FW 95-25

Administrative Record

FORT WINGATE DEPOT ACTIVITY, GALLUP, NEW MEXICO

Document No. 95-7

Fort Wingate Depot Activity, Gallup, New Mexico, Work Plan for Ground Water Monitoring Program at UST Building 6 Area

U.S. Army Corps of Engineers, Albuquerque District

June 1995

INQUIRIES REGARDING THIS DOCUMENT AND/OR THE ADMINISTRATIVE RECORD FOR FORT WINGATE DEPOT ACTIVITY SHOULD BE MADE TO:
COMMANDER, TOOELE ARMY DEPOT, TOOELE, UTAH 84074

June 1, 1995

Engineering and Planning Division
Planning Branch

Bill Skinner
Underground Storage Tank Bureau
New Mexico Environment Department
P.O. Box 26110
Santa Fe, New Mexico 87502

Dear Mr. Skinner:

The enclosed Work Plan for Groundwater Monitoring at the Fort Wingate former fueling station area is submitted for your review and approval. Please direct comments on the plan to Susan Gant, of my staff, at 505/766-1363 or by fax at 766-8733.

Sincerely,

James A. White
Chief, Planning Branch

Enclosure

Copy Furnished:
Commander, Tooele Army Depot
Attn: Mr. Larry Fisher
Tooele, Utah 84074-500

WORKPLAN
FOR
GROUND WATER MONITORING PROGRAM
AT
UST BLDG. 6 AREA
FORT WINGATE ARMY DEPOT ACTIVITY, NEW MEXICO

Executive Summary

This workplan is written to outline proposed activities needed to complete a two year quarterly ground water monitoring program of the three monitor wells in the former fuel depot area near Building No. 6, at the Fort Wingate Army Depot Activity. Fort Wingate is located about thirteen miles east of Gallup, New Mexico. This ground water monitoring program is being performed on behalf of the Tooele Army Depot, Tooele, Utah, the current manager for Fort Wingate. Fort Wingate was closed in January 1993 under the Base Realignment and Closure Act of 1988. Work at the site will consist of collecting and analyzing water samples from the three monitoring wells installed in 1994 in the shallow alluvial aquifer.

Six underground storage tanks were removed from the former fueling station in January of 1993. An on-site investigation was undertaken in May of 1993 and expanded in 1994, to determine the nature and extent of petroleum product contamination at and around building No. 6. Initial sampling of one of the three wells in November and December of 1994, indicated that benzene contamination was significantly above the State action level for groundwater. Subsequent sampling of this well in March of 1995, indicated that benzene levels are below the State action level. In light of this new laboratory data, the New Mexico Environment Department has mandated a two year, quarterly ground water monitoring program for the wells at this site.

WORKPLAN
FOR
UST BLDG. 6 AREA
GROUND WATER MONITORING PROGRAM
AT
FORT WINGATE ARMY DEPOT ACTIVITY, NEW MEXICO

1.0 Background. Fort Wingate Depot Activity (FWDA) is a federally owned and operated facility under the United States Army command and occupies 22,812 acres of land in McKinley County, New Mexico. FWDA was closed in January of 1993 and is currently managed by Tooele Army Depot in Tooele, Utah. During the week of 18-22 January, 1993, six underground storage tanks (USTs) were removed from the vehicle service and maintenance area at FWDA. A fuel release was discovered during tank removal, presumably from holes in the bottom of several of the tanks or associated piping. This spill was discovered on 19 January and reported to the New Mexico Environment Department (NMED), UST Bureau.

The U.S. Army Corps of Engineers, Albuquerque District (USACE-SWA), performed an on-site investigation to address soil and groundwater contamination at the site and to provide reclamation/remediation alternatives, as necessary. Personnel from USACE-SWA, HTRW Section made a brief inspection of the site during a field reconnaissance trip on 8 February 1993. A strong petroleum odor was detected at the site and several gallons of liquid were observed in a test pit adjacent to the UST excavation area.

An on-site investigation was begun in May of 1993. Petroleum constituent data was collected from sixteen soil borings advanced to an average of sixty feet in depth. Headspace readings on a PID were collected at five foot intervals to guide the collection of soil samples in the contaminated and uncontaminated zones. Based on the laboratory and field results from the sixteen soil borings completed at the site in May of 1993, the vertical extent of the contamination appeared to be limited by a continuous clay layer occurring at about 40 feet in depth. The horizontal extent of the contamination appeared to be limited to within 250 feet downgradient of the former underground storage tanks. These results were submitted to the NMED in June of 1993. After reviewing these results, the NMED requested in January of 1994, that the investigation be expanded to better define the vertical and horizontal extent of the contamination and to determine if fuel products have significantly contaminated the shallow alluvial aquifer.

In October and November of 1994, six soil borings to a depth of 60 feet were drilled , and 3 monitoring wells to an average depth of 57 feet were installed at the UST site. Laboratory analysis of water from one of these wells , MW-20, located south and west of the UST removal area indicated benzene contamination at 110 μg/l, well above the State action level of 10μg/l for benzene in groundwater. All three wells were resampled in December of 1994 and again, laboratory analysis indicated that the same well was still contaminated with benzene, but at a lower level of 59 μg/l. A soil gas survey was conducted in the UST area in March of 1995 to

better define the location of the benzene contamination around MW-20, however, benzene was not found in the soils or water at a depth of 35 to 50 feet in that area. The three wells were resampled during the soil gas survey and laboratory analysis indicated that the benzene level in MW-20 had fallen to 4.4 μg/l. With the apparent steady decline in the benzene levels, the Albuquerque District approached the NMED to suspend the investigation and any further requirements to install additional monitoring wells at this site. The NMED agreed that installation of additional monitoring wells was not indicated at this time, however they do require that a two-year quarterly ground water monitoring program provide data for this site to ensure that shallow ground water quality has not been compromised.

2.0 Purpose. The purpose of this two-year quarterly ground water monitoring program is to provide data on the BTEX contamination in the shallow alluvial aquifer that is associated with former, leaking USTs at FWDA. The field work for this program consists of sampling and laboratory analysis of water from the three monitoring wells MW-18, MW-20, and MW-22 every three months, beginning in the third quarter of 1995 and ending in the second quarter of 1997. Albuquerque District will maintain records of all sampling events and laboratory analysis data in accordance with NMED requirements for quarterly reports.

3.0 Detailed Description of Work.

3.1 Monitor Well Sampling Schedule. The wells shall be sampled beginning in July 1995 and every third month thereafter, ending in April 1997, according to the following schedule of sampling events:

1. July 95
2. October 95
3. January 96
4. April 96
5. July 96
6. October 96
7. January 97
8. April 97

3.2 Monitoring Record. Each monitoring sequence, including dates, times, a record of all activities performed, and any unusual or suspicious circumstances observed at this monitoring site shall be noted in a logbook dedicated to this purpose and maintained in the Albuquerque District Office, HTRW Section.

3.3 Monitor Well Sampling Procedures.

3.3.1 Sample Kits. Sample kits shall be obtained from the Contract laboratory in Albuquerque, prior to traveling to Fort Wingate for the sampling event. Prior to departing Albuquerque, sampling personnel shall verify that the sample kits contain all of the following:

- 2-40ml preserved VOA vials for each well (8-40 ml VOAs total),
- 2-40ml preserved VOA vials for QA,
- 2-40ml preserved VOA vials for QC,
- 1-40ml VOA laboratory-prepared trip blank,

- 4 or 5 extra VOAs for unsuccessful sample collection attempts,
- enough *frozen* Blue Ice to cover samples,
- Foam inserts for 40ml vials, or other appropriate cushioning material,
- Supply of sample labels and a permanent ink marking pen.

3.3.2. Sampling Equipment. Wells shall be purged and sampled using either a model ES60 purging pump or disposable polyethylene bailers purchased for this site and stored at the Albuquerque District Office. Sampling personnel shall wear new disposable latex gloves and safety glasses during each sampling event. Disposable equipment will be used once for each well and will be properly disposed of off-site. Teflon-coated steel wire mounted on a reel or disposable nylon cord will be used to suspend and retrieve bailers in the wells. Any equipment that is not disposable shall be decontaminated using an Alconox detergent solution, rinsed in clean water brought to the site or obtained from Building No. 34, the firehouse, and allowed to air dry prior to the sampling of any well.

3.3.3. Order of Sampling. The wells shall be sampled in the following order, progressing from the least contaminated well to the most contaminated: MW-22, MW-18, MW-20.

3.3.4. Vapor Monitoring. Prior to fully removing the well cap from the PVC casing, the vapors in the well casing shall be sampled with a photoionization detector and the measurement recorded in the log book.

3.3.5. Water Level Measurements. The static water level shall be measured to ±0.01 ft (± 0.3 cm) and recorded prior to purging or sample collection. Water level measurements will be made using an electronic water level indicator. This instrument will be decontaminated before use at each well by washing the first 63 feet of the tape in an alconox detergent solution using a brush to remove particulates or surface film, thoroughly rinsing in clean water, and allowing to air dry. Measurements will be taken from the highest point on the PVC casing.

3.3.6. Purging theWell. Prior to sampling, the stagnant water within the well will be removed so that fresh formation water can enter. A minimum of three well volumes shall be removed using a disposable polyethylene bailer or an ES60 pump. Well volumes shall be calculated according to the instructions provided in Appendix A. Conductivity and pH will be monitored and recorded until these parameters have stabilized to ±10% over at least two successive well volumes. If after three volumes, pH and conductivity have not stabilzed, additional well volumes will be removed, until stability of these parameters is achieved. Slowly recharging wells will be bailed to dryness only once. The sampling crew will record the recharge rate, if not immediate, the date, time, and rate of purging, and any unusual conditions noted with this operation.

If using a pump, lower the pump into the well to a short distance below the water level and begin water removal. Lower the pump, as required, to maintain submergence. Measure and record the rate of discharge frequently, using a bucket and stopwatch. Purge water will be disposed of by discharging the water on the asphalt surface of the surrounding parking area, avoiding areas where ponding is likely.

3.3.7. Sample Collection. The well should be sampled as soon as possible after purging using a disposable bailer. For slowly recharging wells, sampling should take place as soon as sufficient recharge has occurred to fill sampling containers. Each sample container will be filled directly from the bailer, rather than from a common container, using the VOC sampler tip which is inserted into the check valve for ease of filling.

Fill the VOA vials completely so that no headspace remains. To avoid aeration, hold the container at an angle so that the stream of water flows down the side of the vial. Do not touch the side of the vial with the VOC sampler tip while filling. Fill the vial until a convex liquid surface slightly protrudes from the top to eliminate any air bubbles and replace the Teflon-lined cap. Turn the vial upside down and tap it to check for air bubbles. If there are any bubbles, the vial will be opened to allow the bubbles to rise to the top and a few more drops of sample shall be added to the vial to drive the bubbles off. If bubbles are still present after closing the vial a second time, discard this vial and try again with another empty vial. Do not empty and refill a vial with sample water, because the preservative will be lost on emptying.

Two VOA vials will be collected for each sample. Sampling equipment and containers must be kept from ground contact, but may be placed on clean plastic sheets on the ground.

3.3.8. Immiscible Layers. Immiscible liquid layers are not expected to be encountered, however, if an immiscible layer is observed in the bailer, or during any other procedure in the sampling process, the thickness of the immiscible layer will be measured in the well casing using an appropriate electronic probe. The apparent thickness of the immiscible layer is defined as the difference between the liquid level and the water interface level. Presence and thickness of the immiscible layer shall be noted in the logbook.

3.3.9. Preservation and Packaging. Water samples are preserved with a hydrochloric acid solution which lowers the pH of the sample to less than 2. This preservative has been added to the VOA vials in the laboratory prior to field sampling, so that no acids will be utilized or carried into the field. Sample vials will be labeled with project name, sample matrix, name of sampler, well number, date and time of sampling, and type of analysis required. Labels shall be so placed on each vial that they secure the vial cap to the the vial and also wrap around the body of the vial. Samples will be placed in foam inserts in a laboratory-supplied cooler that contains frozen "blue ice." Samples and Trip Blanks will be maintained at a temperature of 4°C until they are delivered to the laboratory. Samples will be delivered to the laboratory no later than 24 hours from the time the last well is sampled.

3.3.10. Analytical Procedures. All water samples will be anyalyzed by EPA method 8020/modified 8015(C6-C36). These method numbers shall be written clearly on each VOA vial label and on the Chain of Custody.

3.3.11. Chain of Custody (COC) Control. The COC form is a formal record which documents the integrity of each sampling event. This record describes the sample(s), the date and method of sampling, the analysis required, who delivered the sample(s) to the laboratory and when, who received the sample(s) at the laboratory, and in what condition sample(s) were received. A blank COC form will accompany the sample kit and shall be completed prior to delivery of the samples to the laboratory.

3.3.12. Quality Assurance (QA) and Quality Control (QC). QA and QC samples to be chemically analyzed will be used to verify that the sampling and analytical techniques are being performed properly. QC samples are taken in the field and analyzed with the field samples by the same laboratory. QA replicate samples are analyzed by an independent laboratory to check the performance of the contract laboratory. The following types of QA/QC samples will be required for this monitoring program.

a. Replicates. Replicate samples or *splits* are extra samples which replicate the field samples. This means that the splits are as identical as possible to the field samples. Every tenth sample collected from the four monitoring wells at this site will be collected in triplicate. One of the triplicates is the field sample, one is the QA sample and one is the QC sample. The triplicates shall be labled identically, except for sample number, without identifying to the laboratory which is the QA, QC or field sample.

b. Trip Blanks. Trip Blanks are sealed VOA vials that are prepared by the laboratory and will be included in the sample kit and will be labled. Each cooler of samples must include at least one Trip Blank. Trip Blanks will remain in the cooler from the time it is picked up from the laboratory until it is redelivered to the laboratory.

c. Equipment Blanks. Equipment blanks will consist of deionized, distilled water which has been poured over or through non-dedicated purging or sampling equipment such as bailers or pumps. The equipment blank will be analyzed for the same parameters as the field samples and will be labeled, preserved and shipped in the same manner. Equipment blanks measure the effectiveness of equipment decontamination and will be collected at a rate of 1 for every 5 times the euipment in question is decontaminated.

4.0 Reporting Requirements. The report received from the contracting laboratory for each sample event shall be kept in the project file in the HTRW Section of the Abuquerque District for one year following the completion of this sampling program. One copy of each report

will be forwarded to the following entities within a week of the receipt of each report in the Abuquerque District:

- State of New Mexico Environment Department
  Underground Storage Tank Bureau
  ATTN: Bill Skinner
  P.O. Box 26110
  Santa Fe, New Mexico 87502

- ATTN: SDSTE-IRE/Mr. Larry Fisher
  Tooele Army Depot
  Tooele, Utah 84074

5.0 Safety and Health. A site-specific Safety and Health Plan (SSHSP) shall accompany this workplan in Appendix B. This plan shall establish procedures to protect the sampling personnel from potential safety and health hazards arising from sampling activities performed in support of this monitoring program.

Calculation of Well Volume

To insure that the proper volume of water has been removed from the well prior to sampling it is first necessary to determine the volume of standing water in the well pipe and the volume of water in the filter pack below the well seal. The volume can be easily calculated by the following method. Calculations shall be entered in the field logbook.

1. Refer to the well schematic for each well to obtain all available information on well construction. Use consitent units (preferably feet).

2. Calculate the volume of water in the *casing*:

$$V_c = \pi(d_1/2)^2(H - h);$$

where d_1 is the inside diameter of the casing, H is the total depth of the well from top of casing, and h is the static water level from the top of casing.

3. Calculate the volume of water in the *filter pack*:

$$V_f = \phi\pi[(d_3/2)^2 - n(d_2/2)^2][H - (h \text{ or } h_s)];$$

where ϕ is 0.30 and represents the interstitial space in the filter pack, n is the number of casings in the borehole, d_2 is the outside diameter of the casing, d_3 is the diameter of the borehole, and h_s is the distance from top of casing to the bottom of the seal. Use the *greater* distance, h or h_s.

4. One well volume is the sum of the water in the casing plus the water in the filter pack:

$$V_T = V_c + V_f$$

5. Convert the volume from cubic feet to gallons or liters, as necessary:

cubic ft x 7.48 = gallons gallons x 3.785 = liters

SITE HEALTH AND SAFETY PLAN

1.0 Purpose and Scope. This plan establishes procedures to protect Corps of Engineers (COE) employees and their contractors from potential safety and health hazards arising from sampling activities conducted in support of this groundwater monitoring program. The field work for this program consists of sampling and laboratory analysis of water from the three monitoring wells MW-18, MW-20, and MW-22 every three months, beginning in the third quarter of 1995 and ending in the second quarter of 1997.

2.0 Applicability. This plan applies to COE personnel, their contractors, and visitors in the identified working area. Contractors will follow this plan, as a minimum, and may have additional health requirements of their own. COE supervisors are to ensure that employees understand and follow these guidelines. The senior sample team member will ensure that these procedures are followed in the field.

3.0 References.

3.1 *COE Safety and Occupational Health Requirements Manual* 385-1-1, 1992.

3.2 29 CFR 1910.120 and 1926, OSHA Standards.

3.3 NIOSH/OSHA/USCG/EPA, *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities*, October 1985.

3.4 EPA, *Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA*, Draft Document, March 1988.

4.0 Site Description. The site is located within the Administration Area of Fort Wingate Army Depot Activity, a closed facility, which is about 13 miles east of Gallup, New Mexico. The monitoring wells are located within a 250-foot radius of Building No. 6, the former fueling station. The protective casings of the wells are painted yellow and can be easily identified by the red numerals painted on the yellow casing.

5.0 Training.

5.1 Required Training. Only personnel who have completed the 40-hour "Health and Safety Training for Hazardous Waste Operations and Emergency Response" course mandated by 29 CFR 1910.120 will be allowed within the exclusion zone during sampling activities.

5.2 Site-Specific Training. All personnel upon initial entry to the exclusion zone are required to read this Health and Safety Plan. In addition, all personnel will receive a safety briefing by the Project Manager. The safety briefing will include as a minimum;

- Safety, health and other hazards present on the site.
- Use of personal protective equipment.
- Work practices by which personnel can minimize risks from hazards.
- Safe use of engineering controls and equipment on the site.
- Recognition of symptoms and signs which might indicate overexposure to chemical hazards.
- Monitoring to be conducted.
- Decontamination requirements.
- Designated level of protection required for work zone.
- History of the site
- Planned field activities
- Potential hazards
- Safety and worker protection requirements including air monitoring and use of respiratory equipment.
- Decontamination procedures
- Emergency procedures

6.0 Health & Safety Officer. The site health and safety officer will be the senior sampling team member. Problems or incidents beyond the capabilities of the sampling team will be referred to David Willett, Albuquerque District CIH.

7.0 Site Work Zones. The senior sampling team member will establish or define the exclusion zone, contamination reduction zone, and the support zones at the site.

7.1 Exclusion Zone. The exclusion zone shall be the area including and around the

actual work area delineated by the hot-line. The exclusion zone may vary in area depending upon changing field conditions and contamination levels.

7.2 Contamination Reduction Zone. The contaminant reduction zone will consist of a site specific work area just outside the exclusion zone. This zone serves as a buffer between the exclusion zone and the support zone. Decontamination stations, and areas for controlled storage of used protective equipment are located within this zone.

7.2.1 Decontamination. All reusable gloves, boots, eyewear will be decontaminated by thoroughly rinsing with potable water in the contamination reduction zone. All disposable equipment and protective wear will be disposed of in an appropriate manner. Washing of hands and face is required prior to eating, smoking or drinking.

7.2.4 Sampling Equipment. Non-disposable sampling equipment will be cleaned between each well location and at the end of the work day. The sampling equipment will be transported in sealed, clean containers, and care will be taken to avoid contamination. Non-disposable sampling equipment will be washed with a non-phosphate detergent, tap water, and distilled water in that order, allowed to air-dry, and sealed back into clean containers. Each member of the sampling crew will don a new pair of gloves at each sampling location. The person who actually takes the samples will wear disposable plastic gloves and will change them between each sampling interval for each sampling site.

7.2.5. Geophysical Equipment. Downhole geophysical tools and cable will be cleaned with deionized, distilled water from a squeeze bottle, and by scrubbing with a brush if necessary.

7.3 Support Zone. The support zone is the staging area. This contamination-free zone is where equipment, supplies, clothing and other uncontaminated material are stored.

8.0 General Safety and Worker Protection Requirements. The following general safety and worker protection requirements shall apply to this site.

8.1 Personal Protective Equipment. The site safety officer shall determine the level of protection required by monitoring the breathing zone in the exclusion zone before and during scheduled sampling activities.

8.2 Respiratory Protection. All personnel will have MSHA/NIOSH-approved, fit-tested, dual cartridge, air purifying respirators. Documented proof of fist-testing/medical clearance for contractors and visitors will be required. The respirators will be worn as determined by the site safety officer and at such times that a worker feels they might be helpful for dust or odor removal. The respirator cartridge shall be a combination organic vapor/acid, gas-high efficiency particulate air.

8.3 Levels of Protection.

8.3.1 Level D Protection. Primary work uniform consists of work clothes, work gloves, safety glasses and steel-toed boots, as needed. Level D protection is considered appropriate while PID measurements in the breathing zone are not above background concentrations and field operations are not likely to encounter contamination.

8.3.2 Modified Level D Protection. Modified level D protection is required when PID measurements are not above background levels, but there is a reasonable probability that workers, during field activities, may be exposed to contaminated air, soil or water. Modified level D consists of rubber steel-toed boots or work boots with disposable covers, disposable Tyvek coveralls, rubber gloves, safety glasses, ear protection, and hard hat, as required. Gloves and boots will be taped to Tyvek coveralls.

8.3.3 Level C Protection. Includes wearing modified Level D protection plus inner latex gloves and outer PVC (or similar) gloves, and full-face or half-face respirator with filter cartridge as designated in paragraph 7.2. Level C protection will be worn when the concentration of volatile organics is above background, but less than 5 units in the breathing zone as measured by the PID.

8.3.4 Breathing Zone Limits. At the discretion of the site safety officer, all work will cease at the site and workers will leave the exclusion zone if PID readings in the breathing zone exceed 5 PID units,. After 30 minutes the site will be retested. Work may resume once concentrations subside to safe working levels. If elevated concentrations remain higher than 5 PID units or if high levels reoccur, the site safety officer will contact the PM and the District Safety Officer.

8.4 Smoking, Eating & Drinking Areas. Smoking, eating, or drinking are permitted only in designated areas.

8.5 Hearing Protection. Hearing protection will be worn where continuous noise is expected to be or is greater than 85dB(A) or where impulse noise exceeds 140 dB.

9.0 Monitoring Procedures and Action Levels. Employee exposure to volatile organics vapors will be monitored. If PID units exceed background levels, certain compounds likely to exist at the site such as benzene will be monitored using compound- specific colorimetric tubes. At the discretion of the senior sampling team member, when concentrations of detectable organic volatiles in the breathing zone exceed site background levels, workers within the exclusion zones may be required to wear level C protection. The senior sampling team member may order the site to be evacuated if concentrations of organic volatiles exceed 5 PID units and procedures detailed in section 7.3.4 will be followed.

9.1 Combustible Gas Meter. A combination combustible gas/hydrogen sulfide/oxygen meter (referred to in this document simply as CGI) will be used for testing ambient air for combustible gases or oxygen deficient air. When CGI readings indicate that combustible gasses are present at levels of 10%, but less than 25% of the lower explosive limit (LEL), work will proceed with caution. If combustible gases are present at 25% or greater of the lower explosive limit (LEL), work will cease and the site will be evacuated until combustible gas levels subside.

9.2 Photoionization Detector (PID). Volatile organics will be monitored using a PID. No special action will be taken for PID readings at or below background levels. Modified level D or level C protection will be worn during periods where PID readings in the breathing zone are between background and 5 PID units.

9.5 Conditions for Work Stoppages. Should the readings from the PID continue to exceed action levels (i.e. 5 PID units), work will be stopped and the PM and the District Safety Officer will be notified.

10.0 Hazard Evaluation. Activities planned for this groundwater monitoring program may be inherently hazardous. The following is a list of some of the potential hazards associated with this investigation.

10.1 Suspected On-Site Contaminants. Benzene is the primary suspected on-site contaminant.

10.1.1 Benzene. Benzene vapor is irritating to the eyes, nose and throat. If inhaled in sufficient concentrations, it may cause dizziness and/or loss of consciousness. Long-term chronic effects include destruction of the bone marrow and resultant damage to the blood production system. The threshold limit value (TLV) for ingestion of benzene is recommended at an airborne concentration of 0.1 ppm. Benzene is a confirmed human carcinogen, meaning it has been causally associated with the development of cancer in humans.

10.2 On-site Physical Hazards.

- Cold or heat stress is a potential hazard depending on the time of year that the sampling is conducted.

- Workers should be on guard for venomous snakes.

- Inattentive or careless operation of machinery may present the greatest danger to workers during sampling activities as discussed in sections 9.3 - 9.7.

10.3 Groundwater Sampling. Water sampling may expose workers to chemical hazards.

11.0 Site Specific Worker Protection Requirements. Other than the requirements listed in section 7, no additional requirements are planned for this site investigation, however, the senior sampling team member shall be responsible to increase required levels of worker protection if site conditions change.

12.0 Emergency Response/Contingency Plan. This section describes contingencies and emergency planning procedures to be implemented at the Site. This plan is compatible with local, state and federal disaster and emergency management plans as appropriate.

12.1 Pre-Emergency Planning. During the site briefings held periodically, all employees will be trained in and reminded of provisions of the emergency response plan, communication systems, and evacuation routes. The plan will be reviewed and revised if necessary, on a regular basis by the HSO. This will ensure that the plan is adequate and consistent with prevailing site conditions.

12.2 Personnel Roles and Lines of Authority. The senior sampling team member has primary responsibility for responding to and correcting emergency situations. This includes taking appropriate measures to ensure the safety of site personnel and the public. Possible actions may involve evacuation of personnel from the site area, and evacuation of adjacent workers. He/she is additionally responsible for ensuring that corrective measures have been implemented, appropriate authorities notified, and follow-up reports completed. The Site Health & Safety Officer (HSO) may be called upon to act on the behalf of the senior sampling team member, and will direct responses to any medical emergency. The individual contractor organizations are responsible for assisting the senior sampling team member in his/her mission within the parameters of their scope of work.

- Field Manager: Senior sampling team member.
- HSO: Project Manager, Susan W. Gant.
- HSO Alternates: David Willett, CIH or Chief, HTRW Section.

12.3 Emergency Recognition and Prevention. Section 12 includes information on the chemical and physical hazards onsite. Personnel will be familiar with techniques of hazard recognition from preassignment training and site specific briefings. The senior sampling team member is responsible for ensuring that prevention devices or equipment are available to personnel.

12.4 Evacuation Procedures. In the event of an emergency which necessitates an evacuation of the site, all personnel should evacuate upwind of any activities. Personnel will be expected to proceed to the closest exit and mobilize and remain at that area until the senior

12.5 Emergency Notification. The following list provides names and telephone numbers for emergency contact personnel. In the event of a medical emergency, personnel will take direction from the senior sampling team member and notify the appropriate emergency organization. In the event of a fire or spill, the senior sampling team member will notify the appropriate local, state, and federal agencies.

Organization	**Telephone**
Ambulance Service	(505) 722-7746
Hospital: Rehoboth-McKinley Christian Hospital	(505) 863-6832
State Police	(505) 863-9353
Fire	(505) 863-3801
EPA Emergency Response Team	(908) 321-6660
NMED Emergency Response	(505) 827-9329
National Response Center	800-424-8802
COE Industrial Hygienist	(505) 766-1291
COE Albuquerque District Safety Office	(505) 766-1390

12.6 Directions to Hospital in Gallup: Proceeding through the main entrance/exit of Fort Wingate Depot Activity, turn left (west) onto the Frontage Road, old U.S. Route 66, towards Gallup. Travel about 7 miles on U.S. 66 to the T-intersection of Boardman, State Route 564. There is a traffic light at this intersection, proceed left (south) through the intersection onto Boardman. Proceed about 3 miles on Boardman to the intersection with Red Rock Drive. Turn right (northwest) onto Red Rock Drive and follow the signs to the hospital, which is visible from the intersection.

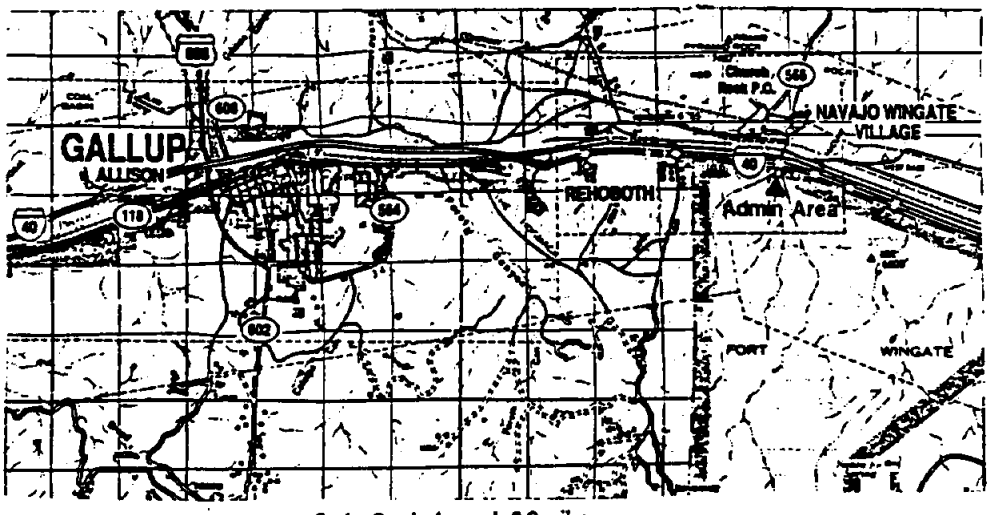


Figure 12.1 Evacuation Route to Medical Facility in Gallup

12.7 Emergency Medical Treatment Procedures.

- Any person who becomes ill or injured in the exclusion zone must be decontaminated to the maximum extent possible. If the injury or illness is minor, full decontamination should be completed and first aid administered prior to transport. If the patient's condition is serious, at least partial decontamination should be completed (i.e., complete disrobing of the victim and redressing in clean coveralls or wrapping in a blanket.)

- First aid should be administered while awaiting an ambulance or paramedics.

- All injuries and illnesses must immediately be reported to the project manager.

- Any person being transported to a clinic or hospital for treatment should take with them information on the chemical(s) they have been exposed to at the site.

- Any vehicle used to transport contaminated personnel will be treated and cleaned as necessary.

12.8 Fire or Explosion. In the event of a fire or explosion, the local fire department should be summoned immediately. Upon their arrival, the senior sampling team member will advise the fire commander of the location, nature, and identification of the hazardous materials on site. If it is safe to do so, site personnel may:

- Use fire fighting equipment available on site to control or extinguish the fire; and,

- Remove or isolate flammable or other hazardous materials which may contribute to the fire.

12.9 Spill or Leaks. In the event of a spill or a leak, site personnel will:

- Inform their supervisor immediately;

- Locate the source of the spillage and stop the flow if it can be done safely; and,

- Begin containment and recovery of the spilled materials.

12.10 Adverse weather. In the event of adverse weather, the senior sampling team member will determine if work can continue without sacrificing the health and safety of site personnel. Some of the items to be considered prior to determining if work should continue are:

- precipitation/wind hazard
- limited visibility
- potential for accidents
- potential for heat stress
- electrical storms
- malfunctioning of monitoring equipment

12.11 On-Site Emergency Equipment. The following emergency equipment will be located on each site:

- First aid kit
- Cellular telephone
- Berm materials
- Fire extinguisher
- Eye wash station
- Real time air equipment

13.0 Fire Equipment. Fire extinguishing equipment meeting 29 CFR part 1910, subpart 1, shall be on hand and ready for use to control fires.

14.0 Medical Monitoring. The COE provides their employees with a base line physical examination and annual physical exam up-dates thereafter, including blood chemistry with complete blood count and differential; urinalysis, medical history; audiogram; vision test; pulmonary function testing; and a physician's interpretation of the employees ability to wear a respirator. As required, the examination may include testing for heavy metals. All contract personnel will be required to have a medical monitoring plan which must include proof of medical clearance to wear personal protective equipment.

15.0 Plan Approval. This Health and Safety Plan has been submitted, reviewed, and approved by the following personnel:

Submitted by:

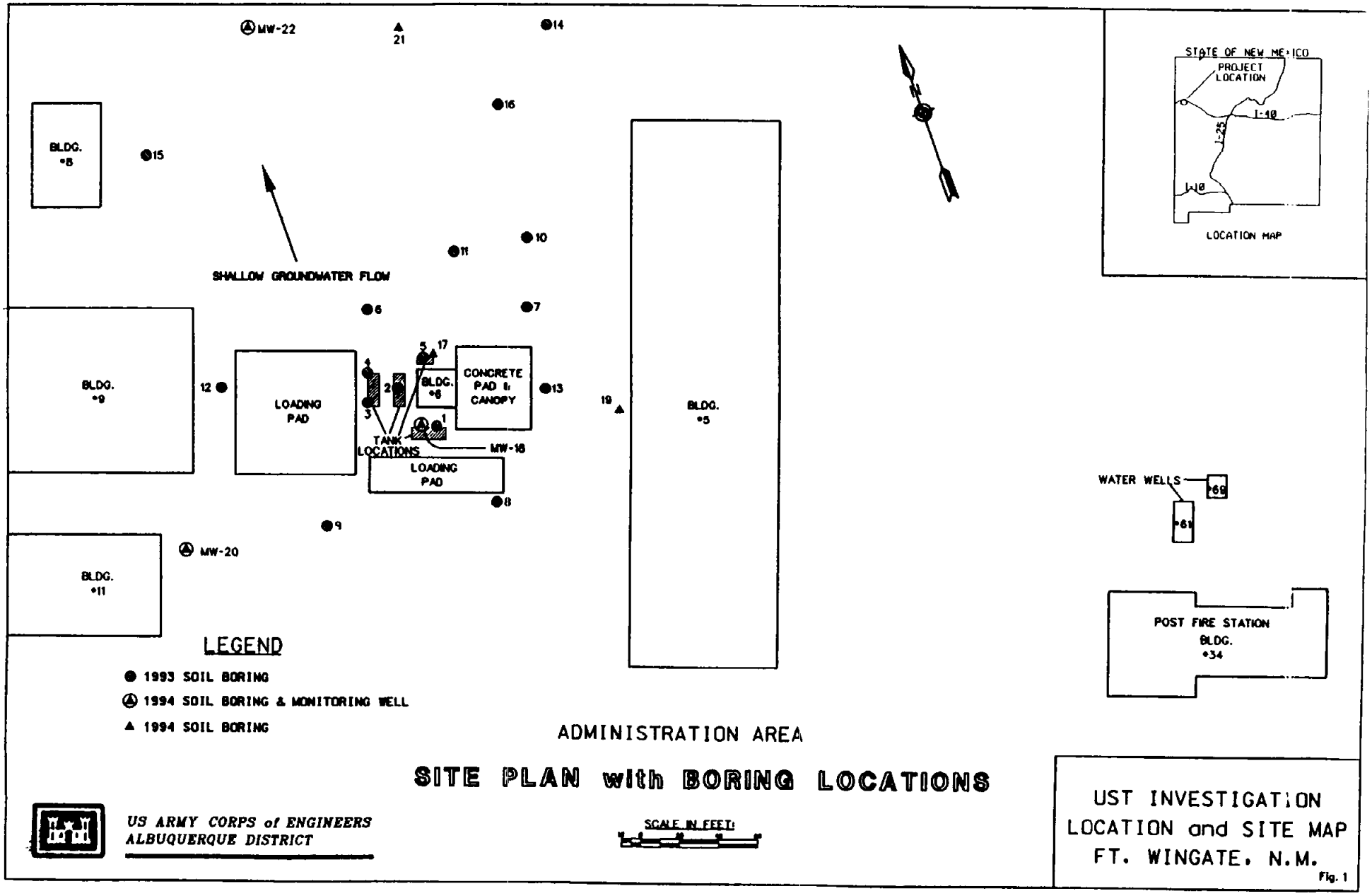
Susan Gant
Project Manager

Approved by:

David Gregory, P.E.
Acting Chief, HTRW Section

Reviewed and Recommended Acceptance by:

David Willet, CIH
Industrial Hygienist



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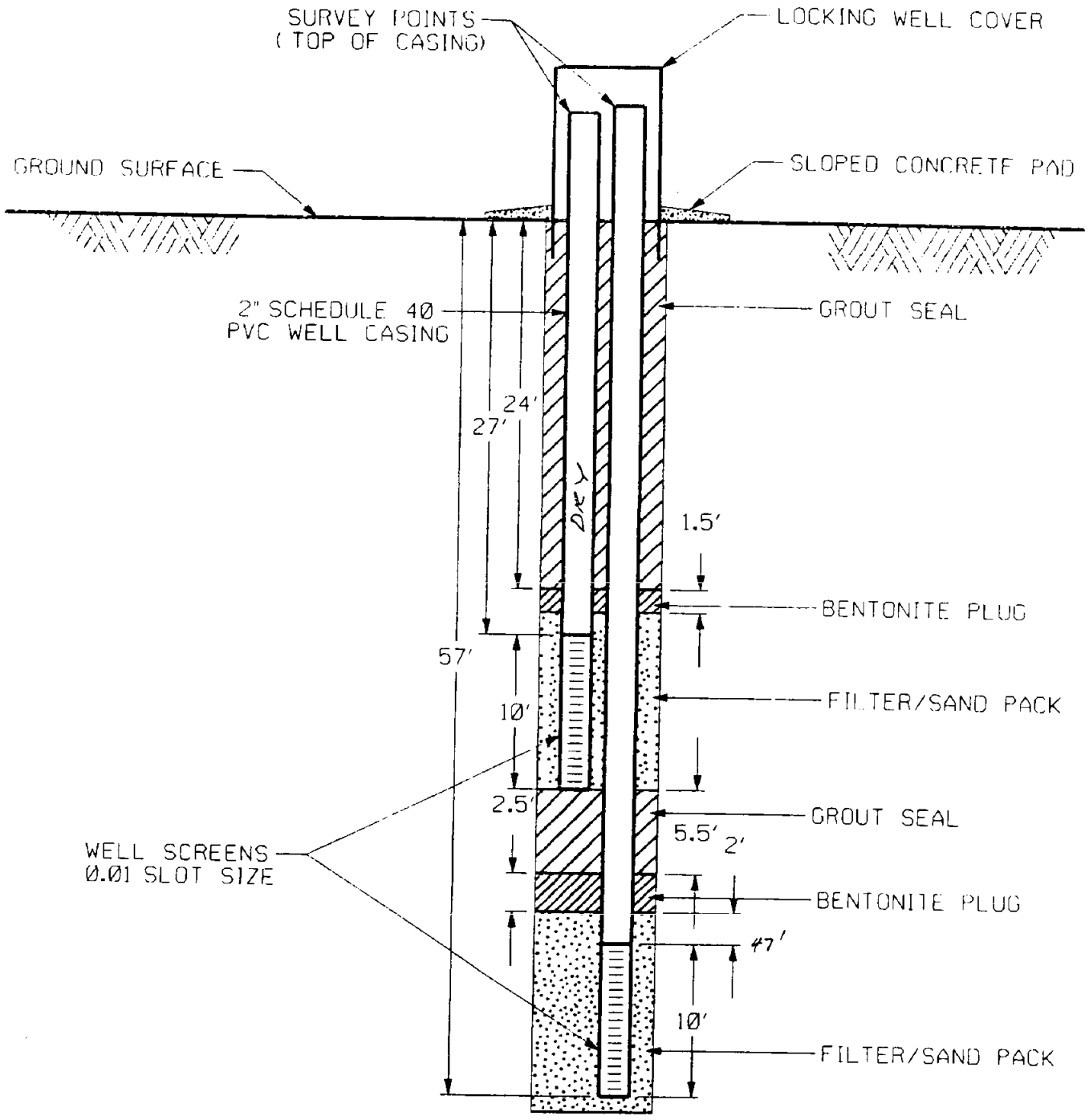

NESTED MONITORING WELLS SCHEMATIC

(NOT TO SCALE)

MW #18

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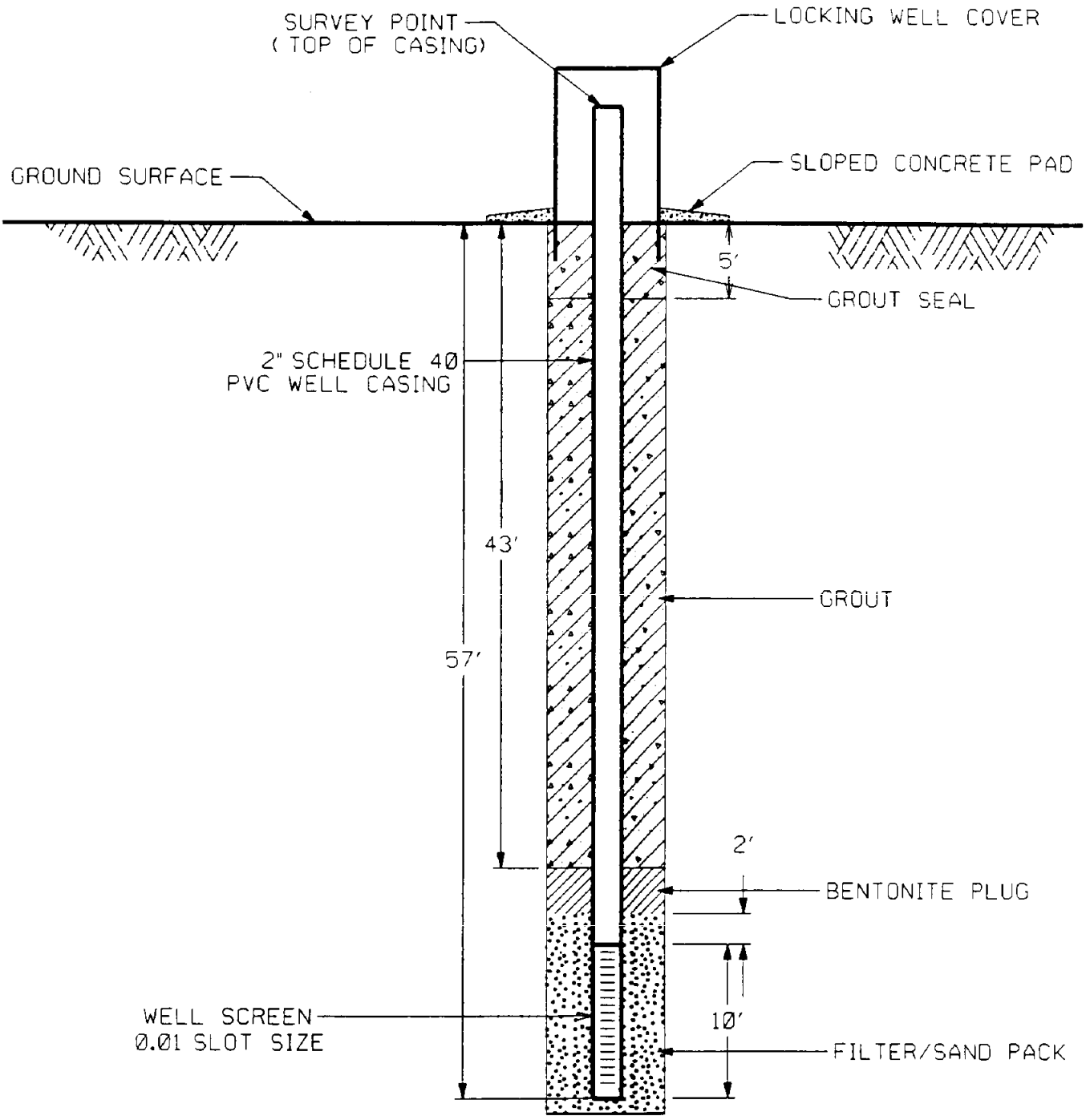

NESTED MONITORING WELLS SCHEMATIC

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MW #20

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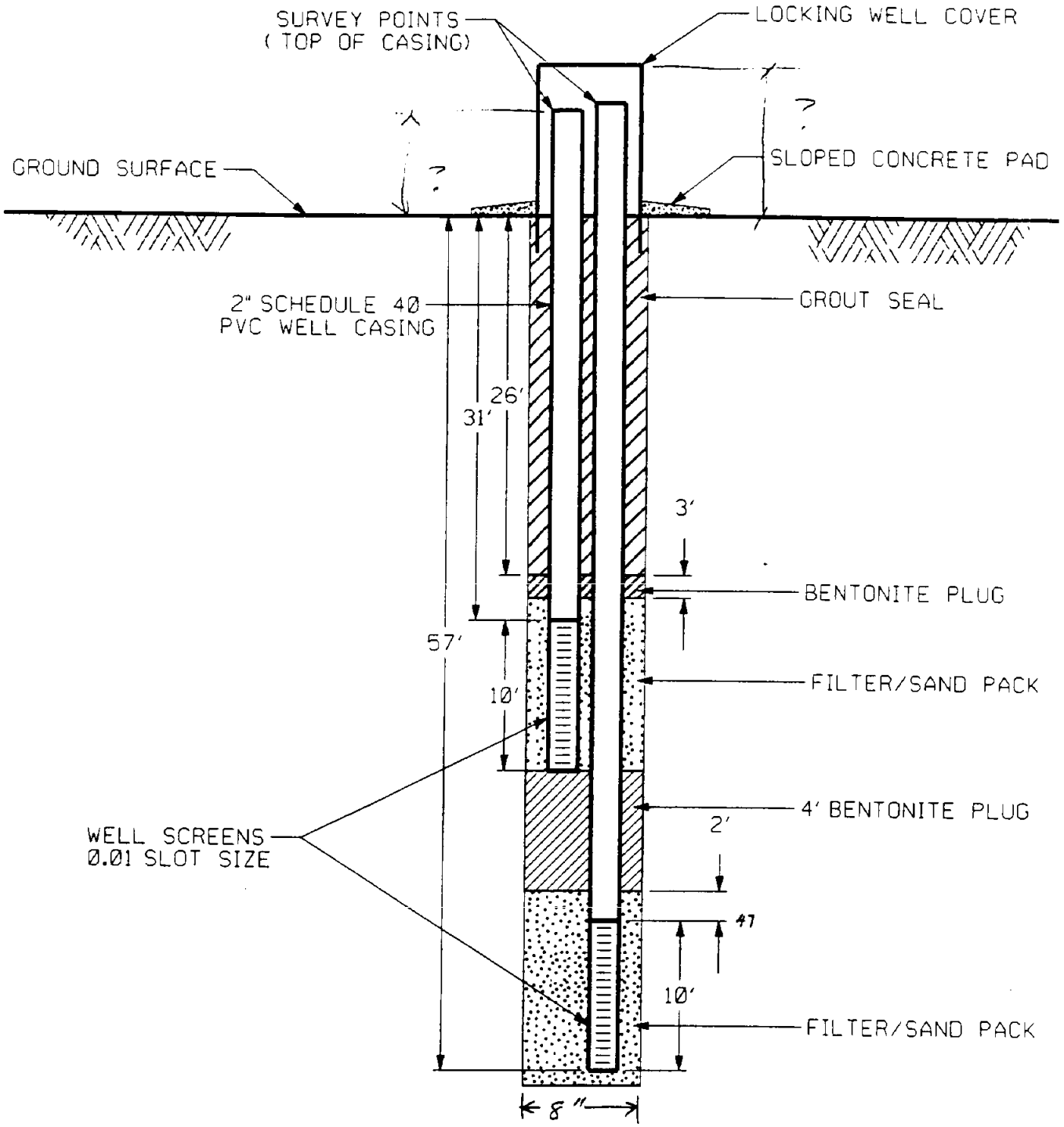
ALBUQUERQUE DISTRICT



NESTED MONITORING WELLS SCHEMATIC

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MW #22

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