

ORDINANCE NO. 1547

AN ORDINANCE OF THE CITY OF CHULA VISTA AMENDING CHAPTER 35 OF THE CHULA VISTA CITY CODE BY ADDING THERETO A NEW ARTICLE 7 RELATING TO CONSTRUCTION, REPAIR, RECONSTRUCTION OR DESTRUCTION OF WELLS, AND INCORPORATING BY REFERENCE WATER WELL STANDARDS: STATE OF CALIFORNIA (CHAPTER II OF DEPARTMENT OF WATER RESOURCES BULLETIN NO. 74), AND CATHODIC STANDARDS: STATE OF CALIFORNIA (CHAPTER II OF DEPARTMENT OF WATER RESOURCES BULLETIN NO. 74-1)

The City Council of the City of Chula Vista does ordain as follows:

SECTION I: That Chapter 35 of the Chula Vista City Code is hereby amended by adding thereto a new Article 7 to read as follows:

ARTICLE 7. WATER WELLS.

Sec. 35.701. Purpose and Intent.

It is the purpose of this article to further protect the environmental quality in this City by providing for the construction, repair and reconstruction of wells to the end that the ground water of this City will not be polluted or contaminated and that water obtained from such wells will be suitable for the purpose for which used and will not jeopardize the health, safety or welfare of the people of this City, and for the destruction of abandoned wells or wells found to be public nuisances to the end that such wells will not cause pollution or contamination of ground water or otherwise jeopardize the health, safety or welfare of the people of this City.

Sec. 35.702. Definitions.

The following words shall have the meaning provided in this section:

"Abandoned and Abandonment" shall apply to a well which has not been used for a period of one year, unless the owner declares in writing, to the Health Officer, his intention to use the well again for supplying water or other associated purposes (such as an observation well or injection well) and receives approval of such declaration from the Health Officer. All such declarations shall be renewed annually and at such time be resubmitted to the Health Officer for approval. Test holes and exploratory holes shall be considered abandoned twenty-four hours after construction work has been completed, unless otherwise approved by the Health Officer of San Diego County.

"Abatement". The construction, reconstruction, repair or destruction of a well so as to eliminate a nuisance caused by a well polluting or contaminating ground water.

"Agricultural Well". A water well used to supply water for irrigation or other agricultural purposes, including so-called stock wells.

"Cathodic Protection Well". Any artificial excavation in excess of 20 feet constructed by any method for the purpose of installing equipment or facilities for the protection, electrically, of metallic equipment in contact with the ground. (See definitions of deep anode bed and shallow anode bed.)

"Commercial Well". A water well used to supply a single commercial establishment.

"Community Water Supply Well". A water well used to supply water for domestic purposes in systems subject to Chapter 7 of Part I of Division 5 of the California Health and Safety Code.

"Construct, Reconstruct (Construction, Reconstruction)". To dig, drive, bore, drill or deepen a well, or to re-perforate, remove, replace, or extend a well casing.

"Contamination". An impairment of the quality of water to a degree which creates a hazard to the public health through poisoning or through spread of disease.

"Deep Anode Bed". Any cathodic protection well more than 50 feet deep.

"Destruction". The proper filling and sealing of a well that is no longer useful so as to assure that the ground water is protected and to eliminate a potential physical hazard.

"Electrical Grounding Well". Any artificial excavation in excess of 20 feet constructed by any method for the purpose of establishing an electrical ground.

"Health Officer". The Health Officer of San Diego County or his designee.

"Individual Domestic Well". A water well used to supply water for domestic needs of an individual residence.

"Industrial Well". A water well used to supply an industry on an individual basis.

"Modification, Repair or Reconstruction". The deepening of a well or the re-perforation or replacement of a well casing and all well repairs and modifications that can affect the ground water quality.

"Observation Well". A well used for monitoring or sampling the conditions of water-bearing aquifer, such as water pressure, depth, movement or quality.

"Order of Abatement". Both mandatory and prohibitory orders requiring or prohibiting one or more acts; said term shall also include those orders effective for a limited as well as an indefinite period of time, and shall include modifications or restatements of any order.

"Permit". A written permit issued by the Health Officer permitting the construction, reconstruction, destruction, or abandonment of a well.

"Person". Any person, firm, corporation or governmental agency.

"Pollution". An alteration of the quality of water to a degree which unreasonably affects (1) such waters for beneficial uses, or (2) facilities which serve such beneficial uses. Pollution may include contamination.

"Public Nuisance". The term "public nuisance", when applied to a well, shall mean any well which threatens to impair the quality of ground water or otherwise jeopardize the health or safety of the public.

"Salt Water (Hydraulic) Barrier Well". A well used for extracting water from or injecting water into the underground as a means of preventing the intrusion of salt water into a fresh water bearing aquifer.

"Shallow Anode Bed". Any cathodic protection well more than 20 feet deep but less than 50 feet deep.

"Test or Exploratory Hole". Any excavation used for determining the nature of underground geological or hydrological conditions, whether by seismic investigation, direct observation or any other means.

"Well". Any artificial excavation constructed by any method for the purpose of extracting water from or injecting water into the underground, for providing cathodic protection or electrical grounding of equipment, for making tests or observations of underground conditions, or for any other similar purpose. Wells shall include, but shall not be limited to, community water and supply wells, individual domestic wells, commercial wells, industrial wells, agricultural wells, cathodic protection wells, electrical grounding wells, test and exploratory holes, observations wells and salt water (hydraulic) barrier wells, as defined herein, and other wells whose regulation is necessary to accomplish the purposes of this article.

Wells shall not include: (a) oil and gas wells, geothermal wells or other wells constructed under the jurisdiction of the State Department of Conservation, except those wells converted to use as water wells; (b) wells used for the purpose of dewatering excavations during construction, or stabilizing hillsides or earth embankments; or (c) other wells whose regulation is not necessary to fulfill the purpose of this article as determined by the Health Officer.

Sec. 35.703. State Reporting.

Nothing contained in this article shall be deemed to release any person from compliance with the provisions of Article 3 of Chapter 10 of Division 7 of the Water Code of the State of California or any successor thereto.

Sec. 35.704. Standards - General.

No person shall construct, repair, reconstruct or destroy any well subject to this article which does not conform to the standards established herein.

Sec. 35.705. Standards for Water Wells.

Standards for the construction, repair, reconstruction or destruction of water wells shall be as set forth in Chapter II of State Department of Water Resources Bulletin No. 74 (three copies of which have been filed with the City Clerk with the following modifications:

1. Part II, Section 8(A)

ADD: To footnote 1/ "Shallow dug, or bored wells used for community water supply shall be located at least 250 feet from any sewage disposal facility."

2. Part II, Section 9(A)

SUBSTITUTE: "20 ft. 1/" for "none 3/" (this automatically deletes the 3/ footnote).

3. Part II, Section 9(E)

ADD: Following footnote following section title:

****Exception - where the air-rotary method is used for individual domestic wells 8" in diameter or smaller, the thickness of seal may be reduced to 1".**

4. Part II, Section 19(B)

DELETE: Entire section with exception of that portion of the first sentence which states:

"Because of their susceptibility to contamination and pollution; the use of well pits should be avoided."

5. Part II, Section 15(A), Item 3

DELETE: Phrase:

"Where the water is to be used for domestic purposes."

6. Part II, Section 16

DELETE: From Section 16 title the words: "Large and diameter" and

SUBSTITUTE: the words "Bored or dug."

7. Part II, Section 16(A)

DELETE: Word "Underground" from last sentence so sentence reads: "When used for this purpose, these wells shall be located at least 250 feet from any sewage disposal facility."

Sec. 35.706. Standards for Cathodic Protection Wells.

Standards for the construction, repair, reconstruction or destruction of cathodic protection wells shall be as set forth in Bulletin No. 74-1 of the State Department of Water Resources (three copies of which are filed with the City Clerk with the following modifications:

1. Chapter II, Part I, Section 1-A

DELETE: Definition of "Cathodic Protection Well" as printed and

ADD: "A. Cathodic Protection Well" A cathodic protection well means an artificial excavation in excess of 20 feet constructed by any method for the purpose of installing equipment or facilities for the protection electrically of metallic equipment in contact with the ground, commonly referred to as Cathodic Protection.

2. Chapter II, Part II, Section 8

DELETE: Word "Location" in Title and

ADD: Word "Construction" so title reads:

"Well Construction with Repect to Pollutants"

3. Chapter II, Part II, Section 10

DELETE: Subsection A-4 and the asterisked footnote in their entirety.

4. Chapter II, Part III, Section 13B

DELETE: Phrase "If the casing is 8 inches or larger in diameter" thereby leaving the phrase "The well is covered with an appropriate locked cap."

Sec. 35.707. Nuisances - Investigation.

The County Health Officer may, upon reasonable cause to believe that an abandoned well or other well is causing a nuisance by polluting or contaminating ground water, or constitutes a safety hazard, investigate the situation to determine whether such a nuisance does in fact exist. He shall have the power, when in the performance of his duty and upon first presenting his credentials and identifying himself as an employee of the County Health Department to the person apparently in control of the premises, if available, to enter upon any such premises between the hours of 8:00 a.m. and 6:00 p.m., to discover or inspect any thing or condition which appears to indicate such a nuisance. He may examine such premises, things or conditions, take such samples and make such tests as needed and take any other steps reasonably necessary for the proper investigation and determination of whether such a nuisance exists.

Sec. 35.708 Order to Abate Nuisance.

Whenever the Health Officer determines that an abandoned or other well is causing a nuisance by polluting or contaminating ground water, or constitutes a safety hazard, he may issue a written order requiring that the conditions productive of the nuisance be abated within a period of ten days thereafter and shall forthwith serve the order upon the person occupying the premises, if any, and if no person occupies the premises, the order shall be posted upon said premises in a conspicuous place. In addition, a copy shall be mailed to the owners of the premises as their names and addresses appear upon the last equalized assessment roll. The Health Officer may for good cause extend the time specified in the order or otherwise modify or rescind the order.

The order of abatement shall advise the possessors and owners of the property of their right to appeal to the City Council and to stay the order of abatement pending such appeal.

Sec. 35.709. Appeal from Order of Abatement.

Any person who has been given an order of abatement may, within ten days following the receipt of the order of abatement, file an appeal in writing to the City Council. Said appeal shall be accompanied by a filing fee of twenty-five dollars (\$25.00) and shall specify the grounds upon which the appeal is taken. The City Clerk shall then proceed to set the matter for hearing, not later than 20 days thereafter, and such appeal shall stay the effect of any order issued pursuant to Section 35.708 until the City Council hears the appeal and issues its order either to affirm, overrule or modify the action of the Health Officer. Notice of the hearing shall be mailed to the appealing party at least five days prior to the hearing.

Sec. 35.710. Abatement by County Health Officer.

In the event that a nuisance is not abated in accordance with an order of abatement, the Health Officer may, upon securing the approval of the City Council, proceed to abate the nuisance by force account, contract or any other method deemed most expedient by the City Council.

Sec. 35.711. Payment of Costs.

The Health Officer shall prepare and file with the City Clerk a report specifying the work done, the itemized and total cost of the work, a description of the real property upon which the well is or was located, and the names and addresses of the record owner, the holder of any mortgage or deed of trust of record, and any other person known to have a legal interest in the property.

A hearing shall be held on said report and any protests or objections thereto, and notice of the hearing shall be mailed to the persons with a legal interest in the property at least ten days prior to the date set for the hearing. The City Council shall determine at the hearing the correct charge to be made for the work.

All costs of abatement carried out under the terms of this section shall constitute a charge and special assessment against the parcel of land involved. If such costs are not paid within 60 days, they shall then be declared a special assessment against that property as provided in Government Code Section 25845. The assessment shall be collected at the same time and in the same manner as ordinary City taxes are collected and shall be subject to the same penalties and the same procedure and sale in case of delinquency as provided for ordinary City taxes. All laws applicable to the levy, collection and enforcement of City taxes shall be applicable to such special assessment. In addition to its rights to impose said special assessment, the City shall retain the alternative right to recover its costs by way of civil action against the owner and person in possession or control jointly and severally.

Sec. 35.712. Penalties.

Any person who violates the terms of this article or any permit issued hereunder shall be guilty of a misdemeanor, punishable by a fine not exceeding five hundred dollars (\$500.00) or by imprisonment not exceeding six (6) months, or by both such fine and imprisonment. Such person shall be deemed guilty of a separate offense for each and every day or portion thereof during which any such violation is committed, continued or permitted and shall be subject to the same punishment as for the original offense.

Sec. 35.713. Construction, Repair, Reconstruction and Destruction of Wells - Acts Prohibited.

No person shall construct, repair, reconstruct or destroy any well unless a written permit has first been obtained from the Health Officer as provided in this article, and unless the work done shall conform to the standards specified in this article and all the conditions of the said permit.

Sec. 35.714. Permits.

A. *Applications.* Applications for permits shall be made to the Health Officer and shall include the following:

1. A plot plan showing the location of the well with respect to the following items within a radius of 250 feet from the well:

- (a) Property lines.
 - (b) Waste disposal systems or works carrying or containing sewage, industrial wastes, or solid wastes.
 - (c) All intermittent or perennial, natural or artificial bodies of water or water-courses.
 - (d) The approximate drainage pattern of the property.
 - (e) Other wells.
 - (f) Structures, surface or subsurface.
2. Location of the property, and the Assessor's parcel number.
 3. The name of the person who will construct the well.
 4. The proposed minimum and the proposed maximum depth of the well.
 5. The proposed minimum depths and types of casings and minimum depths of perforations to be used.
 6. The proposed use of the well.
 7. Other information as may be necessary to determine if the underground waters will be adequately protected.

B. *Fees.* Each application shall be accompanied by a fee of twenty-five dollars (\$25.00), and shall be paid directly to the San Diego County Department of Public Health.

C. *Conditions.* Permits shall be issued in compliance with the standards provided in this article except that such standards shall be inapplicable or modified as expressly provided by the Health Officer in such permit upon his finding that such modifications or inapplicability will accomplish the purposes of this ordinance. Permits may also include any other condition or requirement found by the Health Officer to be necessary to accomplish the purposes of this article.

D. *Grounds for Refusal of Permit.* The Health Officer may refuse to issue a permit for any of the following reasons:

1. The applicant is not a person authorized to perform the work as provided in this article.
2. The applicant fails to post the required surety bond or cash deposit as provided in this article.
3. The permit application is not in proper form.
4. The proposed well would create a water pollution problem or would aggravate a pre-existing water pollution problem or would violate any of the standards established in this article.

E. *Terms, Completion of Work.* The permittee shall complete the work authorized by the permit within the time and before the date set out in the permit. The permittee shall notify the Health Officer in writing upon completion of the work and submit a copy of the well drilling log and no work shall be deemed to have been completed until such written notification and a copy of the well drilling log have been received. A final inspection of the work shall be made by the Health Officer unless such inspection is waived by him, and no permittee shall be deemed to have complied with this article or his permit until such inspection has been performed or waived.

F. *Guarantee of Performance.* Prior to the issuance of a permit, the applicant shall post with the Health Officer a cash deposit or bond guaranteeing compliance with the terms of this article and the applicable permit, such bond to be in an amount deemed necessary by the Health Officer to remedy improper work, but not in excess of twenty-five hundred dollars (\$2,500.00). Such deposit or bond may be waived by the Health Officer where other assurances of compliance are deemed adequate by him.

G. *Continuous Bond or Cash Deposit.* In lieu of furnishing a separate bond for each permit as provided above, a properly licensed contractor may deposit with the Health Officer a surety bond or cash deposit in the amount of twenty-five hundred dollars (\$2,500.00), which bond or cash deposit shall be available to remedy any improper work done by the contractor pursuant to any permit issued under this article.

H. *Review and Appeal.* Any person aggrieved by the refusal of a permit or the terms of a permit required by this article may appeal in writing to the City Council. The appeal shall be accompanied by a filing fee of fifteen dollars (\$15.00). The City Council shall, within forty (40) days after the filing of an appeal, hold a hearing on said appeal and shall mail notice in writing of the date thereof to the appellant and applicant at least five (5) days before the hearing date. The decision of the City Council shall be rendered within ten (10) days after the initial hearing date and shall be binding upon the parties, except that the determinations made by the Health Officer relating directly to the public health may not be overruled or modified by the City Council.

Sec. 35.715. Person Authorized to Perform Work.

Construction, reconstruction, repair, and destruction of wells shall be performed by a contractor licensed in accordance with the provisions of the Contractors' License Law (Bus. & Prof. Code, Ch. 9, Div. 3) unless exempted by that law.

Sec. 35.716. Inspections.

1. Upon receipt of an applicant, an inspection of the well location may be required by the Health Officer to be made by the Health Officer prior to issuance of a well permit.

2. The Health Officer or any person designated by the Health Officer may inspect the work in progress and may enter the premises at any reasonable time for the purpose of performing such inspection.
3. After work has been completed pursuant to any permit the Health Officer shall be notified by the person performing the work and the Health Officer shall make a final inspection of the completed work to determine compliance with the well standards.

Sec. 35.717. Expiration of Permit.

Each permit issued pursuant to this article shall expire and become null and void if the work authorized thereby has not been completed within one hundred twenty (120) days following the issuance of the permit.

Upon expiration of any permit issued pursuant hereto, no further work may be done in connection with construction, repair, reconstruction, or abandonment of a well unless and until a new permit for such purpose is secured in accordance with the provisions of this article.

Sec. 35.718. Extension of Permit.

Any permit issued pursuant to this article may be extended at the option of the Health Officer. Each individual extension granted by the Health Officer shall be for not longer than one hundred twenty (120) days. In no event shall the Health Officer grant an extension which would make the total term of the permit exceed one year. Application for extension shall be made on a form provided by the Health Officer. The fee for submitting such application shall be twenty-five dollars (\$25.00), which amount shall be paid directly to the San Diego County Department of Public Health.

Sec. 35.719. Revocation or Suspension.

1. A permit issued hereunder may be revoked or suspended by the Health Officer as hereinafter provided if he determines that a violation of this article exists, that written notice has been directed to permittee specifying the violation and that the permittee has failed or neglected to make the necessary adjustments within thirty (30) days after receiving such notice.
2. A permit may be so revoked or suspended by the Health Officer if he determines at a hearing for such purpose that the person to whom any permit was issued pursuant to this article has obtained the same by fraud or misrepresentation, provided that notice of the time and place of such hearing is given to the permittee at least five (5) days prior thereto.

3. The suspension or revocation of any permit shall not be effective until notice thereof in writing is mailed to the permittee, and the time for filing an appeal to the City Council has expired. The notice shall advise the permittee of his right to appeal to the City Council and to stay the suspension or revocation pending such appeal.

Sec. 35.720. Log of Well.

Any person who has drilled; dug, excavated or bored a well shall, upon completion of the well, submit to the Health Officer an accurate and complete log to include:


1. A detailed record of the boundaries, character, size distribution and color of all lithologic units penetrated.
2. Type of well casing.
3. Location of perforations and sealing zones, and
4. Any other data deemed necessary by the Health Officer. In areas where insufficient subsurface information is available, the Health Officer may require inspection of the well log prior to any operation.

SECTION II: This ordinance shall take effect and be in full force on the thirty-first day from and after its passage and approval.

Presented by

Approved as to form by


Lane F. Cole, Director of
Public Works


George W. Lindberg, City Attorney

ADOPTED AND APPROVED BY THE CITY COUNCIL OF THE CITY OF CHULA VISTA, CALIFORNIA, this 6th day of August, 1974, by the following vote, to-wit:

AYES: *Councilmen* Scott, Hobel, Hamilton, Hyde, Egdahl
NAYES: *Councilmen* None
ABSENT: *Councilmen* None
ABSTAIN: *Councilmen* None

Thomas D. Hamilton Jr.

Mayor of the City of Chula Vista

ATTEST

Jennie M. Fulasz
City Clerk

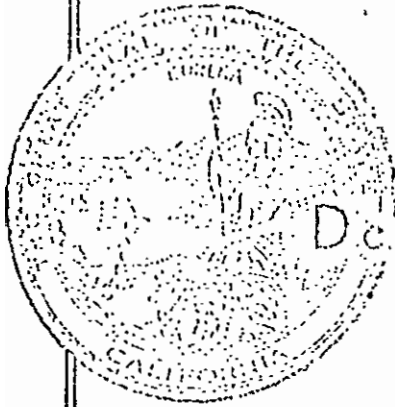
STATE OF CALIFORNIA)
COUNTY OF SAN DIEGO) ss.
CITY OF CHULA VISTA)

I, JENNIE M. FULASZ, *City Clerk of the City of Chula Vista, California,*
DO HEREBY CERTIFY that the above and foregoing is a full, true and correct copy of
_____ and that the same has not been amended or
repealed.

DATED: _____

City Clerk

(SEAL)



STATE OF CALIFORNIA
The Resources Agency

Department of Water Resources

BULLETIN No. 74-1

CATHODIC PROTECTION WELL STANDARDS

State of California

EXCERPT
CHAPTER II ONLY

MARCH 1973

NORMAN B. LIVERMORE, JR.
Secretary for Resources
The Resources Agency

RONALD REAGAN
Governor
State of California

WILLIAM R. GIANELLI
Director
Department of Water Resources

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CHAPTER II. STANDARDS

The standards presented in this report for the construction and destruction of cathodic protection wells are considered satisfactory under most conditions throughout the State. However, geologic and ground water conditions vary widely, and to devise standards for every conceivable situation would have been impossible. Accordingly, provision has been made for deviation from the standards and in their application with the objective of providing ground water quality protection equal to that provided by these standards.

The standards recommended are similar to those for water wells set forth in Bulletin No. 74. Because certain general water well standards apply equally to cathodic protection wells, they have been repeated verbatim. The wording in others has been slightly modified. The arrangement is parallel to those for water wells.

Part I. General

Section 1. Definitions

A. Cathodic Protection Well. As defined in Section 13711 of the Water Code:

"...means any artificial excavation in excess of 50 feet constructed by any method for the purpose of installing equipment or facilities for the protection electrically of metallic equipment in contact with the ground, commonly referred to as cathodic protection."

B. Enforcing Agency. An agency designated by duly authorized local, regional, or state government to administer laws or ordinances pertaining to well construction.

Section 2. Exemption Due to Unusual Conditions.

If the enforcing agency finds that compliance with any of the requirements prescribed herein is impractical for a particular location because of unusual conditions, it may prescribe alternative requirements which are "equal to" these standards in terms of protection obtained.

Section 3. Exclusions.

The standards prescribed in Part II, "Construction", do not apply to test holes or exploratory holes. However, Part III, "Well Destruction", does apply to test holes and exploratory holes.

Section 4. Special Standards.

In locations where existing geologic or ground water conditions require additional or more restrictive standards than those described herein, such special standards may be prescribed by the enforcing agency.

Section 5. Contractors.

Cathodic protection wells shall be constructed by contractors licensed in accordance with the provisions of the Contractors License Law (Division 3,

Chapter 9, of the Business and Professions Code unless exempted by that act.

Section 6. Reports.

Reports concerning the construction of cathodic protection wells shall be filed in accordance with the provisions of Sections 13750 through 13755 (Division 7, Chapter 10, Article 2) of the Water Code.

Section 7. Temporary Cover.

During periods when no work is being done on the well, such as overnight or while waiting for sealing material to set, the well and surrounding excavation, if any, shall be covered. The cover shall be sufficiently strong and well enough anchored to prevent the introduction of foreign material into the well and to protect the public from a potentially hazardous situation.

PART II. Well Construction

Section 8. Well Location with Respect to Pollutants.

A. In congested urban areas or where the cathodic protection well is located within 100 feet of a source of pollution (sewer, septic tank, etc.) the annular space shall be sealed to a depth of at least 50 feet below the land surface (as described in Section 10, following).

B. Where in the opinion of the enforcing agency adverse conditions exist, wells located further than 100 feet from sources of pollution shall be sealed as prescribed in Paragraph A, above, or the depth of seal increased.

Section 9. Surface Construction Features.

A. The top of the well shall be protected against the entrance of surface water draining from the surrounding land by installation of watertight caps, covers, plugs or similar devices.

In drainage ways, exclusive of highways, streets, paved surfaces (such as parking lots, equipment yards, etc.), sidewalks, and the like, the top of the well shall terminate above, or be otherwise protected against, known conditions of flooding.

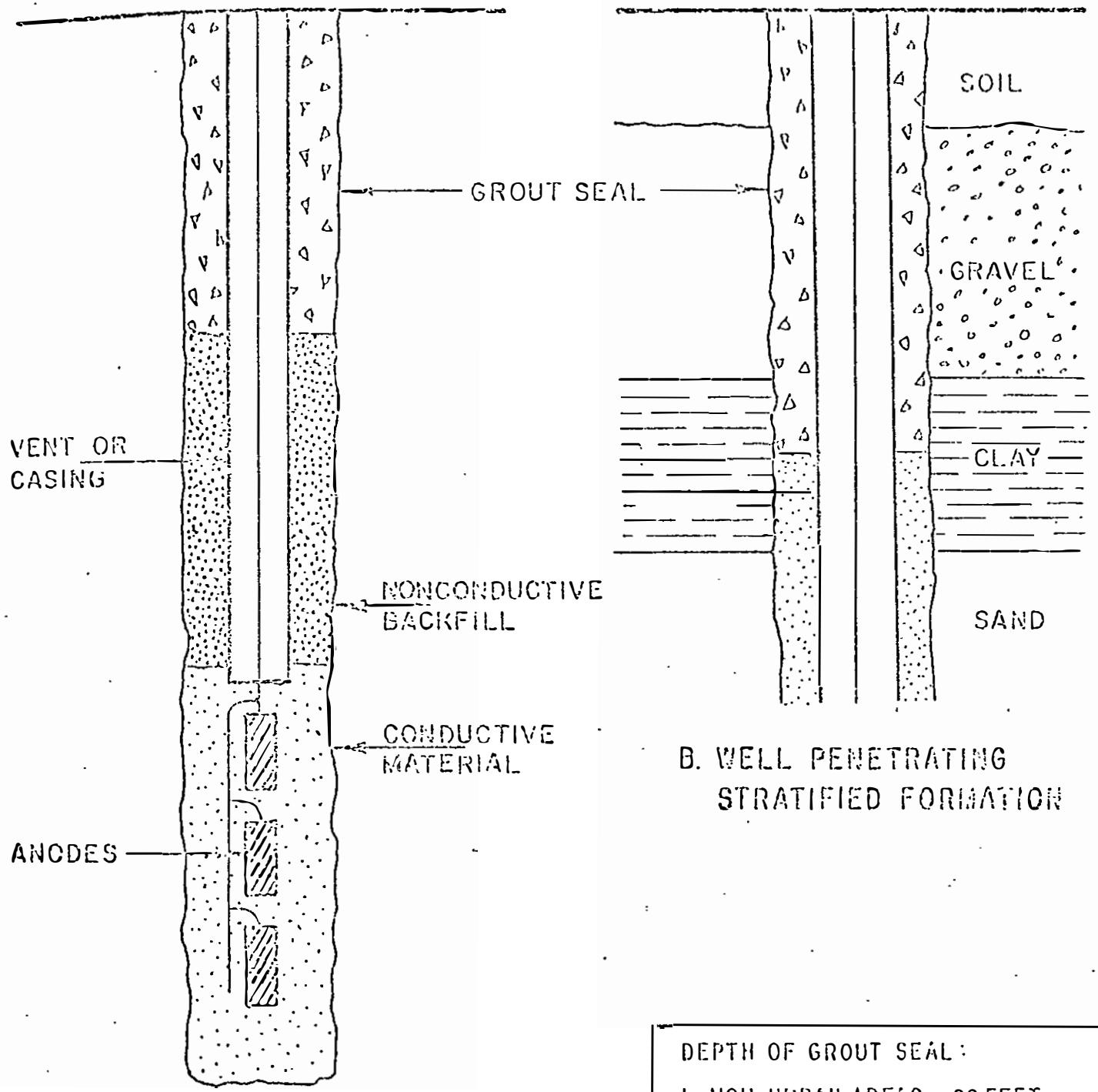
B. When extended above ground surface, the vent pipe shall be terminated at the rectifier housing or other protective housing at an elevation which is above known conditions of flooding.

Section 10. Sealing the Upper or Rear-Surface Annular Space.

The space between the well casing or vent pipe and the wall of the drilled hole (the annular space) shall be effectively sealed to protect against contamination or pollution by surface and/or shallow, subsurface waters, as set forth below.

A. Sealing Conditions. Following are requirements to be observed in sealing the annular space:

1. The space shall be filled with sealing material (Paragraph B below) to a depth of at least 20 feet, or as prescribed in Section 8 of these standards, or to the minimum depth (greater than 20 feet) as prescribed by the enforcing agency (Figure 6).



A. GENERAL REQUIREMENT

B. WELL PENETRATING STRATIFIED FORMATION

- | |
|---|
| <p>DEPTH OF GROUT SEAL:</p> <ol style="list-style-type: none"> 1. NON URBAN AREAS - 20 FEET 2. CONGESTED URBAN AREAS - 50 FEET 3. AS OTHERWISE REQUIRED BY ENFORCING AGENCY (MINIMUM OF 20 FEET) |
|---|

FIGURE 6. SEALING CONDITIONS FOR UPPER ANNULAR SPACE

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2. In wells that penetrate stratified formations, if any impervious formation is encountered within five feet of where the bottom of the seal described in Paragraph 1 of this section would terminate, the seal should be extended into the impervious formation a distance of 10 feet or its total thickness, whichever is least (Figure 6).

3. When a temporary conductor casing is used to hold out caving material during construction of the well or during placement of the seal, it may be left in place or withdrawn as the sealing material is placed.

4. The space between the base of the seal and the anode interval may be filled with granular permeable backfill (such as pea gravel or other inorganic material).* (See Figure 6.)

B. Sealing Material. The sealing material shall consist of neat cement, cement grout, bentonite-gelatinous mud, puddled clay, or concrete. The neat cement mixture shall be composed of one bag (94 pounds) of Type I Portland Cement to five to seven gallons of clean water. Cement grout shall be composed of not more than two parts by weight of sand and one

*It is not intended here to discourage or preclude the practice of sealing the entire upper interval. It may be more practical and economical to do so. However, where the depth of seal is shallow, the owner may wish to exercise the option of backfilling the remainder of the interval.

part of cement with five to seven gallons of clean water (per bag of cement). Quick-setting cement, retardants to setting, and other additives, including hydrated lime to make the mix more fluid (up to 10 percent of the volume of cement), and bentonite (up to five percent) to make the mix more fluid and to reduce shrinkage, may be used. Concrete shall be "Class A" (six sacks of Portland Cement per cubic yard) or "Class B" (five sacks per cubic yard).

C. Thickness of Seal. The thickness of the seal shall be at least two (2) inches, and not less than three (3) times the size of the largest coarse aggregate used in the sealing material.

D. Placement of Seal. The sealing material shall be applied, if possible, in one continuous operation from the bottom of the interval to be sealed to the top. Where the seal extends from the anode interval to the ground surface and its depth is extensive, the seal may be applied in steps or a plug may be placed at the top of the anode interval first to provide a base for the seal. If the plug consists of a material that must solidify (cement grout, etc.) it shall extend at least 10 feet and be allowed to set at least 12 hours before placing the remainder of the seal.*

Section 11. Sealing-Off Strata.

In areas where a well penetrates

*The use of quick setting cement is not precluded, in which case the time of set is correspondingly reduced.

more than one aquifer and any of the aquifers contain water of a quality such that, if allowed to mix in sufficient quantity, will result in a significant deterioration* of the quality of water in the other aquifer(s) or the quality of water produced, the strata producing such water shall be sealed-off to prevent entrance of the water into the well or its migration to other aquifer(s).

A. Sealing Conditions.

(Figures 7 and 8) The aquifer(s) shall be sealed off by placing impervious material opposite the aquifer and/or opposite confining strata as described in the following paragraphs. Sufficient sealing material shall be applied to fill the annular space between the casing or vent pipe and the wall of the drilled hole in the interval to be sealed, and to fill the voids which might absorb the sealing material.**

Should the top of interval to be sealed lie within 10 feet of where the base of the seal specified in Section 10 of these standards would end, the seal shall extend the full length of the annular space from the ground surface to the bottom of the interval.***

*Significant deterioration is discussed in Chapter III.

**Thus the volume of material introduced must at least equal the calculated volume of annular space to be sealed.

***In many instances sealing the entire interval above the anode interval will expeditiously and economically fulfill the conditions outlined here and in Section 10 of these standards.

Case 1. Upper Aquifers.

(Figure 7A) Where the aquifer producing poor quality water lies above the aquifer to be protected, the seal shall extend from the top of the aquifer down to at least 10 feet into the confining stratum (the material separating the two aquifers) or the thickness of the confining stratum whichever is least.

Case 2. Bottom Aquifers.

(Figure 7B) Where the aquifer producing poor quality water lies below the aquifer to be protected, the annular space opposite the aquifer itself should not be sealed. Instead the annular space opposite the aquifer to be protected shall be sealed its full length and 10 feet into the confining stratum.

Case 3. Multiple Strata.

(Figure 8) Where more than one aquifer produces poor quality water, they are adjacent to one another, and overlie an aquifer to be protected, all overlying aquifers and impervious strata shall be sealed (Figure 8A). Should they underlie the aquifer to be protected, the aquifer and its underlying confining strata for a distance of at least 10 feet shall be sealed off (Figure 8B). If separated by the aquifer to be protected, the upper and lower confining strata, the aquifer to be protected, and the upper aquifer containing poor quality water shall be sealed off (Figure 8C).

B. Sealing material shall consist of neat cement, cement grout, or other suitable impervious material. (See Section 10, Part B).

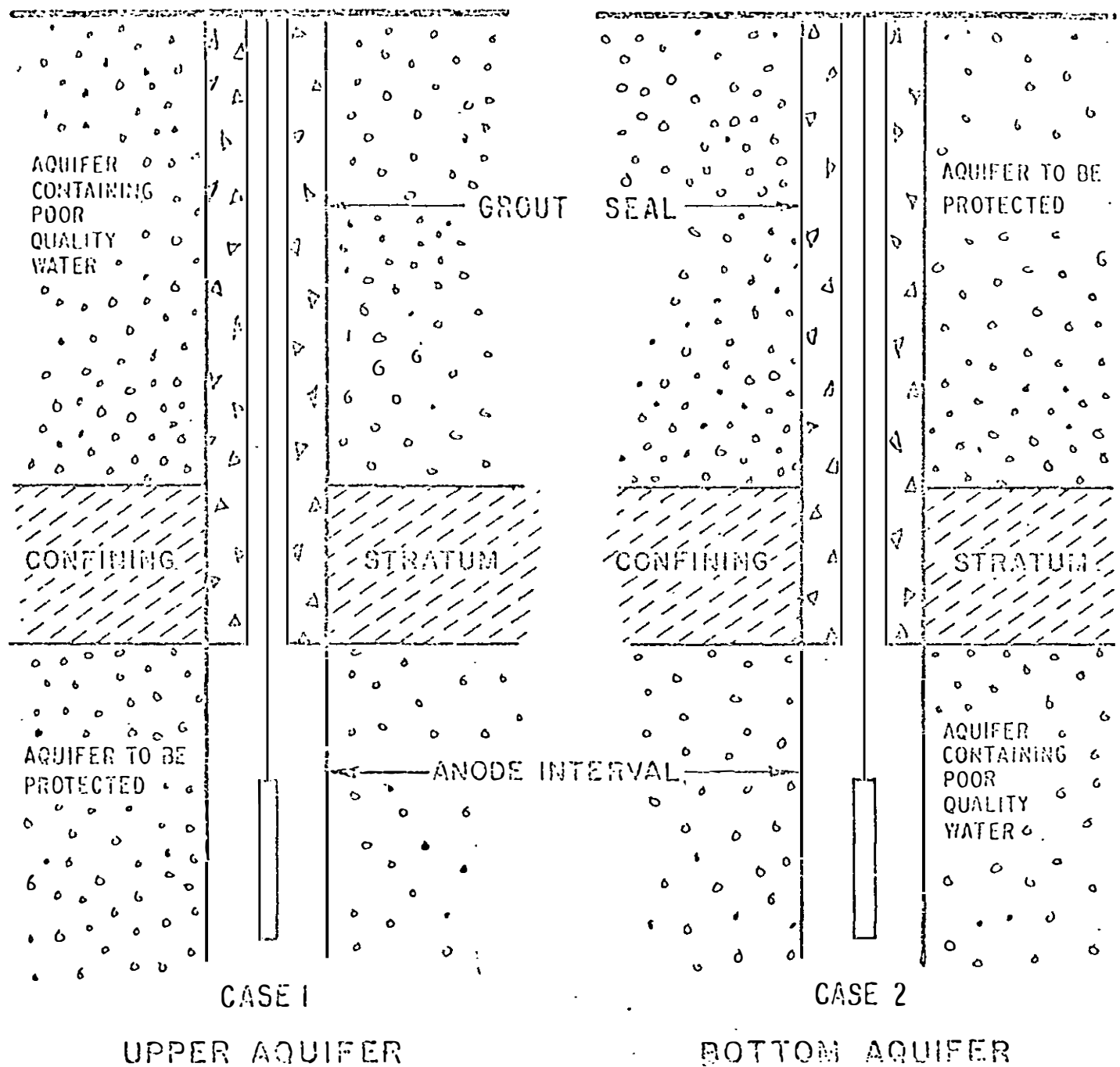


FIGURE 7. SEALING-OFF STRATA

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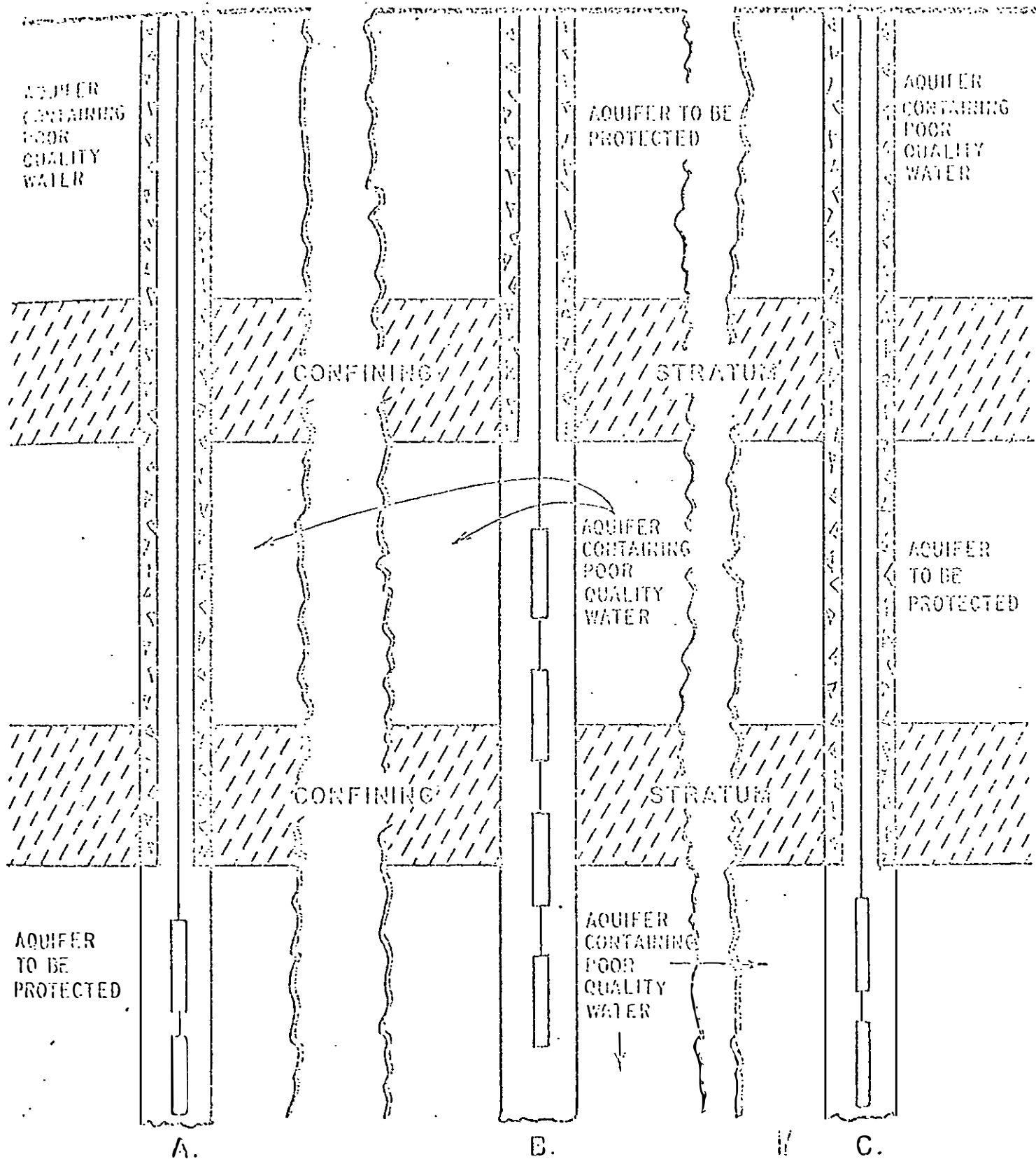


FIGURE 8. SEALING OFF STRATA - CASE B - MULTIPLE STRATA

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C. Sealing shall be accomplished by a method approved by the enforcing agency.

D. The sealing material shall be placed from the bottom to the top of the interval to be sealed and, if possible, in one continuous operation. If the depth of the sealing interval is extensive and begins at the top of the anode interval, a plug may be placed at the top of the anode interval and the seal may be placed in steps. Should the plug be composed of cement grout or similar material which must "set up" it shall be at least 10 feet thick and shall be allowed to set undisturbed at least 12 hours before placing the remainder of the seal.*

Part III. Destruction of Wells

Section 12. Purpose of Destruction.

Proper destruction of a well that is no longer useful serves two main purposes:

- A. To assure that the ground water supply is protected and preserved for further use.
- B. To eliminate the potential physical hazard that exists.

Section 13. Definition of "Abandoned" Well.

A cathodic protection well is considered "abandoned" when it has not been used for a period of one year, unless the owner declares his intention to use the well again. As evidence of his intentions for continued use,

*The use of quick setting cement is not precluded, in which case the setting time is reduced.

the owner shall properly maintain the well in such a way that:

A. The well has no defects which will facilitate the impairment of quality of water in the water-bearing formations penetrated.

B. If the casing exceeds eight inches in diameter the well is covered with an appropriate locked cap.

C. The well (or its surface location, if terminated below ground) is marked so that it can be clearly seen.

D. The area surrounding the well is kept clear of brush or debris.

Section 14. General Requirement.

All "abandoned" cathodic protection wells shall be destroyed in such a way that they will not act as a channel for the interchange of waters, when such interchange will result in significant deterioration of the quality of water in any or all water-bearing formations penetrated, or present a hazard to the safety and well-being of people and of animals.

Destruction of a well shall consist of the complete filling of the well in accordance with the procedures described in Section 15 (following).

Section 15. Requirements for Destroying Wells.

A. Objective. The objective of the requirements described in this section is to restore as nearly as possible those subsurface conditions which existed before the well was constructed, taking into account

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also change, if any, which have occurred since the time of construction. (For example, an aquifer which may have produced good quality water at one time but which now produces water of inferior quality, such as a coastal aquifer that has been invaded by sea water. Under these conditions the aquifer must now be sealed-off to prevent further migration via the well).

B. Preliminary Work. Before the hole is filled, the well shall be investigated to determine if there are conditions which will interfere with the process of filling and sealing. Such conditions will be corrected.

1. If there are any obstructions, they shall be removed, if possible, by cleaning out the hole or by redrilling.

2. Where necessary, to insure that the sealing material fills not only the well casing or vent pipe but also any annular space or nearby voids, the casing or vent pipe should be perforated or otherwise punctured.*

3. In wells that have been constructed prior to the adoption or implementation of the construction standards in Part II, it will be necessary to remove the vent pipe and

*If wells have been constructed in accordance with the construction standards in Part II, the annular space will have already been sealed and perforating or puncturing the casing or vent pipe will not be necessary.

cables and remove by redrilling* the granular backfill material under conditions described below. Exceptions are those cathodic protection wells constructed since January 1970 in accordance with the design adopted by the Southern California Cathodic Protection Committee (7).

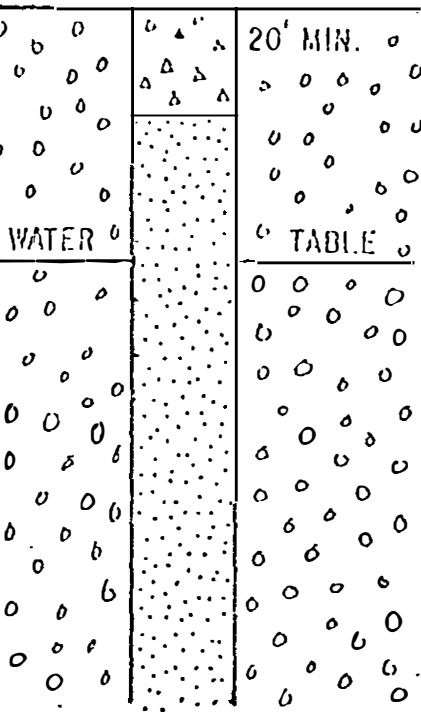
C. Filling and Sealing Conditions. (Figure 9) The following requirements are to be observed when the stated conditions are encountered:

1. Well wholly situated in unconsolidated material in an unconfined ("free") ground water zone. The upper 20 feet shall be sealed with impervious material and the remainder of the well down to the anode interval may be filled with clay, sand, or other suitable inorganic material.

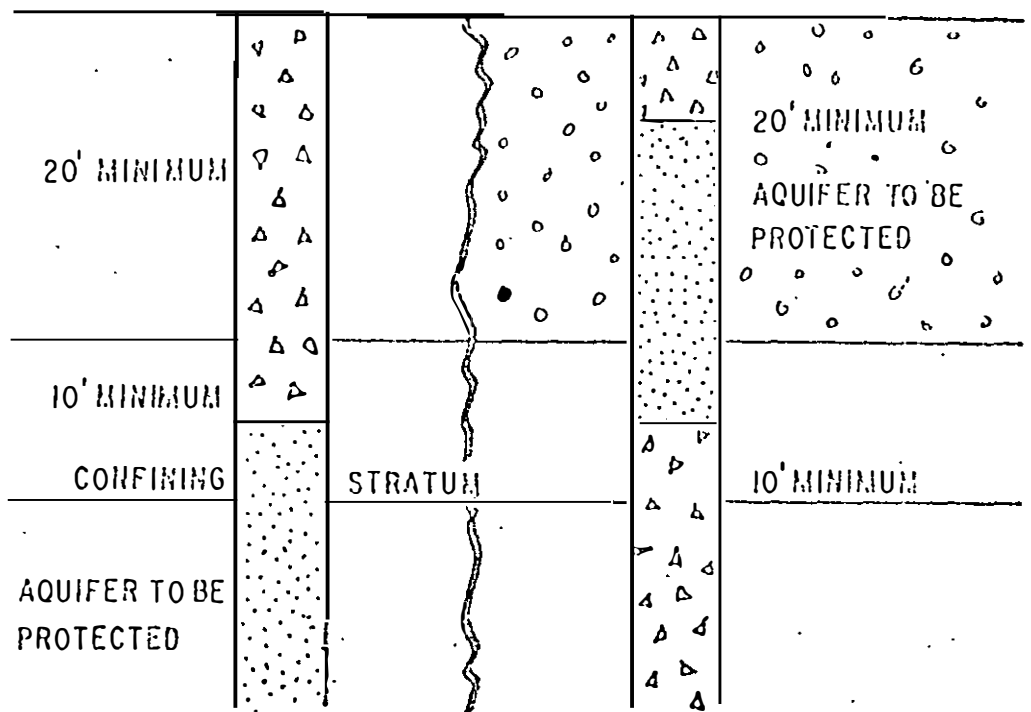
2. Well penetrating several strata. In all cases the upper 20 feet of the well shall be sealed with impervious material.

In areas where the interchange of water between aquifers may result in a significant deterioration of the quality of water in one or more aquifers, or may result in a loss of artesian pressure, the well shall be filled and sealed so as to prevent such interchange. The aquifer producing the deleterious water shall be sealed by placing impervious material opposite the aquifer,

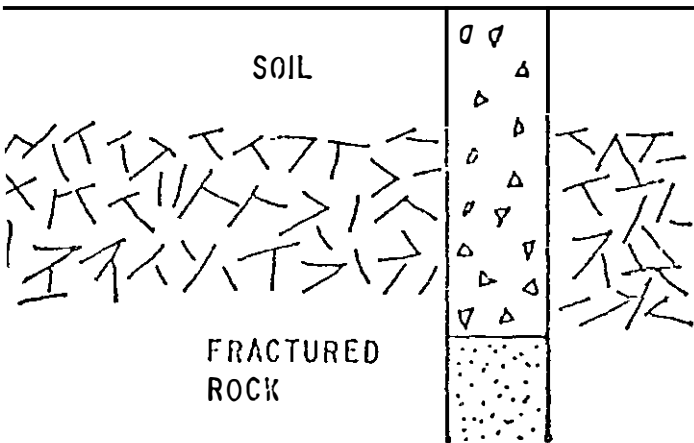
*An alternate method is the injection under pressure of sealing material into the granular backfill.



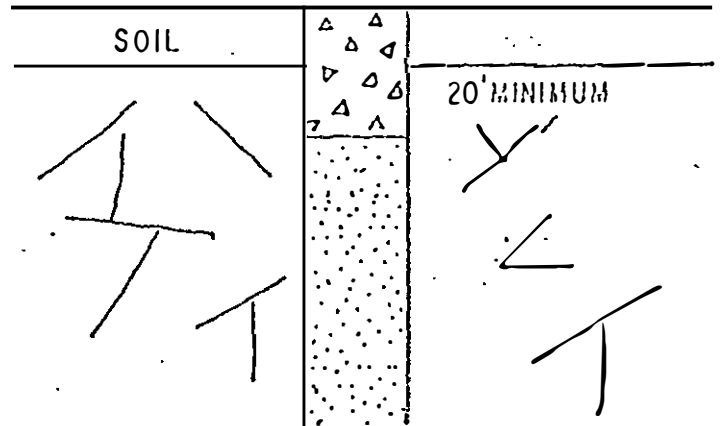
WELL IN UNCONSOLIDATED MATERIAL



2. WELLS IN SEVERAL STRATA
 Left: UPPER STRATA SEALED
 Right: BOTTOM STRATA SEALED



WELL IN FRACTURED ROCK



4. WELL IN CONSOLIDATED MATERIAL

 IMPERVIOUS SEALING MATERIAL


 FILL MATERIAL

FIGURE 9. WELL DESTRUCTION: SEALING CONDITIONS

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5. When pressure is applied to force sealing material into the annular space, the pressure shall be maintained for a length of time sufficient for the cementing mixture to set.

6. To assure that the well is filled and that there has been no jamming or "bridging" of the material, verification shall be made that the volume of material placed in the well installation at least equals the volume of the empty hole.

To determine that the specified material extends to the required elevation, after each filling operation the depth to the top of the material from the ground surface shall be measured.

E. Materials. Requirements for sealing and fill materials are as follows:

1. Impervious Sealing Materials. No material is completely impervious. However, sealing materials shall have such a low permeability that the volume of water passing through them is of small consequence.

Suitable materials include neat cement, cement grout, concrete, bentonite clays (muds), silt and clays, well-proportioned mixes of silts, sands, and clays (or cement), and native soils* that have a

*Examples of materials of this type are: Very fine sand with a large percentage of silt or clay, inorganic silts, mixtures of silt and clay, and clay. Native materials should not be used when the sealing operation involves the use of pressure.

coefficient of permeability of less than 100 feet per year. Used drilling muds are not acceptable.

Neat cement, cement grout, and concrete shall be composed of mixtures described in Section 10, Paragraph B of these standards.

2. Fill Material. Many materials are suitable for use as a filler in destroying wells. These include clay, silt, sand, gravel, crushed stone, native soils,* mixtures of the aforementioned types, and those described in the preceding paragraphs. Material containing organic matter shall not be used.

F. Additional Requirements for Wells in Urban Areas. To make further use of the well site in incorporated areas or unincorporated areas developed for multiple habitation, the following additional requirements must be met:

1. The sealing operation shall extend only to within six feet of the ground surface.

2. After the well has been properly filled, including sufficient time for sealing material to set, the upper six feet of well casing or vent pipe and other surface structures shall be removed and the excavation backfilled with native soil.

*Examples of materials of this type are: Very fine sand with a large percentage of silt or clay, inorganic silts, mixtures of silt and clay, and clay. Native materials should not be used when the sealing operation involves the use of pressure.

and opposite the confining strata for a sufficient vertical distance (but no less than 10 feet) in the direction of confinement. Sand or other suitable inorganic material may be placed opposite the aquifers producing good quality water and other strata where impervious sealing material is not required.*

In locations where interchange is in no way detrimental, suitable inorganic material may be placed opposite the formations penetrated.

3. Wells penetrating creviced or fractured rock. Where creviced or fractured rock is encountered, the portions of the well opposite this material shall be sealed with neat cement, cement grout, or concrete.

4. Well in noncreviced, consolidated material. The upper 20 feet of a well in a noncreviced, consolidated material

shall be filled with impervious material. The remainder of the well may be filled with any suitable inorganic material.

5. Well penetrating specific aquifers. Under certain conditions, the enforcing agency may require that specific aquifers be sealed off during destruction of the well.

D. Placement of Material. The following requirements shall be observed in placing fill or sealing material in wells to be destroyed:

1. The well shall be filled with the appropriate material (as described in Paragraph E of this section) from the bottom of the well up.

2. Where neat cement, cement grout, or concrete is used, it shall be placed if possible, in one continuous operation. Where the length of seal is extensive the material may be placed in steps.

3. Sealing material shall be placed in the interval (or intervals) to be sealed by methods that prevent free fall, dilution, and/or separation of aggregates from cementing materials.

4. Where a flow (usually) that is under substantial pressure is encountered, methods must be used to restrict the flow while placing the sealing material. In such cases, the casing must be perforated opposite the area to be sealed and the sealing material forced out under pressure into the surrounding formation.

*Determining the significance of interchange of waters whose qualities vary and of the loss of artesian pressures requires extensive knowledge of the ground water basin in question. The Department of Water Resources has over the years, and frequently in cooperation with agencies such as the U. S. Geological Survey, undertaken a number of ground water studies and amassed considerable information and data about the subject. Although much is known about the State's ground water supplies, detailed studies sufficiently accurate to define interchange problems have been made only in certain areas. In still other areas, there is only partial definition of the problem.

Sec. 67.422. STANDARDS FOR CATHODIC PROTECTION WELLS.

Standards for the construction, repair, reconstruction or destruction of cathodic protection wells shall be as set forth in Bulletin No. 74-1 of the State Department of Water Resources (three copies of which are filed with the Clerk of the Board of Supervisors of the County of San Diego and marked as Document No. 481211B with the following modifications:

1. Chapter II, Part I, Section 1-A

DELETE: Definition of "Cathodic Protection Well:" as printed and

ADD: "A. Cathodic Protection Well: A cathodic protection well means an artificial excavation in excess of 20 feet constructed by any method for the purpose of installing equipment or facilities for the protection electrically of metallic equipment in contact with the ground, commonly referred to as Cathodic Protection."

2. Chapter II, Part II, Section 8

DELETE: Word "Location" in Title and

ADD: Word "Construction" so Title reads:

"WELL CONSTRUCTION WITH RESPECT TO POLLUTANTS"

3. Chapter II, Part II, Section 10

DELETE: Subsection A-4 and the asterisked footnote in their entirety.

4. Chapter II, Part III, Section 13B

DELETE: Phrase "If the casing is 8 inches or larger in diameter" thereby leaving the phrase "The well is covered with an appropriate locked cap."