
APPENDIX A4

**Construction Inspection Report
North Plant Transmission Pipeline**

**Construction Inspection Report
for
Newmark OU Remedial Action
Newmark Groundwater Contamination Superfund Site
North Plant Transmission Pipeline**

DRAFT

Prepared for:

**Contract No. 68-W-98-225 / WA No. 015-RARA-09J5
U.S. Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, California 94105**

Prepared by:

**URS Group, Inc.
2520 Ventura Oaks Way, Suite 250
Sacramento, California 95833**

February 2002

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1.0 INTRODUCTION

This report is a summary of field inspections performed during the construction of the North Plant Transmission Pipeline.

The pipeline construction inspection was performed by URS Group, Inc. (URSG) for the United States Environmental Protection Agency (USEPA). URSG performed the inspection under contract number 68-W9-0054 and work assignment number 54-47-9NJ5.

1.1 JOB DESCRIPTION

The North Plant Transmission Pipeline transfers groundwater from three extraction wells to the Newmark North Water Treatment Plant (North Plant). The North Plant removes organic contaminants from the water delivered by the pipeline and is located at 1265 Reservoir Drive. It includes fourteen 20,000-pound granular activated carbon (GAC) vessels, and a total design flow rate of 4,875 gallons per minute (gpm). The vessels operate in seven serial pairs in parallel.

El-Co, Inc. (El-Co) was procured and contracted by the San Bernardino Municipal Water Department (SBMWD) to complete the construction.

The scope of work includes construction of a ductile iron pipeline (DIP) to transfer groundwater from three extraction wells adjacent to the Western Avenue flood control channel to the North Plant for treatment.

The three extraction wells include North Extraction Well No. 1, which is designated by SBMWD as Well No. 7 (Well No. 7), North Extraction Well No. 2 (Well No. 6), and Existing Extraction Well No. 3 (Well No. 3). Pipe was installed at each extraction well and tie-ins were to be completed by the City of San Bernardino Municipal Water Department (SBMWD).

The pipeline begins at Well Number 7 as a 12-inch diameter line at Station 11+83, as shown on the North Plant Transmission Pipeline drawings. The pipe extends northwards along Western Avenue for 620 feet.

The pipeline turns east and crosses underneath a concrete flood control channel. A Southern California Edison (SCE) conduit was also placed under the flood control channel to provide power to Well No. 6. At the location of Well Number 6, on the east side of the flood control channel, a 12" x 16" tee was installed at Station 18+67.

From the 12" x 16" tee, the pipe size increases to 16-inch diameter and follows the flood control channel north for 480 feet and crosses 42nd Street. At the location of Well No. 3, a 16" x 12" tee was installed at Station 24+38. The pipeline continues north along the flood control channel access road for approximately 400 feet, and turns 90° east (Station 28+35) into the North Plant.

DRAFT CONSTRUCTION INSPECTION REPORT
NEWMARK OU REMEDIAL ACTION
NEWMARK GROUNDWATER CONTAMINATION SUPERFUND SITE
NORTH PLANT TRANSMISSION PIPELINE
URS Group, Inc.
Contract No. 68-W-98-225 / WA No. 015-RARA-09J5

Section No. 1.0
02/22/02
Page 2

At Station 29+28 at the North Plant, the 16-inch DIP terminated with a 16" x 20" reducer and a 20" x 24" reducer. This was tied into a 24-inch raw water supply line (plant influent) for the GAC vessels.

2.0 CONSTRUCTION SUMMARY

2.1 TASKS COMPLETED

March 1998

- The Notice to Proceed was dated March 27, 1998.

April 1998

- A preconstruction meeting was held on April 2.
- Excavation for the North Plant pipeline commenced on April 24 at Station 18+03. El-Co began the installation of the pipeline in Western Avenue, south of Well No. 6 and completed the tie-in to Well No. 7 on April 29.
- El-Co excavated through the flood control channel at Western Avenue, and encased the 12-inch DIP in concrete from April 28 to April 29.
- Excavation in the concrete flood control channel from Western Avenue to Well No. 6 commenced on April 30.

May 1998

- Excavation in the concrete flood control channel from Western Avenue to Well No. 6 was completed on May 1.
- On May 1, the 12-inch DIP was properly encased in concrete beneath the flood control channel.
- El-Co poured the flood control channel walls on May 19.
- From May 4 to May 7, El-Co placed 480 feet of 16-inch DIP from Well No.6 to 42nd Street.
- On May 8, El-Co encased a 4-inch Edison conduit in red concrete under Western Avenue.
- El-Co successfully performed a hydrostatic test on the pipeline from Well No. 6 to Well No. 7 on May 13.
- El-Co paved the excavated areas of Western Avenue on May 15.
- On May 15, El-Co encountered a concrete thrust block for a 12-inch water line which paralleled 42nd Street and proceeded north along the flood control channel. El-Co used two 45° bends to construct the pipeline up and over the existing 12-inch water line. The entire trench was

backfilled with sand and a 4-inch thick concrete cap was placed over the trench. Since there were no restrained joints before the 45° bend, a concrete collar was also poured before the first 45° bend to act as a thrust block.

- El-Co tied in the 16-inch pipeline to the North Plant on May 21.
- On May 22, El-Co performed a hydrostatic test on the pipeline between the North Plant and Well No. 7, after installing a blow-off assembly at Station 24+80, and a combination air vacuum / release valve at Station 28+35.

2.2 PROBLEMS ENCOUNTERED AND RESPECTIVE SOLUTIONS

May 1998

- On May 15, El-Co encountered a concrete thrust block for two water lines at Station 24+10. El-Co installed two 45° bends to go up and over the 12-inch water line, sand was used as backfill, and a 4-inch concrete cap was placed over the trench.
- On May 19, two blow-off assemblies were encountered that were not on the flood control record plans at Stations 24+80 and 18+30. The blow-off assemblies were turned away from the flood control channel.
- On May 22, El-Co installed a combination air vacuum/release valve due to a high point in the 16-inch pipeline to release accumulated air.

2.3 QUALITY ASSURANCE TEST SUMMARY

2.3.1 Compaction Testing

Soil compaction tests were taken by CHJ, Inc. (CHJ), a certified independent testing laboratory. CHJ performed tests of the trench backfill and subgrade. All of the compaction tests were taken with a nuclear density gauge, using the Nuclear Density Gauge method per ASTM standard D 2922. All of the compaction tests passed. Compaction test results are contained in Appendix A.

2.3.2 Hydrostatic Testing

The hydrostatic tests were performed on all newly constructed pipelines according to The City of San Bernardino Municipal Water Department (SBMWD) Specification No. 1292, Section 6-1.1. All pipelines tested passed the hydrostatic tests.

2.3.3 Concrete Testing

Concrete compression tests were performed by CHJ. Cylinders were taken during the pour of the flood control channel walls. The compressive strength tests were performed according to ASTM C39 Standard Method for Testing Comprehensive Strength of Cylindrical Concrete Specimens. The slump tests were performed according to ASTM C143, Standard Test Method for Slump of Hydraulic Cement Concrete. Concrete test results are contained in Appendix B.

2.4 AGENCY INVOLVEMENT

The following agencies were involved in the construction of the North Plant Transmission Pipeline:

1. SBMWD was responsible for inspection of the pipeline, purchasing construction materials, and approving the compaction, hydrostatic, and concrete testing.
2. The City of San Bernardino Public Works Department was responsible for road inspection. This included traffic control permits, and asphalt and subgrade compaction.
3. The San Bernardino County Flood Control District (SBCFCD) issued permits associated with construction in the flood control channel, and inspected the concrete encasements and flood control channel wall repair. The SBCFCD also requested compaction tests in the flood control channel.

2.5 CHANGE ORDER SUMMARY

El-Co was contracted with SBMWD; therefore, change orders were managed by SBMWD

2.6 PUNCH LIST ITEMS

A punch list was not issued during the performance of this contract.

2.7 CONCLUSION

The scope of work associated with the North Plant Pipeline was completed according to the plans and specifications. The pipeline was ready for use pending tie-in's to the extraction wells and the North Plant by SBMWD.

Appendix A
Construction Inspection Report
North Plant Transmission Pipeline
Compaction Test Results

Compaction Test Results

Test Number	Station	Depth From Surface (ft)	Testing Method	Required Compaction (%)	Result (% relative compaction)
B.F. 1	16+30	1.5	Sand Cone	90	92
B.F. 2	13+00	6.0	Sand Cone ¹	90	98
B.F. 3	17+88	4.0	Nuclear ²	90	94
B.F. 4	14+00	3.0	Nuclear	90	94
B.F. 5	13+35	3.0	Nuclear	90	90
B.F. 6	12+60	3.0	Nuclear	90	96
B.F. 7*	18+30 (East bank)	1.0 in bank	Nuclear	90	96
B.F. 8*	18+60 (West bank)	1.0 in bank	Nuclear	90	96
B.F. 9	19+50	2.0	Nuclear	90	93
B.F. 10	20+00	2.0	Nuclear	90	96
B.F. 11	21+50	2.0	Nuclear	90	98
B.F. 12	23+25	3.0	Nuclear	90	90
B.F. 13	25+30	2.0	Nuclear	90	96
S.G. 1	13+10	Surface	Nuclear	95	98
S.G. 2	14+10	Surface	Nuclear	95	99
S.G. 3	15+10	Surface	Nuclear	95	99
S.G. 4	16+35	Surface	Nuclear	95	99
S.G. 5	17+89	Surface	Nuclear	95	96
S.G. 6	18+05	Surface	Nuclear	95	98
S.G. 7	19+75	Surface	Nuclear	95	99
S.G. 8	20+50	Surface	Nuclear	95	99
S.G. 9	22+25	Surface	Nuclear	95	99

NOTES:

B.F. = Backfill
 S.G. = Subgrade

- Tests were taken in the concrete flood control channel banks half way up the bank.
- ¹ Sand Cone method per ASTM standard D 1556
- ² Nuclear Density Gauge method per ASTM standard D 2922

URS

A PROFESSIONAL SERVICES ORG.

URS CONSULTANTS

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NORTH HAVEN	TALLAHASSEE

November 13, 1996

Mr. James G. Dye, P.E.
City of San Bernardino
Municipal Water Department
300 N. D Street
San Bernardino, California 92418

62370.60.41.0113
04.c

**Subject: Contract No. 68-W9-0054 / WA No. 54-37-9NJ5
Newmark Groundwater Contamination Superfund Site
Newmark Operable Unit Remedial Design
Area of Concrete Excavated by El-Co Contractors
Drain Line Installation**

Dear Mr. Dye:

The following is a breakdown of the 12,471 square feet (SF) of concrete excavated during installation of the drainline associated with the Newmark drinking water restoration Superfund project.

1. First area in front of Proposed Extraction Well No. 3 on 11th Street:
20' x 28' = 560 SF
2. Second area in front of Proposed Extraction Well No. 3 on 11th Street:
4.5' x 22' = 99 SF
3. From Proposed Extraction Well No. 3 to middle of Mountain View Avenue on 11th Street:
10' x 199' = 1,990 SF
4. From middle of Mountain View Avenue to front of Proposed Extraction Site No. 4 on 11th Street:
6' x 663' = 3,978 SF
5. In front of Proposed Extraction Site No. 4 on 11th Street:
10' x 34' = 340 SF
6. Length of Sierra Way:
4'-3" x 1,295' = 5,504 SF

If you have any questions or require additional information, please do not hesitate to contact me at (916) 929-2346.

Sincerely,

URS CONSULTANTS, INC.

Dwayne Deutscher, P.E.
Site Manager

(62370-F/L111396.dd)

Post-it® Fax Note	7671	Date	11/13/96	# of pages	1
To	James Dye	From	Martha Adam		
Co./Dept.		Co.			
Phone #		Phone #			
Fax #		Fax #			



INCORPORATED

P.O. Box 231 • 1355 E. Cooley Dr., Colton, CA 92324 • Phone (909) 824-7210 • Fax (909) 824-7209

October 11, 1996

City of San Bernardino Water Department

Job No. 96483-1

P.O. Box 710

San Bernardino, California 92402

Attention: Mr. James Dye

Subject: Compaction Report
 Water Line Trench Backfill
 Tract No. 15573
 11th Street and Mountain View Avenue
 San Bernardino, California

Dear Mr. Dye:

This report covers the results of in-place density tests taken to date on the water line trench backfill at the above referenced location.

All tests were taken in coordination with and as requested by the client's representative.

FIELD PROCEDURE:

A total of 10 in-place density tests were taken by the sand volume and nuclear methods between September 13 and October 10, 1996. A representative sample of the soil encountered was returned to the laboratory for determination of the Optimum Moisture Content - Maximum Dry Density curve.

The locations of the in-place density tests are indicated on the attached Field Compaction Test Summary Sheet.

OPTIMUM MOISTURE - MAXIMUM DENSITY RELATION:

ASTM D 1557-78

<u>Soil Type</u>	<u>Classification</u>	<u>Optimum Moisture (Percent)</u>	<u>Maximum Dry Density (PCF)</u>
2	Silty Sand, fine with medium, coarse and gravel to 3/4", brown (SM)	13.0	121.5

RESULTS:

The results of the in-place density tests taken to date, and the relative compaction in each case, are shown on the attached Field Compaction Test Summary Sheets.

LIMITATIONS:

C.H.J., Incorporated has striven to perform our services within the limits prescribed by our client, and in a manner consistent with the usual thoroughness and competence of reputable soils engineers practicing under similar circumstances. No other representation, express or implied, and no warranty or guarantee is included or intended by virtue of the services performed or reports, opinion, documents, or otherwise supplied.

This report reflects the testing conducted on the site as the site existed during the water line trench backfill testing, which is the subject of this report. However, changes in conditions can occur with the passage of time, due to natural processes or the works of man on this or adjacent properties. Changes in applicable or appropriate standards may also occur whether as a result of legislation, application, or the broadening of knowledge. Therefore, this report is indicative of only those conditions tested at the time testing was performed, and the findings of this report may be invalidated fully or partially by changes outside of the control of C.H.J., Incorporated. This report should not be relied upon after a period of one year.

The test results presented herein represent an independent sample of the compaction achieved by the contractor who performed the actual compaction operation. Certain information concerning the depth and location of the water line trench backfill tested was furnished by persons representing themselves as knowledgeable of those conditions. In many cases, independent verification of that information furnished to us by others, or the knowledge of that information by any person representing themselves as knowledgeable, is not possible. That information is relied upon during the performance of these tests.

The contractor performing the work on this project remains primarily responsible and liable for the compaction achieved at this project. Compaction testing by our firm in no way relieves the contractor from his obligation to properly perform his work, and this report does not serve as a warranty or guarantee of the contractor's work or of the information supplied to us by the contractor.

The results in this report are based upon testing performed and data collected at separate locations, and interpolation between these locations, carried out for the project and the scope of services described. It is assumed and expected that the conditions between locations of tests are similar to those encountered at the individual locations where testing was performed. However, conditions between these locations may vary significantly. Should conditions be encountered in the field, by the client or any firm performing services for the client or the client's assign, that appear different than those described herein, this firm should be contacted immediately in order that we might evaluate their effect.

If this report or portions thereof are provided to contractors or included in specifications, it should be understood by all parties that they are provided for information only and should only be used as such.

This report and its contents are not intended or represented to be suitable for reuse on extensions or modifications of the project, or for use on any other project.

Respectfully submitted,
C.H.J., INCORPORATED



Ben Williams
Ben Williams, Senior Staff Engineer

Robert J. Johnson
Robert J. Johnson, G.E. 443
Senior Vice President

BW/RJJ:sp

Enclosure: Field Compaction Test Summary Sheet

Distribution: City of San Bernardino Water Department (4)

FIELD COMPACTION TEST SUMMARY SHEET

Job No. 96483-1

PROJECT: CITY OF SAN BERNARDINO WATER COMPANY - WATER LINE TRENCH BACKFILL
AND FINISH GRADE, TRACT NO. 15573, SAN BERNARDINO, CALIFORNIA

Sheet 1 of 1

Date	Test No.	Location of Test	Depth Of Cut (ft.)	Depth Of Fill (ft.)	Depth Of Test (ft.)	DENSITIES			MC (%)	Soil Type	Remarks or Retest of
						Dry (lbs./cu. ft.)	Max. (lbs./cu. ft.)	Rel. (%)			
9/13/96	BF-1	Station 25 + 90, 11th Street		8.0	4.0-4.5	105.9	121.5	87	15.3	2	
	BF-2	Station 29 + 60, 11th Street		8.0	5.0-5.5	88.9	121.5	73	16.3	2	* See BF-6
	BF-3	Station 29 + 62, 11th Street		8.0	1.0-1.5	111.2	121.5	92	16.2	2	
	BF-4	Station 25 + 92, 11th Street		8.0	1.0-1.5	115.2	121.5	95	16.2	2	
	BF-5	Station 31 + 00, 11th Street		8.0	5.0-5.5	104.3	121.5	86	12.2	2	
9/27/96	BF-6	Station 29 + 90, 11th Street		8.0	5.0-5.5	106.0	121.5	87	10.2	2	
10/2/96	BF-7	Station 32 + 96, 11th Street		5.0	2.0-2.5	98.1	121.5	81	20.1	2	* See BF-10
	BF-8	Station 32 + 96, 11th Street		5.0	2.0-2.5	105.3	121.5	87	15.6	2	* See BF-9
10/10/96	BF-9	Station 32 + 96, 11th Street		5.0	2.0-2.5	108.9	121.5	90	14.5	2	
	BF-10	Station 32 + 96, 11th Street		5.0	2.0-2.5	109.0	121.5	90	16.3	2	

LEGEND: (SG) Tests on Subgrade Elevation; (BF) Tests on Backfill; (FP) Tests on Fill in Progress; (FG) Tests on Finish Grade Elevation;
(MC) Moisture Content; (RX) Rock Corrected; (*) Denotes Failure



C.H.J.

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October 11, 1996

City of San Bernardino Water Department

Job No. 96483-1

P.O. Box 710

San Bernardino, California 92402

Attention: Mr. James Dye

Subject: Compaction Report
 Water Line Trench Backfill
 Tract No. 15573
 11th Street and Mountain View Avenue
 San Bernardino, California

Dear Mr. Dye:

This report covers the results of in-place density tests taken to date on the water line trench backfill at the above referenced location.

All tests were taken in coordination with and as requested by the client's representative.

FIELD PROCEDURE:

A total of 10 in-place density tests were taken by the sand volume and nuclear methods between September 13 and October 10, 1996. A representative sample of the soil encountered was returned to the laboratory for determination of the Optimum Moisture Content - Maximum Dry Density curve.

The locations of the in-place density tests are indicated on the attached Field Compaction Test Summary Sheet.

OPTIMUM MOISTURE - MAXIMUM DENSITY RELATION:

ASTM D 1557-78

<u>Soil Type</u>	<u>Classification</u>	<u>Optimum Moisture (Percent)</u>	<u>Maximum Dry Density (PCF)</u>
2	Silty Sand, fine with medium, coarse and gravel to 3/4", brown (SM)	13.0	121.5

RESULTS:

The results of the in-place density tests taken to date, and the relative compaction in each case, are shown on the attached Field Compaction Test Summary Sheets.

LIMITATIONS:

C.H.J., Incorporated has striven to perform our services within the limits prescribed by our client, and in a manner consistent with the usual thoroughness and competence of reputable soils engineers practicing under similar circumstances. No other representation, express or implied, and no warranty or guarantee is included or intended by virtue of the services performed or reports, opinion, documents, or otherwise supplied.

This report reflects the testing conducted on the site as the site existed during the water line trench backfill testing, which is the subject of this report. However, changes in conditions can occur with the passage of time, due to natural processes or the works of man on this or adjacent properties. Changes in applicable or appropriate standards may also occur whether as a result of legislation, application, or the broadening of knowledge. Therefore, this report is indicative of only those conditions tested at the time testing was performed, and the findings of this report may be invalidated fully or partially by changes outside of the control of C.H.J., Incorporated. This report should not be relied upon after a period of one year.

The test results presented herein represent an independent sample of the compaction achieved by the contractor who performed the actual compaction operation. Certain information concerning the depth and location of the water line trench backfill tested was furnished by persons representing themselves as knowledgeable of those conditions. In many cases, independent verification of that information furnished to us by others, or the knowledge of that information by any person representing themselves as knowledgeable, is not possible. That information is relied upon during the performance of these tests.

The contractor performing the work on this project remains primarily responsible and liable for the compaction achieved at this project. Compaction testing by our firm in no way relieves the contractor from his obligation to properly perform his work, and this report does not serve as a warranty or guarantee of the contractor's work or of the information supplied to us by the contractor.

The results in this report are based upon testing performed and data collected at separate locations, and interpolation between these locations, carried out for the project and the scope of services described. It is assumed and expected that the conditions between locations of tests are similar to those encountered at the individual locations where testing was performed. However, conditions between these locations may vary significantly. Should conditions be encountered in the field, by the client or any firm performing services for the client or the client's assign, that appear different than those described herein, this firm should be contacted immediately in order that we might evaluate their effect.

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Respectfully submitted,

C.H.J., INCORPORATED



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Ben Williams, Senior Staff Engineer

Robert J. Johnson

Robert J. Johnson, G.E. 443
Senior Vice President

BW/RJJ:sp

Enclosure: Field Compaction Test Summary Sheet

Distribution: City of San Bernardino Water Department (4)

FIELD COMPACTION TEST SUMMARY SHEET

Job No. 96483-1

PROJECT: CITY OF SAN BERNARDINO WATER COMPANY - WATER LINE TRENCH BACKFILL
AND FINISH GRADE, TRACT NO. 15573, SAN BERNARDINO, CALIFORNIA

Sheet 1 of 1

Date	Test No.	Location of Test	Depth Of Cut (ft.)	Depth Of Fill (ft.)	Depth Of Test (ft.)	DENSITIES			MC (%)	Soil Type	Remarks or Retest of
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10/10/96	BF-9	Station 32 + 96, 11th Street		5.0	2.0-2.5	108.9	121.5	90	14.5	2	
	BF-10	Station 32 + 96, 11th Street		5.0	2.0-2.5	109.0	121.5	90	16.3	2	

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October 11, 1996

City of San Bernardino Water Department

Job No. 96483-1

P.O. Box 710

San Bernardino, California 92402

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ASTM D 1557-78

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Respectfully submitted,
C.H.J., INCORPORATED



Ben Williams
Ben Williams, Senior Staff Engineer

Robert J. Johnson
Robert J. Johnson, G.E. 443
Senior Vice President

BW/RJJ:sp

Enclosure: Field Compaction Test Summary Sheet

Distribution: City of San Bernardino Water Department (4)

FIELD COMPACTION TEST SUMMARY SHEET

Job No. 96483-1

PROJECT: CITY OF SAN BERNARDINO WATER COMPANY - WATER LINE TRENCH BACKFILL
AND FINISH GRADE, TRACT NO. 15573, SAN BERNARDINO, CALIFORNIA

Sheet 1 of 1

Date	Test No.	Location of Test	Depth Of Cut (ft.)	Depth Of Fill (ft.)	Depth Of Test (ft.)	DENSITIES			MC (%)	Soil Type	Remarks or Retest of
						Dry (lbs./cu. ft.)	Max. (lbs./cu. ft.)	Rel. (%)			
9/13/96	BF-1	Station 25 + 90, 11th Street		8.0	4.0-4.5	105.9	121.5	87	15.3	2	.
	BF-2	Station 29 + 60, 11th Street		8.0	5.0-5.5	88.9	121.5	73	10.3	2	* See BF-6
	BF-3	Station 29 + 62, 11th Street		8.0	1.0-1.5	111.2	121.5	92	16.2	2	
	BF-4	Station 25 + 92, 11th Street		8.0	1.0-1.5	115.2	121.5	95	16.2	2	
	BF-5	Station 31 + 00, 11th Street		8.0	5.0-5.5	104.3	121.5	86	12.2	2	
9/27/96	BF-6	Station 29 + 90, 11th Street		8.0	5.0-5.5	106.0	121.5	87	10.2	2	
10/2/96	BF-7	Station 32 + 96, 11th Street		5.0	2.0-2.5	98.1	121.5	81	20.1	2	* See BF-10
	BF-8	Station 32 + 96, 11th Street		5.0	2.0-2.5	105.3	121.5	87	15.6	2	* See BF-9
10/10/96	BF-9	Station 32 + 96, 11th Street		5.0	2.0-2.5	108.9	121.5	90	14.5	2	
	BF-10	Station 32 + 96, 11th Street		5.0	2.0-2.5	109.0	121.5	90	16.3	2	

LEGEND: (SG) Tests on Subgrade Elevation; (BF) Tests on Backfill; (FP) Tests on Fill in Progress; (FG) Tests on Finish Grade Elevation;
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INCORPORATED

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October 11, 1996

City of San Bernardino Water Department

Job No. 96483-1

P.O. Box 710

San Bernardino, California 92402

Attention: Mr. James Dye

Subject: Compaction Report
 Drain Line Trench Backfill
 Sierra Way
 Tract No. 15573
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Dear Mr. Dye:

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FIELD PROCEDURE:

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The locations of the in-place density tests are indicated on the attached Field Compaction Test Summary Sheet.

OPTIMUM MOISTURE - MAXIMUM DENSITY RELATION:

ASTM D 1557-78

<u>Soil Type</u>	<u>Classification</u>	<u>Optimum Moisture (Percent)</u>	<u>Maximum Dry Density (PCF)</u>
1	Silty Sand, fine with medium, coarse and gravel to 3", dark brown (SM)	12.5	124.5
2	Silty Sand, fine with medium, coarse and gravel to 3/4", brown (SM)	13.0	121.5

RESULTS:

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BW/RJJ:sp

Enclosure: Field Compaction Test Summary Sheet

Distribution: City of San Bernardino Water Department (4)

FIELD COMPACTION TEST SUMMARY SHEET

PROJECT: CITY OF SAN BERNARDINO WATER COMPANY - DRAIN LINE TRENCH BACKFILL
SIERRA WAY, TRACT NO. 15573, SAN BERNARDINO, CALIFORNIA

Job No. 96483-1
 Sheet 1 of 1

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October 11, 1996

City of San Bernardino Water Department

Job No. 96483-1

P.O. Box 710

San Bernardino, California 92402

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OPTIMUM MOISTURE - MAXIMUM DENSITY RELATION:

ASTM D 1557-78

<u>Soil Type</u>	<u>Classification</u>	<u>Optimum Moisture (Percent)</u>	<u>Maximum Dry Density (PCF)</u>
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Enclosure: Field Compaction Test Summary Sheet

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FIELD COMPACTION TEST SUMMARY SHEET

Job No. 96483-1

PROJECT: CITY OF SAN BERNARDINO WATER COMPANY - DRAIN LINE TRENCH BACKFILL
SIERRA WAY, TRACT NO. 15573, SAN BERNARDINO, CALIFORNIA

Sheet 1 of 1

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October 11, 1996

City of San Bernardino Water Department

Job No. 96483-1

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Enclosure: Field Compaction Test Summary Sheet

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FIELD COMPACTION TEST SUMMARY SHEET

PROJECT: CITY OF SAN BERNARDINO WATER COMPANY - DRAIN LINE TRENCH BACKFILL
SIERRA WAY, TRACT NO. 15573, SAN BERNARDINO, CALIFORNIA

Job No. 96483-1

Sheet 1 of 1

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Ben Williams, Senior Staff Engineer



Robert J. Johnson, G.E. 443
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FIELD COMPACTION TEST SUMMARY SHEET

Job No. 96483-1

PROJECT: CITY OF SAN BERNARDINO WATER COMPANY - DRAIN LINE TRENCH BACKFILL
SIERRA WAY, TRACT NO. 15573, SAN BERNARDINO, CALIFORNIA

Sheet 1 of 1

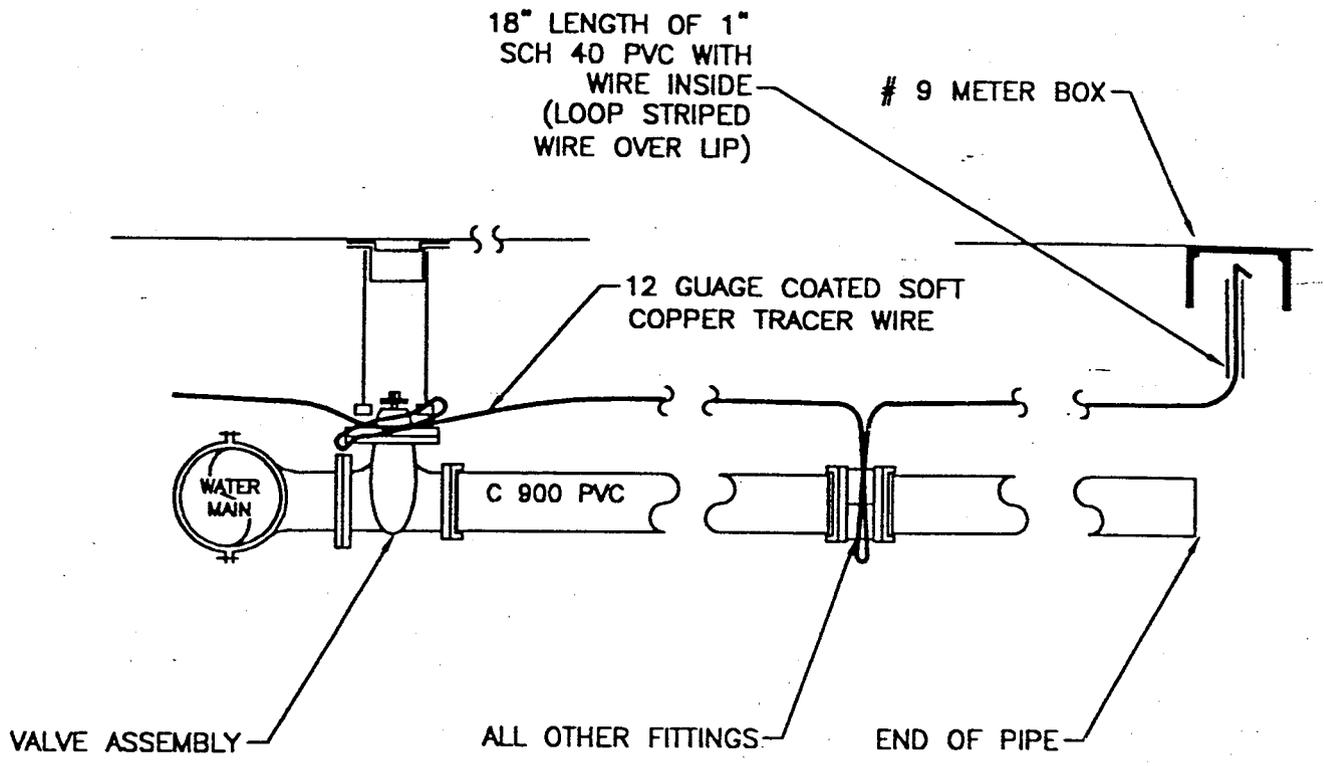
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 (MC) Moisture Content; (RX) Rock Corrected; (*) Denotes Failure

June 19, 1996

Additions and Modifications to Design Drawings:

1. A Tracer Wire is required for the PVC drain line in Sierra Way from 11 Th Street to 9 Th Street. The wire will be supplied by SBMWD and delivered with the fittings. The wire is to be installed in accordance with the attached SBMWD Std. No.W6.8. No un-insulated portion of the wire is to touch metal at any point in the pipeline.
2. The city of San Bernardino Traffic Sections has stated that there are no traffic loops in Sierra Way north of Nine Street.



		SAN BERNARDINO MUNICIPAL WATER DEPARTMENT		DRAWING NUMBER
		TRACER WIRE DETAIL FOR C 900 PVC WATER MAIN		SBMWD
REVISION	DATE	APPROVED <i>W. William Bryden</i>	DATE 6-19-96	W 6.8
SCALE: NONE		W. WILLIAM BRYDEN RCE 28661		

Appendix B
Construction Inspection Report
North Plant Transmission Pipeline
Concrete Test Results

DRAFT CONSTRUCTION INSPECTION REPORT
NEWMARK OU REMEDIAL ACTION
NEWMARK GROUNDWATER CONTAMINATION SUPERFUND SITE
NORTH PLANT TRANSMISSION PIPELINE
URS Group, Inc.
Contract No. 68-W-98-225 / WA No. 015-RARA-09J5

Appendix B
08/24/01

Concrete Test Results

Date Cast	Location	Cylinder Number	Date Tested	Age Tested (days)	Total Load (Pounds)	Compressive Strength (PSI)	Slump (inches)
5/19/98	Flood Control Channel Banks	86435	5/26/98	7	99,350	3,510	2
5/19/98	Flood Control Channel Banks	86436	6/16/98	28	148,810	5,260	2
5/19/98	Flood Control Channel Banks	86437	6/16/98	28	143,730	5,080	2

FAX COVER SHEET

To: Tom J. Alvarez

Firm: Submeridian Municipal Water Department

Fax #: 909-384-5532

From: James C. Basland

Subject: N. Pipeline Construction

URS Greine
2710 Gateway Oaks Drive
Suite 250, North
Sacramento, CA 95833-3504
Telephone: (916) 929-2346
Fax: (916) 929-7263

Date: 7/17/97

Page 1 of: 2

Memo: Tommy, here is a Summary
of the compact. out tests taken on
the North Pipe Line Any more questions
call me at 916-929-2346 - James C.

RECEIVED
MUNICIPAL WATER DEPT.

cc:

North Plant Pipeline compaction.

Test Number	Station	Depth From Surface (ft)	Testing Method	Required Compaction (%)	Result (% relative compaction)
B.F. 1	16+30	1.5	Sand Cone	90	92
B.F. 2	13+00	6.0	Sand Cone ¹	90	98
B.F. 3	17+88	4.0	Nuclear ²	90	94
B.F. 4	14+00	3.0	Nuclear	90	94
B.F. 5	13+35	3.0	Nuclear	90	90
B.F. 6	12+60	3.0	Nuclear	90	96
B.F. 7*	18+30 (East bank)	1.0 in bank	Nuclear	90	96
B.F. 8*	18+60 (West bank)	1.0 in bank	Nuclear	90	96
B.F. 9	19+50	2.0	Nuclear	90	93
B.F. 10	20+00	2.0	Nuclear	90	96
B.F. 11	21+50	2.0	Nuclear	90	98
B.F. 12	23+25	3.0	Nuclear	90	90
B.F. 13	25+30	2.0	Nuclear	90	96
S.G. 1	13+10	Surface	Nuclear	95	98
S.G. 2	14+10	Surface	Nuclear	95	99
S.G. 3	15+10	Surface	Nuclear	95	99
S.G. 4	16+35	Surface	Nuclear	95	99
S.G. 5	17+89	Surface	Nuclear	95	96
S.G. 6	18+05	Surface	Nuclear	95	98
S.G. 7	19+75	Surface	Nuclear	95	99
S.G. 8	20+50	Surface	Nuclear	95	99
S.G. 9	22+25	Surface	Nuclear	95	99

*Tests were taken in the concrete flood control channel banks half way up the bank.

¹Sand Cone method per ASTM standard D 1556

²Nuclear Density Gauge method per ASTM standard D 2922

MEMORANDUM

Tom

URS Greiner

2710 Gateway Oaks Drive, Suite 250N
Sacramento, CA 95833
Telephone: (916) 929-2346
Facsimile: (916) 929-7263

To: James Bowland 4162470 .50.30
04.d

From: Paul Schultz

Date: 18 JUNE 98

Subject: *Flood Control Channel Penetration*

Here is a copy of the Concrete Test Cylinder Data for the channel wall penetration at Western Avenue Station 18+04 West & East Side Slope. Forward a copy to the appropriate parties at the flood control district offices.

Thanks,
Paul



C.H.J. INCORPORATED

P.O. Box 231 • 1355 E. Cooley Drive, Colton, CA 92324 • Phone (909) 824-7210

REC'D JUN 19 1998

CONCRETE TEST CYLINDER DATA

IDENTIFICATION DATA

Contract #SC-98-A-0003

Project: ARCS - Newmark RA
 Client: URS Grenier, Inc. - California
2710 Gateway Oaks Drive, Suite 250 North
Sacramento, CA 95833
 Contractor: Eastland Construction
 Inspector: Mike Seal

Job No. 97722-5
 Report No. 16
 Structure Slope Walls
 Location Western Ave. Sta.
18+04 West & East Sic
Slope

MATERIALS AND MIX DATA

Concrete Supplier: Fourth Street Rock Mix No. CHJ-97163
 Batch Plant Inspection No Yes Ticket No. _____
 Cement Content Sk/Cu-Yd 6.2 Admixtures: _____
 Compressive Strength Required: 7 Day _____ 28 Day 4000

FIELD TEST DATA

Air Temperature: 74 F° Concrete Temperature 76 F°
 Slump: 2 inches Air Content: _____ percent Size: 6x12
 Date Received 5/20/98 Cylinder Markings 1 2 3 4
 Date Cast 5/19/98 Cast by: Fernando Flores

SPECIMEN TEST DATA

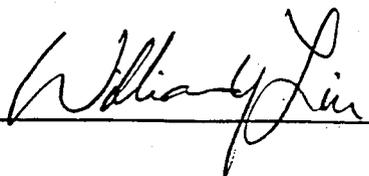
CYLINDER NO.	DATE TESTED	AGE TESTED	TOTAL LOAD	COMPRESSIVE STRENGTH, P. S. I.
16A (86435)	05/26/98	7 days	99,350	3510
16B (86436)	06/16/98	28 days	148,810	5260
16C (86437)	06/16/98	28 days	143,730	5080

Tests by laboratory personnel are in accordance with applicable ASTM methods unless otherwise noted.

DISTRIBUTION:

URS Grenier, Inc. (3)
 Fourth Street Rock (1)

CERTIFIED:



**TRANSPORTATION/FLOOD CONTROL
DEPARTMENT - SURVEYOR**

COUNTY OF SAN BERNARDINO
PUBLIC SERVICES GROUP



825 East Third Street • San Bernardino, CA 92415-0835 • (909) 387-2800
Fax (909) 387-2667

KEN A. MILLER
Director

May 6, 1998

Permit
2633

RECEIVED
EOD/ADMINISTRATION
File: 2-357/2-364/2.04

MAY 13 1998

CITY OF SAN BERNARDINO
MUNICIPAL WATER DEPT.

Slater, Inc.
11045 Rose Avenue
Fontana, CA 92335-7051

Attention: Phil Slater

RE: ZONE 2, WESTERN AVENUE CHANNEL, DEVIL CREEK CHANNEL - PERMIT
NO. P-295048

Dear Mr. Slater:

Reference is made to the concrete mix design you submitted on behalf of the City of San Bernardino Municipal Water Department on April 27, 1998, for the above noted permit.

Please be advised the District has reviewed and hereby approves the mix design listed below and attached.

1. CHJ-97163 - 'A' gradation, 4,000 psi design strength for use on the inverts.

If you have any questions regarding the above, please contact the undersigned at (909) 387-2633.

Sincerely,

KENNETH C. EKE, P.E.
Flood Control Permit Engineer

KCE:eh

Attachments

cc: M. Seal w/attachments

✓ City of San Bernardino Municipal Water Department w/attachments

San Bernardino County
Public Services Group
Flood Control Department
Permit Section

KATELYN A. DAVIS
JON D. ENGLISH

Board of Directors
First District
Second District
THIRD DISTRICT
LARRY ZAVEN

THIRD DISTRICT
Fourth District



P.O. Box 231 • 1355 East Cooley Drive, Colton, CA 92324 • (909) 824-7210

Project:	WESTERN AVE	Date:	August 12, 1997
Application No.:		Job No.:	97016-5
Owner:	County of San Bernardino Flood Control	Mix No.:	CHJ-97163
Architect:		Classification:	
Engineer:		Design Strength:	4000 psi @ 28 days
Contractor:	Slater Construction	Max. Aggregate Size:	1 1/2"
Concrete Subcontractor:		Design Slump:	4"
Concrete Supplier:	Fourth Street Rock	Max. W/C Ratio:	5.2 gals/sk (0.46 by weight)
Aggregate Source:	Lytle Creek, San Bernardino		

Mix Design for One Cubic Yard of Concrete, aggregate saturated surface dry

MATERIAL	WEIGHT LB.	SP GR	ABSOLUTE VOLUME, cu. ft.
Cement, Type II Modified 6.2 sks	583	3.15	2.97
Pozzolan, Class			
Aggregate			
1. Washed Concrete Sand	1257	2.65	7.60
2. 1" Aggregate	843	2.67	5.06
3. 1 1/2" Aggregate	1141	2.68	6.82
4.			
Water 32.0 gallons	267	1.00	4.28
Estimated Entrapped Air (1.0%)			0.27
Admixtures:			
1. WRDA-79 (5 /100)	29.2 fl. oz		
2. (/100)	fl. oz.		
3. (/100)	fl. oz.		

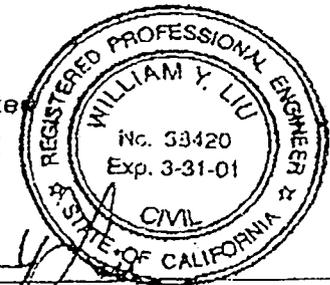
TOTAL 4091 lbs. 27.00 c.f.

Grading Analysis, percent passing U.S. standard sieves

	%	2	1-1/2	1	3/4	1/2	3/8	4	8	16	30	50	100	200	F.M.
Aggregate 1 Sand	39						100	96	83	67	40	19	8	3	2.8
Aggregate 2 1"	26		100	98	80	48	20	2	1						
Aggregate 3. 1 1/2"	35	100	99	38	3	1									
Aggregate 4.															
Combined 1 1/2" max.		100	99	78	61	52	44	38	33	26	16	7	3	1	
Specification limits max			100	80	71	-	53	42	35	28	18	9	3	2	
Green Book "A" min.		100	95	64	55	-	37	32	25	18	10	3	0	0	

Remarks:

Respectfully Submitted
C. H. J., Incorporated



William Y. Liu, R.E.E. 38420

WYL:bjr