



Carlsbad Brine Well Remediation Project
Carlsbad, New Mexico
State of New Mexico - Energy, Minerals and Natural
Resources Department (EMNRD)

Presentation to the Carlsbad Brine Well Remediation Authority July Meeting
Wood Group
July 11, 2018
1:30 PM

Project Team

- Amec Foster Wheeler officially changed its name on April 16, 2018 to Wood Environment & Infrastructure Solutions, Inc. This is a name change only and is administrative in nature.
- Wood has assembled a Team of specialized contractors, capable of implementing all aspects of the project.

Company	Role
Wood Environment & Infrastructure, Inc. (Wood)	Project Management/ Quality Assurance/ Design Lead
Hayward Baker Inc. (HBI)	Construction Team Lead/ Grout Deployment
RESPEC	Monitoring/ Rock Mechanics/ Public Relations Support
Constructor's Inc. (Constructors)	Local Contractor/ Borrow Material
ESG Solutions (ESG)	Microseismic Instrumentation & Data Acquisition



Wood Direct Project Experience

In 2012 retained by OCD to perform:

- Monitoring system upgrades & operation
- Evaluation of previous investigation methods
- Conduct Feasibility Study

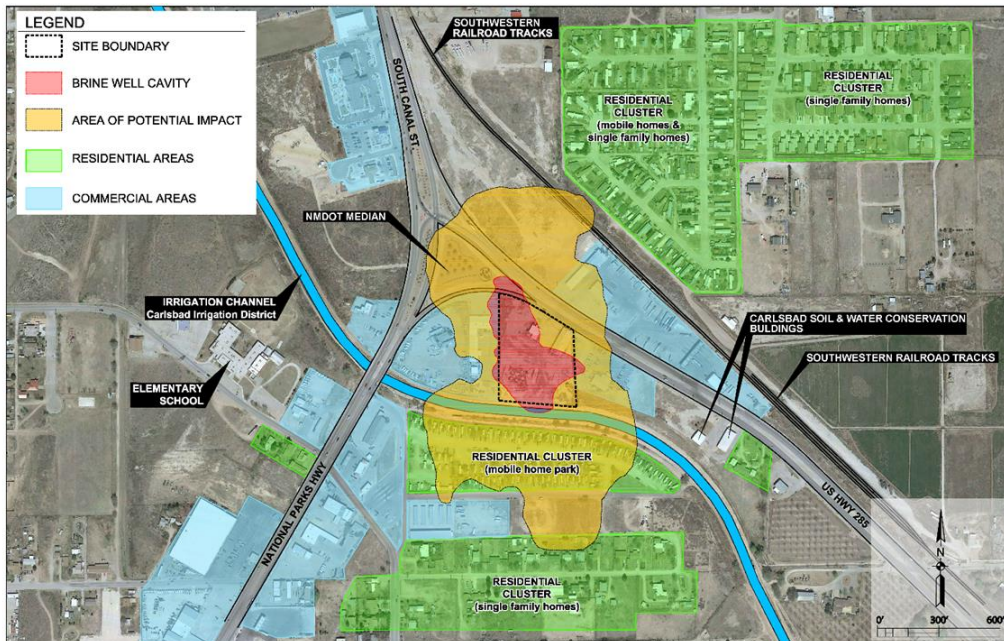
To date, we have gathered and evaluated data from site monitoring instruments over the last 5 years

- Slight pressure increases
- Decrease in microseismic activity



Feasibility Study

- Cavity investigations performed to confirm size, shape, and mechanical parameters.
- OCD selected alternative for in-situ fill of the cavity.



On-going Methods of Site Monitoring

Microseismic (MS)

- Four MS monitoring stations
- One below cavity, three above roof

Atlas Monitoring System (24 hours/7 days)

- Four borehole tilt meter
- Two pressure transducers to measure pressure at Eugenie #1 (well head/annulus)
- Two pressure transducers to measure depth to groundwater (shallow and deep aquifers)
- Pressure transducer to measure depth of water in canal (canal loading)
- Barometric pressure, air & soil temperatures, rain gauge



Public Outreach

- Wood responsible for Project public outreach and Community Interaction for this contract
- Project related press releases and public/stakeholder meetings will be coordinated with OCD
- Series of Town Hall meetings are planned throughout the project.
 - Convey project information at milestones
 - Convey accurate information to all stakeholders
- Project Fact Sheet is being developed to convey project details to stakeholders, residents, businesses and media.



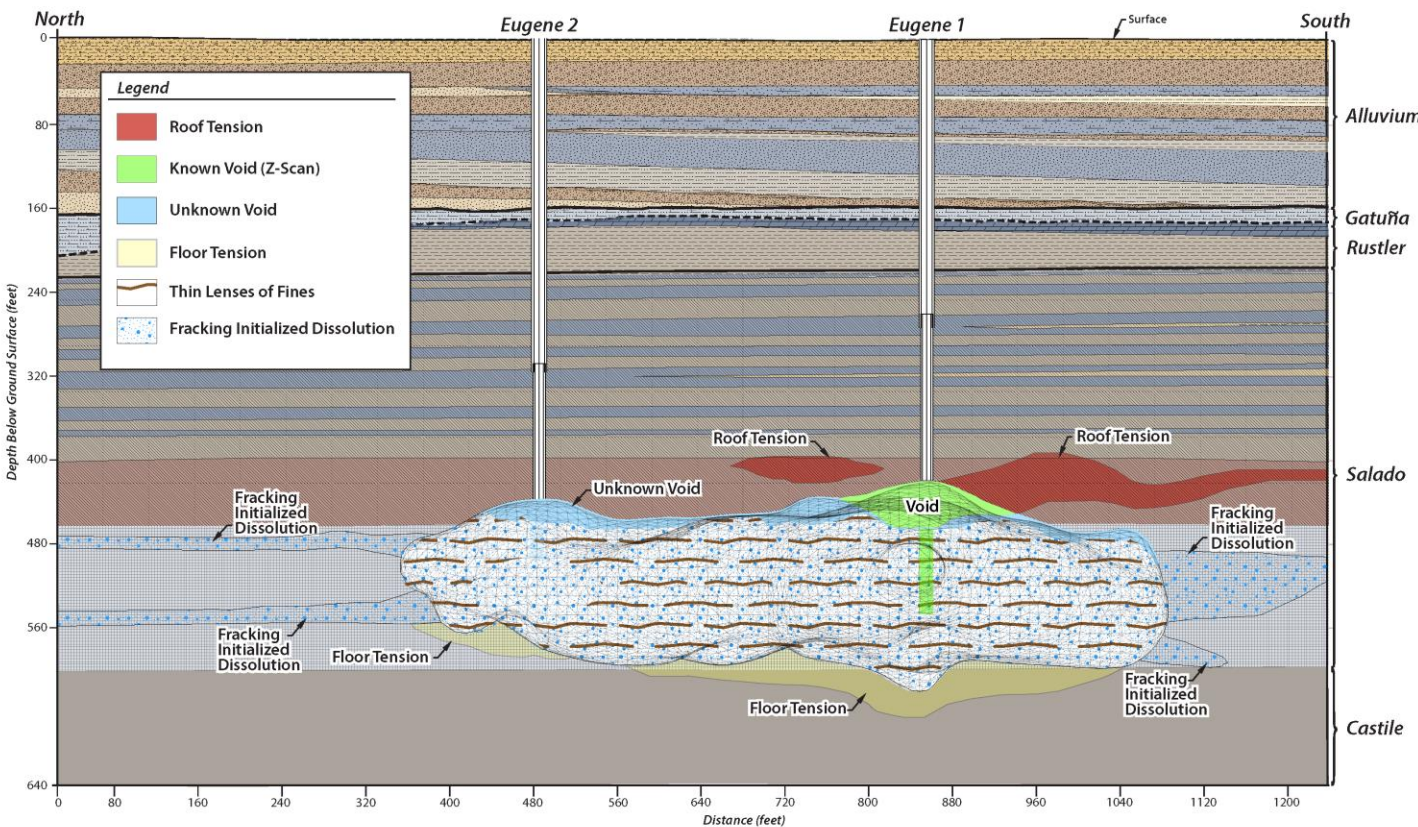


The Solution

Proposed Solution

- Install a series of wells to extract brine and inject grout
 - Maintain cavity pressure
 - Balance volume of brine removed with volume of grout injected
 - Install a grout cap using high mobility grout to support cavity roof
 - Install grout columns using low mobility grout to support grout cap





Cavity Filling Process

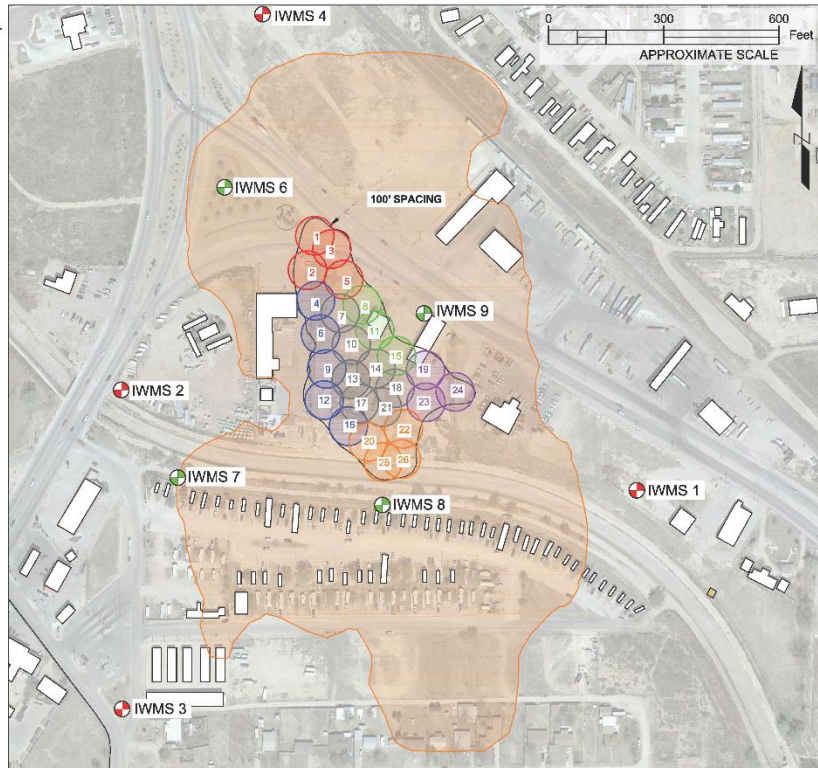
Boring & Grouting Sequencing

LEGEND

- PHASE 1 WELLS
- PHASE 2 WELLS
- PHASE 3 WELLS
- PHASE 4 WELLS
- PHASE 5 WELLS
- PHASE 6 WELLS
- AREA OF IMPACT
- ⊕ EXISTING IWMS
- ⊕ FUTURE IWMS

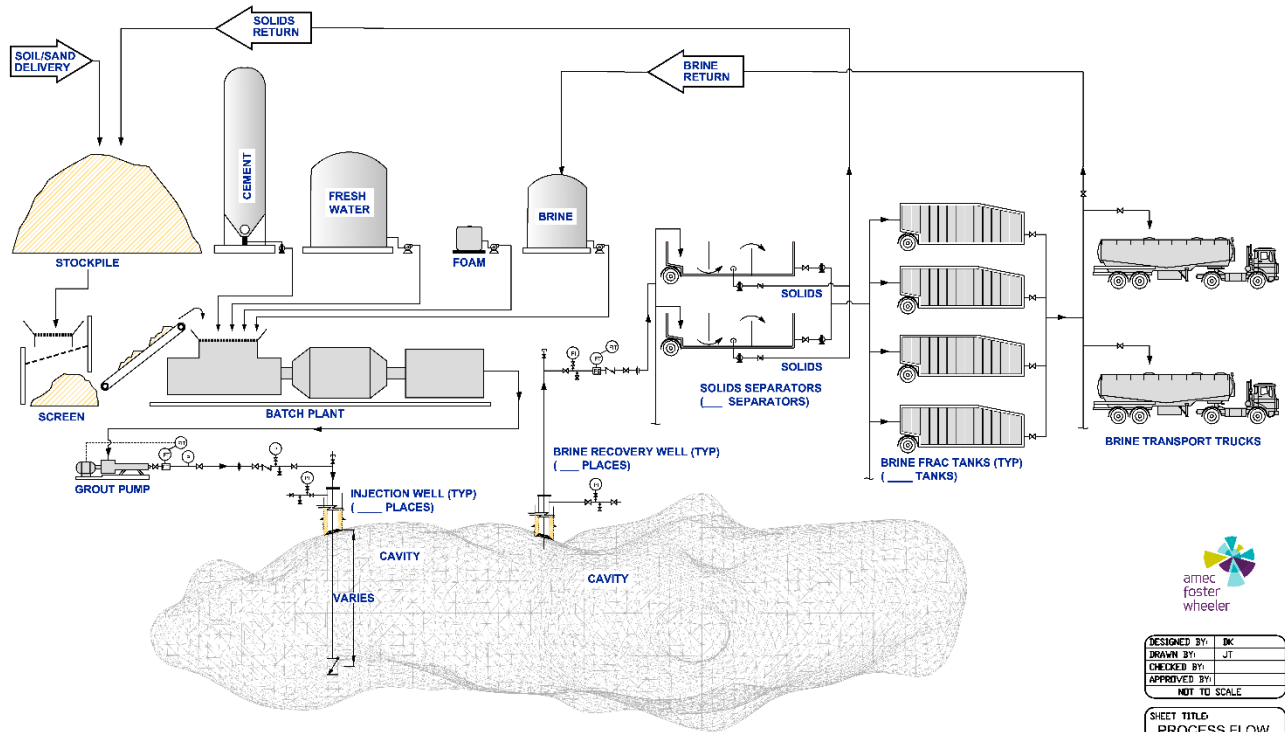
GROUT SEQUENCING

PHASE	GROUT INJECTION WELL	BRINE RECOVERY/ MONITORING WELL
1	1	2,3
	2	3,4
	3	4,5
	5	7,8
	24	19,23
2	19	23,18
	23	18,22
	25	20,26
3	26	20,22
	20	21,22
	22	18,21
4	4	7,6
	6	7,10
	9	10,13
	12	13,17
5	16	17,21
	8	7,11
	11	7,10
6	15	14,8
	7	10
	10	13,14
	13	14,17
	14	17,8
	17	18,21
	21	18
18		



Cavity Filling Process

Process Flow Diagram

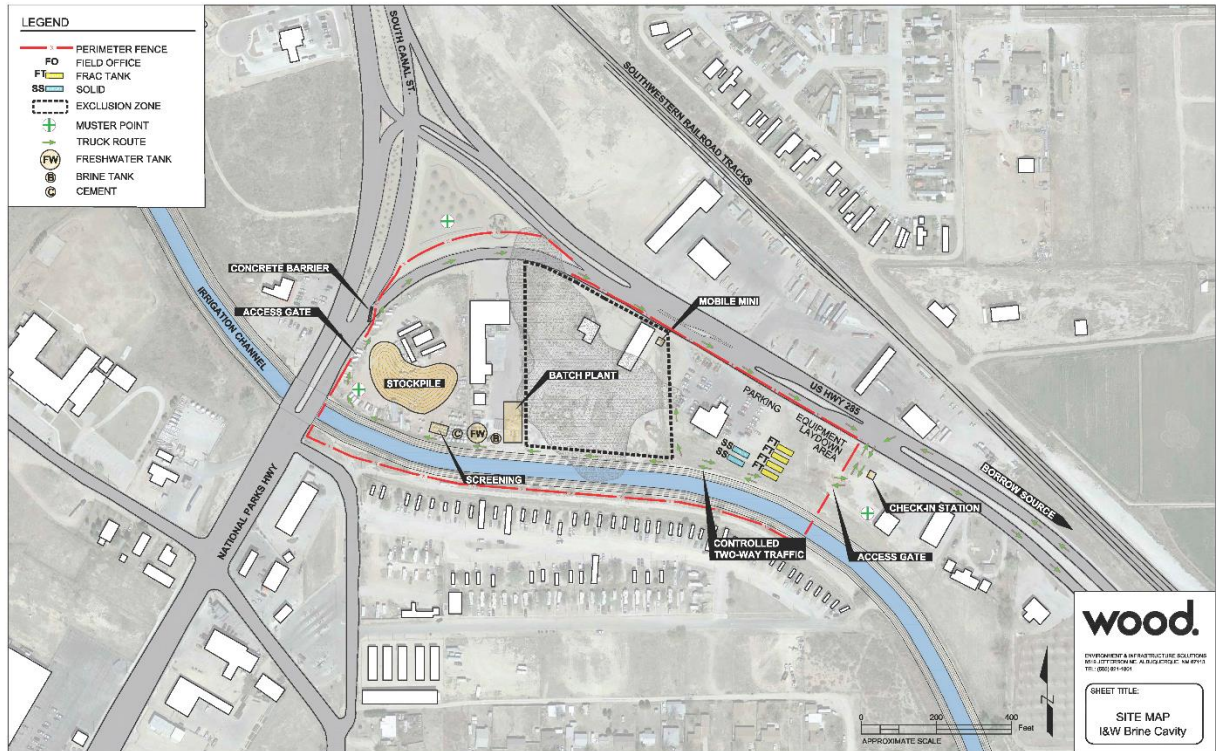


DESIGNED BY:	DK
DRAWN BY:	JT
CHECKED BY:	
APPROVED BY:	
NOT TO SCALE	

SHEET TITLE	
PROCESS FLOW DIAGRAM	
I&W Brine Cavity	



Site and Security Map During Construction



Project Timeline and Progress Report

Planned Activities

- Changes to the site
 - Installation of security/privacy fencing (completed)
 - Signage
 - Relocation of neighbors (City of Carlsbad leading effort)
 - Expanded site boundaries
 - Utility connections
 - Install additional site instrumentation
 - Additional BTM's, HIPI
 - Locations selected based on CSM
 - Relocate existing instrumentation
 - Install additional MS monitoring sites
 - Traffic patterns – Traffic Control Planning



Milestone Schedule

- June 11-22 – Site Maintenance, Site Survey, Brine Well Sampling, and Security Fence Installation (Completed)
- June 30, 2018 -Phase 1a Preliminary Design (Completed)
- July 11, 2018 – Presentation on Traffic Control to Brine Well Authority
- September 2018 – Proposed Public Informational Meeting
- September 2018 – Upgrades to Monitoring
- December 2018 – Complete Design and Refine Cost Estimate for Phase 2
- January 30, 2019 – Field Mobilization and Site Preparation Begin Phase 2 – Implementation



Traffic Control - Strategy

Traffic Control

- Wood responsible for the Following Traffic Control Elements:
 - Coordination with NMDOT on Project Related Traffic Control
 - Preparation of Traffic Control Plan to allow for safe access and egress from the Project Site
 - Provide Traffic Related Signage and Barriers
 - Conduct Monitoring and Maintenance During Construction

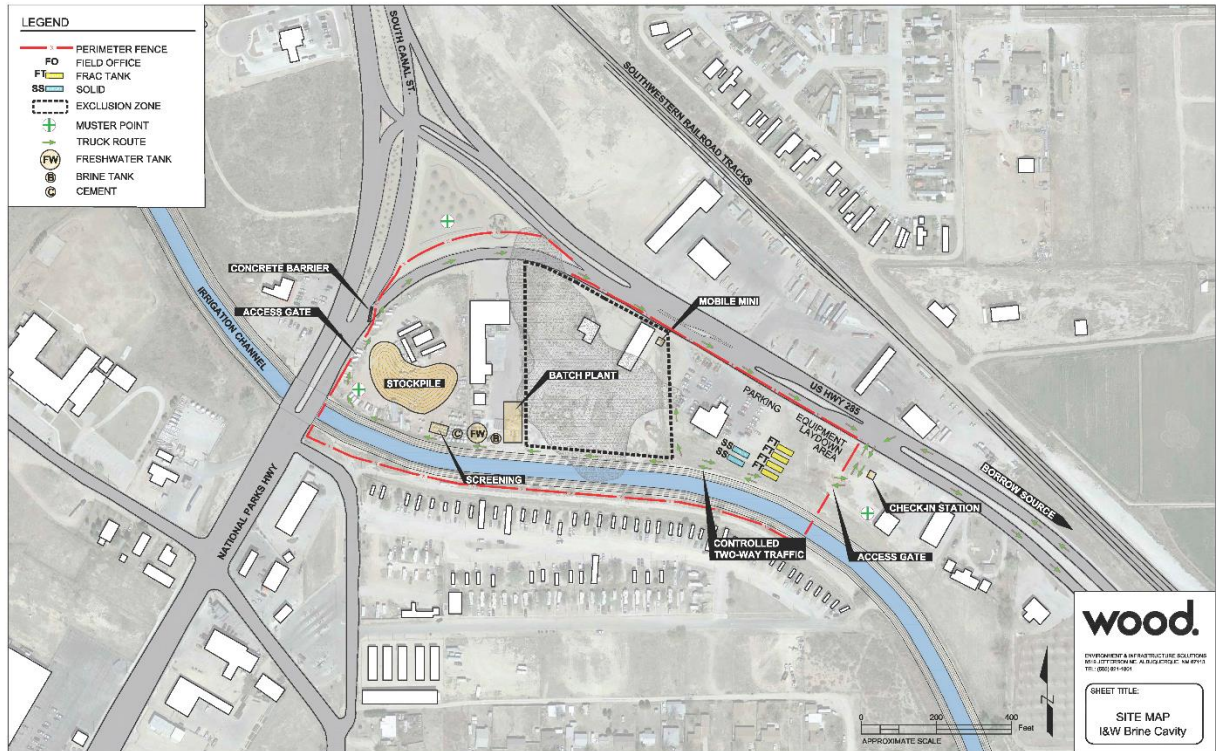


Traffic Control Plan (TCP)

- Draft Traffic Control Plan submitted to NMDOT
- Plan updated per NMDOT Recommendations
- Coordination between Wood and NMDOT is ongoing
- TCP allows for two lanes of traffic in both North and Southbound directions on US 285
- Traffic flow will be modified to allow continued access from Northbound US 62 to Southbound US 285
- TCP will not be implemented until January 2019



Project Site Map



wood.

woodplc.com