STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER

DISTRICT I

TOM BLAINE, P.E.
New Mexico State Engineer

5550 San Antonio Drive, NE
Albuquerque, NM 87109
(505) 383-4000

May 15, 2015

File: None

Fort Wingate Depot Activity, Building 1
Fort Wingate, New Mexico 87316

Office pick-up:
National EWP
Bryan Nydoske, Manager
3621 Hwy 47
Peralta, NM 87042

RE: **Well Plugging Plan of Operations for monitoring well "CMW06"**

Greetings,

The Office of the State Engineer is in receipt of your plugging plan. The plan has been reviewed and is hereby approved, subject to the attached Conditions of Approval.

If you wish for this plugging to be witnessed by authorized OSE personnel, arrangements for appointments during normal work hours may be made with a minimum 48-hour notice by contacting Jess L. Ward, District 1 Supervisor at (505) 383-4000

Please deliver a copy of this plugging plan with attached conditions to the well driller contracted to provide plugging services.

If discussion is needed, please call us (505) 383-4000.

Sincerely,

Joey Fields
NMOSE, District 1

JF:jf,
Enclosure as stated

WELL PLUGGING PLAN OF OPERATIONS

NOTE: A Well Plugging Plan of Operations shall be filed with and accepted by the Office of the State Engineer prior to plugging.

I. FILING FEE: There is no filing fee for this form.

II. GENERAL / WELL OWNERSHIP:

Existing Office of the State Engineer POD Number (Well Number) for well to be plugged: CMW06

Name of well owner: Fort Wingate Depot Activity

Mailing address: Building 1, 7 miles east of Gallup

City: Fort Wingate State: NM Zip code: 87316

Phone number: 505-905-6190 E-mail: richard.cruz2@us.army.mil

III. WELL DRILLER INFORMATION:

Well Driller contracted to provide plugging services: National EWP

New Mexico Well Driller License No.: WD-1210 Expiration Date: 10/31/15

2015 MAY -8 AM 8:53

STATE ENGINEER OFFICE ALBUQUERQUE, NEW MEXICO

IV. WELL INFORMATION:

Note: A copy of the existing Well Record for the well to be plugged should be attached to this plan.

1) GPS Well Location: Latitude: 35 deg, 25 min, 55.194 N sec
Longitude: 108 deg, 37 min, 7.870 W sec, NAD 83

2) Reason(s) for plugging well: Environmental remediation of surface soils via excavation

3) Was well used for any type of monitoring program? Yes If yes, please use section VII of this form to detail what hydrogeologic parameters were monitored. If the well was used to monitor contaminated or poor quality water, authorization from the New Mexico Environment Department may be required prior to plugging.

4) Does the well tap brackish, saline, or otherwise poor quality water? ______ If yes, provide additional detail, including analytical results and/or laboratory report(s): ______

5) Static water level: 12 feet (below land surface) / feet above land surface (circle one)

6) Depth of the well: 18.19 feet

7) Inside diameter of innermost casing: 2 inches.

8) Casing material: PVC

9) The well was constructed with:

☐ an open-hole production interval, state the open interval: _____

☑ a well screen or perforated pipe, state the screened interval(s): 10 feet

10) What annular interval surrounding the artesian casing of this well is cement-grouted? _____

11) Was the well built with surface casing? yes If yes, is the annulus surrounding the surface casing grouted or otherwise sealed? Yes If yes, please describe: Enviroplug bentonite seal - 2 feet and 3.2 inches of concrete

12) Has all pumping equipment and associated piping been removed from the well? NA If not, describe remaining equipment and intentions to remove prior to plugging in Section VII of this form.

V. DESCRIPTION OF PLANNED WELL PLUGGING:

Note: If this plan proposes to plug an artesian well in a way other than with cement grout, placed bottom to top with a tremie pipe, a detailed diagram of the well showing proposed final plugged configuration shall be attached, as well as any additional technical information, such as geophysical logs, that are necessary to adequately describe the proposal.

1) Describe the method by which cement grout shall be placed in the well, or describe requested plugging methodology proposed for the well: The well will be overdrilled and the boring will be grouted from the bottom to the top with cement bentonite grout.

2) Will well head be cut-off below land surface after plugging? Yes

2015 MAY -6 AM 8:53

STATE ENGINEER OFFICE ALBUQUERQUE, NEW MEXICO

VI. PLUGGING AND SEALING MATERIALS:

Note: The plugging of a well that taps poor quality water may require the use of a specialty cement or specialty sealant.

1) For plugging intervals that employ cement grout, complete and attach Table A.

2) For plugging intervals that will employ approved non-cement based sealant(s), complete and attach Table B.

3) Theoretical volume of grout required to plug the well to land surface: 56 gallons

4) Type of Cement proposed: Portland Type II

5) Proposed cement grout mix: ~~5.8~~ 6.2 gallons of water per 94 pound sack of Portland cement.

6) Will the grout be:

☐ batch-mixed and delivered to the site

☑ mixed on site

7) Grout additives requested, and percent by dry weight relative to cement: 3% to 5% Bentonite pre-mixed with .65 gallons water per 1%

8) Additional notes and calculations: 8.25" OD HSA will be used to overdrill the well with a 4.25" ID

VII. ADDITIONAL INFORMATION: List additional information below, or on separate sheet(s):

VIII. SIGNATURE:

I, Bryan Nydoske, say that I have carefully read the foregoing Well Plugging Plan of Operations and any attachments, which are a part hereof; that I am familiar with the rules and regulations of the State Engineer pertaining to the plugging of wells and will comply with them, and that each and all of the statements in the Well Plugging Plan of Operations and attachments are true to the best of my knowledge and belief.

Signature of Applicant — Date: 5/7/15

2015 MAY -8 AM 8:03

STATE ENGINEER OFFICE ALBUQUERQUE, NEW MEXICO

IX. ACTION OF THE STATE ENGINEER:

This Well Plugging Plan of Operations is:

☒ Approved subject to the attached conditions.
☐ Not approved for the reasons provided on the attached letter.

Witness my hand and official seal this 15TH day of MAY, 2015

Tom Blaine, State Engineer

By: _____

TABLE A - For plugging intervals that employ cement grout. Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of grout placement (ft bgl)			1'
Bottom of proposed interval of grout placement (ft bgl)			20'
Theoretical volume of grout required per interval (gallons)			56
Proposed cement grout mix gallons of water per 94-lb. sack of Portland cement			5.8
Mixed on-site or batch-mixed and delivered?			on site
Grout additive 1 requested			Bentonite
Additive 1 percent by dry weight relative to cement			3% to 5%
Grout additive 2 requested			
Additive 2 percent by dry weight relative to cement			

TABLE B - For plugging intervals that will employ approved non-cement based sealant(s). Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of sealant placement (ft bgl)			
Bottom of proposed sealant of grout placement (ft bgl)			
Theoretical volume of sealant required per interval (gallons)			
Proposed abandonment sealant (manufacturer and trade name)			

DISTRICT 1
TOM BLAINE, P.E.
NEW MEXICO STATE ENGINEER

NMED is in agreement with the Army's plan to plug and abandon the well per Ben Wear, Hazardous Waste Bureau, NMED
Well Owner: Fort Wingate Depot Activity, Building 1
Well No. CMW06
Well Location: Latitude = 35d 25m 55.194s, N, and Longitude = 108d 37m 7.870, W, NAD83
Well Driller: National EWP, WD-1210, expires 10/31/15

Specific Plugging Conditions of Approval

1. Water well drilling and well drilling activities, including well plugging, are regulated under 19.27.4 NMAC, which requires any person engaged in the business of well drilling within New Mexico to obtain a Well Driller License issued by the New Mexico Office of the State Engineer (NMOSE). Therefore, the firm of a New Mexico licensed Well Driller shall perform the well plugging.

2. Theoretical volume of sealant of the borehole required for abandonment is as shown on the plugging plan. Total minimum volume of necessary sealant shall be calculated upon sounding the actual pluggable depth of the well.

3. The Well Plugging Plan of Operations submitted requests the use of 3% to 5% bentonite-enriched cement. When supplementing a cement slurry with bentonite as requested, water demand for the mix increases at a rate of approximately **0.65 gallons of water for each 1% increment** of bentonite bdwc (by dry weight cement) above **fundamental water demand of 5.2 gallons water per 94-lb. sack of cement**. A 5% bentonite/cement slurry may therefore contain up to **8.45 gallons** of water total per 94-lb. sack of cement / approximate 5-lb. bentonite increment when appropriately mixed.

   The bentonite should be hydrated separately with its required increment of water before being mixed into the cement slurry. If water is otherwise added to the combination of dry ingredients or the dry bentonite blended into wet cement, the alkalinity of the cement will restrict yield of the bentonite powder, resulting in excess free water in the slurry and enhanced cement shrinkage upon curing.

4. Placement of the sealant within the wells shall be by pumping through a tremie pipe extended to near well bottom, and kept below top of the slurry column as the well is plugged from bottom-upwards in a manner that displaces the standing water column.

5. Should the NMED, or another regulatory agency sharing jurisdiction of the project authorize, or by regulation require a more stringent well plugging procedure than herein acknowledged, the more-stringent procedure should be followed. This, in part, includes provisions regarding pre-authorization to proceed, contaminant remediation, inspection, pulling/perforating of casing, or prohibition of free discharge of any fluid from the borehole during or related to the plugging process.

6. NMOSE witnessing of the plugging will not be required, but shall be facilitated if a NMOSE observer is onsite. NMOSE witnessing may be requested during normal work hours by calling the District 1 NMOSE Office at 505-383-4000, at least 48-hours in advance. NMOSE inspection will occur dependant on personnel availability.

7. A Well Plugging Report itemizing actual abandonment process and materials used shall be filed with the State Engineer (NMOSE, 5550 San Antonio Dr. N.E., Albuquerque, NM 87109), within 20 days after completion of well plugging. Please attach a copy of these plugging conditions.

The NMOSE Well Plugging Plan of Operations plan, as annotated, is hereby approved with the aforesaid conditions applied.

Witness my hand and seal this 15th day of May, 2015.

By:

Joey Fields
Water Resource Specialist
NMOSE District 1

PLUGGING RECORD

NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: CMW06

Well owner: FT Wingate Depot Activity Phone No.: 505-905-6190

Mailing address: Building 1, 7 Miles East of Gallup, NM

City: FT Wingate State: NM Zip code: 87316

II. WELL PLUGGING INFORMATION:

1) Name of well drilling company that plugged well: National EWP

2) New Mexico Well Driller License No.: WD1210 Expiration Date: 10/31/15

3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Matthew Cain

4) Date well plugging began: 5/19/15 Date well plugging concluded: 5/19/15

5) GPS Well Location: Latitude: 35 deg, 25 min, 55.194N sec
Longitude: 108 deg, 37 min, 7.870W sec, WGS 84

6) Depth of well confirmed at initiation of plugging as: 18.19 ft below ground level (bgl), by the following manner: Tagger Tape

7) Static water level measured at initiation of plugging: 12 ft bgl

8) Date well plugging plan of operations was approved by the State Engineer: 5/8/15

9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

10) Log of Plugging Activities - Label vertical scale with depths, and indicate separate plugging intervals with horizontal lines as necessary to illustrate material or methodology changes. Attach additional pages if necessary.

For each interval plugged, describe within the following columns:

Depth (ft bgl)	Plugging Material Used (include any additives used)	Volume of Material Placed (gallons)	Theoretical Volume of Borehole/ Casing (gallons)	Placement Method (tremie pipe, other)	Comments ("casing perforated first", "open annular space also plugged", etc.)
0	95% Portland 5% Bentonite Gel slurry	60 Gallons	50.49	Pour	Hole was very clayey pulled auger and hole stayed open to TD. Drilled to 18.5
18.19					

MULTIPLY		BY		AND OBTAIN
cubic feet	x	7.4805	=	gallons
cubic yards	x	201.97	=	gallons

III. SIGNATURE:

I, Matthew Cain, say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.

Signature of Well Driller

5-21-15

Date

STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER

DISTRICT I

TOM BLAINE, P.E.
New Mexico State Engineer

5550 San Antonio Drive, NE
Albuquerque, NM 87109
(505) 383-4000

May 15, 2015

File: None

Fort Wingate Depot Activity, Building 1
Fort Wingate, New Mexico 87316

Office pick-up:
National EWP
Bryan Nydoske, Manager
3621 Hwy 47
Peralta, NM 87042

RE: **Well Plugging Plan of Operations for monitoring well "CMW20"**

Greetings,

The Office of the State Engineer is in receipt of your plugging plan. The plan has been reviewed and is hereby approved, subject to the attached Conditions of Approval.

If you wish for this plugging to be witnessed by authorized OSE personnel, arrangements for appointments during normal work hours may be made with a minimum 48-hour notice by contacting Jess L. Ward, District 1 Supervisor at (505) 383-4000

Please deliver a copy of this plugging plan with attached conditions to the well driller contracted to provide plugging services.

If discussion is needed, please call us (505) 383-4000.

Sincerely,

Joey Fields
NMOSE, District 1

JF:jf,
Enclosure as stated

WELL PLUGGING PLAN OF OPERATIONS

NOTE: A Well Plugging Plan of Operations shall be filed with and accepted by the Office of the State Engineer prior to plugging.

I. FILING FEE: There is no filing fee for this form.

II. GENERAL / WELL OWNERSHIP:

Existing Office of the State Engineer POD Number (Well Number) for well to be plugged: CMW20

Name of well owner: Fort Wingate Depot Activity

Mailing address: Building 1, 7 miles east of Gallup

City: Fort Wingate State: NM Zip code: 87316

Phone number: 505-905-6190 E-mail: richard.cruz2@us.army.mil

III. WELL DRILLER INFORMATION:

Well Driller contracted to provide plugging services: National EWP

New Mexico Well Driller License No.: WD-1210 Expiration Date: 10/31/15

IV. WELL INFORMATION:

Note: A copy of the existing Well Record for the well to be plugged should be attached to this plan.

1) GPS Well Location: Latitude: 35 deg, 25 min, 59.576 N sec
Longitude: 108 deg, 37 min, 8.724 W sec, NAD 83

2) Reason(s) for plugging well: Environmental remediation of surface soils via excavation

2015 MAY 18 AM 8:52 STATE ENGINEER OFFICE ALBUQUERQUE, NM

3) Was well used for any type of monitoring program? Yes If yes, please use section VII of this form to detail what hydrogeologic parameters were monitored. If the well was used to monitor contaminated or poor quality water, authorization from the New Mexico Environment Department may be required prior to plugging.

4) Does the well tap brackish, saline, or otherwise poor quality water? _____ If yes, provide additional detail, including analytical results and/or laboratory report(s): _____

5) Static water level: 2.5 feet (below land surface) / feet above land surface (circle one)

6) Depth of the well: 5.8 feet

7) Inside diameter of innermost casing: 2 inches.

8) Casing material: PVC

9) The well was constructed with:

☐ an open-hole production interval, state the open interval: _____

☑ a well screen or perforated pipe, state the screened interval(s): 2.5 screen with 0.01" slots

10) What annular interval surrounding the artesian casing of this well is cement-grouted? _____

11) Was the well built with surface casing? Yes If yes, is the annulus surrounding the surface casing grouted or otherwise sealed? Yes If yes, please describe: 6 inch concrete pad on 1.2 inches of bentonite enviroplug

12) Has all pumping equipment and associated piping been removed from the well? NA If not, describe remaining equipment and intentions to remove prior to plugging in Section VII of this form.

V. DESCRIPTION OF PLANNED WELL PLUGGING:

Note: If this plan proposes to plug an artesian well in a way other than with cement grout, placed bottom to top with a tremie pipe, a detailed diagram of the well showing proposed final plugged configuration shall be attached, as well as any additional technical information, such as geophysical logs, that are necessary to adequately describe the proposal.

1) Describe the method by which cement grout shall be placed in the well, or describe requested plugging methodology proposed for the well: The well will be overdrilled and the boring will be grouted from the bottom to the top with cement bentonite grout

2) Will well head be cut-off below land surface after plugging? yes

2015 MAY -8 AM 8:52

VI. PLUGGING AND SEALING MATERIALS:

Note: The plugging of a well that taps poor quality water may require the use of a specialty cement or specialty sealant.

1) For plugging intervals that employ cement grout, complete and attach Table A.

2) For plugging intervals that will employ approved non-cement based sealant(s), complete and attach Table B.

3) Theoretical volume of grout required to plug the well to land surface: 17 gallons

4) Type of Cement proposed: Portland Type II

5) Proposed cement grout mix: ~~5.8~~ 5.2 gallons of water per 94 pound sack of Portland cement.

6) Will the grout be:

☐ batch-mixed and delivered to the site

☑ mixed on site

7) Grout additives requested, and percent by dry weight relative to cement: 3% to 5% Bentonite pre-mixed with .65 gallons water per 1%

8) Additional notes and calculations:

VII. ADDITIONAL INFORMATION: List additional information below, or on separate sheet(s):

The monitoring well was installed to monitor/investigate groundwater for potential metals, explosives, and other contamination associated with the hazardous waste management unit.

VIII. SIGNATURE:

I, Bryan Nydoske, say that I have carefully read the foregoing Well Plugging Plan of Operations and any attachments, which are a part hereof; that I am familiar with the rules and regulations of the State Engineer pertaining to the plugging of wells and will comply with them, and that each and all of the statements in the Well Plugging Plan of Operations and attachments are true to the best of my knowledge and belief.

Signature of Applicant — Date: 5/7/15

IX. ACTION OF THE STATE ENGINEER:

This Well Plugging Plan of Operations is:

☒ Approved subject to the attached conditions.
☐ Not approved for the reasons provided on the attached letter.

Witness my hand and official seal this 15TH day of MAY, 2015

Tom Blaine, State Engineer

By:

2015 MAY -8 AM 8:52

STATE ENGINEER OFFICE ALBUQUERQUE, NEW MEXICO

TABLE A - For plugging intervals that employ cement grout. Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of grout placement (ft bgl)			1'
Bottom of proposed interval of grout placement (ft bgl)			6'
Theoretical volume of grout required per interval (gallons)			17 gallons
Proposed cement grout mix gallons of water per 94-lb. sack of Portland cement			5.8
Mixed on-site or batch-mixed and delivered?			on site
Grout additive 1 requested			Bentonite
Additive 1 percent by dry weight relative to cement			3% to 5%
Grout additive 2 requested			
Additive 2 percent by dry weight relative to cement			

TABLE B - For plugging intervals that will employ approved non-cement based sealant(s). Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of sealant placement (ft bgl)			
Bottom of proposed sealant of grout placement (ft bgl)			
Theoretical volume of sealant required per interval (gallons)			
Proposed abandonment sealant (manufacturer and trade name)			

DISTRICT 1
TOM BLAINE, P.E.
NEW MEXICO STATE ENGINEER

NMED is in agreement with the Army's plan to plug and abandon the well per Ben Wear, Hazardous Waste Bureau, NMED
Well Owner: Fort Wingate Depot Activity, Building 1
Well No. CMW20
Well Location: Latitude = 35d 25m 59.576s, N, and Longitude = 108d 37m 8.724s, W, NAD83
Well Driller: National EWP, WD-1210, expires 10/31/15

Specific Plugging Conditions of Approval

1. Water well drilling and well drilling activities, including well plugging, are regulated under 19.27.4 NMAC, which requires any person engaged in the business of well drilling within New Mexico to obtain a Well Driller License issued by the New Mexico Office of the State Engineer (NMOSE). Therefore, the firm of a New Mexico licensed Well Driller shall perform the well plugging.

2. Theoretical volume of sealant of the borehole required for abandonment is as shown on the plugging plan. Total minimum volume of necessary sealant shall be calculated upon sounding the actual pluggable depth of the well.

3. The Well Plugging Plan of Operations submitted requests the use of 3% to 5% bentonite-enriched cement. When supplementing a cement slurry with bentonite as requested, water demand for the mix increases at a rate of approximately **0.65 gallons of water for each 1% increment** of bentonite bdwc (by dry weight cement) above **fundamental water demand of 5.2 gallons water per 94-lb. sack of cement**. A 5% bentonite/cement slurry may therefore contain up to **8.45 gallons** of water total per 94-lb. sack of cement / approximate 5-lb. bentonite increment when appropriately mixed.

   The bentonite should be hydrated separately with its required increment of water before being mixed into the cement slurry. If water is otherwise added to the combination of dry ingredients or the dry bentonite blended into wet cement, the alkalinity of the cement will restrict yield of the bentonite powder, resulting in excess free water in the slurry and enhanced cement shrinkage upon curing.

4. Placement of the sealant within the wells shall be by pumping through a tremie pipe extended to near well bottom, and kept below top of the slurry column as the well is plugged from bottom-upwards in a manner that displaces the standing water column.

5. Should the NMED, or another regulatory agency sharing jurisdiction of the project authorize, or by regulation require a more stringent well plugging procedure than herein acknowledged, the more-stringent procedure should be followed. This, in part, includes provisions regarding pre-authorization to proceed, contaminant remediation, inspection, pulling/perforating of casing, or prohibition of free discharge of any fluid from the borehole during or related to the plugging process.

6. NMOSE witnessing of the plugging will not be required, but shall be facilitated if a NMOSE observer is onsite. NMOSE witnessing may be requested during normal work hours by calling the District 1 NMOSE Office at 505-383-4000, at least 48-hours in advance. NMOSE inspection will occur dependant on personnel availability.

7. A Well Plugging Report itemizing actual abandonment process and materials used shall be filed with the State Engineer (NMOSE, 5550 San Antonio Dr. N.E., Albuquerque, NM 87109), within 20 days after completion of well plugging. Please attach a copy of these plugging conditions.

The NMOSE Well Plugging Plan of Operations plan, as annotated, is hereby approved with the aforesaid conditions applied.

Witness my hand and seal this 15th day of May, 2015.

By:

Joey Fields
Water Resource Specialist
NMOSE District 1

PLUGGING RECORD

NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: CMW20

Well owner: FT Wingate Depot Activity Phone No.: 505-905-6190

Mailing address: Building 1, 7 Miles East of Gallup, NM

City: FT Wingate State: NM Zip code: 87316

II. WELL PLUGGING INFORMATION:

1) Name of well drilling company that plugged well: National EWP

2) New Mexico Well Driller License No.: WD1210 Expiration Date: 10/31/15

3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Matthew Cain

4) Date well plugging began: 5/20/15 Date well plugging concluded: 5/20/15

5) GPS Well Location: Latitude: 35 deg, 25 min, 59.576N sec
Longitude: 108 deg, 37 min, 8.724W sec, WGS 84

6) Depth of well confirmed at initiation of plugging as: 5.8 ft below ground level (bgl), by the following manner: Tagger Tape

7) Static water level measured at initiation of plugging: 2.5 ft bgl

8) Date well plugging plan of operations was approved by the State Engineer: 5/8/15

9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

10) Log of Plugging Activities - Label vertical scale with depths, and indicate separate plugging intervals with horizontal lines as necessary to illustrate material or methodology changes. Attach additional pages if necessary.

For each interval plugged, describe within the following columns:

Depth (ft bgl)	Plugging Material Used (include any additives used)	Volume of Material Placed (gallons)	Theoretical Volume of Borehole/ Casing (gallons)	Placement Method (tremie pipe, other)	Comments ("casing perforated first", "open annular space also plugged", etc.)
0 6'	95% Portland 5% Bentonite Gel slurry	20 Gallons	16.65	Pour	Drilled to 6' pulled auger and poured grout. Hole stayed open.

MULTIPLY		BY		AND OBTAIN
cubic feet	x	7.4805	=	gallons
cubic yards	x	201.97	=	gallons

III. SIGNATURE:

I, Matthew Cain , say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.

Signature of Well Driller

5-21-15
Date

STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER

DISTRICT I

TOM BLAINE, P.E.
New Mexico State Engineer

5550 San Antonio Drive, NE
Albuquerque, NM 87109
(505) 383-4000

May 15, 2015

File: None

Fort Wingate Depot Activity, Building 1
Fort Wingate, New Mexico 87316

Office pick-up:
National EWP
Bryan Nydoske, Manager
3621 Hwy 47
Peralta, NM 87042

RE: **Well Plugging Plan of Operations for monitoring well "CMW21"**

Greetings,

The Office of the State Engineer is in receipt of your plugging plan. The plan has been reviewed and is hereby approved, subject to the attached Conditions of Approval.

If you wish for this plugging to be witnessed by authorized OSE personnel, arrangements for appointments during normal work hours may be made with a minimum 48-hour notice by contacting Jess L. Ward, District 1 Supervisor at (505) 383-4000

Please deliver a copy of this plugging plan with attached conditions to the well driller contracted to provide plugging services.

If discussion is needed, please call us (505) 383-4000.

Sincerely,

Joey Fields
NMOSE, District 1

JF:jf,
Enclosure as stated

WELL PLUGGING PLAN OF OPERATIONS

NOTE: A Well Plugging Plan of Operations shall be filed with and accepted by the Office of the State Engineer prior to plugging.

I. FILING FEE: There is no filing fee for this form.

II. GENERAL / WELL OWNERSHIP:

Existing Office of the State Engineer POD Number (Well Number) for well to be plugged: CMW21

Name of well owner: Fort Wingate Depot Activity

Mailing address: Building 1, 7 miles east of Gallup

City: Fort Wingate State: NM Zip code: 87316

Phone number: 505-905-6190 E-mail: richard.cruz2@us.army.mil

III. WELL DRILLER INFORMATION:

Well Driller contracted to provide plugging services: National EWP

New Mexico Well Driller License No.: WD-1210 Expiration Date: 10/31/15

IV. WELL INFORMATION:

Note: A copy of the existing Well Record for the well to be plugged should be attached to this plan.

2015 MAY -8 AM 8:54

STATE ENGR OFFICE SANTA FE, NM

1) GPS Well Location: Latitude: 35 deg, 26 min, 49.118 N sec
Longitude: 108 deg, 37 min, 9.493 W sec, NAD 83

2) Reason(s) for plugging well: Environmental remediation of surface soils via excavation

3) Was well used for any type of monitoring program? Yes If yes, please use section VII of this form to detail what hydrogeologic parameters were monitored. If the well was used to monitor contaminated or poor quality water, authorization from the New Mexico Environment Department may be required prior to plugging.

4) Does the well tap brackish, saline, or otherwise poor quality water? _____ If yes, provide additional detail, including analytical results and/or laboratory report(s): _____

5) Static water level: 21.5 feet (below land surface) / feet above land surface (circle one)

6) Depth of the well: 67.5 feet

7) Inside diameter of innermost casing: 2 inches.

8) Casing material: PVC

9) The well was constructed with:

☐ an open-hole production interval, state the open interval: _____

☑ a well screen or perforated pipe, state the screened interval(s): 10' screen with 0.01" slot

10) What annular interval surrounding the artesian casing of this well is cement-grouted? 3 inches

11) Was the well built with surface casing? Yes If yes, is the annulus surrounding the surface casing grouted or otherwise sealed? Yes If yes, please describe: 49' Bentonite-cement slurry

12) Has all pumping equipment and associated piping been removed from the well? _____ If not, describe remaining equipment and intentions to remove prior to plugging in Section VII of this form.

V. DESCRIPTION OF PLANNED WELL PLUGGING:

Note: If this plan proposes to plug an artesian well in a way other than with cement grout, placed bottom to top with a tremie pipe, a detailed diagram of the well showing proposed final plugged configuration shall be attached, as well as any additional technical information, such as geophysical logs, that are necessary to adequately describe the proposal.

1) Describe the method by which cement grout shall be placed in the well, or describe requested plugging methodology proposed for the well: The well will be overdrilled and the boring will be grouted from bottom to top with cement bentonite grout

2) Will well head be cut-off below land surface after plugging? 1'

VI. PLUGGING AND SEALING MATERIALS:

Note: The plugging of a well that taps poor quality water may require the use of a specialty cement or specialty sealant

1) For plugging intervals that employ cement grout, complete and attach Table A.

2) For plugging intervals that will employ approved non-cement based sealant(s), complete and attach Table B.

3) Theoretical volume of grout required to plug the well to land surface: 194.6 gallons

4) Type of Cement proposed: Portland Type II

5) Proposed cement grout mix: 5.2 gallons of water per 94 pound sack of Portland cement.

6) Will the grout be:

☐ batch-mixed and delivered to the site

☑ mixed on site

7) Grout additives requested, and percent by dry weight relative to cement: 3% to 5% Bentonite pre-mixed with .65 gallons water per 1%

8) Additional notes and calculations: 8.25" OD HSA with 4.25" ID will be used to overdrill the wells. Air & Drag Bit will be used to Drill out or install Tremie & Grout from Bottom to surface with Cement Grout & 3% to 5% Bentonite. 5.8 gallons Water & .65 Gallons water for Bentonite per 1% premixed

VII. ADDITIONAL INFORMATION: List additional information below, or on separate sheet(s):

The monitoring well was installed to monitor/investigate groundwater for potential metals, explosives, and other contamination associated with the hazardous waste management unit.

VIII. SIGNATURE:

I, Bryan Nydoske, say that I have carefully read the foregoing Well Plugging Plan of Operations and any attachments, which are a part hereof; that I am familiar with the rules and regulations of the State Engineer pertaining to the plugging of wells and will comply with them, and that each and all of the statements in the Well Plugging Plan of Operations and attachments are true to the best of my knowledge and belief.

Signature of Applicant — 5/7/15 Date

2015 MAY -8 AM 8:54

STATE ENGINEER OFFICE ALBUQUERQUE, NEW MEXICO

IX. ACTION OF THE STATE ENGINEER:

This Well Plugging Plan of Operations is:

☒ Approved subject to the attached conditions.
☐ Not approved for the reasons provided on the attached letter.

Witness my hand and official seal this 15TH day of MAY, 2015

Tom Blaine, State Engineer

By:

TABLE A - For plugging intervals that employ cement grout. Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of grout placement (ft bgl)			1'
Bottom of proposed interval of grout placement (ft bgl)			70'
Theoretical volume of grout required per interval (gallons)			194.6
Proposed cement grout mix gallons of water per 94-lb. sack of Portland cement			5.8
Mixed on-site or batch-mixed and delivered?			on site
Grout additive 1 requested			bentonite
Additive 1 percent by dry weight relative to cement			3% to 5%
Grout additive 2 requested			
Additive 2 percent by dry weight relative to cement			

2015 MAY -8 AM 8:54

TABLE B - For plugging intervals that will employ approved non-cement based sealant(s). Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of sealant placement (ft bgl)			
Bottom of proposed sealant of grout placement (ft bgl)			
Theoretical volume of sealant required per interval (gallons)			
Proposed abandonment sealant (manufacturer and trade name)			

DISTRICT 1
TOM BLAINE, P.E.
NEW MEXICO STATE ENGINEER

NMED is in agreement with the Army's plan to plug and abandon the well per Ben Wear, Hazardous Waste Bureau, NMED
Well Owner: Fort Wingate Depot Activity, Building 1
Well No. CMW21
Well Location: Latitude = 35d 26m 49.118, N, and Longitude = 108d 37m 9.493, W, NAD83
Well Driller: National EWP, WD-1210, expires 10/31/15

Specific Plugging Conditions of Approval

1. Water well drilling and well drilling activities, including well plugging, are regulated under 19.27.4 NMAC, which requires any person engaged in the business of well drilling within New Mexico to obtain a Well Driller License issued by the New Mexico Office of the State Engineer (NMOSE). Therefore, the firm of a New Mexico licensed Well Driller shall perform the well plugging.

2. Theoretical volume of sealant of the borehole required for abandonment is as shown on the plugging plan. Total minimum volume of necessary sealant shall be calculated upon sounding the actual pluggable depth of the well.

3. The Well Plugging Plan of Operations submitted requests the use of 3% to 5% bentonite-enriched cement. When supplementing a cement slurry with bentonite as requested, water demand for the mix increases at a rate of approximately **0.65 gallons of water for each 1% increment** of bentonite bdwc (by dry weight cement) above **fundamental water demand of 5.2 gallons water per 94-lb. sack of cement**. A 5% bentonite/cement slurry may therefore contain up to **8.45 gallons** of water total per 94-lb. sack of cement / approximate 5-lb. bentonite increment when appropriately mixed.

   The bentonite should be hydrated separately with its required increment of water before being mixed into the cement slurry. If water is otherwise added to the combination of dry ingredients or the dry bentonite blended into wet cement, the alkalinity of the cement will restrict yield of the bentonite powder, resulting in excess free water in the slurry and enhanced cement shrinkage upon curing.

4. Placement of the sealant within the wells shall be by pumping through a tremie pipe extended to near well bottom, and kept below top of the slurry column as the well is plugged from bottom-upwards in a manner that displaces the standing water column.

5. Should the NMED, or another regulatory agency sharing jurisdiction of the project authorize, or by regulation require a more stringent well plugging procedure than herein acknowledged, the more-stringent procedure should be followed. This, in part, includes provisions regarding pre-authorization to proceed, contaminant remediation, inspection, pulling/perforating of casing, or prohibition of free discharge of any fluid from the borehole during or related to the plugging process.

6. NMOSE witnessing of the plugging will not be required, but shall be facilitated if a NMOSE observer is onsite. NMOSE witnessing may be requested during normal work hours by calling the District 1 NMOSE Office at 505-383-4000, at least 48-hours in advance. NMOSE inspection will occur dependant on personnel availability.

7. A Well Plugging Report itemizing actual abandonment process and materials used shall be filed with the State Engineer (NMOSE, 5550 San Antonio Dr. N.E., Albuquerque, NM 87109), within 20 days after completion of well plugging. Please attach a copy of these plugging conditions.

The NMOSE Well Plugging Plan of Operations plan, as annotated, is hereby approved with the aforesaid conditions applied.

Witness my hand and seal this 15th day of May, 2015.

By:
Joey Fields
Water Resource Specialist
NMOSE District 1

PLUGGING RECORD

NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: CMW21

Well owner: FT Wingate Depot Activity Phone No.: 505-905-6190

Mailing address: Building 1, 7 Miles East of Gallup, NM

City: FT Wingate State: NM Zip code: 87316

II. WELL PLUGGING INFORMATION:

1) Name of well drilling company that plugged well: National EWP

2) New Mexico Well Driller License No.: WD1210 Expiration Date: 10/31/15

3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Matthew Cain

4) Date well plugging began: 5/19/15 Date well plugging concluded: 5/19/15

5) GPS Well Location: Latitude: 35 deg, 25 min, 49.118N sec
Longitude: 108 deg, 37 min, 9.493W sec, WGS 84

6) Depth of well confirmed at initiation of plugging as: 67.5 ft below ground level (bgl), by the following manner: Tagger Tape

7) Static water level measured at initiation of plugging: 21.5 ft bgl

8) Date well plugging plan of operations was approved by the State Engineer: 5/8/15

9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

Well was not accessible with drill rig. Well was buried under 4' of soil, contractor excavated well head. Wellhead and well were intact. Due to excavation drill rig could not access. Well was left in hole and tremie grouted using portland / betonite slurry. After grouting and sitting for a time well head and monument were removed and excavation back filled.

10) Log of Plugging Activities - Label vertical scale with depths, and indicate separate plugging intervals with horizontal lines as necessary to illustrate material or methodology changes. Attach additional pages if necessary.

For each interval plugged, describe within the following columns:

Depth (ft bgl)	Plugging Material Used (include any additives used)	Volume of Material Placed (gallons)	Theoretical Volume of Borehole/ Casing (gallons)	Placement Method (tremie pipe, other)	Comments ("casing perforated first", "open annular space also plugged", etc.)
0	95% Portland 5% Bentonite Gel slurry	30 Gallons	11.01	Pour	Well was tremie grouted in place as it was inaccessible to drill rig.
67.5					

MULTIPLY		BY		AND OBTAIN
cubic feet	x	7.4805	=	gallons
cubic yards	x	201.97	=	gallons

III. SIGNATURE:

I, Matthew Cain , say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.

Signature of Well Driller

5-21-15
Date

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL PLUGGING PLAN OF OPERATIONS
CONDITIONS OF APPROVAL

This plugging plan is approved subject to the following conditions of approval:

Well File No. N/A (CMW07)

Permittee: Ft. Wingate Depot Activity

Location: 35° 25' 55.2216" N. Lat., 108° 37' 9.34" W. Long.

Plugging Plan File Date: May 2, 2017

1. The well shall be plugged in accordance with Subsection C of Section 19.27.4.30 NMAC by a well driller licensed in the State of New Mexico.

2. The well shall be plugged by tremie pipe from the bottom up with a theoretical volume of cement-bentonite grout equaling 10.9 gallons.

3. The Well Plugging Plan of Operations requests use of up to 5% bentonite-enriched cement. Pure bentonite powder ("90 barrel") is allowed as a cement additive, and neither granular bentonite nor extended yield bentonite shall be mixed with cement for plugging purposes.

   Supplemental bentonite powder increases water demand for the slurry at a rate of approximately 0.65 gallon of water per 1% increment of bentonite by dry weight content above the fundamental water demand of 6.0 gallons of water per 94-lb. sack of cement.

   The final 5% bentonite/cement slurry mix shall not exceed 9.25 gallons of water per 94-lb. sack of cement and 5-lb. bentonite increment.

4. The bentonite shall be hydrated separately with its required increment of water before being mixed into the cement slurry.

   If water is otherwise added to the combination of dry ingredients or the dry bentonite blended into wet cement, the alkalinity of the cement will restrict yield of the bentonite powder, resulting in excess free water in the slurry and enhanced cement shrinkage upon curing.

5. A plugging report shall be filed with the State Engineer within 20 days after completion of plugging. The report shall include all information required by Paragraph (3) of Subsection C of Section 19.27.4.30 NMAC.

Witness my hand and seal this 3rd day of May, A.D. 2017.

Tom Blaine, P.E., State Engineer

By David B. Anderson

~~David~~ B. Anderson
Water Resource Supervisor

STATE ENGINEER'S OFFICE
ALPUQ
2017 MAY -2 PM 4:12

WELL PLUGGING PLAN OF OPERATIONS

NOTE: A Well Plugging Plan of Operations shall be filed with and accepted by the Office of the State Engineer prior to plugging.

I. FILING FEE: There is no filing fee for this form.

II. GENERAL / WELL OWNERSHIP:

Existing Office of the State Engineer POD Number (Well Number) for well to be plugged: CMW07

Name of well owner: Fort Wingate Depot Activity

Mailing address: Trailer 1, 7 Miles East of Gallup

City: Fort Wingate State: NM Zip code: 87316

Phone number: 505-905-6190 E-mail: richard.cruz2@us.army.mil

III. WELL DRILLER INFORMATION:

Well Driller contracted to provide plugging services: Cascade Drilling

New Mexico Well Driller License No.: WD-1210 Expiration Date: 31 October 2017

IV. WELL INFORMATION:

Note: A copy of the existing Well Record for the well to be plugged should be attached to this plan.

1) GPS Well Location: Latitude: 35 deg, 25 min, 55.2216 sec
Longitude: -108 deg, 37 min, 9.34 sec, NAD 83

2) Reason(s) for plugging well: Environmental remediation of surface soils via excavation

3) Was well used for any type of monitoring program? Yes If yes, please use section VII of this form to detail what hydrogeologic parameters were monitored. If the well was used to monitor contaminated or poor quality water, authorization from the New Mexico Environment Department may be required prior to plugging.

4) Does the well tap brackish, saline, or otherwise poor quality water? No If yes, provide additional detail, including analytical results and/or laboratory report(s):

5) Static water level: 42.34 feet below land surface / feet above land surface (circle one)

6) Depth of the well: 66.60 feet

7) Inside diameter of innermost casing: 2 inches.

8) Casing material: PVC

9) The well was constructed with:

_____ an open-hole production interval, state the open interval: _____

X a well screen or perforated pipe, state the screened interval(s): 44.0'-64.0'

10) What annular interval surrounding the artesian casing of this well is cement-grouted? 3 inches

11) Was the well built with surface casing? Yes If yes, is the annulus surrounding the surface casing grouted or otherwise sealed? Yes If yes, please describe: 38.4' bentonite-cement slurry

12) Has all pumping equipment and associated piping been removed from the well? No If not, describe remaining equipment and intentions to remove prior to plugging in Section VII of this form.

V. DESCRIPTION OF PLANNED WELL PLUGGING:

Note: If this plan proposes to plug an artesian well in a way other than with cement grout, placed bottom to top with a tremie pipe, a detailed diagram of the well showing proposed final plugged configuration shall be attached, as well as any additional technical information, such as geophysical logs, that are necessary to adequately describe the proposal.

1) Describe the method by which cement grout shall be placed in the well, or describe requested plugging methodology proposed for the well: the PVC well will be pulled then the boring will be grouted from bottom to top with cement bentonite grout. attempt to

2) Will well head be cut-off below land surface after plugging? 1'

VI. PLUGGING AND SEALING MATERIALS:

Note: The plugging of a well that taps poor quality water may require the use of a specialty cement or specialty sealant

1) For plugging intervals that employ cement grout, complete and attach Table A.

2) For plugging intervals that will employ approved non-cement based sealant(s), complete and attach Table B.

3) Theoretical volume of grout required to plug the well to land surface: 11.42 gallons

4) Type of Cement proposed: Portland Type II

5) Proposed cement grout mix: 6 gallons of water per 94 pound sack of Portland cement.

6) Will the grout be: _____ batch-mixed and delivered to the site

X mixed on site

7) Grout additives requested, and percent by dry weight relative to cement: 3% to 5% bentonite pre-mixed with 0.61 gallons water per 1%

8) Additional notes and calculations:

VII. ADDITIONAL INFORMATION: List additional information below, or on separate sheet(s):

the monitoring well was installed to monitor/investigate groundwater for potential metals, explosives, and other contamination associated with the hazardous waste management unit.

PVC piping will be removed.

VIII. SIGNATURE:

I, Bryan Nydoske, say that I have carefully read the foregoing Well Plugging Plan of Operations and any attachments, which are a part hereof; that I am familiar with the rules and regulations of the State Engineer pertaining to the plugging of wells and will comply with them, and that each and all of the statements in the Well Plugging Plan of Operations and attachments are true to the best of my knowledge and belief.

Signature of Applicant — Date: 5/2/17

STATE ENGINEER'S OFFICE
17 MAY -2 PM 4:15

IX. ACTION OF THE STATE ENGINEER:

This Well Plugging Plan of Operations is:

✓ Approved subject to the attached conditions.
_____ Not approved for the reasons provided on the attached letter.

Witness my hand and official seal this 3rd day of May, 2017

Tom Blaine P.E., New Mexico State Engineer

By: David B. Anderson

TABLE A - For plugging intervals that employ cement grout. Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of grout placement (ft bgl)			1'
Bottom of proposed interval of grout placement (ft bgl)			70'
Theoretical volume of grout required per interval (gallons)			11.42
Proposed cement grout mix gallons of water per 94-lb. sack of Portland cement			6
Mixed on-site or batch-mixed and delivered?			on site
Grout additive 1 requested			bentonite
Additive 1 percent by dry weight relative to cement			3% to 5%
Grout additive 2 requested			
Additive 2 percent by dry weight relative to cement			

STATE ENGINEER OFFICE
2017 MAY -2 PM 4:16

TABLE B - For plugging intervals that will employ approved non-cement based sealant(s). Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of sealant placement (ft bgl)			
Bottom of proposed sealant of grout placement (ft bgl)			
Theoretical volume of sealant required per interval (gallons)			
Proposed abandonment sealant (manufacturer and trade name)			

PLUGGING RECORD

NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: CMW07

Well owner: Fort Wingate Depot Activity Phone No.: 505-905-6190

Mailing address: Trailer 1, 7 Miles East of Gallup, NM

City: Fort Wingate State: NM Zip code: 87316

II. WELL PLUGGING INFORMATION:

1) Name of well drilling company that plugged well: Cascade Drilling LP

2) New Mexico Well Driller License No.: WD 1210 Expiration Date: 10/31/2017

3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Matthew Cain

4) Date well plugging began: 05/09/2017 Date well plugging concluded: 05/09/2017

5) GPS Well Location: Latitude: 35 deg, 25 min, 55.2216 sec
Longitude: -108 deg, 37 min, 9.34 sec, WGS 84

6) Depth of well confirmed at initiation of plugging as: 64.5 bgs ft below ground level (bgl), by the following manner: Tagger Tape

7) Static water level measured at initiation of plugging: 42.34 ft bgl

8) Date well plugging plan of operations was approved by the State Engineer: 05/03/2017

9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

CMW07

10) Log of Plugging Activities - Label vertical scale with depths, and indicate separate plugging intervals with horizontal lines as necessary to illustrate material or methodology changes. Attach additional pages if necessary.

For each interval plugged, describe within the following columns:

Depth (ft bgl)	Plugging Material Used (include any additives used)	Volume of Material Placed (gallons)	Theoretical Volume of Borehole/ Casing (gallons)	Placement Method (tremie pipe, other)	Comments ("casing perforated first", "open annular space also plugged", etc.)
	0' 5% Bentonite enriched Portland Cement	10.52 gallons	10.52 gallons	1" Tremie	Attempted to pull well Well would not pull, grouted in place. Cut well off below ground surface.
	64'.5 5% Bentonite enriched Portland Cement				

MULTIPLY		BY		AND OBTAIN
cubic feet	x	7.4805	=	gallons
cubic yards	x	201.97	=	gallons

III. SIGNATURE:

I, Matthew Cain, say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.

Signature of Well Driller

6-2-17
Date

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL PLUGGING PLAN OF OPERATIONS
CONDITIONS OF APPROVAL

This plugging plan is approved subject to the following conditions of approval:

Well File No. N/A (CMW14)

Permittee: Ft. Wingate Depot Activity

Location: 35° 26' 18.4776" N. Lat., 108° 37' 13.537" W. Long.

Plugging Plan File Date: May 2, 2017

1. The well shall be plugged in accordance with Subsection C of Section 19.27.4.30 NMAC by a well driller licensed in the State of New Mexico.

2. The well shall be plugged by tremie pipe from the bottom up with a theoretical volume of cement-bentonite grout equaling 15.8 gallons.

3. The Well Plugging Plan of Operations requests use of up to 5% bentonite-enriched cement. Pure bentonite powder ("90 barrel") is allowed as a cement additive, and neither granular bentonite nor extended yield bentonite shall be mixed with cement for plugging purposes.

   Supplemental bentonite powder increases water demand for the slurry at a rate of approximately 0.65 gallon of water per 1% increment of bentonite by dry weight content above the fundamental water demand of 6.0 gallons of water per 94-lb. sack of cement.

   The final 5% bentonite/cement slurry mix shall not exceed 9.25 gallons of water per 94-lb. sack of cement and 5-lb. bentonite increment.

4. The bentonite shall be hydrated separately with its required increment of water before being mixed into the cement slurry.

   If water is otherwise added to the combination of dry ingredients or the dry bentonite blended into wet cement, the alkalinity of the cement will restrict yield of the bentonite powder, resulting in excess free water in the slurry and enhanced cement shrinkage upon curing.

5. A plugging report shall be filed with the State Engineer within 20 days after completion of plugging. The report shall include all information required by Paragraph (3) of Subsection C of Section 19.27.4.30 NMAC.

Witness my hand and seal this 3rd day of May, A.D. 2017.

Tom Blaine, P.E., State Engineer

By: David B. Anderson

David B. Anderson
Water Resource Supervisor

WELL PLUGGING PLAN OF OPERATIONS

NOTE: A Well Plugging Plan of Operations shall be filed with and accepted by the Office of the State Engineer prior to plugging.

I. FILING FEE: There is no filing fee for this form.

II. GENERAL / WELL OWNERSHIP:

Existing Office of the State Engineer POD Number (Well Number) for well to be plugged: CMW14

Name of well owner: Fort Wingate Depot Activity

Mailing address: Trailer 1, 7 Miles East of Gallup

City: Fort Wingate State: NM Zip code: 87316

Phone number: 505-905-6190 E-mail: richard.cruz2@us.army.mil

III. WELL DRILLER INFORMATION:

Well Driller contracted to provide plugging services: Cascade Drilling

New Mexico Well Driller License No.: WD-1210 Expiration Date: 31 October 2017

IV. WELL INFORMATION:

Note: A copy of the existing Well Record for the well to be plugged should be attached to this plan.

1) GPS Well Location: Latitude: 35 deg, 26 min, 18.4776 sec
Longitude: -108 deg, 37 min, 13.537 sec, NAD 83

2) Reason(s) for plugging well: Environmental remediation of surface soils via excavation

3) Was well used for any type of monitoring program? Yes If yes, please use section VII of this form to detail what hydrogeologic parameters were monitored. If the well was used to monitor contaminated or poor quality water, authorization from the New Mexico Environment Department may be required prior to plugging.

4) Does the well tap brackish, saline, or otherwise poor quality water? No If yes, provide additional detail, including analytical results and/or laboratory report(s):

5) Static water level: 65.84 feet below land surface / feet above land surface (circle one)

6) Depth of the well: 96.75 feet

7) Inside diameter of innermost casing: 2 inches.

8) Casing material: PVC

9) The well was constructed with:

_____ an open-hole production interval, state the open interval: _____

X a well screen or perforated pipe, state the screened interval(s): 84.2-94.2'

10) What annular interval surrounding the artesian casing of this well is cement-grouted? 3 inches

11) Was the well built with surface casing? Yes If yes, is the annulus surrounding the surface casing grouted or otherwise sealed? Yes If yes, please describe: 79.0' bentonite-cement slurry

12) Has all pumping equipment and associated piping been removed from the well? No If not, describe remaining equipment and intentions to remove prior to plugging in Section VII of this form.

V. DESCRIPTION OF PLANNED WELL PLUGGING:

Note: If this plan proposes to plug an artesian well in a way other than with cement grout, placed bottom to top with a tremie pipe, a detailed diagram of the well showing proposed final plugged configuration shall be attached, as well as any additional technical information, such as geophysical logs, that are necessary to adequately describe the proposal.

1) Describe the method by which cement grout shall be placed in the well, or describe requested plugging methodology proposed for the well: the PVC well will be pulled then the boring will be grouted from bottom to top with cement bentonite grout. attempt to

2) Will well head be cut-off below land surface after plugging? 1'

VI. PLUGGING AND SEALING MATERIALS:

Note: The plugging of a well that taps poor quality water may require the use of a specialty cement or specialty sealant

1) For plugging intervals that employ cement grout, complete and attach Table A.

2) For plugging intervals that will employ approved non-cement based sealant(s), complete and attach Table B.

3) Theoretical volume of grout required to plug the well to land surface: 16.32 gallons

4) Type of Cement proposed: Portland Type II

5) Proposed cement grout mix: 6 gallons of water per 94 pound sack of Portland cement.

6) Will the grout be: _____batch-mixed and delivered to the site

X mixed on site

STATE ENGINEERS OFFICE
2017 MAY 12 PM 4:14

7) Grout additives requested, and percent by dry weight relative to cement: 3% to 5% bentonite pre-mixed with 0.61 gallons water per 1%

8) Additional notes and calculations:

VII. ADDITIONAL INFORMATION: List additional information below, or on separate sheet(s):

the monitoring well was installed to monitor/investigate groundwater for potential metals, explosives, and other contamination associated with the hazardous waste management unit.

PVC piping will be removed.

VIII. SIGNATURE:

I, Bryan Nydoske, say that I have carefully read the foregoing Well Plugging Plan of Operations and any attachments, which are a part hereof; that I am familiar with the rules and regulations of the State Engineer pertaining to the plugging of wells and will comply with them, and that each and all of the statements in the Well Plugging Plan of Operations and attachments are true to the best of my knowledge and belief.

Signature of Applicant — Date: 5/2/17

IX. ACTION OF THE STATE ENGINEER:

This Well Plugging Plan of Operations is:

✓ Approved subject to the attached conditions.
_____ Not approved for the reasons provided on the attached letter.

Witness my hand and official seal this 3rd day of May, 2017

Tom Blaine P.E., New Mexico State Engineer

By: David B. Anderson

STATE ENGINEER'S OFFICE
2017 MAY -2 PM 4:14

TABLE A - For plugging intervals that employ cement grout. Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of grout placement (ft bgl)			1'
Bottom of proposed interval of grout placement (ft bgl)			100'
Theoretical volume of grout required per interval (gallons)			6
Proposed cement grout mix gallons of water per 94-lb. sack of Portland cement			on site
Mixed on-site or batch-mixed and delivered?			betonite
Grout additive 1 requested			3% to 5%
Additive 1 percent by dry weight relative to cement			
Grout additive 2 requested			
Additive 2 percent by dry weight relative to cement			

TABLE B - For plugging intervals that will employ approved non-cement based sealant(s). Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of sealant placement (ft bgl)			
Bottom of proposed sealant of grout placement (ft bgl)			
Theoretical volume of sealant required per interval (gallons)			
Proposed abandonment sealant (manufacturer and trade name)			

PLUGGING RECORD

NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: CMW14

Well owner: Fort Wingate Depot Activity Phone No.: 505-905-6190

Mailing address: Trailer 1, 7 Miles East of Gallup, NM

City: Fort Wingate State: NM Zip code: 87316

II. WELL PLUGGING INFORMATION:

1) Name of well drilling company that plugged well: Cascade Drilling LP

2) New Mexico Well Driller License No.: WD 1210 Expiration Date: 10/31/2017

3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Matthew Cain

4) Date well plugging began: 05/15/2017 Date well plugging concluded: 05/15/2017

5) GPS Well Location: Latitude: 35 deg, 26 min, 18.4776 sec
Longitude: -108 deg, 37 min, 13.537 sec, WGS 84

6) Depth of well confirmed at initiation of plugging as: 94.8 ft below ground level (bgl), by the following manner: Tagger Tape

7) Static water level measured at initiation of plugging: 65.84 ft bgl

8) Date well plugging plan of operations was approved by the State Engineer: 05/03/2017

9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

CMW 14

10) Log of Plugging Activities - Label vertical scale with depths, and indicate separate plugging intervals with horizontal lines as necessary to illustrate material or methodology changes. Attach additional pages if necessary.

For each interval plugged, describe within the following columns:

Depth (ft bgl)	Plugging Material Used (include any additives used)	Volume of Material Placed (gallons)	Theoretical Volume of Borehole/ Casing (gallons)	Placement Method (tremie pipe, other)	Comments ("casing perforated first", "open annular space also plugged", etc.)
	0' 5% Bentonite enriched Portland Cement	15 gallons	15.46 gallons	1" Tremie	Attempted to pull well Well would not pull, grouted in place. Cut well off below ground surface.
	94'.8 5% Bentonite enriched Portland Cement				

MULTIPLY		BY		AND OBTAIN
cubic feet	x	7.4805	=	gallons
cubic yards	x	201.97	=	gallons

III. SIGNATURE:

I, Matthew Cain, say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.

Signature of Well Driller

6-2-17
Date

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL PLUGGING PLAN OF OPERATIONS
CONDITIONS OF APPROVAL

This plugging plan is approved subject to the following conditions of approval:

Well File No. N/A (CMW17)

Permittee: Ft. Wingate Depot Activity

Location: 35° 26' 18.7224' N. Lat., 108° 37' 14.207" W. Long.

Plugging Plan File Date: May 2, 2017

1. The well shall be plugged in accordance with Subsection C of Section 19.27.4.30 NMAC by a well driller licensed in the State of New Mexico.

2. The well shall be plugged by tremie pipe from the bottom up with a theoretical volume of cement-bentonite grout equaling 8.9 gallons.

3. The Well Plugging Plan of Operations requests use of up to 5% bentonite-enriched cement. Pure bentonite powder ("90 barrel") is allowed as a cement additive, and neither granular bentonite nor extended yield bentonite shall be mixed with cement for plugging purposes.

   Supplemental bentonite powder increases water demand for the slurry at a rate of approximately 0.65 gallon of water per 1% increment of bentonite by dry weight content above the fundamental water demand of 6.0 gallons of water per 94-lb. sack of cement.

   The final 5% bentonite/cement slurry mix shall not exceed 9.25 gallons of water per 94-lb. sack of cement and 5-lb. bentonite increment.

4. The bentonite shall be hydrated separately with its required increment of water before being mixed into the cement slurry.

   If water is otherwise added to the combination of dry ingredients or the dry bentonite blended into wet cement, the alkalinity of the cement will restrict yield of the bentonite powder, resulting in excess free water in the slurry and enhanced cement shrinkage upon curing.

5. A plugging report shall be filed with the State Engineer within 20 days after completion of plugging. The report shall include all information required by Paragraph (3) of Subsection C of Section 19.27.4.30 NMAC.

Witness my hand and seal this 3rd day of May, A.D. 2017.

Tom Blaine, P.E., State Engineer

By: David B. Anderson

David B. Anderson
Water Resource Supervisor

WELL PLUGGING PLAN OF OPERATIONS

NOTE: A Well Plugging Plan of Operations shall be filed with and accepted by the Office of the State Engineer prior to plugging.

I. FILING FEE: There is no filing fee for this form.

II. GENERAL / WELL OWNERSHIP:

Existing Office of the State Engineer POD Number (Well Number) for well to be plugged: CMW17

Name of well owner: Fort Wingate Depot Activity

Mailing address: Trailer 1, 7 Miles East of Gallup

City: Fort Wingate State: NM Zip code: 87316

Phone number: 505-905-6190 E-mail: richard.cruz2@us.army.mil

III. WELL DRILLER INFORMATION:

Well Driller contracted to provide plugging services: Cascade Drilling

New Mexico Well Driller License No.: WD-1210 Expiration Date: 31 October 2017

IV. WELL INFORMATION:

Note: A copy of the existing Well Record for the well to be plugged should be attached to this plan.

1) GPS Well Location: Latitude: 35 deg, 26 min, 18.7224 sec
Longitude: -108 deg, 37 min, 14.207 sec, NAD 83

2) Reason(s) for plugging well: Environmental remediation of surface soils via excavation

3) Was well used for any type of monitoring program? Yes If yes, please use section VII of this form to detail what hydrogeologic parameters were monitored. If the well was used to monitor contaminated or poor quality water, authorization from the New Mexico Environment Department may be required prior to plugging.

4) Does the well tap brackish, saline, or otherwise poor quality water? No If yes, provide additional detail, including analytical results and/or laboratory report(s):

5) Static water level: 23.68 feet below land surface / feet above land surface (circle one)

6) Depth of the well: 54.24 feet

7) Inside diameter of innermost casing: 3" inches.

8) Casing material: PVC

9) The well was constructed with:

_____ an open-hole production interval, state the open interval: _____

__X__ a well screen or perforated pipe, state the screened interval(s): 34.24'-54.24'

10) What annular interval surrounding the artesian casing of this well is cement-grouted? _____

11) Was the well built with surface casing? Yes If yes, is the annulus surrounding the surface casing grouted or otherwise sealed? Yes If yes, please describe: 27.0' bentonite-cement slurry

12) Has all pumping equipment and associated piping been removed from the well? No If not, describe remaining equipment and intentions to remove prior to plugging in Section VII of this form.

V. DESCRIPTION OF PLANNED WELL PLUGGING:

Note: If this plan proposes to plug an artesian well in a way other than with cement grout, placed bottom to top with a tremie pipe, a detailed diagram of the well showing proposed final plugged configuration shall be attached, as well as any additional technical information, such as geophysical logs, that are necessary to adequately describe the proposal.

1) Describe the method by which cement grout shall be placed in the well, or describe requested plugging methodology proposed for the well: the PVC well will be pulled then the boring will be grouted from bottom to top with cement bentonite grout. Attempt to

2) Will well head be cut-off below land surface after plugging? 1'

VI. PLUGGING AND SEALING MATERIALS:

Note: The plugging of a well that taps poor quality water may require the use of a specialty cement or specialty sealant

1) For plugging intervals that employ cement grout, complete and attach Table A.

2) For plugging intervals that will employ approved non-cement based sealant(s), complete and attach Table B.

3) Theoretical volume of grout required to plug the well to land surface: 9.79 gallons

4) Type of Cement proposed: Portland Type II

5) Proposed cement grout mix: 6 gallons of water per 94 pound sack of Portland cement.

6) Will the grout be: _____batch-mixed and delivered to the site

__X__ mixed on site

7) Grout additives requested, and percent by dry weight relative to cement: 3% to 5% bentonite pre-mixed with 0.61 gallons water per 1%

8) Additional notes and calculations:

VII. ADDITIONAL INFORMATION: List additional information below, or on separate sheet(s):

the monitoring well was installed to monitor/investigate groundwater for potential metals, explosives, and other contamination associated with the hazardous waste management unit.

PVC piping will be removed.

VIII. SIGNATURE:

I, Bryan Nydoske, say that I have carefully read the foregoing Well Plugging Plan of Operations and any attachments, which are a part hereof; that I am familiar with the rules and regulations of the State Engineer pertaining to the plugging of wells and will comply with them, and that each and all of the statements in the Well Plugging Plan of Operations and attachments are true to the best of my knowledge and belief.

Signature of Applicant — Date: 5/2/17

STATE ENGINEER'S OFFICE
2017 MAY -2 PM 4:13

IX. ACTION OF THE STATE ENGINEER:

This Well Plugging Plan of Operations is:

✓

_____ Approved subject to the attached conditions.
_____ Not approved for the reasons provided on the attached letter.

Witness my hand and official seal this 3rd day of May, 2017

Tom Blaine P.E., New Mexico State Engineer

By: David B. Anderson

TABLE A - For plugging intervals that employ cement grout. Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of grout placement (ft bgl)			1'
Bottom of proposed interval of grout placement (ft bgl)			60'
Theoretical volume of grout required per interval (gallons)			9.79
Proposed cement grout mix gallons of water per 94-lb. sack of Portland cement			6
Mixed on-site or batch-mixed and delivered?			on site
Grout additive 1 requested			bentonite
Additive 1 percent by dry weight relative to cement			3% to 5%
Grout additive 2 requested			
Additive 2 percent by dry weight relative to cement			

TABLE B - For plugging intervals that will employ approved non-cement based sealant(s). Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of sealant placement (ft bgl)			
Bottom of proposed sealant of grout placement (ft bgl)			
Theoretical volume of sealant required per interval (gallons)			
Proposed abandonment sealant (manufacturer and trade name)			

PLUGGING RECORD

NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: CMW17

Well owner: Fort Wingate Depot Activity Phone No.: 505-905-6190

Mailing address: Trailer 1, 7 Miles East of Gallup, NM

City: Fort Wingate State: NM Zip code: 87316

II. WELL PLUGGING INFORMATION:

1) Name of well drilling company that plugged well: Cascade Drilling LP

2) New Mexico Well Driller License No.: WD 1210 Expiration Date: 10/31/2017

3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Matthew Cain

4) Date well plugging began: 05/15/2017 Date well plugging concluded: 05/15/2017

5) GPS Well Location: Latitude: 35 deg, 26 min, 18.7224 sec
Longitude: -108 deg, 37 min, 14.207 sec, WGS 84

6) Depth of well confirmed at initiation of plugging as: 50.8 ft below ground level (bgl), by the following manner: Tagger Tape

7) Static water level measured at initiation of plugging: 23.68 ft bgl

8) Date well plugging plan of operations was approved by the State Engineer: 05/03/2017

9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

CMW17

10) Log of Plugging Activities - Label vertical scale with depths, and indicate separate plugging intervals with horizontal lines as necessary to illustrate material or methodology changes. Attach additional pages if necessary.

For each interval plugged, describe within the following columns:

Depth (ft bgl)	Plugging Material Used (include any additives used)	Volume of Material Placed (gallons)	Theoretical Volume of Borehole/ Casing (gallons)	Placement Method (tremie pipe, other)	Comments ("casing perforated first", "open annular space also plugged", etc.)
	0' 5% Bentonite enriched Portland Cement	20 gallons	8.12 gallons	1" Tremie	Attempted to pull well Well would not pull, grouted in place. Cut well off below ground surface.
	50'.8 5% Bentonite enriched Portland Cement				

MULTIPLY		BY		AND OBTAIN
cubic feet	x	7.4805	=	gallons
cubic yards	x	201.97	=	gallons

III. SIGNATURE:

I, Matthew Cain, say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.

Signature of Well Driller

6-2-17
Date

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL PLUGGING PLAN OF OPERATIONS
CONDITIONS OF APPROVAL

This plugging plan is approved subject to the following conditions of approval:

Well File No. N/A (CMW18)

Permittee: Ft. Wingate Depot Activity

Location: 35° 26' 18.9636" N. Lat., 108° 37' 15.161" W. Long.

Plugging Plan File Date: May 2, 2017

1. The well shall be plugged in accordance with Subsection C of Section 19.27.4.30 NMAC by a well driller licensed in the State of New Mexico.

2. The well shall be plugged by tremie pipe from the bottom up with a theoretical volume of cement-bentonite grout equaling 8.8 gallons.

3. The Well Plugging Plan of Operations requests use of up to 5% bentonite-enriched cement. Pure bentonite powder ("90 barrel") is allowed as a cement additive, and neither granular bentonite nor extended yield bentonite shall be mixed with cement for plugging purposes.

   Supplemental bentonite powder increases water demand for the slurry at a rate of approximately 0.65 gallon of water per 1% increment of bentonite by dry weight content above the fundamental water demand of 6.0 gallons of water per 94-lb. sack of cement.

   The final 5% bentonite/cement slurry mix shall not exceed 9.25 gallons of water per 94-lb. sack of cement and 5-lb. bentonite increment.

4. The bentonite shall be hydrated separately with its required increment of water before being mixed into the cement slurry.

   If water is otherwise added to the combination of dry ingredients or the dry bentonite blended into wet cement, the alkalinity of the cement will restrict yield of the bentonite powder, resulting in excess free water in the slurry and enhanced cement shrinkage upon curing.

5. A plugging report shall be filed with the State Engineer within 20 days after completion of plugging. The report shall include all information required by Paragraph (3) of Subsection C of Section 19.27.4.30 NMAC.

Witness my hand and seal this 3rd day of May, A.D. 2017.

Tom Blaine, P.E., State Engineer

By: David B. Anderson

David B. Anderson
Water Resource Supervisor

WELL PLUGGING PLAN OF OPERATIONS

NOTE: A Well Plugging Plan of Operations shall be filed with and accepted by the Office of the State Engineer prior to plugging.

I. FILING FEE: There is no filing fee for this form.

II. GENERAL / WELL OWNERSHIP:

Existing Office of the State Engineer POD Number (Well Number) for well to be plugged: CMW18

Name of well owner: Fort Wingate Depot Activity

Mailing address: Trailer 1, 7 Miles East of Gallup

City: Fort Wingate State: NM Zip code: 87316

Phone number: 505-905-6190 E-mail: richard.cruz2@us.army.mil

STATE ENGINEER OFFICE
2017 MAY -2 PM 4:15

III. WELL DRILLER INFORMATION:

Well Driller contracted to provide plugging services: Cascade Drilling

New Mexico Well Driller License No.: WD-1210 Expiration Date: 31 October 2017

IV. WELL INFORMATION:

Note: A copy of the existing Well Record for the well to be plugged should be attached to this plan.

1) GPS Well Location: Latitude: 35 deg, 26 min, 18.9636 sec
Longitude: -108 deg, 37 min, 15.161 sec, NAD 83

2) Reason(s) for plugging well: Environmental remediation of surface soils via excavation

3) Was well used for any type of monitoring program? Yes If yes, please use section VII of this form to detail what hydrogeologic parameters were monitored. If the well was used to monitor contaminated or poor quality water, authorization from the New Mexico Environment Department may be required prior to plugging.

4) Does the well tap brackish, saline, or otherwise poor quality water? No If yes, provide additional detail, including analytical results and/or laboratory report(s):

5) Static water level: 41.90 feet below land surface / feet above land surface (circle one)

6) Depth of the well: 54.10 feet

7) Inside diameter of innermost casing: 2 inches.

8) Casing material: PVC

9) The well was constructed with:

_____ an open-hole production interval, state the open interval: _____

__X__ a well screen or perforated pipe, state the screened interval(s): 34.10'-54.10'

10) What annular interval surrounding the artesian casing of this well is cement-grouted? _____

11) Was the well built with surface casing? Yes If yes, is the annulus surrounding the surface casing grouted or otherwise sealed? Yes If yes, please describe: 27.0' bentonite-cement slurry

12) Has all pumping equipment and associated piping been removed from the well? _____ If not, describe remaining equipment and intentions to remove prior to plugging in Section VII of this form.

V. DESCRIPTION OF PLANNED WELL PLUGGING:

Note: If this plan proposes to plug an artesian well in a way other than with cement grout, placed bottom to top with a tremie pipe, a detailed diagram of the well showing proposed final plugged configuration shall be attached, as well as any additional technical information, such as geophysical logs, that are necessary to adequately describe the proposal.

1) Describe the method by which cement grout shall be placed in the well, or describe requested plugging methodology proposed for the well: the PVC well will be pulled then the boring will be grouted from bottom to top with cement bentonite grout. attempt to

2) Will well head be cut-off below land surface after plugging? 1'

VI. PLUGGING AND SEALING MATERIALS:

Note: The plugging of a well that taps poor quality water may require the use of a specialty cement or specialty sealant

1) For plugging intervals that employ cement grout, complete and attach Table A.

2) For plugging intervals that will employ approved non-cement based sealant(s), complete and attach Table B.

3) Theoretical volume of grout required to plug the well to land surface: 9.79 gallons

4) Type of Cement proposed: Portland Type II

5) Proposed cement grout mix: 6 gallons of water per 94 pound sack of Portland cement.

6) Will the grout be: _____ batch-mixed and delivered to the site

__X__ mixed on site

7) Grout additives requested, and percent by dry weight relative to cement: 3% to 5% bentonite pre-mixed with 0.61 gallons water per 1%

8) Additional notes and calculations:

VII. ADDITIONAL INFORMATION: List additional information below, or on separate sheet(s):

the monitoring well was installed to monitor/investigate groundwater for potential metals, explosives, and other contamination associated with the hazardous waste management unit.

PVC piping will be removed.

VIII. SIGNATURE:

I, Bryan Nydoske, say that I have carefully read the foregoing Well Plugging Plan of Operations and any attachments, which are a part hereof; that I am familiar with the rules and regulations of the State Engineer pertaining to the plugging of wells and will comply with them, and that each and all of the statements in the Well Plugging Plan of Operations and attachments are true to the best of my knowledge and belief.

Signature of Applicant — Date: 5/2/17

IX. ACTION OF THE STATE ENGINEER:

This Well Plugging Plan of Operations is:

✓ Approved subject to the attached conditions.
_____ Not approved for the reasons provided on the attached letter.

Witness my hand and official seal this 3rd day of May, 2017

Tom Blaine P.E., New Mexico State Engineer

By: David B. Anderson

TABLE A - For plugging intervals that employ cement grout. Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of grout placement (ft bgl)			1'
Bottom of proposed interval of grout placement (ft bgl)			60'
Theoretical volume of grout required per interval (gallons)			9.79
Proposed cement grout mix gallons of water per 94-lb. sack of Portland cement			6
Mixed on-site or batch-mixed and delivered?			bentonite
Grout additive 1 requested			3% to 5%
Additive 1 percent by dry weight relative to cement			
Grout additive 2 requested			
Additive 2 percent by dry weight relative to cement			

TABLE B - For plugging intervals that will employ approved non-cement based sealant(s). Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of sealant placement (ft bgl)			
Bottom of proposed sealant of grout placement (ft bgl)			
Theoretical volume of sealant required per interval (gallons)			
Proposed abandonment sealant (manufacturer and trade name)			

PLUGGING RECORD

NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: CMW18

Well owner: Fort Wingate Depot Activity Phone No.: 505-905-6190

Mailing address: Trailer 1, 7 Miles East of Gallup, NM

City: Fort Wingate State: NM Zip code: 87316

II. WELL PLUGGING INFORMATION:

1) Name of well drilling company that plugged well: Cascade Drilling LP

2) New Mexico Well Driller License No.: WD 1210 Expiration Date: 10/31/2017

3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Matthew Cain

4) Date well plugging began: 05/15/2017 Date well plugging concluded: 05/15/2017

5) GPS Well Location: Latitude: 35 deg, 26 min, 18.9636 sec
Longitude: -108 deg, 37 min, 15.161 sec, WGS 84

6) Depth of well confirmed at initiation of plugging as: 52.1 ft below ground level (bgl), by the following manner: Tagger Tape

7) Static water level measured at initiation of plugging: 41.90 ft bgl

8) Date well plugging plan of operations was approved by the State Engineer: 05/03/2017

9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

CMW18

10) Log of Plugging Activities - Label vertical scale with depths, and indicate separate plugging intervals with horizontal lines as necessary to illustrate material or methodology changes. Attach additional pages if necessary.

For each interval plugged, describe within the following columns:

Depth (ft bgl)	Plugging Material Used (include any additives used)	Volume of Material Placed (gallons)	Theoretical Volume of Borehole/ Casing (gallons)	Placement Method (tremie pipe, other)	Comments ("casing perforated first", "open annular space also plugged", etc.)
	0' 5% Bentonite enriched Portland Cement	40 gallons	8.50 gallons	1" Tremie	Attempted to pull well Well would not pull, grouted in place. Cut well off below ground surface.
	52'.1 5% Bentonite enriched Portland Cement				

MULTIPLY		BY		AND OBTAIN
cubic feet	x	7.4805	=	gallons
cubic yards	x	201.97	=	gallons

III. SIGNATURE:

I, Matthew Cain, say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.

Signature of Well Driller

6-2-17
Date

NEW MEXICO OFFICE OF THE STATE ENGINEER
WELL PLUGGING PLAN OF OPERATIONS
CONDITIONS OF APPROVAL

This plugging plan is approved subject to the following conditions of approval:

Well File No. N/A (FW38)

Permittee: Ft. Wingate Depot Activity

Location: 35° 26' 8.9736" N. Lat., 108° 37' 14.7" W. Long.

Plugging Plan File Date: May 2, 2017

1. The well shall be plugged in accordance with Subsection C of Section 19.27.4.30 NMAC by a well driller licensed in the State of New Mexico.

2. The well shall be plugged by tremie pipe from the bottom up with a theoretical volume of cement-bentonite grout equaling 1.7 gallons.

3. The Well Plugging Plan of Operations requests use of up to 5% bentonite-enriched cement. Pure bentonite powder ("90 barrel") is allowed as a cement additive, and neither granular bentonite nor extended yield bentonite shall be mixed with cement for plugging purposes.

   Supplemental bentonite powder increases water demand for the slurry at a rate of approximately 0.65 gallon of water per 1% increment of bentonite by dry weight content above the fundamental water demand of 6.0 gallons of water per 94-lb. sack of cement.

   The final 5% bentonite/cement slurry mix shall not exceed 9.25 gallons of water per 94-lb. sack of cement and 5-lb. bentonite increment.

4. The bentonite shall be hydrated separately with its required increment of water before being mixed into the cement slurry.

   If water is otherwise added to the combination of dry ingredients or the dry bentonite blended into wet cement, the alkalinity of the cement will restrict yield of the bentonite powder, resulting in excess free water in the slurry and enhanced cement shrinkage upon curing.

5. A plugging report shall be filed with the State Engineer within 20 days after completion of plugging. The report shall include all information required by Paragraph (3) of Subsection C of Section 19.27.4.30 NMAC.

Witness my hand and seal this 3rd day of May, A.D. 2017.

Tom Blaine, P.E., State Engineer

By: David B. Anderson

David B. Anderson
Water Resource Supervisor

WELL PLUGGING PLAN OF OPERATIONS

NOTE: A Well Plugging Plan of Operations shall be filed with and accepted by the Office of the State Engineer prior to plugging.

I. FILING FEE: There is no filing fee for this form.

II. GENERAL / WELL OWNERSHIP:

Existing Office of the State Engineer POD Number (Well Number) for well to be plugged: FW38

Name of well owner: Fort Wingate Depot Activity

Mailing address: Trailer 1, 7 Miles East of Gallup

City: Fort Wingate State: NM Zip code: 87316

Phone number: 505-905-6190 E-mail: richard.cruz2@us.army.mil

III. WELL DRILLER INFORMATION:

Well Driller contracted to provide plugging services: Cascade Drilling

New Mexico Well Driller License No.: WD-1210 Expiration Date: 31 October 2017

IV. WELL INFORMATION:

Note: A copy of the existing Well Record for the well to be plugged should be attached to this plan.

1) GPS Well Location: Latitude: 35 deg, 26 min, 8.9736 sec
Longitude: -108 deg, 37 min, 14.7 sec, NAD 83

2) Reason(s) for plugging well: Environmental remediation of surface soils via excavation

3) Was well used for any type of monitoring program? Yes If yes, please use section VII of this form to detail what hydrogeologic parameters were monitored. If the well was used to monitor contaminated or poor quality water, authorization from the New Mexico Environment Department may be required prior to plugging.

4) Does the well tap brackish, saline, or otherwise poor quality water? No If yes, provide additional detail, including analytical results and/or laboratory report(s):

5) Static water level: 7.23 feet below land surface / feet above land surface (circle one)

6) Depth of the well: 10.55 feet

7) Inside diameter of innermost casing: 2 inches.

8) Casing material: PVC

9) The well was constructed with:

_____ an open-hole production interval, state the open interval: _____

__X__ a well screen or perforated pipe, state the screened interval(s): _____

10) What annular interval surrounding the artesian casing of this well is cement-grouted? _____

11) Was the well built with surface casing? Yes If yes, is the annulus surrounding the surface casing grouted or otherwise sealed? Yes If yes, please describe: _____

_____

12) Has all pumping equipment and associated piping been removed from the well? _____ If not, describe remaining equipment and intentions to remove prior to plugging in Section VII of this form.

V. DESCRIPTION OF PLANNED WELL PLUGGING:

Note: If this plan proposes to plug an artesian well in a way other than with cement grout, placed bottom to top with a tremie pipe, a detailed diagram of the well showing proposed final plugged configuration shall be attached, as well as any additional technical information, such as geophysical logs, that are necessary to adequately describe the proposal.

1) Describe the method by which cement grout shall be placed in the well, or describe requested plugging methodology proposed for the well: the PVC well will be pulled then the boring will be grouted from bottom to top with cement bentonite grout. Attempt to

_____

2) Will well head be cut-off below land surface after plugging? 1'

VI. PLUGGING AND SEALING MATERIALS:

Note: The plugging of a well that taps poor quality water may require the use of a specialty cement or specialty sealant

1) For plugging intervals that employ cement grout, complete and attach Table A.

2) For plugging intervals that will employ approved non-cement based sealant(s), complete and attach Table B.

3) Theoretical volume of grout required to plug the well to land surface: 2 gallons

4) Type of Cement proposed: Portland Type II

5) Proposed cement grout mix: 6 gallons of water per 94 pound sack of Portland cement.

6) Will the grout be: _____ batch-mixed and delivered to the site

__X__ mixed on site

7) Grout additives requested, and percent by dry weight relative to cement: 3% to 5% bentonite pre-mixed with 0.61 gallons water per 1%

8) Additional notes and calculations:

VII. ADDITIONAL INFORMATION: List additional information below, or on separate sheet(s):

the monitoring well was installed to monitor/investigate groundwater for potential metals, explosives, and other contamination associated with the hazardous waste management unit.

PVC piping will be removed.

VIII. SIGNATURE:

I, Bryan Nydoske, say that I have carefully read the foregoing Well Plugging Plan of Operations and any attachments, which are a part hereof; that I am familiar with the rules and regulations of the State Engineer pertaining to the plugging of wells and will comply with them, and that each and all of the statements in the Well Plugging Plan of Operations and attachments are true to the best of my knowledge and belief.

Signature of Applicant — Date: 5/2/17

IX. ACTION OF THE STATE ENGINEER:

This Well Plugging Plan of Operations is:

✓ Approved subject to the attached conditions.
_____ Not approved for the reasons provided on the attached letter.

Witness my hand and official seal this 3rd day of May, 2017

Tom Blaine P.E., New Mexico State Engineer

By: David B. Anderson

STATE ENGINEER'S OFFICE
2017 MAY -2 PM 1:15

TABLE A - For plugging intervals that employ cement grout. Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of grout placement (ft bgl)			1'
Bottom of proposed interval of grout placement (ft bgl)			12'
Theoretical volume of grout required per interval (gallons)			2
Proposed cement grout mix gallons of water per 94-lb. sack of Portland cement			6
Mixed on-site or batch-mixed and delivered?			on site
Grout additive 1 requested			bentonite
Additive 1 percent by dry weight relative to cement			3% to 5%
Grout additive 2 requested			
Additive 2 percent by dry weight relative to cement			

STATE ENGINEER OFFICE
2017 MAY -2 PM 4:15

TABLE B - For plugging intervals that will employ approved non-cement based sealant(s). Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of sealant placement (ft bgl)			
Bottom of proposed sealant of grout placement (ft bgl)			
Theoretical volume of sealant required per interval (gallons)			
Proposed abandonment sealant (manufacturer and trade name)			

PLUGGING RECORD

NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: FW38

Well owner: Fort Wingate Depot Activity Phone No.: 505-905-6190

Mailing address: Trailer 1, 7 Miles East of Gallup, NM

City: Fort Wingate State: NM Zip code: 87316

II. WELL PLUGGING INFORMATION:

1) Name of well drilling company that plugged well: Cascade Drilling LP

2) New Mexico Well Driller License No.: WD 1210 Expiration Date: 10/31/2017

3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Matthew Cain

4) Date well plugging began: 05/09/2017 Date well plugging concluded: 05/09/2017

5) GPS Well Location: Latitude: 35 deg, 26 min, 8.9736 sec
Longitude: -108 deg, 37 min, 14.7 sec, WGS 84

6) Depth of well confirmed at initiation of plugging as: 8.4 ft below ground level (bgl), by the following manner: Tagger Tape

7) Static water level measured at initiation of plugging: 7.23 ft bgl

8) Date well plugging plan of operations was approved by the State Engineer: 05/03/2017

9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

10) Log of Plugging Activities - Label vertical scale with depths, and indicate separate plugging intervals with horizontal lines as necessary to illustrate material or methodology changes. Attach additional pages if necessary.

For each interval plugged, describe within the following columns:

Depth (ft bgl)	Plugging Material Used (include any additives used)	Volume of Material Placed (gallons)	Theoretical Volume of Borehole/ Casing (gallons)	Placement Method (tremie pipe, other)	Comments ("casing perforated first", "open annular space also plugged", etc.)
	0' 5% Bentonite enriched Portland Cement	6 gallons	1.37 gallons	1" Tremie	Attempted to pull well Well would not pull, grouted in place. Cut well off below ground surface.
	8'.4 5% Bentonite enriched Portland Cement				

MULTIPLY		BY		AND OBTAIN
cubic feet	x	7.4805	=	gallons
cubic yards	x	201.97	=	gallons

III. SIGNATURE:

I, Matthew Cain, say that I am familiar with the rules of the Office of the State Engineer pertaining to the plugging of wells and that each and all of the statements in this Plugging Record and attachments are true to the best of my knowledge and belief.

Signature of Well Driller

6-6-17
Date