and shipping containers are assembled and the proper preservatives are added to containers. In addition, field logs and record sheets, chain of custody forms, and analysis request records must be compiled. All records required for documentation of field collection must be completed by the field personnel. The primary documenting

Bartlett QAP Section 7 Revision 1 November 1, 1993 Page 2 of 4

record is the chain of custody. After completing the chain of custody information, the field personnel must review all sample labels for correct information and preservation.

Samples must be placed in containers compatible with the intended analysis and must be preserved properly. Also, sample collection must allow for the time interval between acquiring the sample and analysis (holding time) so that the sample is representative. Table 6.1 provides requirements for various analytical parameters with respect to the type of containers, preservation methods, and maximum holding times between collection and analysis.

Polyethylene or glass containers are required and, in most cases, samples must be cooled to 4°C.

Figure 7.1 represents the NET chain of custody form which may be used by personnel in collecting and shipping samples.

The chain of custody form shall be signed by each individual who has the sample in his possession:

- The chain of custody record shall be initiated in the field by the person collecting the sample, for every sample.

- If the person collecting the sample does not transport the samples to the laboratory or the sample containers for shipment, the first block for "Relinquished By, Received By" shall be signed by the field personnel.

- The person transporting the samples to the laboratory by delivering them for shipment shall sign the record form as "Relinquished By".

- If the samples are shipped to the laboratory by commercial carrier, the chain of custody form shall be sealed in a watertight container, and the shipping containers shall be sealed before giving it to the carrier.

- If the samples are shipped by commercial carrier, the waybill shall serve as an extension of the chain of custody record between the final field custodian and the laboratory.

- If the samples are transported directly to the laboratory, the chain of custody shall be kept in possession of the person delivering the samples.

- Upon receipt in the laboratory, the login personnel shall open the shipping containers, compare the contents with the chain of custody record, and sign, date, record cooler temperatures and make note of any discrepancies on the chain of custody form.

- If discrepancies occur, the samples in question shall be segregated from the normal sample storage and appropriate notification made immediately.

Bartlett QAP Section 7 Revision 1 November 1, 1993 Page 3 of 4

- The chain of custody records shall be maintained with the records for a specific project, becoming part of the project file.

Multipart chain of custody forms may be used so that one copy can be returned to the person shipping the samples after receipt in the laboratory.

#### Laboratory Document Control

The goal of the document control program is to assure that all documents for a group of samples will be accounted for when the project is completed. All observations and results recorded by NET are entered into pre-printed data sheets or into permanent labortory notebooks. Data records are referenced with the sample, date and analyst's initials.

All documentation in notebooks and other documents shall be in ink. If an error is made in a notebook, that person should place one line through the error, enter the correct information, and initial and date the correction.

#### Laboratory Storage of Samples

The primary considerations for sample storage are:

 maintaining prescribed temperature which, if required, typically is 4°C, and

- extracting and/or analyzing samples within the prescribed holding time for the parameters of interest.

The temperature and holding time requirements of Table 6.1 shall be used. Placing samples in the proper storage environment is the responsiblity of the sample custodian. Should a sample need immediate attention due to a holding time or collection problem, the login personnel will notify either the Operations Manager or the Project Manager for assistance.

### Sample Disposal

Several possibilities for sample disposition exist:

- the sample may be consumed completely during analysis,

- sample may be returned to the customer or location of sampling for disposal, or

- the sample may be stored after analysis. (samples are normally maintained no longer than five weeks from receipt unless otherwise requested).

NE	NATIONAL ENVIRONMENTAL TESTING, INC.	CHAIN O COMPANY ADDRESS PHONE PROJECT NUMBI		DY RE	ECOF	RD			- REP( - INVO - PO I	DAT TO		not specified	proper environing if re-analy: anticipated, observed. The of these process The Operation	
	,	PROJECT MANA	GEA	البه ال	u!ij .:			ANALYSES	NET		The second second second		sra ng ng ng ng ng ng ng ng ng ng ng ng ng	
(PRINT NAME)		SKONATURE		?.TA!Y	10 010	<u> </u>	77	77	777	/ A way and		н н. т	M REL P	
(PRINT NAME)		SIGNATURE		-								gu gu	n sHria	
DATE THE	SAMPLE ID DESCRIPT ON	68.40 CCN9 -	он ал ал ал ал ал ал ал ал ал ал ал ал ал							COMMEN	TS	chain re 7.1	l cont s ant nmenta SOP on ger sh	
						_		_  _				0 0	al líco	
												haf	dom 1	
												in	d potn	
	····						_					o ta	t erer	
												f dy		
					╶┼╾╀	-+-+-							ine sport	
												l tt		
					╶┼╶┼			+				уdу		
								-+				, m		
									1			Or	N CON	
												j j	t rrn Lang	w x <del>x</del> v w
												ł	on been	90000 10220 110220
CONDITION OF	FIELD FILTEREDT Y	ES/NO	VOLATILES FF	REE OF HE	DSPACE	7 YES / NO	5		ICMPERAIL	UPON HEGEIPT, _				
SAMPLE REMAI	NDER DISPOSAL RETURN SA I REQUEST	MPLE REMAINDER TO C	LIENT VIA						DATE					
RELINGLASHED BY	DATE/TIME	RECEIVED BY:		AELI	CUISHED I	r		DATE/TIM	E	RECEIVED FOR NET BY	1	1		м Ч ц ц ц ц
METHOD OF SH		REMARKS:												т
														0 0 1
													ті лус ті лоса ті лоса	

1

(

.

t

Bartlett QAP Section 8 Revision 2 Sept. 12, 1994 Page 1 of 6

### SECTION 8

### Calibration Procedures and Frequency

This section describes the calibration procedures used for the majority of the instrumentation in the laboratory as well as the frequency of such calibrations.

All materials used for instrument calibration will be of highest purity available from a commercial source or from the U.S. Environmental Protection Agency Pesticide and Industrial Chemicals Repository or the National Bureau of Standards.

#### GAS CHROMATOGRAPH/MASS SPECTROMETER (GC/MS)

#### Calibration Standards

Stock solutions are high purity standards. The supplier, date prepared, expiration date, preparation procedure and the analyst who prepared the standard are documented in the standard preparation record book. All stock solutions are recorded in the standards preparation record book and given a unique identification number. From the stock, working standards are prepared by diluting the stock. The process is as follows:

- Prepare stock solutions if necessary. Stock Solutions for 8240/624 have a shelf life of 2 months. A typical replacement rate for these stock solutions is approximately every two weeks.
- Prepare working standards by dilution of the stock standards or purchased ampules when appropriate.
   524.2 standards are prepared from ampules. The shelf life of the ampules are the stated expiration date on the ampules.
- 3. Verify the working standards by analysis of an initial calibration verification sample using either EPA QC concentrates or other independent standards.

#### Calibration Procedure

An initial 5 point calibration curve is performed on each GC/MS instrument using calibration standards prepared as described above. Following the initial calibration the curve is monitored by the following quality control measures.

At the beginning of each 12 hour shift that volatile organic analyses are performed using Methods 624/8240, the GC/MS system must be checked to verify that acceptable performance criteria are obtained for Bromofluorobenzene (BFB). This performance

Bartlett QAP Section 8 Revision 2 Sept. 12, 1994 Page 2 of 6

check is also required at the beginning of each 8 hour run sequence for method 524.2 for drinking water samples. The performance test must be passed before analyzing any samples, blanks or standards. If the tune requirements cannot be met system maintenance may be necessary followed by a new 5 point calibration of the instrument.

At the beginning of each 12 hour shift that semi-volatile organic analyses are performed using Methods 625/8270, the GC/MS system must be checked to see if acceptable performance criteria are achieved for Decafluorotriphenylphosphine (DFTPP). The performance criteria must be achieved before any sample, blanks, or standards are analyzed. If the tune requirements cannot be met system maintenance may be necessary followed by a new 5 point calibration of the instrument.

If tune acceptance criteria are met, a continuing calibration check standard (CCC) is analyzed next. The method specific CCC acceptance criteria must be met before analysis of samples can continue. For Methods 624, 8240, 524.2, 625, and 8270 System Performance Check Compounds (SPCC) are also analyzed and must have acceptable results as compared to the analytical methods criteria. If the CCC or SPCC criteria cannot be met then system maintenance may be required followed by a new calibration of the instrument.

All initial calibration data as well as the subsequent calibration verification data are documented.

GAS AND LIQUID CHROMATOGRAPHY

Calibration Standards

Stock solutions are prepared from high purity standards. The supplier, date prepared, expiration date, preparation procedure and the analyst who prepared the standard are documented in the standard preparation record book. All stock solutions are recorded in the standard preparation record book and given a unique identification number. From the stock, working standards are prepared by diluting the stock.

### Calibration Procedure

The instruments are calibrated using a minimum of 5 standards. The Relative Standard Deviation %RSD between the response factors for the calibration standards must meet the linearity specifications of the analytical method or of the bench SOP. The average response factor for the calibration is then used in calculating the concentrations of unknowns based upon their response.

The instruments are calibrated after a CCV fails or any major system change such as the replacement of a column.

Bartlett QAP Section 9 Revision 2 August 19, 1994 Page 1 of 29

-

### SECTION 9

#### Analytical Procedures, Facilities and Equipment

The Bartlett Division of NET maintains a full range of modern, state-of-the-art equipment and instrumentation. Additional equipment and instrumentation is available at other NET laboratories located throughout the United States.

Listings of major analytical instrumentation and equipment for both the laboratory and field operations are found in Tables 9.1-9.6.

The Bartlett Division occupies approximately 16,700 square feet of laboratory space and employs 32 employees, full and part time. The building floor plan is shown in Figure 9.1.

The Bartlett Division of NET uses a wide range of analytical methodology including many EPA approved methods for the analysis of wastewater, groundwater, drinking water, soils and hazardous waste. Tables 9.7 - 9.9 list the parameters, methodology, referenced method and the associated reporting limits for the metals, wet chemistry and the organics departments.

Bartlett QAP Section 9 Revision 2 August 19, 1994 Page 2 of 29

•••

# TABLE 9.1

Equipment Listing for the Metals Department

Group	<ul> <li>Furnace</li> <li>Graphite Furnace Atomic Absorption; PE Model 5000</li> <li>Programmer; Perkin Elmer (PE) HGA 500</li> <li>Autosampler; PE AS40</li> <li>Printer; Citezen 120D</li> </ul>
Group	<ul> <li>Inductively Coupled Plasma - Atomic Emission Spectrometry (ICP-AES)</li> <li>ICP; Perkin Elmer (PE) 40, sequential</li> <li>Autosampler; PE AS-51</li> <li>Data System; Wyse Video 7 UGA16</li> <li>Printer; Okidata Microline 390</li> </ul>
Group	: Flame - Atomic Absorption unit; Perkin Elmer (PE) 460 - Burner Control; PE Serial #79771 - Printer; Model 056-1005
Group	: Automated Cold Vapor (Mercury) - Atomic Absorption unit; PE 460 - Cold Vapor Pump; Serial # 64793
Group	: Hydride accessories - Atomic Absorption unit; PE 460 - Vapor Generator (Hydride); PE MHS-10
Group	: Metals Preparation Laboratory - Balance; Mettler PM 600 - Hot Plates (2); Thermolyne 2200 - Hood Vents (3)

Bartlett QAP Section 9 Revision 2 August 19, 1994 Page 3 of 29

~

.

# TABLE 9.2

Equipemnt Listing for the Wet Chemistry Department

Description	Manufacturer	Model
TOC Analyzer	Dohrman DC-80	9500
Spectrophotometer; Flow Thru	Milton Roy	401
Spectrophotometer; Drop In Cell	Milton Roy	301
pH Meter	Orion Research	501
Fluoride Probe	Orion Research	720A
Turbidimeter	Hach	2100A
Conductivity Meter; Digital	VWR	23226- 523
Flash Point Analyzer	Pensky Martin	K162
Oxygen Meter	YSI Scientific	54A
Oxygen Meter	YSI Scientific	50B
Balance; Toploader	Mettler	PM600
Balance; Analytical	Mettler	H30
COD Digestion Block	Tecam	DB3H
TKN Digestion Block	Technicon	BD20/40
Muffle Furnace	Lindberg	51828
Oven; 180°c	Thelco, GCA/Precision Scientific	16
Oven; 105°c	Blue M, Stabil-therm	
Water Bath	Napco	220A
ZHE Extractor (8)	Millipore	NC1-13D3
TCLP Tumblers (16)		
Platform Shaker	Eberbach	

Bartlett QAP Section 9 Revision 2 August 19, 1994 Page 4 of 29

••

TABLE 9.2 (CONT.)

\_\_\_\_

Description	Manufacturer	Model				
Cyanide Distillation Rigs (16)						
Phenol/Ammonia Distillation Rigs (10)						
Hood Vents (3)						
BACTERIOLOGY						
Autoclave	Market Forge Sterilmatic	STME				
Microscope (2)	Graft Apsco Nikon	I9416 42722				
Colony Counter	Fisher	7-910				
Incubator	Fisher	170				
Water Bath (2)	Blue M Lab-Line Instruments	1110 <b>-1</b> 3000 <b>-</b> 2				

Table 9.3

Equipment Listing for the GC/MS Department

Unit:	<pre>GC/MS-A Primary: 524.2 aqueous volatiles Secondary: 624/8240 aqueous volatiles - GC- Hewlett Packard Model 5890 - MS- Hewlett Packard Model 5970 - Liquid Sample Concentrator; Tekmar LSC-2000 - Purge Device; ALS 2016 - Data System; Hewlett Packard 1000, RTE-6 Series - Data Storage; Hewlett Packard 7970E Mag Tape</pre>
Unit:	<pre>GC/MS-C Primary: 624/8240 aqueous volatiles Secondary: 8240 non-aqueous volatiles - GC- Hewlett Packard Model 5890 - MS- Hewlett Packard Model 5970 - Liquid Sample Concentrator; Tekmar LSC-2000 - Purge Device; ALS 2016 - Heater; Tekmar 3310 - Data System; Hewlett Packard 1000, RTE-6 Series - Data Storage; Hewlett Packard 7970E Mag Tape</pre>

Bartlett QAP Section 9 Revision 2 August 19, 1994 Page 5 of 29

Table 9.3 (CONT.)

GC/MS-D (625/8270 Semi-Volatiles) Unit: - GC- Hewlett Packard Model 5890 Series II - MS- Hewlett Packard Model 5970 - Autosampler; Hewlett Packard Model 7673A - Data System; Hewlett Packard Model 1000 RTE-A Series - Data Storage System; HP 7979 Mag Tape - Data Storage System; Hewlett Packard Model 7974 Unit: GC/MS-E (625/8270 Semi-Volatiles) - GC- Hewlett Packard Model 5890 Series II - MS- Hewlett Packard Model 5970 - Autosampler; Hewlett Packard Model 7673A - Data System; Hewlett Packard Model 1000 RTE-A Series - Data Storage System; HP 7979 Mag Tape Unit: GC/MS-F Primary: 8240 non-aqueous volatiles Secondary: 624/8240 aqueous volatiles - GC- Hewlett Packard Model 5890 - MS- Hewlett Packard Model 5970 - Liquid Sample Concentrator; Tekmar LSC-2000 - Purge Device; ALS 2016 - Heater; Tekmar 3310 - Data System; Hewlett Packard 1000, RTE-6 Series - Data Storage; Hewlett Packard 7970E Mag Tape

Balance: Toploader; Mettler PM600

Hood Vent (1)

### TABLE 9.4

Equipment Listing for the GC/LC Department

Unit:	GC-A (8150 Herbicides, 8080/608 Pesticides/PCBs) - GC-Hewlett Packard Model 5890 - Autosampler; Hewlett Packard Model 7673A - Detector; Dual Column ECD
Unit:	GC-B (505, 507 and 508 Pesticides/PCBs) - GC-Hewlett Packard Model 5890 - Autosampler; Hewlett Packard Model 7673A - Detector; Dual Column ECD

Bartlett QAP Section 9 Revision 2 August 19, 1994 Page 6 of 29

TABLE 9.4 (CONT.)

GC-C (8080/608 Pesticides/PCBs, 8150 Herbicides) Unit: - GC-Hewlett Packard Model 5890 - Autosampler; Hewlett Packard Model 7673A - Detector; Dual Column ECD GC-D (Glycols/Alcohols) Unit: - GC-Hewlett Packard Model 5890 Series II - Autosampler; Tekmar 7673A - Detector; Single Coumn FID GC-E (8020 BETX, pVOCs, MTBE, Trimethylbenzenes) Unit: - GC-Hewlett Packard Model 5890 - Purge Device; ALS 2016 - Heater; Tekmar 3310 - Detector; Dual PID GC-F (TPH-GC) Unit: - GC-Hewlett Packard Model 5890 - Autosampler; Hewlett Packard Model 7673A - Detector; Single Column FID Unit: GC-G (Method Development) - GC-Hewlett Packard Model 5890 - Detector; NPD/FPD GC-H (Method Development) Unit: - GC-Hewlett Packard Model 5890 Series II - Detector; FID/PID Unit: HPLC-A (8310) - LC-Hewlett Packard Model 1090 - Detector; Hewlett Packard 1046A diode array and flourescence detectors HPLC-B (531.1 Carbamates, 547 Glyphosates) - LC-Hewlett Packard Model 1090 Series II Unit: - Detector; Hewlett Packard 1046A diode array and fluorescence detectors

Bartlett QAP Section 9 Revision 2 August 19, 1994 Page 7 of 29

-

## TABLE 9.5

Equipment Listing for the Organic Preparation Department

Description	Manufacturer	Model
Sonicator	Fisher Scientific	Ultrasonic FS-14
Gel Permeation Cleanup (GPC) Device	ABC	Autoprep 1002B
Centrifuge	Dynac	Serial #15816
Oven, 105°c	Fisher	Isotemp 349
Balance; Toploader (1)	Mettler	PM600
Hood Vents (7)		

# TABLE 9.6

Equipment Listing for the Field Sampling Department

Description	Manufacturer	Model
Autosamplers (3)	ISCO	2910
Autosamplers (1)	ISCO	1580
Conductivity Meter	VWR	23226-523
pH Meter	Accumet	1001
Pressure Filtration Device	Geotech	
Field Sampling Vehicles (3)	Chevy and Ford Vans 4WD Chevy Pickup	
2 Inch PVC Bailer (1)		
2 Inch Stainless Steel I	Bailers (2)	
Downrigger with Tripod;	Big Jon	
Depth Meter with 250 ft. teflon tape	Solinst	
Depth Meter	Soiltest	DR-760A

Bartlett QAP Section 9 Revision 2 August 19, 1994 Page 8 of 29

...

# TABLE 9.6 (CONT.)

Teflon Coated Stainless Steel Line - 100 ft.

12 Gallon Carboy Nalgene

Toolbox with Tools

### Table 9.7

Summary of Methodology and Reporting Limits NET Midwest, Bartlett Division Wet Chemistry Department

Parameter	Method References	Reporting	g Limits
Acidity as CaCO3 Titrimetric	305.1 / 2310 (1,2)	5 50	mg/L ug/g
Alkalinity as CaCO3 Titrimetric	310.1 / 2320 (1,2)	5 50	mg/L ug/g
Ash	2540 (2)	0.01	%
Biological Oxygen Demand, D.O. elect. 5 day	405.1 / 5210 (1,2)	2	mg/L
Bottom Sediment & Water	D-96 (5)	0.1	%
Bromide Colorimetric	405 (1)	0.50	mg/L
Carbonaceous BOD5 D.O. electrode	405.1 / 5210 (1,2)	2	mg/L
Cation Exchange Capacity (CEC)	9080 (6)	1.0	meq/ 100g
Chemical Oxygen Demand (COD) Spectrophotometr	410.4 / 5220D (1,2) ric 3	20 ,350	mg/L ug/g
Chloride; Mercuric Nitrate Titration	325.3 / 4500-Cl C (1,2)	5 50	mg/L ug/g

Bartlett QAP Section 9 Revision 2 August 19, 1994 Page 9 of 29

-

.

Table 9.7 (Cont.)

Parameter	Method References	Reporting	g Limits
Chlorine DPD colorimetric	4500-Cl G (2)	0.10	mg/L
Coliform, Fecal membrane filter	909C (9)	1/100m]	L.
Coliform, Total membrane filter	909A (9)	1/100m1	Ľ
Coliform, Colilert	See Table 5.21	prescer abscer	nce/ nce
Color platinum cobalt units	110.2 (1)	10	АРНА
Conductivity umhos 25 degrees C	120.1 / 2510 B (1,2)	1	umhos/cm
Cyanide, Total and Amenable Spectrophotometric	335.1, 335.2 / 4500-CN A,B,C,E,G / 9010 (1,2,6)	0.002 0.10	mg/L ug/g
Cyanide, Reactive	7.3. (6)	0.25	ug/g
Density	2710 F (2)	0.1	g/cc
Extraction (TCLP) Inorganic/Organic/ZHE	1311 (7)		
Flash Point Pensky/Martin C.Cup	1010 (6)	25	degrees C
Fluoride, F- Ion Selective Elect.	340.2 / 4500-F C (1,2)	0.05	mg/L
Hardness, Total EDTA Titration	130.2 / 2340 B,C (1,2)	5	mg/L
Hexavalent Chromium Colorimetric	3500-Cr D / 7196 (2,6)	0.01 4	mg/L ug/g
Hydrogen Ion, pH Electrometric	150.1 / 9045 (1,6)	0.01	units

~--

Bartlett QAP Section 9 Revision 2 August 19, 1994 Page 10 of 29

-

•

Table 9.7 (Cont.)

Parameter	Method References	Reporting	g Limits
Methylene Blue Activated Substance (MBAS)	425.1 / 5540 C (1,2)	0.05	mg/L
Nitrogen, Ammonia Distillation, Nesslerization	350.2 / 4500-NH3 B,C (1,2)	0.50 15	mg/L ug/g
Nitrogen, Kjeldahl Semi-Automatic Block Digestor	351.2 / 4500-Norg B (1,2	2) 0.50	mg∕L
Nitrogen, Nitrate + Nitrite Manual Cd Reduction	353.3 / 4500-NO3 E (1,2)	0.10	mg/L
Nitrogen, Nitrate + Nitrite Electrode Method	4500-NO3 D (2)	0.50	mg/L
Nitrogen, Nitrite Spectrophotometric	354.1 / 4500-NO2 (1,2)	0.01	mg/L
Odor Threshold odor	140.1 / 2150 B (1,2)		T.O.N.
Oil & Grease Partition Grav. Soxhlet Hydrocarbons (nonpolar O&G)	413.1 / 5520 B (1,2) 5520 D (2) 5520 F (2)	5 0.005 5	mg/L % mg/L
Paint Filter Liquids Test	9095 (6)	Pass of	r Fail
Phenolics Spectrophotometric, Manual 4-AAP with Distillation	420.1 / 5530 B,C / 9065 (1,2,6)	0.020 0.50	mg/L ug/g
Phosphorus, Ortho and Total, Persulfate Digestion/Ascorbic Acid, Single Reagent	365.2 / 4500-P A,B,E (1,2)	0.02 4.0	mg/L ug/g

Bartlett QAP Section 9 Revision 2 August 19, 1994 Page 11 of 29

-

-

Table 9.7 (Cont.)

Parameter	Method References	Reporting	Limits	
Residue, Filterable Gravimetric 180 C	160.1 / 2540 C (1,2)	25	mg/L	
Residue, Non-Filterable Gravimetric 105 C	160.2 / 2540 D (1,2)	5	mg/L	
Residue, Settleable Volumetric, Imhoff	160.5 / 2540 F (1,2)	0.1	mL/L	
Residue, Total Gravimetric 105 C	160.3 / 2540 B (1,2)	0.01 25	% mg/L	
Residue, Volatile Gravimetric 550 C	160.4 / 2540 E (1,2)	0.01 25	% mg/L	
Silica Molybdosilicate	370.1 / 4500-Si D (1,2)	0.2	mg/L	
Specific Gravity	2710 F (2)	0.1	g/cc	
Standard Plate Count	907 (9) 1/1		)OmL	
Sulfate Turbidimetric	375.4 / 4500-SO4 2- E / 9038 (1,2,6)	10 100	mg/L ug/g	
Sulfide Methylene Blue	376.2 / 4500-S2- C,D (1,2)	0.10 1.0	mg/L ug/g	
Sulfide Reactive	7.3. (6)	2.5	ug/g	
Sulfite Titrimetric	377.1 / 4500-SO3 2- B (1,2)	2	mg/L	
Temperature	170.1 / 2550 B. (1,2)	0.1	degrees C	
Total Organic Carbon (TOC)	5310 C (2)	1.0	mg/L	
Turbidity Nephelometric	180.1 / 2130 B (1,2)	0.1	NTU	

Actual quantitation limits may be higher due to matrix interference or sample dilution. Adjustment of RLs for solid samples are based on sample weights.

Bartlett QAP Section 9 Revision 2 August 19, 1994 Page 12 of 29

Table 9.7 (Cont.)

Method References:

1. U.S. EPA 1983. <u>Methods for Chemical Analysis of Water and</u> <u>Wastes</u>. EMSL Cincinnati, Ohio, EPA-600/4-79-020.

2. APHA. 1989. <u>Standard Methods for the Examination of Water</u> and Wastewater. Seventeenth Edition. American Public Health Association, Washington, D.C.

3. NIOSH Manual of Analytical Methods, Third Edition.

4. Code of Federal Regulations. 40 CFR Part 761

5. ASTM - American Society for Testing Materials

6. U.S. EPA 1986. <u>Methods for Evaluating Solid</u> <u>Waste-Physical/Chemical Methods</u>. SW-846 Third Edition. Office of Solid Waste, U.S. EPA, Washington, D.C.

7. <u>Code of Federal Regulations</u>. 40 CFR Part 126 Appendix 2; Method 1311

8. U.S. EPA, EPA/600/4/84-008

9. APHA. 1985. <u>Standard Methods for the Examination of Water</u> <u>and Wastewater</u>. Sixteenth Edition. American Public health Association, Washington, D.C.

Bartlett QAP Section 9 Revision 2 August 19, 1994 Page 13 of 29

-

# Table 9.8

\_\_\_\_

Summary of Analytical Methodology and Reporting Limits NET - Bartlett Division Metals Department

PARAMETER	METHOD	REFER	RENCE	REI	PORTING	G LIMI	TS
Aluminum (Al) Direct Aspiration AA ICP	202.1/ 200.7/	7020 6010	(1,2) (3,2)	0.50 0.10	mg/L mg/L	25 0.5	ug/g ug/g
Antimony (Sb) Graphite Furnace AA ICP	204.2/ 200.7/	7041 6010	(1,2) (3,2)	0.0050 0.50	) mg/L mg/L	25	ug/g
Arsenic (As) Graphite Furnace AA ICP	206.2/ 200.7/	7060 6010	(1,2) (3,2)	0.0050	) mg/L mg/L	10	ug/g
Barium (Ba) Direct Aspiration AA ICP	208.1/ 200.7/	7080 6010	(1,2) (3,2)	0.50 0.020	mg/L mg/L	25 1.0	ug/g ug/g
Beryllium (Be) Direct Aspiration AA ICP	210.1/ 200.7/	7090 6010	(1,2) (3,2)	0.0050	) mg/L ) mg/L	0.25 0.25	ug/g ug/g
Boron (B) ICP	200.7/	6010	(3,2)	0.050	mg/L	2.5	ug/g
Cadmium (Cd) Direct Aspiration AA ICP	213.1/ 200.7/	7130 6010	(1,2) (3,2)	0.050 0.010	mg/L mg/L	2.5 0.50	ug/g ) ug/g
Calcium (Ca) Direct Aspiration AA	215.1/	7140	(1,2)	1.0	mg/L	50	ug/g
Chromium (Cr) Direct Aspiration AA ICP	218.1/ 200.7/	7190 6010	(1,2) (3,2)	0.040 0.040	mg/L mg/L	2.0 2.0	ug/g ug/g
Cobalt (Co) Graphite Furnace AA ICP	219.2/ 200.7/	7201 6010	(1,2) (3,2)	0.20 0.10	mg/L mg/L	10 5.0	ug/g ug/g
Copper (Cu) Direct Aspiration AA ICP	220.1/ 200.7/	7210 6010	(1,2) (3,2)	0.050 0.010	mg/L mg/L	2.5	ug/g ) ug/g

Bartlett QAP Section 9 Revision 2 August 19, 1994 Page 14 of 29

~

••

Table 9.8 (Cont.)

-----

PARAMETER	METHOD	REFERENCE	REPORTING	LIMITS
Iron (Fe) Direct Aspiration AA ICP	236.1/ 200.7/	7380 (1,2) 6010 (3,2)	0.10 mg/L 0.050 mg/L	5.0 ug/g 2.5 ug/g
Lead (Pb) Direct Aspiration AA Graphite Furnace AA ICP	239.1/ 239.2/ 200.7/	7420 (1,2) 7421 (1,2) 6010 (3,2)	0.10 mg/L 0.0050 mg/L 0.080 mg/L	5.0 ug/g 4.0 ug/g
Magnesium (Mg) Direct Aspiration AA	242.1/	7450 (1,2)	l.0 mg/L	50 ug/g
Mercury (Hg) Manual Cold Vapor AA	245.1/ 7471,	7470 (1,2)	0.0002 mg/L	0.02 ug/g
Molybdenum (Mo) Direct Aspiration AA ICP	246.1/ 200.7/	7480 (1,2) 6010 (3,2)	0.50 mg/L 0.10 mg/L	25 ug/g 5.0 ug/g
Nickel (Ni) Direct Aspiration AA ICP	249.1/ 200.7/	7520 (1,2) 6010 (3,2)	0.10 mg/L 0.050 mg/L	5.0 ug/g 2.5 ug/g
Potassium (K) Direct Aspiration AA	258.1/	7610 (1,2)	l.0 mg/L	50 ug/g
Selenium (Se) Hydride Gen AA (Mod.) ICP	3114B/ 200.7/	7741 (5,2) 6010 (3,2)	0.0050 mg/L 0.10 mg/L	5.0 ug/g
Silicon (Si) Direct Aspiration AA	3111 D	(5)	5.0 mg/L 2	50 ug/g
Silver (Ag) Direct Aspiration AA Graphite Furnace AA ICP	272.1/ 272.2/ 200.7/	7760 (1,2) 7761 (1,2) 6010 (3,2)	0.040 mg/L 0.0050 mg/L 0.050 mg/L	2.0 ug/g 2.5 ug/g
Sodium (Na) Direct Aspiration AA	273.1/	7770 (1,2)	1.0 mg/L	50 ug/g
Strontium (Sr) ICP	200.7/	6010 (3,2)	0.010 mg/L	0.50 ug/g
Thallium (Tl) Direct Aspiration AA Graphite Furnace AA	279.1/ 279.2/	7840 (1,2) 7841 (1,2)	0.50 mg/L 0.0050 mg/L	25 ug/g
ICP	200.7/	6010 (3,2)	0.20 mg/L	10 ug/g

Bartlett QAP Section 9 Revision 2 August 19, 1994 Page 15 of 29

-

••

Table 9.8 (Cont.)

\_\_\_\_

PARAMETER	METHOD REFERENCE	REPORTING LIMITS			
Tin (Sn) Direct Aspiration AA ICP	282.1/ 7870 (1,2) 200.7/ 6010 (1,2)	2.0 mg/L 100 ug/g 1.0 mg/L 50 ug/g			
Titanium (Ti) Direct Aspiration AA ICP	283.1 (1) 200.7/ 6010 (3,2)	1.0 mg/L 50 ug/g 0.020 mg/L 1.0 ug/g			
Vanadium (V) ICP	200.7/ 6010 (3,2)	0.050 mg/L 2.5 ug/g			
Zinc (Zn) Direct Aspiration AA ICP	289.1/ 7950 (1,2) 200.7/ 6010 (3,2)	0.050 mg/L 2.5 ug/g 0.020 mg/L 1.0 ug/g			
PREPARATIONS FOR METALS	ANALYSES				
Total Dissolved Metals 0.45 u filtration	4.1.1 (1)				
Total Metals, Aqueous ICP, Flame AA	4.1.3/ 3010 (1,2)				
Total Metals, Aqueous GFAA	3020 (2)				
Total Metals, Solids	3050 (2)				
Arsenic/Selenium Digestions	7061/7741 (2)				
Method References:					
1. Methods for Chemical Analysis of Water and Wastes. Cincinnati, Ohio: U.S. Environmental Protection Agency, 1979. EPA-600/4-79-020.					
2. Test Methods for Ev Methods. 3rd Edition Protection Agency, 1986	valuating Solid Waste . Washington, DC: . SW-846.	: Physical/Chemical U.S. Environmental			
3. Methods for the Samples. EMSL U.S. EPA;	Determination of Meta June 1991 EPA-600/4-9	ls in Environmental 91-010.			
4. ASTM- American Soci	ety for Testing and Ma	aterials, D1428-82.			
5. Standard Methods for 17th Edition. Wash Association, 1989.	r the Examination of M ington, DC: Americ	Water and Wastewater. can Public Health			
Bartlett QAP Section 9 Revision 2 August 19, 1994 Page 16 cf 29

# Table 9.9

Summary of GC/MS and GC Methodology and Reporting Limits NET Midwest, Bartlett Division Organics Departments

Parameter	Method References		Repor	ting L	imits
VOLATILE ORGANIC ANALY	TES				_
Acrolein	624, 8240 (1,2)	50	ug/L	50	ug/kg
Acetone	624, 8240	20	ug/L	50	ug/kg
Acrylonitrile	624, 8240	50	ug/L	50	ug/kg
Benzene	624, 8240 524.2 (3)	1.0 0.5	ug/L ug/L	2.0	ug/kg
Bromobenzene	524.2	1.0	ug/L		
Bromochloromethane	524.2	1.0	ug/L		
Bromodichloromethane	624, 8240 524.2	1.0 0.5	ug/L ug/L	2.0	ug/kg
Bromoform	624, 8240 524.2	1.0 0.5	ug/L ug/L	2.0	ug/kg
Bromomethane	624, 8240 524.2	1.0 2.0	ug/L ug/L	5.0	ug/kg
2-Butanone (MEK)	624, 8240	20	ug/L	50	ug/kg
n-Butylbenzene	524.2	1.0	ug/L		
tert-Butylbenzene	524.2	1.0	ug/L		
sec-Butylbenzene	524.2	1.0	ug/L		
Carbon disulfide	624, 8240	20	ug/L	20	ug/kg
Carbon tetrachloride	624, 8240 524.2	1.0 0.5	ug/L ug/L	2.0	ug/kg
Chlorobenzene	624, 8240 524.2	1.0 0.5	ug/L ug/L	2.0	ug/kg
Chloroethane	624, 8240 524.2	2.0 2.0	ug/L ug/L	7.0	ug/kg

Bartlett QAP Section 9 Revision 2 August 19, 1994 Page 17 of 29

Tab	le	9.	. 9	(Cont.	. )
				<b>N</b>	

-

Parameter	Method References		Reportin	g L:	imits
2-Chloroethylvinyl ethe:	r 624, 8240	2.0	ug/L	5.0	ug/kg
Chloroform	624, 8240 524.2	1.0 0.5	ug/L ug/L	2.0	ug/kg
Chloromethane	624, 8240 524.2	1.0 2.0	ug/L ug/L	7.0	ug/kg
o-Chlorotoluene	524.2	1.0	ug/L		
p-Chlorotoluene	524.2	1.0	ug/L		
Dibromochloromethane	624, 8240 524.2	1.0 0.5	ug/L ug/L	2.0	ug/kg
Dibromomethane	524.2	1.0	ug/L		
1,2-Dibromo-3-Chloroprop	pane 524.2	10	ug/L		
Dichloromethane	524.2	0.5	ug/L		
Dichlorodifluoromethane	524.2	1.0	ug/L		
o-Dichlorobenzene	624, 8240 524.2	1.0 0.5	ug/L ug/L	2.0	ug/kg
p-Dichlorobenzene	624, 8240 524.2	1.0 0.5	ug/L ug/L	2.0	ug/kg
m-Dichlorobenzene	624, 8240 524.2	1.0 1.0	ug/L ug/L	2.0	ug/kg
1,1-Dichloroethane	624, 8240 524.2	1.0 1.0	ug/L ug/L	2.0	ug/kg
1,2-Dichloroethane	624, 8240 524.2	1.0 0.5	ug/L ug/L	2.0	ug/kg
1,1-Dichloroethene	624, 8240 524.2	1.0 0.5	ug/L ug/L	2.0	ug/kg
cis-1,2,Dichloroethene	624, 8240 524.2	1.0 0.5	ug/L ug/L	2.0	ug/kg
trans-1,2-Dichloroethen	e 624, 8240 524.2	1.0 0.5	ug/L ug/L	2.0	ug/kg
1,2-Dichloropropane	624, 8240 524.2	1.0 0.5	ug/L ug/L	2.0	ug/kg

١

-

-

Bartlett QAP Section 9 Revision 2 August 19, 1994 Page 18 of 29

-

••

Table 9.9 (Cont.)

-----

Parameter	Method References		Reporti	ng L	imits
1,3-Dichloropropane	524.2	1.0	ug/L		
2,2-Dichloropropane	524.2	1.0	ug/L		
1,1-Dichloropropene	524.2	1.0	ug/L		
1,3-Dichloropropene	524.2	1.0	ug/L		
cis-1,3-Dichloropropene	624, 8240	1.0	ug/L	2.0	ug/kg
trans-1,3-Dichloroprope	ne 624, 8240	1.0	ug/L	2.0	ug/kg
Ethylbenzene	624, 8240 524.2	1.0 0.5	ug/L ug/L	2.0	ug/kg
Ethylene Dibromide (EDB	) 524.2	10	ug/L		
Fluorotrichloromethane	624, 8240 524.2	1.0 1.0	ug/L ug/L	2.0	ug/kg
Hexachlorobutadiene	524.2	1.0	ug/L		
2-Hexanone	624, 8240	20	ug/L	20	ug/kg
Isopropylbenzene	524.2	1.0	ug/L		
p-Isopropyltoluene	524.2	1.0	ug/L		
Methylene chloride	624, 8240	5.0	ug/L	20	ug/kg
4-Methyl-2-pentanone (M	IBK) 624, 8240	5.0	ug/L	20	ug/kg
Naphthalene	524.2	1.0	ug/L		
n-Propylbenzene	524.2	1.0	ug/L		
Styrene	624, 8240 524.2	1.0 0.5	ug/L ug/L	2.0	ug/kg
1,1,1,2-Tetrachloroetha	ne 524.2	0.5	ug/L		
1,1,2,2-Tetrachloroetha	ne 624, 8240 524.2	1.0 0.5	ug/L ug/L	3.0	ug/kg
Tetrachloroethene	624, 8240 524.2	1.0 0.5	ug/L ug/L	2.0	ug/kg

Bartlett QAP Section 9 Revision 2 August 19, 1994 Page 19 of 29

-

.

	Table	9.9	(Cont.	.)
--	-------	-----	--------	----

Parameter	Method References		Report	ing L	imits
Toluene	624, 8240 524.2	1.0 0.5	ug/L ug/L	2.0	ug/kg
1,2,3-Trichlorobenzene	524.2	1.0	ug/L		
1,2,4-Trichlorobenzene	524.2	0.5	ug/L		
1,1,1-Trichloroethane	624, 8240 524.2	1.0 0.5	ug/L ug/L	2.0	ug/kg
1,1,2-Trichloroethane	624, 8240 524.2	1.0 0.5	ug/L ug/L	2.0	ug/kg
Trichloroethene	624, 8240 524.2	1.0 0.5	ug/L ug/L	2.0	ug/kg
1,2,3-Trichloropropane	524.2	1.0	ug/L		
1,2,4-Trimethylbenzene	524.2	1.0	ug/L		
1,3,5-Trimethylbenzene	524.2	1.0	ug/L		
Vinyl acetate	624, 8240	5.0	ug/L	20	ug/kg
Vinyl chloride	624, 8240 524.2	1.0 0.5	ug/L ug/L	7.0	ug/kg
o-Xylene	524.2	0.5	ug/L		
m & p-Xylene	524.2	0.5	ug/L		
Xylenes Total	624, 8240	1.0	ug/L	3.0	ug/kg
SEMI-VOLATILE ORGANIC A	NALYTES - BASE/NEUT	RALS			
Acenaphthene	625, 8270 (1,2)	10	ug/L	330	ug/kg
Acenaphthylene	625, 8270	10	ug/L	330	ug/kg
Aniline	625, 8270	10	ug/L	330	ug/kg
Anthracene	625, 8270	10	ug/L	330	ug/kg
Benzidine	625, 8270	50	ug/L	1600	ug/kg
Benzo(a)anthracene	625, 8270	10	ug/L	330	ug/kg

Bartlett QAP Section 9 Revision 2 August 19, 1994 Page 20 cf 29

Table	9.9	(Cont.)

Parameter	Method References		Reporting Limits			
Benzo(b)fluoranthene	625, 8270	10	ug/L	330	ug/kg	
Benzo(k)fluoranthene	625, 8270	10	ug/L	330	ug/kg	
Benzo(g,h,i)perylene	625, 8270	10	ug/L	330	ug/kg	
Benzo(a)pyrene	625, 8270	10	ug/L	330	ug/kg	
Benzyl butyl phthalate	625, 8270	10	ug/L	330	ug/kg	
Bis(2-chloroethyl)ether	625, 8270	10	ug/L	330	ug/kg	
Bis(chloromethyl)ether	625, 8270	10	ug/L	330	ug/kg	
Bis(2-chloroethoxy)meth	ane 625, 8270	10	ug/L	330	ug/kg	
Bis(2-chloroethyl)ether	625, 8270	10	ug/L	330	ug/kg	
Bis(2-chloroisopropyl)e	ther 625, 8270	10	ug/L	330	ug/kg	
Bis(2-Ethylhexyl)phthal	ate 625, 8270	10	ug/L	330	ug/kg	
4-Bromophenyl phenyl et	her 625, 8270	10	ug/L	330	ug/kg	
4-Chloroaniline	625, 8270	20	ug/L	660	ug/kg	
2-Chloronaphthalene	625, 8270	10	ug/L	330	ug/kg	
4-Chlorophenyl phenyl e	ther 625, 8270	10	ug/L	330	ug/kg	
Chrysene	625, 8270	10	ug/L	330	ug/kg	
Dibenzo(a,h)anthracene	625, 8270	10	ug/L	330	ug/kg	
Dibenzofuran	625, 8270	10	ug/L	330	ug/kg	
Di-n-butylphthalate	625, 8270	10	ug/L	330	ug/kg	
1,2-Dichlorobenzene	625, 8270	10	ug/L	330	ug/kg	
1,3-Dichlorobenzene	625, 8270	10	ug/L	330	ug/kg	
1,4-Dichlorobenzene	625, 8270	10	ug/L	330	ug/kg	
3,3'-Dichlorobenzidine	625, 8270	20	ug/L	660	ug/kg	
Diethylphthalate	625, 8270	10	ug/L	330	ug/kg	

-

-

-

Bartlett QAP Section 9 Revision 2 August 19, 1994 Page 21 of 29

Table 9.9 (Cont.)

	Method References	Reporting Limits			
Parameter		10	ug/L	330 I	lg/kg
Dimethylphthalate	625, 8270	10	uq/L	330	ug/kg
2,4-Dinitrotoluene	625, 8270	10	ug/L	330	ug/kg
2,6-Dinitrotoluene	625, 8270	10	-97 -	330	ug/kg
Di-n-octylphthalate	625, 8270	10	ug/ =	330	ua/ka
1,2-Diphenylhydrazine	625, 8270	10		330	ug/kg
Fluoranthene	625, 8270	10	ug/L	230	ug/kg
Fluorene	625, 8270	10	ug/L	220	
Hexachlorobenzene	625, 8270	10	ug/L	330	ug/kg
Hexachlorobutadiene	625, 8270	10	ug/L	330	ug/ kg
Hexachlorocyclopentad	iene 625, 8270	10	ug/L	330	ug/kg
Hexachloroethane	625, 8270	10	ug/L	330	ug/kg
Tudeno (1 2 3-cd) pyrer	ne 625, 8270	10	ug/L	330	ug/kg
	625, 8270	10	ug/L	330	ug/kg
Isophorone	625, 8270	10	ug/L	330	ug/kg
2-MetnyInapirchalene	625, 8270	10	ug/L	330	ug/kg
Naphthalene	625. 8270	50	ug/L	1600	ug/kg
2-Nitroanaline	625, 8270	50	ug/L	1600	ug/kg
3-Nitroanaline	625, 8270	50	ug/L	1600	ug/kg
4-Nitroanaline	625, 6270	10	ug/L	330	ug/kg
Nitrobenzene	625, 8270	10	ug/L	330	ug/kg
N-Nitrosodimethylami	ine 625, 8270	10	ug/L	330	ug/kg
N-Nitrosodiphenylam:	ine 625, 8270	10	ua/L	330	) ug/kg
N-Nitrosodi-n-propy	lamine 625, 8270	10		, 33(	) ug/kg
Phenanthrene	625, 8270	1 C	י ייבי י	33	0 ua/ka
Pyrene	625, 8270	T	, uy/r		- ,, ,

-

-

Bartl	ett	ÇAF	þ
Secti	on 9		
Revis	ion	2	
Augus	t 19	, 1	.994
Page	22 c	f 2	29

-

-

Table 9.9 (Cont.)

Parameter	Meth	od References		Repor	ting I	imits
Pyridine	625,	8270	50	ug/L	1650	ug/kg
1,2,4-Trichlorobenzene	625,	8270	10	ug/L	330	ug/kg
ACIDS						
Benzoic acid	625,	8270	50	ug/L	1600	ug/kg
Benzyl Alcohol	625,	8270	20	ug/L	660	ug/kg
4-Chloro-3-methylphenol	625,	8270	10	ug/L	330	ug/kg
2-Chlorophenol	625,	8270	10	ug/L	330	ug/kg
2,4-Dichlorophenol	625,	8270	10	ug/L	330	ug/kg
2,4-Dimethylphenol	625,	8270	10	ug/L	330	ug/kg
2,4-Dinitrophenol	625,	8270	50	ug/L	1600	ug/kg
2-Methyl-4,6-dinitrophe	nol 6	25, 8270	50	ug/L	1600	ug/kg
2-Methylphenol (o-Creso	l) 62	5, 8270	10	ug/L	330	ug/kg
4-Methylphenol (p-Creso	1) 62	5, 8270	10	ug/L	330	ug/kg
Cresols, Total	625,	8270	10	ug/L	330	ug/kg
2-Nitrophenol	625,	8270	10	ug/L	330	ug/kg
4-Nitrophenol	625,	8270	50	ug/L	1600	ug/kg
Pentachlorophenol	625,	8270	50	ug/L	1600	ug/kg
Phenol	625,	8270	10	ug/L	330	ug/kg
2,4,5-Trichlorophenol	625,	8270	10	ug/L	330	ug/kg
2,4,6-Trichlorophenol	625,	8270	10	ug/L	330	ug/kg

Bartlett QAP Section 8 Revision 2 Sept. 12, 1994 Page 3 of 6

An initial calibration verification standard is analyzed with each new calibration. This standard is prepared from an independent source standard different than that used for the instrument calibration. The ICV standard must be recovered within the acceptance criteria of the analytical method or bench SOP.

Continuing Calibration Verification Standards (CCVS) are analyzed according to the analytical SOP schedule, typically every 10 samples or 14 injections (whichever comes first) or every 24 hours. If the CCVS does not meet the analytical method specifications then the instrument must be recalibrated.

All initial and subsequent continuing calibration verifications are recorded.

ATOMIC ABSORPTION SPECTROPHOTOMETER

Calibration Standards

The calibration stock solutions and the calibration standards are prepared from NIST traceable standards where possible. The lot number, date prepared, date of expiration and the analyst who prepared the standard are recorded in the standard preparation record book. The process is as follows:

- 1. Calibration standards are prepared by dilution of the stock standard.
- 2. The calibration standards are prepared using the same type of acid or combination of acids as the sample will have after digestion.

Calibration Procedure

The instruments are calibrated for every analytical run sequence beginning with a blank and three standards, analyzing them from lowest to the highest concentration. The acceptance criteria for the calibration curve is a correlation coefficient of greater than 0.995.

After the instrument is calibrated, the calibration curve is verified by analyzing an initial calibration verification sample (ICV). The ICV is an EPA quality control concentrate or an independent known from a supplier different than the supplier of the stock standard and it has a concentration that was not used to generate the curve.

If the ICV sample analysis exceeds the control limits, the analysis is ended and the problem is investigated and corrected. The instrument is then recalibrated and the ICV analyzed again.

Bartlett QAP Section 8 Revision 2 Sept. 12, 1994 Page 4 of 6

Sample analysis can only begin after the ICV has been recovered within the acceptance criteria.

To assure calibration accuracy throughout each analytical run, a continuing calibration verification sample (CCV) must be analyzed at a frequency of 10% during the analytical run. The CCV is also analyzed after the last sample on the analytical run. If a CCV is outside the control limits, the analysis must be terminated and the analysis started back at the last CCV which was in control. If the CCV continues to fall outside of the control limits the instrument may need to be recalibrated or resloped followed by an ICV and begin the analysis where the last CCV was in control.

The initial calibration as well as all subsequent calibrations and calibration verifications are documented.

ICP Calibration Procedure

The instrument is calibrated for every analytical run sequence with a blank and one standard for each analyte of interest.

A series of Spectral Interference Check Standards (SICs) are analyzed. If the SICs do not meet the specified acceptance criteria the problem is investigated and corrected.

The calibration curve is verified by analyzing an Initial Calibration Verification sample (ICV). The ICV is an EPA quality control concentrate or an independent known from a supplier different than the supplier of the stock standard and it has a concentration that was not used to generate the curve.

To assure calibration accuracy throughout the analytical run, a continuing calibration verification sample must be analyzed every 10 samples at a minimum. If a CCV does not meet specified acceptance criteria then the samples following a failed CCV must be repeated on another run or bracketed by acceptable CCVs.

The initial calibration as well as all subsequent calibrations and calibration verifications are documented and archived.

WET CHEMISTRY DEPARTMENT

Calibration Standards

Calibration standards are made from high quality materials. The supplier, date prepared, expiration date and the analyst who prepared the standard are documented in the standard preparation record book. All stock solutions as well as calibration standards are labeled with the parameter, date prepared, expiration date and the analysts initials. Stock solutions have

Bartlett QAP Section 8 Revision 2 Sept. 12, 1994 Page 5 of 6

a shelf life of no more than 1 year from preparation.

Depending upon the analyte, calibration procedures will vary. Following is the typical calibration procedures for the majority of the Wet Chemistry methods.

Some Wet Chemistry parameters require the use of a 5 point referenced calibration curve. The data used in plotting a referenced calibration curve will consist of a blank and a minimum of 5 standards evenly distributed throughout the range of the method. This data must be collected under the same conditions as those that will exist during routine analyses. Because of their importance, two sets of data are required for calibration curves, each being performed at different times. The standard calibration curve is prepared by plotting the absorbance values of standards (y-axis) versus the corresponding concentration (x-axis). The standard absorbance values should be corrected for the blank value where required, but the blank is not included in the curve itself, unless the instrument manufacturers instructions state otherwise. This may occur on instruments which have a data system capable of drawing the curve.

For analytes which are calibrated daily, a blank and a minimum of three calibration standards are required for the calibration of the instrument. These standards are evenly distributed throughout the range of the method. The curve is plotted as described above for a five point curve.

For analytes which are not calibrated using the above procedures, the manufacturers recommended calibration procedures are used.

Each calibration requiring the use of multiple standards for the calibration curve, a correlation coefficient of 0.995 or greater must be achieved using all calibration standards. The blank must not be included in the calibration, unless instrument manufacturers instructions state otherwise.

From the linear least square model, back calculate the standards' values. These values must not differ from the theoretical standards' values by more than +/-10% for the upper level standards and +/-20% for the low standard on the curve.

Every calibration curve is verified by analyzing an Initial Calibration Verification Standard (ICVS) and obtaining a value within +/-10% of the true value or within the acceptance ranges established according to averages reported by the independent agency supplying the standard.

Continuing Calibration Verification Standards (CCVS) are analyzed at a minimum of 1 per 20 samples to verify that the calibration of the instrument is still valid throughout the analytical run. Both the initial and subsequent calibration verifications are

Bartlett QAP Section 8 Revision 2 Sept. 12, 1994 Page 6 of 6

.

recorded in the proper record books.

# ANALYTICAL BALANCES

All analytical balances are calibrated annually by a certified technician. All analytical balances are checked daily or at each use with a designated weight. The calibration checks must have a weight which does not exceed limits described in the NET "Balance Calibration SOP". Any deviation must result in a new calibration with verification using the class "S" weights.

Bartlett QAP Section 9 Revision 2 August 19, 1994 Fage 23 of 29

-

••

Table 9.9 (Cont.)

\_

. \_\_\_\_

Parameter 1	Method References		Report	ing Li	imits
GC VOLATILE ANALYTES	· · · · · · · · · · · · · · · · · · ·	<u> </u>			
1,2-Dibromo-3-chloropropa (DBCP)	ane 504 (3)	0.02	ug/L		
Ethylene Dibromide (EDB)	504	0.01	ug/L		
Benzene	602, 8020 (1,2)	1.0	ug/L	2.0	ug/kg
Ethyl Benzene	602, 8020	1.0	ug/L	2.0	ug/kg
Toluene	602, 8020	1.0	ug/L	2.0	ug/kg
Xylene	602, 8020	1.0	ug/L	2.0	ug/kg
GC SEMIVOLATILE ANALYTES					
2,4-D	8150,	2.0	ug/L	20	ug/kg
	515.1 (3)	0.1	ug/L		
2,4,5-TP (Silvex)	8150, 509B 515.1	2.0 0.2	ug/L ug/L	20	ug/kg
Dalapon	515.1	1.0	ug/L		
Dinoseb	515.1	0.2	ug/L		
Pentachlorophenol	515.1	0.04	ug/L		
Picloram	515.1	0.1	ug/L		
Alachlor	507 (3)	0.2	ug/L		
Aldrin	608,	0.05	i ug/L	5.0	ug/kg
	508 (3)	0.05	i ug/L		
Atrazine	507	0.1	ug/L		
alpha-BHC	608, 8080	0.05	i ug/L	5.0	ug/kg
beta-BHC	608, 8080	0.05	i ug/L	5.0	ug/kg
delta-BHC	608, 8080	0.05	i ug/L	5.0	ug/kg

Bartlett QAP Section 9 Revision 2 August 19, 1994 Page 24 of 29

	Table	9.9	(Cont.	
--	-------	-----	--------	--

Parameter Method	d References	Reporting Limits	s
gamma-BHC (Lindane)	608, 8080 508	0.05 ug/L 5.0 ug/l 0.02 ug/L	kg
Chlordane	608, 8080 508	0.50 ug/L 50 ug/l 0.2 ug/L	kg
4,4'-DDD	608, 8080	0.10 ug/L 10 ug/l	kg
4,4'-DDE	608, 8080	0.10 ug/L 10 ug/1	kg
4,4'-DDT	608, 8080	0.10 ug/L 10 ug/J	kg
Total DDT	508	1.0 ug/L	
Dieldrin	608, 8080 508	0.10 ug/L 10 ug/l 0.05 ug/L	kg
Endosulfan I	608, 8080	0.05 ug/L 5.0 ug/l	kg
Endosulfan II	608, 8080	0.10 ug/L 10 ug/	kg
Endosulfan Sulfate	608, 8080	0.10 ug/L 10 ug/	kg
Endrin	608, 8080 508	0.10 ug/L 10 ug/l 0.01 ug/L	kg
Endrin Aldehyde	608, 8080	0.10 ug/L 10 ug/J	kg
Heptachlor	608, 8080 508	0.05 ug/L 5.0 ug/l 0.04 ug/L	kg
Heptachlor Epoxide	608, 8080 508	0.05 ug/L 5.0 ug/l 0.02 ug/L	kg
Hexachlorobenzene	505 (3)	0.1 ug/L	
Hexachlorocyclopentadiene	505	0.1 ug/L	
Methoxychlor	608, 8080 508	0.50 ug/L 50 ug/1 0.1 ug/L	kg
Simazine	507	0.07 ug/L	
Toxaphene	608, 8080 508	0.50 ug/L 50 ug/ 1.0 ug/L	kg
Di (2-ethylhexyl) adipate	506 (8)	0.6 ug/L	
Di (2-ethylhexyl) phthalate	506	0.6 ug/L	

•

-

-

Bartlett QAP Section 9 Revision 2 August 19, 1994 Page 25 of 29

-

-

Table	9.9	(Cont.)
-------	-----	---------

\_\_\_\_\_

Parameter	Method	Refere	ences		Report	ting	Limits
Aroclor 1016		608, 508	8080	1.0 0.5	ug/L ug/L	100	ug/kg
Aroclor 1221		608, 508	8080	1.0 0.5	ug/L ug/L	80	ug/kg
Aroclor 1232		608, 508	8080	1.0 0.5	ug/L ug/L	80	ug/kg
Aroclor 1242		608, 508	8080	1.0 <sup>°</sup> 0.5	ug/L ug/L	80	ug/kg
Aroclor 1248		608, 508	8080	1.0 0.5	ug/L ug/L	80	ug/kg
Aroclor 1254		608, 508	8080	1.0 0.5	ug/L ug/L	100	ug/kg
Aroclor 1260		608, 508	8080	1.0 0.5	ug/L ug/L	100	ug/kg
PCBs as Decachlorobipher	nyl	508A	(3)	1.0	ug/L		
Total Petroleum Hydroca:	rbons	Cali: Metho	fornia od				
HPLC SEMIVOLATILE ANALY	TES						
Acenaphthene		8310 (2)	0.0	18 m	g/L (	0.660	mg/kg
Acenaphthylene		8310	0.0	10 1	mg/L	0.660	mg/kg
Anthracene		8310	0.0	066	mg/L	0.660	mg/kg
Benzo(a)anthracene		8310	0.0	0013	mg/L	0.002	6 mg/kg
Benzo(b)fluoranthene		8310	0.0	0018	mg/L	0.003	6 mg/kg
Benzo(k)fluoranthene		8310	0.0	0017 :	mg/L	0.003	4 mg/kg
Benzo(a)pyrene		8310 550	0.0 (8)	0023	mg/L 2 ug/L	0.004	6 mg/kg
Benzo(g,h,i)perylene		8310	0.0	0076	mg/L	0.051	mg/kg
Chrysene		8310	0.0	0015	mg/L	0.030	mg/kg

Bartlett ÇAP Section 9 Revision 2 August 19, 1994 Page 26 of 29

~

-

Table 9.9 (Cont.)

-----

Parameter	Method	Referen	ces	Repo	rting L	imits
Dibenzo(a,h)anthracene		8310	0.00030	mg/L	0.006	mg/kg
Fluoranthene		8310	0.0021	mg/L	0.660	mg/kg
Fluorene		8310	0.0021	mg/L	0.140	mg/kg
Indeno(1,2,3-cd)pyrene		8310	0.0021	mg/L	0.0086	mg/kg
Naphthalene		8310	0.010	mg/L	0.025	mg/kg
Phenanthrene		8310	0.0064	mg/L	0.660	mg/kg
Pyrene		8310	0.0027	mg/L	0.180	mg/kg
Aldicarb		531.1	(3) 0.	5 ug/	L	
Aldicarb Sulfone		531.1	0.0	5 ug/	L	
Aldicarb Sulfoxide		531.1	0.5	5 ug/	L	
Carbaryl		531.1	0.!	5 ug/	L	
Carbofuran		531.1	0.9	9 ug/	L	
3-Hydroxycarbofuran		531.1	1.0	0 ug/	L	
Methiocarb		531.1	1.0	0 ug/	L	
Methomyl		531.1	0.9	5 ug/	L	
Oxamyl		531.1	3.0	0 ug/	L	
Propoxur		531.1	0.5	5 ug/	L	
Glyphosate		547 (8)	) 6.0	0 ug/	L	
Endothall		548 (8)	) 9.0	0 ug/	L	
Diquat		549 (8)	) 0.4	4 ug/	L	
SAMPLE PREPARATION FOR (	ORGANIC	ANALYSE	S			
Liquid/Liquid Extraction Separatory Funnel	n	3510 (2	2)		NA	

Liquid/Liquid Extraction Continuous Extraction 3520 (2) NA

Bartlett QAP Section 9 Revision 2 August 19, 1994 Page 27 of 29

Table 9.9 (Cont.)

Parameter	Method References	Reporting Limits
Solid/Liquid Extraction Soxhlet Extraction	3540 (2)	NA
Solid/Liquid Extraction Sonication Extraction	3550 (2)	NA
Waste Sample Waste Dilution	3580 (2)	NA
Volatile Sample Methanol Extraction	5030 (2)	NA
Alumina Cleanup (Modifie Florisil Cleanup Silica Gel Cleanup Acid-Base Cleanup Sulfur Cleanup GPC Cleanup	ed) 3610 (2) 3620 (2) 3630 (2) 3650 (2) 3660 (2) 3640 (2)	NA NA NA NA NA

#### NA - Not Applicable

According to each method, compound lists may be extended upon QC approval.

## Method References:

(1). U.S. EPA 1984. <u>Methods for Organic Chemical Analysis for</u> <u>Municipal and Industrial Wastewater</u>. Appendix A. 40 CFR Part 136. Federal Register, Vol. 49, No. 209, 1984.

(2). U.S. EPA 1986. <u>Test Methods for Evaluating Solid</u> <u>Waste-Physical/Chemical Methods</u>. SW-846 Third Edition. Office of Solid Waste, U.S. EPA, Washington D.C.

(3). U.S. EPA 1988. <u>Methods for the Determination of Organic</u> <u>Compounds in Drinking Water</u>. EPA/EMSL, Cincinnati, Ohio, EPA/600/4-88-039.

(4). APHA. 1985. <u>Standard Methods for the Examination of Water</u> <u>and Wastewater</u>. Sixteenth Edition. American Public Health Association, Washington, D.C.

(5). U.S. EPA 1983. <u>Methods for Chemical Analysis of Water and</u> <u>Wastes</u>. EMSL Cincinnati, Ohio, EPA-600/4-79-020.

(6). NIOSH. Manual of Analytical Methods, Third Edition.

Bartlett ÇAP Section 9 Revision 2 August 19, 1994 Page 28 of 29

-

•••

# Table 9.9 (Cont.)

\_\_\_\_

(7). USEPA EMSL, Cincinnati, Ohio; <u>The Analysis of</u> <u>Trihalomethanes in finished Waters by the Purge and Trap Method</u>. November 6, 1979

(8). U.S. EPA 1990. <u>Methods for the Determination of Organic</u> <u>Compounds in Drinking Water</u>. EPA/EMSL, Cincinnati, Ohio, EPA/600/4-90/020, July 1990.

Bartlett QAP Section 9 Revision 2 August 19, 1994 Page 29 of 29

Figure 9.1 NET Bartlett Division - Laboratory Floor Plan



Bartlett QAP Section 10 Revision 2 November 1, 1993 Page 1 of 7

#### SECTION 10

## Data Reduction, Validation, and Reporting

# Data Reduction

Analytical results are reduced to appropriate concentration units which are dictated by the analytical method. Data is recorded in a bound, numbered logbook or on computer print-out forms. Where required by method, blank correction will be applied. Calculations will be independently verified by appropriate laboratory staff.

### Data Validation

Data validation is the process of evaluating data and either accepting or rejecting it based upon a set of criteria. NET data review personnel and/or supervisory personnel validate laboratory data with the use of the following criteria:

- proper sample collection
- use of Standard Operating Procedures or other approved analytical procedures
- use of properly operating and calibrated instruments
- precision and accuracy comparable to that obtained in similar analytical programs

Records on all data will be maintained. These records include the chromatograms, strip charts and laboratory notebooks. Persons validating the data will have a sufficient knowledge of the technical work to identify questionable values.

# Data Reporting

All reports will be assembled and approved by the project manager, and delivered to the client within the agreed upon time period in a standard format.

Any additional information required by the client, such as operating conditions, QA/QC data, recommendations, method citations or problems will be reported by the Project Manager.

Occasionally a report must be re-issued due to the addition of test or correction of an error. When the report is re-issued, a notation of "Corrected" is to be placed on the page of the report.

Bartlett QAP Section 10 Revision 2 November 1, 1993 Page 2 of 7

### Data Release to Third Parties

The following description is taken from "NET Terms and Conditions":

"NET will not intentionally divulge to any person (other than the Client or any other person designated by the Client in writing) any information regarding the services, or any information disclosed to NET by the Client. This shall not apply to the extent that the information is required to be disclosed by NET under the compulsion of legal process, NET will, to the extent feasible, provide reasonable notice to the client before disclosing the information."

## REPORTING SCHEME

Figure 10.1 shows the analytical data reporting scheme from analysis to archival of analytical results. Figure 10.2 is an example of a routine report and Figure 10.3 is an example of a "Corrected" report. A variety of report formats are available to meet your specific needs.

## INTERNAL COMMUNICATION

Figures 10.4 and 10.5 are examples of forms which have been instituted for the purpose of communicating information and maintaining documentation of this information within the laboratory. Figure 10.4 is the Laboratory Notification Form which allows information such as matrix problems, incorrect sample preservatives, or unusual observations to be communicated. Figure 10.5 is the Analysis Re-Evaluation Request Form which allows the Project Manager or Data Review Clerk to request a re-evaluation of a parameter with the type of action to take and the sample number(s) in question. Response information such as the reason for the difference noted (if any), problem corrected, and the type of action that will be needed is collected. These forms are directed through the QA Coordinator with copies being retained in respective project files.

Bartlett QAP Section 10 Revision 2 November 1, 1993 Page 3 of 7

Figure 10.1 Analytical Data Review and Reporting Scheme



Bartlett QAP Section 10 Revision 2 November 1, 1993 Page 4 of 7

# Figure 10.2 Routine Report Format



NATIONAL ENVIRONMENTAL ® TESTING, INC. Bartlett Division 850 W. Bartlett Ro Bartlett HL 60103 Teil (708) 269-3100 Fax. (708) 269-5445

# ANALYTICAL REPORT

Mr. or Ms. Customer10/25/1993GREATEST COMPANY IN THE WORLD11 Main StreetSample No. : xxxxx5Small Town, USA 60777NET Job No.: 93.xxxx5

Sample Description: Lincoln - Hanover Park

Date	Taken:	10/18/1993	Date	Received:	10/18/1993
Time	Taken:	20:00	Time	Received:	11:15
IEPA	Cert. No	b. 100221	WDNR	Cert. No.	999447130

Parameter	Results	Units	Date of	Nethod	Analyst	Batch Ho.	Analytical
			Analysis	POL		Prep/Run	Hethod
TCLP, Metals	Leached		10/18/1993		jas	201	1311 (1)
Metals Prep, TCLP	Complete		10/20/1993		jæt	438	3010 (1)
Metals Prep, Ag TCLP	Complete		10/22/1993		edo	170	7760 (1)
Hetals Prep, Hg TCLP	Complete		10/22/1993		edo	288	
TCLP - ICP	Complete		10/24/1993		jat	984	6010 (1)
TCLP-Arsenic, ICP	<0.20	ag∕l	10/24/1993	0.20	jæt	438 702	6010 (1)
TCLP-Barium, ICP	0.347	mg/L	10/24/1993	0.020	jant	438 651	6010 (1)
TCLP-Cadmium, ICP	<0.010	mg/L	10/24/1993	0.010	jæt	438 623	6010 (1)
TCLP-Chromium, ICP	<0.040	mg/L	10/24/1993	0.040	jat	438 613	6010 (1)
TCLP-Lead, ICP	<0.080	mg/L	10/24/1993	0.080	jet	438 774	6010 (1)
TCLP-Mercury, CVAA	<0.0004 0	2 mg/L	10/24/1993	0.0002	jet	288 291	7470 (1)
TCLP-Selenium, 1CP	<0.10	mg/L	10/24/1993	0.10	j∎t	438 535	6010 (1)
TCLP-Silver, AA	<0.040	<b>mg/</b> L	10/24/1993	0.040	edo	170 200	7760 (1)
TCLP Organic Prep	Leached		10/20/1993		jas	85	
Prep, BNA Extract (TCLP)	extracted		10/22/1993		Las	210	3500 (1)
TCLP-ACID COMPOUNDS - 8270							
TCLP-Cresols, Total	<0.10	mg/L	10/24/1993	0.10	rla	210 416	8270 (1)
TCLP-3-Nethylphenol (m-cresol)	<0.10	mg/L	10/24/1993	0.10	rla	210 416	8270 (1)
TCLP-2-Hethylphenol (o-Cresol)	≪0.10	mg/l	10/24/1993	0.10	rla	210 416	8270 (1)
TCLP-4-Nethylphenol (p-Cresol)	⊲0.10	mg∕L	10/24/1993	0.10	rta	210 416	8270 (1)
TCLP-Pentachlorophenol	<0.50	mg/L	10/24/1993	0.50	rla	210 416	8270 (1)
TCLP-2,4,5-Trichlorophenol	<0.50	mg/L	10/24/1993	0.50	rta	210 416	8270 (1)
TCLP-2,4,6-Trichtorophenol	<0.10	mg/L	10/24/1993	0.10	rla	210 416	8270 (1)
Surr: Phenol-dó	53	2	10/24/1993	10-110	ria	210 416	8270 (1)
Surr: 2-Fluorophenol	51	X	10/24/1993	43-116	ria	210 416	8270 (1)
Surr: 2,4,6-Tribromophenol	77	2	10/24/1993	10-123	rta	210 416	8270 (1)

D2: Parameter analysis performed at a 2x dilution.



.

Bartlett QAP Section 10 Revision 2 November 1, 1993 Page 5 of 7

# Figure 10.3 "Corrected" Report



Bartiett Division 850 W. Bartiett Ro Bartiett, 1L 60103 Tel. (708) 289-3100 Fax. (708) 289-5445

•

# ANALYTICAL REPORT

Mr. or Ms. Customer		10/25/1993	
1 Main Street	HE WORLD	Sample No. :	xxxxx5
Small Town, USA 6077	7	NET JOD NO.:	93.xxxx5

Sample Description: Lincoln - Hanover Park

Date Taken: 10/18/1993 Time Taken: 20:00 IEPA Cert. No. 100221 Date Received: 10/18/1993 Time Received: 11:15 WDNR Cert. No. 999447130

Parameter	Results	Units	Date of	Hethod	Analyst	Batch No.	Analytical
			Analysis	POL		Prep/Run	Hethod
TCLP, Metals	Leached		10/18/1993		jas	201	1311 (1)
Metals Prep, TCLP	Complete		10/20/1993		jmt	438	3010 (1)
Retals Prep, Ag TCLP	Complete		10/22/1993		edo	170	7760 (1)
Metals Prep, Hg TCLP	Complete		10/22/1993		edo	268	
TCLP - TCP	Complete		10/24/1993		jæt	984	6010 (1)
TCLP-Arsenic, ICP	<0.20	mg/1	10/24/1993	0.20	jast	438 702	6010 (1)
TCLP-Barium, ICP	0.347	mg/l	10/24/1993	0.020	jmt	438 651	6010 (1)
TCLP-Cadmium, ICP	<0.010	mg/l	10/24/1993	0,010	jant	438 623	6010 (1)
TCLP-Chromium, ICP	<0.040	mg/L	10/24/1993	0.040	jant	438 613	6010 (1)
TCLP-Lend, ICP	<0.080	mg/L	10/24/1993	0.080	jmt	438 774	6010 (1)
TCLP-Hercury, CVAA	<0.0004 02	mg/L	10/24/1993	0.0002	jet	288 291	7470 (1)
TCLP-Selenium, ICP	<0.10	eg/L	10/24/1993	0.10	jant	438 535	6010 (1)
TCLP-Silver, AA	<0.040	mg/L	10/24/1993	0.040	edo	170 200	7760 (1)
TCLP Organic Prep	Leached		10/20/1993		jas	85	
Prep, BNA Extract (TCLP)	extracted		10/22/1993		las	210	3500 (1)
TCLP-ACID COMPOUNDS - 8270							
TCLP-Cresols, Total	<0.10	mg/L	10/24/1993	0.10	rta	210 416	8270 (1)
TCLP-3-Hethylphenal (m-cresol)	<0.10	mg/L	10/24/1993	0.10	ria	210 416	8270 (1)
TCLP-2-Hethyiphenol (o-Cresol)	<0.10	mg/L	10/24/1993	0.10	ria	210 416	8270 (1)
TCLP-4-Methylphenol (p-Cresol)	<0.10	mg/L	10/24/1993	0.10	rla	210 416	8270 (1)
TCLP-Pentachlorophenol	<0.50	mg∕l	10/24/1993	0.50	rla	210 416	8270 (1)
TCLP-2,4,5-Trichlorophenol	<0.50	mg/L	10/24/1993	0.50	rta	210 416	8270 (1)
TCLP-2,4,6-Trichlorophenol	<0.10	mg/L	10/24/1993	0.10	ria	210 416	8270 (1)
Surr: Phenol-dó	53	x	10/24/1993	10-110	rla	210 416	8270 (1)
Surr: 2-Fluorophenol	51	x	10/24/1993	43-116	rla	210 416	8270 (1)
Surr: 2,4,6-Tribromophenol	77	x	10/24/1993	10-123	rla	210 416	8270 (1)

CORRECTED REPORT

D2: Parameter analysis performed at a 2x dilution.



Bartlett QAP Section 10 Revision 2 November 1, 1993 Page 6 of 7

•

.

# Figure 10.4 Laboratory Notification Form

LABORATORY NOTIFICATION FORM

Date Initiated:		
SAMPLE NUMBER(S):		JOB NO
PARAMETER:	D	EPARTMENT:
CLIENT:	A	NALYST:
DEVIATION/CONCERN:		
· · · · · · · · · · · · · · · · · · ·		
ACTION RECOMMENDED:		
	<u> </u>	
RESPONSE NEEDED TO THI	E LAB BY:	
CLIENT CONTACT	YES	סא
CONTACT NAME:		DATE:
COMMENTS:		·
	····-	
		·····
		······································
Whice form	Project Manager	
has been	Operations Manager	(NEC)
copied to:	Division Manager OA/QC Coordinator	(TAG) (RCK)
	Customer Service	(KAP) (DGW)
	Marketing	(MLK) (GTS)
	Login Lab Staff	

Bardett Division

Bartlett QAP Section 10 Revision 2 November 1, 1993 Page 7 of 7

# Figure 10.5 Analysis Re-Evaluation Request Form

# **RE-EVALUATION REQUEST FORM**

Department:

Due Date:\_\_\_\_\_

Parameter:\_\_\_\_\_

Job Number:\_\_\_\_\_ Client:\_\_\_\_\_ Requested By:\_\_\_\_\_

Date Completed:\_\_\_\_\_

Request Date:\_\_\_\_\_

\_\_\_\_\_

Sample ID	Original Result	RER Result	Explanation

Reason for Req	uest:		
Check	QC	. <u></u>	Other
Check	Calculations	·····	Repeat Analysis
Action Request	eu.		check baca Entry

Action	Taken:	Routing	:
	Contacted Client		Dept Supervisor
	No action needed		Project Manager
	Entered new results		QA/QC Officer
	Issued corrected report		Ops Manager
	Cther		

Bartlett QAP Section 11 Revision 2 May 5, 1994 Page 1 of 11

#### SECTION 11

# Internal Quality Control and Frequency

# INTERNAL QUALITY CONTROL

Internal quality control makes use of several types of QC samples to monitor the performance of the measurement process. Quality control checks are analyzed to ensure the generation of accurate and valid data on client samples. Below is a list of the types of QC samples used in the laboratory.

### Method Blank

A DI water sample that is prepared in the laboratory just like a sample. The method blank is analyzed with samples that were processed at the same time as the blank. The method blanks are used to assess the extent of contamination, if any, obtained during the preparation process.

## Laboratory Reagent Blank (LRB)

A DI water sample that is prepared in the laboratory just like a sample. The method blank is analyzed with samples that were processed at the same time as the blank. The method blanks are used to assess the extent of contamination, if any, obtained during the preparation process. This term is most commonly used in drinking water methodology.

#### Solvent/Reagent Blank

A blank prepared from any solvent or reagent lot used in the analysis. This blank is used to assess any background contamination of the solvents/reagents.

## Holding Blanks

A DI water blank that is placed in the storage location for volatile organic samples. A holding blank will be analyzed on a weekly basis. This blank is used to assess any cross contamination of the volatile samples stored in the particular location.

# Initial Calibration Verification Standard (ICV)

The calibration of an instrument is checked with this standard prepared from a source other than that used to calibrate the instrument. An ICV is analyzed after each new calibration of an instrument.

Bartlett CAP Section 11 Revision 2 May 5, 1994 Page 2 of 11

### Continuing Calibration Verification (CCV)

During the analytical run, at a minimum frequency of one CCV per 20 samples, the mid-range calibration standard is re-analyzed to assess the calibration of the instrument.

### Matrix Spike/Matrix Spike Duplicate (MS/MSD)

A sample is split into three aliquots. One aliquot of the sample is set aside. The other two aliquots are spiked with a known concentration of the analyte(s). All three aliquots are prepared in the same manner and analyzed in the same analytical batch. Precision can then be determined by comparing the matrix spike/matrix spike duplicate (MS/MSD) pair. Accuracy can be determined from the matrix of interest by calculating the recovery of the spiked analytes.

Laboratory Fortified Sample (LFS)

A sample is split into two aliquots. One aliquot of the sample is set aside. The other aliquots is spiked with a known concentration of the analyte(s). Both aliquots are prepared in the same manner and analyzed in the same analytical batch. Accuracy can be determined from the matrix of interest by calculating the recovery of the spiked analytes. This term is most commonly used in drinking water methodology.

#### Duplicate Analysis

For those analytes which cannot be spiked i.e. pH, two aliquots of the sample are analyzed. The results of the two analyses are compared to determine precision. Duplicate analysis is performed at a minimum frequency of 1 per 20 samples or per batch, which ever is less.

#### Tune Check

GC/MS instruments analyze BFB (4-Bromofluorobenzene) for volatiles or DFTPP (Decafluorotriphenylphosphine) for semi-volatiles to tune check. The mass spectrum of the appropriate compound is produced every 12 hours or every 8 hours in the case of Method 524.2. The abundances of the ions produced in this spectrum must pass all of the method specifications.

#### Surrogate Compounds (Organic Analysis)

Samples have surrogate compounds added to them before sample preparation. Surrogate compounds are chemically similar to the analytes being measured. Surrogates are used to assess the behavior of the analytes with the matrix, during sample preparation and analysis. Surrogate compounds must meet all method specifications.

Bartlett QAP Section 11 Revision 2 May 5, 1994 Page 3 of 11

#### Internal Standards (GC/MS)

Internal standards are pure compounds added to each standard and sample in known amounts to measure the relative response of method analytes. Each internal standard represents a group of analytes. The internal standard is used in conjunction with the calibration standards to determine analyte concentration. Internal standards are added immediately before analysis. Internal standard peak areas must meet all method specifications.

#### Laboratory Control Standard (LCS)

The LCS consists of a prepared standard which is set up along with a group of client samples. This standard is also analyzed along with the batch of samples to which it belongs. The accuracy of the preparation procedure can be assessed by determining the percent recovery of the analyte in the standard.

#### Laboratory Fortified Blank (LFB)

The LFB consists of a prepared standard which is set up along with a group of client samples. This standard is also analyzed along with the batch of samples to which it belongs. The accuracy of the preparation procedure can be assessed by determining the percent recovery of the analyte in the standard. This term is most commonly used in drinking water methodology.

#### Reporting Limit Verification Standard (RLVS)

A standard prepared at the reporting limit for the analyte of interest. This standard is used to assess the validity of the current reporting limit when the calibration curve does not include a standard at the reporting limit. This is used to assure the client that the reporting limit is an achievable quantity.

The quality assurance measures and their frequency are described below. Control limits for the QC samples are summarized in Tables 5.1 - 5.21.

### Metals Analyses

<u>Method</u> <u>Blanks</u> - are carried through the sample preparation at a frequency of one per batch of 20 samples per matrix, with the exception of Mercury where the method blank is analyzed once every 15 samples.

Laboratory Control Standard - A LCS is carried through the sample preparation at a frequency of one per batch of 20 samples per matrix. All analytes represented in a given analytical batch will have the LCS analyzed for that metal. The Mercury LCS is

Bartlett QAP Section 11 Revision 2 May 5, 1994 Page 4 of 11

analyzed once every 15 samples.

<u>Matrix Spike/Matrix Spike Duplicate</u> - One MS/MSD is represented in each digested batch of samples which contain a maximum of 20 samples. The MS/MSD is analyzed for all of the metals represented in the analytical batch.

<u>Calibration</u> - A three point curve analyzed at the beginning of each analytical run for all furnace and flame analyses. ICP analyses require only a single point calibration daily.

<u>Initial Calibration Verification Standard</u> - Each analytical run will have an ICV analyzed immediately after each daily calibration.

<u>Reporting Limit Verification Standard</u> - If the low standard in the calibration curve is not at the reporting limit then the RLVS is analyzed at the beginning of each analytical run.

<u>Reagent Blank</u> - Analyzed at the beginning, and at a minimum every 10 samples and also at the end of the analytical run.

<u>Continuing</u> <u>Calibration</u> <u>Verification</u> <u>Standard</u> - <u>Analyzed</u> every tenth sample at a minimum throughout the analytical run. Each analytical run will also end with a CCV.

<u>Spectral Interference Check Standard (SIC)</u> - Analyzed with each analytical run following the daily calibration and at the end of the run.

<u>Dupicate Analysis</u> - A sample duplicate may be included an analysis batch.

Wet Chemistry Analyses

Titrations:

- <u>Reagent Blank</u> Run with each analytical run and every 20 samples.
- <u>Method Blank</u> (if applicable) analyzed with the analytical run and every 20 samples.
- <u>CCV's</u> Analyzed at the beginning and the end
- of the analytical run and every 20 samples.
- MS/MSD's Analyzed if possible every 20 samples.

Spectrophotometric Parameters:

 <u>Reagent Blank</u> - If necessary, one per analytical run is analyzed and at a minimum every 20 samples.
 <u>ICV</u> - Analyzed from an alternate source once with each new calibration.

Bartlett QAP Section 11 Revision 2 May 5, 1994 Page 5 of 11

- <u>Method blank</u> - Analyzed once with each batch of samples requiring a preparation/digestion.

- <u>CCV's</u> Analyzed at the beginning, every 20 samples and the end of the analytical run.
- <u>MS/MSD's</u> Analyzed every 20 samples or per analytical batch if less than 20 samples.
- LCS Same as Method Blank

Gravimetric Parameters:

- <u>Method Blank</u> Analyzed once with each analytical batch.
- <u>Standard</u> Analyzed per analytical batch.
- <u>Duplicate</u> Analyzed every 10 samples or per analytical batch.

Total Organic Carbon Analyzer:

- Calibration Verified with each new analytical run.
- ICV Analyzed after each new calibration verification. - CCV - Analyzed at the beginning, every 20 samples and
- at the end of the analytical run. - Reagent Blank - Analyzed after every 20 samples and the
- end of the analytical run.
- <u>MS/MSD</u> Analyzed after every 20 samples or per analytical batch if less than 20 samples.

Digestions/Preparations/Distillations/Extractions:

- Method Blank Set up with each analytical batch.
- <u>LCS</u> Set up with each analytical batch.
- <u>MS/MSD</u> Set up with each analytical batch per matrix and every 20 samples.

(<u>Batch</u> = sample set prepared using the same reagent lots and standard lots not to exceed twenty samples.)

Bartlett QAP Section 11 Revision 2 May 5, 1994 Page 6 of 11

#### GC/MS Organic Department

- Holding Blank Analyzed weekly from each storage refrigerator for volatile organics.
- Method Blank Analyzed with each analytical batch of samples.
- Tune Check Bromofluorobenzene or DFTPP analyzed at the beginning of each 8 or 12 hour run sequence depending upon the method being used.
- ICV Analyzed with each new calibration curve.
- CCV CCC compounds analyzed after each successful tune for each analytical run sequence.
- Surrogates Added to each sample, blank and spike and analyzed each run.
- MS/MSD Volatiles: One per 20 samples, except method 524.2.
  - Semi-Volatiles: One per 20 samples extracted.
- LCS Volatiles: Analyzed every 20 samples or less. Semi-Volatiles: One per extraction set up to 20 Samples.

## GC Organic Department

Methods 608/8080/ for PCB's

- Method Blank Set up and analyzed every batch of samples.
- <u>ICV</u> Analyzed with each new calibration curve.
   <u>CCV</u> Analyzed 1 per 10 samples or 14 injections, whichever is smaller and for drinking water parameters at the end of the run sequence.
- Surrogates Added to each sample, balnk and spike and analyzed each run.
- MS/MSD Analyzed per 20 samples (if sample volume permits).
- LCS Analyzed per 20 samples or extraction batch, whichever is smaller.

Methods 608/8080 for Pesticides

- Method Blank Set up and analyzed every batch of samples.
- <u>ICV</u> Analyzed with each new calibration curve.
- <u>CCV</u> A single component pesticide mix is analyzed 1 per 10 samples or 14 injections, whichever is smaller and for drinking waters at the end of the run sequence.
- Surroqates Added to each sample, blank and spike and analyzed each run.
- MS/MSD Analyzed every 20 samples (if sample volume permits).
- LCS Analyzed every 20 samples or extraction batch,

Bartlett QAP Section 11 Revision 2 May 5, 1994 Page 7 of 11

#### whichever is smaller.

Method 504

- Method Blank Analyzed every 20 samples in the analytical run.
- <u>ICV</u> Analyzed after each new calibration curve.
   <u>CCV</u> Analyzed at the beginning, every 10 samples and at the end of the analytical run.
- RLVS- The Reporting Limit Verification Standard is analyzed weekly.
- <u>LFB</u> 10% of sample load.
- LFS Analyzed every 20 samples.

Method 8020/602

- Method Blank Analyzed every 20 samples in an analytical run.
- Surroqate Added to all samples, blanks and spikes and analyzed for each analytical run.
- ICV Analyzed with each new calibration.
- <u>CCV</u> Analyzed at the beginning and every 10 samples each analytical run.
- MS/MSD Analyzed every 20 samples.
- LCS Analyzed with each analytical batch of samples.

Methods SM 509B/SW-846 8150

- Method Blank Analyzed every 20 samples or each extraction batch.
- Surrogate Added to all samples, blanks and spikes and analyzed each analytical run.
- <u>ICV</u> Analyzed after each new calibration curve. <u>CCV</u> Analyzed at the beginning of each analytical run and every 10 samples or 14 injections, whichever is smaller.
- MS/MSD Analyzed after every 20 samples per matrix.
- LCS Analyzed with each analytical batch of samples.

Method 515.1

- Method Blank Analyzed every ten samples.
- Surrogate Added to all samples, blanks and spikes and analyzed each analytical run.
- <u>ICV</u> Analyzed after each new calibration curve.
- $\overline{CCV}$  Analyzed at the beginning, every 10 samples and at the end of each analytical run.
- LFS Analyzed 10% of samples.
- LFB Analyzed every 20 samples or analytical batch.

Bartlett OAP Section 11 Revision 2 May 5, 1994 Page 8 of 11

## TPH California Method

- Method Blank Analyzed every 20 samples or analytical batch.
- CCV Analyzed every 24 hours.
- MS/MSD Analyzed every 20 samples.
- LCS Analyzed with each analytical batch of samples.

Method 508

\_\_\_\_

- LRB Analyzed every 20 samples or extraction batch, whichever is smaller.
- Surrogate Added to all samples, blanks and spikes and analyzed each analytical run.
- <u>ICV</u> Analyzed with each new calibration. <u>CCV</u> Analyzed at the beginning of each run and every 8 hours.
- <u>LFS</u> 10% of all samples are spiked.
   <u>LFB</u> Analyzed every 10 samples or extraction batch, whichever is smaller.

Method 508A

- <u>LRB</u> Analyzed every 10 samples in an analytical run.
- <u>ICV</u> Analyzed with each new calibration <u>CCV</u> Analyzed at the beginning, every 10 samples and at the end of the analytical run.
- LFS Analyzed every 20 samples.
- <u>LFB</u> analyzed every 10 sample or extraction batch, whichever is smaller.

Method 507

- LRB Analyzed every 10 samples or extraction batch, whichever is smaller.
- Surrogate Added to all samples, blanks and spikes and analyzed with each run.
- <u>ICV</u> Analyzed with each new calibration.
- <u>CCV</u> Analyzed at the beginning, every 10 samples and at the end of the analytical run.
- LFS Analyzed every 20 samples.
- LFB Analyzed with each analytical batch of samples.

#### LC Organic Department

Method 8310

- Method\_Blank Analyzed every 20 samples or extraction batch, whichever is smaller.
- Surrogate Added to all samples, blanks and spikes and analyzed each run.

Bartlett QAP Section 11 Revision 2 May 5, 1994 Page 9 of 11

- <u>ICV</u> - Analyzed with each new calibration.

- <u>CCV</u> Analyzed every 24 hours.
- <u>MS/MSD</u> Analyzed every 20 samples.
- LCS Analyzed with each analytical batch of samples.

Method 531.1

- <u>LRB</u> Analyzed every 10 samples in an analytical run.
- <u>Surrogate</u> Added to all samples, blanks and spikes and analyzed each run.
- <u>ICV</u> Analyzed with each new calibration.
- $\overline{CCV}$  Analyzed at the beginning, every 10 samples and at the end of the analytical run.
- LFS Analyzed 10% of all samples.
- LFB Analyzed every 10 samples in an analytical run.

# Bacteriological Analyses

The Internal Quality control measures and frequencies are listed in Tables 5.18 through 5.21. Drinking Water quality control measures are found in the referenced citation in Section 5.

## 11.1 Personnel Training

All analysts are required to demonstrate proficiency in the analyses they will be performing prior to working on actual samples. The training encompasses the analytical procedures to be utilized, the elements of quality control to be associated with the procedure, and the necessary safety information. All of these elements are included in each Standard Operating Procedure. Training is conducted by senior laboratory personnel, and requires that each analyst be familiar with the SOP associated with the task, observe an experienced analyst perform the analysis, work under direct supervision, and finally demonstrate proficiency at the analysis. Figure 11.1 is a SOP training documentation form used when training a new analyst. This form is taken from the NET "Certification of Laboratory Personnel" SOP. Each analyst has a personal training record which is updated periodically.

In addition to the internal training, employees are encouraged to participate in short courses available from instrument manufacturers and professional development seminars. All external training documentation is also kept in the personnel training files. The training files are maintained by the Department Supervisors with a master compendium of copied training files maintained by the QA Coordinator.

Eartlett QAP Section 11 Revision 2 May 5, 1994 Page 10 of 11

Figure 11.1 SOP Training and Implementation Record Form

Method Certification Revision No. Draft2 Date: 17 September 1992 Page 13 of 15

\_\_\_\_\_

SOP TRAINING AND IMPLEMENTATION RECORD

SCP Title:

Method No.:\_\_\_\_\_

Revision:\_\_\_\_\_

Initial Review: establish what needs to be changed in order to comply with SOP. Include list of reagents or other equipment which needs to be obtained in order to implement the changes. Attach a summary of the initial review to this form.

Date of Initial Review:

Training: the analyst(s) has read the SOP and the procedure has been performed by the following analyst accompanied by the assigned trainer.

Analyst(s) Signature:\_\_\_\_\_

Supervisor/Trainer Signature:\_\_\_\_\_

Date Training Completed:

Performance evaluation sample: must be analyzed and be acceptable before client samples can be analyzed, if adopting a new method.

PE	Sample 10	True Value	Acceptance Limits	Date Ampule Prepared	Gate Analysis Performed	Value Obtained	Acceptable
) !		 	1 	 	l		 
 		 	• <del> </del>	, <del> </del>	, 	/ 	· 
— 		<del> </del> 	<u>}</u> 	<del> </del>	i I	<u> </u>	 
		   		!   ↓	   	1	   
:		,	l	i	[	 	   !

\_\_\_\_\_

Comments:

Supervisor Signature and Date:

NET, Inc.

Method Certification Revision No. Draft2 Date: 17 September 1992 Page 12 of 15

-

LABORATORY TRAINING SUMMARY

Name

Date Employed

Instructions for use of this forms: This form should be updated each time an analyst is certified for preforming a new procedure. Enter the analysis and date training a new procedure. Enter the analysis and date training a new procedure. Enter the analysis and date training bear successfully met.

Analysis	Date Initialed	Read SOP	NN	Ĩ	Observation	34	9C1 5	followup	Date Completed	Initials Supervisor	Initials Analyst	Certification Awarded
											- - - -	
											 ( '	
kî T:												
HVS = Metho MDL = Met <sup>i</sup>	d Validation bod Detectio	Sample, Refer on Limit, Refe	to method r to Detec	i specific Si tion Limit :	DP for details. 50P. Analyst mus	it demons	trate knowl	edge of concept	s/calculation	and have actua	ily performed	at least one MDI
study Dbservetton PE = Perfori OCIs = Ou	<ul> <li>Verify this</li> <li>mance Evaluate</li> <li>ality Control</li> </ul>	at the analyst tion sample, a	is using dminister . verify the	appropriate PE sample(s t the enaly:	technique ) according to th at is aware of co	ala SOP a	ind the meth mits for ac	nod specific SOF	QCLE, document	ation of OCIS.	and confront	ve action for uils
The need to	r follow up 1	should be disc	ussed prio	r to awardi	ng the certificat	į						

Bartlett QAP Section 11 Revision 2 May 5, 1994 Page 11 of 11

-

NET, INC.

Figure 11.1 SOP Training and Implementation Record Form (CONT.)
Bartlett QAP Section 12 Revision 2 November 1, 1993 Page 1 of 9

#### SECTION 12

### Performance and Systems Audits

## PERFORMANCE AUDITS

The QA objective of the Bartlett Division of NET is to provide data of known and documented high quality. To this end, the Bartlett Division participates in several performance evaluation audits as well as NET's own Interlaboratory Testing Program.

The external performance evaluation audits and round robins that Bartlett participates in are briefly described below.

EPA Water Pollution (WP) Performance Evaluation Audit Program: The U.S. EPA distributes ampules containing unknown concentrations of a wide variety of organic and inorganic parameters. The analyses are made by the laboratory personnel using routine analytical procedures. After evaluation by the EPA, NET receives a listing of true concentrations of each analyte. This program monitors laboratories which perform analyses on NPDES and POTW pre-treatment agreement samples. This performance evaluation audit is conducted on a semi-annual basis.

EPA Water Supply (WS) Performance Audit Program: A program similar to the EPA WP performance evaluation audit, except this program monitors laboratories which perform analysis for the Safe Drinking Water Act parameters. This audit is conducted on a semi-annual basis.

The State of Illinois perfroms an on-site audit once every three years and reviews WS performance sample results for Illinois Safe Drinking Water Act (SDWA) certification.

The Illinois Department of Public Health (IDPH) audits the bacteriology lab once every two years for IDPH certification.

Wisconsin DNR performs a bi-annual audit and Wisconsin performance samples are analyzed yearly for Wisconsin wastewater certification.

Our American Association of Laboratory Accreditation (A2LA) certification requires an audit once every two years and an annual laboratory review.

For all systems audits performed, a complete response is provided by the Division's Quality Assurance Coordinator.

Bartlett QAP Section 12 Revision 2 November 1, 1993 Page 2 of 9

Please see Table 12.1 for a listing of current certifications and Performance Evaluation sample participation. Figure 12.1 through 12.4 provides a copy of NET Bartlett's certificates held with the Illinois EPA, Illinois DPH, Wisconsin DNR and A2LA.

#### INTERNAL SYSTEMS AUDITS

The system audit is a systematic check of a qualitative nature consisting of a review of a laboratory's quality assurance systems and physical facilities for sampling, calibration and measurements. System audits are conducted on a monthly basis by the QA Coordinator in the departments within the Bartlett Division of NET. These departments are: Bacteriology, Wet Chemistry, Metals, GC, LC, GC/MS, Field Sampling, Reporting, Customer Service and Administration.

These audits may include several components listed below:

- Personnel, facilities and equipment
- Chain of custody procedures
- Instrument calibration and maintenance
- Standards preparation and verification Analytical procedures
- Quality control procedures
- Data handling procedures Documentation control procedures
- Deliverable requirements

## CERTIFICATIONS

The Bartlett Division of NET maintains several certifications. Analytical services that require laboratory certification which NET-Bartlett does not currently hold, (such as industrial hygiene monitoring) may be obtained through the NET network of laboratories.

See Table 12.1 and Figures 12.1 through 12.4 for current certifications.

Bartlett QAP Section 12 Revision 2 November 1, 1993 Page 3 of 9

Table 12.1

January 31, 1994 Page 1 of 2

National Environmental Testing Bartlett Division Certifications, Audit Programs and Interlaboratory Collaborative Studies

Activity

Major Program/ Years of Participation U.S. EPA Performance Evaluation Samples (WP and WS series) for drinking water and water pollution.

State of Illinois EPA
State of Illinois Rules
and Regulations:
Title 35: Subtitle A:
Chapter II: Part 183
Certification and
Operation of Environmental
Laboratories.
Approval since 1986.
Current certificate:
7/93 to 4/96
Certificate # 100221

State of Wisconsin Department of Natural Resources. Under the provisions of ch. NR 149 Laboratory Certification and Registration. Approval since 1980 Current certificate: Aug 4, 1993 -Jun 30, 1994 Laboratory ID# 999447130

and Their Sources. Approval since 1976. Current certificate expires March 1995. Registry No. 17533

Approval since 1980 Current certificate: Aug 4, 1993 -Jun 30, 1994 Laboratory IDf 999447130 Illinois Department of Public Health. Standard Plate Count, Total and Fecal Coliform in water. Examination of Samples of Water Supplies

Perform analyses four times per year. Results are scored by U.S. EPA and are available for review.

Perform annual chemical analyses of public water supply proficiency samples. Pass bi-annual on-site audit.

Perform annual analyses of proficiency evaluation samples. Pass an initial on-site audit and periodic update audits.

Pass a bi-annual on-site audit.

Bartlett QAP Section 12 Revision 2 November 1, 1993 Page 4 of 9

•

Table 12.1 (cont.)

January 31, 1994 Page 2 of 2

National Environmental Testing Bartlett Division Certifications, Audit Programs and Interlaboratory Collaborative Studies

Major Program/ Years of Participation Activity Pass an initial and bi-annual on-site audit. Perform an A2LA - The American Association for Laboratory Accreditation. Requirements annual review with A2LA. set forth by ISO/IEC guide Submit WP and WS PE studies 25-1990 "General Requirements as they are performed. for the Competence of Calibration and Testing Laboratories" and any additional program requirements in the identified field of testing. Presented: 1-18-94 Valid to: 11-30-95 Certificate # 0453-01 Discharge Monitoring Perform annual analyses of Report (DMR) QA Study. For NPDES work done at NPDES proficiency evaluation samples. the Bartlett Division for state municipalities. Approval from 1982 to current. Waste Management, Inc. -Approval based upon an annual Environmental Monitoring on-site audit and review of proficiency evaluation samples. Laboratories. Groundwater Monitoring Program. 1989 to current. US Ecology. Approved Vendors List. Approval based on an annual on-site audit.

June, 1992 to current.

Eartlett QAP Section 12 Revision 2 November 1, 1993 Page 5 of 9

-

-

----

Table 12.1 (cont.)

January 31, 1994 Page 1 of 1

National Environmental Testing Bartlett Division Addendum to Certifications, Audit Programs and Interlaboratory Collaborative Studies

Major Program/ Years of Participation	Activity
U.S. EPA Contract Laboratory Program (CLP) January 1989 - July 1991	Perform analysis of quarterly blind proficiency samples for the organic target compound list. Pass yearly on-site system audits.

Note: NET Bartlett succesfully completed the pre-award proficiency sample analysis as well as the on-site audit; however, in December, 1991, NET withdrew from the bidding process of its own accord.

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
AWARDS THIS
CERTIFICATE OF APPROVAL
ТО
National Environmental Testing, IncBartlett Division
850 West Bartlett Road
Bartlett, IL 60103
FOR THE FOLLOWING CHEMICAL ANALYSES OF ENVIRONMENTAL SAMPLES:
EPA Method 524.2, Rev. 3.0: Phase I, II, and V VOCs and TTHMs; Provisional Certification Granted for EPA Method 504, Rev. 2.0: 1,2-Dibromo-3-Chioropropane, Ethylene Dibromide; Provisional Certification Granted for EPA Method 505, Rev. 2: Alachior, Aldrin, Chordane, DDT, Dieldrin, Endrin, Heptachior, Heptachior Epoxide, Hexachiorobenzene, Hexachiorocyclopentadiene, Lindane, Methoxychior, Simazine, Toxaphene;
Provisional Cartification Granted for EPA Method 531.1, Rev. 3.0: Aldicarb, Aldicarb Sullone, Aldicarb Sulloxide, Oxempi, Carboluren,
Provisional Cartification Granied for EPA Method 5054, Hev. 10: PCBs as decenhicrobiphenyl, Provisional Cartification Granied for EPA Method 569, July 1990: Diquat, Provisional Cartification Granied for EPA Method 515, 18 ev. 40: 24-D. Dalacon, Dinosab, Pentachkuroband, Dikkurm Provisional Cartification Granied for EPA Method 515, 18 ev. 40: 24-D. Dalacon, Dinosab, Pentachkuroband, Dikkurm
Provisional Certification Granted for EPA Method 506, July 1990: DU(2-ethythexyl) adipate, Di(2-ethythexyl) phthatale, EPA Method 506, July 1990: Benzo(a) pyrane,
Provisional Cartification Granted for EPA Method 547, July 1990: Glyphosate, Provisional Cartification Granted for EPA Method 548, July 1990: Endothali,
EPA Method 200.7, Rev. 3.3: Berkum, Beryllium, Cadmium, Chromium, Copper, Iron, Manganese, Nickel, Zinc; EPA FLAA Methods, MCAWW 1983: Calcium, Sidium, Cadmium, Chromium, Calcium, Sodium, Calcium, Status, Calcium, Status, Calcium, Calciu
epa graa meinoos, muaww 1983; Ansmony, Leega, Seennum, Indiium; epa meinoo 243, 1, muaww 1983; Meicury, epa Meinoo 206, J. McAww 1983; Aisonic Epa Meinoo 376 - McAww 1983; Sidiale: Epa Method 375 2 McAww 1987; Cyanida: Epa Method 316 1, McAww 1987; Mediin
EPA Method 180,1, MCAWW 1983: TDS; EPA Method 340.2, MCAWW 1983; Fluoride; EPA 150.1, MCAWW 1983; PH in polable water.

**CERTIFICATE NUMBER : 100221** 

DATE OF ISSUE : 02/94 Update

Maya So

DIRECTOR

on induso

CERTIFICATION

1

**DIVISION MANAGER** 

UZUNU ΩĪ 0000 Q < < 0 H D ወ H th H Ë. NHH 00400 n c o n 043 rt ň, щ. оиин К 6ΰ μ . O 9 ω

DATE OF EXPIRATION : 04/96

t

er divisio

Certificate

Figure

12.1

Illinois

EPA

Figu
ure
12.2
111
inois
DPI
Т
Certi
fica
ate

Registry No. 17533 Date MARCH 11, 1993

t

For the period ending MARCH 11, 1995 Athu R. Lumpten, M.D. Director of Public Health

(

1

Bartlett QAP Section 12 Revision 2 November 1, 1993 Page 7 of 9

Bartlett QAP Section 12 Revision 2 November 1, 1993 Page 8 of 9

# Figure 12.3 Wisconsin DNR Certificate

\_ -----

\_\_\_\_

-----

DEI DEI under the	PARTMENT OF He	NATURAL RESOU	RCES
under the	He		
under the		reby grants	
under the		Certification	S 2
undu me	provisions of ch. NR	140 Wisconsin Administrat	ive Code to:
	provisions of cit. HK	149, Wisconsni Administrat	
NET Bartlett Divisio	n		999447130
850 West Bartlett Ro	ad		Laboratory ID Number
Barttett, IL Ouros			Issued January 24, 1994
			Engine June 30 1994
or the following test out	egories:		Expires: tone 30, 1994
Oxygen Utilization	Calcium	Pesticides by LC	
Mitrogen	Cadmium	* Pesticides; Acid	
Ammonia	Cobait	* Petroleum Hydrocarbons	
Nitrite	Chromium	Petroleum VOCs	
Nitrate	Copper	* Organics; Organochlorine	
Kjeldahl Nitrogen	lron	PCBs	
Phosphorus	Mercury	Organochiorine Pesticid	25
Physical	Potassium		
General I	Hagnesium		
General 11	Manganese		
Chloride	Nal y <del>bdenum</del>		
Cyanide	Sociuma		
<b>cco</b>	Nickel		
Fluoride	Lead		
Phenolics	Antimony		
Sulfate	Selenium		
General III	Tin		
FP Toxicity	Strontium		
Ignitability	Thallium		
Reactivity	Vanadium		
TCLP	Zinc		
Hetals I	* Organics; Purgeable		
Silver	* Organics: Base/Neutra		
Aluminum	Semivolatiles by GC/	ns	
Arsenic	* Organics: Acid		
Barium	* Liquid Chromatography	,	
Bervilium	Polynuclear Aromatic	: NC	
,			
	/	( it is	
Leoue E. Me.	er Xum	Thill.	( mation)
wraary (	Adimnistrator, Divi	sion for Environmental Quality Di	rector. Office of Technical Service
- () (	J		

Bartlett QAP Section 12 Revision 2 November 1, 1993 Page 9 of 9

# Figure 12.4 A2LA Certificate



Bartlett QAP Section 13 Revision 2 November 1, 1993 Page 1 of 1

## SECTION 13

#### Preventative Maintenance

Preventative maintenance procedures such as lubrication, detector cleaning and the frequency of such maintenance are performed according to the procedures outlined in the manufacturer's manual. Precision and accuracy data are examined for trends beyond control limits to determine evidence of instrument problems. Maintenance must be performed when instrument performance begins to deteriorate as made evident by poor peak resolution, shifts in calibration curves, loss of sensitivity, or failure to meet one of the quality control criteria.

Instrument notebooks are kept containing usage, calibration, maintenance and repair record/agreements for each major instrument. The laboratory maintains adequate supplies of spare parts for use as needed.

In the event of equipment failure that cannot be resolved in-house, service is obtained from the instrument manufacturer, if available, at the laboratory. If on-site repair is not possible, then arrangements are made to ship the instrument back to the manufacturer for necessary repairs. Back-up instruments which have been approved for the analysis shall perform the analysis normally carried out by the malfunctioning instrument, if feasible. If back-up is not available and analysis cannot be carried out within the time frame, the samples shall be subcontracted to another certified laboratory to carry out the analysis.

Bartlett QAP Section 14 Revision 1 November 1, 1993 Page 1 of 1

#### SECTION 14

## Specific Routine Procedures to be Used to Assess Data Precision and Accuracy of Specific Measurement Parameters Involved

#### ANALYSIS OF STATISTICAL DATA

The Bartlett Division of NET utilizes control charts and tabulations to analyze accuracy and precision data. Control limits are determined using a minimum of twenty data points.

The minimum twenty data points are carefully evaluated to be sure these data points are representative of the procedure. Data points are tabulated and the mean and Standard Deviation (SD) are measured. Control limits are set at the mean +/- 3SD. Warning limits are set at the mean +/- 2SD. The control and warning limits are then set for ensuing data.

NET's "Procedure for Statistical Control Charting/Tabulation" should be consulted for NET's minimum control charting requirements and for example control charts.

Control charts may be maintained for:

- Accuracy: Laboratory Control Standard Continuing Calibration Verification Surrogate Recovery Matrix Spike % Recovery Initial Calibration Verification Standard
- Precision: MS/MSD Relative Percent Difference (RPD) Individual Duplicates, RPD or Difference
- Laboratory Contamination: Method Blanks Reagent Blanks

Out of control situations are defined as:

- \* A single point outside the 3 sigma control limit
- \* 7 consecutive points increasing
- \* 7 consecutive points decreasing
- \* 7 consecutive points on the same side of the mean

Any out of control situation requires corrective action and identification of the problem. Corrective action can be documented in the instrument maintenance log, on a "Laboratory Notification Form" or in a separate corrective action report.

Bartlett QAP Section 15 Revision 1 November 1, 1993 Page 1 of 5

#### SECTION 15

#### Corrective Action

A quality assurance program cannot be considered complete without a defined and usable policy for correcting quality problems. NET utilizes a closed-loop corrective action system which is directed by the Division Manager and the Quality Assurance Coordinator. The quality assurance program is designed to avoid problems but it also is used to identify potential problems and to identify and correct any problems that may exist. Quality control problems fall into two categories: those requiring immediate corrective action or those which require long-term corrective action.

The quality control procedures outlined to this point in the manual are designed to help analysts detect the need for corrective action. Often the analyst's previous experience will be the most valuable tool in identifying suspicious results or malfunctioning equipment; immediate corrective action can then be taken. The actions taken or suspicious data are noted in the laboratory notebook but further documentation is not necessary unless further corrective action will be needed. Table 15.1 lists common sampling and analysis errors and the corrective action for the error.

Long-term corrective action is identified by standard QC procedures, control charts, performance or systems audits. Any quality issue that cannot be solved by immediate action requires long-term corrective action. NET uses a system to ensure that the condition is reported to a person who is part of the closed-loop action and follow-up plan. Figures 15.1 through 15.5 show the forms used by NET to track corrective action.

As part of the systems audits in each department, previous findings requiring corrective action are investigated during the next audit to determine if the corrective action taken on the earlier problem is still being used consistently.

The essential steps of the closed loop corrective action system are:

- 1. Identify the problem
- 2. Assign responsibility for investigating the problem
- 3. Investigate and determine the cause of the problem
- 4. Determine a corrective action to eliminate the problem

Bartlett QAP Section 15 Revision 1 November 1, 1993 Page 2 of 5

- 5. Assign responsibility for implementing the corrective action.
- 6. Implement the corrective action.
- 7. Verify that the corrective action has solved the problem by running either a double or single blind performance evaluation sample or a followup systems audit.
- 8. Document and archive the entire corrective action process.

The corrective action process is documented using the Laboratory Notification Form (LNF), figure 10.4, the Reevaluation Request Form (RER), figure 10.5, or the Internal Testing Program (ITP) Corrective Action Report (CAR), figure 15.1 through 15.3, each according to the type of corrective action. Generally, the LNF is used for non-performance sample related corrective action that is internally generated. The RER is used for corrective action generated by a client request. The ITP CAR is used for performance sample based corrective action.

All long-term corrective actions, once identified, are followed through the closed loop system by the QA Coordinators. The Division Manager has the ultimate responsibility to see that the prescribed corrective action is operational and has solved the problem.

Bartlett QAP Section 15 Revision 1 November 1, 1993 Page 3 of 5

-

•

Figure 15.1 Part One ITP Corrective Action Report.

National Environmental Testing, Inc.	Corrective Action Report	
то:		Date://
RE: Out-of Control Value	Reported	
FR:		
Division:		Program:
Department:		Date CAR Due:
Analysis:		
Reported Value:	Tru	e Value:
Control Limits:	·····	
Method Reference:		
Instrument ID and Type:_		······
Problem Id Training Method not followed QC not performed QC limits ignored Detection Limit Prob Dilution/Calculation Other: Corrective Action Taken:	entifcation (Check Superv Login Report Labora lems Instru error Standa Unknow	all that apply) fision ing tory Contamination ment Problems ards problem
Project Mana Quality Assu	ger rance Coordinator	Date
Division Mar	ager	Date

usr/mam/mam2/carp1

Bartlett QAP Section 15 Revision 1 November 1, 1993 Page 4 of 5

•

Figure 15.2. Part Two of ITP Corrective Action Report.

Corrective Action Repo	ort - Quali	ty Control I	ndicators	Part 2	
Analyte(s):			E	vision:	
		MDL Stu	dy	<u> </u>	
Date enalyzed	Dete	ection Limit	Reporting Limit	Units	
	C	Calibration	(express in same unit	s as sample)	
Date analyzed	# of Stds	Lowest Std.	Highest Std.	r or XRSD	
	Initial	Calibration	Verification		
Date snalyzed	True Conce	mtration P	leasured Conc.	Control Limits	
	N	lethod Blan	k		
Prep Date Prep Batch # Dat	e analyzed Ar	al Batch # )	leasured Conc.	Control Limits	
	Laborato	ry Control S	Sample		
Pren Date Pren Batch # Dat		al Batch #		Nessured Cox	trol limite
	A	r Charle S	ample Spille/	AS & MSD	
<pre>Prep Date/Batch# Date anal/Bat Prep Date/Batch# Date anal/Eat</pre>	ch# Sample C	onc. Spike Cor	nc. Heasured Conc.	Spk X Revry Contr	ol Limits
Precision (	Check - MS	S/MSD or S	ample & Dup	licate	· · ·
Prep Date Prep Batch # Dat	e analyzed An	al Batch # MS	(or Sample) Conc.	MSD (or Duplicate) (	ione .
RPD		Control	Limits		
Cont	inuing Cal	ibration Ve	rification		
Cate analyzed	True Conc.	Measured Cor	x. Recovery	Control Limits	-
AFTER)	True Conc	Heasured for	Y Becovery	Control Limits	_
Additional Comment	s:				
CAR Follow-Up Sche	dule:	·			

usr/mamumam2\_Larp2

\_\_\_\_

Bartlett QAP Section 15 Revision 1 November 1, 1993 Page 5 of 5

-

-

Figure 15.3. Part Three ITP Corrective Action Report.

-----

----

NATIONAL ENVIRONMENTAL TESTING, INC.	Corrective Action Report	
	DATE:	
TO: Director of Data Quality	cc:	
RE: Division Administered PE	Results	
FR: Division OA Coordinator		
ITP#: Analysis	: Division:	
PE Sample Source:		
PE True Value:	PE Control Limits:	
Control Limit Reference:		
Laboratory Result:		
Date of PE Analysis:	· · · · · · · · · · · · · · · · · · ·	
Was the PE Single Blind? Double Blind?		
Is the Analysis now in control:		
· · · · · · · · · · · · · · · · · · ·		
This sheet is accompanied by	the QCI sheet for this PE sample.	

Quality Assurance Coordinator

usr/mam/mam2/carp3

\_\_\_\_\_

Bartlett QAP Section 16 Revision 1 November 1, 1993 Page 1 of 2

### SECTION 16

#### Outside Lab Subcontractors Data Quality Requirements

NET Bartlett Divsion provides a wide range of services and instrumentation. In addition, NET Bartlett has the advantage of using "sister" NET laboratories, which work under the same National Quality Assurance Plan as NET Bartlett, for services that may not be provided at the Bartlett Division. In some circumstances, most often do to specific state regulations, it is necessary to subcontract services provided by another laboratory.

In order to ensure the high quality of data provided by NET continues to be provided when a subcontract laboratory is used, the following standards have been set for approval of subcontract laboratories.

### Minimum Approval Requirements

The following is a list of minimum requirements to be met before approving a subcontract laboratory.

- \* State or Federal Certifications Acquire a copy of the certificate that applies to the subcontracted procedure(s), if applicable.
- \* Vendor's QAP and SOQ Review these materials to ensure quality control measures and capabilities are sufficient to meet the original work plan.
- \* WP/WS Studies Review past performance according to these PE studies.

## Additional Requirements

The requirements listed above are minimum requirements. Upon request by our client or as deemed necessary by the Division Manager, Project Manager or QA Coordinator at NET, the following procedures may also be carried out to approve a subcontract laboratory.

- \* Vendor Audit Survey (written) covering general or specific QA/QC issues such as MDLs, methods, QCIs, Control limits...
- \* Send PE samples to the vendor.
- \* On-Site Audit (detailed) covering good laboratory practices, method requirements, QCIs...

Bartlett QAP Section 16 Revision 1 November 1, 1993 Page 2 of 2

-

The procedures listed above are carried out by the Quality Assurance Coordinator at the Bartlett Division. He or she may rely on other personnel for specific expertise especially in the case of an on-site audit.

The minimum requirements set forth here are to be maintained at a frequency of once every two years. The QA Coordinator shall maintain a list of approved subcontract laboratories.

Any measurement reported from a subcontract laboratory will be flagged as such on the NET Bartlett Analytical Report.

Bartlett QAP Section 17 Revision 2 Sept. 12, 1994 Page 1 of 1

•

## SECTION 17

Quality Assurance Reports to Management

In order to provide information to the Division Manager, Operations Manager and Project Manager concerning the performance of the laboratory in the quality assurance program, the QA Coordinator will meet with them on a weekly or bi-weekly basis, as needed, to review quality control data trends, problems, and other information.

The information in these meetings is then summarized and disseminated to other Departmental Supervisors.

Monthly QA reports are made to the Corporate Director of Data Quality, Division Manager and Laboratory Staff and covers the following materials: Audits and Client Visits, Performance Evaluation Samples, Certifications, Accreditations, Training, SOPs, QAPPs and any other developing items related to the quality assurance and quality control system.

# APPENDIX D

# STANDARD OPERATING PROCEDURE FIELD GAS CHROMATOGRAPH

TITLE:	Gas Chromatograph	
DATE:	May 1995	
SOP NUMBER:	260	Page 1 of 6

# 1.0 SCOPE

This operating procedure describes the operation and maintenance of the Photovac 10S gas chromatograph (GC) for use in the field. Manufacturer's specifications and recommendations should be followed or referred to as and when need arises.

# 2.0 OBJECTIVES

The activities covered by this procedure:

- Insure quality control in field GC analyses.
- Insure uniformity and continuity in operation, calibration, and maintenance of both the equipment and measuring techniques by different qualified field analysts or technicians.

## 3.0 EQUIPMENT NEEDED

- GC and its accompanying accessories.
- Carrier gas.
- Syringe.
- Calibration gas.
- User's manual for GC.

Read all the instructions before using the instrument. Refer to the owner's manual for a list of other trouble shootings and problems, additional maintenance and repair information, as well as for a more detailed description of the equipment and its correct operation.

# 4.0 PRELIMINARY TO OPERATION

1. Locate the unit in an area with low-traffic and where the temperature remains fairly constant. Peak retention times are inversely proportional to temperature (i.e., retention times get shorter as the environment gets hotter) for which reason the instrument should be located inside a shelter where there could be some degree of temperature control. Avoid exposing the instrument to rain, snow or dust. Never operate the instrument outdoors in a misty or very humid day.

- 2. The carrier gas recommended is "Air Ultra-Zero" or "Air Zero-Zero"; this must contain <u>less than</u> 0.1 ppm of total hydrocarbon contamination. "Zero" grade air is not recommended.
- 3. Manual injection of small samples is done using a gas tight syringe (2-inch maximum side port needle).
- 4. <u>Never</u> turn the instrument "ON" without a flow of carrier gas. It could cause damage to the lamp.
- 5. If operating the instrument from an external carrier gas cylinder, use a high purity, 2-stage regulator that can reduce the pressure to 40 psi (280 kPa). The connection between the cylinder regulator and the instrument should be very clean and made of Teflon or stainless steel. This transfer line should be <sup>1</sup>/<sub>8</sub>-inch diameter. <u>Never</u> use rubber or soft plastic tubing.
- 6. If using the automatic mode of operation, follow the next guidelines:
  - a) If calibrant is toxic, connect the *PUMP OUT* port to a vented line. Also, purge the calibrant line before connecting.
  - b) If using an external pressurized tank to supply the calibration gas, it should be equipped with a reducing regulator to deliver at 5 psi (35 kPa). The delivery line should also be Teflon or stainless steel.
- 7. Be very careful not to change the settings of any valve, specially of the gas fittings on the instrument top panel (*DETECTOR OUT, AUX OUT*) unless adjustment of the flow is necessary. Refer to the *START-UP AND OPERATION* section for more information.
- 8. The injection ports are fitted with "Septum" which is used to prevent leakage. The septum is reached by unscrewing the black "Septum Retainers" in the instrument top panel. The septum Teflon side should be down when inserting them into the retainers. The septum must be changed every 25-30 injections. Do not overtighten the retainers because the needle becomes blocked with a core of septum material.
- 9. Allow 30 minutes for warmup time after the initial switch on of the power before doing any calibration of the instrument.
- 10. When not using a particular fitting, wrap it in a clean plastic bag or aluminum foil and set aside in a safe place because it could cause contamination of the instrument. The instrument should also be covered with its lid and be closed when not in use.
- 11. Always disconnect the pressure device when not using the instrument.
- 12. Concentration range is from 0.001 ppb to 9999 ppm. Below 0.001 ppb, the instrument will print as 0.0000 ppb. Above 9999 ppm will appear as \*\*\*\*.

- 13. This instrument in particular does not detect compounds with ionization potential greater than eleven (11).
- 14. <u>Never</u> inject a sample that contains moisture in it.
- 15. Fill the internal tank of the instrument up to 1200 psi for one day of use. Delivery pressure should not exceed 40 psi.
- 16. The instrument battery lasts for eight hours. Recharge the battery the same amount of hours it was used.

# 5.0 MAINTENANCE

- 1. Routine maintenance of the instrument consists of monitoring the consumable air carrier gas and replacing it periodically.
- 2. Shut the unit down for 20 minutes after changing carrier gas.
- 3. Change paper and pens on the printer/plotter as needed.
- 4. The lamp will also require periodic replacement depending upon the sampling frequency. Refer to the owner's manual for specific details.
- 5. The septum in the injection ports must be changed every 25-30 injections.

# 6.0 START-UP AND OPERATION

- 1. If operating the instrument from an external gas cylinder, connect the cylinder to the *EXTERNAL* CARRIER IN fitting. If operating the instrument from its own internal carrier gas reservoir, check the gauge marked DELIVERY located at the rear left on the instrument. This gauge shows the pressure at which the carrier gas is being delivered and should always read 40 psi.
- 2. Connect the instrument to the main electrical supply or to an external battery providing a maximum of 14 volts.
- 3. Establish a supply of carrier gas.
- 4. Use a 2-channel flowmeter (0-50 mL/min) to compare the readings with the Custom Specification Sheet, located in the clear plastic folder in the front of the owner's manual, using the following procedure:

- Connect the left channel to *DETECTOR OUT* and the right channel to the *AUX OUT* needle valve.
- Compare the readings (both flows should be equal and should be between 10-15 mL/min).
- Adjust the readings if necessary:

SOP Number 260

- the left channel is adjusted via the RED color coded valve;
- the right channel is adjusted using the small needle valve attached to the AUX OUT port (these valves interact so adjustments need to be iterative);
- if the readings are not the same, adjust the AUX OUT needle valve until they are equal. Turn the valve handle clockwise to lower the right channel and to raise the left channel. Turn it counterclockwise to raise the right and lower the left. Wait 10 seconds or so for the flow to stabilize;
- once both flows are equal they can be raised or lowered together by using the *RED FLOW* valve at the left on the top panel. Turn it clockwise to lower both flows or counterclockwise to raise both flows to 15 mL/min. Stabilization will take 20 seconds or so;
- leave the meter in place and continue until the readings are the same.
- Allow the instrument to stabilize for 20 minutes after all adjustments are completed.
- 5. If using the isothermal GC capillary column oven assembly, connect the power supply to the 10S EXT DC top panel receptacle.
  - Open the module to check the oven unit.
  - Check the temperature setting. The corresponding light will be ON if it is selected. Change to the desired temperature by turning the switch.
- 6. Depress the ON key, you should see "LAMP NOT READY PLEASE WAIT". Wait 2-3 minutes until "READY ENTER COMMAND" appears. Let the instrument warmup for 30 minutes.
- 7. Depress the TEST key follow by ENTER. A Status Report will be printed. Check all the instrument setup parameters with the Custom Specification Sheet. The headings "Field" and "Power" should be within 20% of the setup, the other numbers should correspond exactly with the Specification Sheet.

SOP Number 200 Page 5 01 0
----------------------------

- 8. Press the LIST key. Select the library needed and press ENTER for a list of all the compounds stored in it. There are four separate libraries available within the computer. These libraries are for storing information entered with the "setup" group and with the CYCLE, EVENT, INFO, and CAL keys.
- 9. Depress the GAIN key to set the gain. Press the up arrow key until the gain number correspond with the Specification Sheet and press ENTER.
- 10. Depress the CYCLE key. Check the "TIMER DELAY", "ANALYSIS TIME", and "CYCLE TIME" settings with the Specification Sheet. Use the CLEAR key and the numerical key pad to make any changes, otherwise press ENTER.
- 11. Depress the USE key. Select the library to be used and hit ENTER. Type the day number and press ENTER. Follow the same procedure for the month, year, hour and minute. Note that the instrument uses a 24-hour clock.

# 7.0 CALIBRATION AND ANALYSIS

- 1. If using the automatic mode, connect the supply of calibration gas. The delivery line should be connected to the *CAL IN* port. If calibrant is toxic, connect the *PUMP OUT* port to a vented line. Also, purge the calibrant line before connecting.
- 2. Press the *INFO* key to enter information to print with each analysis.
- 3. To see how the results are affected if a parameter is changed after an analysis is done, press the CAL key and ENTER to relist the information.
- 4. To store compounds in a library for calibration purposes, press the STORE key. Select the peak number corresponding to the chromatogram to be identified and press ENTER. Type the name of the compound, the concentration in ppm and its limit value in ppm. The purpose of the limit value is to flag the result by printing in red when this value is exceeded.
- 5. Use the *EDIT* key if the spelling of a compound or its limit value needs to be changed. Enter the ID number from the library printout. To delete a compound, press the *CLEAR* key and *ENTER* after entering the ID number and pressing *ENTER*.
- 6. To update retention times due to changes in the instrument temperature, inject a sample of your calibrant gas. After the analysis is done, press the *CAL* key. Type the plotter peak to relist and the ID number in the library. For retention time update only, the concentration in ppm <u>must be zero</u>. For recalibration type the concentration of your standard and hit *ENTER*.

## SOP Number 260

Page 6 of 6

- 7. The volume of the sample injected is varied by changing the difference between "EVENT 4 OFF" time and "EVENT 5 ON" time. Refer to the owner's manual for additional information and specific instructions.
- 8. Pump the syringe about 10 times to ensure it is flushed with the mixture, then withdraw a syringe full from the bag or container. Depress the plunger until the desired volume remains in the syringe.
- 9. To start an analysis, press the START-STOP key, select "PROBE IN" and press ENTER. Hold the syringe barrel in one hand and guide the needle down the hole in the center of the "Manual Injection Port 1" until resistance as the needle point touches the rubber septum is felt. Get ready with the other hand to push the plunger down. Injection should be made <u>immediately</u> following the two-second buzz.

# APPENDIX E

**RESUMES OF NEW PROJECT MEMBERS** 

# Curriculum Vitae

## THOMAS M. COVILLI, CIH

Associate/Regional Health & Safety Manager

Expertise Industrial Hygiene Site Remediation Training

Professional Work Experience

Title

1980-Present

## Safety and Industrial Hygiene

- Complete Industrial Hygiene survey, including safety/IH audit, training program evaluations, chemical exposure monitoring, noise exposure monitoring, ventilation system evaluation, review of records, job hazard analysis, etc., conducted for a major paint manufacturing company in St. Louis, Missouri. Provided consultation services for this company which achieved the "Star" status under OSHA's prestigious VPP (Voluntary Protection Program).
- Comprehensive industrial hygiene survey including noise monitoring; exposure monitoring for various airborne dusts; organic chemicals and metal fumes; and ventilation system evaluation conducted for a large St. Louis based corporation involved in the foods industry.
- Managed the personal exposure monitoring for an extensive asbestos abatement project involving over \$7,000,000 of abatement and demolition work conducted at the Ford City Complex in Chicago, Illinois.
- Served as managing CIH in representing the Clayton School District during an extensive asbestos abatement project which was conducted in accordance with AHERA regulations.
- Provided CIH consulting services for a St. Louis based company involved in decontaminating chemical storage tanks; conducted confined space entry testing, lock-out procedures, etc., as necessary to effect safe entry. Recommended appropriate personal protective equipment and emergency equipment for such entries.
- Served as CIH responsible for all air monitoring services (exposure monitoring, area monitoring, and clearance monitoring) for an extensive abatement project performed at the Kirkwood School District under AHERA guidelines.

# DAMES & MOORE

Thomas M. Covilli Page -2-

- Conducted airborne area and exposure monitoring for carbon monoxide at a large iron foundry located in Northeast Missouri; involved recommendations for improvements (i.e., administrative and engineering controls) for certain point sources.
- Implementation of Hazard Communication Program and required training for employees at several companies in the chemical industry, rail car manufacturing and repair industry, and metal plating industry.
- Health & Safety Officer for environmental investigative work at the Bettis Atomic Power Plant NPL site in West Mifflin, Pennsylvania.
- Dames & Moore Regional Health & Safety Manager for the Midcontinental United States responsible for training, audits, medical surveillance, and internal professional consultation on health and safety issues.
- Performed noise and air exposure assessments at a foam production facility in Kansas City, Missouri including air monitoring for isocyanates, nuisance particulate, and 1,1,1-trichloroethane.

## Remedial

- Managed an environmental site remediation project requiring identification, transportation and disposal of several hundred leaking above ground containers of hazardous substances for a hanger facility at Lambert St. Louis International Airport, St. Louis, Missouri. Project required soil sampling and analysis to determine extent of surface soil contamination, as well as excavation, transportation, and disposal of contaminated soils. Project also included proper closure of four (4) underground storage tanks containing hazardous materials.
- Managed an extensive cleanup of over 200 leaking underground containers which also involved radiological contamination located at a major airport facility, including assessment; identification; excavation; transportation and disposal of waste and USEPA/State/and DOE liaison.
- Provided individualized underground storage tank management assistance to a number of facilities, including compliance assessment, recommendations, supervision of remedial excavation, sampling and analysis to determine potential leakage, and resultant soil excavation, transportation and disposal.

Thomas M. Covilli Page -3-

- Managed two (2) environmental remediation projects at the old Department of Energy facility in Weldon Spring, Missouri. One project involved management and disposal of several thousand gallons of PCB oils and associated transformer carcasses; the second project involved management of consolidation and repackaging of over 4,000 containers of hazardous chemicals and wastes including substances such as mercury, PCB contaminated oils, asbestos, reactive metals, chlorinated hydrocarbons, aromatic and aliphatic hydrocarbons, acids, caustics, strong oxidizers, and radiologically contaminated liquids and solids.
- Project Manager for remedial activities under a 106 Superfund Administrative Order at a former waste oil re-refinery facility which had PCB contamination. Activities included wastewater treatment, sludge solidification, oil disposal and site grading, PRP Committee coordination, and agency/legal liaison.
- Assistant Project Manager for a major surface impoundment removal project that involved over 4,000,000 gallons of waste in at a railcar repair facility in Texas. Required detailed coordination and quality control soil sampling/testing.
- Managed a lead abatement project at a former zinc galvanizing facility in Missouri which included interfacing with the Missouri Department of Natural Resources, establishing clean-up goals, and performing personnel, area, and perimeter air monitoring.

## Environmental

- Phase I assessments including limited asbestos surveys for two (2) large supermarket chains in Kansas City, Missouri.
- Project Manager and Health & Safety Officer for a subsurface geological and hydrogeological investigation at a parcel of land adjacent to a landfill involving radiological and organic chemical contamination.
- Environmental compliance assessments in St. Louis, Missouri for two (2) facilities of a large client in the telecommunications industry.
- Project Manager for a geological and hydrogeological site investigation at a former railcar repair facility in Illinois involving PNA and volatile organic chemical contamination.
- Environmental compliance audits at several railcar repair facilities throughout the country to assure compliance with federal, state, and local regulations, as well as compliance to company policy and procedures.
- Prepared contingency plans (as required by the EPA for generators of hazardous wastes) specific for each of several companies (in the metal plating industry, rail car repair industry, and chemical industry).

	Thomas M. Covilli Page -4-
	• Wrote batch wastewater pretreatment procedures for six (6) railcar repair facilities which included communication with various state and local agencies to determine discharge parameters for public-owned treatment work systems.
Past Experience	Allstates Environmental Services, Vice President, 1987-1990 Metcalf and Associates, Vice President, 1986-1987 Petrolite, Inc., Environmental Chemist, 1984-1986 ACF Industries, Division Environmental Chemist, 1980-1984
Academic Background	B.S., Zoology (minor in chemistry), Southeast Missouri State University, 1980
Professional Organizations	Member of American Industrial Hygiene Association Member of American Academy of Industrial Hygiene Member of the Missouri Waste Control Coalition Member of the Air and Waste Management Association
Professional Registration	Certification in the Comprehensive Practice of Industrial Hygiene (CIH), 1987 (Certificate #3723) Accreditation as Inspector/Management Planner under the Asbestos Hazard Emergency Response Act (AHERA), 1987 (Certificate #VIIKU23110-25R)
Selected Publications	In-house company-specific chemical commodity safety and handling manual with separate procedures for handling over 1,000 different chemicals. Manual has sections pertaining to first aid, exposure precautions, toxicology, hazard assessment, special safety equipment, and confined space entry.
	In-house company-specific data guide used by plant and corporate personnel for environmental purposes detailing procedures for handling and disposing of hazardous and other type waste as well as other environmental matters. This involved a great deal of research and thorough understanding of federal environmental regulations (e.g., RCRA, CERCLA, Clean Water Act, Clean Air Act).
	Article in a St. Charles, Missouri magazine regarding Hazard Communication and Community Right to Know.

-----

# Curriculum Vitae

JAMES R. BODDY

Title Senior Engineer

with Firm

Expertise Soil Mechanics and Foundation Engineering

Experience Dames & Moore, 1971

Project manager and principal investigator on studies pertaining to geotechnical and civil-related engineering, including earth structures, building structures, storage tanks, and power generating plants, as well as the closure plans of existing facilities and structures at mining and milling operations, oil refineries, and chemical plants. Other projects include diking embankments, waste impoundments, and water retention and mill tailing dams.

- Principal-in-charge of the development of engineering design and ground water components for the closure and post closure plans of a solid waste disposal basin for an oil refinery near East St. Louis, Illinois.
- Preliminary evaluation and development of alternatives and cost estimates for a reclamation closure plan at a large copper mining, milling and refining facility in Salt Lake City, Utah.
- o Investigation of ground water and development of remedial plans for control of contaminant migration from a uranium tailings impoundment.
- o Study of the leakage of possible contaminants from bottom ash and fly ash ponds at a power generating station.
- o Engineering support for the closure and post closure plans of the remote hazardous waste management facility at an oil refinery in North Salt Lake City, Utah.
- o Investigation of the geotechnical and ground water conditions contributing to a major slide area within a section of a pit wall within a large open pit mine.
- A complete design of a water retention earthfill embankment in Arizona from conceptual planning through construction management. Primary emphasis of this project was given to embankment stability of soft shale.
- o Geotechnical investigation of foundation conditions for the design of a mining plant, including foundation recommendations for office, storage, and processing facilities.
- o Development of geotechnical concepts and preparation of design plans and specifications of embankments and tailings impoundment systems for several mining and milling facilities.
- o Performing geotechnical design evaluation and complete designs of water retention earth fill embankments in the western United States.

DAMES & MOORE

JAMES R. BODDY Page -2-

- o Subsurface investigation and the development of geotechnical parameters for a 50-mile gas pipeline constructed within peat and soft soil areas.
- o Development of geotechnical and foundation design parameters for hospitals, condominiums, and industrial facilities.
- o Development of geotechnical design concepts for a 9-mile section of proposed mountain roadway on variable soil and rock conditions.
- o Establishing foundation, geotechnical, and ground water engineering parameters for 25 miles of diking. Major concerns centered around soft ground conditions and protection of the embankment slopes against stream flow erosion.

PastDesign Engineer with the Los Angeles County Road Department, LosExperienceAngeles, California

- o Structural and foundation design of highways and related structures such as culverts and bridges.
- AcademicM.S., Soils Engineering, University of IllinoisBackgroundM.S., Engineering Mechanics and Structures, University of Southern<br/>California<br/>B.S., Civil Engineering, University of Illinois

Countries

Worked In United States (including Alaska), Canada, Iran, Indonesia, Nigeria

Registration Professional Engineer, California, Utah, New Mexico, Wyoming, Colorado, Idaho, Illinois, West Virginia, and Ohio

nh-to

# JAMES R. BODDY

Title	Senior Geotechnical Engineer/Principal		
Expertise	Manager of Geotechnical Engineering and Design		
Experience with Firm	Principal and project director on engineering studies pertaining to remedial action plans and environmental projects including the following:		
	<ul> <li>Project management of engineering studies and design for a remedial action program at the former Vitro Chemical Company site in Salt Lake City, Utah. The engineering study included alternatives in on-site and off-site remedial design and construction of 2 million tons of uranium tailings material.</li> <li>Project Manager of a reclamation alternatives study and cost estimate for a large copper mining and processing facility in Salt Lake City, Utah for the company's implementation and long-term care. Conceptual development of the closure plans included actions at the mine, waste dumps, tailings impoundment facilities, smelter, concentrators, crusher area, and refinery.</li> </ul>		
	• Project Director on indefinite delivery orders for studies and designs pertaining to miscellaneous civil and military hazardous waste and environmental projects under the jurisdiction of the Kansas City District Office of the U.S. Corps of Engineers. Two delivery orders of this work are:		
	- Engineering services for a RCRA Facilities Investigation (RFI) at Fort Bliss, Texas.		
	- Engineering services for the remedial design to remove buried drums at the Gustavus Airport, Gustavus, Alaska.		
	• Project director and manager for the geotechnical engineering and remedial design for an inactive evaporation pond at Aerojet Heavy Metals (AHMC) facility near Jonesboro, Tennessee. The disposal and evaporation facility had been used for process liquids waste containing depleted uranium (DU) and thorium contamination.		
	• Project director for engineering design and study of ground water monitoring and closure and post-closure care plans of a solid waste disposal basin (SWDB) under RCRA control at an oil company manufacturing complex in southwest Illinois near St. Louis, Missouri.		
	Project manager and principal investigator on geotechnical studies pertaining to engineering investigations for building structures, fuel storage tanks, power generating plants, roadways and roadway structures, and power transmission		

generating plants, roadways and roadway structures, ince storage tanks, power generating plants, roadways and roadway structures, and power transmission lines; and geotechnical and ground water-related studies pertaining to diking projects, embankments, processing plants, and waste impoundments. Projects have been located throughout the United States and internationally in Indonesia, Iran, and Nigeria. JAMES R. BODDY Page - 2 -

	•	Establishing foundation, geotechnical, and ground water engineering parameters for 25 miles of diking. major concerns centered around soft ground conditions and protection of the embankment slopes against stream flow erosion.
	•	Development of geotechnical design concepts for a 9-mile section of proposed mountain roadway on variable soil and rock conditions.
	•	Investigation of the geotechnical and ground water conditions contributing to a major slide area within a section of a pit wall within a large open pit mine.
	•	Geotechnical/structural investigation of a large housing development experiencing foundation distress and developing remedial actions.
	•	Development of geotechnical and foundation design parameters for hospitals, condominiums, and industrial facilities.
	•	Geotechnical investigation of foundation conditions for the design of a mining plant, including foundation recommendations for office, storage, and processing facilities.
	•	Development of geotechnical concepts and preparation of design plans and specifications of embankments and tailings impoundment systems for several mining and milling facilities.
	•	Performing geotechnical design evaluation and complete designs of water retention earth fill embankments in the western United States.
Past		
Experience	Design Califori related	Engineer with the Los Angeles County Road Department, Los Angeles, nia. Work consisted of structural and foundation design of highways and structures such as culverts and bridges.
Academic Background	M.S., S M.S., I B.S., C	Soils Engineering, University of Illinois Engineering Mechanics and Structures, University of Southern California Sivil Engineering, University of Illinois
Countries		
Worked In	United	States (including Alaska, Canada, Iran, Indonesia, Nigeria
Registration	Profess Idaho, 1 and Oh	ional Engineer – California, Utah, New Mexico, Wyoming, Colorado, Illinois, West Virginia, Massachusetts, Minnesota, Missouri, Wisconsin io

[d:\...\cv\baddy-4.ev]

\_\_\_\_\_