TO: BOARD OF DIRECTORS

FROM: BRUCE BUEL BSB

DATE: May 4, 2007

AGENDA ITEM
F
MAY 9, 2007

MANAGER'S REPORT

ITEM

Standing report to your Honorable Board --*Period covered by this report April 19, 2007 through May 2, 2007*

DISTRICT BUSINESS

Administrative

Staff interviewed two District Engineer candidates on April 23, 2007 and rejected both. Based on the first two rounds of interviews staff has requested that the Finance Audit and Personnel Committee review the salary range and/or job duties of this position (See Minutes from 5/2/07 FAP Committee Meeting attached as part of Agenda Item G).

Staff presented a rough draft budget to the Finance, Audit and Personnel Committee at its Committee's April 18th Meeting and received edit recommendations from the Committee. Staff will circulate a proposed budget prior to the Board's May 30, 2007 Budget Workshop.

Our Administrative Intern, Laura Pennebaker, reported for work on April 16, 2007. Our Water Conservation/Outreach Specialist is scheduled to report to work on May 14, 2007.

Staff has held meetings with representatives of the Craig Family regarding the proposed Outside User Agreement. Staff expects that a draft OUA will be presented to the Board at the Board's May 23, 2007 Board Meeting.

Staff attended SCAC's April 23rd meeting and the Committee recommended that the County certify a Level of Severity III for water supply on the Nipomo Mesa. Staff expects to participate in the Planning Commission's May 24, 2007 Meeting on this issue.

The General Manager attended the Spring Cal/Nevada AWWA Section conference from April 18 to April 20. Attached are excerpt of some of the materials discussed at the conference.

Safety Program
No injury reports during the period.

Project Activity

Staff will provide a verbal projects update to the Board at the Board Meeting.

Conservation Program Activities

Staff has been working with the Conservation Committee on the Emergency Shortage Ordinance.

RECOMMENDATION

Staff seeks direction and input from your Honorable Board.

ATTACHMENTS –

- AWWA Conference Materials

Halfway Through: Long Term 2 Enhanced Surface Water Treatment & Stage 2 Disinfectant Byproduct Rules

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Long Term 2 Enhanced Surface Water Treatment Rule (Briefly)

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LT2 ESWTR

- **Final Rule published Jan 5, 2006**
  - **Federal Register 71, #3, pp 654-786**
- **CA, AZ, NV agree to implement LT2**
- **EPA has enforcement authority until the State adopts the rule**

New Data on Cryptosporidium

- Occurrence
  - Source water occurrence overall is lower than previously thought
  - Relatively high levels for some filtered systems
  - Finished water occurrence relatively higher in systems avoiding filtration
- New treatment technology available (UV)

Source Water Monitoring Requirements - *Filtered Systems*

- **Filtered systems serving 10,000 or more people monitor for Cryptosporidium, E. coli and turbidity**
  - **At least monthly for 24 months**
- **Filtered systems serving <10,000 monitor initially only for E. coli**
  - **Biweekly for 12 months**
  - **If above triggers, then must do Cryptosporidium twice a month for 12 months**
- **No monitoring for filtereds, if 5.5-log treatment**

Source Water Monitoring Requirements – *Systems Avoiding Filtration*

- Systems avoiding filtration monitor for *Cryptosporidium*
  - **10,000 or more: monthly for 24 months**
  - **<10,000: twice a month for 12 months**
  - **No monitoring if 3.0-log Crypto inactivation in place**

40 CFR 141.707

Initial Source Water Monitoring - Dates

System must begin initial round by the dates shown below, unless avoidance criteria are met

Schedule	Population served	Begin first round no later than...
1	≥ 100,000	October 2006
2	50,000 – 99,999	April 2007
3	10,000 – 49,999	April 2008
4	< 10,000 & monitor for *E. coli*	October 2008
4	<10,000 & monitor for *Crypto*	April 2010

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Initial Source Water Monitoring Plans – Due Dates

- **System must submit monitoring plan 3 months before monitoring is scheduled to begin, at latest.**

Schedule	Population served	Submit monitoring plan no later than...
1	≥ 100,000	June 30, 2006
2	50,000 – 99,999	Dec. 31, 2006
3	10,000 – 49,999	Dec. 31, 2007
4	< 10,000 & monitor for *E. coli*	July 1, 2008
4	<10,000 & monitor for *Crypto*	Dec. 31, 2009

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Grandfathered Data – Due Dates

- Report intent on same schedule as you would submit a source water monitoring plan
- Report applicable data to State within 2 months after source water monitoring is scheduled to start

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Considering the Source Water Monitoring Results: Bin Classification

- Filtered Systems are assigned a "bin" classification based on source water quality (i.e. crypto concentration)
- Any additional surface water treatment requirements for *Cryptosporidium* treatment are based upon this bin classification
- Special requirements for PWSs avoiding filtration

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Filtered System Bin Classification & Additional Treatment

Bin Number	*Cryptosporidium* concentration (in oocysts/L)	Additional Treatment Beyond Current Requirements
1	*Crypto* < 0.075	No additional treatment
2	0.075 ≤ *Crypto* < 1.0	1.0 log
3	1.0 ≤ *Crypto* < 3.0	2.0 log
4	*Crypto* ≥ 3.0	2.5 log

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Compliance Schedule - *Systems Required to Install Additional Treatment*

Systems that serve...	Compliance Date
≥10,000 people	April 1, 2012
50,000 to 99,999 people	October 1, 2012
10,000 to 49,999 people	October 1, 2013
<10,000 people	October 1, 2014
States may allow up to 2 more years to comply if capital improvements are needed.	

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Compliance Help (1)

- **EPA Website:**
  http://www.epa.gov/OGWDW/disinfection/lt2/compliance.html
  - LT2 Quick Reference Guides
  - Source Water Monitoring Guidance Manual
  - Point of Contact List by State
  - On-line LT2 Training Module & List of Upcoming Webcast Trainings

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Compliance Help (2)

- **EPA Website:**
  http://www.epa.gov/OGWDW/disinfection/lt2/compliance.html
  - Information about the EPA laboratory certification program for Cryptosporidium Analysis
  - Microbial Laboratory Guidance Manual for LT2
  - List of Laboratories Certified for Crypto Analysis

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Compliance Help (3)

- **EPA Website:**
  http://www.epa.gov/OGWDW/disinfection/lt2/compliance.html
- Toolbox Options Guidance Manuals
  - Membrane Filtration & Low Pressure Membrane Filtration Guidance Manuals
- *Upcoming* Toolbox Guidance Manuals
  - Microbial Toolbox Guidance Manual
  - UV Disinfection Guidance Manual
  - UV Disinfection Guidance Manual Workbook

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Stage 2 DBPR
Purpose

- To provide additional protection from disinfection byproducts of concern
  - Recognizes that current compliance based on averaging across entire distribution system may miss spots that may have higher DBP levels, risks
  - Supplements existing DBP Rule by focusing on parts of distribution system with higher risks

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DBP Public Health Concerns

- Chlorine + microorganisms = dead bugs
- But, chlorine + organic carbon = DBPs (chlorinated disinfection byproducts)
- Ingestion of these DBPs associated with adverse health effects
  - Cancer (bladder, colon, and rectal); Suspected reproductive and developmental damage
- Known impacts low, but much unknown

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Stage 2 DBPR
Main Components

- Initial Distribution System Evaluation (IDSE)
- New compliance monitoring locations
  - High TTHM and HAA sites chosen from IDSE and/or Stage 1 DBPR sites
- Compliance based on Locational Running Annual Average (not systemwide average)
- Population based monitoring frequency

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Initial Distribution System Evaluation (IDSE)

- Studies conducted by water systems to identify distribution system locations that represent high TTHM and HAA5 levels
- Results of the IDSE are used to select Stage 2 compliance monitoring sites
- Not required for NTNCWSs serving fewer than 10,000 people
- In addition to current Stage 1 monitoring

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IDSE Schedule

	Systems Serving:	Submit 40/30 Cert. or Monitoring Plan By:	Complete IDSE Study By:	Submit IDSE Report By:
1	≥ 100,000	Oct 1, 2006	Sept 30, 2008	Jan 1, 2009
2	50,000–99,999	Apr 1, 2007	Mar 31, 2009	Jul 1, 2009
3	10,000–49,999	Oct 1, 2007	Sep 30, 2009	Jan 1, 2010
4	< 10,000	Apr 1, 2008	Mar 31, 2010	Jul 1, 2010

Schedule for systems in a combined distribution system is based on that of the largest system in the combined distribution system

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Factors Affecting DBP Formation & Concentration

- Precursor concentration
- Disinfectant - type and dose
- Water chemistry
- Water temperature
- Water age
- Biodegradation of HAAs

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Standard Monitoring Program - Steps

- Select monitoring locations
- Prepare and submit Standard Monitoring Plan
  - Primacy Agency must approve the plan
- Conduct monitoring according to plan
  - 12 months of monitoring for TTHM and HAA5
- Select Stage 2 DBPR compliance monitoring locations based on IDSE and Stage 1 data
- Prepare and submit IDSE report

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Standard Monitoring Plan- *Required Components*

- Population served
- Source water type
- Distribution system schematic
  - **Entry points and sources**
- Locations and dates of proposed IDSE monitoring
- Locations and dates of Stage 1 DBPR monitoring
- Justification for IDSE monitoring sites
  - **Must include data used to justify selection**

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Standard Monitoring Program *Sampling Requirements*

- Dual sample set (both TTHM and HAA5) collected at all locations
- Sample site locations based on system type, size – as specified in regulation
- Sample frequency based on population served and source type – as in regulation

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Standard Monitoring Plan - Selecting "High HAA5" Sites

- **HAA5 formation**
  - Water age, but also consider biodegradation
- **Avoid**
  - Areas with known biofilm growth
  - Areas with difficulty maintaining a residual
- **Good HAA5 sites**
  - Downstream of booster chlorination
  - Sites with low but detectable residual
  - Areas of high historic levels
  - Downstream of tanks
  - Hydraulic dead ends and mixing zones
  - Areas with low water use

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IDSE Options (3)
System Specific Studies

- If you have at least as much valid TTHM and HAA5 data in hand as would be required for the Standard Monitoring Program, you may use them, or
- If you have a validated hydraulic model for your system that can predict water age and DBPs, you can use that

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System Specific Study
Existing Monitoring Data

Minimum requirements:

- Must include at least as many samples as SMP
- Samples collected no earlier than 5 years prior to study plan submission date
- Samples collected and analyzed according to analytical requirements
- Each location must have been sampled once during month of highest TTHM/ HAA5 or highest water temperature
- Must include all Stage 1 DBPR compliance monitoring results

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Selecting Stage 2 Monitoring Sites

- Calculate a locational running annual average (LRAA) for each IDSE site and Stage 1 site
- Select sites with highest LRAA values according to Stage 2 requirements
- May select sites with slightly lower LRAA values, but must provide rationale in report
  - (i.e. to provide better geographic coverage, maintain historic data collection, site used to sample for other water quality parameters)
- Finally, sample for Stage 2 Compliance

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Compliance Help (1)

- **EPA Website:**
  http://www.epa.gov/OGWDW/disinfection/stage2/compliance.html
  - Stage 2 Fact Sheets (40/30, VSS, SMP, SSS)
  - IDSE Tool and Guidance Manual
  - Point of Contact List by State
  - On-line Stage 2 Training Module & List of Upcoming Webcast Trainings

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Compliance Help (2)

- **EPA Website:**
  http://www.epa.gov/OGWDW/disinfection/stage2/compliance.html
- **Guidance Manuals**
  - Draft Simultaneous Compliance Manual
- **Upcoming Guidance Manuals**
  - Consecutive Systems Guidance Manual
  - Small Systems Guidance Manual
  - Operations Evaluation Manual

UNREGULATED CONTAMINANT MONITORING REGULATION
(the Second Cycle)
UCMR 2

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Final UCMR 2

- Published in the Federal Register January 4, 2007
- Website for Federal Register Notice:

http://www.epa.gov/fedrgstr/EPA-WATER/2007/January/Day-04/w22123.pdf

UCMR 2
Overview of Talk:

- Purpose & Organization of UCMR 2
- Applicability- Who must comply
- Monitoring Requirements
- Monitoring Costs
- Reporting Requirements
- Roles, Responsibilities, and Contact Info.

Purpose and Organization

Brief History of the UCMR Program

- First established under the 1986 SDWA
- Updated per 1996 SDWA amendments
  - ➢ Monitoring occurs in 5-year cycle
  - ➢ No more than 30 contaminants per cycle
- UCMR 1 from 2001-2005 *(64 FR 50556)*
- UCMR 2 from 2007-2011 *(72 FR 368)*

~30 UCs

Purpose of the UCMR

- Determine occurrence of unregulated contaminants in finished DW
- Use data in regulatory decision-making

Resampling Procedures

- Required if sample:
  - ➢ Does not meet collection or QC requirements
  - ➢ Is lost or damaged during shipping
  - ➢ Is subject to lab error
- 30-day deadline
- Recollection *must* include original Sample Event Code (SE#) to correctly associate with original sample set

Monitoring Requirements

Use of EPA-Approved Labs

- Systems must use UCMR 2 EPA-approved labs
- Lab approved by method
- Current list available at: *http://www.epa.gov/safewater/ucmr/ucmr2/labs.html*

UCMR 2 Estimated Monitoring Costs per Sample

List 1- Assessment Monitoring	$435
List 2- Screening Survey	$870

Where to Report

** Most information is reported to SDWARS **

PWSs serving >10K only

- CDX account for SDWARS required
  - ➢ August 2006 - Customer retrieval keys (CRKs) issued to PWS and States
  - ➢ Users can nominate others within organization
  - ➢ Still need a CDX account for SDWARS? *Contact the UCMR Message Center (800-949-1581)*
  - ➢ 2007 - EPA-approved labs will get accounts

Where to Report

UCMR Sampling Coordinator

- Non-electronic reporting limited to:
  - ➢ PWS applicability issues
  - ➢ Groundwater representative sampling plan proposals submitted by May 4, 2007
  - ➢ PWS schedule or inventory changes after August 2, 2007

Mail:	UCMR Sampling Coordinator, USEPA, Technical Support Center, 26 West Martin Luther King Dr (MS 140) Cincinnati, OH 45268
E-mail:	*UCMR_Sampling_Coordinator@epa.gov*
Fax:	(513) 569-7191

Reporting Monitoring Results

Overview

15 Data Elements

- ➢ 5 from PWSs, prior to monitoring (also posted with results by labs)
- ➢ 10 posted by lab, with results

Data Elements 1-5

Reported Prior to and with Sample Results

- 1. PWSID
- 2. PWS Facility ID
- 3. Water Source Type
- 4. Sampling Point ID
- 5. Sampling Point Type

Data Elements 6-15

Reported with Sample Results

- 6. Disinfectant Residual Type *(Screening Survey only)*
- 7. Sample Collection Date
- 8. Sample ID
- 9. Contaminant
- 10. Analytical Method
- 11. Sample Analysis Type
- 12. Analytical Results - Sign
- 13. Analytical Result - Value
- 14. Lab ID
- 15. Sample Event

Reporting with Monitoring

Key Dates

Requirement	Due
Lab posts results & associated data	120 days from sample collection
PWSs review & approve data	60 days from lab posting of data*

** After this date, data considered approved by PWS, available for EPA & State review, prior to public release.*

Reporting to your Public Consumer Confidence Reports

- Applies to CWSs only
- CWSs must report average & range of detected contaminants
- CWSs may briefly explain reason for UCMR monitoring

Consumer Confidence Report

Suggested Language

The explanation may read as follows:

Unregulated contaminants are those that don't yet have a drinking water standard set by USEPA. The purpose of monitoring for these contaminants is to help EPA decide whether the contaminants should have a standard.

More information about CCR at:
www.epa.gov/safewater/ccr

Other Resources

- UCMR2 implementation question?
- Database registration question?
  - Call the UCMR Message Center: 800-949-1581

- General UCMR 2 question?
  - Call the Safe Drinking Water Hotline: 800-426-4791

- UCMR 2 Website: http://www.epa.gov/safewater/ucmr/ucmr2/

States

Roles and Responsibilities
By Agreement with EPA

- CA, NV provided list of applicable PWSs and sample site locations (to SDWARS)
- NV agreed to notify PWSs and provide compliance assistance
- CA has no substantial involvement in UCMR 2 implementation.

PWSs

Roles and Responsibilities

- Immediate reporting responsibility (SDWARS)
  - Register/establish CDX account for SDWARS
  - Enter PWS contact information by April 4, 2007
  - Review sample location inventory, monitoring schedule by August 2, 2007
- Prior to monitoring
  - Establish contract with EPA-approved UCMR 2 lab
- During scheduled monitoring
  - Ensure proper sample collection/shipment
  - Review/approve lab posted data in SDWARS

Laboratories

Roles and Responsibilities

- UCMR 2 approval, by method from USEPA
- Labs conducting analyses post data to SDWARS
  - Subcontract labs post data to SDWARS
- EPA approval is contingent upon labs:
  - Posting data to SDWARS
  - Adhering to quality control
- EPA-approved labs subject to audit

Laboratories

Proficiency Testing (PT) Schedule

Two of 5 PTs Remaining

- PT Study #4 - June 19, 2007
  - Application deadline: May 21, 2007
- PT Study #5 - September 25, 2007
  - Final PT study of Laboratory Approval Program
  - Application deadline: August 27, 2007

Laboratory Approval Program Registration Deadline: April 4, 2007

UCMR 2 Compliance Update– CA and Nevada Systems

- Compliance with the April 4th Milestone
  - CA 236/357 = 66% compliance
  - NV 8/10 = 80%
  - AZ 38/55 = 69%

(as of Monday, 4/16/07)

UCMR2 Groundwater Representative Sampling Locations
Instructions for Preparing a Groundwater Representative Monitoring Plans

Documentation Included in the Groundwater Representative Monitoring Plan (GWRMP)

Overview

The proposed GWRMP shall be submitted by the water system in either of two formats. Either one plan for the entire water system, which includes all proposed groundwater representative sampling locations (GWRSLs), or one plan for each proposed GWRSL. The proposal will contain four sections. The first three sections contain the basic information used to develop the proposal and the fourth section is a summary of this information where the water system provides a justification why they should be permitted to use the proposed GWRSL(s).

Water System Responsibilities

For each proposed representative sampling location, you must submit the following information: PWSID Code, PWS facility identification code, and sampling point identification code (as defined in Table 1, paragraph (e) of the proposed rule). The following defines the four sections required in the proposal, but it will be the responsibility of the water system to provide detailed information related to these broad areas that they consider relevant to their proposed request. It is also the water system's responsibility to use this information to justify their request. It is not the responsibility of the State or EPA to interpret the information provided, but to verify the information and logic the water system used in their proposal. References to any documents used in the development of the GWRMP should be included at the end of the proposal. EPA reserves the right to request these documents.

Section 1 - Site Map

The purpose of this section is to show an overview map of the locations of the wells that will be represented by the proposed GWRSL and visually show the various important geographical information, e.g., roads, rivers, etc, which they considered in developing the proposed GWRMP.

The proposal should include a map of the area which the GWRSL(s) will represent. The map should show the location of all wells and their entry points to the distribution system as well as the location of the proposed GWRSL(s). This map should also include all roads and locations of major potential sources of contamination (e.g., industries, landfills, wastewater discharges, underground storage tanks, agricultural irrigation, animal farms, mining septic tanks, deep injection wells, etc.). The map should also provide information on the distances of each well from the proposed GWRSL. Figure 1 presents an example of a site map.

This section of the plan can present basic information about the water system, including the number of wells, well location, screen intervals or water bearing intervals for open boreholes, identification of the areal extent and thickness of the area confining units and aquifer(s) utilized by the water system, the regional groundwater flow rate and direction. This information could be summarized from source water assessment plans or wellhead protection plans.

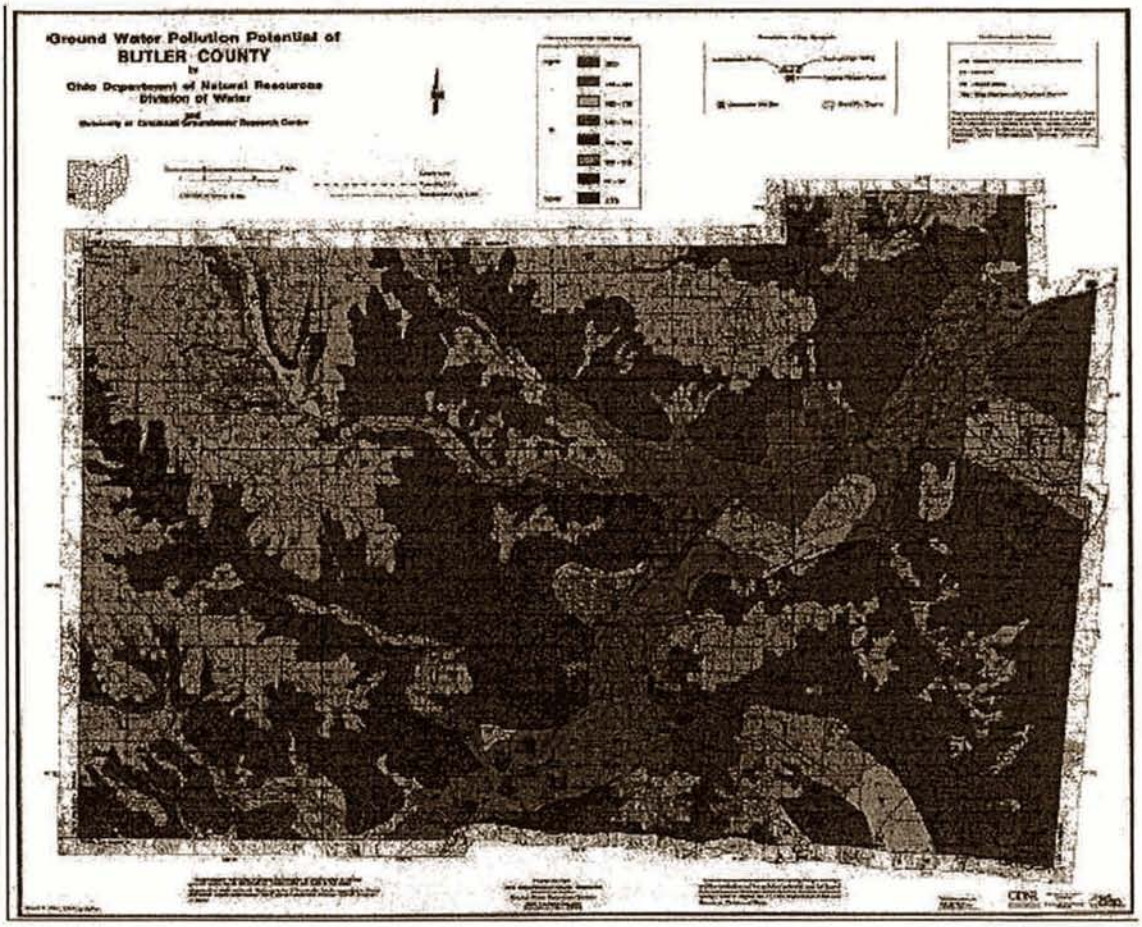


Figure 2. State Groundwater Contamination Information

Section 3 - Similarities of Groundwater Quality for Proposed Area

The purpose of this section is to provide data that shows how the groundwater at all the wells within the proposed area are similar and how the proposed GWRSL is truly representative of the all the wells within the area.

This section should contain a summary of the well log information for all the wells and how this information is similar to the proposed GWRSL. The information that should be included is information on the well depth, well construction, and strata found during construction of the wells.

This section should also contain a summary and analysis of the water quality data to indicate that all of the wells produce water of a similar quality. The water system should identify the water quality parameters they consider relevant given their situation and provide an explanation of why they chose the particular parameter(s). For the selected water quality parameters, the water system should report historical and representative water quality data for each of the wells within the proposed area and the GWRSL over the period of a year.

EPA United States Environmental Protection Agency

UCMR 2: Fact Sheet for Assessment Monitoring of List 1 Contaminants

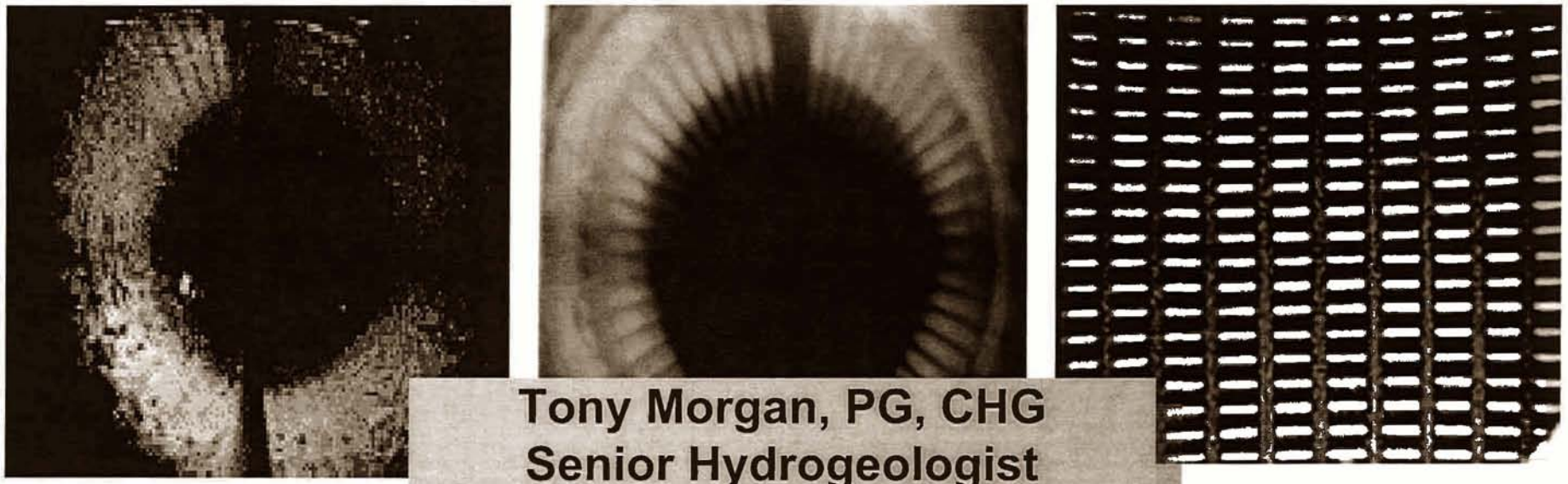
Overview of the Rule	
Title	Unregulated Contaminant Monitoring Regulation (UCMR) for Public Water Systems (PWSs) Revisions
Purpose	To collect occurrence data for contaminants suspected to be present in drinking water, but that do not have health-based standards set under the Safe Drinking Water Act. Assessment Monitoring targets contaminants that are analyzed with methods that utilize existing and widely used technology. The UCMR monitoring program is the primary source of drinking water contaminant occurrence data used by EPA in regulatory determinations.
General Description	The second cycle of the revised UCMR (UCMR 2) includes Assessment Monitoring (List 1) for 10 contaminants using 2 analytical methods. PWSs subject to Assessment Monitoring will sample within a twelve month period during 2008 - 2010. Monitoring results for PWSs serving over 10,000 people are reported to EPA's UCMR electronic data reporting system (i.e., the Safe Drinking Water Accession and Review System [SDWARS].)
Utilities Covered	Community water systems (CWSs) and non-transient non-community water systems (NTNCWSs) that serve a total population of more than 10,000 people and a representative sample of 800 systems serving 10,000 or fewer people are required to conduct Assessment Monitoring.

UCMR 2 List 1 Contaminants

Contaminant and CAS[1] Registry Number	MRL[2] (µg/L)	Use or Environmental Source	Health Effects[3]
2 Priority Compounds (1 insecticide and 1 insecticide degradate), by EPA Method 527			
Dimethoate 60-51-5	0.7	Insecticide used on cotton and other field crops, orchard crops, vegetable crops, in forestry, and for residential uses	EPA classified as a "possible human carcinogen," with a reference does (RfD) of 0.0002 milligrams per kilogram per day (mg/kg/day)
Terbufos sulfone 56070-16-7	0.4	Degradate of the parent compound, terbufos; terbufos used for systemic control of soil-borne insects and nematodes in fields of corn, grain sorghum, and sugar beets	EPA derived chronic RfD of 0.00005 mg/kg/day for the parent compound, based on no observed adverse effect level for plasma cholinesterase inhibition
5 Flame Retardants, by EPA Method 527			
2,2',4,4'-tetrabromodiphenyl ether (BDE-47) 5436-43-1	0.3	Flame retardants added to plastics (for products such as computer monitors, televisions, textiles, and plastic foams)	Animal studies suggest thyroid and liver effects, as well as possible reduced immune system function and neurobehavioral alteration
2,2',4,4',5-pentabromodiphenyl ether (BDE-99) 60348-60-9	0.9		
2,2',4,4',5,5'-hexabromodiphenyl ether (BDE-153) 68631-49-2	0.8		
2,2',4,4',6-pentabromodiphenyl ether (BDE-100) 189084-64-8	0.5		
2,2',4,4',5,5'-hexabromobiphenyl (HBB) 59080-40-9	0.7	Flame retardant additive; production of polybrominated biphenyls ended in 1976 in U.S. after an incident of significant accidental agricultural contamination in 1973	
3 Explosives, by EPA Method 529			
2,4,6-trinitrotoluene (TNT) 118-96-7	0.8	Used as an explosive in bombs and grenades, also used as a propellant; small amounts used for industrial explosive applications, such as deep well and underwater blasting; chemical intermediate in manufacture of dyestuffs and photographic chemicals	EPA classified as possible human carcinogen (Group C) based on urinary bladder papilloma and carcinoma in female rats and activity in Salmonella, with and without metabolic activation
1,3-dinitrobenzene 99-65-0	0.8	Used in explosives; also formed as a by-product during the manufacture of the explosive TNT; used in the manufacture of aramid fibers, spandex, and dyes	EPA derived chronic oral RfD of 0.0001 mg/kg/day, based on increased spleen weight
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) 121-82-4	1.0	Used in detonators, primers, mines, rocket boosters, and plastic explosives; used in fireworks and demolition blocks, and as a rodenticide	EPA derived chronic oral RfD of 0.0003 mg/kg/day, based on prostate inflammation observed in rats in a 2-year feeding study, and has classified RDX as a possible human carcinogen (Group C), based on adenomas and carcinomas in female mice

[1] Chemical Abstracts Service
[2] Minimum reporting level
[3] Unregulated Contaminant Monitoring Regulation (UCMR) for Public Water Systems Revisions; Proposed Rule. Fed Reg. Vol. 70, No. 161. p. 49093, August 22, 2005.

Water Well Rehabilitation: the Good, the Bad, and the Ugly



Tony Morgan, PG, CHG
Senior Hydrogeologist
Layne GeoSciences Group
Layne Christensen Company
Fontana, CA

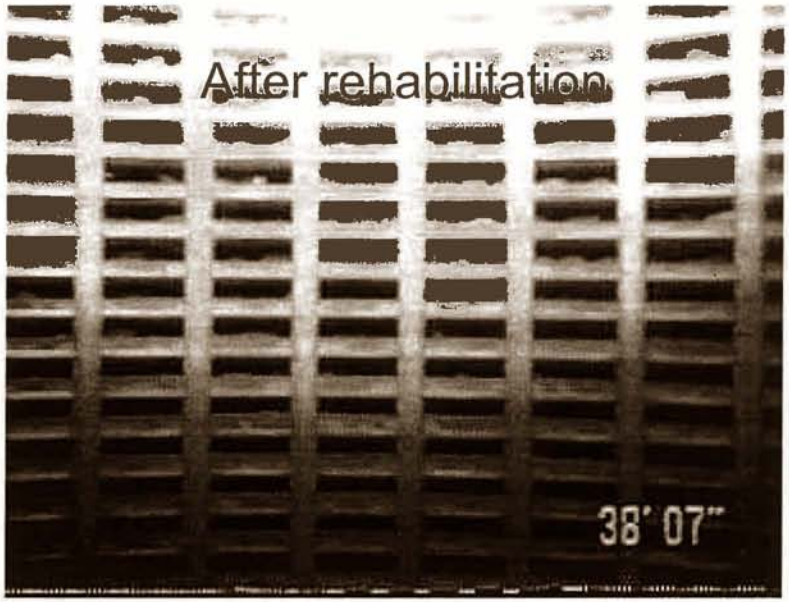
Identify Problems

- Lost Capacity
- Turbidity
- Corrosion
- Red Water
- Taste / Odor
- Pump Wear
- Water Quality Fluctuations

Rehabilitation Goals

Restore lost capacity by:

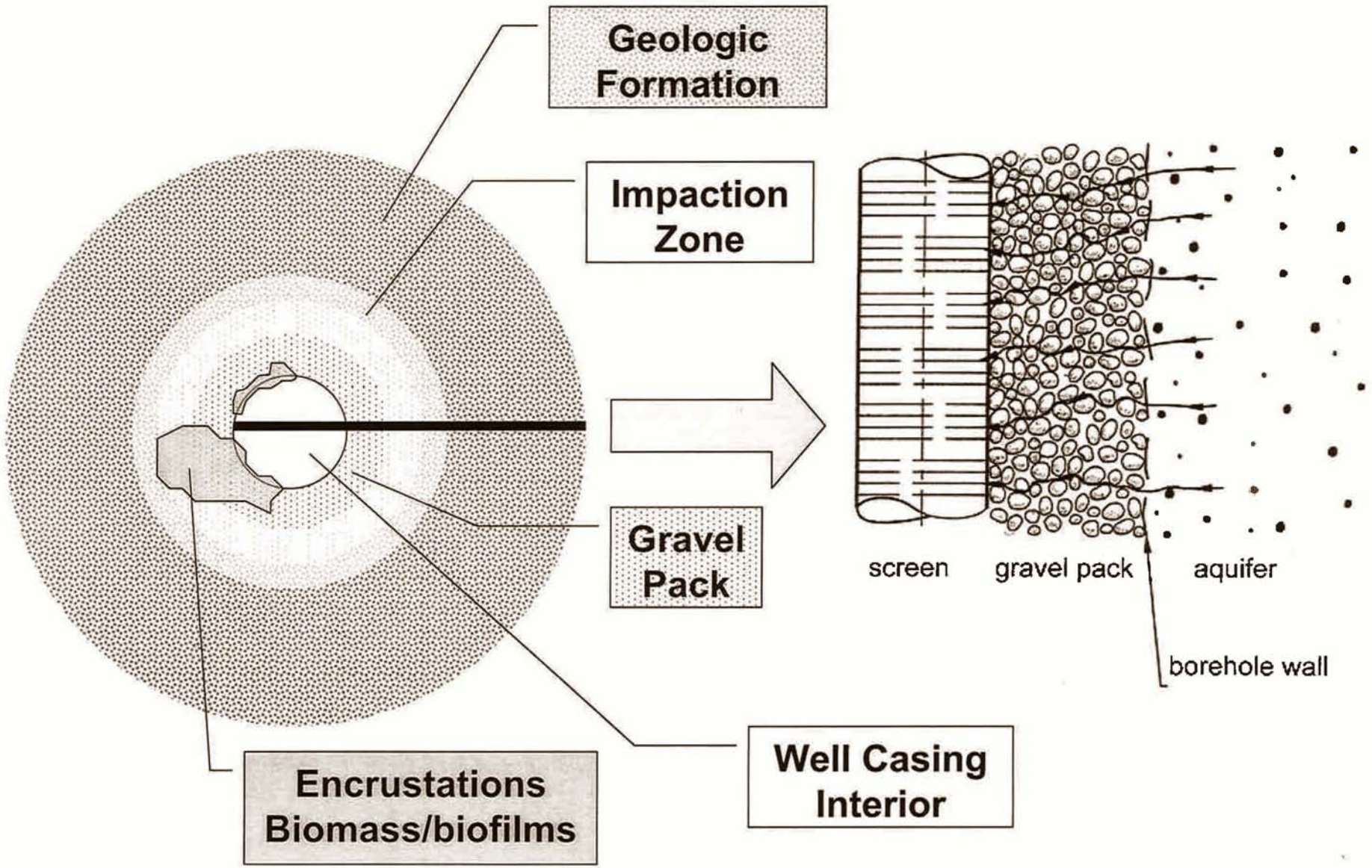
- Remove clay, silt, sand from gravel pack
- Remove mineral encrustations
- Remove biofouling and its by-products



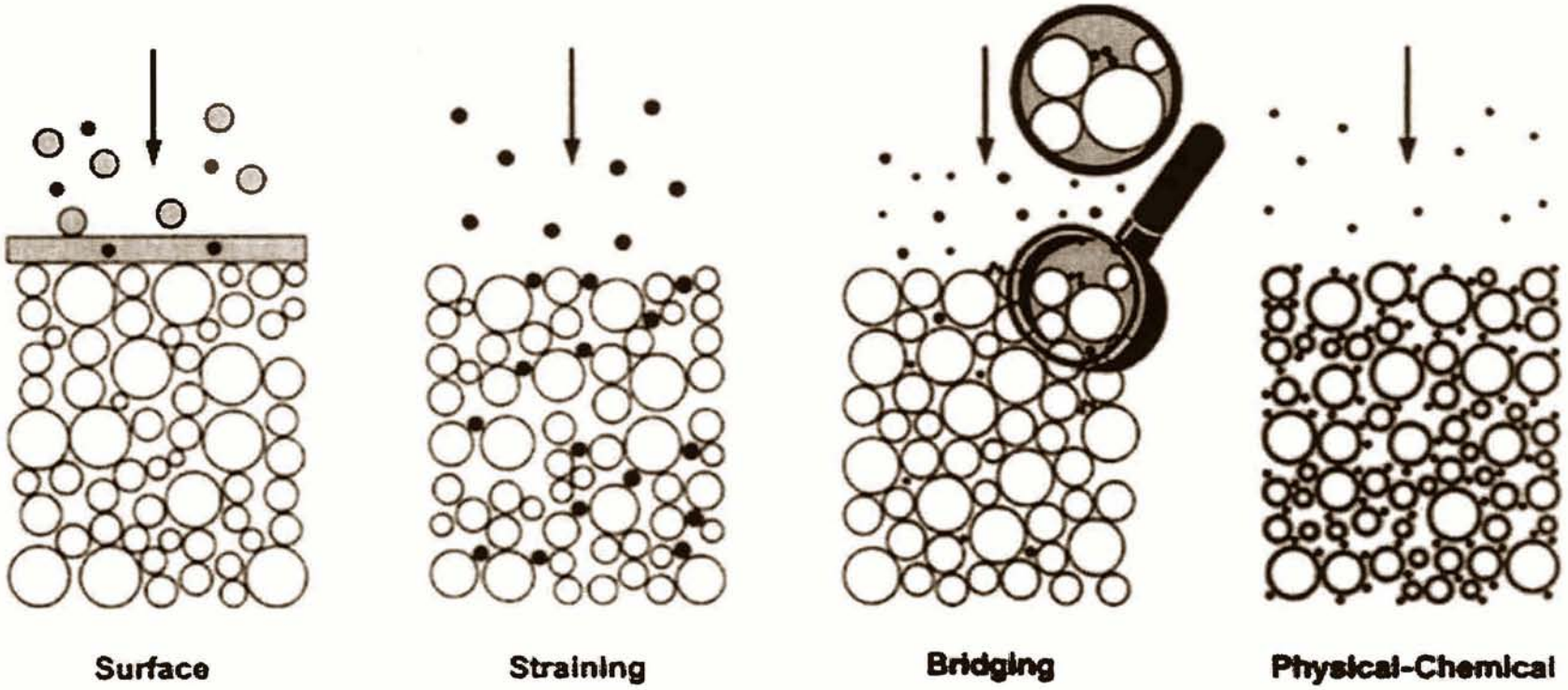
Rehabilitation Zones

- Inside the well casing
- Exterior of well casing and surrounding gravel pack
- Near-well geologic formation

Rehabilitation Zones



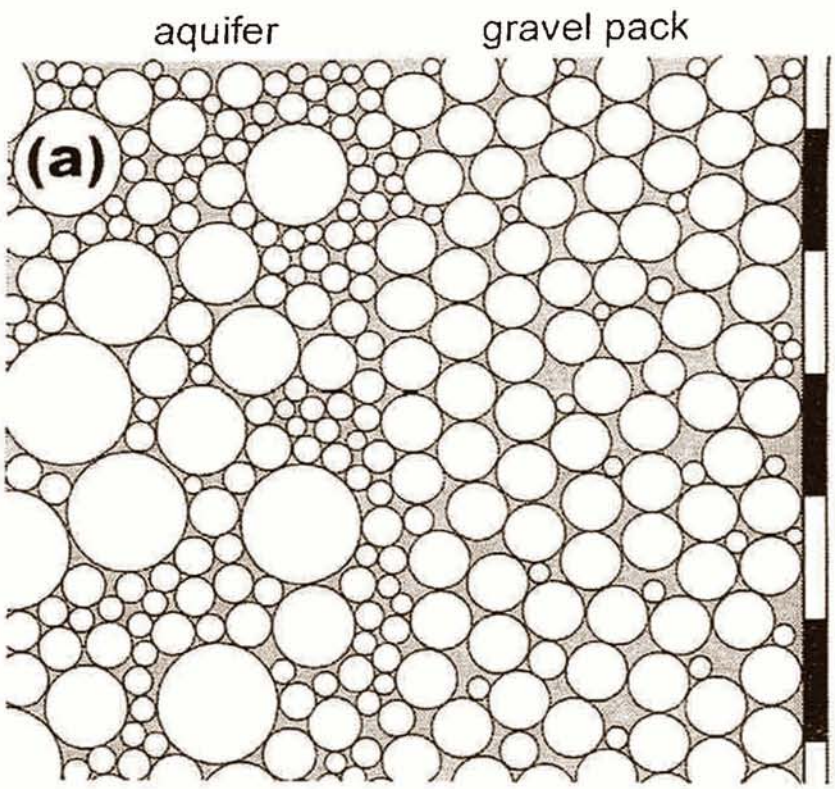
Impaction Zone

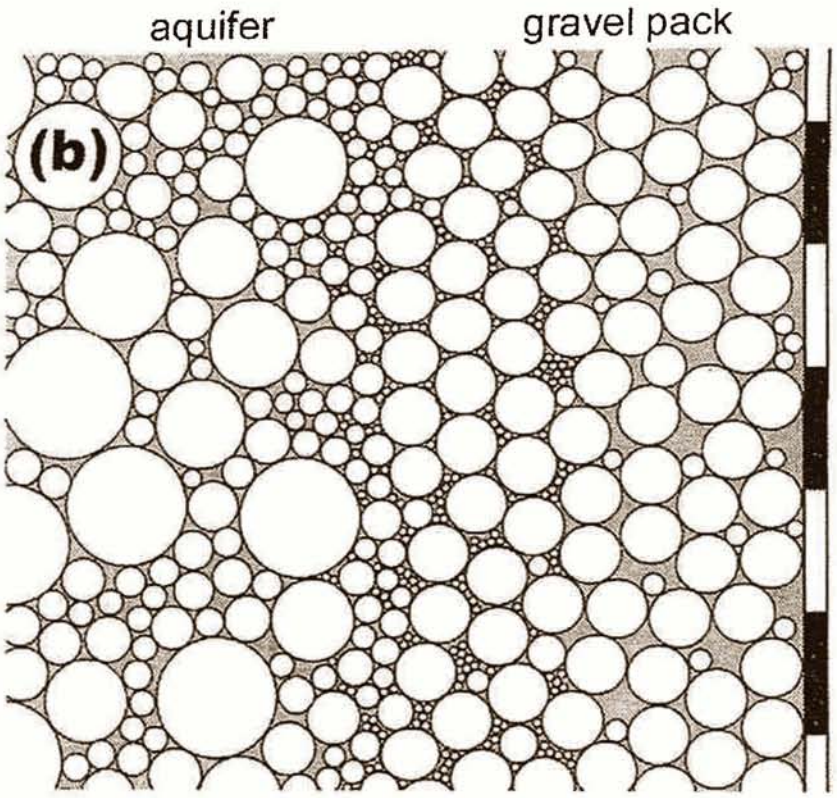


Filtration Mechanisms

- **Surface** – surface cake forms when particle size > pore size
- **Straining** – average particle size < average pore size. Particle eventually trapped
- **Bridging** – Multiple particles arrive at pore at same time and bridge; often caused by high velocity flow
- **Physical / Chemical** – attracting electrostatic forces bond particle to gravel pack; gravitational settling

Impaction Zone

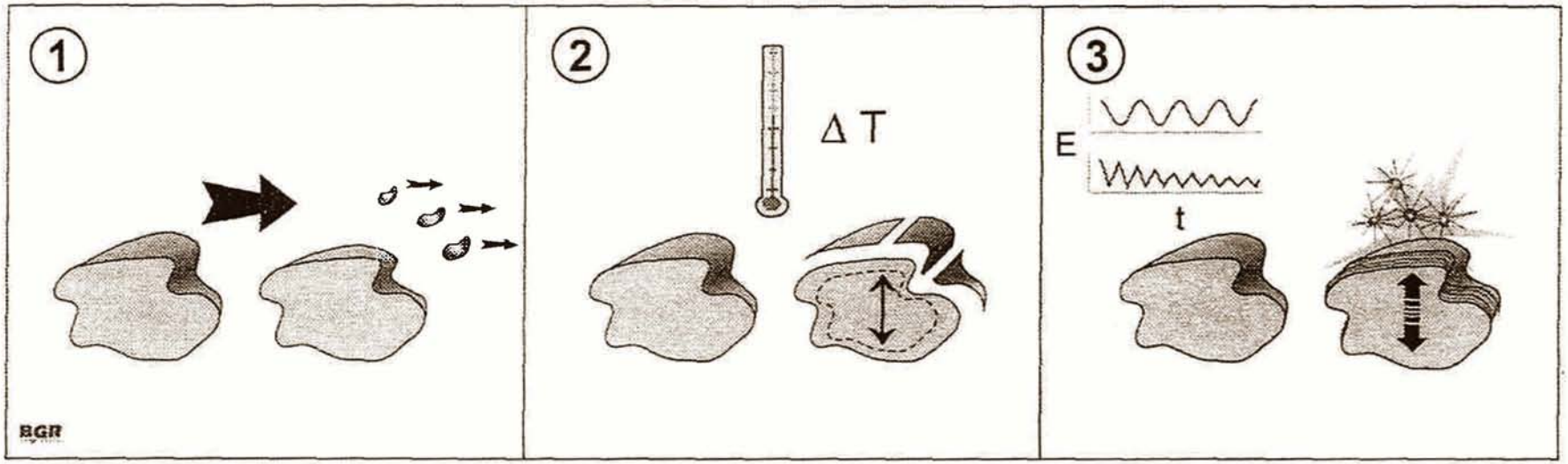




Rehabilitation Technology Categories

- Major rehabilitation method categories:
  - Mechanical
  - Chemical

Mechanical Methods



Separation methods for mechanical rehabilitation

- Hydraulic erosion
- Thermal expansion / contraction
- Impulses

Mechanical Methods

- Brushing (also called "well cleaning")
- Swabbing/Development
- Jetting
- RotoScrub
- Bore Blast
- Aqua Freed
- Sonar Jet

Chemical Methods

- Chlorination
- Acidization
- Formulated Chemistries

Site-Specific Factors

Volume

Concentration

Sequence

Combinations

Pre-mixing

Method Summary

	Well Casing Interior	Gravel Pack	Gravel Pack – Formation Interface	Geologic Formation
Brushing	√ √ √	√	--	--
Swabbing/Pumping	√	√ √	√	
Jetting	√	√ √	--	--
RotoScrub	√ √ √	√ √	√	--
BoreBlast	√ √ √	√ √	√ √	√
AquaFreed	√ √ √	√ √ √	√ √ √	√ √
Sonar Jet	√ √ √	√ √	√	--
Chemicals	√ √ √	√ √ √	√ √ √	√ √ √

√ √ √ Very Effective √ √ Moderately Effective √ Marginally Effective

Effective Rehabilitation Programs

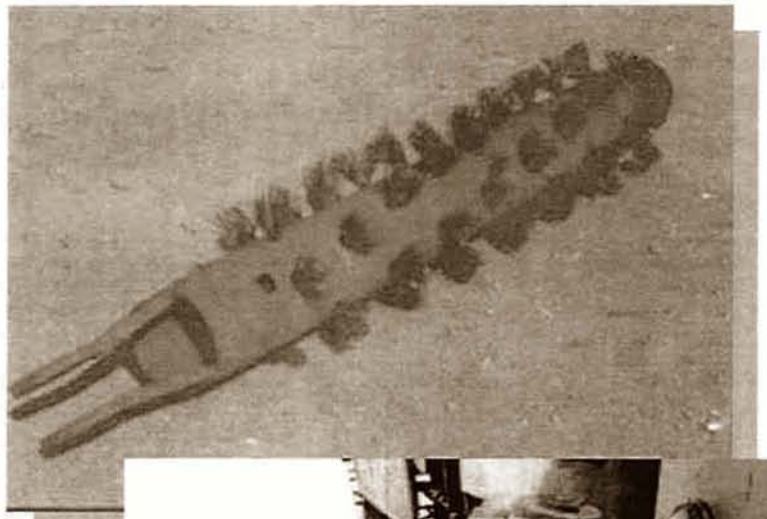
- Can involve multiple, different strategies
- Must achieve effective deposit removal
- Must be custom tailored, based upon cause of problem, well construction details, and type of formation
- Must have penetration into the surrounding formation
- Must have good agitation

Water Well Rehabilitation: the Good, the Bad, and the Ugly

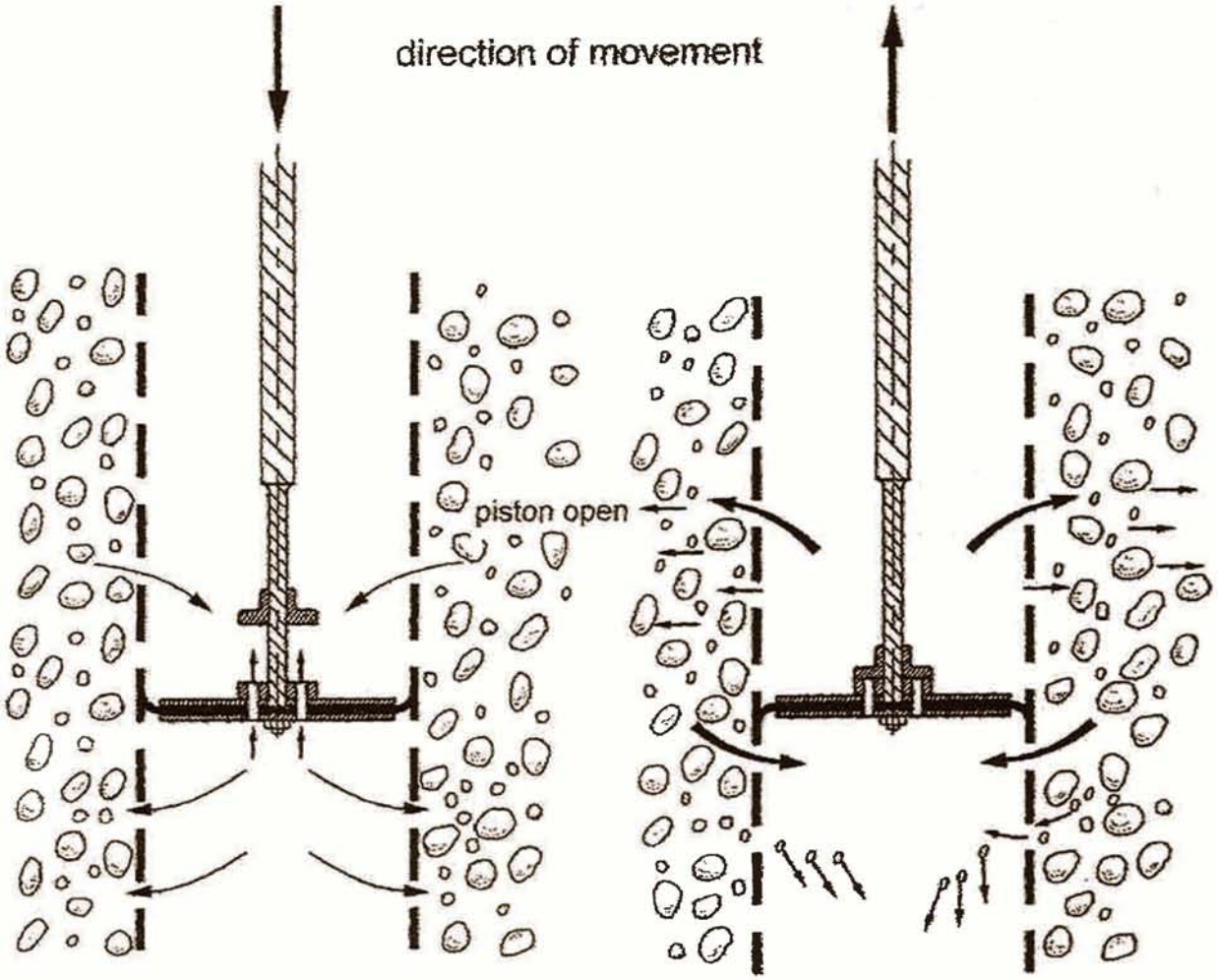
For more information contact:

Tony Morgan, PG, CHG
Senior Hydrogeologist
Layne GeoSciences Group
Layne Christensen Company
Fontana, CA
909-390-2833
tmorgan@laynechristensen.com

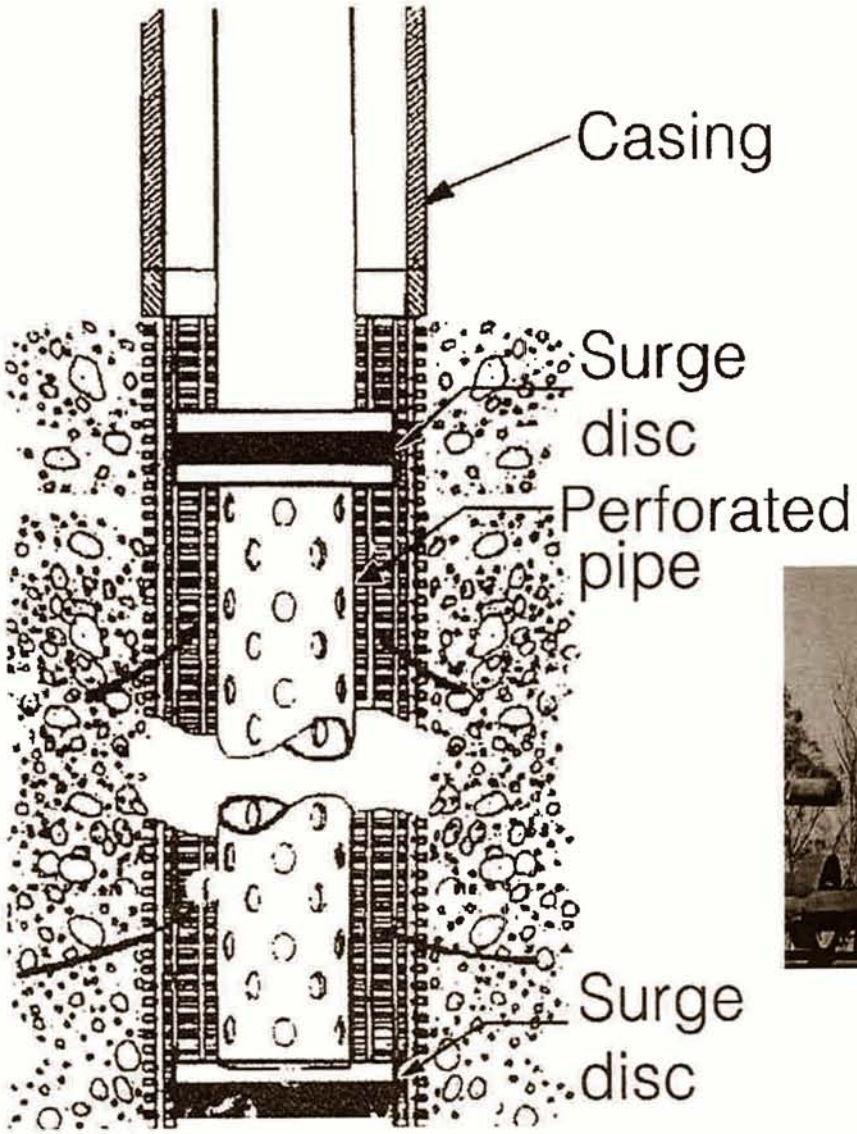
Example Brushes



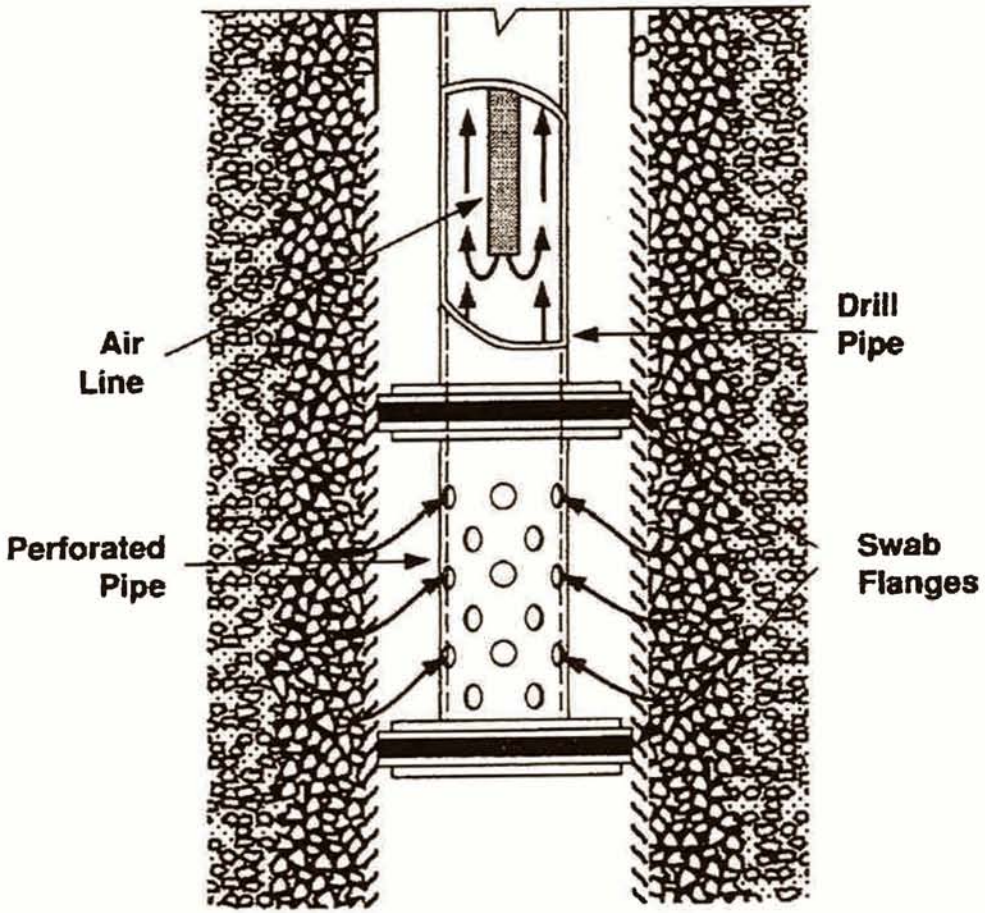
Single disc surging / surge block



Double disc

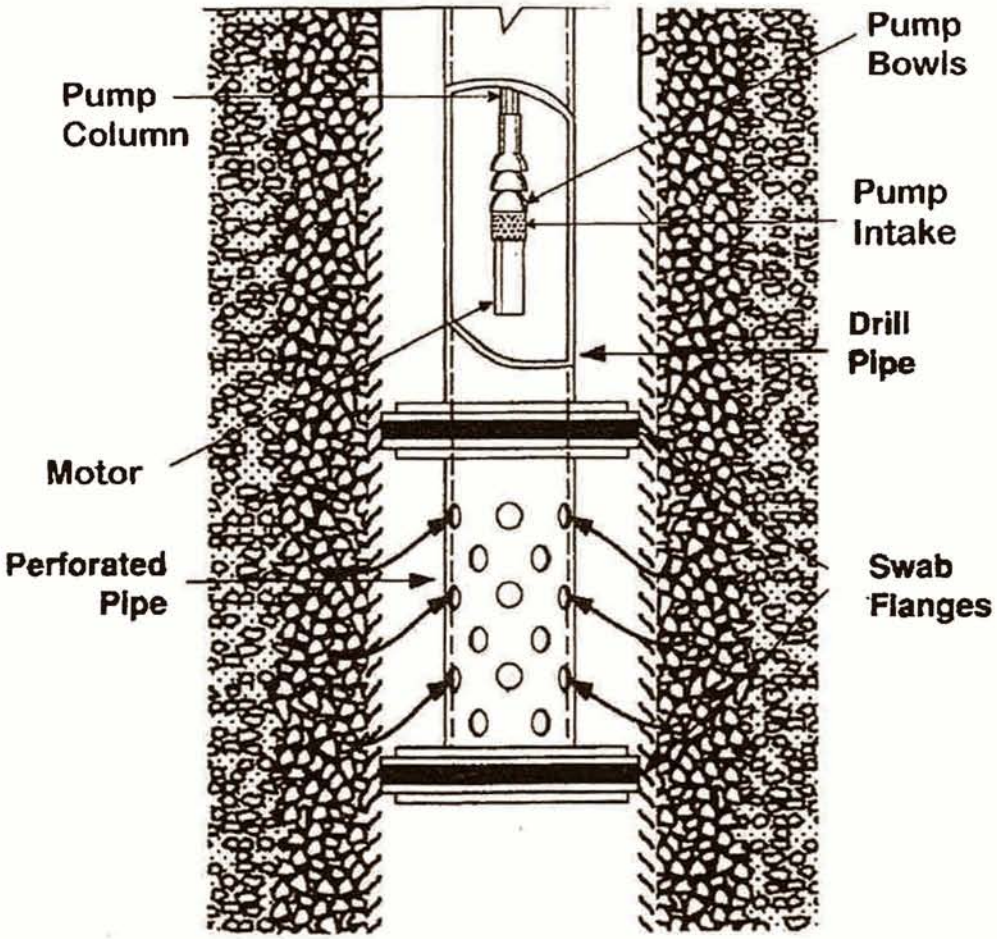


Double disc airlifting



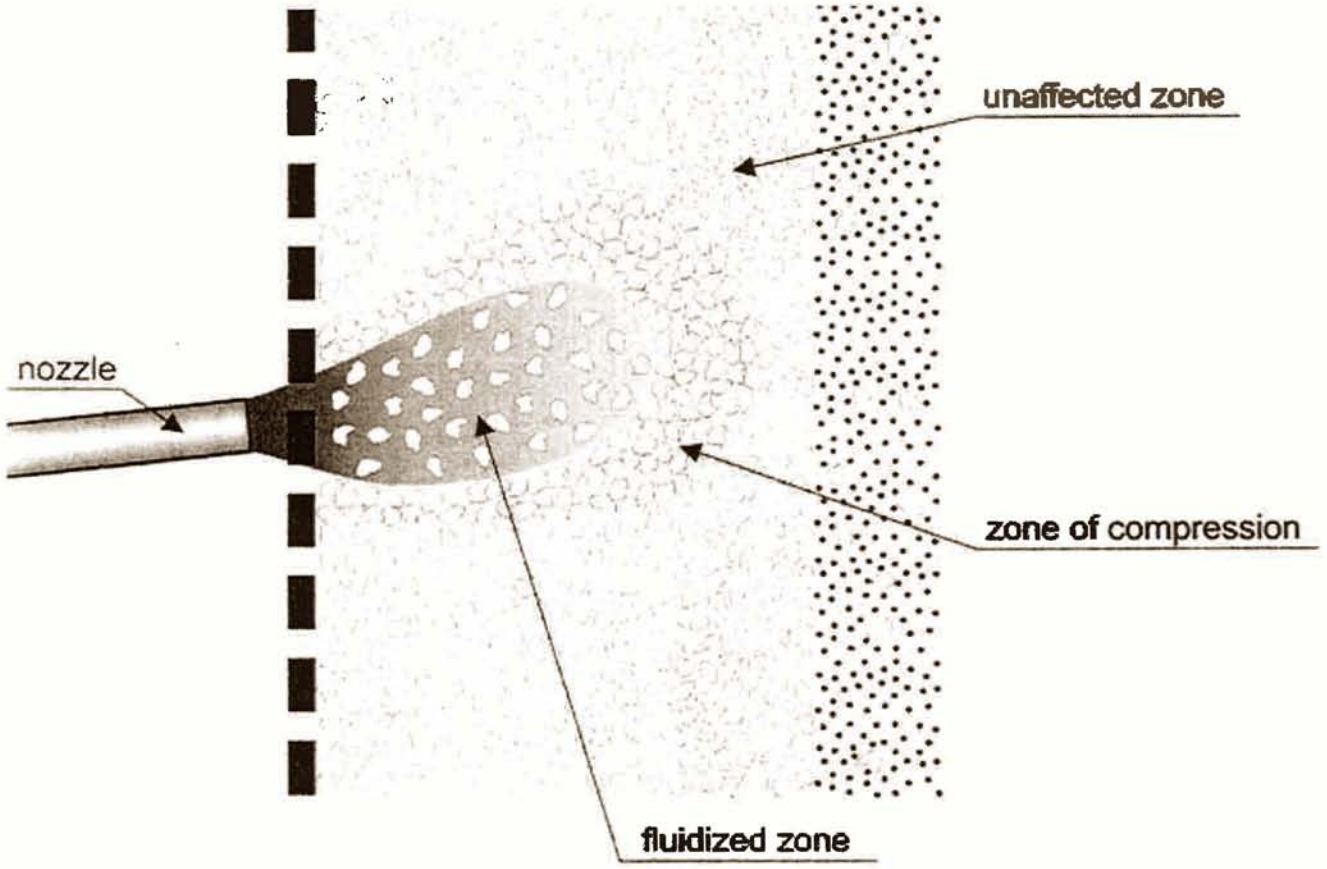
Airlift Swabbing Tool

Double disc pumping

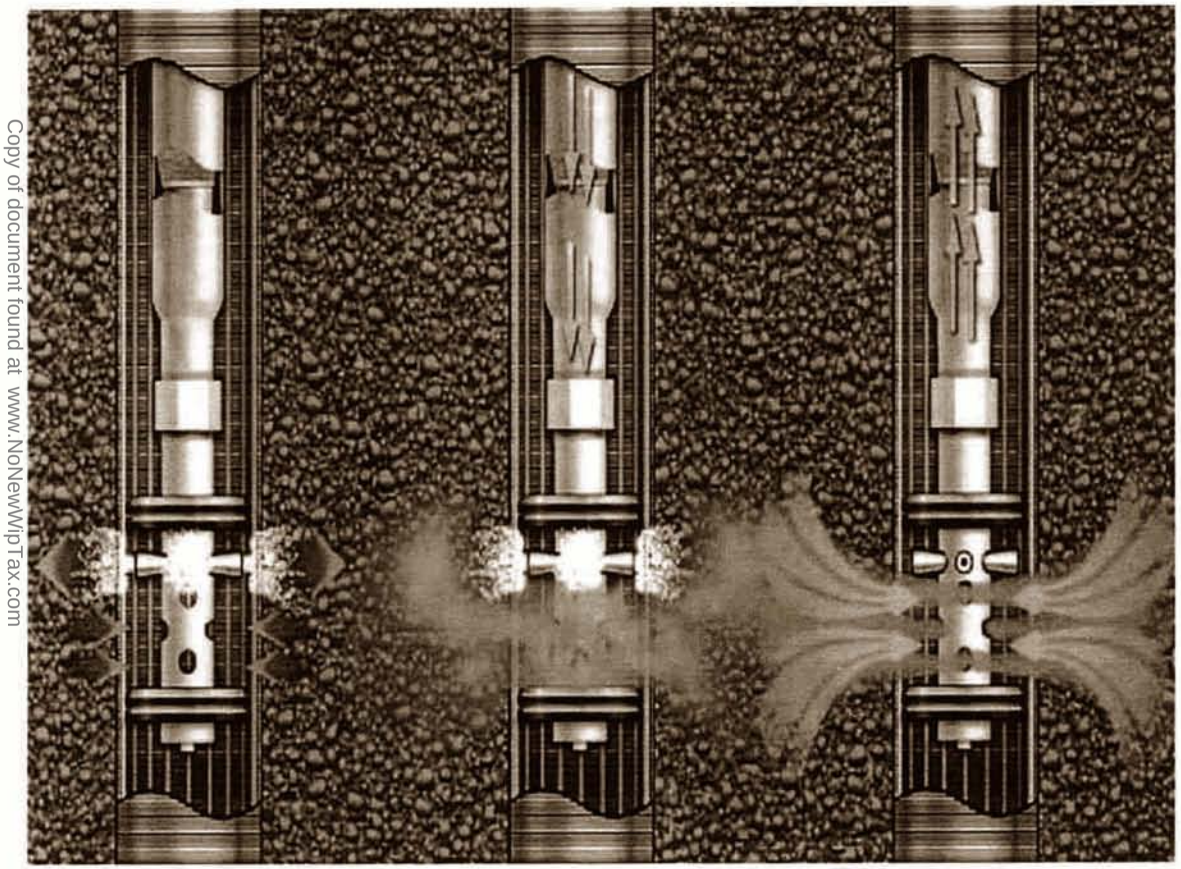


Submersible Pump Swabbing Tool

Jetting

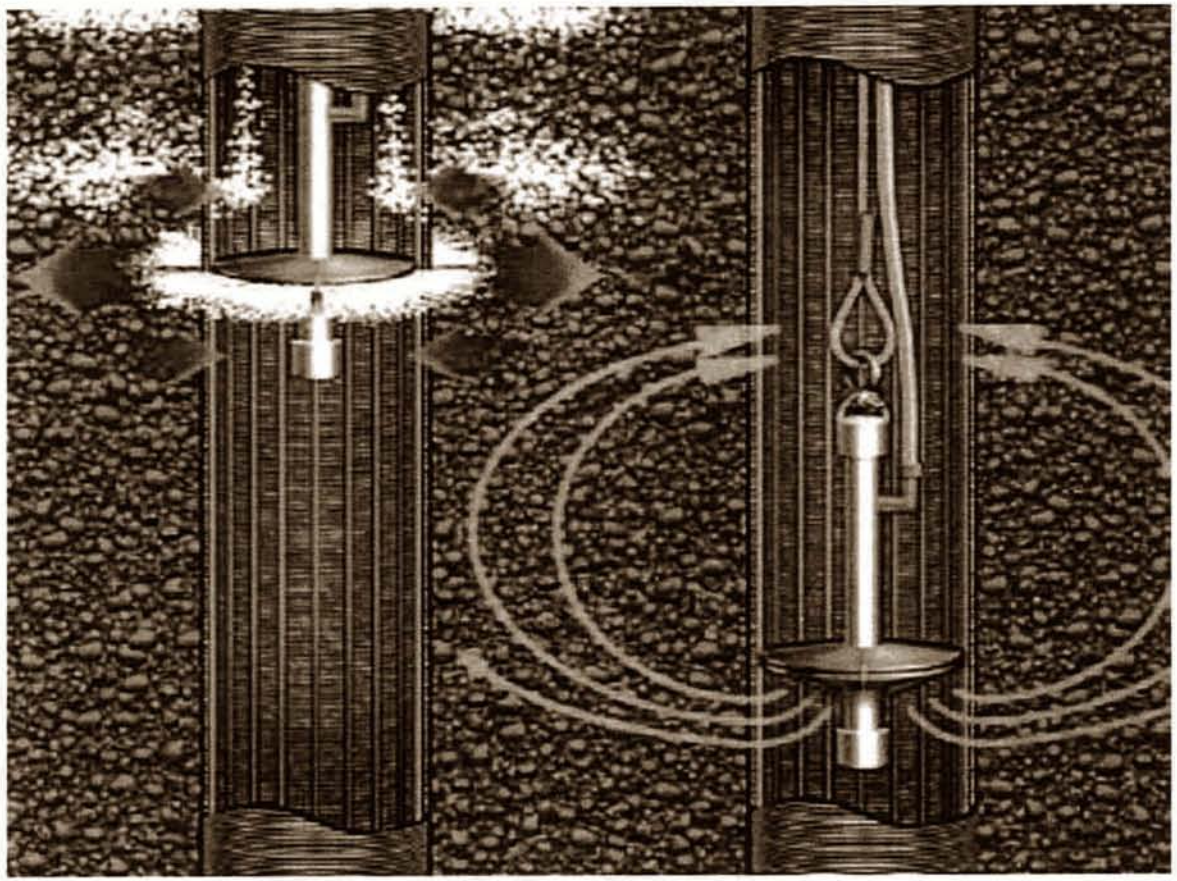


Bore Blast



- Percussive energy
- Surging energy
- Fluid displacement
- Agitation of chemistry

Bore Blast



- Small discharge orifice to direct energy into perforations

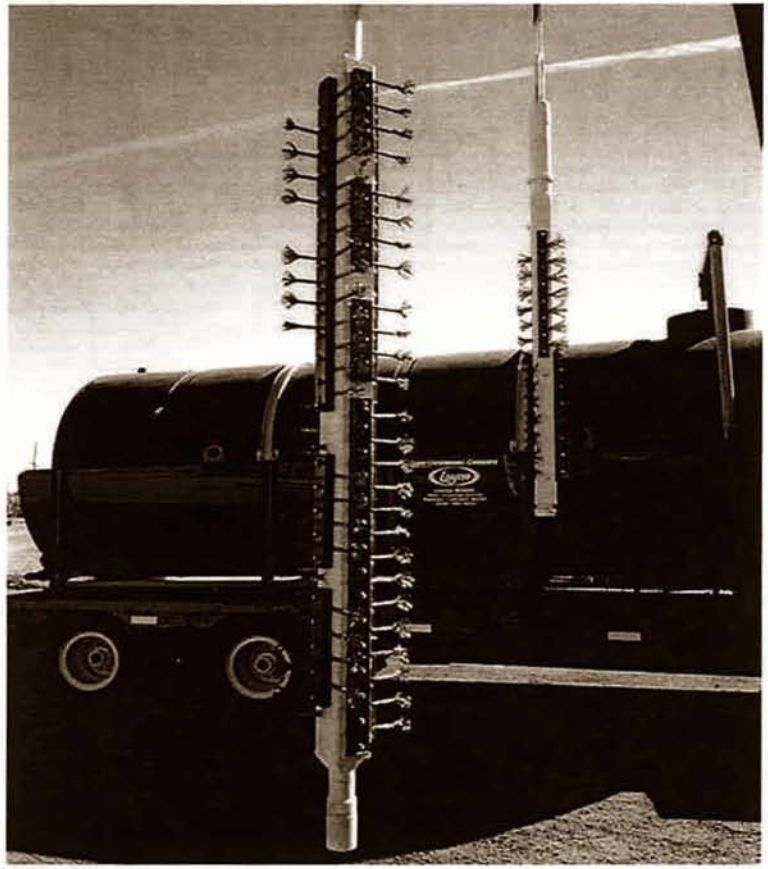
Sonar Jet

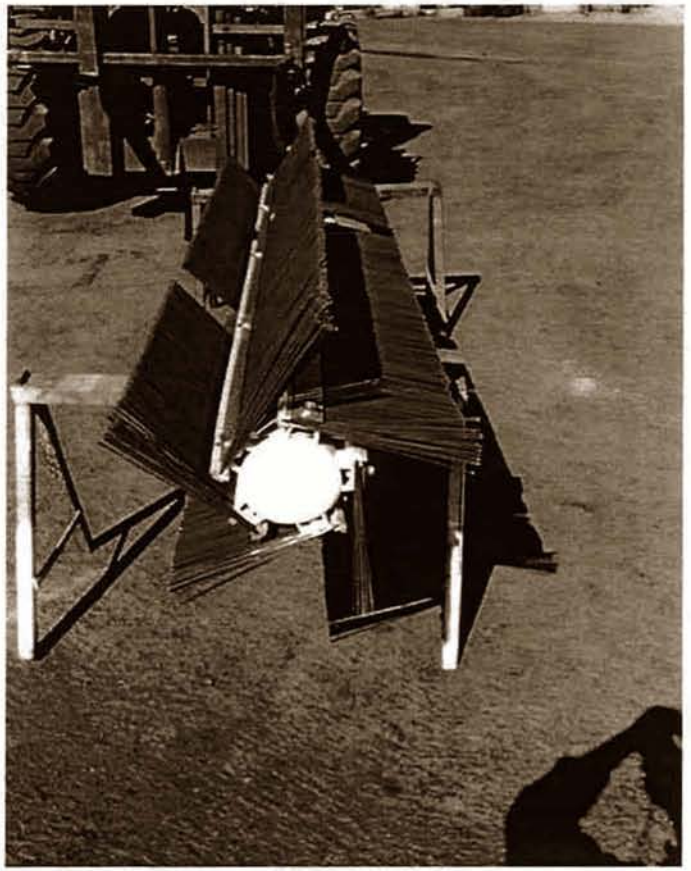
- Vibratory explosive using expansive gas
- Effective for casing interior and short distance into gravel pack
- Size of charge based on well diameter and submergence of water
- Often used as a pre-treatment
- Reduces chemical demand
- Removes scale from screen or casing

RotoScrub

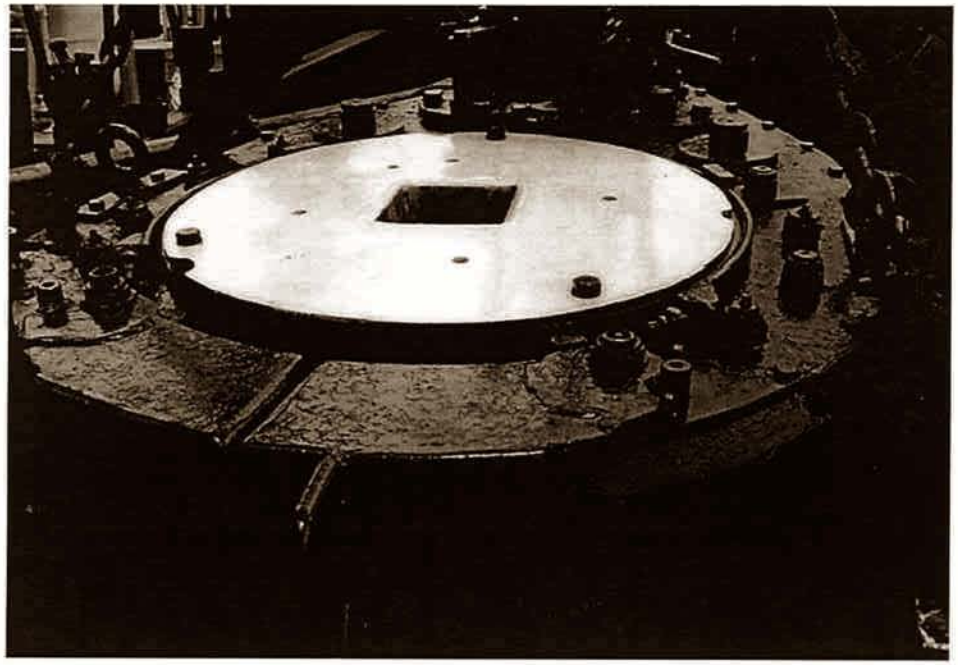
- Rotational movement by hydraulic power tongs
- Bottle-type brush
- Low carbon bristles for tough material
- Stainless steel bristles for softer material and very low ph applications
- Nylon for wire wrap wells

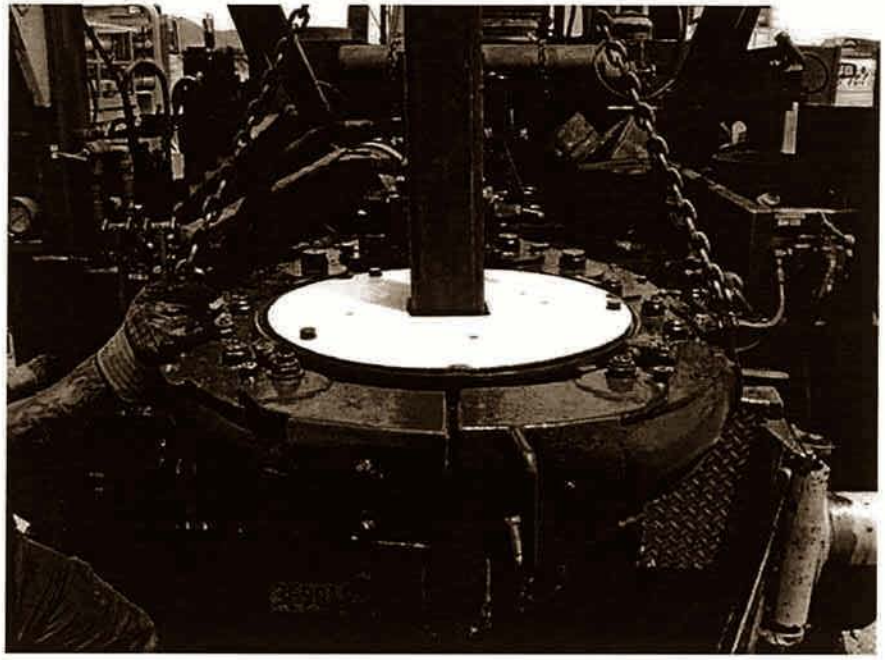
RotoScrub



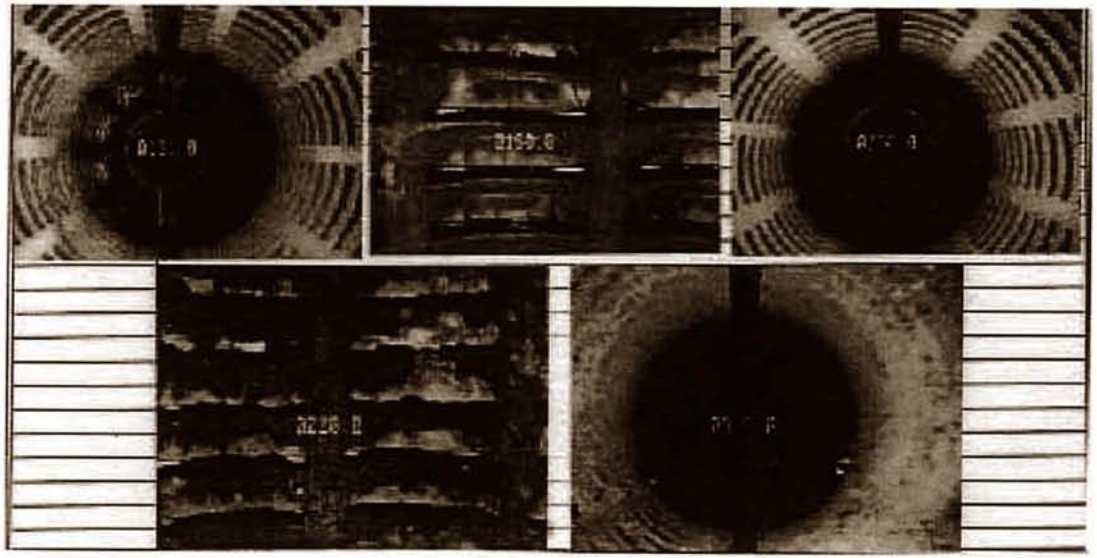


RotoScrub



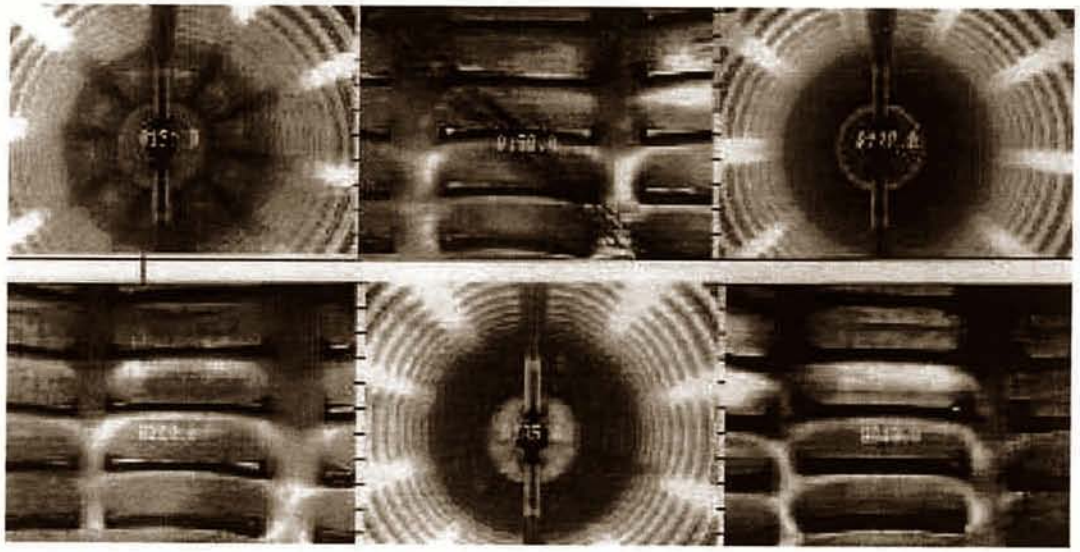


RotoScrub



Pre-RotoScrub

Post-RotoScrub



Aqua Freed

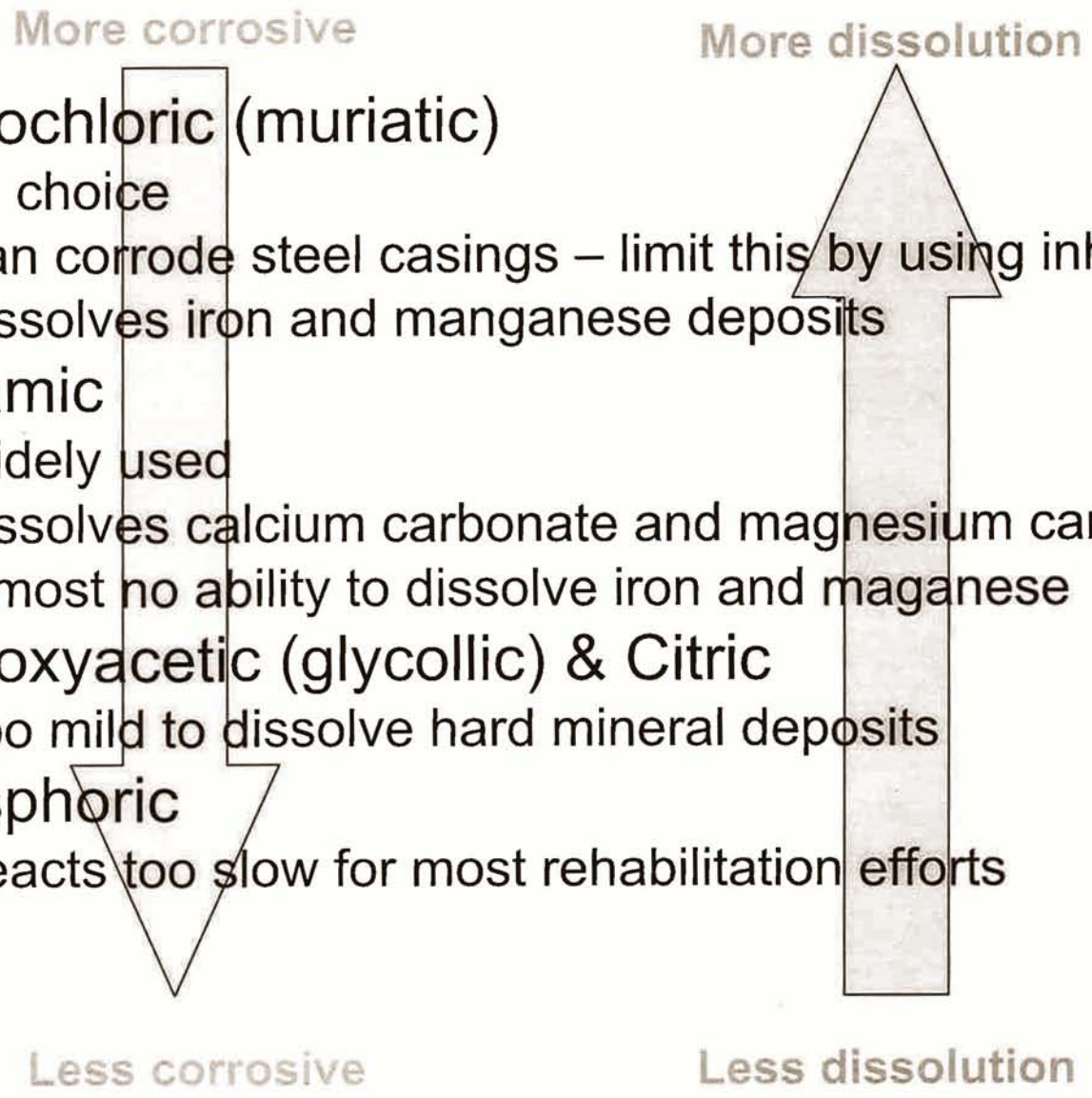
Aqua Freed

- Injection of liquid carbon dioxide (CO2)
- CO2 penetrates gravel pack and geologic formation
- Change from liquid to gaseous phase causes rapid expansion (500x)
- Light carbonic acid formation
- Freezing
- Reduces surface tension
- Documented evidence of geologic formation treatment

Chlorination (Shock)

- Limited value as a chemical oxidizing agent to remove material – 80% of material is inorganic
- Effective at oxidizing organic material to get slime dispersion
- Not very effective at restoring specific capacity

Acidization



- Hydrochloric (muriatic)
  - #1 choice
  - Can corrode steel casings – limit this by using inhibitors
  - Dissolves iron and manganese deposits
- Sulfamic
  - Widely used
  - Dissolves calcium carbonate and magnesium carbonate
  - Almost no ability to dissolve iron and maganese
- Hydroxyacetic (glycollic) & Citric
  - Too mild to dissolve hard mineral deposits
- Phosphoric
  - Reacts too slow for most rehabilitation efforts

Formulated Chemistry

- Phosphorus-based treatments
  - good for well development (dispersal of clays)
  - "food source" for microbes
- Disinfectants
  - Sodium hypochlorite
  - Calcium hypochlorite (50% less effective than sodium hypochlorite)
  - Chlorine gas
  - Chlorine dioxide
  - Sodium hydroxide (lye)

Formulated Chemistry

- Dispersants
- Penetrants
- Surfactants
- Corrosion Protection

TO: BOARD OF DIRECTORS

FROM: BRUCE BUEL BBTJ

DATE: MAY 4, 2007

AGENDA ITEM
G
MAY 9, 2007

COMMITTEE REPORTS

ITEM

Receive Minutes from the April 30, 2007, Parks Committee and the Minutes from the April 18 and May 2, 2007, Finance, Audit, and Personnel Committee

BACKGROUND

Attached is the set of draft minutes from the April 30, 2007, Parks Committee and the draft minutes from the April 18 and May 2, 2007, Finance, Audit, and Personnel Committee. Members of the Committees or Staff can respond to questions and receive comments from the Board regarding the meetings or the draft minutes.

RECOMMENDATION

It is recommended that your Honorable Board edit the draft minutes as appropriate and, adopt the final sets of minutes.

ATTACHMENTS

1. April 18, 2007 Finance Audit & Personnel Committee Meeting
2. April 30, 2007 Parks Committee Meeting
3 May 2, 2007 Finance, Audit & Personnel Committee Meeting

T:\BOARD MATTERS\BOARD MEETINGS\BOARD LETTER\BOARD LETTER 2007\COMMITTEE REPORTS 070509.DOC

NIPOMO COMMUNITY SERVICES DISTRICT

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Web site address www.ncsd.ca.gov

MINUTES OF THE 4/18/07 MEETING OF THE

FINANCE, AUDIT AND PERSONNEL COMMITTEE

1. CALL TO ORDER, ROLL CALL AND FLAG SALUTE

Chairman Vierheilig called the Special Meeting to order at 9:00 a.m. in the NCSD Board Chambers. Both Chairman Vierheilig and Director Trotter were in attendance along with staff members Bruce Buel and Lisa Bognuda. Members of the public included Bill Nelson, Mike Winn and Jim Harrison.

2. CONSIDER EMPLOYEE COST OF LIVING ADJUSTMENT (COLA)

Staff reviewed the Revised Staff Report dated April 17, 2007. Pursuant to Resolution 2006-1000, the Board of Directors approved the use of the Consumer Price Index-Urban Wage Earners and Clerical Workers (Average of annual increases for the Los Angeles-Riverside-Orange County and San Francisco-Oakland-San Jose) for all future Cost of Living Adjustments (COLA). The computation for the FY 2007-2008 budget was made following the example presented by the Bureau of Labor and Statistics and was determined to be 3.53%. Upon motion of Director Trotter and seconded by Director Vierheilig, the Committee unanimously approved the recommendation of 3.53% COLA for the FY 2007-2008.

3. REVISIONS TO THE PERSONNEL POLICIES AND PROCEDURES MANUAL

Staff reviewed the proposed revisions to the Personnel Policies and Procedures Manual. The Staff report for this agenda item was prepared prior to the April 11, 2007, regular Board Meeting. At that meeting the Board of Directors made changes to the job descriptions for the Utility Superintendent and the Inspector/Preventative Maintenance Supervisor. These changes will be included in the revisions to be presented to the Board of Directors at the April 25, 2007 Board Meeting. Director Vierheilig asked for minor modifications to Policy 5020. The Committee unanimously approved forwarding the recommendations, with corrections, to the Board of Directors.

4. DRAFT BUDGET FOR FISCAL YEAR 2007-2008 AND RECRUITMENT BASED ON RECOMMENDATIONS FROM CLASSIFICATION STUDY

Staff reviewed the draft budget for Fiscal Year 2007-2008 with the Committee (with the exception of personnel which was reviewed separately below). The following is a summary of changes and comments made by the Committee:

- ✓ Fund #120-Town Water- The funded replacement should be increased from $92,000 to an amount that would cause the Fund to be in a neutral financial position.
- ✓ Fund #130-Town Sewer-The funded replacement will be kept at $351,000 due to adequate reserves.

4. DRAFT BUDGET FOR FISCAL YEAR 2007-2008 AND RECRUITMENT BASED ON RECOMMENDATIONS FROM CLASSIFICATION STUDY (continued)

- ✓ A footnote will be added to Pages 32-35 regarding the potential merger of the Town Water and Black Lake Water systems and the potential for modifications to the budget based on the merger plan during the fiscal year.
- ✓ A footnote will be added to Pages 32-35 regarding the potential merger of the Town Water and Black Lake Water systems and the potential for modifications to the budget based on the approved merger plan.
- ✓ Fund #150 – Black Lake Sewer will need to borrow funds at some point in the fiscal year until new rates are in effect. The Committee is recommending Fund #150 initiate a loan from Fund #130 – Town Sewer. This item will be presented to the Board of Directors for consideration when the time comes. The budget will be modified to reflect interest expense in Fund #150 and interest income in Fund #130.
- ✓ Fund #300 – Solid Waste-Staff recommended and the Committee concurred that the budgeted Franchise Fee Revenue be reduced to $88,000 to reflect a potential reduction in the Franchise Fee from 10% to 7.3%.
- ✓ Fund #820 – Funded Replacement Black Lake Water budget is projected to be lowered from $903,000 to $200,000 to reflect the potential merger of the two water systems.
- ✓ Fund #830 – Funded Replacement Black Lake Sewer will need to borrow funds to fund the pond liner replacement. The Committee is recommending Fund #830 initiate a loan from Fund #810 – Funded Replacement Town Sewer until the new rates are in effect. This item will be presented to the Board of Directors for consideration when the time comes. The budget will be modified to reflect interest expense in Fund #830 and interest income in Fund #810.
- ✓ Staff recommended adding $50,000 to the Supplemental Water Project costs to hire a lobbyist.
- ✓ The Committee asked for minor cosmetic changes to the budget.

Mr. Bill Nelson of Black Lake commented throughout the discussions.

The Committee unanimously agreed on the above recommendations and asked Staff to make the changes to the draft budget.

The Committee reviewed the revisions to the Personnel Policies and Procedures Manual as Agenda Item #2. As part of the budgeting process, the Committee was asked to review the proposed organizational structure and determine which positions will be funded and at what point in the fiscal year the positions will be filled.

The following is a summary of changes and comments made by the Committee:

- ✓ The Committee recommends recruiting for a Utility Superintendent at Salary Range #47.
- ✓ The Committee recommends recruiting for an Inspector/Maintenance Supervisor at Salary Range #42.
- ✓ The Committee recommends recruiting for a part-time Secretary/Clerk to report to duty three months after the Utility Superintendent reports to work.
- ✓ The Committee recommends the postponement of hiring of one additional Utility Worker and one additional Maintenance/Customer Service Worker until July 1, 2008 (next fiscal Year).

4. DRAFT BUDGET FOR FISCAL YEAR 2007-2008 AND RECRUITMENT BASED ON RECOMMENDATIONS FROM CLASSIFICATION STUDY (continued)

- ✓ The Committee recommends maintaining the current Utility Supervisor and Utility Field Foreman positions until the Utility Superintendent reports to work.
- ✓ The Committee recommends the District maintain the current Organizational Chart until the Utility Superintendent reports to work after which time the new proposed Organizational Chart will become effective.
- ✓ The Committee recommends the proposed Organizational Chart be modified to move the Assistant Administrator beneath the General Manager.
- ✓ The Committee recommends the Board of Directors reconsider the recruitments of the Utility Supervisor and the Inspector/Preventative Maintenance Supervisor at Salary Range #42 and not Salary Range #46.

5. SET NEXT MEETING

No date was set for the next meeting.

NIPOMO COMMUNITY SERVICES DISTRICT

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MINUTES OF THE 4/30/07 MEETING OF THE

PARKS COMMITTEE

1. CALL TO ORDER, ROLL CALL AND FLAG SALUTE

Chairman Winn called the Special Meeting to order at 1:00pm in the NCSD Board Chambers. Both Chairman Winn and Director Harrison were in attendance along with General Manager Bruce Buel, Assistant to the General Manager Faith Watkins, and five members of the public. Chairman Winn described the purpose and format of the meeting. There was no public comment on this item.

2. DISCUSS ACTIVATION AND PARK DEVELOPMENT STATUS

Bruce Buel indicated that no plans had been received from Cal Poly and summarized the draft MOU and the draft Funding Analysis Request for Proposal (RFP) for an engineer to craft one or more funding zones, as set forth in the meeting packet. Committee discussion followed on the MOU with both Committee Members suggesting edits. Jim Tefft and Kathy Kubiak also suggested edits and asked about the intent of the MOU. Jim Harrison moved that the Committee recommend that the Board approve the MOU in concept, as edited, and forward the MOU to the County for consideration. Mike Winn seconded the motion, which passed unanimously. Committee discussion followed on the draft RFP with both Committee Members suggesting edits. Jim Tefft and Peg Miller commented on the draft RFP. Jim Harrison moved that the Committee recommend that the Board authorize distribution of the RFP as edited. Mike Winn seconded the motion, which passed unanimously.

3. EDIT DRAFT PARKS SURVEY QUESTIONNAIRE

Bruce Buel summarized the draft questionnaire set forth in the meeting packet, summarized the feedback to date from various reviewers, and requested committee feedback. Jim Tefft asked about the intended use of the survey results and suggested that the consultant provide notice to the community prior to initiating the calls. Significant committee discussion followed in regards to edits to the questionnaire with a consensus amongst the Committee that the questionnaire, as edited, was ready for the consultant to initiate calling after notice was provided to the Community.

4. DISCUSS OPTIONS FOR RECEIVING ADVISORY INPUT ON PARKS ISSUES

Bruce Buel summarized the options identified by staff for encouraging citizen input on Parks issues. Mike Winn and Jim Harrison commented on the advantages and disadvantages of the identified options. Mike Winn indicated that he favored the concept of creating a new Citizens Advisory Sub-Committee supported by the members of the Parks Committee instead of staff. Mike Winn further suggested that each Board Member appoint one member of the sub-committee from within the District and that the five sub-committee members in turn appoint two additional members who reside in the

District's Sphere of Influence. Mike Winn also recommended that the Board set minimum qualifications for selection of all seven sub-committee members and volunteered to draft a proposed set of minimum criteria. Jim Harrison indicated that he could support all of Mike Winn's suggestions. Following additional Committee discussion, Mike Winn moved to recommend that the Board initiate the process to form the Sub-Committee as described above. Jim Harrison seconded the motion, which passed unanimously. There was no public input.

5. SET MEETING DATE(S) FOR SUBSEQUENT MEETINGS

The Committee agreed to meet again at 1 pm on Monday 6/25/07. There was no public comment.

6. ADJOURNMENT

Chairman Winn thanked the public for participating and adjourned the meeting at 2:37 p.m.

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MINUTES OF THE 5/02/07 MEETING OF THE

FINANCE, AUDIT AND PERSONNEL COMMITTEE

1. CALL TO ORDER, ROLL CALL AND FLAG SALUTE

Chairman Vierheilig called the Special Meeting to order at 9:00 a.m. in the NCSD Board Chambers. Both Chairman Vierheilig and Director Trotter were in attendance along with staff members Bruce Buel and Lisa Bognuda. Members of the public included Mike Winn and Jim Harrison.

2. CONSIDER OPTIONS FOR RECRUITING DISTRICT ENGINEER

Staff stated that it had processed two unsuccessful rounds of recruiting for the District Engineer. Staff believes that the advertised salary range is not sufficient to attract and retain a qualified candidate. Staff presented a salary survey prepared by CCWA as well as an excerpt from the Koff & Associates Salary Survey adopted by the Board of Directors in December 2006.

The Committee discussed the option of hiring a college graduate without an engineering license (Engineer-In-Training).

Staff presented options to the Committee:

1. Consider increasing the Salary Range for District Engineer
2. Consider recruiting a Project Manager in lieu of a District Engineer

The Committee agreed to recruit for a District Engineer at Salary Range #67-#68. Upon motion of Director Trotter and seconded by Director Vierheilig, the Committee unanimously agreed to forward the recommendation to the Board of Directors.

3. SET NEXT MEETING

No date was set for the next meeting.