



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION IX  
75 Hawthorne Street  
San Francisco, CA 94105

Mail Code WTR-9

July 9, 2001

Michael Bithell, Sr.  
IMC Chemicals Inc.  
P.O. Box 367  
Trona, CA 93592-0367

Re: Modification to UIC Class III Permit # CAS000000002

Dear Mr. Bithell:

EPA has received your letter, dated 4 June 2001, requesting a modification of permit # CAS000000002. Specifically, you requested an amendment to Attachment Q, Plugging and Abandonment. A modified plugging and abandonment plan, reflecting your revisions and EPA review, was with the afore mentioned letter. EPA hereby approves this amendment and the adoption of the modified plan.

This is a minor permit modification as described under 40 CFR Part 144.41.

If you have any questions, please call Hillary Hecht of my staff at (415) 744-1890.

Sincerely,

*Laura Tom Bose*

Laura Tom Bose  
Manager  
Groundwater Office

## Amendment to IMC Chemical Corporation's UIC Permit # CAS 000000002, Attachment Q

### Plugging and Abandonment (P & A)

The following request is for modifying the existing Plugging and Abandonment Procedure as stipulate in IMC's Underground Injection Control (UIC) Permit, Class III, Permit Number CAS000000002, EPD ID CAD048456941, Attachment Q. Under the existing UIC permit IMC is required to plug and abandon all injection wells after they are decommissioned. The basic procedure is outlined in Attachment Q of the permit, which requires the placement of a continuous column of grout from total depth of the casing to ground level. As stipulated in the permit, the estimated cost to plug a well is about \$1,730. Because of this cost and the number of injection wells drilled and abandoned each year IMC has been looking for options, which will reduce the cost and achieve equal or better results. During the past few weeks IMC has developed and tested a method which plugs wells from total depth to ground level at one-tenth the cost and achieves the same results as defined in the UIC Permit (see attachment, P & A Test). In addition, this method can be utilized to plug any diameter casing or tubing between 10 3/4" and 2" diameter.

Plugging and Abandonment procedure (see attachment, Figure 1):

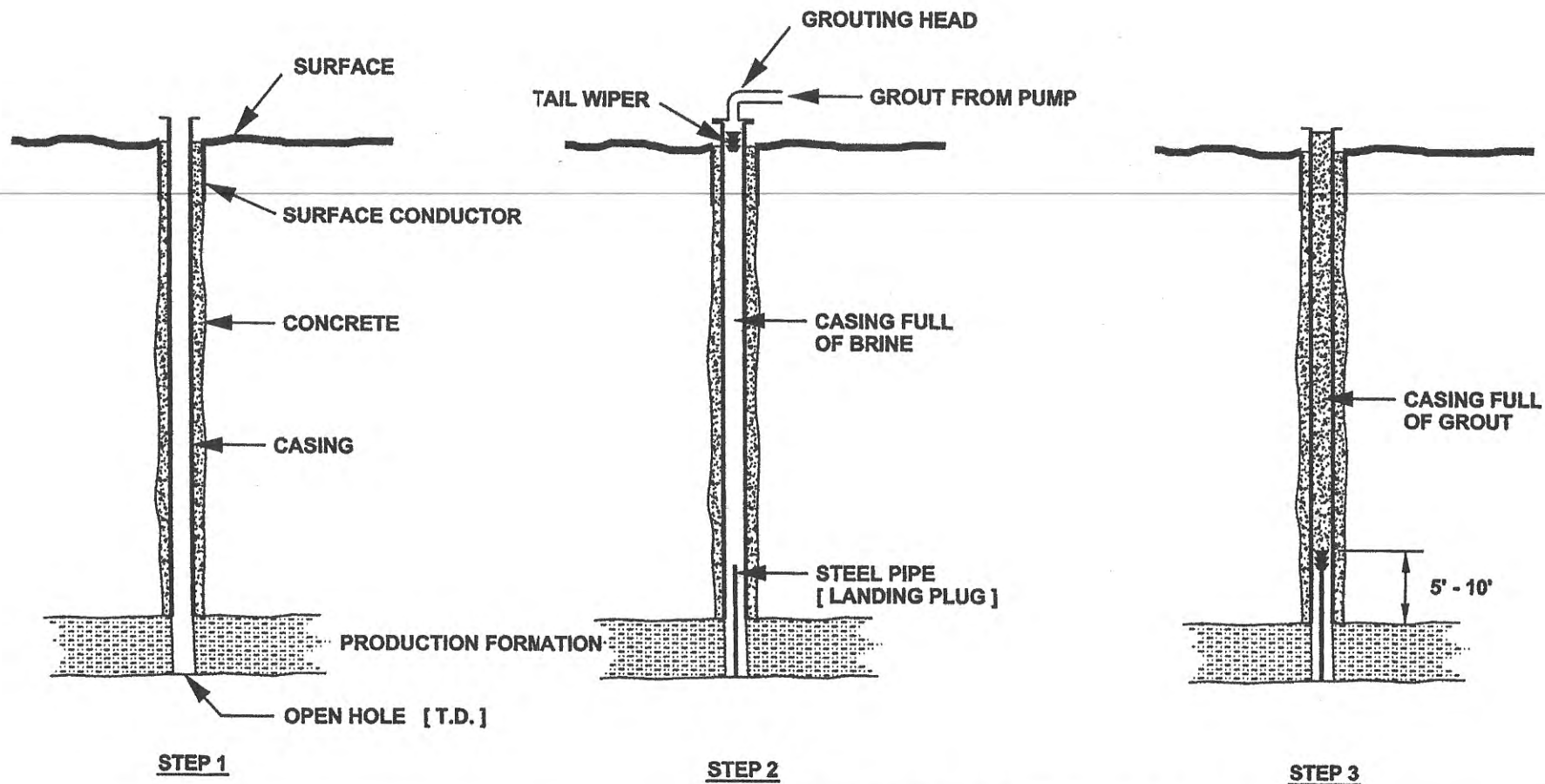
- 1) The well depth will be measured using a cloth measuring tape with a weighted tip to insure the tape will go to the bottom of the well casing. This measurement will be compared to the original total depth of the casing when the well was completed to insure an accurate theoretical casing volume is calculated. In addition, this measurement will be used to define the feet of open hole below the casing.
- 2) Once the total depth of the well is determined the theoretical volume of the casing will be calculated and used to determine the amount of grout to pump into the well during the P & A.
- 3) Prior to cementing a short section of pipe will be inserted inside the casing and allowed to free fall to the bottom of the well. The purpose of this section of pipe is to act as a landing plug for the tail wiper, which will butt up against the pipe and stop the wiper and cement from leaving the casing. The length of pipe is determined by subtracting the measured depth less the total depth of the casing and adding about 5 to 10 feet.
- 4) The tail wiper (see attachment, Figure 2) is a standard oil field cementing tail wiper plug, which is purchased from Gemico or Halliburton. Prior to pumping the grout into the well the wiper will be inserted into the casing. The function of the tail wiper is to separate the cement from the brine during pumping, which avoids cement contamination. In addition, the tail wiper will physically hold the cement from falling out the bottom of the well after it butts up against the small diameter pipe inserted into the well prior to grouting.
- 5) A high-pressure grout pump will be connected to the wellhead, via a high-pressure flex hose, and used to pump the tail wiper and cement down the well. The high-pressure grout pump has a one-quarter cubic yard cement hopper, which is used to measure the actual volume of cement used to plug the well.
- 6) When the grout is pumped inside the casing the grout will displace the tail wiper and force it down the well. While the wiper is moving down the hole, just ahead of the grout, it will wipe the inside of the casing and remove the brine and any debris inside the casing.
- 7) When the tail wiper butts up against the small diameter pipe a pressure spike will be noted on the pressure gage and pumping will be stopped.
- 8) The theoretical grout volume, which was determined in No.2 (above), will be compared to the actual volume to substantiate a successful abandonment. The cement level inside the casing will be checked after 24 hours to substantiate the grout remained inside the casing. At this point the injection well will be abandoned and the appropriate notifications issued.

Cement Specifications:

An 8-sack, Type II Portland Cement will be used to cement the well.

# TYPICAL INJECTION WELL PLUGGING AND ABANDONMENT

NO SCALE



I M C Chemicals

TROMA, CALIFORNIA 93302

**FIGURE 1**

DRAWN BY G. CORRION

DATE APRIL 23, 2001

REVISION

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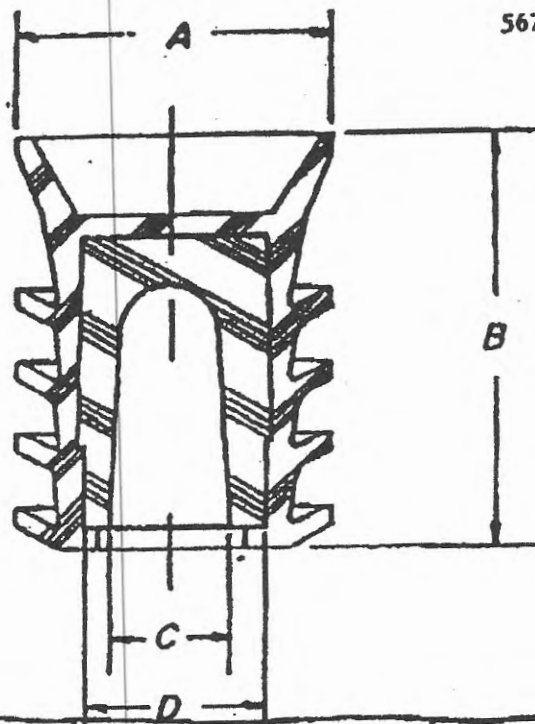
TYPICAL INJECTION WELL  
PLUGGING AND  
ABANDONMENT

DRAWING NUMBER

FIG. 1

TOP CEMENTING PLUG "1" CK" W/PLASTIC CORE

56702



3 1/2    3.12    5    ?    ?

XXX	Size (in.)	A (in.)	B (in.)	C (in.)	D (in.)	Weight (lb)
044	4-1/2	4.312	8	0.875	2.300	5
050	5	4.750	8	0.875	2.300	5
054	5-1/2	5.300	9-1/8	1.550	3.182	5
065	6-5/8	6.380	9-1/8	1.550	3.182	7
070	7	6.780	9-1/8	2.234	4.062	8
075	7-5/8	7.375	9-1/8	2.234	4.062	10
085	8-5/8	8.313	9	2.937	5.825	12
095	9-5/8	9.250	9	3.937	6.815	14
106	10-3/4	10.188	10	2.000	7.815	19
116	11-3/4	11.250	10-1/4	2.000	7.815	23
133	13-3/8	12.800	14-1/2	3.000	9.500	53
160	16	15.500	14-1/2	3.000	9.500	65

FIGURE 2