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4 Phoenix, Arizona 85004
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6 swene@law-msh.com
7 Attorneys for Naco Water Company, LLC

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AZ CORP COMMISSION
DOCKET CONTROL

ORIGINAL

8 **BEFORE THE ARIZONA CORPORATION COMMISSION**

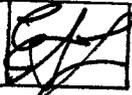
9 **COMMISSIONERS**

10 BOB STUMP, CHAIRMAN
11 GARY PIERCE
12 BOB BURNS
13 SUSAN BITTER SMITH
14 BRENDA BURNS

Arizona Corporation Commission

DOCKETED

DEC 12 2013

DOCKETED BY 

14 IN THE MATTER OF THE APPLICATION
15 OF NACO WATER COMPANY, LLC FOR
16 A RATE INCREASE

DOCKET NO: W-02860A-06-0002

DOCKET NO: W-02860A-05-0727

16 IN THE MATTER OF THE APPLICATION
17 OF NACO WATER COMPANY, LLC FOR
18 APPROVAL OF FINANCING

**COMPLIANCE REGARDING
DECISION 69393**

19 Pursuant to Decision 69393 (“Decision”), Naco Water Company, L.L.C.
20 (“Company”), hereby files the following documents in furtherance of compliance with
21 the Decision:
22

- 23 • Water Loss Reduction Statement/Plan (*see* Attachment 1);
- 24 • List of projects funded by WIFA Loan (*see* Attachment 2); and
- 25 • Hydrology study regarding sulfate plume (*see* Attachment 3).

27 RESPECTFULLY SUBMITTED this 12th day of December, 2013.

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MOYES SELLERS & HENDRICKS LTD.

Steve Wene

Steve Wene

Original and 13 copies of the foregoing
filed this 11th day of December, 2013, with:

Docket Control
Arizona Corporation Commission
1200 West Washington
Phoenix, Arizona 85007

Donnelly Herbert

ATTACHMENT 1

SOUTHWESTERN UTILITY MANAGEMENT INC
WATER UTILITY MANAGEMENT
TELEPHONE: (520) 623-5172
FAX: (520) 792-0377
WEB - www.southwesternutility.com



MAILING ADDRESS:
P.O. BOX 85160
TUCSON, AZ 85754

LOCATION:
2015 N FORBES BLVD, SUITE 107
TUCSON, AZ 85745

Arizona Corporation Commission
Utilities Division
1200 W Washington St.
Phoenix, AZ 85007

December 12, 2013

To whom it may concern;

The following is a report containing a plan to help reduce water loss to 10% or under for Naco Water Company. We understand this system is out of compliance for a Water loss <10%. In the past 6 years Southwestern Utility Management, Inc. ("SUM") has helped Naco Water obtain \$1,160,000.00 of infrastructure upgrades and improvements from the Water Infrastructure Finance Authority ("WIFA") loan and over \$1,196,976.17 in upgrades to the water system from Freeport McMoran due to sulfate issues at the Naco Highway area. These projects included; new water mains, service lines and a new storage tanks.

This system has had many water leaks due to age in some of the older infrastructure locations and vandalism to an exposed 6" water main that were repaired but still had a loss of many thousands of gallons of water. Naco Water is very proactive when it comes to water line repairs but cannot control the volume of leaks that may occur from some of the infrastructure that is over 40 years of age. Naco Water will work on a leak detection program to locate troubled areas within the system that may not have surfaced yet and a meter replacement program. Below are a cost analysis and a plan to help overcome the water loss issues for this water utility.

Please do not hesitate to contact us if you need additional information or have questions.

Sincerely,

Keith Dojaquez, CCI
Vice President Operations
Southwestern Utility Management, Inc.

Cc: Bonnie O'Connor, President

1. METER REPLACEMENT PROGRAM

This task includes replacing aged meters in the system. Due to the age of these meters they do not read accurately. If these meters are replaced the percentage of water loss will be more accurate. The cost of the meters are \$70.00 each (Prices from Dana Kepner). In order to help with the water loss issues Naco Water would have to change at least 20 meters a month ($\$70.00 \times 20 \text{ meters} = \$1,400.00$) to have any progress on the reduction of water loss.

2. LEAK DETECTION PROGRAM

This task includes a water leak detection program. The costs are from Utility Services Associates.

The cost is approximately \$1,250.00 a day plus a mobilization charge of \$800.00. To analyze the whole system and all other contact points would be about 5-7 days but in a 2.5 mile area or approximately 200 services at a time would take 2 days per assessment.

ATTACHMENT 2

Naco Water Company, LLC
PO Box 85160
Tucson, Arizona 85754
520-624-1460
boconnor@southwesternutility.com

December 12, 2013

Arizona Corporation Commission
Compliance Section
1200 W. Washington
Phoenix, AZ 85007

Re: Docket # W-02860A-06-0002 ET AL, Decision #69393 Compliance Requirement – List of Projects
Paid via WIFA Loan #

Naco Township 02-024 – Freeport/McMoran Settlement

Listed below you will find the system upgrades and replacements as completed by Freeport McMoran:

6" PVC 3,980 feet installed in 2013
New 110,000 gallon storage tank built 2013
2-15 horse power booster pumps removed from well 6 2013
2-25 horse power booster pumps installed at well 6 2013

Naco well 3 02-133 (Now interconnect to Township)
Well 3 DWR number 55-203321 has been abandoned 2013
1-5 horse power well pump removed 2013
1-5 horse power booster pump removed 2013
2-3.5 horse power booster pumps installed 2013
1-20,000 gallon storage tank built 2013
1-7,000 gallon storage tank removed 2013
900 feet of 2" piping PVC/steel removed 2013
1,170 feet of 3" ABS piping removed 2013
2,011 feet of 4" PVC piping installed 2013
New 2,000 gallon pressure tank installed 2013
Old 2,000 gallon pressure tank removed 2013
New altitude valve installed in 4' x 6' vault

Regards,

Bonnie O'Connor, Manager

Wells Fargo / Freeport-McMoRan
Requisition 17 - FINAL
Cost Incurred Report and Draw Request
Naco Water Company

Type of Request: ■ Final

Period Covered: 3/05/2013 to 5/20/2013

Recipient Contact & Address:

Naco Water Company
P.O. Box 85160
Tucson, Arizona 85754

Wire Transfer Instructions (Optional):

Bank Name:

Bank ABA Number:

Account Number:

Contact: Bonnie O'Connor

Phone #: (520) 623-5172

FAX #: (520) 792-0377

Attention:

Phone #:

Attach statements, invoices, or other proof that the amount requested below is currently due or has been advanced by the Recipient.

Tasks (Draw Request Data)

Request by Budget Item (1)	Budget (2)	Previously Disbursed (3)	This Request (4)	Total To Date (5) = (4) + (3)	Total as % of Budget (6) = (5) / (2)
6" Interconnect from Main, Well #3 System Dist. Mains, Mobilization	\$302,566.73	\$292,823.91			
Well #3 Improvements	\$297,562.98	\$233,391.56			
Well #6 Improvements	\$242,137.36	\$223,355.50	\$145,549.86 ⁱ		
Retainage		(\$53,414.42)			
Construction Subtotals	\$842,267.07	\$696,156.55	\$145,549.86	\$841,706.41	99.9%ⁱⁱ
Geotechnical Engineering & Testing	\$10,668.00	\$8,280.00		\$8,280.00	78%
Preliminary Engineering & System Model	\$16,127.50	\$16,127.50		\$16,127.50	100%
Professional Services Rendered Prior to 5/31/11	\$9,000.00	\$9,616.75		\$9,616.75	107%
Engineering	\$73,158.40	\$70,871.57		\$70,871.57	97%
Admin. & Legal Fees	\$36,579.20	\$31,198.50	\$5,370.00 ⁱⁱⁱ	\$36,568.50	100%
Project Management & Inspection	\$73,158.40	\$60,933.27	\$14,060.00 ^{iv}	\$74,993.27	103%
Surveying	\$9,280.00	\$9,280.00		\$9,280.00	100%
Contingency / Permits	\$109,737.60	\$7,225.00		\$7,225.00	7%
Engineering & Surveying Transmission Realignment	\$17,000.00	\$17,000.00		\$17,000.00	100%
Taxes					
Total	\$ 1,196,976.17	\$926,689.14	\$164,979.86	\$1,091,669.00	91%

ⁱ See Attachment 1 (KE&G Invoice 120285-8 for final payment). Note, KE&G's final invoice does not track the three subcategories, but does demonstrate project completion, which is why the data table was revised.

ⁱⁱ Reflects the \$3,000 in liquidated damages from KE&G (see KE&G Invoice 120285-8, line 2 "change order").

ⁱⁱⁱ See Attachment 2 (SUM invoice 5472 totaling \$1,275); see also Attachment 3 (MSH invoices 19916, 20101, 20114 for \$1,491.00, \$693.00, and \$1,911.00, respectively).

^{iv} See Attachment 4 (Carlson Invoices 09-075.25 for \$ 5,320.00, 09-075.26 for \$6,555.00, 09075.27 for \$1,710.00 and 09-075.28 for \$475.00).

Naco/Freeport - Requisitions #1 thru #6

Date	Vendor	Inv #	Amount	Category	Account
7/7/2011	Carlson Engineering	09-075.1	\$ 40,549.70	Well #3 Engineering	3311
7/8/2011	Carlson Engineering		\$ (7.15)	Well #3 Engineering	3311
6/1/2011	Southwestern Utility	4306	\$ 1,758.75	Freeport Expense	6251
8/11/2010	Moyes Sellers, Attny	16070	\$ 168.00	Freeport Expense - Legal Fees	6308
9/10/2010	Moyes Sellers, Attny	16161	\$ 1,050.00	Freeport Expense - Legal Fees	6308
10/8/2010	Moyes Sellers, Attny	16277	\$ 126.00	Freeport Expense - Legal Fees	6308
11/5/2010	Moyes Sellers, Attny	16406	\$ 210.00	Freeport Expense - Legal Fees	6308
12/3/2010	Moyes Sellers, Attny	16561	\$ 563.00	Freeport Expense - Legal Fees	6308
1/14/2011	Moyes Sellers, Attny	16784	\$ 714.00	Freeport Expense - Legal Fees	6308
2/8/2011	Moyes Sellers, Attny	16830	\$ 420.00	Freeport Expense - Legal Fees	6308
3/11/2011	Moyes Sellers, Attny	16977	\$ 315.00	Freeport Expense - Legal Fees	6308
4/6/2011	Moyes Sellers, Attny	17025	\$ 609.00	Freeport Expense - Legal Fees	6308
5/12/2011	Moyes Sellers, Attny	17143	\$ 525.00	Freeport Expense - Legal Fees	6308
6/14/2011	Moyes Sellers, Attny	17232	\$ 1,401.00	Freeport Expense - Legal Fees	6308
7/13/2011	Moyes Sellers, Attny	17321	\$ 2,259.00	Freeport Expense - Legal Fees	6308
8/25/2011	Moyes Sellers, Attny	17467	\$ 3,745.50	Freeport Expense - Legal Fees	6308
9/13/2011	Moyes Sellers, Attny	17612	\$ 2,348.65	Freeport Expense - Legal Fees	6308
9/10/2010	Moyes Sellers, Attny	16160	\$ 903.00	Freeport Expense - Legal Fees	6308
1/14/2011	Moyes Sellers, Attny	16783	\$ 587.00	Freeport Expense - Legal Fees	6308
4/6/2011	Moyes Sellers, Attny	17024	\$ 267.00	Freeport Expense - Legal Fees	6308
		Requisition #1	\$ 58,512.45	Freeport Wire	
10/14/2011	Southwestern Utility	4531	\$ 1,075.50	Freeport Expense	6251
10/12/2011	Moyes Sellers, Attny	17686	\$ 3,276.00	Freeport Expense - Legal Fees	6308
10/15/2011	Carlson Engineering	09-075.9	\$ 5,326.61	Well #3 Engineering	3311
		Requisition #2	\$ 9,678.11	Freeport Wire	
10/20/2011	AZ Dep. Of Environ. Quality	ATC Permit	\$ 3,300.00	Well #3	6221
11/11/2011	Moyes Sellers, Attny	17878	\$ 966.00	Freeport Expense - Legal Fees	6308
12/8/2011	Moyes Sellers, Attny	18002	\$ 798.00	Freeport Expense - Legal Fees	6308
12/15/2011	Carlson Engineering	09-075.11	\$ 17,070.30	Well #3 Engineering	3311
11/15/2011	Carlson Engineering	09-075.10	\$ 20,043.00	Well #3 Engineering	3311
		Requisition #3	\$ 42,177.30	Freeport Wire	
1/4/2012	Garcia & Sons	1150	\$ 580.00	Pot Holing for Engineers	6201
1/15/2012	Carlson Engineering	09-075.12	\$ 9,583.24	Well #3 Engineering	3311
1/17/2012	Moyes Sellers, Attny	18110	\$ 588.00	Freeport Expense - Legal Fees	6308
12/21/2011	ADEQ	ATC Permit	\$ 2,980.00	Well #6	6221
		Requisition #4	\$ 13,731.24	Freeport Wire	

Naco/Freeport - Requisitions #1 thru #6 (continued)

Date	Vendor	Inv #	Amount	Category	Account
2/15/2012	Carlson Engineering	09-075.13	\$ 12,223.76	Well #3 Engineering	3311
2/13/2012	Southwestern Utility	4728	\$ 787.50	Freeport Exp	6251
2/17/2012	Moyes Sellers, Attny	18223	\$ 987.00	Freeport Expense - Legal Fees	6308
		Requisition #5	\$ 13,998.26	Freeport Wire	
3/15/2012	Moyes Sellers, Attny	18336	\$ 882.00	Freeport Expense - Legal Fees	6308
4/11/2012	Moyes Sellers, Attny	18382	\$ 2,211.00	Freeport Expense - Legal Fees	6308
5/9/2012	Carlson Engineering	Change Order #1	\$ 8,254.00	Realignment of Transmission Main	3311
3/14/2012	Southwestern Utility	4913	\$ 3,969.75		6251
		Requisition #6	\$ 15,316.75	Freeport Wire	

Total Req 1 thru 6: \$ 153,790.11

Naco/Freeport - Requisitions #7 thru #15

Date	Vendor	Inv #	Amount	Category	Account
5/1/2012	Carlson Engineering	09-075.15	\$ 8,805.00	Well #3 & #6 Engineering & realignment	3311
5/17/2012	Moyes Sellers, Attny	18549	\$ 1,197.00	Freeport Expense	6308
3/20/2012	Southwestern Utility	4776	\$ 225.00	Freeport Expense	6251
		Requisition #7	\$ 10,227.00	Freeport Wire	
6/14/2012	Moyes Sellers, Attny	18699	\$ 588.00	Freeport Expense	6308
6/7/2012	Carlson Engineering	09-075.16	\$ 8,400.00	Realignment	3311
		Requisition #8	\$ 8,988.00	Freeport Wire	
7/16/2012	Moyes Sellers, Attny	18817	\$ 840.00	Freeport Expense	6308
3/20/2012	Southwestern Utility	4776 Bal.	\$ 150.00	Freeport Expense	6251
7/17/2012	Carlson Engineering	09-075.17	\$ 1,750.00	Bid Documents	3311
7/24/2012	Southwestern Utility	4956	\$ 600.00	Freeport Expense	6251
7/10/2012	ADEQ	Permit	\$ 900.00	ATC Interconnect Well#6 to #3	6221
		Requisition #9	\$ 4,240.00	Freeport Wire	
8/6/2012	Carlson Engineering	09-075.18	\$ 3,586.65	Trans Main Plans	3311
		Requisition #10	\$ 3,586.65	Freeport Wire	
8/29/2012	Engineering America	App Payment #1	\$ 98,211.95	Construction	330.1
9/1/2012	Carlson Engineereing	09-05.19	\$ 6,497.23	Project Management & Geotech	3311
8/17/2012	Moyes Sellers, Attny	18932	\$ 231.00	Freeport Expense	6308
9/11/2012	Southwestern Utility	5031	\$ 1,275.00	Well #6 Storage Tank Inspe	6251
		Requisition #11	\$ 106,215.18	Freeport Wire	
10/9/2012	Carlson Engineering	09-075.20	\$ 6,181.83	Engineering & Geotech	3311
11/5/2012	Carlson Engineering	09-075.21	\$ 3,325.00	Project Management	3311
10/17/2012	Moyes Sellers, Attny	19150	\$ 609.00	Freeport Expense	6308
9/12/2012	Moyes Sellers, Attny	19007	\$ 63.00	Freeport Expense	6308
10/10/2012	Moyes Sellers, Attny	19007	\$ 294.00	Freeport Expense	6308
11/12/2012	Moyes Sellers, Attny	19213	\$ 798.00	Freeport Expense	6308
11/15/2012	Southwestern Utility	5150	\$ 4,500.00	Well #6 inspections/Storage	6251
		Requisition #12	\$ 15,770.83	Freeport Wire	

Naco/Freeport - Requisitions #7 thru #15 (continued)

Date	Vendor	Inv #	Amount	Category	Account
12/4/2012	Carlson Engineering	09-075.22	\$ 2,565.00	Project Management	3311
12/7/2012	Southwestern Utility	5167	\$ 1,875.00	Well #3 Inspec & 6" main on Newell St.	6251
11/30/2012	KE&G	App for Pay #1	\$ 34,121.64 \$ 6,210.80 \$ 19,209.05 \$ 19,862.85 \$ (7,940.44)	Begin 6" interconnect for main Begin Well #3 Dist Mains Begin Well #3 Improvements Begin Well #6 Improvements Retention	3311
		Requisition #13	\$ 75,903.90		
1/21/2013	Engineering America	Freeport PAY2	\$ 78,755.00	Naco Water Tank	330.1
1/21/2013	Carlson Engineering	Freeport 09-075.23	\$ 3,610.00	Project Management & Inspection	3311
1/21/2013	KE & G Construction	Freeport 120285-2	\$ 41,375.92 \$ 6,620.82 \$ 73,686.06	(3311) Begin 6" interconnect from Main(4597.32 retention) (3311) Begin Well #3 Distribuion Mains (735.65 Retention) (330.1) Begin Well #3 Improvements (\$8188.28 Retention)	3311 3311 330.1
1/18/2013	Southwestern Utility	Freeport 5255	\$ 4,800.00	Well 3 Inspect 6" Main On Newell; Inspect Well#4 on Fairway View	6251
1/21/2013	Moyes Sellers	freeport 19355	\$ 546.00	Freeport Expense	6308
		Requisition #14	\$ 209,393.80	Freeport Wire	
2/11/2013	KE&G	Freeport 120285-3	87507.05 63252.45 1097.12 15425.72 10139.11 1436.21 2376.63 2129.86	(3311) 6" Interconnect from Main (3311) Well #3 Distribution Mains (330.1) Earthwork, Tank Ring & ABC Well #3 (330.01) Tank Interior/Exterior Coating WELL #3 (330.1) tank cathodic protection Well #3 (3311) water lines trenching and backfill well 3 (304) expand CL fence with barbed wire Well#6 (304) Replace existing east fence fabric Well #6	3311 3311 330.1 330.01 330.1 3311 304 304
1/25/2013	Moyes	Freeport 19524	\$ 966.00	Freeport Exp	6308
2/12/2013	Moyes	Freeport 19613	\$ 756.00	Freeport Exp	6308
2/8/2013	Southwestern Utility	Freeport 5272	\$ 4,050.00	Inspections & Daily Reports	6521
12/10/2012	Carlson Engineering	Freeport 09-75.23	\$ 59.83	Direct Cost +15% Copies for KE&G \$4.36, Copies of Trans Main Delta Revision \$47.67	6211
		Requisition #15	\$ 189,195.98	Freeport Wire	

Naco/Freeport - Requisitions #16 thru #

2/11/2013	KE&G	Freeport Req #5	8377.99	Begin 6" Interconnect From Main	3311
			4171.55	Begin Well #3 Distribution Mains	3311
			3379.71	tank cathodic protection well #3	330.1
			8023.22	2000 gal hydro-tank w/ coating well 3	330.2
			12481.18	electric service relocate at well 3	3111
			13095.49	electric reack transformers, surge protector	3311
			1170.61	chlorinator shed w/ vents well 3	330.1
			2629.29	booster, air charger, steel piping	3111
			2805.39	altitude valve well 3	330.1
			478.74	water lines trenching and backfill well 3	330.1
			690.22	electric trenching & backfill well 3	3111
			1323.27	site electric well 3	3111
			1094.05	Water level probes well 3	3111
			606.28	Light pole Well 3	330.1
			1091.1	Pres. test, disinfect & Flush well 3	330.1
			35495.14	Well #3 Improvements	3311
			2856.06	boosters piping, etc Well 6	3111
			1254.49	site water lines well 6	330.1
			1373.28	Add 8" flange to existing water tank	330.1
			1821.01	Water line trench and backfill well6	330.1
2/28/2013	KE&G	Freeport Retention	4296.77	Begin 6" Interconnect From Main	3311
			4296.55	Begin Well #3 Distribution Mains	3311
			1104.29	Vault w/lid for sltitude valve well 3	3311
			574.04	concrete slabs and footings well 3	3311
			93.98	overflow splash pad well 3	330.1
			3197.84	electric rack framing, deck & paint	3111
			8523.83	storage tank and appurtenences well 3	330.1
			2772.63	tank interior/exterior coating well 3	330.1
			1046.2	tank connection valves and wittings well 3	330.1
			800.42	Begin well 6 improvements	3111
2/12/2013	Engineering America	Freeport PAY 3	9314.05	(330.1) Freeport Well Site 6	330.1
3/1/2013	Sum	5309	450	(3311) 2/12/13 Inspections & Field Report	3311
			450	(3311) 2/26/13 Inspections and Field Report	3311
			150	(3311) Meeting Regarding Inspections	3311
2/20/2013	moyes	Freeport 19661	357	Freeport Expense	6312
3/20/2013		Freeport 19738	987	Freeport Expense	6312
2/4/2013	Carlson Engineering	09-075.24	3372.5	(3311) project management and inspection	3311
			3372.5	(330.1) project management and inspection	330.1
			Requisition #16	\$ 149,377.67	Freeport Wire

4/25/2013	KE&G	120285-8	145549.86	Final Payment Work On WELLS 3 & 6	3311
5/21/2013	SouthwesternUtility	5472	450	(3311) Field Supervisor- 4/12/13 gather data for final requisition	3311
			450	(3311) Field Supervisor- 4/26/13 gather data for final requisition	3311
			187.5	(3311) Field Supervisor- 5/20/13 prepare final requisition	3311
			187.5	(3311) Field Supervisor- 5/21/13 prepare final requisition	3311
4/23/2013	Moyes	19916	1491	Freeport Expense	6312
5/20/2013	Moyes	20101	693	Freeport Expense	6312
5/20/2013	Moyes	20114	1911	Freeport Expense	6312
3/5/2013	Carlson	09-075.25	2660	Project Management & Inspection WELL3 and 6" interconnect	3311
			2660	Project Management & Inspection WELL3 and 6" interconnect	330.1
4/4/2013	Carlson	09-075.26	3277.5	(3311) project management and inspection	3311
			3277.5	(330.1) project management and inspection	330.1
5/2/2013	Carlson	09-075.27	855	Project Management & Inspection WELL3 and 6" interconnect	3311
			855	Project Management & Inspection WELL3 and 6" interconnect	330.1
5/13/2013	Carlson	09-075.28	237.5	Project Management & Inspection WELL3 and 6" interconnect	3311
			237.5	Project Management & Inspection WELL3 and 6" interconnect	330.1
		Requisition #17	\$ 164,979.86	Freeport Wire	
		Total Req 7 through 17	\$ 937,878.87		
		Total Req 1 through 6	\$ 153,790.11		
			\$ 1,091,668.98	Total Project Naco Freeport	

ATTACHMENT 3

1.0 INTRODUCTION

Naco Water Company (NWC) retained Tierra Dynamic Company (TDC) to preform a well siting investigation for installation of new groundwater production wells in the area of Naco, Arizona and Bisbee Junction, Arizona (Bisbee-Naco basin). New wells are needed to replace water supply lost from wells NWC-3 and NWC-4. Water supply from NWC-3 contains 460 mg/L sulfate and exceeds the secondary maximum contaminant level of 250 mg/L. Production from well NWC-4 is lost as a result of sulfate-related well screen fouling, despite repeated cleaning; the sulfate concentration in NWC-4 is 220 mg/L.

Sources of this sulfate contamination are the Phelps Dodge Mining Company Warren Mining District former evaporation pond and Warren Ranch Irrigation Area located north of Naco, Arizona. Excess groundwater from mine dewatering operations was discharged to the Warren Ranch Irrigation Area from 1905 through 1987, and to the evaporation pond from 1908 through 1987 (Savci Environmental Technologies, LLC., June 1998). Mine-water discharge to these areas resulted in infiltration and groundwater mounding of high-sulfate water. The project investigation area is shown on Figures 1, 2, and 3.

1.1 OBJECTIVE

The objective of this project is to identify conceptual locations and costs for the installation of new groundwater supply wells to replace water supply wells NWC-3 and NWC-4. Potential locations for replacement well sites were focused within areas of the Bisbee-Naco basin that do not contain sulfate-impacted or uranium-impacted groundwater, and are reasonably close to Naco township and/or Bisbee Junction.

1.1.1 Single-Opportunity Settlement

Preliminary discussions conducted in Spring 2006 between NWC and Phelps Dodge Mining Company (Phelps Dodge) legal counsel and operations manager indicate that Phelps Dodge is willing to assist NWC with it claims for the replacement of drinking water supplies lost from wells NWC-3 and NWC-4. However, it was also indicated that Phelps Dodge desired to provide this assistance via a single-opportunity settlement with NWC.

The requirement for a single-opportunity settlement does present some specific challenges for selection of the most appropriate replacement well locations. Furthermore, the need for a single-opportunity settlement implicitly precludes consideration of possible groundwater contamination mitigation options such as well deepening and/or water blending operations. Although both options are practical and possible solutions to reduce groundwater sulfate concentrations and/or resolve well-fouling problems, long-term cost uncertainties associated with these options, and similar options, preclude them from consideration under a cost-effective single-opportunity settlement.



1.2 SCOPE OF SERVICES

The scope of services provided by TDC include the following:

- perform review of available literature to gain understanding of the subject area hydrogeology and regional activities effecting hydrogeology;
- conceptually evaluate locations for the installation of new groundwater supply wells;
- prepare a report containing investigative findings, conceptual recommendations, and costs for siting and installation of new wells.

1.3 LIMITATIONS

The services described and/or proposed in this document are consistent with professional environmental consulting principals and practices generally accepted at this time. No other warranty, expressed or implied, is made. These services were performed and/or are proposed consistent with TDC's agreement with it's client. This document is solely for the use and information of TDC's client unless otherwise noted. Any reliance on this document by a third party is at such party's sole risk.

Proposals, opinions, and recommendations contained in this document apply to conditions existing when services were performed or proposed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. TDC is not responsible for the impacts of any changes in environmental conditions, standards, practices, or regulations subsequent to performance of service. TDC does not warrant the accuracy of information supplied by others, or the use of segregated portions of this document.

This document may rely upon data previously collected by others. In performing the services documented herein, it is understood that a careful balance must be struck between the limits of reasonable data quality assurance, and the limits of data collection quality control information. Services documented herein utilized data previously collected by others under the assumptions that standard industry practices and procedures were utilized in the collection of all third-party data. The following paragraphs discuss additional assumptions and parameters under which opinions are rendered.

No investigation is thorough enough to identify all conditions at a given site, or to investigate all areas of a given site. If conditions of interest have not been identified during this investigation, such a finding should not therefore be construed as a guarantee of the absence of such conditions, but rather that such conditions were not identified by the services performed within the scope, limitations, and cost of the work contracted to TDC.



Conditions may exist in the investigation area that cannot be identified by visual observation. Where subsurface work is performed, TDC's professional opinions are based in part on interpretation of data from discrete sampling locations that may not represent actual conditions at un-sampled site locations.

Except where there is expressed concern of TDC's client, or where specific environmental contaminants or conditions have been previously reported by others, naturally occurring toxic substances, potential environmental contaminants inside or outside buildings, contaminant concentrations, or environmental conditions that are not of current environmental concern may not be reflected in this document.



2.0 SITE INFORMATION

The areal extent of this investigation included the area shown on Figures 1 through 3.

2.1 REGIONAL HYDROGEOLOGY

2.1.1 PRIMARY WATER-BEARING GEOLOGIC UNITS

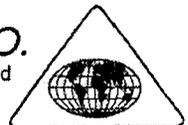
Three primary hydrogeologic units are present beneath the investigation area. From shallowest to deepest, these geologic units are the basin fill deposits, the Morita Formation, and the Glance Conglomerate. In general, wells completed within the basin fill deposits have the greatest groundwater production capacity, while the Morita Formation and Glance Conglomerate have successively less groundwater production capacity.

TDC constructed geologic cross-sections N-N' through S-S' within the investigation area. These cross-sections were used to assist identifying favorable locations for well installation. The locations of the cross sections are shown on Figure 1. The cross-sections are presented on Figures 4 through 9. Well registration and installation documents from Arizona Department of Water Resources (ADWR) and well drilling information from other entities were used to construct the cross sections; these documents are referenced later in this report and are contained in Appendix 1. Additional data used to prepare this report were obtained from sources cited in the References section and on Table 1. Appendix 2 contains the ADWR Well Report for the investigation area (Arizona Department of Water Resources, August 2006).

2.1.2 GROUNDWATER QUALITY

Groundwater quality in an extensive portion of the investigation area is impacted with sulfate concentrations exceeding 250 milligrams per liter (mg/L) as a result of Phelps Dodge Mining Company's former mine dewatering discharge activities. Excess groundwater from mine dewatering operations was discharged to the Warren Ranch Irrigation Area from 1905 through 1987 and the evaporation pond from 1908 through 1987 (Savci Environmental Technologies, LLC., June 1998).

Code of Federal Regulations 40 CFR Part 143.3 establishes a 250 mg/L secondary maximum contaminant level (SMCL) for sulfate in water that is delivered to the ultimate user by public water systems (Appendix 3). The United States Environmental Protection Agency also refers to SMCLs as National Secondary Drinking Water Regulations (NSDWRs) and describes the NSDWRs as non-enforceable guidelines for the States and other implementing agencies (Appendix 3) (United States Environmental Protection Agency, November 2006). Contaminants included within the NSDWRs may cause cosmetic effects (skin or tooth discoloration) or aesthetic effects (taste, odor, or color).



Mine dewatering discharge to the Warren Ranch Irrigation Area and evaporation ponds resulted in infiltration and groundwater mounding of high-sulfate water. Sulfate concentration contours in groundwater are shown on Figure 2. Water quality data is limited and much of the available information is at least ten years old, from the period 1990 through 1997.

Groundwater modeling predicts that the area of sulfate-impacted groundwater will, through the year 2048, expand slightly in some areas and contract slightly in other areas along the 250 mg/L contour line established in 1998 (Savci Environmental Technologies, LLC., June 1998). The 250 mg/L sulfate contour predicted to occur in 2048, as adapted from Savci Environmental Technologies (SET), is shown on Figure 2.

At the request of Arizona Department of Environmental Quality, groundwater samples were collected by Phelps Dodge in August 1999 and tested for the presence of uranium (Savci Environmental Technologies, LLC., March 2000). SET reported the highest concentration of uranium as 33 micrograms per liter (ug/L) in groundwater from well TM-41 located in the area of the former Phelps Dodge evaporation pond. SET reported another area of high uranium concentration centered approximately one mile east-southeast of Bisbee Junction; 21 ug/L uranium was detected in Leigh Breasted well. TDC review of ADWR records did not identify any well owned by Leigh Breasted; therefore, this well ownership is not included on Table 1. According to SET, particle tracking and the absence of mine-related, calcium sulfate-type groundwater indicated that uranium is naturally occurring in groundwater in the Leigh Breasted well east-southeast of Bisbee Junction. A Use Protection Level of 38 ug/L is proposed as an Aquifer Protection Permit condition for the Concentrator Tailings Storage Area (Savci Environmental Technologies, LLC., March 2000). Pursuant to Federal drinking water standards contained at 40 CRF Part 141.66e (Appendix 4), the maximum contaminant level for uranium in drinking water is 30 ug/L. The compliance date for the uranium MCL was 8 December 2003 (Code of Federal Regulations, July 2002b).

Groundwater quality is generally very good in locations beyond the sulfate- and uranium-impacted areas included within the scope of this investigation. Groundwater quality data is summarized on Table 1.

2.1.3 GROUNDWATER ELEVATION AND FLOW

The groundwater mound resulting from infiltration of mine dewatering discharge has almost completely dissipated since the cessation of discharge activities in 1987. Groundwater elevation contours are shown on Figure 3. These elevation contours are based on the average of groundwater elevations (presented in Table 2) collected during 1996 from the uppermost aquifer (Savci Environmental Technologies, LLC., June 1998). Based upon this data, the generalized groundwater flow direction is to the southwest and west within the portion of the investigation area located west of the Black Gap fault.



3.0 WELL SITE EVALUATIONS

This well siting investigation identifies potential well sites and scores them based on criterion that include the following:

- potential for groundwater production;
- existing groundwater quality;
- estimated future groundwater quality;
- well site purchase/lease availability;
- access road easement availability
- pipeline easement availability, and;
- length of new pipeline from proposed well site to well NWC-4 at Bisbee Junction.

It is important to note that some criterion are more heavily weighted than others. In the final analysis, groundwater production capacity and groundwater quality are weighted much more heavily than pipeline installation and land purchase costs. The areal extent of this investigation included the area shown on Figure 1, Figure 2, and Figure 3.

Based on a review of the available data, TDC has identified three potential sites for installation of new groundwater supply wells. These sites are shown on Figure 1, Figure 2, and Figure 3:

- Site 1 is east of Naco, south of the San Pedro and Southwestern Railroad (SPS Railroad) tracks;
- Site 2 is west of Naco, south of the SPS Railroad tracks;
- Site 3 is within the town of Naco near the U.S.-Mexico border.

The advantages and disadvantages of each site evaluation criterion considered herein is discussed and summarized below in tabular format. The evaluation criteria that are considered for well siting are shown in the tables below. The criteria for each site are given a numerical score between 1 and 5 and a corresponding description from "Poor" to "Excellent." A score of 1 represents the worst estimated outcome, or the greatest degree of uncertainty; and a score of 5 represents the best estimated outcome, or the least degree of uncertainty - as shown below.

1	Poor
2	Fair
3	Good
4	Very Good
5	Excellent



3.1 BISBEE JUNCTION EVALUATION

Areas east and south of Bisbee Junction were initially considered for well installation. Due to the presence of sulfate-impacted groundwater in the location of NWC-4, and as the well fouling problems within well NWC-4 worsened, potential replacement well sites would by necessity be significant distances east and/or south of NWC-4. However, an area of groundwater containing naturally occurring uranium is believed present approximately one mile east-southeast of Bisbee Junction (Savci Environmental Technologies, LLC., March 2000). Uranium concentrations south and east of Bisbee Junction ranged from 11 to 21 ug/L in samples collected by Phelps Dodge in August 1999. According to 40 CRF Part 141.66e, the maximum contaminant level for uranium in drinking water is 30 ug/L (Code of Federal Regulations, July 2002b).

Well logs for wells within the Bisbee Junction area indicate that the Morita Formation and Glance Conglomerate are encountered at or near the ground surface, and groundwater production from wells constructed within these formations is less than from wells constructed within the basin fill deposits. Accordingly, the probability of completing a replacement supply well with adequate groundwater production capacity is correspondingly reduced. Multiple, and possibly iterative, geophysical surveys and test wells would most likely be required to identify a suitable replacement well location.

Consideration of the Bisbee Junction area for well installation must also be weighed against the need for a well near Naco township to replace well NWC-3, which is impacted by sulfate. Even if a suitable well site was identified in the Bisbee Junction area, costs to acquire and install wells at two separate sites would then be incurred because an additional well site is required to replace NWC-3.

Based upon sulfate concentrations at Bisbee Junction, known uranium concentrations south and east of Bisbee Junction, and shallow occurrence of the Morita Formation and Glance Conglomerate, well sites east or south of Bisbee Junction are considered incompatible with a single-opportunity settlement proffered by Phelps Dodge.

3.2 SITE 1 EVALUATION

Site 1 is depicted on Figure 1, Figure 2, and Figure 3, and is located south of Greenbush Draw approximately one mile east of Naco township. The proposed site location is within the Southwest 1/4 of Section 16, Township 24 South, Range 24 East, south of the SPS Railroad tracks. Land in this area is privately owned (Cochise County Assessor's Office, January 2007). Property ownership records are contained in Appendix 5.



3.2.1 AQUIFER PRODUCTION CAPACITY

Arizona Department of Water Resources (ADWR) records from groundwater wells TM-5 and TM-12 located approximately 3,500 feet southeast and 3,400 feet southwest of Site 1, respectively, provide useful information as described below. These wells are shown on Figure 4 - Cross-Section O-O'. Well TM-5 is constructed to a total depth of 160 feet below ground surface (bgs) and had a corresponding water level of 131 feet bgs in 1989. Well TM-12 is constructed to a total depth of 171 feet bgs and had a corresponding water level of 128 feet bgs in 1989. Both of these wells were constructed as groundwater monitor wells by Phelps Dodge. They appear to be constructed within basin fill deposits to their total depths. Test pumping of well TM-5 resulted in 18.7 feet of drawdown at a pumping rate of 7 gallons per minute (gpm). Test pumping of well TM-12 resulted in 1 foot of drawdown at pumping rate of 12.7 gallons per minute (gpm). ADWR documentation did not indicate the duration of test pumping.

Existing data in the area of Site 1 indicates that basin fill thickness increases from east to west as the top of the Morita Formation plunges. The depth of basin fill in this area is estimated to be fair for long-term, groundwater production. Groundwater from the Morita Formation may provide significant production increase with increasing well depth. Aquifer production capacity is likely to be fair to good within the context of the production capacity of the Bisbee-Naco basin.

3.2.2 AQUIFER WATER QUALITY - EXISTING

Low concentrations of sulfate were detected in groundwater samples collected from monitor wells TM-5 and TM-12; they ranged from 10 mg/L to 7 mg/L in 1996 (Savci Environmental Technologies, L.L.C., August 1999). Site 1 is estimated to be 2,000 feet south of the sulfate plume as described in the report prepared by SET for Phelps Dodge (Savci Environmental Technologies, 1998).

The Naco, Sonora-Mexico Eastside sewage treatment lagoon facility is located in Mexico approximately one mile southwest of Site 1 (Science Applications International Corporation, September 1997). Wastewater from the Eastside lagoons is discharged to an agricultural area located immediately east of the lagoons and extending approximately one mile east and two miles south (Arizona Department of Environmental Quality, February 2007). Wastewater treatment methods are unknown. Potential impacts to groundwater from the Eastside lagoons and related agricultural irrigation are unknown.

Based on the available data, existing groundwater quality is estimated to be good to very good. However, sampling of well TM-12 for constituents of interest must be performed to confirm groundwater quality between the Eastside lagoons and Site 1. Groundwater sampling between the agricultural irrigation area located south of Site 1 must also be performed to confirm groundwater quality between sites.



3.2.3 AQUIFER WATER QUALITY - FUTURE

Except for the SPS Railroad tracks, potential well-site land at and surrounding Site 1 is generally undeveloped. Groundwater modeling conducted by SET for Phelps Dodge predicts that by 2048 the sulfate-impacted groundwater will not migrate beyond the plume's southern boundary as established in the modeling report (Savci Environmental Technologies, June 1998). Of concern, however, is the failure of this same groundwater modeling work to accurately predict recently documented sulfate impacts or 460 mg/L at well NWC-3.

Another future concern is the Naco, Sonora-Mexico Eastside sewage treatment lagoon facility and associated agricultural irrigation located south and southwest of the Site 1 in Mexico (Science Applications International Corporation, September 1997). Potential impacts to groundwater from the Eastside lagoons and agricultural irrigation using treated effluent are unknown.

Evidence of mining activity is present in Sonora, Mexico adjacent to the U.S.-Mexico border, east of the above-referenced agricultural area. The nature of the mining activity and the potential impact to groundwater is not known.

Based upon the available data and uncertainty surrounding sulfate migration from the north, potential impacts from the Naco, Sonora-Mexico Eastside sewage treatment lagoon facility and agricultural irrigation using treated effluent, and mining activities, future groundwater quality is estimated to be fair.

3.2.4 WELL SITE PURCHASE/LEASE AVAILABILITY

The proposed location of Site 1 is on privately owned land. Land purchase and land lease availability are estimated to be fair to good.

3.2.5 ACCESS ROAD EASEMENT AVAILABILITY

It's anticipated that a dedicated dirt access road will be constructed to access Site 1. As shown in Figures 1, 2, and 3, the proposed pipeline and dedicated access road route runs west from the well site, across private property, to the east side of Section 18, then north across privately owned land along the east boundary of Section 18, then west to the junction of Newell Road and Naco Highway. The length of dedicated access road is approximately 7,000 feet. As the pipeline extends northeast along the Naco Highway and east along Purdy Lane, the need for a dedicated access road is not expected; easements for this portion of the pipeline are addressed in the next section. Availability of securing access road utility easements through purchase and/or lease from public and/or private property owners is estimated to be fair to good.



The dedicated access road would need to cross the SPS Railroad tracks along the access road's north leg. Information obtained from an internet search indicates that on July 13, 2006, SPS Railroad filed with the Surface Transportation Board to ask for approval to immediately abandon the railroad line. According to the September 18, 2006 article contained in Appendix 6, the Surface Transportation Board decision was pending. Abandonment of the rail line increases the uncertainty of obtaining an easement to cross the railroad tracks. Availability of securing the needed easement from the railroad is estimated to be fair.

3.2.6 PIPELINE EASEMENT AVAILABILITY

The proposed pipeline will be constructed to convey water from Site 1 to existing well site NWC-4 located at Bisbee Junction. The pipeline will follow the route shown on Figures 1, 2, and 3. Utility easements will be required from public and/or private entities owning land along the pipeline route. Availability of securing utility easements through purchase and/or lease from public and/or private property owners is estimated to be fair to good.

3.2.7 PIPELINE LENGTH

The proposed pipeline length is estimated to be approximately 26,400 feet. The estimated cost to construct a pipeline of this length is moderate compared with the other alternatives; therefore, the score for length is good.

SITE 1 EVALUATION SUMMARY	
CRITERION	SCORE
Aquifer Production Capacity	2-3
Aquifer Water Quality - Existing	3-4
Aquifer Water Quality - Future	2
Well Site Purchase/Lease Availability	2-3
Access Road Easement Availability	2-3
Pipeline Easement Availability	2-3
Pipeline Length	3



3.3 SITE 2 EVALUATION

The proposed location of Site 2 is shown on Figure 1, Figure 2, and Figure 3. It is located west of Naco, south of the SPS Railroad, in the Southeast 1/4 of Township 24 South, Range 23 East, Section 14. According to Cochise County land ownership records, Site 2 is located on Arizona state land and most of the proposed route of the access road and pipeline are located on Arizona state land (Cochise County Assessor's Office, December 2006). Property ownership records are contained in Appendix 5.

3.3.1 AQUIFER PRODUCTION CAPACITY

ADWR records for "monitor hole" 14-ABA2 located approximately 2,400 feet north of Site 2 provides useful information about hydrogeologic conditions. This "monitor hole" is shown on Figure 4 - Cross-Section N-N'. According to the United States Geological Survey request for variance submitted to ADWR, well 14-ABA2 is a geophysical "monitor hole." It was constructed to a total depth of 92.5 feet bgs and is not open to the aquifer. The ADWR Well Driller Report for 14-ABA2 indicates that "perched water" was identified from 27 to 30 feet bgs, 42 to 45 feet bgs, and 79 to 83 feet bgs. Well 14-ABA2 appears to be constructed within basin fill deposits to its total depth.

ADWR records for groundwater well NSD-3, located approximately 2,400 feet northeast of Site 2, indicate a total construction depth of 100 feet bgs. This well is shown on Figure 4 - Cross Section N-N'. In 1990 the water level in NSD-3 was 66 feet bgs. Well NSD-3 appears to be constructed within basin fill to its total depth. Test pumping of well NSD-3 resulted in 6 feet of drawdown at a pumping rate of 15 gallons per minute (gpm). Documentation did not indicate the duration of the test pumping.

Records for Arizona Water Company groundwater well AWC-2, located approximately 4,600 feet east-northeast from Site 2, were used to evaluate hydrogeology in the area surrounding Site 2. This well is shown on Figure 4 - Cross-Section N-N'. Well AWC-2 is one of several wells that comprise the "Bisbee well field," which Arizona Water Company uses to supply drinking water to the town of Bisbee. AWC-2 was drilled to a total depth of 393 feet bgs in 1954. According to the Arizona Water Company document labeled "Bisbee Inventory, Well No 2 Naco," drilling of AWC-2 identified "decomposed igneous rock probably andesite porphyry" from a depth of 248 to 393 feet bgs (Geoscience Support Services, Inc, March 2006). This rock may be related to the following passage by Littin: "Magnetic surveys by Phelps Dodge Corporation in the late 1960's indicate the presence of a dike, possibly andesite, trending north-south near the base of the basin fill beneath the Bisbee well field (Littin, June 1987). According to the Arizona Water Company documents labeled "Well Data & Log" and "Bisbee Inventory, Well No 2 Naco," AWC-2 was plugged with concrete from 333 to 367 feet bgs "to try and stop hydrogen sulfide gas" encountered at 365 feet bgs (Geoscience Support Services, Inc., March 2006). First water was encountered at a depth of 73 feet bgs in 1954.



Records for Arizona Water Company groundwater well AWC-5, located approximately 5,200 feet east-northeast from Site 2, were examined. Well AWC-5, also part of the Bisbee well field, is shown on Figure 4 - Cross-Section N-N', and Figure 5 - Cross Section O-O'. The ADWR Well Driller Report indicates that AWC-5 was drilled to a total depth of 1,183 feet bgs. Interpretation of the drilling log indicates that the basin fill extends to a depth of 440 feet bgs, Morita Formation to a depth of 1,140 feet bgs, and "volcanics - black with white quartz" to a depth of 1,183 feet bgs. The well is screened from 163 feet to 603 feet and from 623 feet to 1163 feet (Geoscience Support Services, Inc, March 2006). The static water level shown on The Weber Group "Test Pump Results" was 111.5 feet below measuring point. During step test pumping, a maximum drawdown of 402 feet was reported with a pumping rate of 1108 gpm. Specific yield ranged from 2.75 to 6.44 gallons per minute per foot of drawdown.

Due to the significant distance from Site 2 to the closest reference wells NSD-3, 14-ABA2, AWC-2, and AWC-5, the uncertainty of aquifer production capacity and basin fill thickness is increased. Therefore, aquifer production capacity is conservatively estimated to be less than within the area of AWC-5, and is likely to be good to very good.

3.3.2 AQUIFER WATER QUALITY - EXISTING

Phelps Dodge sulfate mapping, and Appendix 7 analytical data from Arizona Water Company groundwater production wells located upgradient of Site 2, indicate that groundwater within the Bisbee well field has not been impacted by sulfate from the Phelps Dodge plume.

Groundwater analytical data for well NSD-3 located southwest of the Naco Sanitary District Wastewater Treatment Facility was obtained by TDC from a review of Arizona Department of Environmental Quality (ADEQ) files (ADEQ, December 2006). Total dissolved solids (TDS) detected in groundwater samples collected during 2000 and 2001 ranged from 352 to 402 milligrams per liter (mg/L). Sulfate concentrations for these same dates ranged from 107 to 120 mg/L. A fecal coliform concentration of 14 CFU/100 milliliters was detected in the July 2000 sample but was not detected in subsequent samples. TDS and sulfate concentrations in the samples from NSD-3 appear to be elevated above concentrations detected in groundwater samples from nearby Arizona Water Company wells AWC-2 through AWC-5 and Naco Sanitary District monitor wells NSD-1 (a.k.a. MW-1) and NSD-2 (a.k.a. MW-2). During the period from 1995 through 2005, Arizona Water company wells AWC-2 through AWC-5 contained approximately 7 to 35 mg/L sulfate and 224 to 290 mg/L TDS (Geoscience Support Services, Inc., March 2006). Samples collected on 4 October 2001 from Naco Sanitary District monitor wells NSD-1 and NSD-2 contained 12.5 mg/L to 18.2 mg/L sulfate and 227 mg/L to 294 mg/L TDS. The higher sulfate and TDS concentrations in NSD-3 versus NSD-1, NSD-2, and the Arizona Water Company wells may be related to wastewater discharge outfall from the Naco Wastewater Treatment Facility and/or differences in well screen depths.



The proposed location of Site 2 was selected in order to minimize the likelihood of encountering groundwater potentially impacted by the Naco Wastewater Treatment facility. Groundwater analytical results for wells NSD-1, NSD-2, NSD-3 and the Arizona Water Company wells are contained in Appendix 7.

The Naco, Sonora-Mexico Westside wastewater lagoons are located approximately 7,300 feet southeast of the proposed location of Site 2. There are documented wastewater overflows from collection lines and from the lagoons resulting in accidental wastewater "discharges northward, across the U.S./Mexico border, through natural drainage courses" (SAIC, September 1997). More recent expansion of the Eastside wastewater lagoon system has reduced the need to utilize the problematic Westside lagoons and associated piping system. However, occasional releases of wastewater have occurred from the Westside lagoon piping system since the 2004 completion of the Eastside lagoon expansion project (Arizona Department of Environmental Quality, February 2007).

There are no groundwater wells located north of the U.S./Mexico border, between the Westside lagoons and Site 2; therefore, data has not been found to indicate whether or not infiltration from the Westside lagoons or unplanned releases from the piping or lagoon system have impacted groundwater in the area of Site 2.

Based on the proximity of Site 2 to sulfate-impacted groundwater, the Naco, Arizona Wastewater Treatment facility, and the Naco, Sonora-Mexico Westside wastewater lagoons and associated piping, the existing groundwater quality at proposed location of Site 2 is estimated to be good to very good.

3.3.3 AQUIFER WATER QUALITY - FUTURE

Groundwater analytical data for well NSD-3 located downgradient of the Naco Sanitary District wastewater treatment facility detected what appear to indicate elevated concentrations of TDS and sulfate in samples collected during 2000 and 2001. Fecal coliform was also detected in the July 2000 sample. These concentrations may be related to the Naco Wastewater Treatment facility.

The recent inception of treated sewer effluent discharge from the San Jose Treatment facility may influence future water quality along Greenbush Draw and the area of Site 2. The San Jose Treatment facility is located approximately 3.5 miles east of Site 2. The facility treats wastewater from the City of Bisbee. As shown on Figure 1, Figure 2, and Figure 3, the outfall for treated effluent is approximately 2.25 miles east of Site 2, into Greenbush Draw at the east boundary of Section 18, Township 24 South, Range 24 East. Groundwater modeling indicates that infiltration of treated effluent along Greenbush Draw will result in increased TDS concentrations in groundwater north of Site 2 (Geoscience Support Service, March 2006). ADEQ considered these groundwater modeling data and other conflicting data. Based on their review, ADEQ approved the City of Bisbee's Aquifer Protection Permit to operate the San Jose Wastewater Treatment Plant and an Arizona



Pollution Discharge Elimination System (AZPDES) permit to discharge treated effluent into Greenbush Draw. A copy of the ADEQ public announcement for the issuance of these two permits is included in Appendix 8.

The Naco, Sonora-Mexico Westside wastewater lagoons are located in Mexico approximately 7,300 feet southeast of Site 2 (SAIC, September 1997). The estimated groundwater flow direction beneath the Westside lagoons is northwest. Groundwater quality data is not available to reveal the sewage treatment facility's impact to groundwater, if any.

Based on the proximity of Site 2 to sulfate-impacted groundwater, Naco, Arizona Wastewater Treatment facility, the Naco, Sonora-Mexico Westside wastewater lagoons and associated piping, and the outfall of treated effluent from the San Jose Wastewater Treatment Plant, future groundwater quality at the proposed location of Site 2 is estimated to be good to very good.

3.3.4 WELL SITE PURCHASE/LEASE AVAILABILITY

Land purchase and/or land lease availability from the State Land Department are estimated to be excellent for Site 2.

3.3.5 ACCESS ROAD EASEMENT AVAILABILITY

It is anticipated that a dedicated dirt access road will be constructed to Site 2. As shown in Figures 1, 2, and 3, the proposed route for the access road will extend south from the well site to Section 23, then east across State land Sections 23 and 24, then north and east to Newell Road within Naco township. The length of dedicated access road is approximately 10,900 feet. Easement across private and/or public property adjacent to the west side of Naco Township is estimated to be fair to good. Availability of securing right of way easement through purchase and/or lease from the State Land Department is estimated to be excellent.

3.3.6 PIPELINE EASEMENT AVAILABILITY

The proposed pipeline will be constructed to convey water from Site 2 to existing well site NWC-4 located at Bisbee Junction. The proposed pipeline will follow the route shown on Figures 1, 2, and 3. Availability of securing right of way easement through purchase and/or lease from the State Land Department is estimated to be excellent. Availability of securing right of way easement across private and/or public property adjacent to the west side of Naco Township is estimated to be fair to good.



3.7 PIPELINE LENGTH

The pipeline length from Site 2 to existing well NWC-4 at Bisbee Junction is estimated to be 34,900 feet. The estimated cost to construct pipeline this distance is high compared with the other alternatives; therefore, the score for length is fair.

SITE 2 EVALUATION SUMMARY	
CRITERION	SCORE
Aquifer Production Capacity	4-5
Aquifer Water Quality - Existing	3-4
Aquifer Water Quality - Future	3-4
Well Site Purchase/Lease Availability	5
Access Road Easement Availability	3-4
Pipeline Easement Availability	3-4
Pipeline Length	2

3.4 SITE 3 EVALUATION

Site 3 is shown on Figure 1, Figure 2, and Figure 3. The Site 3 proposed location is approximately 1,200 feet north of the US-Mexico border in the township of Naco, Arizona. Naco is unincorporated land located on the southern boundary of Cochise County, Arizona. Land for the well site is anticipated to be owned by Cochise County or a private party, depending on the exact location of Site 3.

3.4.1 AQUIFER PRODUCTION CAPACITY

Data from groundwater well NWC-1, previously located approximately 1,300 feet southeast of Site 3, was examined. In a 1953 written communication from Arizona Public Service Company, the specific capacity of well NWC-1 was 14 gallons per minute per foot of drawdown (Littin, June 1987). Literature review did not identify a well log, driller report, or other documents containing information about the drilling and installation of NWC-1. According to Mr. Steve Siegfried of Southwestern Utility Management, Inc., well NWC-1 is abandoned and the land for this well site is no longer owned by the Naco Water Company (Steve Siegfried, December 2006).



Naco Water Company well NWC-2 is located approximately 1,000 feet east of Site 3. The ADWR Well Driller Report for groundwater well NWC-2 indicates "caliechie" to 150 feet bgs, alluvium from 150 to 190 feet bgs, "caliechie" from 190 to 210 feet bgs, and alluvium from 210 to 312 feet bgs. The total depth drilled was 312 feet bgs. First water and static water were reported at 150 feet bgs. Well NWC-2 is shown on Figure 5 - Cross-Section O-O'. Data supplied by Southwestern Utilities Management Inc., indicates the peak sustained groundwater flow delivered to the public water supply system from NWC-2 occurred in March 2006 and measured 43 gpm (Southwestern Utilities Management Inc., June 2006).

The ADWR Well Driller Report for groundwater well NWC-6, located approximately 900 feet north-northwest of Site 3, was examined. The report indicates alluvium to a depth of 130 feet, "volcanic conglomerate" from 130 to 240 feet bgs, alluvium from 240 to 340 feet bgs, and "alluvial with high clay content" from 340 to 410 feet bgs. First water and static water were reported at 140 feet bgs and 130 feet bgs, respectively.

Available information indicate that aquifer production capacity at Site 3 is likely to be very good within the context of the production capacity in the Bisbee-Naco basin. However, the close proximity of Site 3 to well NWC-2 and NWC-6 may result in unacceptable water level decline in this general area. Therefore, aquifer production capacity receives a score of fair to good.

3.4.2 AQUIFER WATER QUALITY - EXISTING

Phelps Dodge sulfate mapping, an estimated westerly groundwater flow north of Site 3, and absence of sulfate impact to well NWC-2 are interpreted to indicate that sulfate impact to groundwater in this area has not occurred.

The Naco, Sonora-Mexico Eastside sewage treatment lagoon facility and related agriculture are located approximately 4,800 feet southeast of the Site 3 (SAIC, September 1997). Despite the estimated groundwater flow direction from the lagoons to the northwest toward Site 3, impacts from the sewage treatment facility to groundwater have not been documented. Available information is not specific enough to ascertain whether or not groundwater has not been impacted by documented wastewater overflows from Naco, Mexico's Westside sewer collection lines and lagoons.

Based on the available data, existing groundwater quality is estimated to be very good. However, sampling of more than one well nearby the proposed location of Site 3 for constituents of interest would be required to confirm groundwater quality.



3.4.3 AQUIFER WATER QUALITY - FUTURE

Phelps Dodge sulfate plume mapping, an estimated westerly groundwater flow north of Site 3, and the absence of sulfate impact to well NWC-2 are collectively interpreted to indicate that sulfate impact to groundwater in this area has not occurred but should be monitored. The distance from Site 3 to the Phelps Dodge sulfate plume is approximately 4,300 feet to the northeast.

Possible well locations for Site 3 are surrounded by the developed areas of Naco, Arizona township. The municipality of Naco, Sonora-Mexico located immediately south of the U.S./Mexico border. Aside from documented accidental releases of untreated sewer effluent from pipelines associated with the Westside lagoon system in Naco, Mexico, available information does not identify the presence of surface land uses that could impact groundwater. However, future surface land uses in Mexico are uncertain and uncontrollable. Available information is not specific enough to ascertain whether or not groundwater could be impacted by documented wastewater overflows from Naco, Mexico's Westside sewer collection lines and lagoons, or by other proposed future land uses.

The recent inception of treated sewer effluent discharge from the San Jose Treatment facility may influence future water quality along Greenbush Draw and the area of Site 3. The facility treats wastewater from the City of Bisbee. As shown on Figure 1, Figure 2, and Figure 3, the outfall for treated effluent is approximately 4,700 feet northeast of Site 3, into Greenbush Draw at the east boundary of Section 18, Township 24 South, Range 24 East. Groundwater modeling indicates that infiltration of treated effluent along Greenbush Draw will result in increased TDS concentrations in groundwater north of Site 3 (Geoscience Support Service, March 2006). ADEQ considered these groundwater modeling data and other conflicting data. Based on their review, ADEQ approved the City of Bisbee's Aquifer Protection Permit to operate the San Jose Wastewater Treatment Plant and an Arizona Pollution Discharge Elimination System (AZPDES) permit to discharge treated effluent into Greenbush Draw. A copy of the ADEQ public announcement for the issuance of these two permits is included in Appendix 8.

Based upon the available data and uncertainty surrounding sulfate migration from the north, possible impacts from the Naco, Sonora-Mexico Westside sewage lagoons, Eastside sewage lagoons and related agriculture, and the outfall of treated effluent from the San Jose Wastewater Treatment Plant, future groundwater quality is estimated to be fair to good.

3.4.4 WELL SITE PURCHASE/LEASE AVAILABILITY

Land lease/purchase availability from public or private owners is estimated to be good for Site 3. Site 3 will require the purchase an/or lease of land as no other undeveloped properties are owned by NWC within Naco township.



3.4.5 ACCESS ROAD EASEMENT AVAILABILITY

Since this proposed well site is located in Naco township, construction of an access road should not be necessary. Therefore, the road construction score is excellent.

3.4.6 PIPELINE EASEMENT AVAILABILITY

The proposed pipeline will be constructed to convey water from Site 3 to well site NWC-4 located at Bisbee Junction. The proposed pipeline will follow the route shown on Figures 1, 2, and 3. It is estimated that utility easements will be required solely from public entities along the pipeline route. Availability of securing utility easements through purchase and/or lease from public entities is estimated to be very good.

3.4.7 PIPELINE LENGTH

The distance from Site 3 to well site NWC-4 located at Bisbee Junction is estimated to be approximately 23,900 feet. The estimated cost to construct pipeline this distance is low compared with the other alternatives; therefore, the score for distance is excellent.

SITE 3 EVALUATION SUMMARY	
CRITERION	SCORE
Aquifer Production Capacity	2-3
Aquifer Water Quality - Existing	4
Aquifer Water Quality - Future	3
Well Site Purchase/Lease Availability	3
Access Road Easement Availability	5
Pipeline Easement Availability	4
Pipeline Length	5



4.0 CONCEPTUAL COST ESTIMATES

Conceptual cost estimates were developed for well installation and related costs for proposed well Site 1, Site 2, and Site 3. The main factors that appear to influence the overall cost for each site are land acquisition, land development, access road length, and pipeline length. These site-specific factors are discussed below. The estimated costs are presented in Tables 3-5.

The estimated costs for well installation, source approval, and plant construction were assumed to be the same for each proposed well site. Similarly, pipeline construction cost from the junction of Newell Road and Naco Highway, north to Purdy Lane, and east to well NWC-4 at Bisbee Junction are assumed to be the same for each proposed well site.

4.1 SITE 1 CONCEPTUAL COST

Site 1 is located within an undeveloped portion of private land, south of the SPS Railroad, between Naco and Bisbee Junction. The conceptual cost estimate assumes that approximately one-quarter acre of land will be purchased or leased to construct the plant site. The land would require clearing and grading to prepare the site for plant construction. An approximate 7,000 foot long access road would be constructed on private land from the junction of Naco Highway and Newell Road to the well site. Electrical power is assumed to be available along the SPS Railroad, however, an electrical service line extension of at least 1,000 feet is assumed to be required to bring power to the well site.

Approximately 26,400 feet of water pipeline would be installed along the pipeline route. The water pipeline would extend east from Site 1, then north and east to the junction of Newell Road and Naco Highway. The pipeline would proceed northeast along Naco Highway and connect to the Country Club Estates water system at the NWC-3 well site. The water main would continue north along Naco Highway to Purdy Lane, then east to Bisbee Junction Road. The pipeline would connect to the Bisbee Junction water system at the NWC-4 well site near Border Road. A booster pump station would most likely be required near Goar Ranch to boost the water to the higher elevation at Bisbee Junction.

4.2 SITE 2 CONCEPTUAL COST

Site 2 is located within an undeveloped portion of State land, where it is assumed that Arizona State trust land may be acquired or leased to construct the plant site. The site is west of Naco and south of the SPS Railroad. Again, the land would require clearing and grading to prepare the site for plant construction. An approximate 10,900 foot long access road would extend across State land, south from Site 2 toward the U.S. Mexico border, then east across Sections 23 and 24, then north and east to Newell Road at the west side of Naco. For the purpose of cost estimation, an electrical service line extension of at least 1,500 feet is assumed to bring power from the SPS Railroad to the well site.



Approximately 34,900 of water pipeline would be installed along the pipeline route. The water pipeline would extend south from Site 2, then east across Sections 23 and 24, then north and east to Newell Road at the west side of Naco. The pipeline would proceed east along Newell Road to the junction with Naco Highway, then northeast along Naco Highway and connect to the Country Club Estates water system at the NWC-3 well site. The water main would continue north along Naco Highway to Purdy Lane, then east to Bisbee Junction Road. The pipeline would connect to the Bisbee Junction water system at the NWC-4 well site near Border Road. A booster pump station would most likely be required near the Goar Ranch to boost the water to the higher elevation at Bisbee Junction.

4.3 SITE 3 CONCEPTUAL COST

The location of Site 3 within the town of Naco. Roads and electrical service would be readily available. The conceptual cost estimate assumes that approximately one-quarter acre of land will be acquired or leased to construct the plant site. The land is assumed to require clearing and grading to prepare the site for plant construction. It is assumed that an access road will not be needed.

Approximately 23,900 feet of water pipeline would be installed along the pipeline route. The water pipeline would extend north from Site 3, then east along Newell Road to the junction of Newell Road and Naco Highway. The pipeline would proceed northeast along Naco Highway and connect to the Country Club Estates water system at the NWC-3 well site. The pipeline would continue north along Naco Highway to Purdy Lane, then east to Bisbee Junction Road. The water main would connect to the Bisbee Junction water system at the NWC-4 well site near Border Road. A booster pump station would most likely be required near the Goar Ranch to boost the water to the higher elevation at Bisbee Junction.



5.0 RECOMMENDATIONS

Based upon the proceeding evaluation, TDC provides the following rationale for our recommendations: while our recommendations are based upon an analysis of available data, these recommendations are conceptually-based because many issues will require further investigation and refinement prior to final implementation. Addressing these outstanding issues will require a more detailed analysis of site specific conditions after a consensus has been reached between the Naco Water Company and Phelps Dodge on the replacement of wells NWC-3 and NWC-4.

The recommendations listed below are influenced by the necessity to resolve the issue of replacing wells NWC-3 and NWC-4 assuming a single-opportunity settlement between Phelps Dodge Mining Company and Naco Water Company. Because of the single-opportunity settlement approach assumed by this investigation, a high score is required on each well siting selection criterion related to production capacity and water quality. Our recommendations assume that the scoring estimates of selection criteria are valid and settlement with Phelps Dodge will be obtained.

Our recommendations are provided below.

- Select Site 2 for installation of two replacement wells.
- Obtain current groundwater sampling data from well NSD-3.
- Under a land use license agreement, install one or two shallow groundwater monitor wells in the area of Site 2 to verify existing groundwater quality.
- Perform Phase 1 Environmental Site Assessment of land for Site 2.
- Execute agreements for lease or purchase of Site 2 land, and access road.
- Construct an access road running from the well site south to Section 23, east across Section 24, and north to Newell Road at the west side of Naco.
- Install two wells on land located west of Naco, south of the SPS Railroad, in the Southeast 1/4 of Township 24 South, Range 23 East, Section 14.
- Install approximately 34,900 feet of water pipeline along the access road, then east along Newell Road to its junction with Naco Highway, northeast along Naco Highway to Purdy Lane, and east to well NWC-4 at Bisbee Junction.
- Install approximately 360 feet (included in the 34,900 foot estimate above) of proposed pipeline from Naco Highway to NWC-3 at Country Club Estates.
- Execute an agreement between Phelps Dodge Mining Company and Naco Water Company that guarantees Naco Water Company will provide land owners along Purdy Lane (including those with Sulfate contaminated wells) potable water service delivered from the new Purdy Lane pipeline. The cost for connection to the pipeline and future water use by these land owners who's wells are impacted with sulfate would be paid by Phelps Dodge Mining Company. This recommendation is intended to satisfy the Mitigation Order issued by the Arizona Department of Environmental Quality.



6.0 CONCLUSIONS

6.1 VALUE-ADDED BENEFITS vis-a-vis PENDING MITIGATION ORDER

Recommendations presented in this report were prepared to provide the most cost-effective, long-term water supply solutions to NWC. Nonetheless, it is very important for all parties involved to recognize that some of the principal recommendations provided herein will also serve to benefit Phelps Dodge, and can actually be leveraged by Phelps Dodge to help minimize mitigation costs it might otherwise be compelled to incur vis-a-vis the mitigation order Phelps Dodge has pending with the ADEQ.

It is anticipated that Phelps Dodge will soon be required to execute a mitigation consent order with the ADEQ to mitigate contaminated groundwater supply impacts to landowners and other groundwater users adversely-impacted by the high-sulfate groundwater contamination associated with the Phelps Dodge Mining Company Warren Mining District former evaporation pond and Warren Ranch Irrigation Area.

Initial consultations with ADEQ's water quality enforcement section appear to indicate that any such mitigation order will likely be quite similar to the mitigation order Phelps Dodge recently executed with the ADEQ to address sulfate groundwater contamination associated with the Phelps Dodge Sierrita Mine. Therefore, it appears as though a principal requirement of the pending mitigation order will most likely require Phelps Dodge to compensate, or otherwise redress, landowners and other groundwater users adversely-impacted by the high-sulfate groundwater contamination present along the length of Purdy Lane - extending from its intersection with Naco Highway eastward to Bisbee Junction.

Inasmuch as the pipeline installation recommended herein would travel this entire distance, Phelps Dodge could then be able to point to this same water supply pipeline as an "alternative to practically and cost effectively provide drinking water that meets applicable drinking water standards and with sulfate concentrations less than 250 mg/L to the owner/operator of a existing drinking water supply determined ...to have an average concentrations in excess of 250 mg/L..." (ADEQ Mitigation Order on Consent Docket No. P-50-06, dated 14 June 2006). Settlement of NWC claims for replacement of water supplies lost from wells NWC-3 and NWC-4, in the manner recommended herein, could be leveraged by Phelps Dodge to provide a very cost-effective and legitimate basis for mitigation order satisfaction relative to landowners and other groundwater users adversely-impacted by the high-sulfate groundwater contamination present along the entire length of Purdy Lane.

In summary, should Phelps Dodge settle with NWC in the manner recommended herein, future settlement costs with almost all other landowners or other groundwater users adversely-impacted by the high-sulfate groundwater contamination would be exponentially reduced.



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