AMENDED APPLICATION

W-01445A-10-0517

PART 3 OF 5
BAR CODE # 0000125116

To review remaining parts please see the following:

PART 1 OF 5 BAR CODED #0000125114

PART 2 OF 5 BAR CODED #0000125115

PART 4 OF 5 BAR CODED #0000125117

PART 5 OF 5 BAR CODED #0000125118

ARIZONA WATER COMPANY

Docket No. W-01445A-10-0517

2010 RATE HEARING

(*AMENDED*)

For Test Year Ending 12/31/10

PREPARED

DIRECT TESTIMONY & EXHIBITS

OF

Fredrick K. Schneider

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ARIZONA WATER COMPANY

Direct Testimony of

Fredrick K. Schneider

I. Introduction and Qualifications

Q. PLEASE STATE YOUR NAME, EMPLOYER AND OCCUPATION.

A. My name is Fredrick K. Schneider. I am employed by Arizona Water Company (the "Company") as Vice President of Engineering. My business address is 3805 N. Black Canyon Highway, Phoenix, Arizona 85015.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND.

A. I graduated in 1990 with a Bachelor of Science degree in Hydrology from the College of Engineering and Mines at the University of Arizona, in Tucson, Arizona. Additionally, I have taken graduate level classes at the University of Phoenix.

Q. PLEASE DESCRIBE YOUR WORK EXPERIENCE.

A. In 1987, I began working for the United States Department of Agriculture performing chemical and granular gradation laboratory soils analysis. In 1988, I accepted a position with the City of Tucson as an Engineering Intern in their Engineering department performing civil engineering site reviews, and later transferred to the Water department working on groundwater modeling, environmental remediation and groundwater contamination investigation until I graduated from the University of Arizona in 1990.

Upon obtaining my degree, I joined Boyle Engineering Corporation in Phoenix, Arizona as an Assistant Engineer and was later promoted to the position of Associate Engineer. Boyle Engineering provides consulting engineering services to the public and private sectors in the areas of water and wastewater. During this time, I was involved in a variety of consulting

assignments, including all phases of system planning and design, reconnaissance level investigations, feasibility studies and construction phase services, including water and wastewater master planning, groundwater supply development, surface water supply development, storage reservoir design and construction, treatment facilities, pipeline systems, wastewater collection, treatment and disposal.

In 1995, I accepted a position with Wood, Patel and Associates in Phoenix, Arizona. During that time, my duties consisted of engineering design and project management for various water and wastewater pipeline feasibility analyses, evaluation of alternatives, cost estimating, detailed hydraulic analysis and master planning new developments ranging in size from several hundred to several thousand acres.

In 1998, I joined Citizens Water Resources ("Citizens") as a Senior Development Engineer. I was later promoted to the position of Development Services Supervisor, where I negotiated development agreements, reviewed water and wastewater master plans and facility infrastructure plans, and was responsible for the inspection and approval of constructed facilities for projects within the metropolitan Phoenix area. I became an employee of Arizona American Water Company ("Arizona-American") when its parent company, American Water Company, purchased the water and wastewater assets of Citizens on January 15, 2001, and was subsequently promoted to the position of Development Services Manager, responsible for the same duties described above statewide. In 2003, I moved from engineering to the operations area when I was promoted to the position of Manager of Arizona-American. In that position, I was responsible for the operations of all of Arizona-American's water and wastewater treatment facilities, distribution and collection facilities and customer service. In May 2004, I was promoted to the position of Director of Engineering

for American Water Company's Western Region, where my responsibilities included overseeing all capital planning and engineering activities for American Water Company's operations in Arizona, California, Hawaii, New Mexico and Texas.

In October 2005, I accepted a position as an Associate of Brown and Caldwell, managing the Phoenix Infrastructure department including the design, project management and construction administration of water and wastewater infrastructure projects within the metropolitan Phoenix area.

In August 2007, I joined Arizona Water Company as Vice President of Engineering. My responsibilities now include capital planning, design and construction management of all of the Company's engineering projects.

Q. ARE YOU A MEMBER OF ANY PROFESSIONAL ORGANIZATIONS?

A. Yes. I am a member of the American Water Works Association ("AWWA") and the Arizona Water Association (formerly Arizona Water and Pollution Control Association). I was also a member of the Infrastructure Replacement Group of the Blue Ribbon Panel on Sustainability, a panel formed to address water sustainability that was jointly chaired by the Arizona Corporation Commission (the "Commission"), the Arizona Department of Water Resources ("ADWR") and the Arizona Department of Environmental Quality ("ADEQ").

Q. ARE YOU A REGISTERED PROFESSIONAL ENGINEER?

A. Yes. I have been a registered professional engineer in the State of Arizona continuously since 1995.

Q. DO YOU HAVE ANY OTHER CERTIFICATIONS?

A. Yes. I am an ADEQ Grade 2 certified operator in Water and Wastewater Treatment and a Grade 3 certified operator in Water Distribution and Wastewater Collection.

Q. HAVE YOU TESTIFIED PREVIOUSLY BEFORE THE COMMISSION?

A. Yes. I have previously testified in rate proceedings and Certificate of Convenience and Necessity ("CCN") hearings before the Commission. In addition, I have testified in California before the California Public Utilities Commission and prepared pre-filed testimony in Hawaii and New Mexico. I testified in the Company's last rate application proceeding for the total Company (*see* Docket No. W-01445A-08-0440).

II. Purpose and Extent of Direct Testimony

Q. WHAT IS THE PURPOSE AND EXTENT OF YOUR DIRECT TESTIMONY?

A. For ratemaking purposes, the Company's water systems are divided into three groups, the Western, Eastern and Northern Groups. My testimony concerns the Western Group, which is comprised of the Ajo, Pinal Valley and White Tank water systems. The Pinal Valley Water System ("PVWS") is comprised of the Casa Grande, Coolidge, Tierra Grande and Stanfield water systems, which were consolidated in Decision No. 71845. The PVWS is now comprised of the following four ADEQ public water systems:

ARIZONA WATER COMPANY
PVWS
ADEQ Water Systems

Water System	PWS ID No.
Casa Grande	11-009
Coolidge Airport	11-707
Tierra Grande	11-076
Stanfield	11-012

My direct testimony discusses critical and necessary post-Test Year plant additions in the Pinal Valley and White Tank water systems and at the Phoenix corporate office, the reasons why such additions should be included in this rate case, the Company's planning and budgeting process for the construction of plant additions and improvements and a description of the Company-funded

utility plant additions since the last rate proceeding. My direct testimony also discusses proposed arsenic treatment plant additions in Pinal Valley, transmission and distribution system maintenance costs, and the Company's proposed Pinal Valley CAP Treatment Plant and related water infrastructure in Pinal Valley associated with the Off-Site Facilities Fee. The last topic of my direct testimony discusses lost and unaccounted for water which I characterize as system water losses throughout this direct testimony and the required service line and water main replacements required to reduce water loss in the PVWS to comply with Commission directives in Decision No. 71845.

III. Post-Test Year Plant Additions

Q. IS THE COMPANY PROPOSING ANY POST-TEST YEAR PLANT ADDITIONS?

A. Yes. The Company is proposing post-Test Year Plant Additions for the Pinal Valley and White Tank water systems, as well as for the Phoenix Office.

Q. PLEASE DESCRIBE THOSE ADDITIONS.

A. The projects are identified and described below by water system. Exhibit FKS-1 contains detailed project information and facts describing the utility plant improvements and supporting data.

A. Pinal Valley:

i. Pinal Valley – Consolidated Casa Grande (11-009).

Well No. 27 Pump Replacement (WA 1-4763) - Shortly after the completion of the 2010 storage tank and booster station project, the production of Well No. 27 dropped off rapidly from 450 gpm to 125 gpm over a period of four days. Upon the removal of the well pump by the contractor, Company engineers determined that the impellers and bowl assembly were worn beyond use. Additionally, the well screening showed significant signs of plugging based on a completed well video inspection. A summary of the results is included in Exhibit

FKS-1. This portion of the system operates at higher pressures, and the well pump was fabricated with a double-bolted ductile iron bowl assembly to accommodate these higher pressures. Copies of the site plan, design information, and contract are included in Exhibit FKS-1. This well is critical to meeting peak system demands. Well No. 27 is the only well located in the upper zone in the PVWS and represents approximately twenty percent of the total supply located in this zone. As a result of this project, well production capacity has been restored back to 450 gpm to meet critical water demands of the community without service interruption. This pump replacement project was completed and placed in service on December 20, 2010. The project completion would not normally be considered post-Test Year plant; however, the contractor did not submit its final invoice to the Company until March 2011. Accordingly, the final invoice for this project is being submitted as post-Test Year plant. A copy of the December 20, 2010 completion notice is included in Exhibit FKS-1.

Coolidge Old Town Waterline Replacement (WA 1-4772) – As stated above, in Decision No. 71845, the Commission ordered the Company to reduce system water loss to less than ten percent by July 1, 2011. This waterline replacement project replaces three waterlines located in alleyways between Coolidge and Elm Avenues and from Main Street to Arizona Boulevard (State Highway 87). The Cement Asbestos ("CA") pipe being replaced dates back to the 1930s and 1940s, comprises approximately 6,200 LF of 3 and 4-inch CA pipe, and 200 LF of 6-inch CA pipe. The failing water main is being replaced with 4,193 LF of 6-inch C-900 Polyvinyl Chloride ("PVC") pipe and 2,144 LF of 12-inch C-900 PVC pipe. These main replacement projects were undertaken because the existing failing water mains developed a higher than average number of leaks. The Company's employees have installed numerous repair clamps on these aging waterlines as shown in the repair table included in Exhibit

FKS-1 and specifically have repaired or worked on these sections of water main nearly sixty times since 2005. In addition to the excessive age of these water mains, the frequency and severity of leaks and breaks have been compounded by Tamarack (Salt Cedar) tree roots growing into the couplings of the main, resulting in coupling leaks or breaks as shown in the photos included in Exhibit FKS-1. These types of leaks can go undetected for years since they are typically not visible. All of these main replacements are specifically designed to reduce water losses within the Coolidge area of the PVWS and comply with Decision No. 71845. Water main repair history is included in Exhibit FKS-1. The Company received the Approval of Construction ("AOC") from ADEQ on April 25, 2011. Copies of the construction plans, construction schedule, proposal/contract and ADEQ AOC are included in Exhibit FKS-1. This project was completed on April 1, 2011 and is anticipated to be placed in service on or about May 13, 2011.

Valley Farms Waterline Replacement (WA 1-4773) – This waterline replacement project replaces a waterline located in the Valley Farms portion of the Coolidge water system along Vah Ki Inn Road from Rhodes Court to McGee Road and along Moore Circle from Vah Ki Inn Road to McGee Road. This waterline has developed nearly thirty leaks as shown in Exhibit FKS-1. A significant portion of this waterline was installed in the 1930s when rolled rubber joint gaskets were used. These types of gaskets tend to leak and blow out and are no longer used. This project replaces approximately 2,400 LF of 6-inch CA pipe with 1,241 LF of 12-inch C-900 PVC pipe and 1,112 LF of 6-inch C-900 PVC pipe. Completion of this project is critical to the Company's compliance with the Commission's order in Decision No. 71845 that the Company reduce water loss in all of its water systems including the Coolidge area of the PVWS. Water main repair history is included in Exhibit FKS-1. The Company received the AOC from ADEQ on April 25, 2011. Copies of the construction plans, construction

schedule, proposal/contract and ADEQ AOC are included in Exhibit FKS-1. This project was completed on April 1, 2011 and is anticipated to be placed in service on or about May 6, 2011.

Arizona City Transmission and Distribution Waterline Improvements (WA 1-4774) – The Arizona City Distribution System is interconnected with the PVWS through a single 12-inch transmission line. The transmission line is approximately five miles long starting at the Tanger Booster Station in Casa Grande and ending at the intersection of Battaglia Road and Lamb Road at the northern boundary of the Arizona City Distribution System as shown in Exhibit FKS-1. Well No. 28, the only well source located in the Arizona City portion of the PVWS, is also located at this intersection on the northwest corner. The Company recently installed approximately 2,470 LF of 12-inch Ductile Iron Pipe ("DIP") and 1,500 LF of 16-inch DIP on Lamb Road from Battaglia Road south to Heather Road and on Heather Road from Lamb Road to just east of Kashmir Road. Construction plans, the Company's proposal/contract and Pinal County Public Works approval are included in Exhibit FKS-1. The Company received the AOC from ADEQ on March 8, 2011, copies of which are included in Exhibit FKS-1. These waterline improvements were necessary to better distribute the water from Well No. 28, the 5-mile long transmission line from the Tanger Booster Station in Casa Grande and improve flow throughout the system in accordance with the WaterCAD Hydraulic model included in Appendix 9.4 in Exhibit FKS-10. These improvements will also provide more stable system pressures during peak system demand and increase pumping efficiencies by reducing the head pressure on Well No. 28 and the Tanger Booster Station. This work was completed on January 20, 2011 and placed in service on March 11, 2011.

Well No. 23 Pump Replacement (WA 1-4802) – Production from Well No. 23 has declined from 1,400 gpm to approximately 800 gpm. This well is

critical to meeting peak system demands. The pump has been pulled and the Company's engineers have completed a physical inspection which showed signs of significant wear and the pump requires replacement. All of the column pipe, tube and shaft needs to be replaced. The column pipe and oil tubes are severely corroded with several observed holes, splits and leaks which have caused the failure of several bearing sections and damage to the shaft. Pictures of the column, tube and shaft are included in Exhibit FKS-1. A video of the well casing has revealed severe well plugging which requires cleaning, brushing and bailing before being returned to service. A copy of the well video log is also included in Exhibit FKS-1. When compared to the cost of drilling a new well at an estimated cost of $1,257,949 (as shown in Exhibit FKS-2), replacing the pumping equipment, piping and thoroughly cleaning the well at an estimated cost of $80,720 is the most cost-effective solution. Copies of the pump design information and contract for the pump replacement are included in Exhibit FKS-1. This work is anticipated to be completed and placed in service on or about May 27, 2011.

Pinal Valley – Well No. 14 Pump Replacement (WA 1-4803) – The submersible pump at Well No. 14 has failed. The pump and motor are in the process of being replaced. This work began on April 27, 2011. This well is required to meet peak system demands and for backwashing of the Cottonwood arsenic treatment plant. Copies of the cost estimate, site plan, pump design documentation and contract for the pump replacement are included in Exhibit FKS-1. When compared to the cost of drilling a new well at an estimated cost of $1,257,949 (as shown in Exhibit FKS-2), replacing the pumping equipment at an estimated cost of $35,398 is the most cost-effective solution. This work is anticipated to be completed and placed in service on or about June 17, 2011.

Grading and Drainage Improvements at Valley Farms (WA 1-4807) – As part of the Pinal County building permit for the Company's Valley Farms Storage Tank and Booster Station Improvements which were completed and placed in service December 21, 2009, Pinal County also required the Company to complete certain grading and drainage improvements. A copy of the building permit, grading and drainage requirements and site plan are included in Exhibit FKS-1. The required grading and drainage improvements are currently under construction and are anticipated to be completed and placed in service on or about June 25, 2011.

ii. Pinal Valley – Coolidge Airport (11-707)

Coolidge Airport Waterline Replacement (WA 1-4768) – In Decision No. 71845, the Commission ordered the Company to reduce water loss in all of its systems to less than ten percent by July 1, 2011. Based on the Company's detailed water loss evaluation of the Coolidge Airport water system, it determined that a significant portion of the 6-inch waterline dating back to the 1930s was failing and needed to be replaced. The repair history shows numerous instances of leaks in 2010, the Company completed sixteen separate repairs on the Coolidge Airport water system as shown in Exhibit FKS-1. Based on the frequency and history of breaks and leaks, the Company suspects that there are significant undiscovered leaks likely in this water system that are not visible due to the sandy soil. The Company followed the proposed alignment of the new roadway established in the City of Coolidge Airport Master Plan for construction of the new waterline. Replacement of this aging and failing pipe will dramatically reduce water losses in the Coolidge Airport water system and maintain reliable and adequate water service. Fire flows and pressures will be improved and the frequent pipe failures and main breaks caused by frequent pump cycling and deteriorating water mains will be reduced. The Company received the AOC from

ADEQ on February 9, 2011. Water main repair history is included in Exhibit FKS-1. Copies of the construction plans, construction schedule, proposal/contract and ADEQ AOC are included in Exhibit FKS-1. This project was critically needed by the Company to comply with the Commission's order in Decision No. 71845 for the Company to reduce water losses. Because of the Company's replacement of this aging and leaking water main and its water loss reduction efforts, the Company expects water loss in the Coolidge Airport water system to be significantly reduced and in compliance with the Commission's directive in Decision No. 71845. This project was placed in service on February 9, 2011.

iii. Pinal Valley – Tierra Grande (11-076)

Tierra Grande Well No. 3 Pump Replacement (WA 1-4801) – The Tierra Grande water system PWSID No. 11-076 has two wells, Well No. 1 and Well No. 3, that supply all of the water needed for the water system. The pump at Well No. 3 failed due primarily to wear. The well screening showed significant signs of plugging based on a completed well video inspection. A summary of the inspection results is included in Exhibit FKS-1. The Company engineers have also determined that the well requires a thorough cleaning before it can be returned to service. Both Wells No. 1 and No. 3 are located on the same site approximately 30 feet apart. A site plan illustrating the well locations is included in Exhibit FKS-1. In order to properly clean the well casing for Well No. 3 without degrading water quality at Well No. 1, Well No. 1 must be temporarily removed from service. The cleaning process is expected to take approximately two weeks. Unfortunately, system demands will not allow both wells to be down for this length of time without another source of supply to meet system demands. The most cost-effective way to supply the Tierra Grande water system with the needed potable water during the critical well cleaning process is to install a

temporary, above-ground waterline from the Pinal Valley – Casa Grande water system (PWSID No. 11-009). Copies of the waterline plans, ADEQ approval, permits, contracts and cost estimates are included in Exhibit FKS-1. Well No. 3 is needed to meet peak water system demands, and is anticipated to be returned to service on or about June 10, 2011.

B. White Tank:

Vertical Waterline Relocations for New Flood Control Channel Improvements (WA 1-4810) – Maricopa County Flood Control District ("MCFCD") is constructing an outfall drainage channel along the west side of Jackrabbit Trail as part of the MCFCD regional drainage improvements which is being constructed to alleviate storm flooding of businesses and residences in the area. With the construction of this regional drainage improvement, MCFCD has required the Company to relocate its water facilities that are in conflict with the planned drainage channel improvements. The Company's waterlines are located within Maricopa County Right-of-Way and were installed by permits. Under the terms of these permits, the Company is required to relocate its water facilities at its expense. Copies of MCFCD's relocation request letter and the existing waterline permits are included in Exhibit FKS-1. These waterline relocations are under construction and must be completed to meet water service needs. Copies of the waterline relocation plan, permit and construction contract are included in Exhibit FKS-1. This work is currently under construction and is expected to be completed on or about June 30, 2011.

C. Phoenix Office:

Purchase Additional Leak Detection Equipment (WA 1-4823) – As discussed in detail within Section IX of my testimony, in 2003 the Company implemented an aggressive leak detection program and purchased various types of sophisticated leak detection equipment. With the success of this program, the

Company has been budgeting and purchasing additional leak detection equipment each year. In April of 2011, the Company purchased a fourth set of Digital Loggers manufactured by Flow Matrix, Incorporated. This equipment can be used to survey large portions of a water system and is used throughout the Company's various water systems. With the successes achieved by using the Company's existing three Digital Data Loggers, the Company has purchased a fourth Digital Data Logger. In addition to the Digital Data Loggers, the Company also purchased three additional sets of Leak Noise Amplification Systems used to assist the water system operators in locating leaks. These devices are placed on valves, fire hydrants or service lines and are used to listen for distinct leak noises that travel along the pipe, through the water and sometimes to the surface or through metallic water facilities. A summary of this equipment is included in Exhibit FKS-1. A description of this equipment and its use is described in detail within Section 5.3 of Exhibit FKS-10.

IV. Description of Company-Funded Construction Budgeting Procedures

Q. HOW DOES THE COMPANY DETERMINE WHICH PROJECTS TO FUND IN A GIVEN BUDGET YEAR AND WHAT PROCEDURE DOES THE COMPANY USE TO IDENTIFY A COMPANY-FUNDED UTILITY PLANT CONSTRUCTION PROJECT?

A. Each year, the Company prepares a detailed construction budget for each of its eleven consolidated water systems for the upcoming year. The budgeting process begins with each Division Manager preparing a proposed construction budget for utility plant additions in the water systems they manage. Within the proposed construction budget, each Division Manager identifies the water facilities needed to improve or maintain service to existing customers, based on their management experience and personal knowledge of the water system. For example, Division Managers propose construction projects such as storage

tanks, replacement of or increases in capacity of booster pump stations, new wells or replacement of water mains or transmission lines. These recommendations are made to ensure safe, reliable and adequate water service.

The proposed construction projects are then reviewed and analyzed by the Company's engineering staff, who further research and evaluate the need for each project. Data supporting each project is collected and the engineering staff develops preliminary schematics and cost estimates. Engineering staff also review current and projected water system demands and evaluate production, pumping and storage capacities available to meet such demands. Additional factors reviewed and analyzed include compliance, trends in source water quality and changes in regulations that may affect continued compliance with drinking water standards.

Several days are set aside each year for Division Managers, engineering staff, operations staff and senior management to meet at each Division office to collectively review and discuss each proposed construction project. A field visit is subsequently conducted to review and discuss the larger scale construction projects. The proposed projects are then prioritized by the Company's officers and a final construction budget is prepared and presented to the Company's Board of Directors for review and approval.

Q. WHO DETERMINES HOW MUCH WILL BE ALLOCATED AND APPROVED FOR COMPANY-FUNDED PROJECTS?

A. The Company's Board of Directors establishes the dollar amount of the annual construction budget. Under normal circumstances, the construction budget would increase each year to reflect increasing costs of construction due to increases in the costs of materials and labor, general inflation and additional regulatory requirements. Since the end of 2007, however, the Company's construction budget has been significantly reduced due to the Company's

worsening financial condition. For example, the Company's 2008 capital budget was reduced from $18.9 million to $8.1 million. Additional reductions for the next three budget years were required and authorized by the Company's Board of Directors, further reducing the Company's 2009, 2010 and 2011 capital budgets to $5.0 million, $6.6 million and $8.8 million, respectively.

Q. HOW DO YOU IMPLEMENT THE COMPANY'S CONSTRUCTION BUDGET?

A. Upon Board of Directors approval of the Company's construction budget, the Company's Engineering department prepares detailed construction plans for the planned additions to utility plant and obtains the required regulatory permits and approvals. Once the required approvals have been obtained, the Engineering department releases the project to construction. Major water infrastructure, such as booster pump stations, storage tanks and new wells, are competitively bid by the Company's Engineering department. For pipeline projects, the Division Managers solicit competitive bids from a list of qualified independent contractors. All other factors being equal, these projects are awarded to the qualified contractors submitting the lowest bids.

Q. DOES THE COMPANY FUND ALL INFRASTRUCTURE NEEDED TO SERVE NEW DEVELOPMENTS?

A. No. The Company's annual construction budget is limited to projects funded by the Company. Developers' infrastructure requirements are funded by the developers as their projects proceed.

Q. ARE DEVELOPER ADVANCED FUNDS FOR WATER FACILITIES INCLUDED IN THE COMPANY'S ANNUAL CAPITAL BUDGET?

A. No.

Q. HOW ARE DEVELOPERS' WATER FACILITY REQUIREMENTS DETERMINED AND BUDGETED?

A. The Company works with developers to determine the water facilities required to serve their developments. Such facilities include waterlines, fire hydrants, water services and water meters. However, for larger developments, the facilities required may also include storage tanks, booster pump stations, wells and water treatment plants. The facilities required are included in main extension agreements between the Company and developer. The developers fund these infrastructure requirements, and the project timing is entirely dependent on their development schedule. Since the Company does not fund these infrastructure requirements, it does not include developer advances or contributions within its annual capital budget.

Q. WHAT IS THE BREAKDOWN OF COMPANY-FUNDED INFRASTRUCTURE VERSUS DEVELOPER-FUNDED UTILITY PLANT ADDED SINCE THE LAST RATE APPLICATION THAT INCLUDED THE WESTERN GROUP?

A. The breakdown of Company-funded versus developer-funded infrastructure follows the growth characteristics of each water system. With the ongoing recession, the amount of developer-funded infrastructure has dropped sharply with the cessation of building in the Western Group. With the Company's reduced earnings, Company-funded utility plant additions have also decreased. In the Western Group, developers funded 56.3 percent of the total utility plant added between January 2008 and December 2010.

V. <u>Description of Company-Funded Utility Plant Additions For The Western Group</u>

Q. SINCE THE LAST RATE CASE APPLICATION, ARE THERE NEW PUBLIC WATER SYSTEMS WHICH THE COMPANY OPERATES?

A. Yes. The Company now operates a water system serving the Coolidge Airport.

Q. HOW LONG HAS THE COMPANY OPERATED THE WATER SYSTEM THAT SERVES THE COOLIDGE AIRPORT?

A. The Company has operated the Coolidge Airport water system since November 1, 2007.

Q. PLEASE SUMMARIZE THE COMPANY-FUNDED UTILITY PLANT ADDED TO THE WESTERN GROUP SINCE DECEMBER 31, 2007.

A. From the beginning of 2008 through June 30, 2011, the Company annually funded construction projects for each Western Group system to maintain or replace infrastructure, resolve operational problems, address safety concerns, comply with Safe Drinking Water Act requirements and make the utility plant additions necessary to maintain safe, reliable and adequate water service to its customers. A summary of the cost of these improvements follows:

ARIZONA WATER COMPANY Western Group Company-Funded Utility Plant Added From 2008 to June 30, 2011[1]		
Ajo	**PVWS**	**White Tank**
$79,682	$9,349,540	$2,306,938

The cost of the utility plant additions for the three water systems in the Western Group represent infrastructure needed to maintain reliable and adequate water service. Due to the Company's weakened financial condition, utility plant additions budgeted in 2008, 2009, 2010 and 2011 did not include all plant identified by the Company's Division Managers or Engineering staff as being necessary. To improve this situation, the Company is proposing to continue the Arsenic Cost Recovery Mechanism ("ACRM") for its Western Group, establish an Off-Site Facilities Fee and adopt a Distribution System Improvement

[1] Excludes post-Test Year plant additions, which were approved as part of Docket No. W-01445A-08-0440 and includes post-Test Year plant additions sought in this Rate Case Application.

Charge ("DSIC"). Mr. Harris and Mr. Garfield address the specific details of these proposals in their direct testimony.

The following table summarizes the length of water mains by pipe diameter added to each system since the last rate case.

Linear Feet Of Water Pipelines Added From January 1, 2008 thru June 30, 2011			
Water Main Diameter	**Ajo**	**PVWS**	**White Tank**
6-inch	1,171	6,540	3,016
8-inch	N/A	2,159	180
12-inch	N/A	13,409	2,007
16-inch	N/A	2,352	5,807
24-inch	N/A	372	N/A

A. Ajo:

In Ajo, capital expenditures remained stable, but lower than optimum. The Company completed water main replacements and tie-ins to improve service, system pressure and system reliability. This replacement project was completed in late 2008 comprising approximately 1,100 LF of 6-inch DIP in the alley between Cameron and Sartillon Avenues. The remaining capital investments consisted of replacement of service lines and main line valves and other miscellaneous items.

B. Pinal Valley:

i. Pinal Valley – Consolidated Casa Grande (11-009)

The PVWS experienced a rate of growth from 2008 through 2010 that was significantly slower than during the previous rate case period. Notable Company-funded capital improvements included the design and construction of eight underground pipe sleeved waterline replacements under the Union Pacific railroad tracks. These replacements were required due to the addition of a second railroad track constructed adjacent to the existing track. The Company

also completed the first three phases of the Pinal Valley Supervisory Control And Data Acquisition ("SCADA") project as described below.

The first three phases focused on:

1. Detailed design and programming.

2. Purchase and installation of SCADA computers, software and physical hardware at control centers located in the Casa Grande and Coolidge areas.

3. Installation of a water treatment plant control system at the nitrate treatment plant located in Coolidge at Wells No. 9 and No. 10.

4. Installation of a pump and tank level control system at the Coolidge elevated storage tank and booster station in Coolidge at Well No. 7.

5. Construction of the Burgess Peak Tank controls and primary repeater in Casa Grande, which is the primary control for two centralized arsenic water treatment plants' production and serves as a repeater site for communication for all Pinal Valley water treatment, production and storage facilities.

6. Installation of a secondary repeater at Casa Grande Well No. 27 to relay data from the easternmost portion of the PVWS to the central SCADA system in Casa Grande.

7. Installation of SCADA design, construction and programming for the two largest arsenic treatment plants and eleven wells that supply water to these arsenic treatment plants. The production from these two arsenic treatment plants supply over half (approximately 55 percent) of the PVWS production. The SCADA system monitors over 70 critical arsenic treatment processes.

In addition to the above, the Company replaced several large well pumps and motors, rehabilitated one well, replaced booster pumps, motors, and chemical pumps and installed miscellaneous new electrical controls and a power

supply to a critical well. The Company also constructed waterline and service line replacements, waterline tie-ins to loop waterlines to improve pressure and reliability.

Plant Addition Summary For PWSID No. 11-009
Project Name
Purchase Property for Storage Tank and Booster Pump Station
Replace the Electrical Panel at Well No. 7
Construct Cathodic Protection at Scott Drive Tank
Replace Pumping Equipment at CG Well No. 19
Install 1,000 LF of 24-inch Water Main on Hacienda at McCartney Road
Install Phase One of the SCADA System
Install Phase Two of the SCADA System
Replace Portion of Block Wall at Tanger Booster Pump Station
Construct Block Wall around CG Well No. 17 and Well No. 20
Install 1,800 LF of 12-inch C-900 on Vah Ki Inn Road
Install 2,000 LF of 8-inch C-900 on McGee Road South of Vah Ki Inn Road
Install Pumping Equipment at Well No. 13
Replace Pumping Equipment at CG Well No. 24
Relocate and Adjust Water Main Crossings at Several Locations due to Railroad Expansion
Construct Phase Three of the SCADA System
Install New Piping at Tanger Booster Pump Station to Improve Flow and Pressure
Convert Mylar Maps to Digital and Map the Pinal Valley Water System
Purchase Leak Detection Equipment
Construct New Service Entrance Section and Electrical Panel for CG Well No. 10
Install 600 LF of 6-inch C-900 in the Alley East of Washington
Replace Pumping Equipment at CG Well No. 27
Vertical Water Main Realignment due to City of Casa Grande Sewer line Conflict
Replace CLC Water Main on Peart Road South of Earley with New Valve
Replace Pumping Equipment at CG Well No. 10
Construct pH Adjustment at CG Well No. 31
Construct 16,000 Gallon Storage Tank and Booster Pump at CG Well No. 27
Re-Equip Valley Farms Well No. 1
Vertical Water Main Realignment along Cottonwood Lane due to City of Casa Grande Storm Drain Conflict
Replace Pumping Equipment at CG Well No. 21
Vertical Water Main Realignment due to Irrigation Improvement Project
Replace Pumping Equipment at CL Well No. 10
ROW Lease from the State Land Department
Replace Pumping Equipment at CG Well No. 27
Replace 200 LF of 6-inch PVC w/12-inch DIP on Vah Ki Inn Road at the PMIP Canal Crossing

ii. Pinal Valley – Coolidge Airport (11-707)

A list of significant projects completed for ADEQ PWSID No. 11-707 is included in the following table:

Plant Addition Summary For PWSID No. 11-707
Project Name
Replace Pumping Equipment at CL Airport Well No. 1 North
Construct 15,000 Gallon Storage Tank and Booster Pump Station
Replace Pumping Equipment at CL Airport Well No. 2 South

iii. Pinal Valley – Stanfield (11-012)

A list of significant projects completed for ADEQ PWSID No. 11-012 is included in the following table.

Plant Addition Summary For PWSID No. 11-012
Project Name
Replace Suction and Discharge Piping and Booster Pumps at Stanfield
Replace Pumping Equipment at Well No. 3

C. **White Tank:**

The White Tank system continued to experience slow growth from 2008 through 2010. Capital improvements included the design and construction of a transmission pipeline critically needed to adequately transport water across the water system. Additionally, this transmission pipeline improves operational efficiencies in the lower zone, significantly improving flow capacities.

Other White Tank system improvements include replacement of well pump motors, rehabilitation of a well, booster pump station upgrades and pump replacements, installation of new electrical controls and power supply to a critical water treatment plant and pumping facility and waterline replacements. At the existing nitrate treatment plant, additional pre-treatment filtration (bag filters) were installed to increase system reliability by removing particulate matter prior to water treatment, thereby reducing the potential for treatment plant disruptions and maintenance impacts. A nitrate analyzer was also installed in compliance with a Maricopa County Environmental Services approved blend plan to ensure

the safety of all water produced by the system. A list of significant projects completed within the White Tank water system is included in the following table.

COMPLETED PROJECTS WHITE TANK WATER SYSTEM
Project Name
Install 5,280 LF 16-inch DIP to Resolve Pressure and Flow Restrictions
Install 2,650 LF of 6-inch DIP on Latham and Portland Street
Replace and Install VFD Booster Pump at the Beautiful Arizona Estates Booster Site
Rebuild 2-50HP Booster Pumps at Monte Vista
Replace Service Entrance Section at Monte Vista
Install Alarms, Controls for Nitrate Analyzer at Monte Vista and Pre-Filtration Equipment Well No. 7
Replace Pumping Equipment at Well No. 2
Replace Pumping Equipment at Well No. 4
Construct Asphalt Driveway and Grading/Drainage Facilities at Well No. 7

VI. Proposed Arsenic Treatment Plant Additions

Q. DOES THE COMPANY NEED TO CONSTRUCT ADDITIONAL ARSENIC TREATMENT PLANTS IN THE WESTERN GROUP?

A. Yes. Because of increasing arsenic levels in the Company's PVWS wells, the Company plans to expand the treatment capacity of the existing Henness Road arsenic treatment plant. In addition, a new arsenic treatment plant for Coolidge Well No. 13 must be constructed in the PVWS because of sharply rising arsenic levels that do not comply with the Maximum Contaminant Level ("MCL") as shown in Exhibit FKS-4. Construction of these arsenic treatment plants is required for the Company to comply with the federally mandated safe drinking water standards for arsenic. The Company is proposing to recover the cost of compliance with stringent new arsenic standards through the continuation of the ACRM, as addressed in Mr. Garfield's and Mr. Harris' testimony.

In Decision No. 71845, the Commission authorized continuation of the ACRM in the Company's Sedona and Superstition water systems. Mr. Harris also discusses continuation of the ACRM in Section IV of his direct testimony.

Q. WHY IS THE COMPANY PLANNING TO EXPAND THE TREATMENT CAPACITY OF THE HENNESS ROAD ARSENIC TREATMENT PLANT?

A. The Company needs to expand this treatment plant to make full use of existing wells that require arsenic treatment due to rising arsenic levels that do not comply with the MCL.

The Cottonwood Lane arsenic treatment plant is at full capacity and cannot treat all source capacity currently available at this arsenic treatment plant. In addition, the Cottonwood Lane site is too small to accommodate expansion. The Company anticipated future expansion needs at the Henness Road arsenic treatment plant and its design was based on a modular expandable plant design. The Henness Road arsenic treatment plant site is sufficiently sized to accommodate two additional vessels, increasing the arsenic treatment plant capacity by 1,350 gpm, enough capacity to treat Well No. 25. Well No. 25 now pumps primarily to the Cottonwood Lane arsenic treatment plant, but under the Company's proposed expansion of the Henness Road arsenic treatment plant, water from Well No. 25 (approximately 1,230 gpm) will be pumped to the Henness Road arsenic treatment plant. This expansion will treat all incoming source capacity to comply with the arsenic safe drinking water standard. The total capacity of the Henness Road arsenic treatment plant will be expanded from 4,050 gpm to 5,400 gpm.

Currently, the Cottonwood Lane arsenic treatment plant accounts for 34 percent of the total water supply to the Casa Grande area of the PVWS. After the reallocation and expansion, the percent of supply for the Cottonwood Lane and Henness Road arsenic treatment plants will be 34 percent and 31 percent, respectively. As noted, the reallocation of these sources and expansion of this plant will also allow full use of those arsenic-contaminated wells within the system and postpone the need for additional supplies for this area.

CURRENT WELL CAPACITY AND HIGHEST RECORDED ARSENIC LEVELS		
WELL NO.	FLOW (GPM)	ARSENIC LEVEL (PPB)
10	840	11
14	160	10.5
17	700	13
19	1500	13.6
21	680	12
23	1500	17.2
24	920	15
25	1230	16
26	1360	50
30	720	30
31	1045	63

The existing arsenic treatment process, coagulation/filtration, will also be used for this expansion. The schedule for the expansion is as follows:

ACTIVITY	DURATION
Design and Permitting	8 months beginning January 1, 2012.
Bidding	30 days
Procurement	5 months
Construction	8 months with a completion date of May 1, 2014.

The preliminary cost estimate for the Henness Road arsenic treatment plant expansion is $900,000.

Q. WHY IS THE COMPANY PLANNING TO CONSTRUCT A NEW ARSENIC TREATMENT PLANT AT COOLIDGE WELL NO. 13?

A. Construction of an arsenic treatment plant at Coolidge Well No. 13 is needed to comply with the federally mandated arsenic MCL and to provide the necessary supply to ensure adequate service during peak system demands. When this well was originally drilled and placed in service in 2006, the arsenic levels were approximately 6 parts per billion ("ppb") which was below the new arsenic MCL of 10 ppb. The well has been in service reliably since that date, but water

sampling results now show arsenic levels at or above the 10 ppb MCL as depicted in Exhibit FKS-4. The well cannot be used until a new arsenic treatment plant is completed. A system analysis, included in Exhibit FKS-3, shows a shortage of approximately 380,000 gallons per day ("GPD") when Coolidge Well No. 13 cannot be used. Therefore, Coolidge Well No. 13 is a critically needed source of supply and is required to maintain safe, reliable and adequate water service in this area.

Q. WHAT IS THE CURRENT STATUS OF THIS ADDITIONAL ARSENIC TREATMENT PLANT?

A. The Company is evaluating arsenic treatment process alternatives to determine the best available treatment technology and cost-effective arsenic treatment process to construct at Coolidge Well No. 13. Once this process is completed, the Company will prepare the Site Plan and Use Permit for City of Coolidge approval. Once this approval is received in late 2011, the Company will proceed with detailed design drawings followed by project bidding and construction. The preliminary cost estimate for the Coolidge Well No. 13 arsenic treatment plant is $1,750,000.

VII. Transmission and Distribution System Maintenance

Q. ARE EFFORTS TO REDUCE WATER LOSS LIMITED TO CAPITAL EXPENDITURES ASSOCIATED WITH REPLACING AGING INFRASTRUCTURE?

A. No. A significant amount of the Company's effort to reduce water loss is focused on maintenance of its transmission and distribution ("T&D") systems. The Company incurs a significant amount of operating expenses to maintain its T&D systems and repair main breaks and service leaks. Between January 2008 and December 2010, the Company repaired over 800 leaks or more than one leak repaired each workday as shown in the table below.

Water Main and Service Line Leaks	
YEAR	LEAKS REPAIRED
2008	275
2009	256
2010	271

Q. HAS THE COMPANY BEEN ABLE TO MAINTAIN ITS NORMAL LEVEL OF TRANSMISSION AND DISTRIBUTION SYSTEM MAINTENANCE WITH THE CURRENT ECONOMIC CONDITIONS AND DETERIORATING EARNINGS?

A. No. As explained by Mr. Harris in Section II of his direct testimony, the Company implemented a number of significant, but temporary, cost-cutting measures in response to the economic downturn beginning in 2008, including a focused reduction in the level of costs devoted to the maintenance of the Company's T&D systems within minimum levels sufficient to maintain adequate and reliable service. As discussed in Section VI of Mr. Reiker's direct testimony, the Company succeeded in reducing T&D maintenance expenses by over $770,000, or 23.0 percent from 2007 levels. However, a consequence of the Company's cost-cutting measures was a further (though hopefully temporary) limitation in the Company's ability to adequately respond to and reduce water loss.

Q. CAN THE COMPANY CONTINUE TO REDUCE WATER LOSS AND MAINTAIN ITS T&D SYSTEMS EFFECTIVELY WITHOUT INCREASING THE AMOUNT EXPENDED ON THESE EFFORTS?

A. No. Short term (1-3 years) reductions in T&D maintenance cannot be continued. The continued reduction and deferral of T&D maintenance (and associated expenses) will lead to long-term maintenance problems and increased water loss. It is vital that, besides replacing old failing waterlines, the Company also increase the amount spent maintaining its T&D to normal levels in the near future so it can prolong the useful lives of such infrastructure and continue to reduce

water loss. Again, these cost-cutting measures were meant to be only for the short term and were not intended as long-term reductions.

Q. HOW WILL THE COMPANY BE ABLE TO REDUCE WATER LOSS IF T&D EXPENSES WERE REDUCED TO ABNORMALLY LOW LEVELS THROUGH COST-CUTTING MEASURES IN 2008?

A. By normalizing T&D expenses through pro forma adjustments. *See* Mr. Reiker's Direct Testimony, pages 19-20.

Q. WILL THE COMPANY BE ABLE TO COMPLY WITH THE COMMISSION'S DIRECTIVE TO REDUCE WATER LOSS TO LESS THAN TEN PERCENT FOR ALL OF ITS SYSTEMS WITHOUT INCURRING ADDITIONAL T&D EXPENSES?

A. No. A critical aspect of the Company's efforts to reduce water loss includes locating and repairing water main and service line leaks and breaks, all of which are maintenance expenses and not capital expenditures.

Q. WILL THE COMPANY BE BETTER POSITIONED TO COMPLY WITH THE COMMISSION'S WATER LOSS REDUCTION DIRECTIVE IF THESE ADJUSTMENTS ARE APPROVED?

A. Yes.

VIII. <u>Off-Site Facilities Fee</u>

Q. WHAT IS THE AMOUNT OF THE COMPANY'S PROPOSED OFF-SITE FACILITIES FEE?

A. As discussed in Section VII of Mr. Harris' direct testimony, the proposed Off-Site Facilities Fee tariff is $3,500 for each new service connection with a 5/8 x 3/4-inch meter. The amount of the Facilities Fee increases for larger meter sizes. The proposed Off-Site Facilities Fee tariff is included in Mr. Harris' direct testimony as Exhibit JDH-9.

Q. WHAT FACILITIES DOES THE COMPANY PROPOSE TO FUND WITH THIS FACILITIES FEE?

A. The Company intends to use Facilities Fees to fund major regional water supply and treatment facilities needed to meet the water supply requirements of the growing customer base the Company expects in the future. The facilities are primarily the Pinal Valley Regional surface water treatment plant ("Pinal Valley CAP Treatment Plant") and the necessary transmission and distribution mains, storage tanks and booster stations needed to treat, store, pump and ultimately provide safe, reliable and adequate water service and to transition to sustainable supplies. Sustainable supplies are needed to meet the needs of increased customers projected in the future in this area. The preliminary estimated cost to design and construct the Pinal Valley CAP Treatment Plant and all related infrastructure facilities is approximately $81.8 million, as detailed in Exhibit FKS-5.

The phasing of the proposed infrastructure related to the Off-Site Facilities Fee is depicted in Exhibit FKS-6. The total project is expected to be constructed in phases over a 20-year time frame, as described in Exhibits FKS-6 and FKS-7.

Q. PLEASE DESCRIBE THE PINAL VALLEY CAP TREATMENT PLANT.

A. The Pinal Valley CAP Treatment Plant is a surface water treatment plant being planned and designed to provide a renewable water source of supply for the Company's Pinal Valley service area. The PVWS has a combined annual CAP allocation of 10,884 acre-feet, or the equivalent of the need for a potential 10 Million Gallon per Day ("MGD") treatment capacity. Additional available CAP water allocations may be available in the future, if needed. A copy of the Pinal Valley CAP Treatment Plant site layout is included as Exhibit FKS-8.

Q. DOES THE CONSTRUCTION OF THE PINAL VALLEY CAP TREATMENT PLANT REQUIRE A SIGNIFICANT INVESTMENT?

A. Yes. When complete, facilities will be in place to treat and deliver CAP water and will provide sustainable water benefits to customers in the Company's PVWS. Mr. Harris has provided direct testimony in Section VII, describing the Company's proposed Off-Site Facilities Fee tariff to fund the Pinal Valley CAP Treatment Plant and its related infrastructure.

Q. WHAT BENEFITS ARE ACHIEVED BY BALANCING THE COMPANY-FUNDED INFRASTRUCTURE WITH DEVELOPER-FUNDED INFRASTRUCTURE?

A. The Company's goal is to have developers, not existing customers, pay for the cost of water facilities needed to serve new developments. Having developers fund infrastructure results in lower overall cost of service and more gradual rate increases. In addition, the risks related to speculative development are borne by developers and not existing customers.

Q. WHAT WILL THE RATE IMPACT BE FOR EXISTING PVWS CUSTOMERS TO FUND CONSTRUCTION OF THE PINAL VALLEY CAP TREATMENT PLANT?

A. As described in Section VII of Mr. Harris' direct testimony, the Pinal Valley CAP Treatment Plant will be funded from Facilities Fees and not by the Company. Construction of the Pinal Valley CAP Treatment Plant and associated water facilities will be funded by developers and customers should not have to pay for these facilities.

Q. WHY DOES THE COMPANY CONSIDER THE PROPOSED PINAL VALLEY CAP TREATMENT PLANT TO BE A REGIONAL PLANT?

A. Because it will be treating the Company's Casa Grande and Coolidge CAP allocations for use within all systems in the Company's entire PVWS, comprising approximately 232 square miles.

Q. HOW MANY CONNECTIONS COULD BE SERVED BY THE PINAL VALLEY CAP TREATMENT PLANT?

A. The Company's Pinal Valley CAP allocations total 10,884 acre-feet. Based on the average residential water usage in the PVWS of 9,664 gallons per month (See Schedule H-2, Page 4 of the Company's application), or 0.30 acre-feet per residential connection per year, the Pinal Valley CAP Treatment Plant will have the capacity to supply approximately 28,650 equivalent residential units or an equivalent population of 85,950. In addition to the Company's existing Pinal Valley CAP allocations, there is the potential to secure contracts for non-Indian agricultural priority CAP water and to lease CAP supplies from other subcontractors.

Q. IN ADVANCE OF THE CONSTRUCTION, WHAT OTHER STEPS WILL THE COMPANY TAKE TO DESIGN AND PREPARE FOR CONSTRUCTION OF THE PINAL VALLEY CAP TREATMENT PLANT AND RELATED FACILITIES?

A. There are several engineering tasks that must be completed in advance of the construction. These include:

1. Acquiring rights-of-way, permits or easements.

2. Completing additional minor land acquisitions.

3. Submitting construction drawings for the Pinal Valley CAP Treatment Plant to the U.S. Department of the Interior's Bureau of Reclamation for environmental approvals.

4. Obtaining a Pinal County Conditional Use Permit, as the land is currently zoned for agricultural use; and

5. Coordinating with the local power company to bring power to the Pinal Valley CAP Treatment Plant, its associated booster pump stations, wells and to establish telecommunication, sewer and other utility or supporting services.

Upon completion of the above-referenced engineering tasks, the Company will be ready to prepare necessary documents to bid the design, which will culminate in the completion of full construction drawings for the Pinal Valley CAP Treatment Plant.

Q. WHAT PROGRESS HAS THE COMPANY MADE TO DATE IN PREPARING FOR THE PINAL VALLEY CAP TREATMENT PLANT CONSTRUCTION?

A. In 2001, the Company started planning the Pinal Valley CAP Treatment Plant in central Pinal County by identifying and purchasing the Real Property near Coolidge, in close proximity to the CAP canal.

In 2006, the Company solicited proposals from and interviewed Arizona's most qualified surface water treatment design and construction consultants. Through this competitive process, Carollo Engineers was selected to proceed with a comprehensive Utilization Plan and Conceptual Design report for the Pinal Valley CAP Treatment Plant.

On March 30, 2005 the Company submitted its application to the Arizona State Land Department ("ASLD") for right-of-way access to cross state land from the CAP canal to the proposed Pinal Valley CAP Treatment Plant site. The lease for the right-of-way was approved by the ASLD and the lease agreement between ASLD and the Company was executed on December 11, 2009.

Q. WHEN DOES THE COMPANY EXPECT TO COMMENCE CONSTRUCTION OF THE PINAL VALLEY CAP TREATMENT PLANT AND ASSOCIATED FACILITIES?

A. The construction of the Pinal Valley CAP Treatment Plant and related infrastructure facilities will commence once sufficient funds are raised through the proposed Facilities Fee. Collection of the required funds is dependent on customer growth in the PVWS. Exhibits FKS-6 and FKS-7 depict the

construction schedule anticipated for this important water facility based on current growth projections.

IX. Reducing Water Losses – Current Program

Q. HOW DOES THE COMPANY MEASURE AND REPORT WATER LOSSES?

A. The Company calculates and reports water loss in accordance with ADWR requirements, specifically in accordance with ADWR's Third Management Plan for the three Active Management Areas ("AMA") where the Company's water systems are located (Phoenix, Pinal and Tucson). Each Active Management Area Management Plan for 2000-2010 defines water loss and establishes the methods for calculating its percentage. For the Company's water systems not covered by one of the three AMAs, the same methodologies are followed.

For the Third Management Plan period, ADWR allows water providers to exclude certain non-revenue water used for specific purposes from the water loss calculation. Those allowed non-revenue system deliveries are summarized in section 5.7.6.2 of the Third Management Plan titled, "Distribution System Requirements" and are listed in detail in Appendix 5-M. The Company uses the Third Management Plan water loss calculation methods in accordance with Appendix 5-M. Pertinent excerpts from the ADWR Third Management Plan for the Phoenix AMA are attached as Exhibit FKS-9.

Q. PLEASE DESCRIBE THE COMPANY'S EFFORTS TO REDUCE WATER LOSS IN ITS SYSTEMS, SPECIFICALLY THE WESTERN GROUP WATER SYSTEMS THAT ARE THE SUBJECT OF THIS RATE CASE.

A. Reducing water loss within the Company's ADEQ Public Water Systems ("PWS") is an ongoing and concerted effort by the Company. The public water systems include community and non-community water systems. Water loss for each system is tracked monthly and analyzed by each Division Manager. Division Managers direct employees to monitor, locate and repair leaks using the

Company's leak detection equipment, and track and record those efforts each month. The Company's upper management reviews monthly reports from the Division Managers that detail their activities in repairing leaks and monitoring for undetected leaks. This information is closely monitored and carefully scrutinized to ensure that water loss is kept to a cost-effective minimum. The efforts in the Western Group water systems are no exception.

Q. WHAT DO YOU MEAN BY "COST-EFFECTIVE MINIMUM"?

A. By "cost-effective minimum", I am referring to the level of system water loss that normally occurs as part of water system operations without: (1) having to divert capital resources from projects that are more urgent and necessary to ensure the provision of reliable and adequate service and (2) requiring a level of investment that would be unduly burdensome on the Company's very limited capital budget and on customers' rates.

Q. YOU ALSO MENTIONED THAT THE COMPANY USES LEAK DETECTION EQUIPMENT. IS THIS EQUIPMENT USED IN THE WESTERN GROUP WATER SYSTEMS?

A. Yes. To provide for a more effective ongoing leak detection program, reducing water loss has been fully integrated into the Company's daily operations. The Company purchased leak detection equipment so its own employees can perform the required leak surveys, as described below.

In 2003, the Company purchased its first digital leak correlator and a digital data logger for use in locating leaks. Training was provided to a number of the Company's field technicians. Based on the initial success in using this equipment, the Company purchased a second set of leak correlators and digital data loggers. This equipment is used throughout the Company, and the Company's system operators have become more proficient and experienced with the use of these types of equipment. As a result, the Company purchased

additional digital leak correlators. Currently, each Division has and routinely uses at least one set of leak correlators. In systems where additional digital leak correlators were needed to adequately maintain its system, the Company authorized the purchase of two units. Currently, the Company owns eight digital leak correlators and four digital data loggers, which are used throughout the Company's water systems. The third and fourth digital data loggers were purchased in 2010 and 2011, respectively. For a complete description of the Company's leak detection equipment, *see* Section 5.3 of Exhibit FKS-10.

The Company has achieved some success in reducing water loss due, in large part, to ongoing water loss monitoring and the continued use of these leak detection units. The Company intends to purchase additional digital leak correlators and digital data loggers in future years as needed.

Q. IS THE COMPANY DOING MORE TO MONITOR AND REDUCE WATER LOSS?

A. Yes. The Company has prepared a comprehensive analysis outlining the historical, current and anticipated future efforts and requirements to effectively reduce water loss in the Company's PVWS. This initial report, titled "Water Loss Reduction Program for the Pinal Valley Service Area," and dated May 2, 2011, is attached to this testimony as Exhibit FKS-10. For Ajo and White Tank, the Company seeks to reduce water loss through similar efforts in the following four categories: 1) water main and service line repair and replacement, 2) use of leak detection equipment to monitor the system for leaks, 3) water meter selection review, and 4) meter repair, maintenance and replacement program.

Q. CAN YOU SUMMARIZE THESE CATEGORIES IN MORE DETAIL?

A. Yes. I will summarize the Company's water loss reduction efforts for each category.

WATER MAIN AND SERVICE LINE MAINTENANCE AND REPLACEMENT PROGRAM

The Company reduces water losses caused by leaks and water main and service line breaks by locating such leaks and breaks and effecting timely repairs and/or replacements. The Company schedules repairs of smaller water main and service line leaks as soon as possible. In the case of main breaks, the Company makes repairs on an emergency basis. Sources of water losses caused by unidentified water main and service line leaks are more problematic, as they are not always easily identified except through more advanced methods of detection, such as through the use of digital leak detection or correlation equipment and by conducting leak surveys. Meter readers report observed service leaks in their normal course of reading meters and enter such information into data entry devices used to generate service repair orders. Meter readers serve an essential role in system monitoring as they operate in every part of each water system each month and report signs of leaks and/or breaks through visual inspection.

LEAK DETECTION

As discussed above, the Company relies upon two complementary types of leak detection equipment in its water systems. This equipment allows the Company to identify the location of water leaks more efficiently than other, more labor intensive methods. One type of leak detection equipment, the digital data logger, is used to survey a larger area of the distribution systems to locate potential leaks that would not otherwise be located by visual inspection/observation techniques. A second type of leak detection equipment, the digital leak correlator, is used to pinpoint the location of potential leaks on a real-time basis, as well as confirming or validating locations of suspected leaks identified through surveys conducted with the digital data logger. Other effective

"listening" devices are also used throughout the Company's water systems. The Company's system operators are professionally trained in the operation of the digital leak detection equipment, and the use of this type of equipment has proven to be an effective method of locating leaks and reducing water loss.

METER SELECTION REVIEW

The Company's engineering department, using information provided by the Company's meter shop in Coolidge, reviews new meter applications prior to establishing water service. Typically, 5/8 x 3/4-inch water meters are installed for new residential subdivisions. Both residential and non-residential meter applications that require 1-inch or larger water meters result in wide ranges of flows and some applications may include fire flows. The Company's Engineering department chooses the most appropriate meter for each application that meets the service needs and can accurately measure the quantity of water provided throughout the expected range of customer flows. Different types of water meters have characteristic accuracies through various ranges of flows. Meters are designed to provide a high level of accuracy throughout specific ranges of flows according to AWWA and other water industry standards. Within a specific size of meter, different meter types (i.e., turbo, compound, jet, etc.) have different accuracies over various flow ranges. Simply put, not all meters are the same and each meter has its limitations or specific use.

METER MAINTENANCE PROGRAM

The Company's meter maintenance program establishes the criteria for meter removal, repairs and replacement. Instead of simply replacing a water meter based on its number of years in service, the Company's meter shop has established comprehensive change-out criteria based on total gallons, water quality and length of time in service for each water system. The water quality characteristics of individual water systems can have a significant impact on the

service life of a metering device and, as a result, maintenance criteria can vary between systems. Simply repairing or replacing all meters based on years in service without regard to usage and water quality impacts is not an effective and efficient use of capital or maintenance expenditures.

The Company's meter shop performs periodic random tests on each water system's meters to provide an ongoing assessment of the suitability of meter change-out criteria for each system. In this manner, the Company ensures that meter accuracy is maintained within industry standards and is confirmed through meter testing. The Company's water systems are current with their meter maintenance program and ongoing meter testing program.

Q. IS THE COMPANY'S METER REPAIR PROGRAM AN EFFECTIVE AND COMPREHENSIVE PROGRAM?

A. Yes. I am not aware of any private water utility in Arizona that manages its meter program as aggressively and efficiently as the Company. Our meter repair and maintenance technicians routinely instruct other water utilities' personnel on such advanced practices at utility conferences. The Company is a leader within the water industry in this regard. The Company's meter shop is able to test meters from 5/8 x 3/4-inch to 12-inch in size with a flow testing range of 0.25 gpm to 1,000 gpm. In fact, other water utilities periodically ask our meter technicians to test their meters to verify meter accuracy.

In addition, the Company's President, Mr. Garfield, serves on AWWA's Water Meter Standards Committee, which establishes water meter accuracy, repair, and other standards for the water industry.

Q. ARE THESE CATEGORIES OF WATER LOSS REDUCTION METHODS TYPICALLY USED BY WATER COMPANIES?

A. Yes. The water main and service line maintenance programs and the use of leak detection equipment are standard water industry practices. However, the

Company's Western Group contains water infrastructure that is approaching 90 years old and is showing signs of acute failure. The Company's efforts to cut water loss and eliminate causes of water loss are discussed in more detail in Sections 4 and 5 of the report attached as Exhibit FKS-10.

X. Reducing Water Losses – Distribution System Improvements

Q. DID THE COMMISSION ESTABLISH A WATER LOSS STANDARD IN DECISION NO. 71845?

A. Yes. In Decision No. 71845, page 92 lines 26-28 and page 93, lines 1-8, the Commission ordered:

> "That Arizona Water Company shall reduce the non-account water for each of its systems to less than 10 percent by July 1, 2011. For those systems that have not achieved a water loss rate of less than 10 percent by July 1, 2011, AWC should evaluate the systems and prepare a report demonstrating how the Company plans to reduce water losses to less than 10 percent. If the Company contends that reducing water losses to less than 10 percent is not cost effective, it should submit a detailed cost analysis and explanation demonstrating why the water loss reduction to less than 10 percent is not cost effective. Absent extraordinary circumstances, and with compelling supporting documentation, no system should be permitted to maintain non-account water above 15 percent. The water loss report should be filed with Docket Control, as a compliance item in this docket, by no later than December 31, 2011."

Q. HAS THE COMPANY DOCUMENTED AND QUANTIFIED ITS EFFORTS TO REDUCE WATER LOSS IN THE PINAL VALLEY WATER SYSTEM?

A. Yes. The Company has prepared an initial detailed report titled "Water Loss Reduction Program for the Pinal Valley Service Area", attached to this testimony as Exhibit FKS-10, which specifically evaluates water loss in the Company's Pinal Valley water system including the Coolidge Airport water system. Section 5.0 of Exhibit FKS-10 details the Company's historic and ongoing efforts to reduce water loss in these systems.

Q. PLEASE DISCUSS THE WATER LOSS ANALYSIS.

A. In addition to an overview of the existing water system, the Company's detailed analysis includes measures to reduce water loss. The Company also conducted a distribution system analysis, including age, size, material type, leak history, soil conditions and other pertinent information, to evaluate all of its water main and service line infrastructure. This analysis included the development of detailed hydraulic modeling and recommendations of utility plant improvements required to reduce water loss. These recommendations include specific projects and detailed design and construction cost estimates. As I also discuss on pages 8-10, several water mains were replaced in the Coolidge water system to comply with the Commission's directive that the Company "shall reduce the non-account water for each of its systems to less than 10 percent by July 1, 2011."

Q. HAVE YOU REVIEWED WATER LOSS FOR THE COMPANY'S WESTERN GROUP WATER SYSTEMS?

A. Yes. As of December 2010, two systems have water loss percentages greater than ten percent, with one having water loss greater than fifteen percent.

Q. WHICH WATER SYSTEMS ARE THOSE?

A. The Coolidge water system had an overall water loss of 10.81 percent and, in particular, the Coolidge Airport water system had a water loss of 39.18 percent for the calendar year 2009.

The Company already has made progress in reducing the Coolidge Airport water system losses, reducing water loss from 74.29 percent in February 2008 to 30.08 percent for calendar year 2010. The following table summarizes the Western Group water loss by ADEQ PWS system for calendar year 2009, the twelve months ending September 2010 and for calendar year 2010.

ARIZONA WATER COMPANY Western Group Lost and Unaccounted for Water				
SYSTEM	PWS ID No.	CALENDAR YEAR 2009 REPORTED WATER LOSS	12-MONTH ROLLING AVERAGE ENDING SEPTEMBER 2010	CALENDAR YEAR 2010 REPORTED WATER LOSS
Ajo	10-003	7.71%	6.47%	7.85%
Coolidge	11-014	10.81%	11.31%	n/a
Coolidge Airport	11-707	39.18%	38.71%	30.08%
Casa Grande	11-009	6.84%	5.24%	5.16%
Tierra Grande	11-076	7.52%	7.03%	7.17%
Stanfield	11-012	8.27%	7.96%	6.31%
White Tank	07-128	5.12%	5.23%	4.04%

Q. DID ANY WESTERN GROUP WATER SYSTEM HAVE WATER LOSS GREATER THAN TEN PERCENT IN THE COMPANY'S LAST RATE CASE?

A. Yes. The Company's Tierra Grande water system's water loss exceeded ten percent for calendar year 2007. Since then, the Company has been successful in reducing water loss in this system. The reported annual water loss was 7.52 percent and 7.17 percent for calendar years 2009 and 2010, respectively.

Q. THROUGH THIS INITIAL DETAILED REVIEW AND ANALYSIS COMPLETED BY THE COMPANY, WHAT WERE THE FINDINGS?

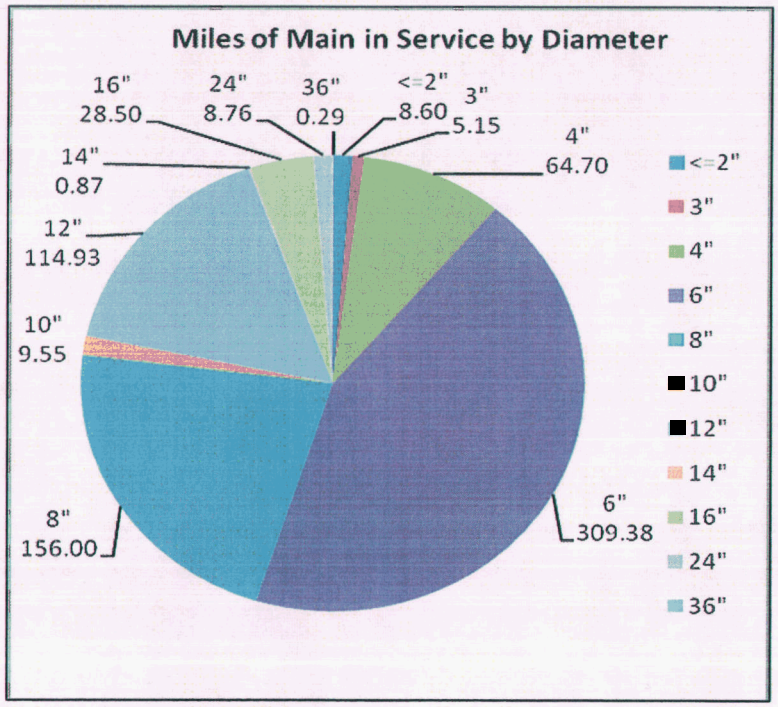
A. In reviewing the Company's efforts to reduce water loss, it was determined that between October 2009 and September 2010, water system operators spent nearly 16,000 hours monitoring, detecting and repairing water main and service leaks and breaks throughout the Pinal Valley water system. This is equivalent to approximately eight people working 40 hours per week for an entire year.

A review of the PVWS showed that many of the water system's water mains have been in service since the early 1920s, and are well past their useful service life. Many of these old water mains, some as small as 2-inch, do not comply with today's minimum standards. Because of their age and industry practice at the time, modern corrosion protection was not available when these

types of water mains were installed and, as a result, are susceptible to numerous leaks, which are difficult to detect, locate and repair.

The PVWS experienced a significant amount of growth during the mid-1970s and, with that growth, came the installation of a large amount of CA water mains as well as the installation of polybutylene and polyethylene ("poly") water service lines. Unfortunately, poly service lines have proven to become brittle and split longitudinally. Repairing this type of service line is difficult and normally leads to their full replacement when leaks are discovered. It is estimated that approximately 600 failing poly services have been replaced since 2000. However, over 3,700 of the failing poly service lines remain and require replacement in the very near future. Without these replacements, water losses are expected to increase.

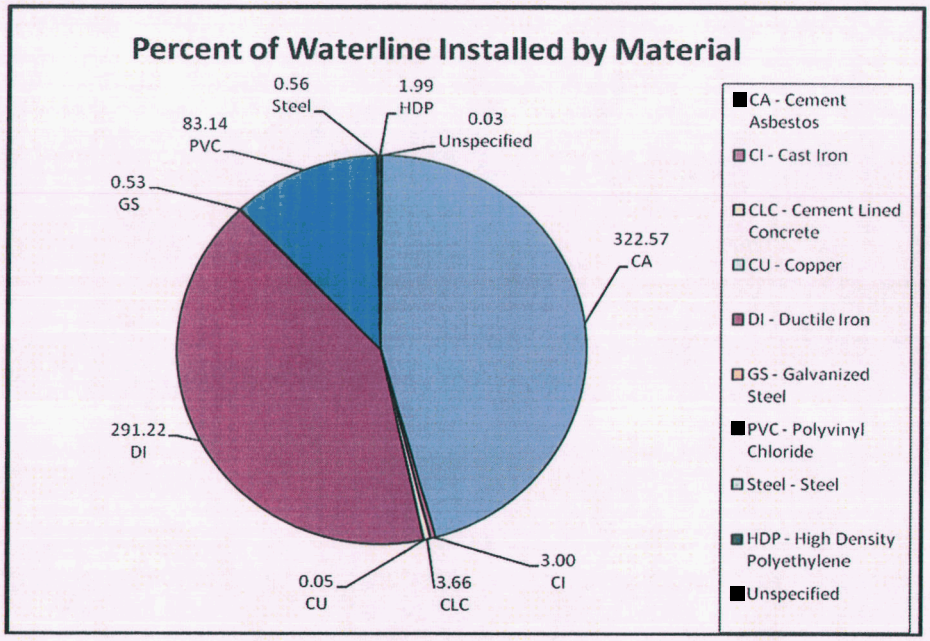
The following three sets of charts and tables show the miles of main by size, material type and in service by decade installed within the Pinal Valley system, respectively.



Size	Miles of Main	Pipe Size	Miles of Main
<=2-inch	8.60	12-inch	114.93
3-inch	5.15	14-inch	0.87
4-inch	64.70	16-inch	28.50
6-inch	309.38	24-inch	8.76
8-inch	156.00	36-inch	0.29
10-inch	9.55		

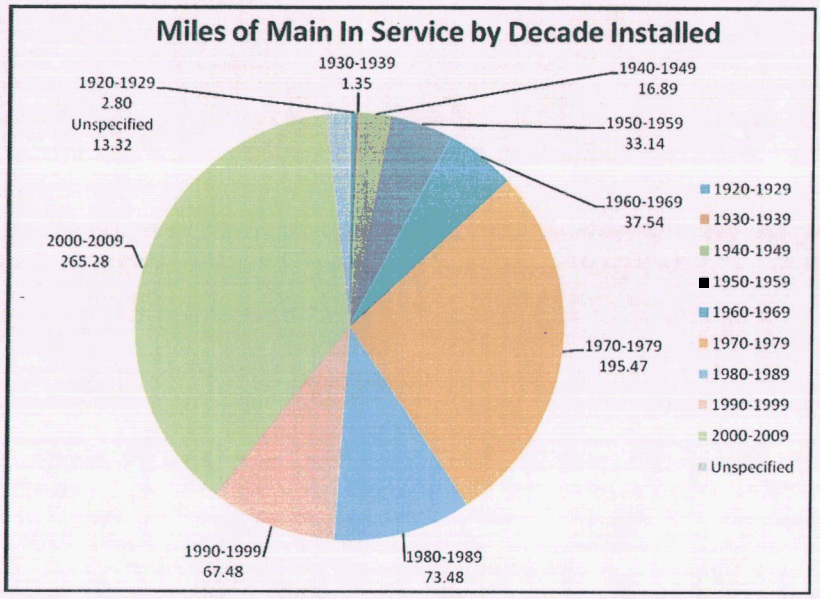
The table above shows that 78.45 miles or over 416,200 LF of water mains in service today are less than six inches in diameter.

The chart and table below show miles of water main currently in service by material type. A majority of the water mains are either DI or CA. Yet nearly 21,600 LF of water main is constructed of unprotected metal.



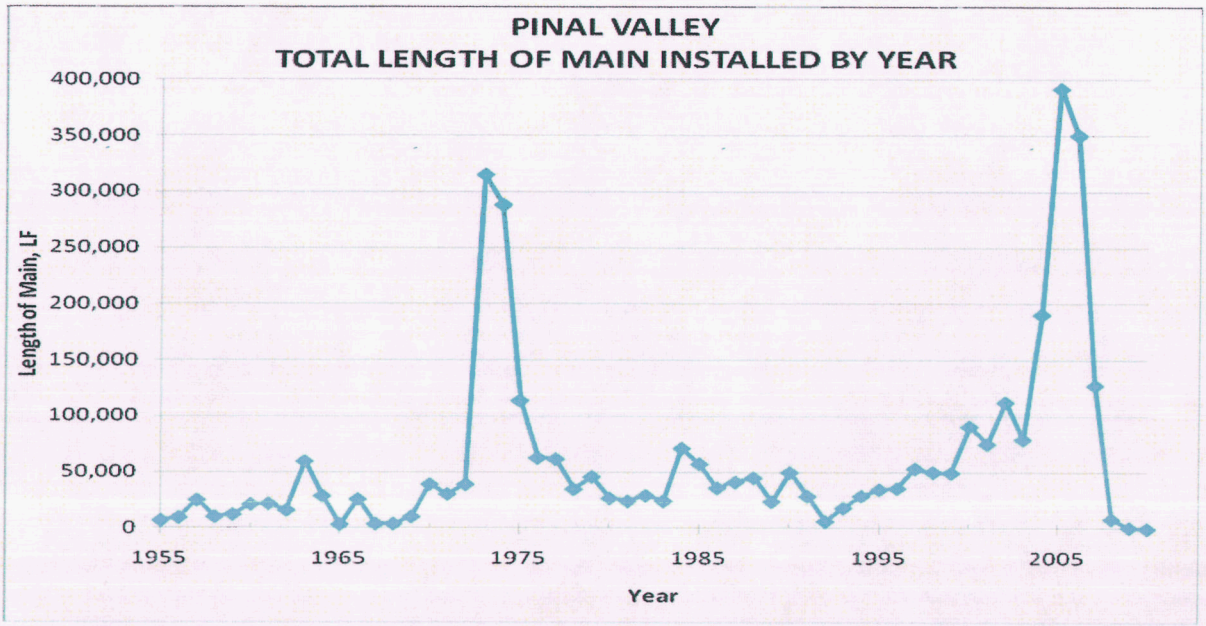
Material Type	Miles of Main	Material Type	Miles of Main
Cement Asbestos	322.57	Galvanized Steel	0.53
Cast Iron	3.00	High Density Polyethylene	1.99
Cement Lined Concrete	3.66	Polyvinyl Chloride	83.14
Copper	0.05	Steel	0.56
Ductile Iron	291.22	Unknown Material	0.03

The chart and table below depict the miles of water main installed by decade and still in service. Three percent or 21 miles or over 111,000 LF of water main currently in service, was installed prior to 1950 and is over 60 years old. As described in Section 4 of the analysis detailed in Exhibit FKS-10, much of this water main is at or reaching the end of its useful service life.



Decade	Miles of Main	Decade	Miles of Main
1920-1929	2.80	1970-1979	195.47
1930-1939	1.35	1980-1989	73.48
1940-1949	16.89	1990-1999	67.48
1950-1959	33.14	2000-2009	265.28
1960-1969	37.54	Unspecified	13.32

The following graph shows the lineal feet of water main installed by year since 1955. Note the significant length of water mains added in the mid-1970s and in the mid-2000s.



Q. THE FOREGOING DETAILED INFORMATION, CHARTS AND GRAPH SHOW A NEED TO REPLACE A SIGNIFICANT AMOUNT OF WATER MAINS AND SERVICE LINES WITHIN THIS WATER SYSTEM. HOW DOES THE WATER INDUSTRY CALCULATE THE COST OF REPLACING INFRASTRUCTURE?

A. In several ways. For example, the Handy Whitman Index of Public Utility Construction Costs is an engineering cost index that tracks the cost of constructing various types of public utility plant in different parts of the country. This index compares the cost of constructing public utility plant from one time period to another. As an example, for the PVWS, the older water mains in downtown Casa Grande were installed in 1921 and have a cost index of 27, while the current index is 587.

Q. WHAT DOES THIS CHANGE IN ENGINEERING COST INDEX MEAN IN TERMS OF DOLLARS TO INSTALL TRANSMISSION AND DISTRIBUTION MAINS IN 2010 VERSUS INSTALLING TRANSMISSION AND DISTRIBUTION MAINS IN 1921?

A. The index is used to project construction costs using today's cost index and comparing it to the cost index for the time period of the original installation. In the

example above, the 2010 cost index (587) divided by the 1921 cost index (27) shows that the cost of constructing cast iron or ductile iron water mains in 2010 is almost 22 times the cost of installing the same pipe under the same conditions that may have existed in 1921.

Q. DOES THIS ENGINEERING COST INDEX ACCOUNT FOR THE FULL REPLACEMENT COST?

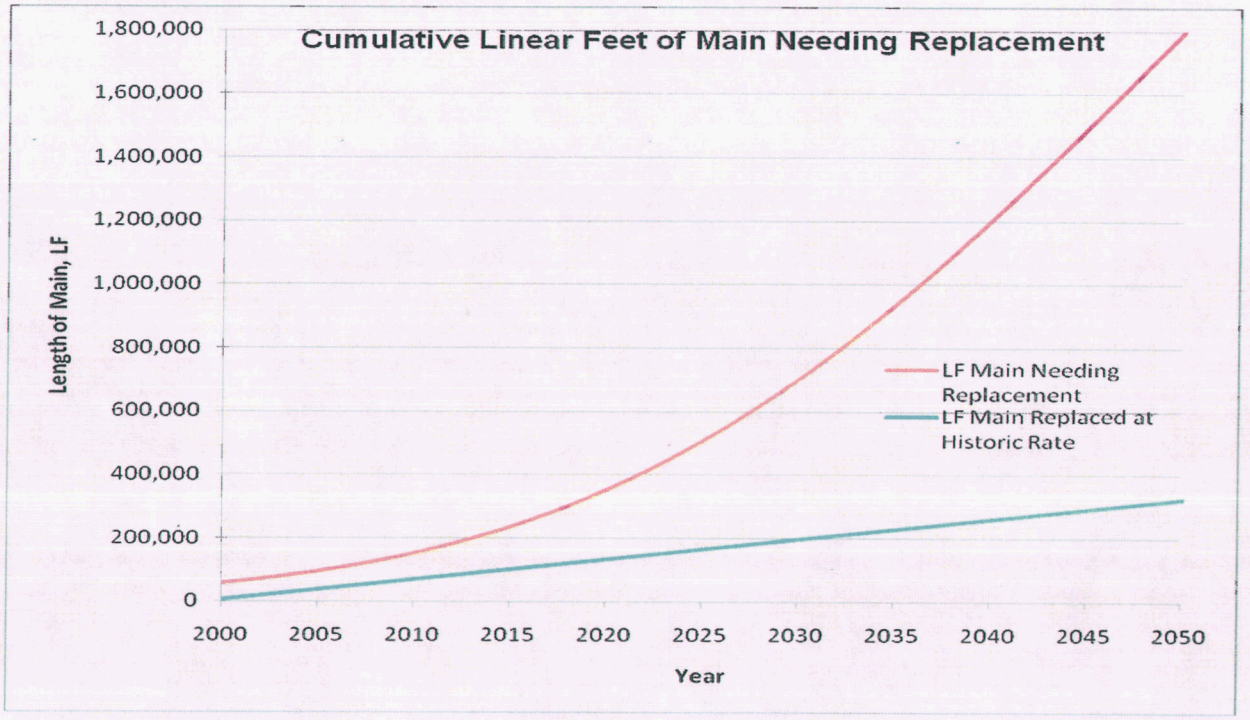
A. No. This engineering cost index does not account for changes in construction conditions that may have developed since 1921 or during any time period.

Q. PLEASE EXPLAIN FURTHER WHAT YOU MEAN BY CHANGES IN CONSTRUCTION CONDITIONS.

A. As a more detailed example of what is meant by this term, in the downtown area of Casa Grande, transmission and distribution mains were installed before streets were paved, curbing and gutters installed, telephone lines installed and other more recent underground utilities installed. Therefore, the cost of any replacement of transmission and distribution mains in these areas would have to include the cost of repairing streets and sidewalks, implementation of traffic control measures and working around other underground and above-ground installations to protect them against damage.

Q. HAS THE COMPANY PREPARED A TIMETABLE TO REPLACE THIS INFRASTRUCTURE?

A. Not yet. The graph below shows the current water main replacement rate within the PVWS based on the average replacement rate between 2000 and 2010 versus the needed rate of replacement. Based on the current replacement rate, the Company has determined that it would take 633 years to replace the existing infrastructure. The graph clearly depicts the current scenario where the existing replacement rate is not sufficient to keep pace with the water system needs.



With 90 year-old pipe already near failure or failing, it is not reasonable to assume that replacement sometime in the distant future would be adequate to comply with the Commission mandated reductions in water losses or ensure reliable or adequate water service. Without a sufficient funding mechanism, the required replacement rate cannot be achieved.

Q. HAS THE COMPANY PREPARED A COST ESTIMATE TO REPLACE THIS INFRASTRUCTURE?

A. The Company has prepared a cost estimate to replace the aging and failing water infrastructure in the PVWS and estimates that it will cost approximately $41 million to replace water mains and service lines as depicted in Appendix 9.11 of FKS Exhibit 10 which is also included as Exhibit FKS-11. This estimate was derived from water mains and service lines needing replacement between 2011 and 2020. Replacement unit costs were based on recent bids from other Company projects with the PVWS.

Q. HAS THE COMPANY CONSOLIDATED THE COOLIDGE AND CASA GRANDE WATER SYSTEMS FOR ADWR AND ADEQ REPORTING PURPOSES?

A. Yes. As authorized in Decision No. 71845, the Company's previous rate case, the Coolidge and Casa Grande water systems have been consolidated for ratemaking purposes. On October 21, 2010, the Company notified ADEQ that it was consolidating the Coolidge water system (PWSID No. 11-014) into the Casa Grande water system (PWSID No. 11-009). The Coolidge and Casa Grande water systems were physically interconnected in 2007. Notwithstanding, the reported water loss for 2010 included on page 44 of my testimony was 5.16 percent and represents the consolidated water system, the Commission-mandated water loss reductions in Coolidge must be corrected as the Company undertook to accomplish shortly after the Commission issued that directive in Decision No. 71845.

Q. TO REDUCE WATER LOSS AS THE COMMISSION REQUIRED BY DECISION NO. 71845, WHAT SPECIFIC UTILITY PLANT IMPROVEMENTS HAS THE COMPANY COMPLETED TO REDUCE WATER LOSS IN THE COOLIDGE WATER SYSTEM?

A. The Company evaluated its Pinal Valley water distribution system through the use of its digital leak detection equipment, and analyzed data the Company collected over the past several years regarding main breaks and service line leaks. The Company determined that three very old and leaking waterlines in the Coolidge water system needed to be replaced so that the Company could effectively reduce water loss to comply with the standard set by the Commission in Decision No. 71845. The Company then budgeted the additional funds needed to replace the aging and leaking facilities described below.

Project One

Project One is replacement of three waterlines currently located in alleyways in Coolidge between Coolidge and Elm Avenues and from Main Street to Arizona Boulevard (State Highway 87). The 4-inch CA water mains being replaced date back to the 1930s and 1940s. This project replaces approximately 5,640 LF of 4-inch CA pipe and 200 LF of 6-inch CA pipe, with 4,193 LF of 6-inch C-900 PVC pipe and 2,144 LF of 12-inch C-900 PVC pipe, at a total estimated construction cost of $663,251.

Project Two

Project Two is replacement of a waterline located in the Valley Farms portion of the Coolidge water system along Vah Ki Inn Road from Rhodes Court to McGee Road and along Moore Circle from Vah Ki Inn Road to McGee Road. The majority of this waterline was installed in the 1930s when rolled rubber gaskets were used as sealing material at the couplings. These types of gaskets, which are no longer used, inevitably cause problems as they age, leak and fail. This project replaces approximately 2,000 LF of 6-inch CA pipe with 1,241 LF of 12-inch C-900 PVC pipe and 1,112 LF of 6-inch C-900 PVC pipe at an estimated construction cost of $121,180.

Project Three

Project Three is the replacement of a waterline at the Coolidge Airport. The 6-inch CA water main being replaced was originally installed in the 1930's. This project replaces approximately 3,423 LF of 6-inch pipe with 3,300 LF of 12-inch C-900 PVC pipe a cost of $137,814. Additionally, all metered connections were evaluated for accuracy and those meters found to be inaccurate were replaced.

Based on this information, and in accordance with the Commission's directive in Decision No. 71845, the Company quickly moved forward with the

waterline replacement projects to replace the failing waterlines. All three of these projects will be completed by the Company before the Commission's July 1, 2011 deadline to comply with its order to reduce water loss. A detailed description of these three projects and supporting information is listed in Section III and Exhibit FKS-10.

Q. THESE URGENTLY-NEEDED WATER LINE REPLACEMENTS REPRESENT A SIGNIFICANT CAPITAL INVESTMENT BY THE COMPANY TO ADDRESS SYSTEM WATER LOSS. HOW DID THE DECISION TO MAKE THIS INVESTMENT COME ABOUT?

A. Apart from the very high losses of water from these old leaking water lines, the most compelling reason came from the Commission itself. The Commission ordered the Company to reduce water loss in *all* systems to less than ten percent by July 1, 2011. For the PVWS, the Company determined that locating and repairing leaks and breaks alone could not comply with this water loss reduction mandate. Despite the Company's aggressive water loss reduction efforts, these efforts have not been enough to reduce water loss in all systems to less than ten percent as the Commission required.

Q. WILL THESE WATER LINE REPLACEMENTS AID IN REDUCING WATER LOSS TO LESS THAN TEN PERCENT?

A. Yes. These water line replacements are critical in reducing water loss and complying with the Commission's order to immediately reduce water loss. However, more replacements of aging infrastructure are needed in the PVWS to comply with water loss requirements. The solution to this problem requires a going-forward commitment to the planned replacement of aging and failing waterlines with new appropriately sized waterlines. This will directly address the Commission's directive to the Company to reduce water loss. The replacement of a growing number of service lines is also required, as failing service lines are

another significant source of water loss. Due to this critical need, the Company has developed the plan that is detailed in Section 6.0 of the report attached as Exhibit FKS-10.

Q. HOW IS THE COMPANY PROPOSING TO RESOLVE THE GAP IN INFRASTRUCTURE REPLACEMENT TO REDUCE WATER LOSS AND KEEP IT LOWER THAN TEN PERCENT?

A. As stated previously, the Company has prepared a detailed plan to begin replacing water mains and service lines that are critically needed to reduce water loss. The detailed plan includes replacing approximately 16,600 LF of aging water mains and 570 aging service lines each year.

Q. WHAT IS THE ESTIMATED COST OF THESE REPLACEMENTS?

A. It is estimated that these replacements will cost $2.5 million dollars annually.

Q. CAN THE COMPANY CURRENTLY FUND THE REPLACEMENTS OF AGING INFRASTRUCTURE NEEDED TO REDUCE AND MANAGE WATER LOSS TO LESS THAN TEN PERCENT?

A. No, not without adequate rate relief and the benefit of an effective cost recovery mechanism such as a Distribution System Improvement Charge ("DSIC"). As discussed in Mr. Harris' and Mr. Garfield's direct testimony, the Company cannot construct these necessary water system replacements and incur the costs of doing so without a change in the way they are recovered.

Q. IS THE COMPANY MAKING ANY PROPOSALS TO ALLOW IT TO FUND THESE TYPES OF CRITICALLY NEEDED UTILITY PLANT REPLACEMENTS?

A. Yes. In other jurisdictions, utility commissions have authorized a DSIC to facilitate infrastructure replacement. The benefits of such a program include more efficient and timely investment of capital, significant progress in replacing aging infrastructure and enhanced service quality and reduction of water loss.

As water supplies become more stressed in the future, reducing water loss through the replacement of aging infrastructure will become even more important. Such programs typically include protections for customers such as limits on the amount of incremental revenues that can be collected, exclusion of capital projects that are revenue producing and true-up mechanisms. Details of the DSIC program are presented in the direct testimony of Mr. Harris, while Mr. Garfield's direct testimony discusses the public policy aspects of a DSIC.

Q. DSIC PROCEDURES ORIGINATED IN THE EASTERN PORTION OF THE UNITED STATES. IS THE PROBLEM OF AGING INFRASTRUCTURE UNIQUE TO THAT AREA?

A. No. The Company's water systems throughout Arizona have facilities that are obsolete, beyond their useful life, and are already failing and need to be replaced. As presented and discussed in Section 4.0 of Exhibit FKS-10, water mains installed and placed in service during the 1920s, 1930s and later have reached the end of their useful service life regardless of where they were installed.

Q. HAVE YOU PREPARED AN ANALYSIS OF AGING INFRASTRUCTURE IN THE PVWS?

A. Yes. The analysis shows approximately 287,000 LF of water main or approximately 7.7 percent of the PVWS is in need of replacement including 3,700 poly service lines, and another 3,500 galvanized service lines over the next 5-10 years. This analysis is based on a complete review of the documented water main and service line repair history summarized in Appendix 9.1 of Exhibit FKS-10. The specific replacement projects are presented in detail in Appendix 9.10 of Exhibit FKS-10. As explained on page 49 of my testimony, the Company estimates that replacing these failing water mains and service lines will cost $41 million. An explanation of this detailed cost estimate is provided in Exhibit

FKS-11. Each year, these costs will increase and the quantity of aging water mains and service lines that have exceeded their useful service life will increase, thereby making it increasingly more difficult to keep up with necessary replacements.

Q. THE PVWS CONSISTS OF WATER MAINS AND SERVICE LINES DATING BACK TO THE 1920s. WHY ARE THESE OLD FACILITIES A PROBLEM?

A. There are numerous studies which have been completed documenting the failure of infrastructure installed during this time period.[2] [3] Materials used to make and join distribution system piping have evolved over time. From the late 1800s until the 1920s, most piping installed was manufactured from "pit" cast iron and was joined using rope and molten lead. Some of the older water mains in the PVWS are of this type of cast iron.

Beginning in the late 1920s, up to and including the 1960s, "spun" cast iron was primarily used. It is stronger and more uniform than "pit" cast iron and allowed for thinner pipes. These improved cast iron water mains were installed without corrosion protection or polyethelyene encasement. Over time, these thinner-walled unprotected cast iron mains are corroding and failing. Cement lining and leadite joining compound (a plasticized sulfur cement) were introduced during the same time period, although leadite joints were eventually found to have increased splitting and corrosion compared to lead. Flexible rubber gasket joints and ductile iron pipe were introduced in the 1950s and 1960s, respectively, improving joints and reducing corrosion rates. The use of PVC and high density polyethylene ("HDPE") pipe began to emerge in the 1970s and 1990s, respectively. Cast iron piping (both pit and spun), installed in the 1920s and

[2] DeBerry, David W., Kidwell, James R., Malish, David A. (1982). *Corrosion in Potable Water Systems.* United States Environmental Protection Agency.

[3] Thomson, James and Wang, Lili (2009). *State of Technology Review Report on Condition Assessment of Ferrous Water Transmission and Distribution Systems.* United States Environmental Protection Agency

later, is approaching the end of its useful life, and many main breaks are associated with this type of pipe.

Deteriorating water distribution system infrastructure include increased leakage and breaks; taste, odor and rusty water complaints; as well as reduced flow capacity and reduced chlorine levels due to corrosion products and biofilms. Consequently, there is an increased potential for water quality degradation and health risks associated with aging infrastructure. As a result, this aging piping needs to be replaced. The analysis included as Exhibit FKS-10 discusses, in detail the numerous problems associated with these aging facilities.

Q. DO THE PVWS OPERATORS ROUTINELY DISCOVER AND REPAIR WATER LEAKS?

A. Yes, very definitely. The Company found and repaired over 1,250 leaks between January 2005 and December 2010 in the PVWS as described in Section VII of this testimony and, as shown in Appendix 9.1 of Exhibit FKS-10. This equates to approximately one leak repair every work day. Approximately seventy-two percent of the recorded leaks were service line leaks. All leaks are repaired promptly after they are detected and located. According to a study completed by the Aging Water Infrastructure Research division of the Environmental Protection Agency, there are 240,000 water main breaks per year in the United States or a water main break 650 times per day[4]. That equates to one main break every two minutes. For the Company's PVWS, there has been a waterline leak practically every work day for five years.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY IN THIS MATTER?

A. Yes.

[4] *Water Distribution Systems* (2009). United States Environmental Protection Agency Aging Water Infrastructure Research Program, http://www.epa.gov/awi/distributionsys.html (Oct. 28, 2010).

FKS-1

POST TEST YEAR PLANT ADDITIONS – PROJECT DETAIL

INDEX

PLANT DESCRIPTION — **WA NO.**

Pinal Valley

i. **PINAL VALLEY – CONSOLIDATED CASA GRANDE (PWSID #11-009)**

WELL NO. 27 PUMP REPLACEMENT ..... WA 1-4763

COOLIDGE OLD TOWN WATERLINE REPLACEMENT ..... WA 1-4772

VALLEY FARMS WATERLINE REPLACEMENT ..... WA 1-4773

ARIZONA CITY TRANSMISSION AND DISTRIBUTION WATERLINE IMPROVEMENTS ..... WA 1-4774

WELL NO. 23 PUMP REPLACEMENT ..... WA 1-4802

WELL NO. 14 PUMP REPLACEMENT ..... WA 1-4803

GRADING AND DRAINAGE IMPROVEMENTS AT VALLEY FARMS ..... WA 1-4807

ii. **PINAL VALLEY – COOLIDGE AIRPORT (PWSID #11-707)**

COOLIDGE AIRPORT WATERLINE REPLACEMENT ..... WA 1-4768

iii. **PINAL VALLEY – TIERRA GRANDE (PWSID #11-076)**

TIERRA GRANDE WELL NO. 3 PUMP REPLACEMENT ..... WA 1-4801

WHITE TANK (PWSID #07-128)

VERTICAL WATERLINE RELOCATION FOR NEW FLOOD CONTROL CHANNEL IMPROVEMENTS ..... WA 1-4810

PHOENIX OFFICE

PURCHASE ADDITIONAL LEAK DETECTION EQUIPMENT ..... WA 1-4823

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
MRL	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:

PROJECT DESCRIPTION:

DRILL AND EQUIP NEW WELL TO SERVE THE PINAL VALLEY SERVICE AREA.

MATERIALS AND LABOR

QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
1	EA	50,000	PURCHASE PROPERTY	50,000
1	EA	400,000	DRILL AND CASE 18" WELL	400,000
1	EA	125,000	PURCHASE AND INSTALL PUMPING EQUIPMENT	125,000
1	EA	150,000	PURCHASE AND INSTALL ELECTRICAL EQUIPMENT	150,000
1	EA	50,000	ELECTRICAL POWER TO SITE	50,000
1	EA	100,000	INSTALL WELL YARD PIPING AND ANCILLARY ITEMS	100,000
1	EA	60,000	TIE NEW WELL INTO EXISTING DISTRIBUTION SYSTEM	60,000
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**935,000**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	14,025
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	65,450
(4) SUBTOTAL - LINES (1), (2) AND (3)	**1,014,475**
(5) OVERHEAD - 15% OF LINE (4)	152,171
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	91,303
SUBTOTAL - LINES (4), (5) AND (6)	**1,257,949**
ESTIMATED COST OF CONSTRUCTION	**$ 1,257,949**

AFH

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
MRL	FKS	WHITE TANK	CASA GRANDE

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:

PROJECT DESCRIPTION:

DRILL AND EQUIP NEW WELL TO SERVE THE WHITE TANK SERVICE AREA AT THE EXISTING MONTE VISTA SITE.

MATERIALS AND LABOR

QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
1	EA	400,000	DRILL AND CASE 18" WELL	400,000
1	EA	125,000	PURCHASE AND INSTALL PUMPING EQUIPMENT	125,000
1	EA	125,000	PURCHASE AND INSTALL ELECTRICAL EQUIPMENT	130,000
1	EA	80,000	INSTALL WELL YARD PIPING AND ANCILLARY ITEMS	85,000
				-
				-
				-
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**740,000**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	11,100
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	51,800
(4) SUBTOTAL - LINES (1), (2) AND (3)	**802,900**
(5) OVERHEAD - 15% OF LINE (4)	120,435
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	72,261
SUBTOTAL - LINES (4), (5) AND (6)	**995,596**
ESTIMATED COST OF CONSTRUCTION	**$ 995,596**

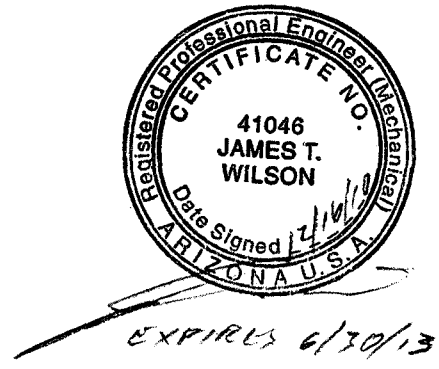
AFH

ARIZONA WATER COMPANY
PINAL VALLEY DIVISION

Coolidge Production Analysis

Prepared by Arizona Water Company

12/16/2010



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Alternatives for Additional Production Capacity 3
Recommendations 4
Attachment A 6
Attachment B 8

Current Production Needs

This analysis evaluates and describes the methodology used to determine the need for additional production capacity within the Coolidge Distribution System ("CDS"). The CDS is a portion of and interconnected with the Pinal Valley Water System ("PVWS"). While water can be conveyed back and forth within the PVWS through the existing distribution system connections ("Interconnections") they are hydraulically distinct from one another based on distance and in some cases by different pressure zones. Another small water system exists within the CDS called the Valley Farms Distribution System ("VFDS"). However, the VFDS is relatively small in comparison to the CDS and it is not capable of providing any significant production capacity to the CDS. For this reason this production analysis only analyzes production capacity within the CDS (excluding the VFDS) along with the estimated flow capacity from the interconnect with the Casa Grande portion of the PVSA.

Arizona Water Company ("the Company") tracks the water production from each well on a monthly basis. These monthly production reports were utilized to calculate Average Day Peak Month ("ADPM") and Peak Day Peak Month ("PDPM") demand for the CDS. A detailed review of this data for 2010 indicates that the peak monthly production occurred in July, 2010. ADPM demand was calculated by taking the sum of all production sources within the CDS and dividing by the number of days of the peak month. PDPM demand was calculated multiplying the ADPM demand by the Company's Pinal Valley peaking factor of 1.5. The peak month production figures for all sources as well as the calculations used to determine the ADPM and PDPM demand are shown in Attachment A.

This information was then used to determine if in the event of well pump failure the system has sufficient production capacity to supply the system demand. This worst case scenario is defined as a failure of the largest production source during PDPM demand. Under this scenario it is assumed that the pumping equipment failure requires only typical repairs that can be completed within three days. During this repair period any production capacity shortfall is to be supplemented by storage capacity within the system. Effectively, this is modeled by increasing the production capacity of the water system by one third of the total available storage for each day of the failure for a total of three days. Company pumping records are used to determine the current pumping capacity for each source. It is assumed that each source is 100% utilized when calculating the total available production capacity. The total available production is calculated in terms of Gallons Per Day ("GPD") by taking the sum of all sources less the largest producing source out of service. Well #13 has not been included in the total production figures because it is currently inactive due to elevated arsenic levels. The system production need is calculated by taking the sum of the total production and one third of the available storage less the PDPM demand. These calculations indicate that there is a need for an additional 380,035 GPD within the CDS. In the event of a well pump failure.

Alternatives for Additional Production Capacity

Several alternatives exist to increase the production capacity in the CDS which include increasing the capacity of the interconnect, drilling another well or continued use of Well #13.

Due to existing limitations of the CGDS increasing the capacity of the interconnect between the CDS and CGDS would require I-10 to be bored at McCartney Road and the installation of approximately 11,560 LF of new 16" waterline. This solution is included in the Pinal Valley Master Plan but due to increasing demands this alternative will only differ the problem to a later date as it does not create any additional production capacity within the PVSA but instead makes it easier to convey water from one area to another.

Drilling another well in the CDS involves several challenges from property acquisition to water quality issues. Drilling another well would require new property acquisition. However, most of the land suitable for drilling a well is located within the Gila River Indian Community Water Rights Settlement Agreement Eastern Protection Zone South, or within the San Carlos Irrigation District. Wells cannot be drilled within either of these areas increasing the difficulty and cost to acquire and develop additional supplies within this area. The CDS is also located in an area known to have significant well construction challenges. A clay layer (low water producing zone) exists between 200 and 1200 feet below the land surface. The water producing zones outside of the clay layer are known to be high in arsenic and nitrates. Drilling another well would most likely also require arsenic and possibly nitrate treatment.

Continued operation of Well #13 will require the installation of an Arsenic Treatment Facility ("ATF"). Upon initial completion of the well the arsenic levels were below the Maximum Contaminant Level ("MCL") of 10 parts per billion ("ppb"). Continued operation of the well has resulted in a steady increase in the effluent arsenic levels. The well site is of sufficient size to accommodate an ATF; no additional property will be required. Since the well is already connected to the system no additional offsite infrastructure improvements will be required. Design and construction of a well head ATF capable of treating the existing well capacity will meet the existing demand needs of the CDS as well as reduce the need for additional need production capacity within the PVSA. Also, with eh use of Well #13 the capacity in the CDS can be utilized to supplement the system demands in the western portion of the PVWS through the existing distribution system connection.

Recommendations

As detailed previously, the CDS requires 380,035 GPD of additional supply in order to maintain safe reliable operation. Based on the alternatives described above installing an ATF at Well #13 will be the most cost effective long term solution. Drilling another well would be the most expensive option since it would also most likely require treatment as well as additional investments for property acquisition, well drilling and infrastructure improvements. Increasing the capacity of the CDS and CGDS interconnect will have similar costs to the treatment of Well #13. However, it will also increase the need for additional production capacity in the PWVS and ultimately result in additional costs related drilling another well as described above.

Installing an ATF at Well #13 is the best and lowest cost solution because the necessary infrastructure is already in place. The water quality issues are known and measureable. Also because the arsenic levels will only marginally exceed the MCL construction and operational costs will be low. The location of this site has the added benefit of creating a more even distribution of supply within the CDS resulting in lower water age and decreased formation of disinfection by products as well as more stable system pressures and flow.

Attachment A

Pinal Valley Water System
Coolidge Area
Monthly Demand Calculations

PINAL VALLEY WATER SYSTEM

COOLIDGE AREA JULY 2010
PINAL COUNTY, ARIZONA

Calculations to determine Average Day and Peak Day Demand

PEAK MONTH PRODUCTION		
CL Well #7	25,044,000	Gallons
CL Well #9	25,147,000	Gallons
CL Well #10	35,959,000	Gallons
CL Well #13	107,000	Gallons
PV Interconnect	(1,463,000)	Gallons
TOTAL MONTHLY PRODUCTION	84,794,000	Gallons

DAILY DEMAND CALCULATIONS		
Number of days in Peak Month	31	Days
Average Day Peak Month (**ADPM**)	= 84,794,000 / 31	GPD
Average Day Peak Month (**ADPM**)	**2,735,290**	GPD
Peak Demand Factor	1.5	
Peak Day Peak Month (**PDPM**)	= ADPM * 1.5	GPD
Peak Day Peak Month (**PDPM**)	**4,102,935**	GPD

Attachment B

Pinal Valley Water System
Coolidge Area
Production Analysis

PINAL VALLEY WATER SYSTEM

SYSTEM	MONTH (2010)	ADPM GPD	PDPM GPD	TOTAL PRODUCTION AT POE (GPD)	1/3 OF TOTAL AVAILABLE STORAGE (GPD)	SYSTEM NET GAIN or (LOSS) GPD
CDS	July	2,735,290	4,102,935	3,470,400	252,500	(380,035)

Additional production required

Source	Production (GPM)	POE	Production (GPM)	Tank Name	Storage (GAL)
CL Well #7	1100	#17*	720	Pancake Tank	15,000
CL Well #9	1240	#18*	1240	Warehouse Tank #1	500,000
CL Well #10	1430	#18*	0	Warehouse Tank #2	1,000,000
CL Well #13	1250	#21**	0		
PV Interconnect	450	N/A	450		

Largest producer assumed temporarily out of service due to pump failure

TOTAL PRODUCTION AT POE (GPM):	2,410	**TOTAL AVAILABLE STORAGE (GAL):**	1,515,000

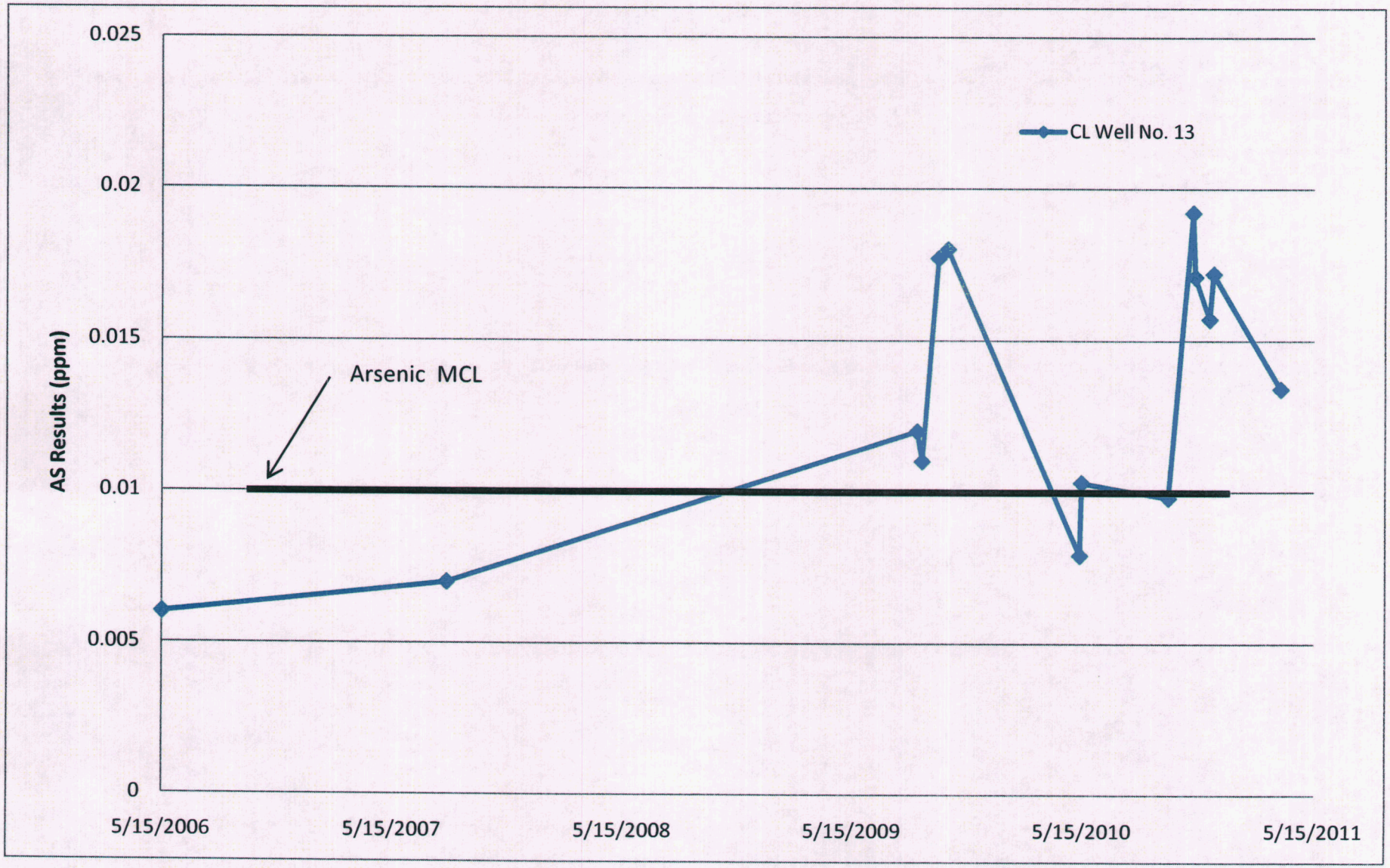
Design Statement for Well Production:

The water distribution system must have sufficient well capacity to meet the peak day demand for three consecutive days with the largest well out-of-service. One-half of the total storage is available to meet the three peak days with the remaining storage held in reserve for fire protection.

* Water production at this POE is limited by the total available well production or booster pump capacity, whichever is less.

** Well #13 is currently inactive due to rising arsenic levels

Pinal Valley Water System
Arsenic Results at Coolidge Well No.13



FKS-4

Rate Case 2010 Western Group Amended

EXHIBIT FKS-4

Pinal Valley CAP Treatment Plant and Related Water Facilities Construction Cost Estimate

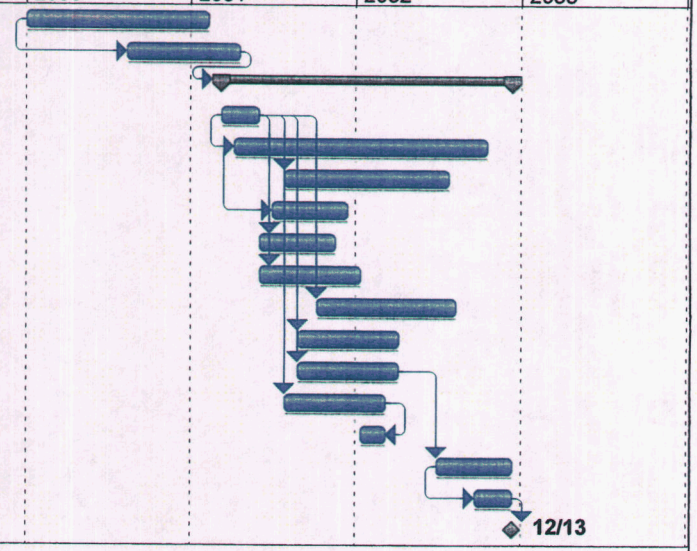
DESCRIPTION		ESTIMATED COST
SITE DEVELOPMENT IIMPROVEMENTS		
Power -Substation & New Power Lines	$	500,000
Existing Gas Lines Protection		30,000
Roads (est. 3 miles @ 24' wide)		4,200,000
Roadway Bridges (2 total)		600,000
Communications -Telephone & Internet Access		250,000
Site Development Construction Direct Costs	$	5,580,000
WATER TREATMENT PLANT		
Site Work		
Earth Work, Site Drainage, Yard Piping, Roads, Parking, Lighting, Utilities, etc.	$	1,890,000
Landscaping & Irrigation		570,000
Headworks/ Raw Water TurnoutlRaw Water Pipeline		850,000
Conventional Treatment Processes		
Raw Water Splitter Box		10,000
Raw Water Storage (5MG)		270,000
Flash/ Rapid Mix / Pump Station		190,000
Floccufation Basins w/ Concrete Baffles		240,000
Rectangular Sedimentation Basins w/ Scraper Type Collectors		1,290,000
GAG Media Filter		3,070,000
Ozone Disinfection		
Site Work, Building & Contactor		1,830,000
Equipment, including LOX		2,240,000
Chemical Facility and Residual Disinfection		
Chemical Feed Building		2,220,000
Used Water Recovery and Solids Handling Facilities		
Solar Drying Beds		930,000
Backwash & Recycle Equalization Basins & Pump Station		150,000
Return Water Pump Station		70,000
Backwash Clarifiers & Backwash Solids Pump Station		330,000
Gravity Thickeners & Return Water PS		460,000
Thickeners Sludge Pumping and Solar Drying Decant		60,000
Finished Water Storage		
Finished Water Reservoir (2 MG)		1,030,000
Booster Station and Surge Tank		1,590,000
Support Facilities		
Administration/ Maintenance Building (6,000 sq. ft.)		1,140,000
Security Enhancement		
Fencing-Chain Link (includes CMU wall)		520,000
Gates (Complete)		70,000
Security Systems -Cameras, Door Entry, CCTV		200,000
Fire Protection -(from GW Wells) 250,000- allo on Tank w/ Pumps		100,000
Well Head Treatment (not required for Phase 1)		
Electrical and I&C (25% of direct subtotal)		4,650,000
Water Treatment Plant Construction Direct Costs	$	25,970,000
TREATED WATER DELIVERY SYSTEM		
Pipe Material -81,840 Feet of 36 DIP	$	11,320,000
Valves and Fittings		2,160,000
Earthwork and Repaving		630,000
Traffic Control		150,000
Bore and Jack Operations (I-10 and SCIDD Canal)		620,000
Utility Relocation		100,000
Mobilization/ Demobilization		750,000
Temporary Easements		40,000
Permanent Easements		50,000
Groundwater Wells (1 Total)		840,000
Off-site Groundwater Wells (2 Total)		2,500,000
Off-site Booster Pump Station		500,000
Off-site Storage Tank		2,580,000
Treated Water Delivery System Construction Direct Costs	$	22,240,000
Total Project - Construction Direct Costs	$	53,790,000
Construction Contingency (25% applied to Site / Plant Costs, 12% to Delivery) (1)	$	10,670,000
Contractor's Indirect Costs (21.2% applied to Site / Plant Costs)		6,700,000
Non-Construction Costs - Engineering & Admin. (25% Plant, 10% Delivery System)		9,980,000
Plant Site Land Cost (2)		660,000
TOTAL PROJECT COST	$	81,800,000

Notes:

(1) 12% contingency provided by AWC reflecting Company's experience with similar pipeline construction projects.
(2) Land cost is based on the actual purchase price in 2005 dollars.

Pinal Valley CAP Treatment Plant Construction Schedule

ID	Task Name	Start
1	Treatment Plant Design (includes bid period)	Tue 1/1/30
2	Treatment Plant Construction Permitting	Tue 8/13/30
3	**Treatment Plant Construction**	**Tue 3/11/31**
4	Submittals/Procurement	Tue 3/11/31
5	Civil Site Work (surveying, grading, paving, landscaping)	Tue 4/8/31
6	Yard Piping	Tue 7/29/31
7	Site Utilities	Tue 7/1/31
8	Raw Water Basin and Related Facilities	Tue 6/3/31
9	Flocc, Sedimenation, Filter Basins	Tue 6/3/31
10	Ozone Generators and Contactors	Tue 10/7/31
11	Solids Handling (Solar Drying Beds, Clarifiers, Thickener, Equalization)	Tue 8/26/31
12	Chemical Facility	Tue 8/26/31
13	Admin Building	Tue 7/29/31
14	Obtain Occupancy Permits (Building Permits Closeout)	Tue 1/13/32
15	Treatment Plant Operations Permitting	Tue 6/29/32
16	Startup/Commissioning	Tue 9/21/32
17	10 mgd Capacity Online	Mon 12/13/32



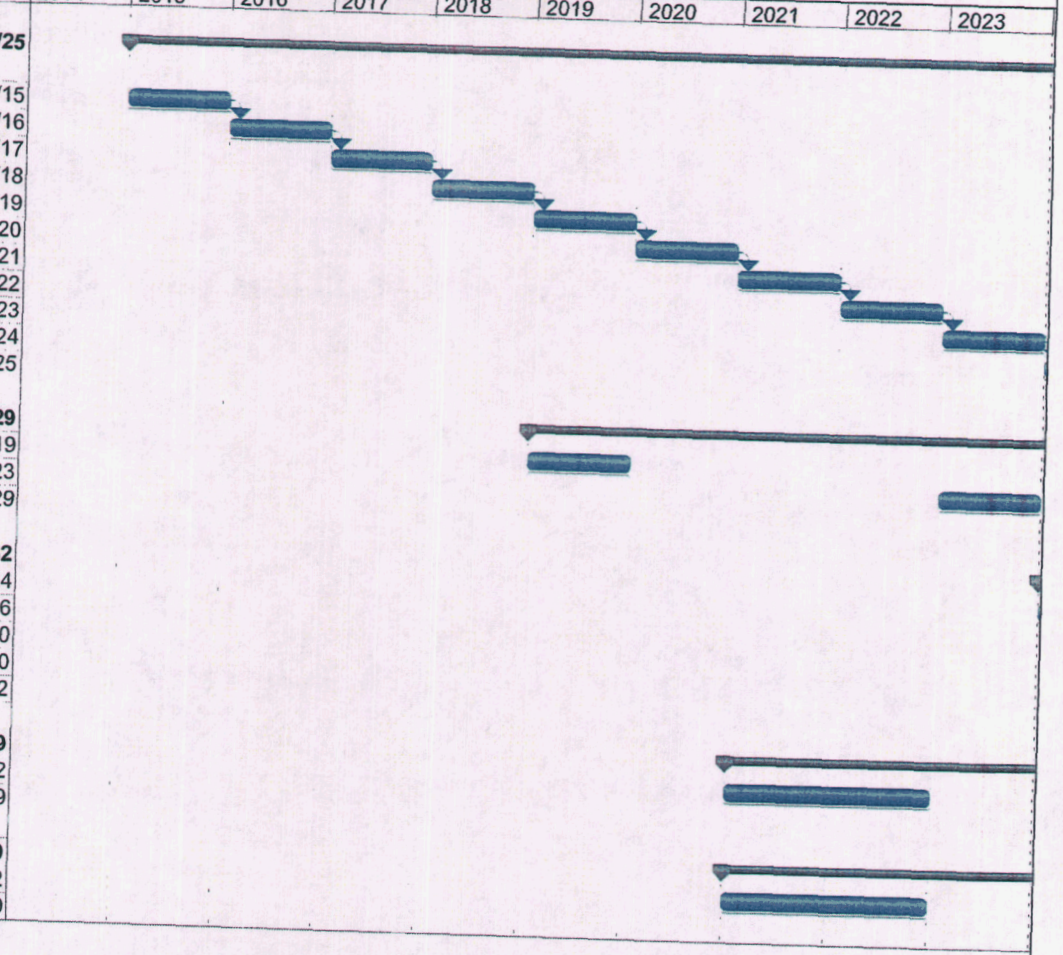
Task
Split
Progress
Milestone
Summary
Project Summary
External Tasks
External Milestone
Deadline

EXHIBIT FKS-7

FKS-6

Off-Site Facilities Fee - Infrastructure Phasing Plan

ID	Task Name	Start	Finish
1			
2	**Transmission and Distribution Mains Construction Estimated at 1.5 - 2 mi/yr**	**Thu 1/1/15**	**Wed 12/31/25**
3	Phase 1	Thu 1/1/15	Thu 12/31/15
4	Phase 2	Fri 1/1/16	Fri 12/30/16
5	Phase 3	Mon 1/2/17	Fri 12/29/17
6	Phase 4	Mon 1/1/18	Mon 12/31/18
7	Phase 5	Tue 1/1/19	Tue 12/31/19
8	Phase 6	Wed 1/1/20	Thu 12/31/20
9	Phase 7	Fri 1/1/21	Fri 12/31/21
10	Phase 8	Mon 1/3/22	Fri 12/30/22
11	Phase 9	Mon 1/2/23	Fri 12/29/23
12	Phase 10	Mon 1/1/24	Tue 12/31/24
13	Phase 11	Wed 1/1/25	Wed 12/31/25
14			
15	**Wells**	**Tue 1/1/19**	**Mon 12/31/29**
16	Well #1 - Offsite	Tue 1/1/19	Tue 12/31/19
17	Well #2 - Offsite	Mon 1/2/23	Fri 12/29/23
18	Well #3 - Onsite	Mon 1/1/29	Mon 12/31/29
19			
20	**Pumping and Treatment Structures**	**Mon 1/1/24**	**Fri 12/31/32**
21	Bridges - Offsite	Mon 1/1/24	Tue 12/31/24
22	Roadway Improvements - Offsite	Wed 1/1/25	Thu 12/31/26
23	Plant Improvements - Onsite	Mon 1/1/29	Tue 12/31/30
24	Turnout Structure and Raw Water Piping	Tue 1/1/30	Tue 12/31/30
25	CAP Plant Construction	Wed 1/1/31	Fri 12/31/32
26			
27	**Storage Tanks**	**Fri 1/1/21**	**Mon 12/31/29**
28	5MG Tank - Offsite	Fri 1/1/21	Fri 12/30/22
29	Reservior - Onsite	Mon 1/3/28	Mon 12/31/29
30			
31	**Booster Stations**	**Fri 1/1/21**	**Mon 12/31/29**
32	5MG Tank Booster Station - Offsite	Fri 1/1/21	Fri 12/30/22
33	Finished Water Booster Station - Onsite	Mon 1/3/28	Mon 12/31/29



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FKS-7

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4	Phase 2	Fri 1/1/16	Fri 12/30/16
5	Phase 3	Mon 1/2/17	Fri 12/29/17
6	Phase 4	Mon 1/1/18	Mon 12/31/18
7	Phase 5	Tue 1/1/19	Tue 12/31/19
8	Phase 6	Wed 1/1/20	Thu 12/31/20
9	Phase 7	Fri 1/1/21	Fri 12/31/21
10	Phase 8	Mon 1/3/22	Fri 12/30/22
11	Phase 9	Mon 1/2/23	Fri 12/29/23
12	Phase 10	Mon 1/1/24	Tue 12/31/24
13	Phase 11	Wed 1/1/25	Wed 12/31/25
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24	Turnout Structure and Raw Water Piping	Tue 1/1/30	Tue 12/31/30
25	CAP Plant Construction	Wed 1/1/31	Fri 12/31/32
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27	**Storage Tanks**	**Fri 1/1/21**	**Mon 12/31/29**
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30			
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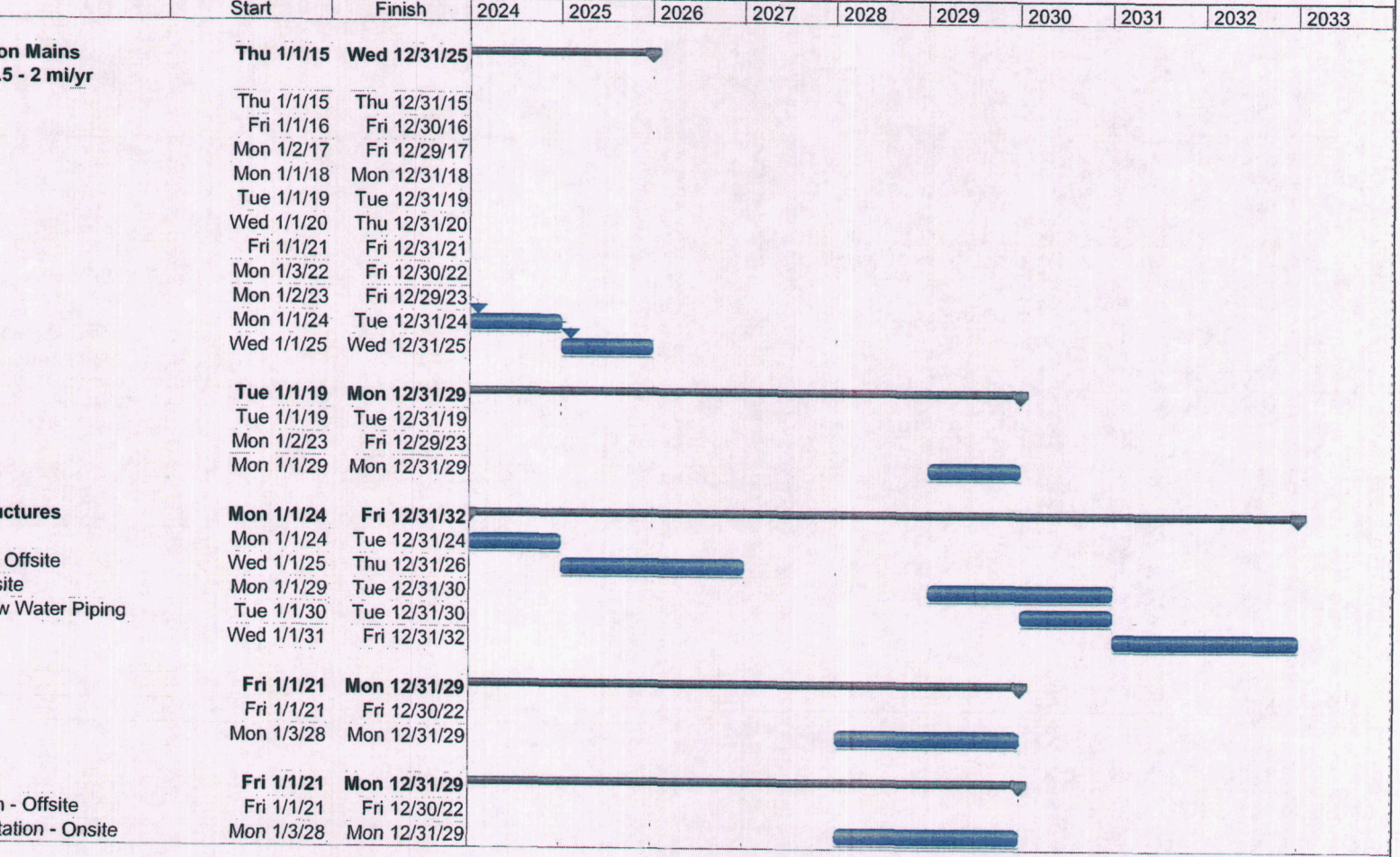

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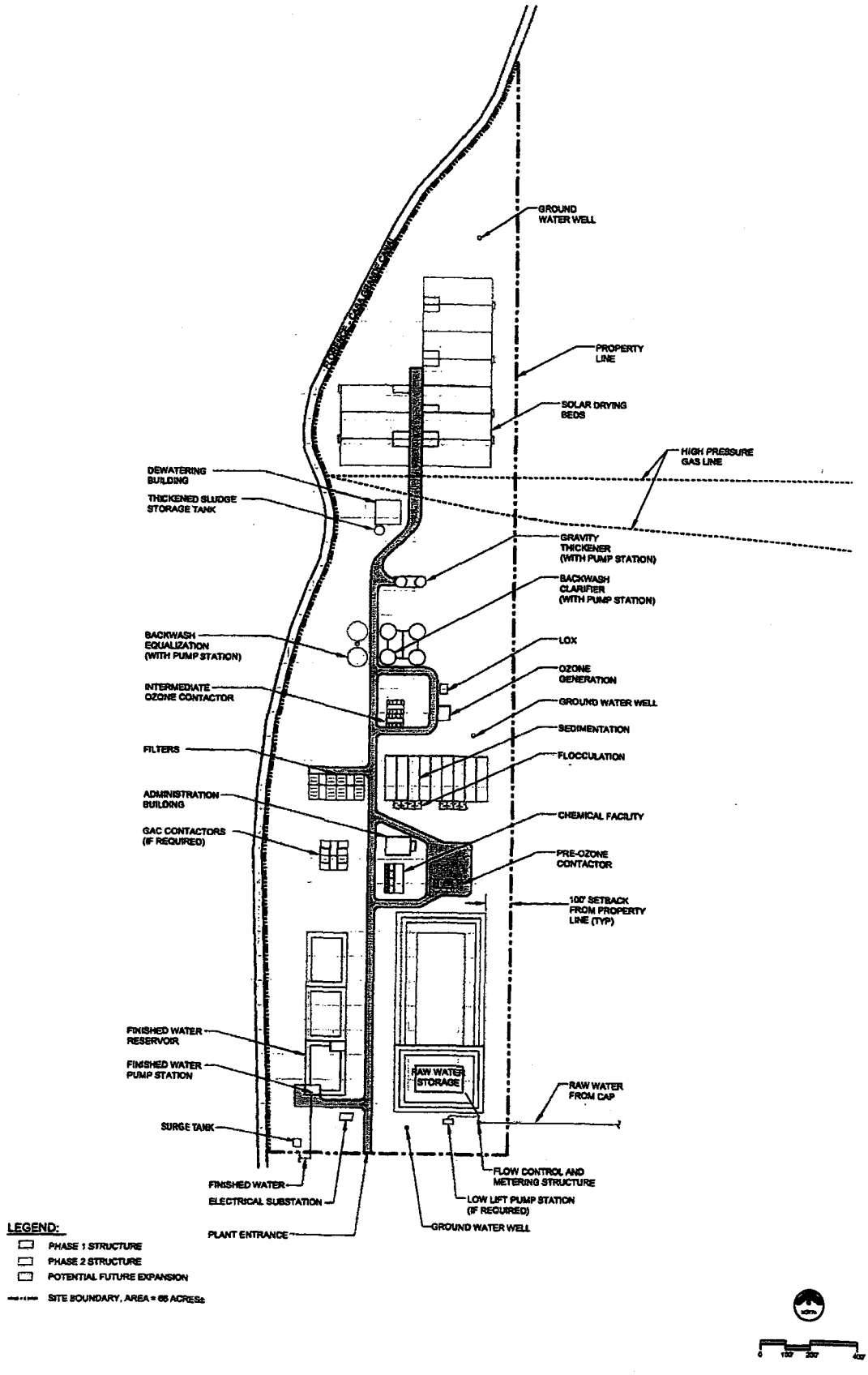
EXHIBIT FKS-6



Site Layout

Figure ES.3

Carollo Engineers...Working Wonders With Water™

Arizona Water Company
Pinal Valley CAP Treatment Plant

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THIRD MANAGEMENT PLAN

FOR

PHOENIX
ACTIVE MANAGEMENT AREA

2000-2010

ARIZONA DEPARTMENT OF WATER RESOURCES

In addition to these individual user requirements, the Third Management Plan contains an individual user requirement that was not included in the Second Management Plan. This additional requirement prohibits the use of groundwater to maintain a water feature installed in a publicly owned right-of-way after January 1, 2002.

Either the individual user or the municipal provider serving the individual user is responsible for complying with the individual user requirement. See section 5-112 for determining responsibility for compliance with the individual user requirements.

5.7.6.2 Distribution System Requirements

Lost and unaccounted for water is defined as the total water from any source, except direct use effluent, withdrawn, diverted, or received in a year minus the total amount of authorized deliveries made by the municipal provider in that year. Lost and unaccounted for water includes line leakage, meter under-registration, evaporation or leakage from storage ponds or tanks, system and hydrant leaks or breaks, and illegal connections.

All municipal providers are required to meet an efficient lost and unaccounted for water standard in their service areas. Lost and unaccounted for water will be determined for each municipal provider based on the total quantity of metered and unmetered water deliveries and the total water pumped, received, or diverted by the municipal provider for each calendar year, excluding direct use effluent. Small municipal providers must maintain lost and unaccounted for water at or below 15 percent. Large municipal providers are required to maintain their system not to exceed 10 percent lost and unaccounted for water. Large untreated water providers are required to either line all canals used to deliver untreated water to the provider's delivery points with a material that allows no more lost water than a well-maintained concrete lining, or operate and maintain its distribution system to limit lost and unaccounted for water at or below 10 percent.

For the third management period, the Department will allow providers to exclude water from the lost and unaccounted for water calculation that is either metered or estimated using approved estimating procedures and that is used pursuant to other regulatory requirements such as well purging and line flushing. Providers may also exclude estimated water uses such as construction (truck loads for dust control) or fire services, but all other uses of water within a distribution system must be metered. Appendix 5-M provides a complete list of uses that are considered in the lost and unaccounted for water calculation and those uses that can be estimated to determine the volume.

5.7.6.3 Monitoring and Reporting Requirements

All municipal providers are required to annually: (1) report to the Department information on the total quantity of water used within the service area and the total volume of water delivered for various municipal purposes, (2) calculate the volume of lost and unaccounted for water within the service area, and (3) report the total number of housing units, by unit type, added to the water service area from July 1 of the previous calendar year to July 1 of the reporting year.

Large municipal providers are required to separately measure and report the amount of water delivered each month for: irrigation uses; residential uses, separated by single family and multifamily; and non-residential uses, separated by water use categories, including turf-related facility use, commercial use, industrial use, government use, construction use, surface water treatment, and other uses.

All municipal providers are required to submit to the Department, on an annual basis, an updated service area and distribution system map delineating all potable and non-potable distribution lines greater than four inches, all potable treatment facilities, all well sites, and all non-potable treatment.

untreated water to a user, and that provided a copy of that agreement to the director by June 22, 1992, is a large untreated water provider upon serving untreated water to at least 500 persons pursuant to the service agreement or upon supplying 100 acre-feet of untreated water during a calendar year pursuant to the agreement.

26. *"Lost and unaccounted for water" means:*

    a. *With respect to a distribution system other than an untreated water municipal distribution system, the total quantity of water from any source, except direct use effluent, withdrawn, diverted or received by a municipal provider during a calendar year for non-irrigation use less the total quantity of authorized deliveries of water from any source, except direct use effluent, made by the municipal provider during the calendar year for non-irrigation use that are metered deliveries or deliveries that the municipal provider accounts for by a method of estimating water use approved by the director.*

    b. *With respect to an untreated water municipal distribution system, the total quantity of untreated water from any source, withdrawn, diverted or received by a large untreated water provider during a calendar year for non-irrigation use less the total quantity of authorized deliveries of untreated water from any source made by the provider during the calendar year for non-irrigation use that are metered deliveries or deliveries that the provider accounts for by a method of estimating water use approved by the director.*

27. *"Lost water" means untreated water from any source that enters an untreated water distribution system and is lost from the system during transportation or distribution due to seepage, evaporation, leaks, breaks, phreatophyte use or other similar or dissimilar causes.*

28. *"Mined groundwater" has the definition prescribed by A.R.S. § 45-561(9).*

29. *"Multifamily housing unit" means a mobile home in a mobile home park and any permanent housing unit having one or more common walls with another housing unit located in a multifamily residential structure, and includes a unit in a duplex, triplex, fourplex, condominium development, town home development, or apartment complex.*

30. *"Municipal distribution system" means a system of pipes, canals or other works within a municipal provider's service area that are owned and operated by the provider to collect, store, treat or deliver water for non-irrigation use.*

31. *"Municipal provider" means a city, town, private water company or irrigation district that supplies water for non-irrigation use.*

32. *"New individual user" means an individual user that begins receiving water from a municipal provider after adoption of the Third Management Plan.*

33. *"New large municipal provider" means a municipal provider that begins serving more than 250 acre-feet of water for non-irrigation use during a calendar year after January 1, 2000, not including untreated water served by a municipal provider that qualifies as a large untreated water provider.*

requirements by the date specified by the director, but not later than January 1 of the year following the year in which the provider's application is approved, and shall remain in compliance with those requirements until the first compliance date for any substitute requirements in the Fourth Management Plan.

5-109. Consolidation of Municipal Provider Service Areas; Acquisition of a Portion of Another Municipal Provider's Service Area

A. Notification

1. *If two or more municipal providers consolidate their service areas into one service area, the consolidated provider shall notify the Department of the consolidation within 30 days after the consolidation becomes effective.*

2. *If a municipal provider acquires a portion of another municipal provider's existing service area, both the acquiring provider and the conveying provider shall notify the Department of the acquisition within 30 days after the acquisition becomes effective.*

B. Regulation of Consolidated Provider

1. *Upon consolidation, a consolidated provider that qualifies as a large municipal provider shall be regulated under the Total GPCD Program described in section 5-103, unless the consolidated provider applies for and is accepted for regulation under the Non-Per Capita Conservation Program described in section 5-104 or the Alternative Conservation Program described in section 5-105.*

2. *If the consolidated provider is regulated under the Total GPCD Program, the director shall establish a total GPCD requirement for the consolidated provider consistent with the methodology used by the director to establish the consolidating providers' total GPCD requirements as set forth in Appendix 5-C.1. The director shall also establish and maintain a flexibility account for the consolidated provider in accordance with section 5-106, subsection A, with a beginning balance to be established by the director based on the ending balances in the flexibility accounts of the consolidating providers.*

3. *If the consolidated provider is accepted for regulation under the Alternative Conservation Program, the director shall establish a residential GPCD requirement for the consolidated provider consistent with the methodology used by the director to establish the consolidating providers' residential GPCD requirements as set forth in Appendix 5-K. The director shall also establish and maintain a flexibility account for the consolidated provider in accordance with section 5-106, subsection B, with a beginning balance to be established by the director based on the ending balances in the flexibility accounts of the consolidating providers.*

4. *If the consolidated provider applies for regulation under the Non-Per Capita Conservation Program or the Alternative Conservation Program and one of the consolidating providers was regulated under that program immediately prior to consolidation, the consolidated provider's application for regulation under the program shall include only the information required by section 5-104 or section 5-105 that has changed since the consolidating provider filed its application for the program.*

APPENDIX 5-M
THIRD MANAGEMENT PLAN
LOST & UNACCOUNTED FOR WATER REQUIREMENTS

Lost & Unaccounted For Water Includes:

Leaks:
- Distribution Lines
- Sewer Lines
- Storage Tanks
- Storage Ponds
- Hydrants
- Other

Breaks:
- Distribution Lines
- Sewer Lines
- Mains
- Hydrants
- Other

Measurement Errors:
- Meter Under/Over-Registration
- Source Meter Errors
- Flumes/Weirs Errors

Evaporation

Illegal Connections/Water Theft

Phreatophyte Uses

****

Water System Uses Include:

- Residential Metered Deliveries
- Non-Residential Metered Deliveries
- Standpipe Uses
- Fire Flow [1]
- Hydrant Meter Reading
- Hydrant Flow Tests [1]
- Fire Sprinkler System Flow Tests [1]
- Construction [1]
- Dust Control [1]
- Line Flushing (distribution, sewer, or treatment facility) [1]
- Street Cleaning [1]
- Storm Drain Flushing [1]
- Water Tests & Pressure Tests [1]
- Well Purging

[1] Estimates can be provided, using a method approved by the director. Documentation must be submitted with annual report.

WATER LOSS REDUCTION PROGRAM FOR THE PINAL VALLEY SERVICE AREA

PWSID #11-009	Casa Grande
PWSID #11-014	Coolidge
PWSID #11-707	Coolidge Airport
PWSID #11-012	Stanfield
PWSID #11-076	Tierra Grande

Prepared By: Arizona Water Company
3805 N. Black Canyon Highway
Phoenix, AZ 85015

Date: May 2, 2011

Exp 9-30-13

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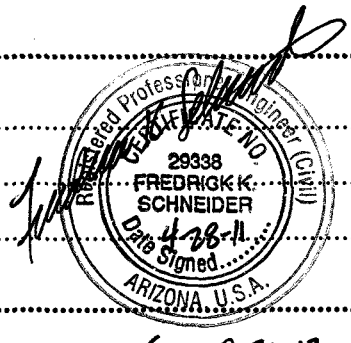

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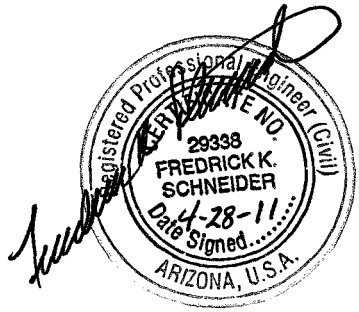

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1.0 EXECUTIVE SUMMARY

This water loss report was prepared by Arizona Water Company (the "Company") for the water systems which are part of the Pinal Valley Service Area ("PVSA") located in central Pinal County and containing approximately 232 square miles. Water losses in the Company's Pinal Valley water system ("PVWS"), which includes the Casa Grande and Coolidge communities, are above ten percent or are increasing towards ten percent. In addition, water loss in the Company's Coolidge Municipal Airport ("CP") water system is above ten percent. In Decision No. 71845, August 25, 2010, the Arizona Corporation Commission (the "Commission") ordered the Company to reduce water losses in all of its water systems to less than ten percent by July 1, 2011, and to report its efforts where it is not able to do so. The Commission also ordered the Company to evaluate the water systems that have not achieved a water loss rate of less than ten percent by July 1, 2011, and prepare a report demonstrating how the Company plans to reduce water losses to less than ten percent, or why it is not cost effective to do so. That report must be filed with the Commission no later than December 31, 2011.

This report shows that the Company has made significant effort and expended significant resources to reduce water losses through water system monitoring, leak detection, repairs and replacements of water mains and service lines. This report also shows that water main and service line leaks and breaks are increasing in frequency. To determine where aging water mains and service lines have led to increases in water loss, the Company's engineers analyzed each water system to assess the condition of water mains and service lines and determine where water main and service lines need to be replaced.

Over 705 miles or nearly four million feet of water mains are currently in service in these water systems. Over time, there were changes in the types of materials used for water mains beginning with the use of cast iron ("CI") pipe in the 1920s, the use of cement asbestos ("CA") pipe in the 1930s, and finally the use of ductile iron ("DI") pipe and polyvinyl chloride ("PVC") pipe in 1986. DI and PVC water mains have been used exclusively since 1986. Other types of water mains have also been installed, but make up a much smaller portion of the distribution system.

These water systems currently have over 28,000 active water service connections. As with water mains, over time there has been a change in the types of materials used for service lines; including the use of polyethylene ("PE"), polybutylene ("PB"), PVC, galvanized steel ("GS") and copper ("CU").

Water mains and service lines must be properly managed, monitored, and maintained to minimize water losses. The Company's well trained employees, using state-of-the-art leak detection equipment, have been effective in identifying such water losses, and repairing or replacing leaky water mains and service lines. However, the effect of aging and failing water mains and water service lines increases water loss beyond the Company's ability to control it through repair and maintenance efforts alone. That point has been reached in portions of the Company's PVWS and CP water systems, and as a result, infrastructure must be replaced.

The Company's engineers have determined that a more aggressive infrastructure replacement program is needed to make significant progress to reduce water losses, and now estimate that a minimum of $2.5 million of new water mains and service lines should be installed annually to replace aging and leaky water mains and service lines in the PVSA. The replacement program projects are specifically designed to reduce water loss in compliance with the Commission's order in Decision No. 71845. Company engineers have prepared a detailed cost estimate to replace the first and most critical phase of aging and failing water infrastructure in the PVWS and estimate that it will cost approximately $41 million to replace water mains and service lines in this first phase. This estimate was based on water mains and service lines included for replacement between 2011 and 2020. The detailed cost estimate is provided in Appendix 9.11. Unfortunately, the Company lacks financial resources to support this additional level of capital expenditures, and will seek the Commission's authority to establish a Distribution System Improvement Charge ("DSIC") as part of an application for new rates filed with the Commission in May 2011. In compliance with the Commission's order to reduce water loss in all of its systems to less than ten percent by July 1, 2011, within a month of Decision No. 71845, the Company started the design and construction of several replacement projects in the PVSA to reduce water losses as the Commission directed the Company to do. These projects include the installation of 9,210 LF of 6-inch C-900, 6,800 LF of 12-inch C-900 PVC, and 178 service lines at a total estimated cost of $1,300,000. Without approval of a DSIC, the Company cannot fund the needed replacement program identified above for the years 2011 through 2020. These replacements are critical to the Company's compliance with the Commission's directive in Decision No. 71845.

2.0 INTRODUCTION

2.1 Purpose

The purpose of this detailed report is to evaluate water losses for the Company's Western Group water systems where water losses exceed, have exceeded, or are likely to exceed ten percent of water produced, to evaluate the extent and impact of aging and failing infrastructure on water loss, and to support the Company's proposal to establish a Distribution System Improvement Charge Tariff. This report presents the Company's plans to comply with the Commission's order in Decision No. 71845 to reduce water losses in such water systems to less than ten percent, and describes the Company's aging and failing infrastructure replacement needs. An overview is provided for the water systems in the PVSA, including detailed information about the background of the water systems, service area, and sources of supply (including a system characterization and assessment). A detailed analysis of water losses is provided, including break and repair history, remedial actions the Company uses to identify and reduce water losses, and recommendations needed for infrastructure replacements to further reduce water losses.

This report focused on the consolidated Casa Grande ("CG") and Coolidge ("CL") water systems (referred to herein as the PVWS) and the CP water system. These systems have shown the highest level of water losses as a result of breaks, leaks and aging and failing infrastructure. The Company closely monitors the other Western Group systems, which already comply with the Commission's standards.

2.2 Abbreviations

The following abbreviations and nomenclature are used throughout this report.

ADWR	Arizona Department of Water Resources
ANSI	American National Standards Institute
AWWA	American Water Works Association
CA	Cement Asbestos
CCN	Certificates of Convenience and Necessity
CDSM	Coolidge Distribution System Model
C-Factor	Hazen-Williams Coefficient of Friction
CG	Casa Grande Water System
CGLZM	Casa Grande Lower Zone Model
CI	Cast Iron
CL	Coolidge Water System
CLC	Cement Lined Concrete
CU	Copper
Commission	Arizona Corporation Commission
Company	Arizona Water Company
CP	Coolidge Municipal Airport Water System
DEM	Digital Elevation Models
DI	Ductile Iron
DSIC	Distribution System Improvement Charge
FRP	Fiber Reinforced Plastic
GIS	Geographic Information System
GPM	Gallons per Minute
GS	Galvanized Steel
HDPE	High Density Polyethylene
MGD	Million Gallons per Day
PB	Polybutylene
PE	Polyethylene
PVC	Polyvinyl Chloride
PVSA	Pinal Valley Service Area; comprised of 232 square miles of CCN.
PVWS	Pinal Valley Water System; described as comprising the consolidated public water systems of Casa Grande and Coolidge.
PWSID	Public Water System Identification
ST	Stanfield Water System
TG	Tierra Grande Water System
TMP	Third Management Plan
TRex	Terrain-Extractor Application

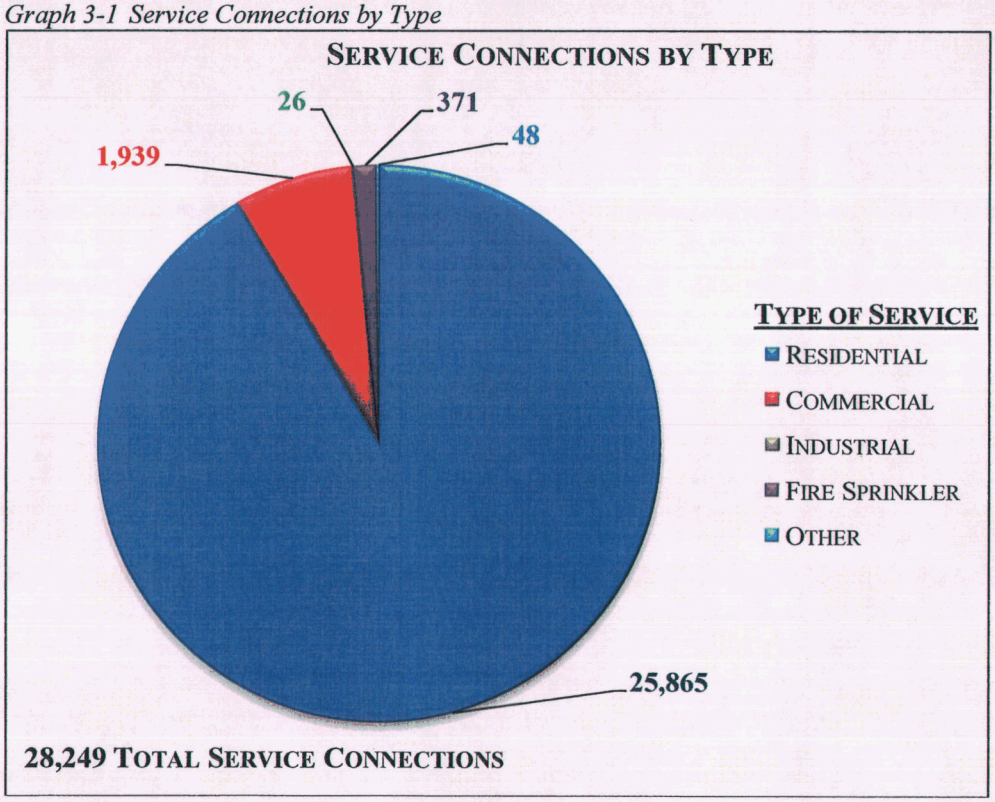
3.0 OVERVIEW OF EXISTING WATER SYSTEMS

3.1 Water System Background

The Company's PVSA[1] encompasses a number of communities in Pinal County, including Casa Grande, Coolidge, Stanfield, Arizona City, Tierra Grande, Randolph, Valley Farms, and the Coolidge Municipal Airport.

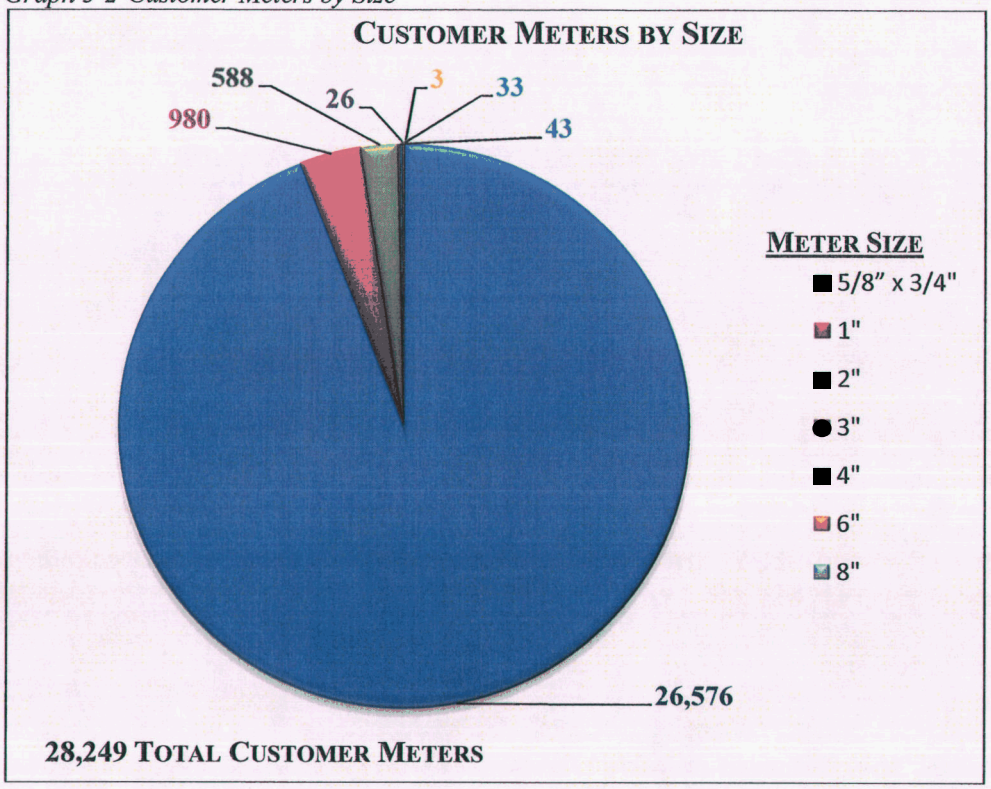
These communities include nearly 2,000 commercial and industrial customer accounts, which typically have higher levels of water demands than residential customer accounts. These non-residential accounts include twenty-six manufacturing facilities, twenty-three schools, ten large retail stores, four office parks, and three hospitals. The PVSA currently has over 28,000 service connections and, based on recent census data, serves an estimated population of 90,000. As shown in Graphs 3-1 and 3-2, the majority of service connections are residential and use 5/8 x 3/4-inch meters.

Graph 3-1 Service Connections by Type



[1] The PVSA is comprised of the PVWS (PWSID No. 11-009), ST (PWSID No. 11-012), TG (PWSID No. 11-076), and CP (PWSID No. 11-707).

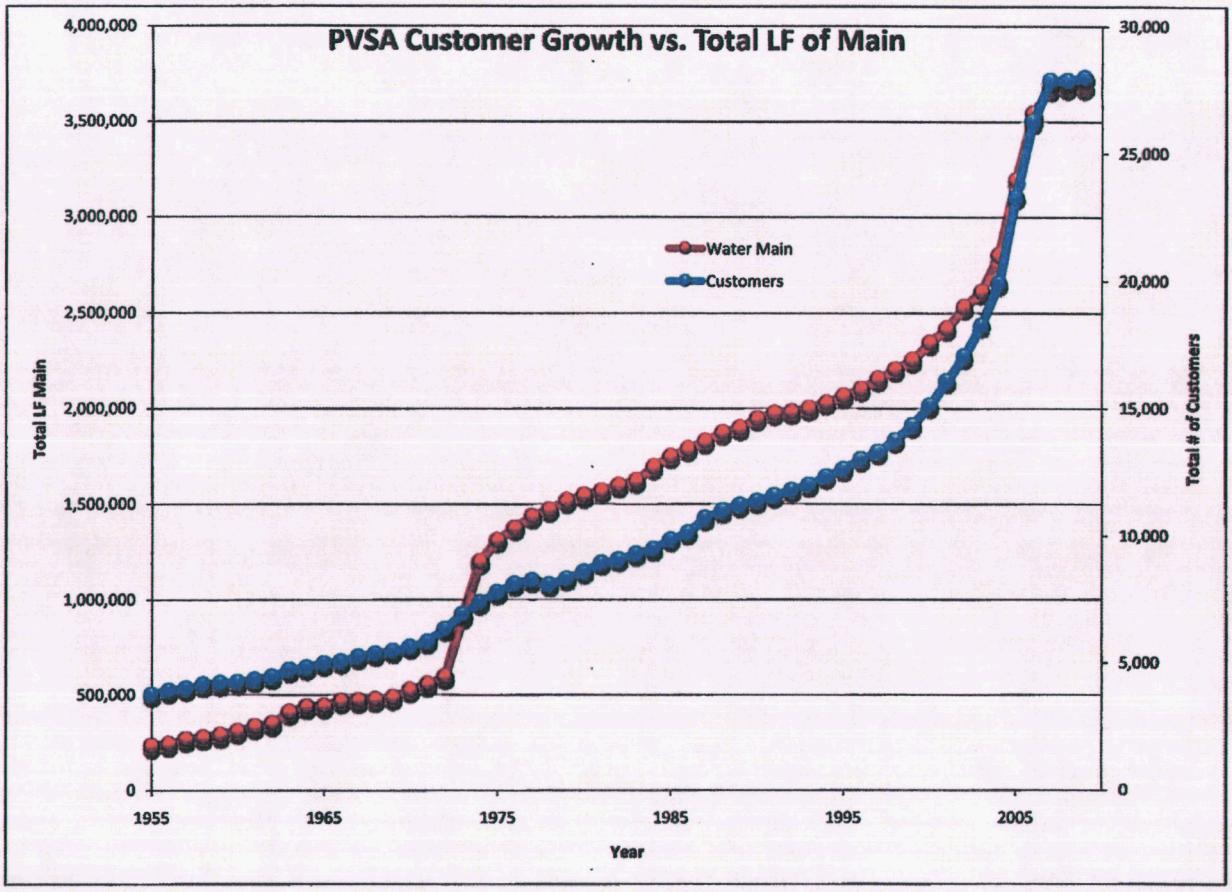
Graph 3-2 Customer Meters by Size



Ninety-two percent of all service connections are classified as residential service connections (most of which use 5/8 x 3/4-inch meters). Seven percent of service connections are classified as commercial, with the remaining one percent classified as industrial, private fire service, or other. Although comprising less than eight percent of all service connections in the PVSA, commercial and industrial service connections account for forty percent of all water deliveries. The remaining sixty percent of the water is delivered to residential service connections.

Water main installations track customer growth and, as a result, many new miles of transmission and distribution water mains and services were constructed in the mid-1970s and the mid-2000s, as shown in Graph 3-3. The PVSA also has older water mains and services, some of which were first installed in the early 1920s, and which remain in service today. These old water mains show advanced corrosion and other signs of aging, such as increasing occurrences of leaks and breaks, which lead to increased water loss and the need for costly and repeated repairs.

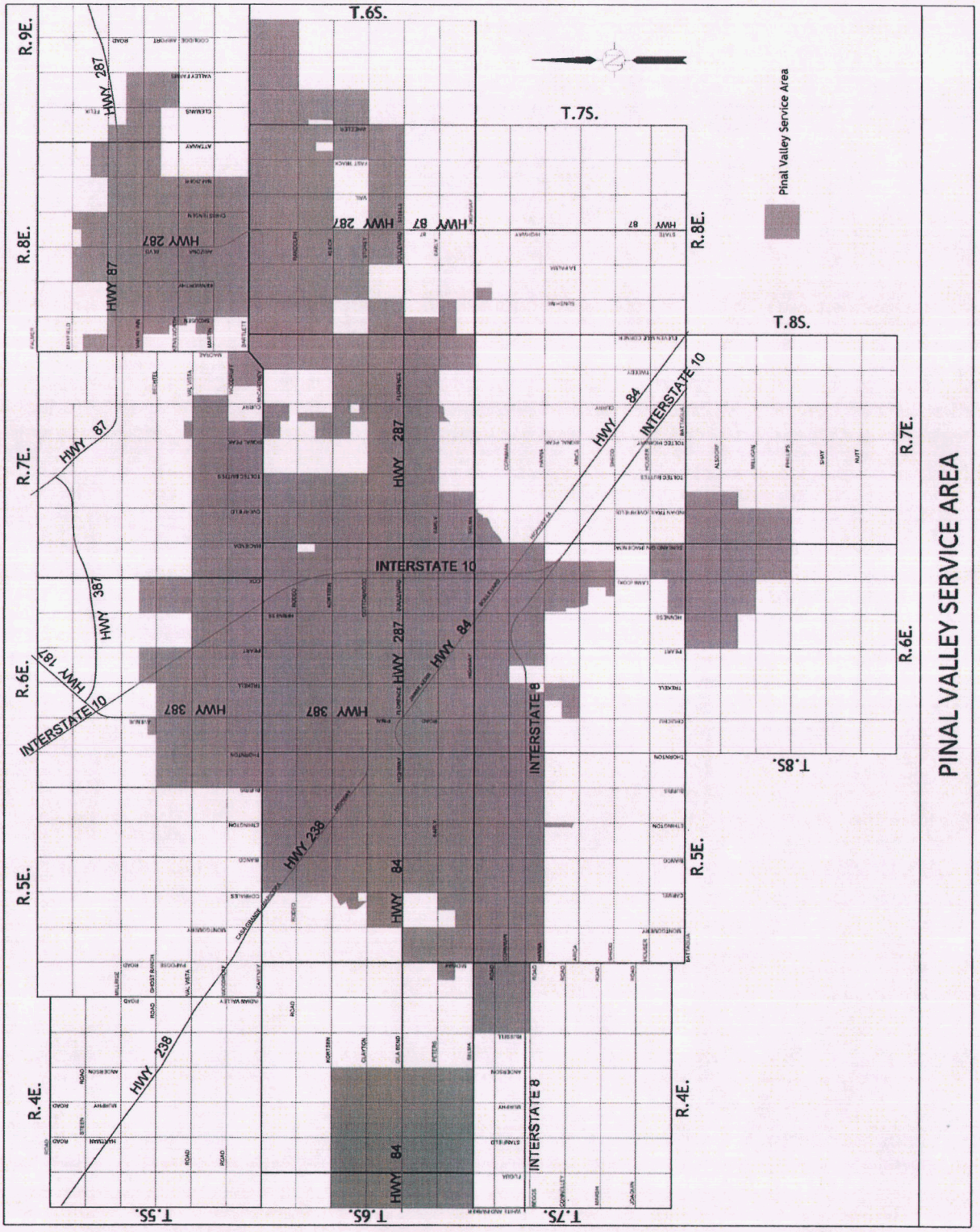
Graph 3-3 PVSA Growth vs. Length of Mains



3.2 Service Area Description

As stated above, the PVSA is located in central Pinal County and contains over 232 square miles, as shown in Map 3-1. The service area is bordered by the Ak-Chin Indian community to the West, the Gila River Indian community to the North, the town of Florence to the Northeast, and Arizona City and the City of Eloy to the South and Southeast.

Map 3-1 Pinal Valley Service Area



3.3 Source of Supply

PVSA customers receive their water from twenty-nine wells that have a combined total pumping capacity of over thirty-four MGD. Some of these wells pump water to the PVSA's seven treatment plants and twenty-one water storage tanks, while others pump directly into the distribution system as separate points of entry. Five treatment plants remove arsenic, one removes nitrate and one removes both arsenic and nitrate. The storage capacity of the PVSA's twenty-one water storage tanks totals over seventeen million gallons.

3.4 Distribution System

As stated earlier, the installation of water mains and service lines in the PVSA has followed the overall pattern of population growth. There are approximately 705 miles of water mains in the PVSA of varying size, material, and age. The water mains in the PVSA are comprised of a variety of materials such as: CA, CI, CLC, CU, DI, GS, PVC, Steel, HDPE, or materials of unknown material type. There are approximately 28,000 water service lines which are comprised primarily of CU, GS, PB and PE.

Water mains vary in size from smaller than two inches in diameter up to thirty-six inches in diameter. Graph 3-4 and Table 3-1 below, show the lengths of water mains in service listed in miles and by pipe diameter. There are over 78 miles or 414,200 LF of water mains smaller than six inches in diameter, as shown in Table 3-1. In accordance with the Arizona Administrative Code ("AAC") R14-2-406 H.2, the Company's current design standards require water mains to be no smaller than six inches in diameter, which is also the predominant water main size comprising forty-four percent of the PVSA water mains.

Graph 3-4 Miles of Water Main by Diameter

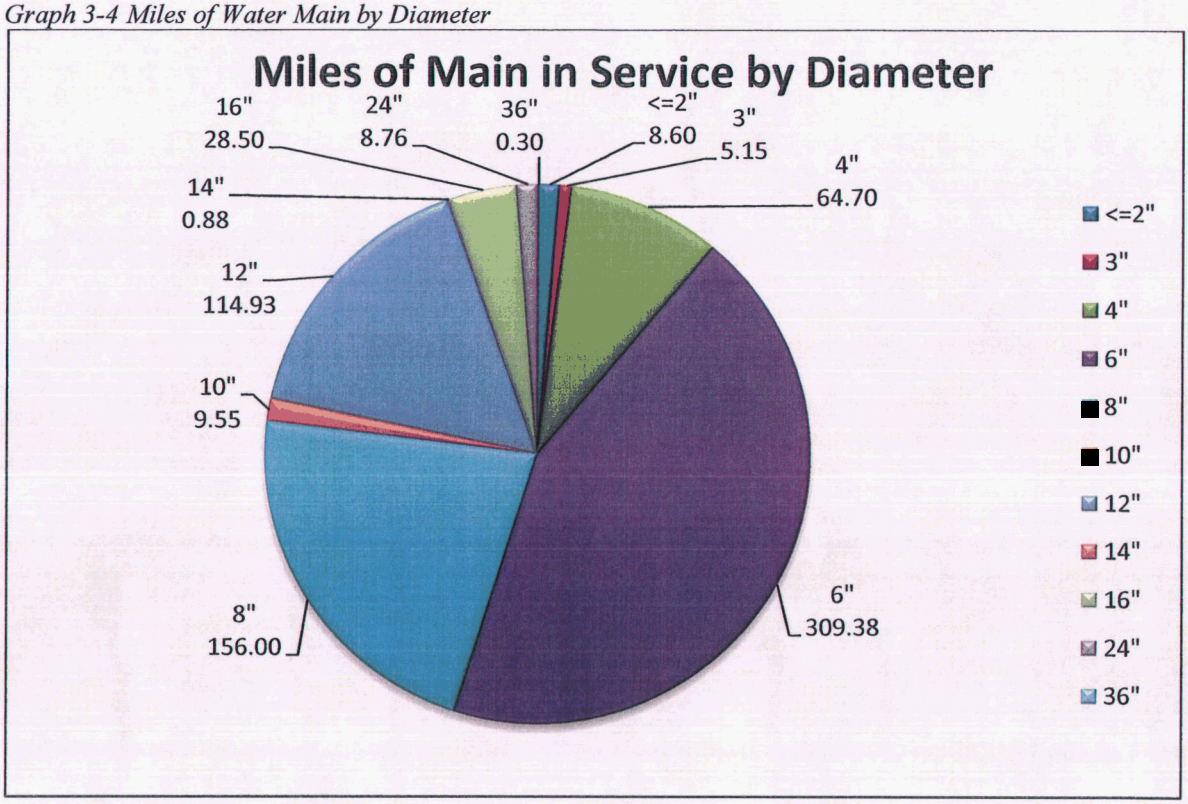


Table 3-1 Miles of Water Main in Service by Diameter

Water Main Size	Miles of Water Main	LF of Main
<=2-inch	8.60	45,385
3-inch	5.15	27,210
4-inch	64.70	341,597
6-inch	309.38	1,633,537
8-inch	156.00	823,705
10-inch	9.55	50,423
12-inch	114.93	606,841
14-inch	0.88	4,618
16-inch	28.50	150,486
24-inch	8.76	46,269
36-inch	0.30	1,550
TOTAL	**706.75**	**3,731,621**

4.0 SYSTEM CHARACTERIZATION AND ASSESSMENT

As stated earlier, the PVSA has over 705 miles of water mains, some of which were installed in 1921 and have been in service for nearly ninety years. Graph 4-1 and Table 4-1 below show the length of water main in service in the PVSA by decade installed. Table 4-4 shows there are over 110,000 LF of water mains installed prior to 1950 and more than sixty years old.

Graph 4-1 Water Mains Installed by Decade

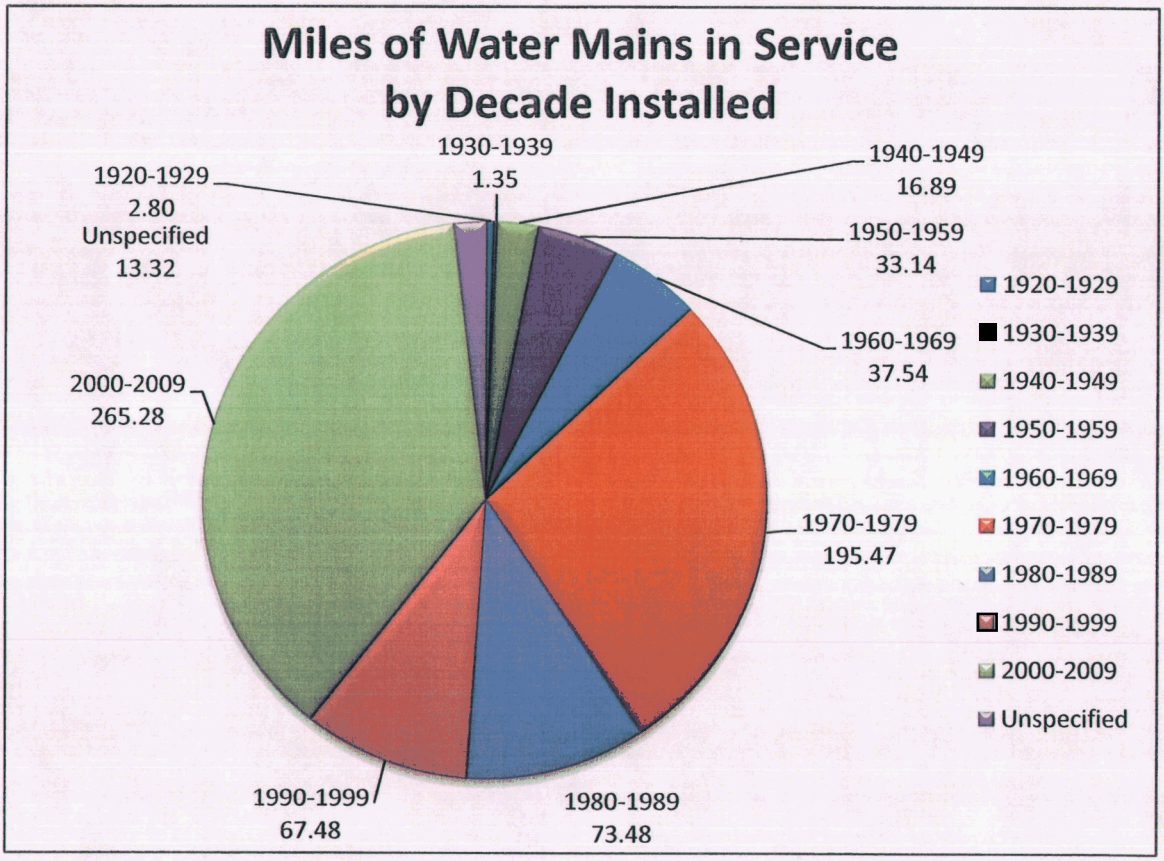


Table 4-1 Water Mains Installed by Decade

Decade Water Mains Installed	Miles of Water Mains
1920 – 1929	2.80
1930 – 1939	1.35
1940 – 1949	16.89
1950 – 1959	33.14
1960 – 1969	37.54
1970 – 1979	195.47
1980 – 1989	73.48
1990 – 1999	67.48
2000 – 2009	265.28
Unspecified	13.32
TOTAL	**706.75**

The useful life of water mains varies considerably based on a number of factors including pipe material, soil conditions, and water quality; however, there is no standard for the estimate of useful life. Water mains are replaced as necessary subject to budget constraints; however, budget limitations do not always allow for replacements within the useful life time frame. As a result, the Company is experiencing an increasing frequency of water main breaks in the PVSA with water mains that are reaching the end of their useful life. The Company's situation is not unique as aging infrastructure is affecting water utilities nationwide (Leaks 1994). Locating and repairing water main leaks are an important aspect of the Company's water loss reduction program as described in detail in Section 5.3 of this report.

4.1 Water Main Material Types

Over the years, the sizes and materials for water mains installed in the PVWS have changed, as shown in Table 4-2.

Table 4-2 LF of Water Main Installed per Decade by Material Type

Material Type	1920s	1930s	1940s
CA	320	5,952	88,177
CI	13,960	1,087	457
TOTAL	**14,280**	**7,039**	**88,634**

CI pipes were commonly installed in the 1920s. CA water mains were used predominantly from the 1930s to the mid 1980s. During this time period, CA pipes were considered to have a longer useful life and better flow characteristics than CI pipes. DI pipe and C-900 PVC pipe have been used exclusively by the Company from 1986 to the present. Graph 4-2 and Table 4-3 below show that a significant portion of the distribution system in the PVWS and PVSA, approximately forty-six percent, is comprised of CA water main. In addition, of the forty-six percent or 1,719,000 LF of CA water mains in service within the PVSA, 1,243,000 LF are six-inch or smaller. As described later in this section, CA water mains six-inch and smaller fail more frequently and have a shorter useful lifespan.

Graph 4-2 Miles of Water Mains by Material Type

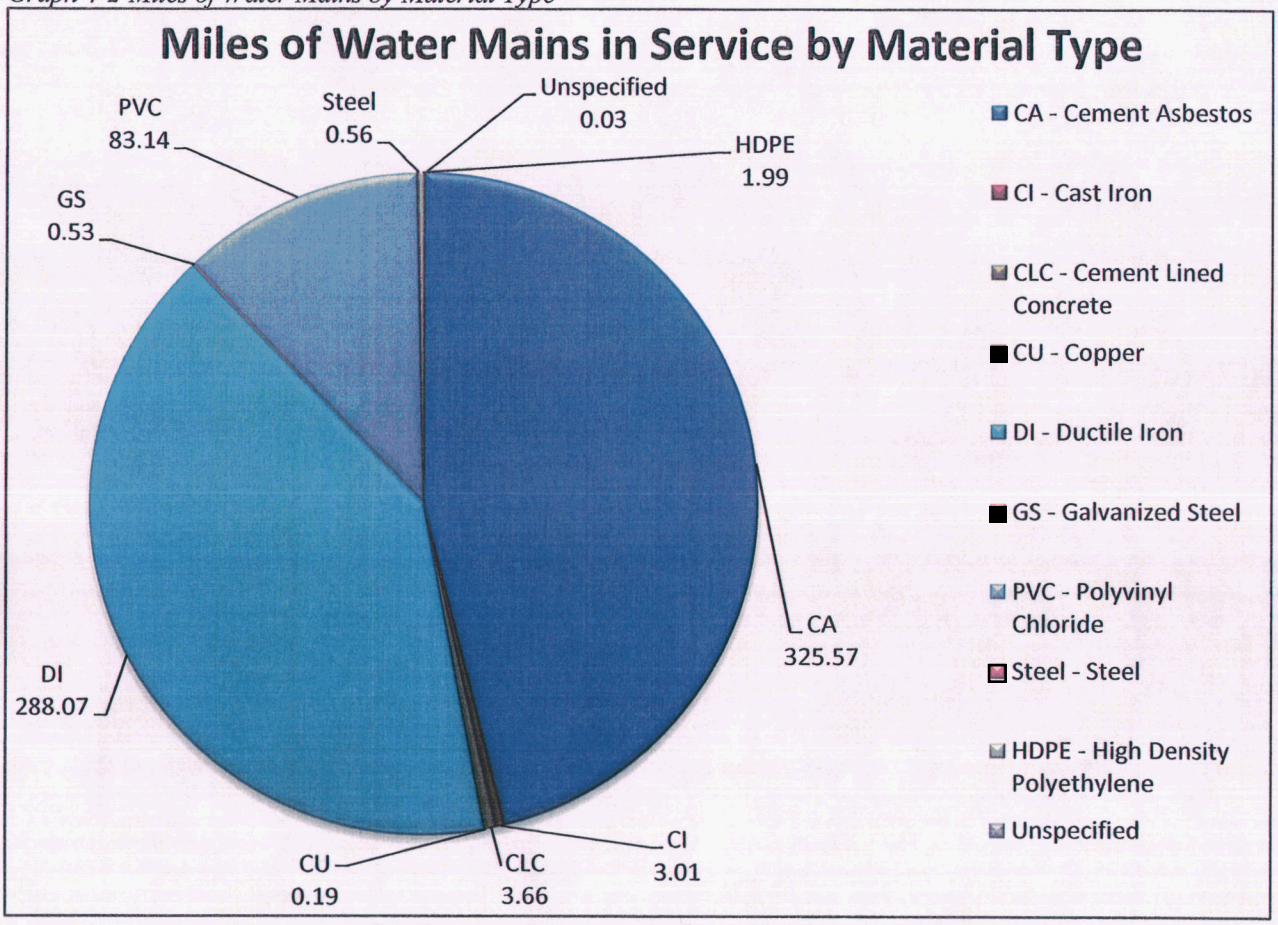


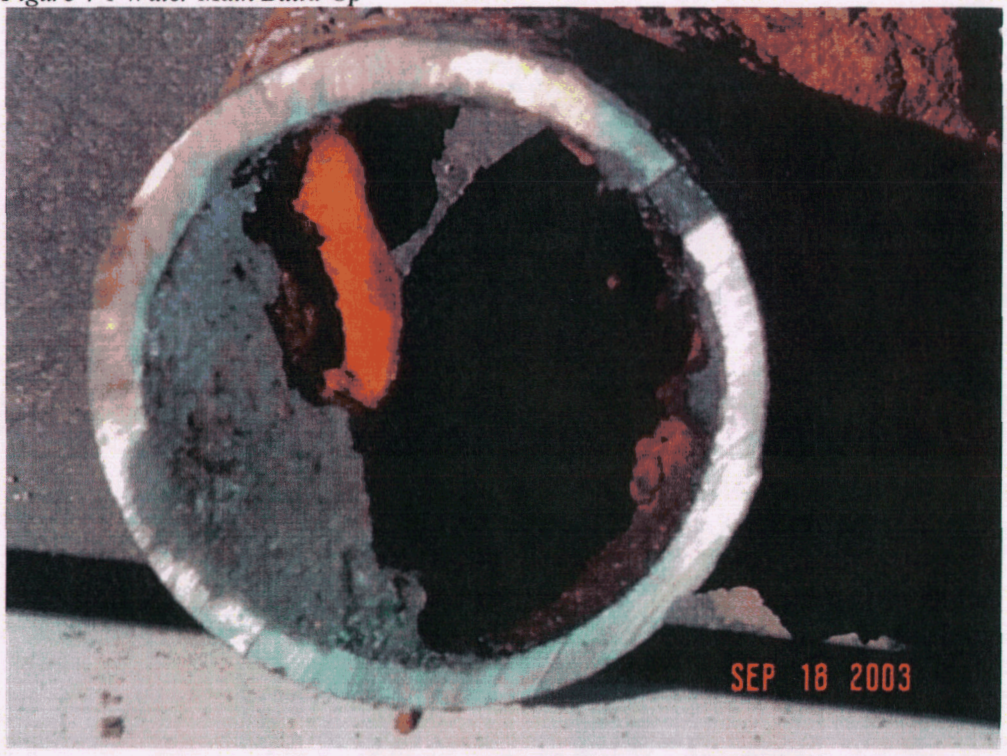
Table 4-3 Length of Water Main in Service by Material Type

Material Type	Miles of Water Main	LF of Water Main
CA	325.57	1,719,022
CI	3.01	15,899
CLC	3.66	19,313
CU	0.19	994
DI	288.07	1,521,025
GS	0.53	2,775
PVC	83.14	438,975
Steel	0.56	2,943
HDPE	1.99	10,500
Unspecified	0.03	175
TOTAL	**706.75**	**3,731,621**

Eighty-Seven percent or 3,240,000 LF of water mains currently in service are either DI or CA. Yet nearly 21,600 LF of water mains are constructed of unprotected metal. CI pipe has been used for water mains since the early 1800s. As with any ferrous type material, CI water mains deteriorate through pitting corrosion, graphitization, and tuberculation build-up. Cement lining applied to the interior of CI water mains reduces internal rates of corrosion. Unfortunately, cement lining of CI pipes did not begin until the 1940s. Consequently, CI water mains that were installed before 1940 suffer from both the internal and external effects of corrosion, further increasing the potential for leaks. The rate and extent of corrosion of water main materials is affected by environmental factors as well, such as the presence of oxygen supply, moisture, soluble salts, cathodic/anodic corrosion, sulfate reducing bacteria, water main installation methods, bedding materials, use of active and passive cathodic protection systems, and other environmental factors.

Unprotected metal water mains of all sizes in the PVSA experience failures from corrosion. Corrosion weakens the structural integrity of the pipe, increasing the likelihood of failure. Internal corrosion in CI water mains leads to the formation of loose porous rust, ferric hydroxide $Fe(OH)_3$, which crystallizes to form a build-up of corrosion on the internal unlined surface of the pipe, commonly referred to as tuberculation. Figure 4-1 provides an example of this build-up of corrosion on a section of four-inch CI water main installed in 1921 in the downtown Casa Grande area of the PVSA, which was replaced in September 2003. As shown in Table 4-3, there are approximately 15,899 LF of additional CI water mains that need to be replaced.

Figure 4-1 Water Main Build-Up



Corrosion pitting usually occurs below the build-up of corrosion scale on the inner wall of the pipe. Such build-up causes operating problems by reducing the flow capacity of the water

pipe. Removing the build-up without applying a protective lining only causes the rate of pit corrosion to accelerate until a new build-up coating is formed (Thomson and Wang 2009). For these reasons, the standard industry practice is not to clean or otherwise disturb the build-up inside CI water mains. In addition to build-up and pit corrosion, graphitization of the inner pipe wall is also visible and shown in Figure 4-1. Graphitization is a type of corrosion process that causes some of the iron to be removed from the pipe wall, leaving behind a graphite flake matrix held together by rust. Graphitization can form a solid substance creating the illusion of undamaged material. The matrix of graphite flakes is significantly weaker than the original CI material. This matrix may be strong enough to temporarily resist the forces of the pipe's internal water pressure, but ultimately leads to leaks and failure.

Water main failures are typically caused by forces applied to the pipe that exceed its residual strength, i.e. its strength is reduced by the effects of corrosion. Forces on water mains include those produced by internal water pressure, bending forces, crushing forces, soil movement-induced tensile forces, and temperature-induced expansive forces. Bending of CI pipes, a type of loading condition, is a common cause of failure which can be made worse by the effects of corrosion. Another loading condition that commonly causes water main failures results from soil locking to the pipe wall through friction forces; after which soil movements create tension in the water main resulting in tensile failures (Makar et al. 2001). Rust of the outer pipe wall is shown in Figure 4-1. The rust effectively increases the coefficient of static friction between the pipe wall and soil, which can lead to increased tensile forces and ultimately to increased failures. The common causes of failure of CI and CA mains are described below.

Common causes of CI water main failures, include blowout holes, circumferential cracking, bell splitting, longitudinal cracking, bell shearing, and spiral cracking. Smaller diameter water mains experience smaller forces from internal water pressure but have smaller moments of inertia, making them susceptible to longitudinal bending failures. Larger diameter water mains experience larger forces from internal water pressure and have higher moments of inertia, making them susceptible to longitudinal cracking and shearing at the bell (Makar et al. 2001). Blowout hole failures occur when corrosion pitting thins the pipe wall to the point where the internal water pressure blows out the remaining, reduced thickness pipe wall.

One of the most common reasons for failure of smaller diameter CI pipe in the PVSA is circumferential cracking caused by bending forces applied to the pipe. The failure crack propagates around the circumference of the pipe, and is visually similar to a twig snapping. Bell splitting is another common type of failure for smaller diameter CI pipe caused by thermal expansion and contraction. Longitudinal cracking is common in larger (larger than sixteen inches in diameter) CI pipes. Bell shearing is common in larger diameter CI pipes, since larger water mains have too high a moment of inertia to produce circumferential failures. Bell shearing failures are caused by compressive forces pushing the spigot of one pipe into the bell of the next or from bending forces. CI pipes larger than eight inches were not commonly used in the PVSA and, as a result, longitudinal cracking, bell shearing, and spiral cracking are not common types of failure experienced seen in the PVSA.

CA water mains have been used commonly in the PVSA since the 1930s, as shown in Table 4-2. CA does not corrode in the same manner as ferrous (such as CI) water mains and was considered a superior product compared to CI. However, chemical changes occur in the cement substrate of the CA pipe due to the interaction of water and the internal surface of the pipe and

from the interaction of the surrounding soil and the external surface of the pipe. These chemical changes cause a loss of strength in the composite material. Deterioration of the pipe is not immediately visible, as no color change or reduction in wall thickness is typically seen. Changes in material or pipe integrity are also not immediately visible. CA pipe deteriorates through the decomposition of hydrated silicates in the cement mortar due to the leaching of calcium hydroxide. As the calcium hydroxide leaches out of the CA pipe, hydrated silicates decompose and release more calcium hydroxide. This degenerative process continues until most of the hydrated silicates are decomposed, resulting in material that is weaker and unstable, which ultimately leads to leaks, breaks, and failure of the pipe. Although the available anti-corrosion techniques for metal pipe have advanced due to requirements of the oil and gas industries, CA water pipe construction has not benefited from similar advancements. The Company's use of CA water mains in new installations ended in 1986 when it changed its specifications to require the use of only DI pipe (or in the Coolidge area PVC C-900 pipe).

Concerns over the failure and useful life of CA water mains have prompted many studies. For example, a study that analyzed pipe breaks in urban water systems identified the positive relationship between the rate of pipe breakage and age (Kettler and Goulter 1985). This confirms the Company's concern that water leaks are increasing as its water system ages. Other studies have shown that the pipe breakage rate is influenced by pipe diameter, with a higher breakage rate for smaller diameters (Guan 1995, Mordak and Wheeler 1988). The thinner pipe wall and lower bending moment resistance of smaller diameter pipe can be attributed to the higher breakage rate (Mordak and Wheeler 1988). The Company has over 1,243,238 LF or seventy-two percent of the CA water mains in the PVSA that are six inches in diameter and smaller, as shown in Table 4-4.

Table 4-4 LF of CA Water Mains Installed

Size	LF
≤ 6-inch	1,243,238
> 6-inch	475,784
TOTAL	**1,719,022**

Based on the leak repair history data collected and presented in Appendix 9.1 the Company has considerably more leaks on smaller diameter (six inches in diameter and smaller) CA water mains compared to larger diameter CA water mains. For example, Figure 4-2 below shows a picture of a blowout hole failure for a CA water main in the PVSA. This is the most common reason for water main failure in the PVSA due to the existence of corrosive soils. The Mordak and Wheeler 1988 Study supports this phenomenon.

Figure 4-2 Blowout Hole Failure

All mains are subject to deterioration and increased risk of failure with age. Water mains made of CI and CA must be replaced since they are reaching the end of their useful lives, and account for over ninety-nine percent of all water mains installed between 1920 and 1949, as shown in Graph 4-3 and Table 4-5. Based on this information, a primary focus of the Company's proposed replacement projects identified in section 6.3, is to concentrate on the replacement of CI water mains and smaller diameter CA water mains which have documented excessive breaks and leaks.

Graph 4-3 Water Mains Installed between 1920 and 1949 by Material Type

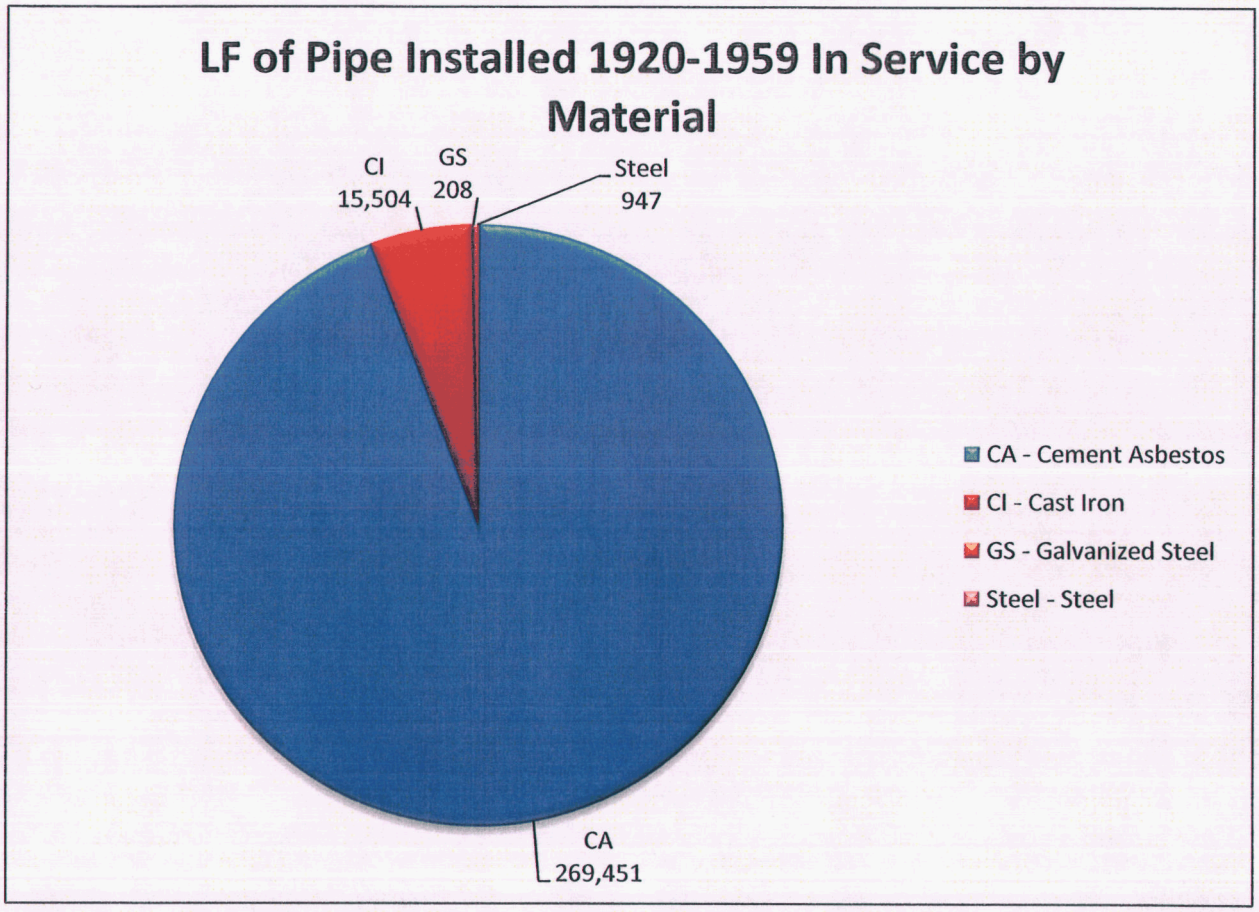


Table 4-5 Water Mains Installed Between 1920 and 1949 by Material Type

Material	LF	Percentage
CA	94,449	85.00%
CI	15,504	13.96%
GS	208	0.19%
Steel	947	0.85%
TOTAL	**111,108**	**100%**

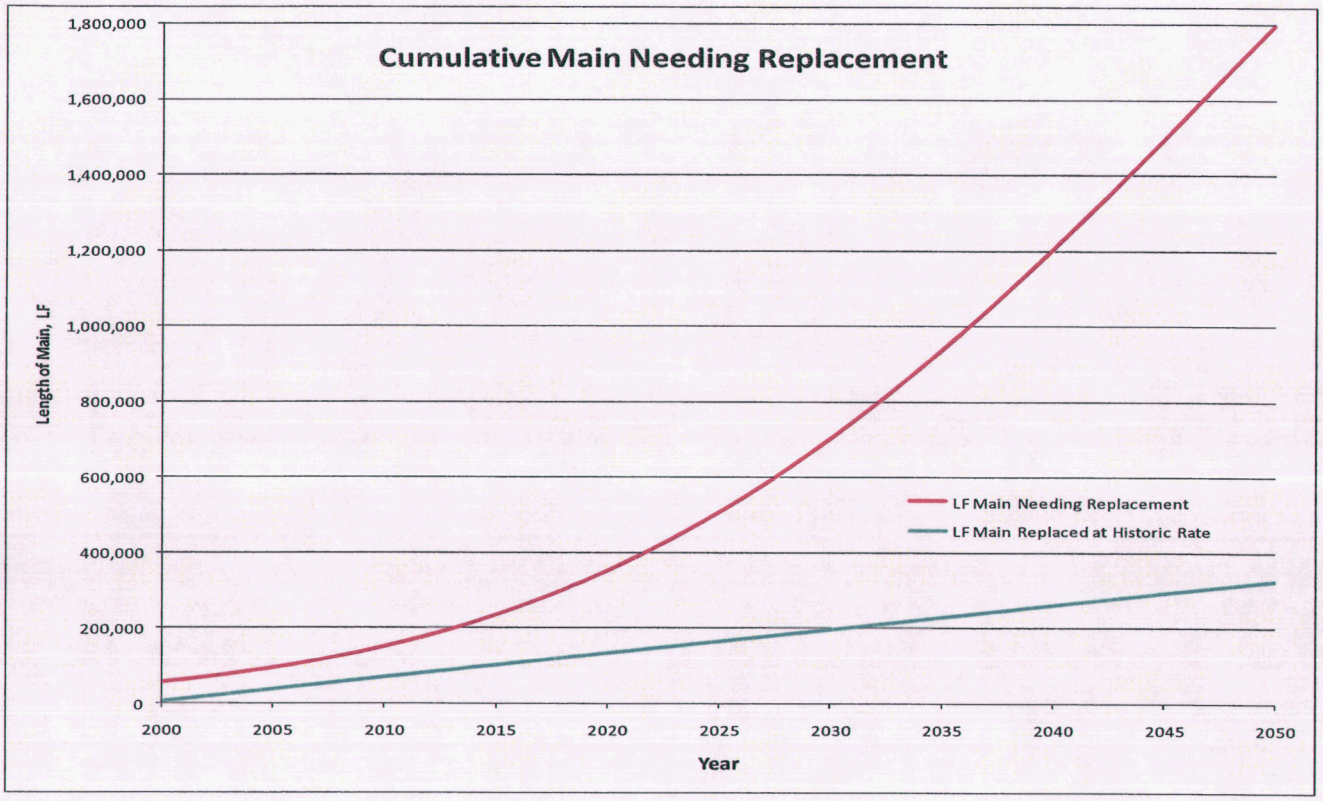
4.2 Average Age of Water Mains

The oldest CI water mains in the PVWS are approximately ninety years old, and the oldest CA water mains are approximately seventy five years old. From the approximately 1,500 leaks recorded in the PVSA in recent years as summarized in Appendix 9.1 and the age of the water mains in the PVSA, these CI and CA water mains have reached the end of their useful life and require replacement.

The magnitude of the capital investment made in the PVSA distribution systems to provide safe, reliable and adequate water service to the Company's customers is substantial. Water mains are often taken for granted because they are a hidden resource buried underground and out of sight. The AWWA has coined the term "The Replacement Era" to refer to the years 2000 to 2030, in which a significant portion of the Nation's water distribution system infrastructure will need to be replaced (Cromwell et al. 2001). Over the next three decades, water utilities will routinely need rate adjustments to recover increases in the cost of service resulting from water main and service line replacements. The AWWA projects that utilities such as the Company will require significant adjustments in revenues to recover the costs associated with these expenditures (Cromwell et al. 2001).

The Company's investment needs for water main replacements are forecasted on an annual basis for the PVSA. The replacement needs are based on the current age of the water mains and their estimated useful lives. The Nessie Curve analysis is a method to graph annual replacement needs based on the date of water main installations and their expected useful life. The Nessie Curve reflects the original water main installation pattern for the PVSA. That pattern is similar to the graph of demographics that predicts future liabilities for the Social Security Trust Fund (Cromwell et al. 2001). By modeling the installation pattern and the life expectancy of water mains, the Company has estimated the timing and magnitude of the investment needed to fund these replacements. The analysis shows approximately 287,000 LF of water main or approximately 7.7 percent of the PVWS needs to be replaced including 3,700 plastic service lines, and another 3,500 galvanized steel service lines over the next 10 years at an estimated cost of $41 million as detailed in Appendix 9.11. This analysis is based on a complete review of the documented water main and service line repair history summarized in Appendix 9.1. Graph 4-4 below shows the predicted water main replacement needs in the PVSA based on various water industry studies, some of which are listed in this section.

Graph 4-4 Rate of Water Main Replacements



Graph 4-4 shows that a significant increase in the rate of water main replacement is necessary. The historic replacement rate of water mains from 2000 to 2009 is approximately 5,900 LF per year and is the starting point for the graph. Graph 4-4 shows that the current need is approximately six times the current rate of replacement. Each year, these costs increase and the quantity of aging and failing water mains and service lines is increasing, making it an increasingly difficult task to replace such aging mains and services.

4.3 Service Line Materials

Water service lines are typically constructed from several different types of materials including CU, plastic, PVC and GS. CU water service lines may become pitted by internal and external corrosion, leading to leaks or breaks increasing water loss. GS water service lines are subject to corrosion, similar to signs of failure as seen in water mains, including pitting corrosion and internal build up. Commercial plastic pipe was first introduced in the United States in the 1940s. In 1948, large-scale production of plastic pipe began with the introduction of PE which was used in various water applications (DeBerry et al. 1982) and was first used for water service lines and household plumbing.

PE is formed by the polymerization of ethylene. PE has a very high chemical resistance and as a result, cannot be joined using adhesives or solvent cements, but instead must be joined by compression or thermal fittings. PE pipe used by the Company for service lines had carbon black added as part of the manufacturing process, which was a common method to protect from ultraviolet radiation (sunlight deterioration). Another plastic pipe used for service lines was PB.

PB has a rigidity similar to that of low density PE, but has a strength greater than that of HDPE. Unlike PE, PB has the ability to retain strength with increasing temperature. Its initial flexibility made it a prime candidate for use in water service lines. Compared to metals, thermoplastics such as PE and PB offer significantly higher corrosion resistance. Thermoplastics are not susceptible to electrochemical and galvanic corrosion because they are not conductors, like metal water mains. PE and PB pipes are also not affected by stray currents in the soil. Stray currents in soil can come from active cathodic protection systems; such as those used by gas companies for protection of steel pipelines. Other forms of stray current can come from various electrical sources, such as power lines. This resistance to electrochemical corrosion alleviates the need for cathodic protection and special coatings. Thermoplastics are also not significantly affected by the inorganics in drinking water, or the chemicals used in water treatment such as acids, bases and brines. At the time of their installation, the water industry determined that PE and PB service lines were the superior replacement.

However, unlike steel, DI and CU, environmental stress cracking is a significant factor in plastic pipe degradation. This form of degradation is due to stress concentrations on the plastic pipe, particularly at joints and fittings. These concentrated stresses arise from: 1) forced alignment of pipe and fittings, 2) thermal expansion and contraction, 3) settling structures, and 4) long-term dimensional changes (DeBerry et al. 1982).

The Company installed PE and PB water service lines from the late 1960s to the early 1980s. Plastic services like PE and PB were commonly used by the water industry in the 1970s which is when the Company installed most of its plastic water service lines. Decades later, plastic service line failures have increasingly led to leaks and breaks which initially required repairs, and eventually full replacement. The Company estimates that approximately 3,700, or thirteen percent, of the water service lines installed in the PVSA were constructed of either PE or PB materials. Because of the high percentage of PE and PB water services, failures from PE and PB services are commonplace and a significant contributor to water losses. Two of the problems commonly seen by the Company on failed plastic services are forced alignment of pipe and fittings, and thermal expansion and contraction. Currently, CU is used for all water service lines up to and including two-inches in diameter. In the previous four to five years, the Company has noticed an increasing trend of pinhole corrosion leaks in copper water service lines due to corrosive soils and, as a result, the Company now requires polyethylene encasement in such types of service lines.

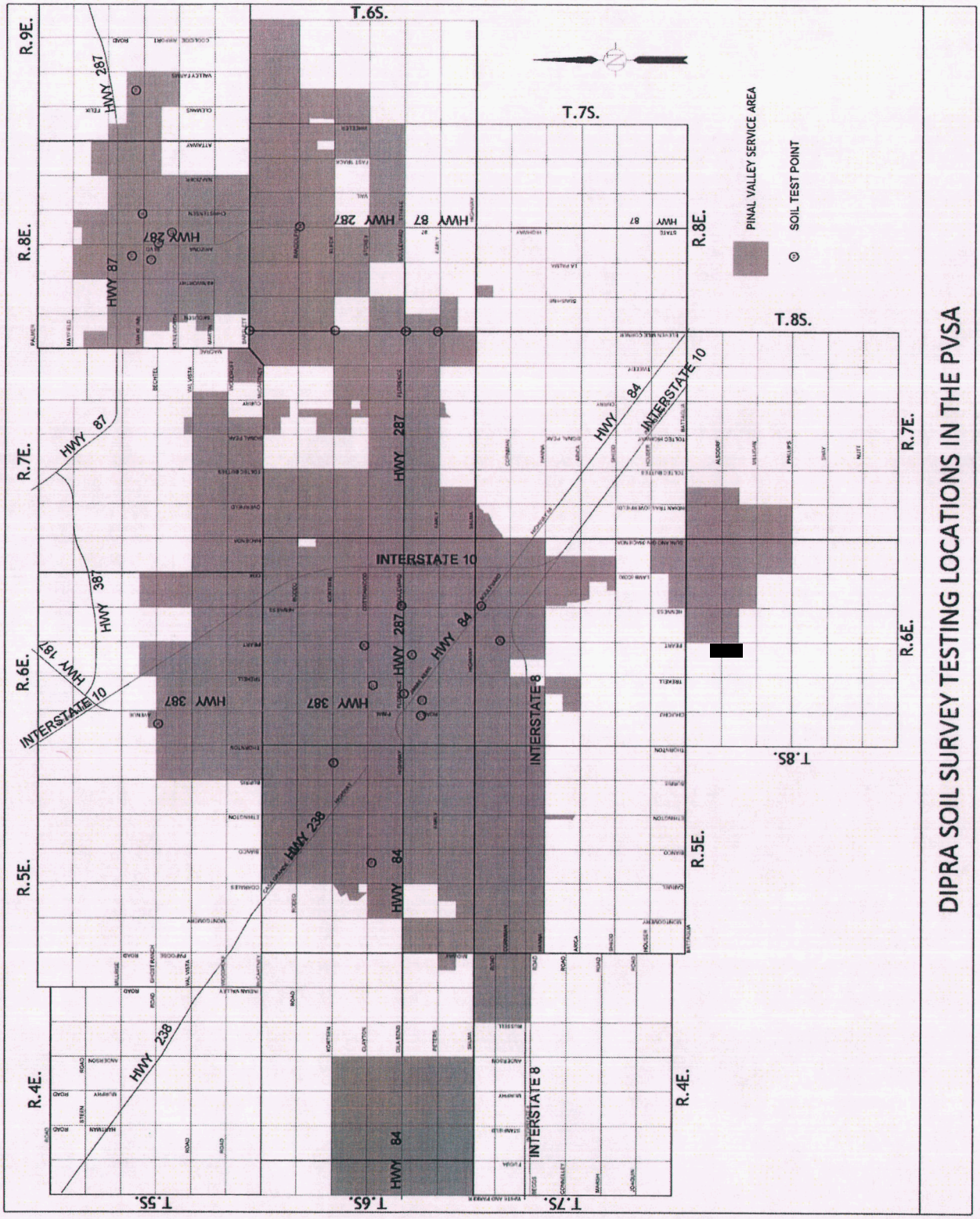
4.4 Polyethylene Encasement

The Company requires the use of polyethylene encasement (or polywrap) of its DI water main and CU service line installations for corrosion protection, which consists of wrapping the pipe with polyethylene tubes or sheets. Polyethylene encasement has been used worldwide for more than fifty years as an effective corrosion protection system for CI, CU and DI pipe. Once installed, polyethylene encasement is a passive protection system that does not require monitoring, supervision, or maintenance. The first national standard in the United States for polyethylene encasement ANSI/AWWA C105/A21.5) was adopted in 1972. In 1974, the American Society of Testing and Materials issued a standard for polyethylene (ASTM A674). The Company currently follows these national standards.

Polyethylene encasement acts as a film that prevents direct contact between the water line and the surrounding soil. Any water that enters the annular space between the polyethylene encasement and the water line, with its available oxygen, reaches a stagnant equilibrium in which the oxidation process stops long before damage occurs to the DI pipe. This is due to the limited availability of oxygen, which is needed for corrosion to occur. Further, pinholes in the loose polyethylene wrapping material do not significantly diminish its ability to protect the water line against corrosion.

In June 1986, a soil survey report was conducted on several of the Company's water systems, including the PVWS water systems. This survey was performed in conjunction with the Company's change in specifications from CA to DI water mains, and was used to help determine whether external corrosion protection was needed for the installation of DI pipe in its various water systems. Test locations were selected in various portions of CG and CL, and assumed to be representative of future pipe installations, see Map 4-1. All field and laboratory procedures were conducted in accordance with Appendix A of ANSI/AWWA C105/A21.5 Standard.

Map 4-1 DIPRA Soil Survey Testing Locations in the PVSA



The soil survey report used the industry accepted "10-Point" method to determine soil corrosivity per Appendix A of ANSI/AWWA C105/A21.5 Standard. Under this method, the soil is analyzed for: resistivity, pH, redox potential, sulfides and moisture. All of these characteristics have been proven to contribute to soil corrosivity. Points are assigned through a piecewise function of each of the soil characteristics measurements. Values that are more corrosive are assigned more points. The soil is considered corrosive to CI and DI pipes when the sum of all the points for the five soil properties listed above is greater than or equal to ten points. The point scale for soil resistivity has changed since the soil survey report was performed in 1986. Table 4-6 below shows the difference in values.

Table 4-6 Corrosivity Point Scale

	CORROSIVITY POINT SCALE		
Year	**1982**	**2010**	
Standard	**AWWA C105/A21.5-82**	**AWWA C105/A21.5-10**	
	Resistivity - ohm-cm		***Points***
	<700	<1500	10
	700-1000	≥1500-1800	8
	1000-1200	>1800-2100	5
	1200-1500	>2100-2500	2
	1500-2000	>2500-3000	1
	>2000	>3000	0

With the new national standards adopted, the Company anticipates updating the Soil Survey for the PVSA in 2011 and 2012.

The point scale in 1986 required the resistivity value to be much lower in order to be considered corrosive. However, there have been many studies (Tucker 1986) showing that soil resistivity is the soil characteristic that contributes the most to soil corrosivity. Tables 4-7 and 4-8 below, show the results of the soil resistivity measurements taken from the sample locations in the CG and CL areas reported in the soil survey report.

Table 4-7 Casa Grande Soil Resistivity

Casa Grande Test Locations	Resistivity ohm-cm
Hwy 84 at Casa Verde	1480
Peart Road 1200' South of Hwy 84	1040
Ash at Florence Blvd	1240
S. Drylace and East 1st Avenue	800
Hermosilla at 2nd Street	340
Colorado at Florence Blvd	560
Florence Blvd at City Limits	1200
Peart and Cottonwood	236
Amarillo Drive and East Manor Drive	1120
Trekell Road at Ross Abbott Plant	1600
Desert Carmel	1720
Deer Run	2200

Table 4-8 Coolidge Soil Resistivity

Coolidge Test Locations	Resistivity ohm-cm
Arizona Blvd and Northern	800
Vah Ki Inn and Christensen	1440
Valley Farms	1000
Kachina and Havasupai	4800
9th Street at Northern	1000
Wilson and Main	1440
Randolph Bateman and Highway 87	116
Kleck Road and 11 Mile Corner Road	1200
Bartlett Road and 11 Mile Corner Road	3320
11 Mile Corner Road and Arizona Road	440
Tierra Grande	1440

Using the point scale in the report, two locations in CL and three locations in CG have resistivity values under 700 ohm-cm, resulting in ten points being assigned to these locations. Using the most recent scoring system, nine out of eleven locations in CL, and nine out of twelve locations in CG, have resistivity values under 1,500 ohm-cm, resulting in ten points. Using either the past or current scoring system, the soils in the CL and CG areas are considered corrosive to CI and DI pipe.

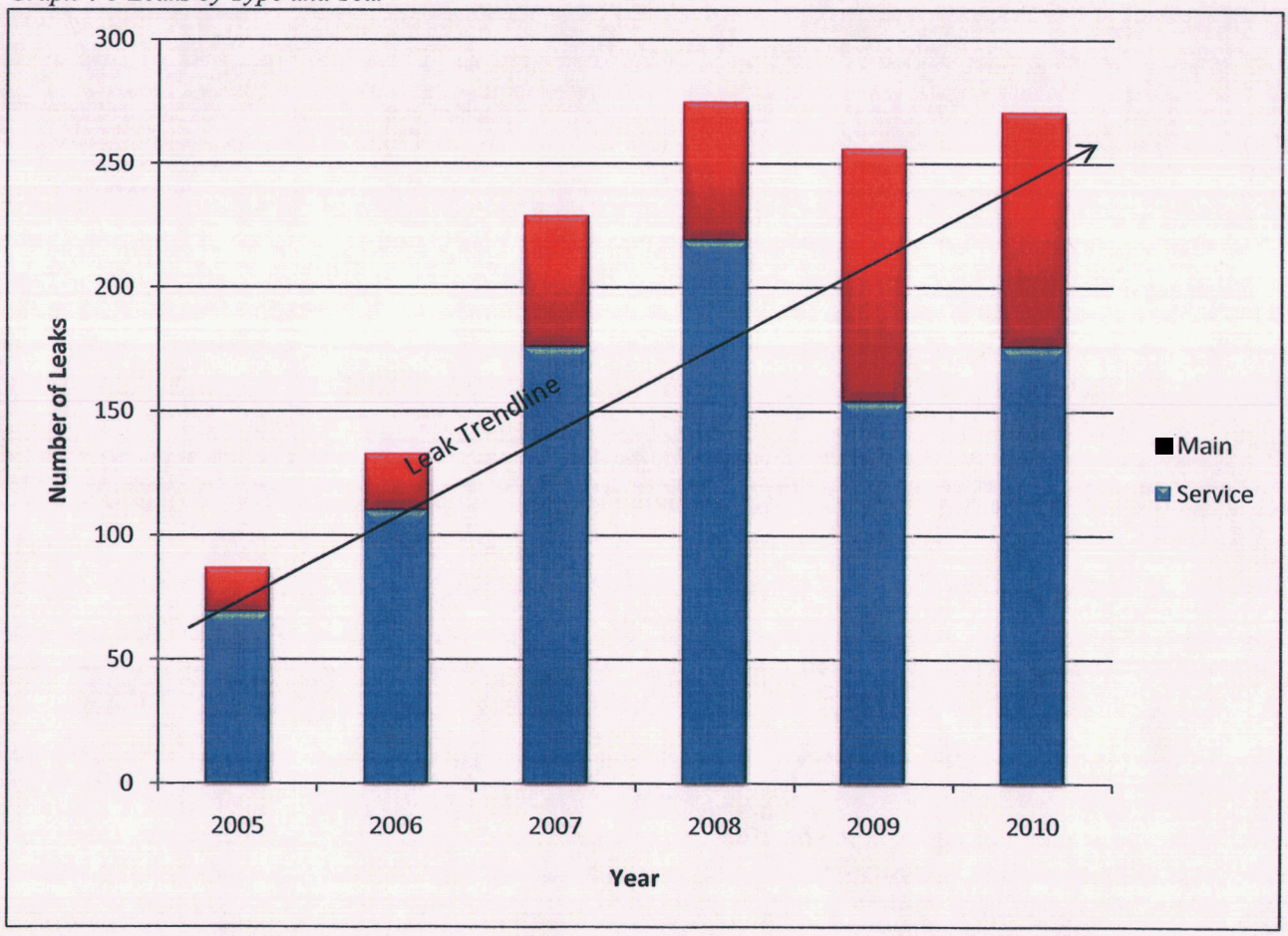
The soil survey report concluded that polyethylene encasement, in accordance with ANSI/AWWA C105/A21.5 Standard, is required for DI water main installations in CG and CL to protect against corrosive soils due to low soil resistivity. Field observations and local information were also available to determine the presence of stray currents in the soil in portions of the CL area. The stray current is due to localized anode beds protecting natural gas pipeline systems (Tucker 1986). Due to the increased threat of corrosion damage related to stray

currents, the Company changed its specification to require the installation of PVC C-900 water mains in the Company's CL water system.

4.5 Break and Repair History

Approximately 1,500 leaks and breaks have been recorded, mostly since 2005, in the PVSA. Leaks, repairs and replacement histories are listed in Appendix 9.1. Data collected included the date and location of the leak, as well as the source of the information. This data was gathered from the Company's records, which included Work Order forms, Blue Stake records, repair records noted on the Company's water system maps, and Company employee notes. The majority of the leaks gathered in Appendix 9.1 were recorded from 2005 through 2010, although the data shows that leaks had been occurring before this time period as well. Per Graph 4-5, the number of leaks and breaks per year has been increasing, showing a deterioration of water mains and service lines, as well as a higher probability of future water main and service line leaks and breaks in the PVSA.

Graph 4-5 Leaks by Type and Year



The number of recorded leaks shown in 2010 is prorated for October through December, since data was not yet available.

In 2008, there were 276 recorded leaks or breaks, which equates to more than one leak or break for every workday. Additionally, the number of recorded water main breaks alone has increased in recent years to approximately one hundred water main breaks per year in 2009.

According to the EPA, there are more than 240,000 water main breaks per year or a water main break 650 times per day in the United States (AWI 2009). The frequency of water main breaks in the Company's PVWS is consistent with the EPA report. Information on water main and service line leaks, breaks, repairs and replacements, was used by the Company in this analysis to assess the condition of infrastructure. Graph 4-5 shows an upward trend in water main leaks and breaks from 2005 through 2010. Considering all of the efforts and costs associated with repairing a leak or replacing a section of pipe, it is important to address the causes of these increasing water main and service line leaks and breaks. Water main and service line leaks and breaks are commonly located under asphalt or sidewalks, which adds difficulty to locating the leak, as well as increasing the cost of repairs or replacements. In addition, traffic control is often required to redirect vehicular and pedestrian traffic around the affected areas. A sufficient work area is needed for employees and equipment, including backhoes, to excavate, stockpile materials, locate, and repair the leak or break. These are just some of the challenges the Company faces in making timely repairs and replacements of failed infrastructure in order to reduce water loss.

Graph 4-5 indicates that the condition of the PVSA is showing signs of deterioration over time. An EPA research program titled "Aging Water Infrastructure Research Program", supports this finding. The program concluded that the number of water main breaks increases substantially as water mains near the end of their useful service life (AWI 2009). Water main and service line leaks and breaks in the PVWS have been plotted on a series of maps that can be found in Appendix 9.2. Water main repairs are indicated by a solid filled water drop while service line repairs are indicated by a unfilled and rotated water drop. The maps are also color-coded based on the installation year of the water main. (Refer to the map legends for details.)

5.0 COMPANY MEASURES TO IDENTIFY AND REDUCE WATER LOSS

5.1 Water Losses

The Company calculates and reports water loss for the PVWS and other PVSA systems in accordance with ADWR reporting requirements in ADWR's TMP for the Pinal Active Management Area.

For the TMP period, ADWR provides that certain non-billable deliveries are excluded from the water loss calculation. Those categories of non-billable deliveries are summarized in Section 5.7.6.2 of the TMP titled "Distribution System Requirements" and are also listed in detail in Appendix 5-J of the TMP. Non-billable deliveries include water delivered for fire flows, distribution system flushing, tank overflows, well flushing, and water necessary for efficient pump operation. Water loss is calculated by subtracting both billable and non-billable deliveries from the amount of water produced. The difference between these two amounts is what is determined to be water loss, and is usually represented as a percentage of the total amount of water produced. Pertinent excerpts from the ADWR TMP related to water loss are included in Appendix 9.3.

Water losses can be grouped into two broad categories: real and apparent losses. Real losses are the actual physical losses of water from the distribution system such as leaks and

breaks. Apparent losses are the non-physical losses that occur due to meter inaccuracies, data handling errors, and unauthorized consumption. Real losses can be reduced with timely repairs of leaks and breaks, a comprehensive leak detection program, and replacement of aging infrastructure. Apparent losses can be reduced through the implementation of a comprehensive meter maintenance program and meter selection review, as well as implementing procedures to reduce water theft. The Company's leak repair program, meter maintenance program, and meter selection review will be discussed in greater detail in Section 5.4 through Section 5.6.

The following Tables and Graphs are for the two water systems within the PVSA with water loss currently exceeding ten percent. Water losses in the CL water system have trended upwards over the past three years. Although the CP water system is trending downward, it still exceeds ten percent water loss.

Table 5-1 Coolidge Water Loss

COOLIDGE WATER LOSS (THOUSANDS OF GALLONS)				
YEAR	PRODUCTION	BILLABLE DELIVERIES	NON-BILLABLE DELIVERIES	PERCENTAGE WATER LOSS
2007	769,435.3	682,057.6	12,693.2	9.71%
2008	736,319.3	689,454.2	21,631.2	3.43%
2009	771,616.4	673,488.2	14,707.1	10.81%
2010*	770,593.0	666,443.6	16,958.6	11.31%

*12 months ending September 2010

Graph 5-1 Coolidge Water Loss Percentage

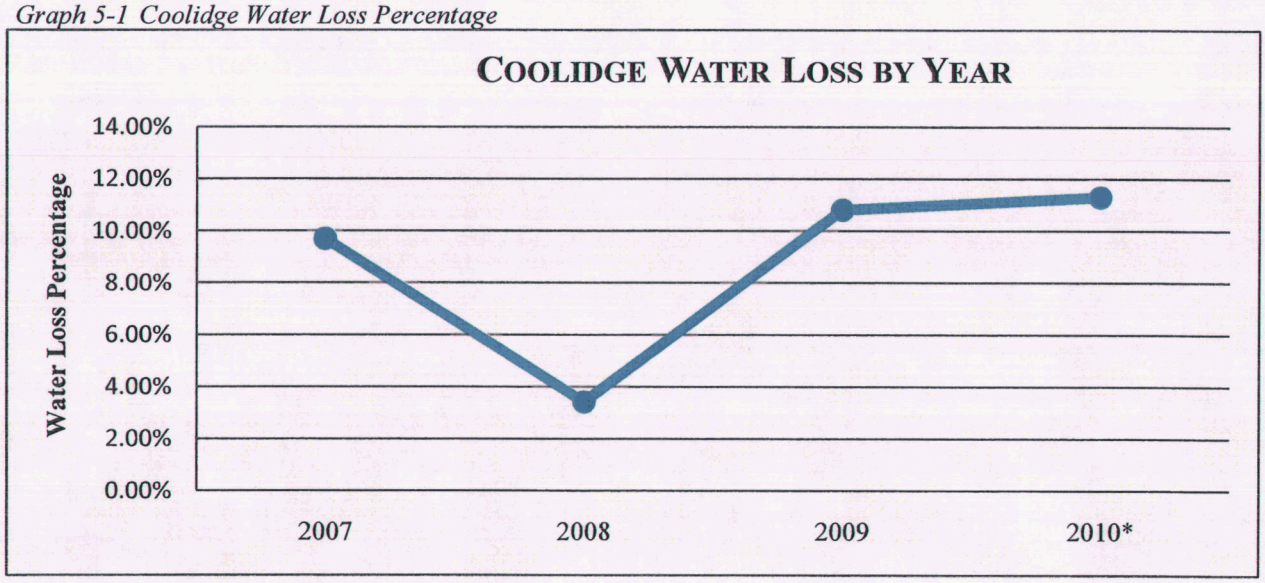
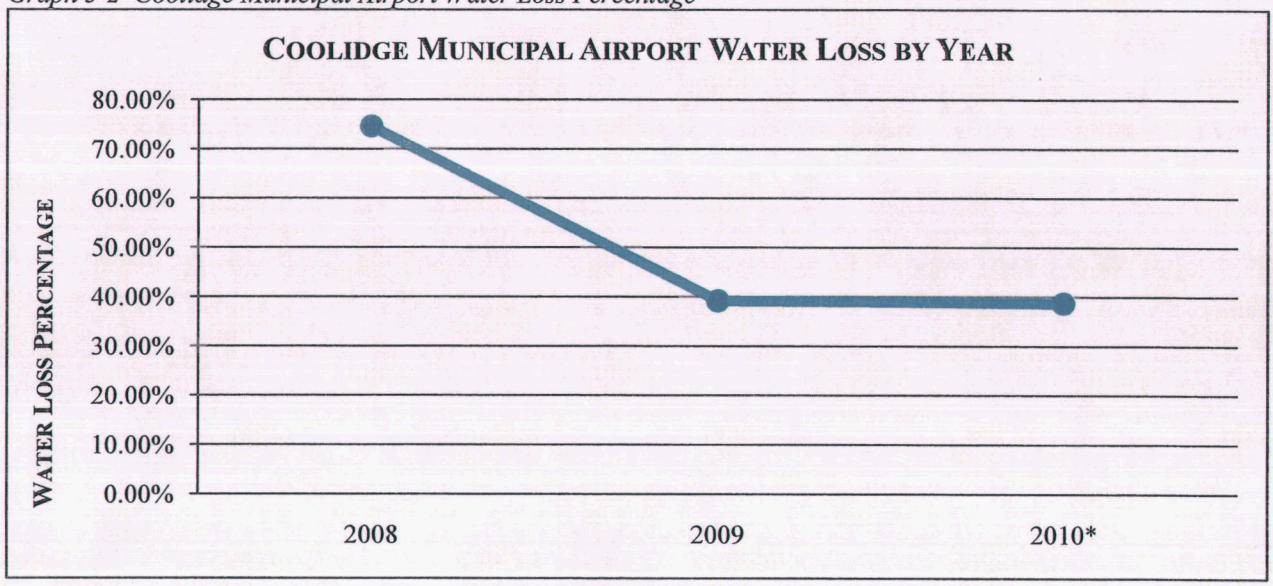


Table 5-2 Coolidge Municipal Airport Water Loss

COOLIDGE MUNICIPAL AIRPORT WATER LOSS (THOUSANDS OF GALLONS)				
YEAR	PRODUCTION	BILLABLE DELIVERIES	NON-BILLABLE DELIVERIES	PERCENTAGE WATER LOSS
2008	9,189.2	1,986.2	350.0	74.58%
2009	3,645.0	2,217.0	-	39.18%
2010*	4,095.2	2,334.1	176.0	38.71%

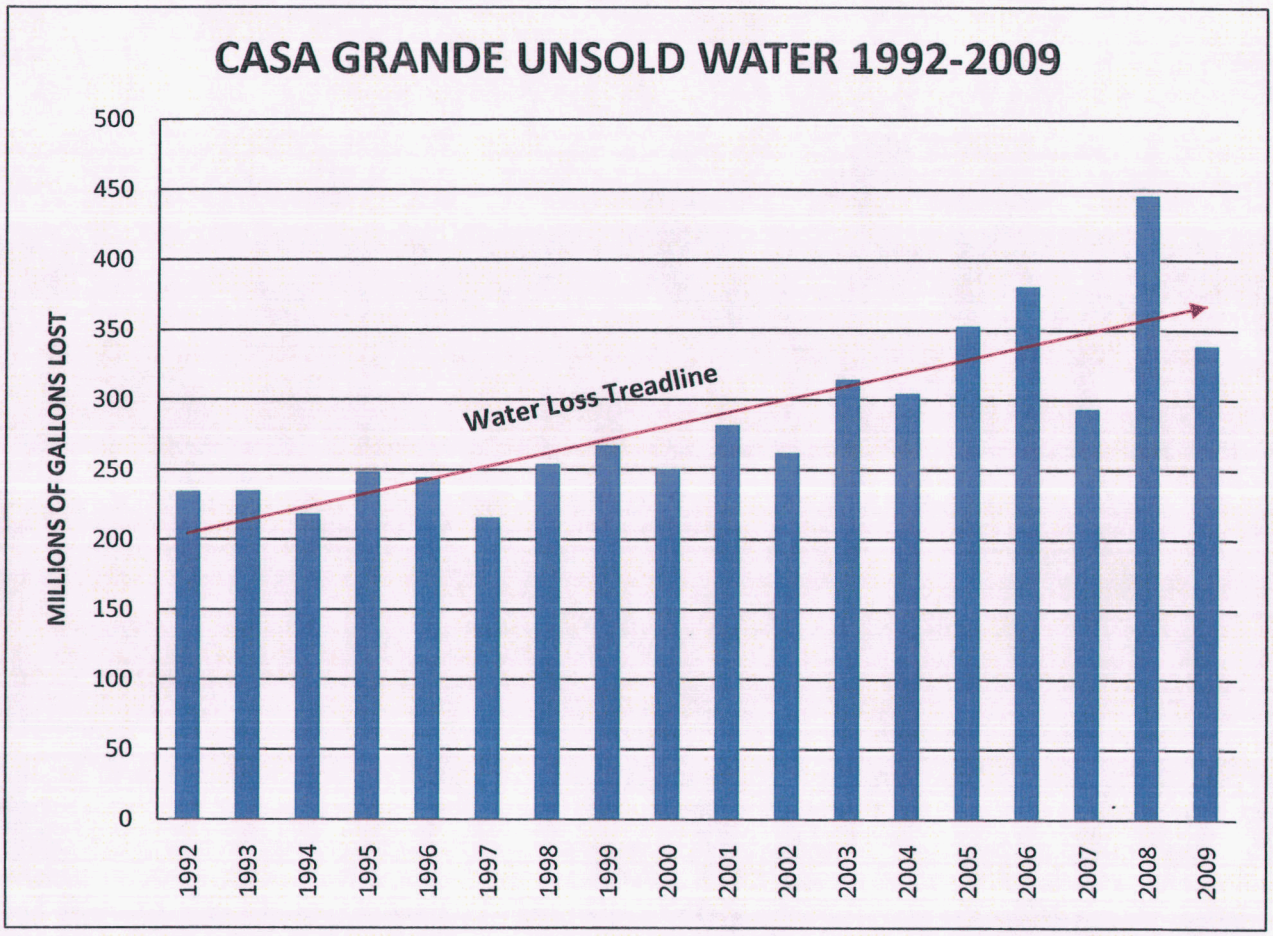
*12 months ending September 2010

Graph 5-2 Coolidge Municipal Airport Water Loss Percentage



Water loss in CG has approached, but is currently below, ten percent; however, there are still areas of concern within the CG system that are masked by the increased customer growth and the installation of new water mains less susceptible to leaks and breaks. As noted in Graph 5-3, the volumes of unsold water (which includes water loss) for CG has increased since 1992. These increases in water loss are masked or offset by the tremendous customer growth. To represent this large customer growth between the years of 2003 and 2008, approximately 9,200 new service connections were installed.

Graph 5-3 Casa Grande Unsold Water by Year



5.2 Company Resources

The Company focuses a number of resources, including employees and equipment, to reduce water loss in the PVSA. The Company has six full time service employees in the PVSA whose primary job duties are to repair leaks and breaks. Additional service employees are dispatched when necessary. In addition to service vehicles, the PVSA service employees have four backhoes, three dump trucks and a vacuum excavator (Figure 5-1) available for their use in repairing water main and service line leaks and breaks. There are also two utility trailers (Figure 5-2) fitted with the additional tools and equipment necessary to make timely repairs of leaks and breaks.

Figure 5-1 Vacuum Excavator

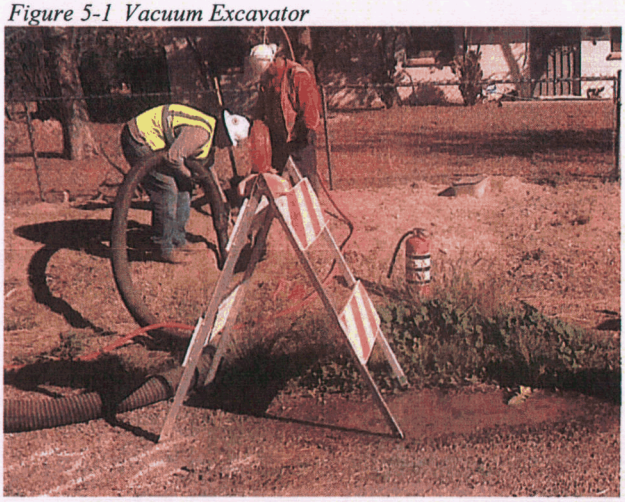


Figure 5-2 Utility Trailer

5.3 Locating and Detecting Leaks

Meter readers report observed service line leaks in their normal course of reading meters. The role meter readers play is essential to system monitoring, as they visually inspect the entire system for leaks and breaks as part of their routine duties. When a meter reader discovers a leak, the information is entered into their handheld meter reading equipment, which then generates a trouble report at the local office. If the leak is severe and warrants immediate attention, the meter reader will contact the local office for its immediate repair. In this manner, leaks can be repaired even before the meter readers complete their shift.

In addition to visual inspections conducted by the Company's meter readers, the Company uses three complementary types of leak detection equipment, which help employees identify the location of water leaks more efficiently than other more labor-intensive methods. The first type of leak detection equipment is a listening device, such as an acoustic noise amplifier or geophone.

Figure 5-3 Acoustic Noise Amplifier

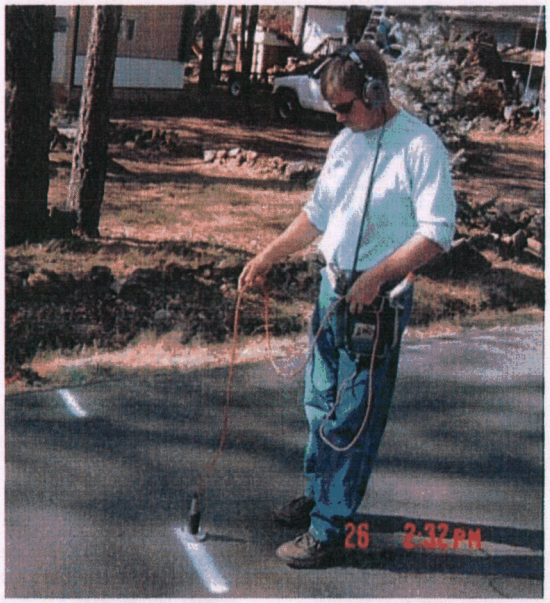


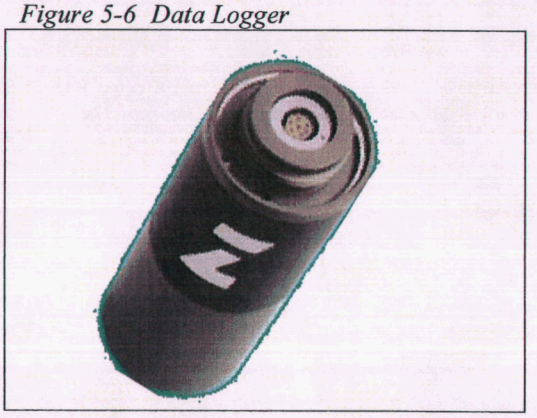
Figure 5-4 Geophone

The acoustic noise amplifier, as shown in Figure 5-3, is a highly sensitive set of "earphones" equipped with signal amplifiers and noise filters to isolate the sound vibrations of a water leak. It is usually placed on the ground above the water main, but can also be placed on meters, valves, or directly on the water main. In addition to the disc-shaped listening device, many models are equipped with a listening "rod" for even more precise locating and ease of contact with the water main. The geophone, as shown in Figure 5-4, is a simplified version of the acoustic noise amplifier in that it is not electronic, but works in much the same manner (i.e. the listening device is placed on or above the water main and the operator listens for the sound of a leak).

A second type of leak detection equipment, known as the digital leak detection logger (Figure 5-5), is used to survey a larger area of the distribution system to locate potential leaks that would otherwise go undetected by visual inspection or listening devices. The data logger, as shown in Figure 5-6, is used to gather data during low noise times (such as between midnight and 2 a.m.) when water use and related noise is lowest and traffic noise is at a minimum.

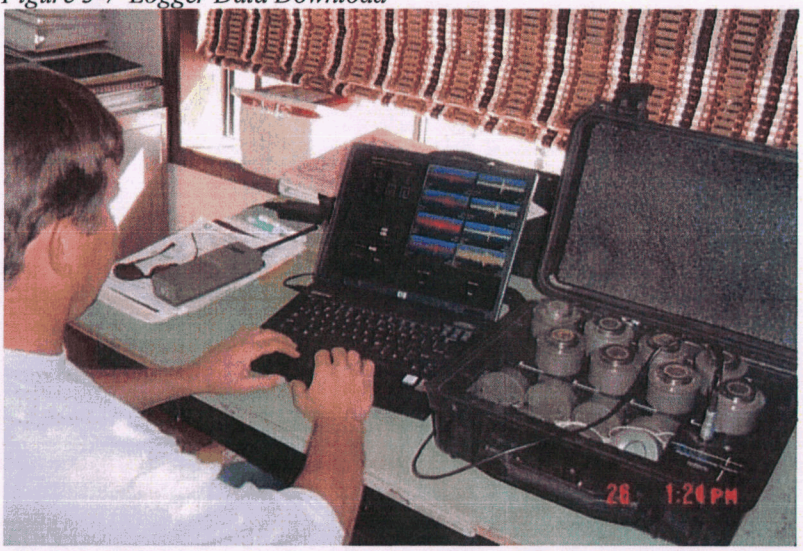
Figure 5-5 Leak Detection Logger

Figure 5-6 Data Logger



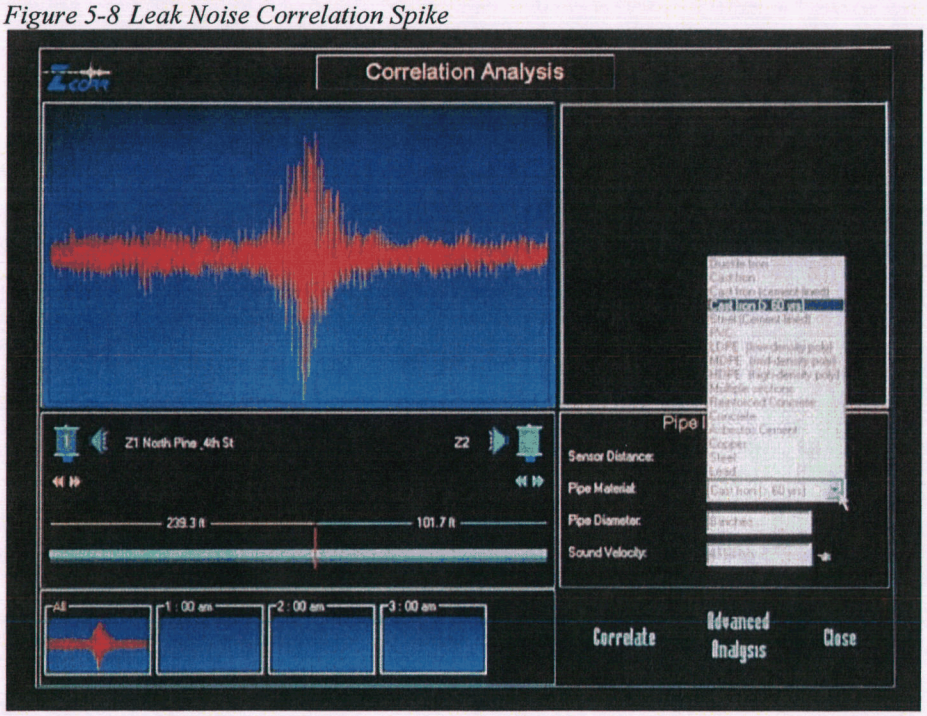
The leak detection logger consists of eight listening devices, or "loggers", which are strategically placed on valves, hydrants, meters or directly on the water main throughout the water system. The loggers are programmed to communicate with each other at three scheduled intervals to pinpoint the location of a leak. The information is then downloaded onto a laptop computer and analyzed to determine if there was any leak "noise" identified between the loggers, as shown in Figure 5-7.

Figure 5-7 Logger Data Download



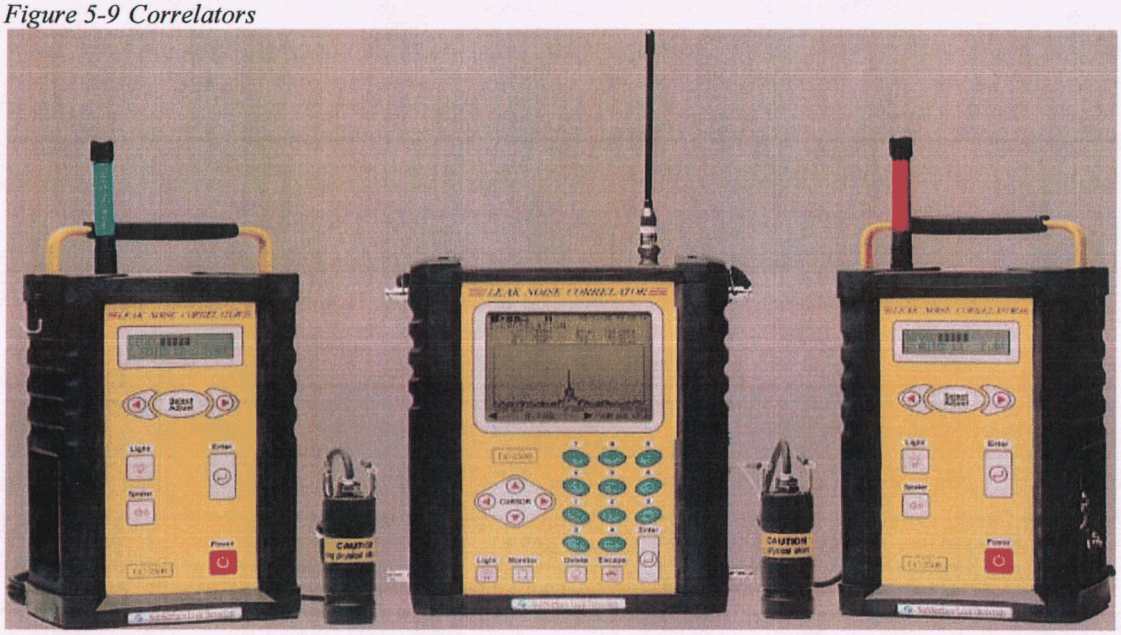
If leak noise is identified, a "correlation spike" will present itself in the data, as shown in Figure 5-8. At this time, the operator can input the pipe size, material type, and distance between the loggers to pinpoint the location of the leak.

Figure 5-8 Leak Noise Correlation Spike



The third type of leak detection equipment, the digital leak correlator, as shown in Figure 5-9, is used to pinpoint the location of the leak noise on a real-time basis, as well as confirming or validating locations of suspected leaks identified through surveys conducted by the digital leak detection logger or geophones.

Figure 5-9 Correlators

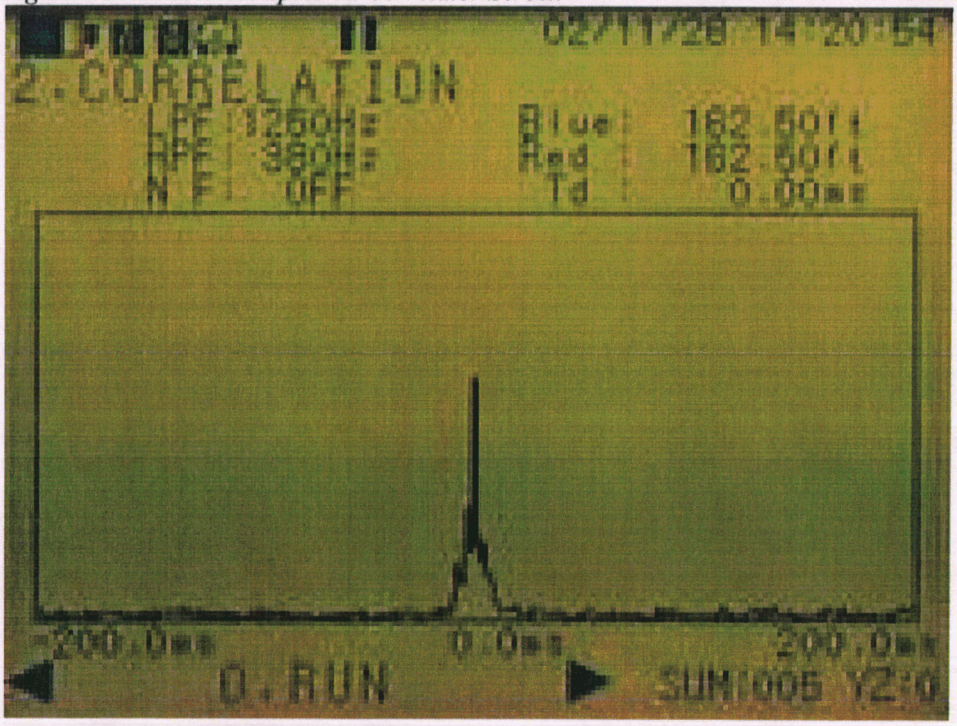


The correlator consists of two transmitters that are placed on valves, hydrants, or meters by a special sensor mounting device or directly on the water main itself. When searching for or pinpointing leaks, the size, material type, and length of each pipe that is located between the transmitters must be entered into the main processor, as shown in Figure 5-10.

Figure 5-10 Data Entry for Use of Correlator

If leak noise is observed, a spike appears on the main processor screen along with the calculated distance from the leak to each of the transmitters, as shown in Figure 5-11 below.

Figure 5-11 Leak Noise Spike on Correlator Screen



When using the correlators, employees confirm the validity of the data by moving the transmitters to alternate locations to verify the original reported location of the leak (i.e. the indicated point of leak). When comparing the output from each correlation, locating or predicting the same point of leak confirms the point where repair crews should begin to excavate for repairs.

There are drawbacks and challenges to using any type of leak detection equipment, including electronic leak detection equipment. Because sound resonates much better on metal pipe, systems with large amounts of non-metallic and/or plastic pipe (such as the CL water system) do not always achieve the same consistency or reliability of results when using detection equipment to locate smaller leaks. Outside noise that is not associated with leaks such as road traffic, electric transformers, other utility lines, and functioning meters will interfere with, and can skew, results from electronic leak detection equipment.

PVSA employees undergo extensive training in the proper operation, use and interpretation of results generated from leak detection equipment. The use of these types of equipment has proven to be an effective tool used to locate water main and service line leaks and breaks and help to reduce water loss. For example, using these and other system monitoring and leak detection techniques, over 16,000 employee hours were spent to identify and repair 244 water main and service line leaks and breaks during the twelve month period ending September 2010 in the PVSA. The Company also uses the Leak Detection Efforts/Loss Control form (shown in Figure 5-12) to assist in the collection of water leak data. This form is completed each time a leak is discovered and repaired, providing a detailed accounting of the leak and its repair, including the location, pipe condition, cause of leak, employee-hours and associated costs. The information collected on this form is used to help determine the timing and priority of water main and service line replacements, and aids in focusing water loss reduction efforts in areas where additional leak detection efforts are needed.

Figure 5-12 Leak Detection Efforts Loss Control Form

ARIZONA WATER COMPANY

LEAK DETECTION EFFORTS/ LOSS CONTROL FORM

PAGE #: _____ (REQUIRED FOR USE IN VERIFYING THIS PAGE WITH THE LEAK DETECTION PROGRAM FORM)

DATE: _____ **DIVISION:** _____ **SYSTEM:** _____ **LEAK #:** _____

TYPE OF LEAK: SERVICE ☐ MAIN ☐ VOLUME (GPM) _____

LOCATION OF LEAK: LEGAL DESCRIPTION: ¼ SEC. _____ SEC. _____ T. _____ R. _____

ADDRESS #: _____ STREET NAME: _____

LOT#: _____ SUBDIVISION NAME: (e.g., PINEWOOD UNIT 1) _____

LOCATION: (e.g. MAJOR CROSS STREETS, INTERSECTION) _____

PIPE CONDITION:

PIPE YEAR: _____ PIPE MATERIAL: _____ PIPE SIZE: _____ PIPE LENGTH: _____ DEPTH OF COVER: (INCHES) _____

EXTERIOR CONDITION: (CIRCLE ONE) BAD POOR FAIR GOOD EXCELLENT

EXTERIOR CONDITION DESCRIPTION: (e.g. CORROSION, PITS, CRACKS)

_____

_____

POLY-WRAPPED: YES ☐ NO ☐

INTERIOR CONDITION: (CIRCLE ONE) BAD POOR FAIR GOOD EXCELLENT

INTERIOR CONDITION DESCRIPTION: (e.g. CORROSION, PITS, TURBERCULATION, SCOURING, SLIME GROWTH)

_____

_____

DESCRIPTION OF LEAK: (e.g. PINHOLE, RADIAL CRACK, AXIAL CRACK, COUPLING/JOINT, COLLAPSE)

_____

_____

CAUSE OF LEAK: (e.g. CORROSION, FREEZING, BEDDING/BACKFILL, EARTH SETTLING, SURGE, ADJ. CONST. ACTIVITIES)

_____

_____

DESCRIPTION OF REPAIRS MADE: _____

_____

_____

REQUIRED ATTACHMENT: COPY OF ¼ ATLAS WITH LOCATION OF LEAK MARKED WITH A RED "X"
REQUIRED ATTACHMENT: MATERIAL(S) LIST AND COST(S)
REQUIRED DIGITAL PHOTOS: RENAME FILE TO MATCH LEAK # (FORMAT 0001-01.JPG, 0001-02.JPG, ETC...)
PLACE DIGITAL PHOTOS IN THE LEAK DETECTION DIRECTORY UNDER THE APPROPRIATE DIVISION/SYSTEM ON THE COMPANY SERVER

EMPLOYEES INVOLVED IN REPAIRS:	**HOURS**
TOTAL HOURS:	

LEAK DETECTION EQUIPMENT USED: (Y/N) _____

5.4 Leak Repair

The Company reduces water loss in the PVSA caused by leaks and breaks through timely maintenance and repairs. PVSA employees schedule repairs of smaller, less-significant water main and service line leaks as soon as possible, while water main breaks are always repaired on an emergency basis. Water losses caused by water main and service line leaks, compared to breaks, are more problematic, as they are not always easily detectable or visible, except through more advanced methods of detection, such as the use of listening devices, leak detection equipment (discussed above), and by conducting leak surveys.

5.5 Meter Maintenance Program

The Company's meter maintenance program establishes the criteria for meter removal and for repairs or replacement. The Company does not replace water meters based solely on years in service. Repairing or replacing all meters based solely on years in service, without regard to gallonage and water quality, is not an effective and efficient use of capital expenditures or labor resources. Rather, the Company's meter shop has established comprehensive maintenance criteria based on gallonage, length of time in service and water quality. Water quality varies between systems and even within a system. These variances can have a significant impact on the useful life of a metering device. For example, the presence of sand and other fine materials can lead to abrasive wear on meters. Build up or deposits from hard water can cause a meter to under register, resulting in increased water loss.

The Company's meter shop performs periodic, random tests on each water system's meters to provide an ongoing assessment of the suitability of meter change-out criteria for each system. In this manner, the Company ensures that meter accuracy is maintained within industry standards, and is regularly confirmed through meter testing, while still keeping apparent losses due to meter inaccuracies low. The PVSA complies with the Company's meter maintenance program and its ongoing meter testing program. For the twelve-month period ending in September 2010, 1,834 meters were either repaired or replaced in the PVSA.

5.6 Meter Selection Review

Using information provided by the Company's meter shop, the Company's Engineering department reviews new meter applications prior to establishing water service. Typically, 5/8 x 3/4-inch water meters are installed for new residential subdivisions. Residential and non-residential meter applications that require one-inch or larger water meters can result in wide ranges of flows, with the largest meter applications typically including fire flows. Different types of water meters have different characteristic accuracies that vary with flow rate. Meters are designed to provide a high level of accuracy throughout such ranges of flows according to AWWA and other water industry standards, although they are not one hundred percent accurate at all flow rates. Within a specific size of meter, different meter types (i.e., turbo, compound, jet, etc.), have different accuracies of flow over various flow ranges. As a result, the Company's Engineering department determines the appropriate size and type of meter for each specific use to meet the service needs and accurately measure all water provided throughout the anticipated range of flows. Again, apparent losses remain low when the correct meter is chosen for the particular application.

6.0 RECOMMENDATIONS

6.1 Areas Needing Improvement

According to the data collected by the Company's field employees, approximately 1,500 leaks were recorded and repaired, most of which occurred during the period from 2005 through 2010, as discussed in detail within Section 4.5.

Appendix 9.1 lists all of these recorded leaks and provides more detailed information including:

1. Location of the leak
2. Date of leak
3. Type of leak (i.e. water main or service line)
4. Repairs vs. replacements

The overall map included in Appendix 9.2 shows the geographic distribution (by section, township, and range) within the Company's PVSA where extensive leaks (greater than twenty per section) were found. On this overall map, each section has different color and cross-hatching used to distinguish between the following areas:

1. Areas with more than 20 reported leaks repaired since 2005
2. Areas with water mains greater than 50 years old
3. Areas evaluated for replacement projects

The number of recorded leaks per year has increased over the last five years (see Table 6-1 below). Information for 2010 does not show data for a full year.

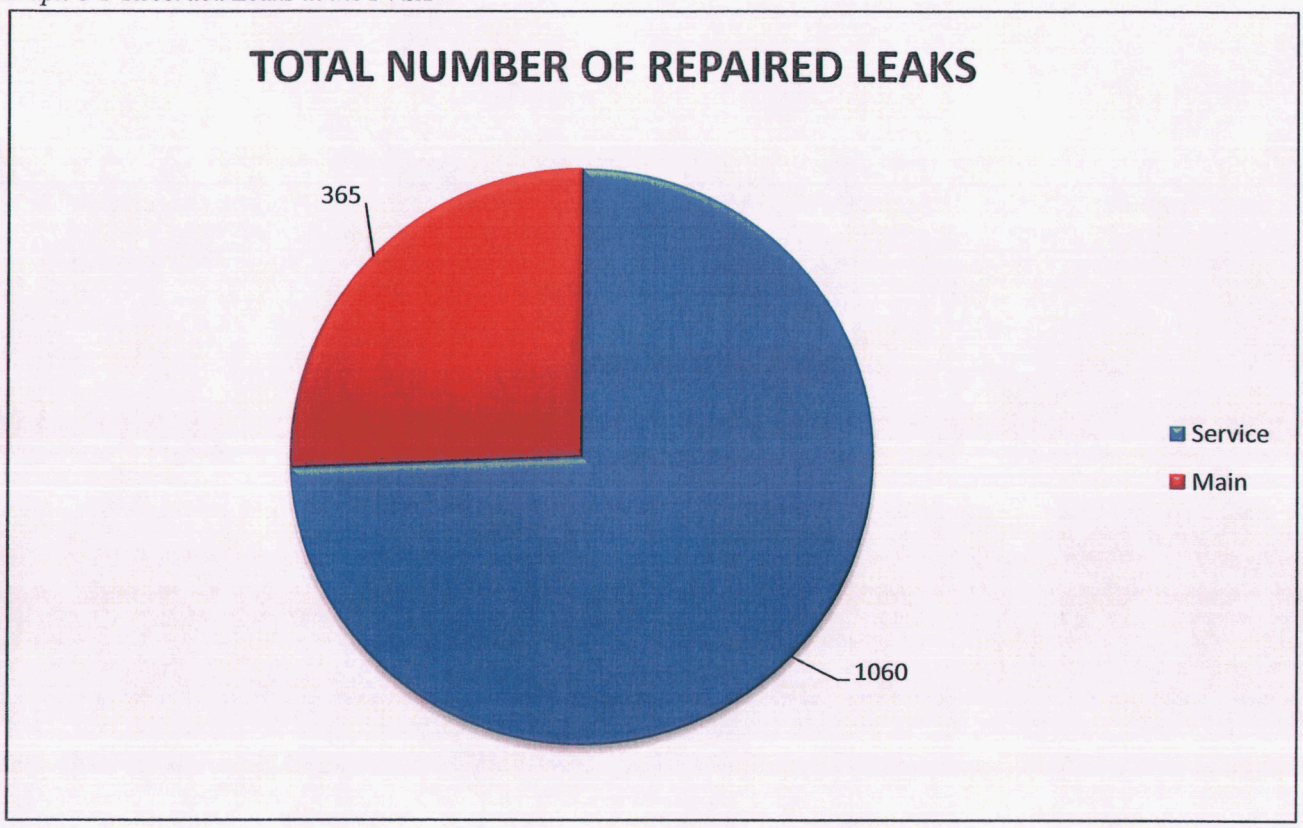
Table 6-1 Recorded Leaks for the PVSA

RECORDED LEAKS FOR THE PVSA			
YEAR	SERVICE	MAIN	TOTAL
2004 and earlier	200	55	255
2005	69	18	87
2006	110	22	132
2007	176	48	224
2008	219	53	272
2009	154	98	252
2010*	132	71	203

*Thru September of 2010

Approximately seventy-four percent of the repaired leaks in Graph 6-1 and Table 6-1 were service line leaks, primarily related to failing PE and PB service lines.

Graph 6-1 Recorded Leaks in the PVSA



Of the reported service line leaks that noted the material of the failed service line, approximately sixty-nine percent were PB or PE plastic services. Where reports on service line leaks did not note the material type of the failed service line, the majority were found to be tapped onto water mains installed during the 1970s, when, as mentioned earlier, plastic water service lines were typically installed in the PVSA. The failure of plastic water service lines has been a growing problem in the PVSA, as well as the Company's other systems. Based on this evidence, the Company has determined that a more aggressive plastic service replacement program is needed in the PVSA. The failure of plastic water service lines is not unique to the Company, as other water utilities have experienced similar problems. PB pipe was used to serve at least 6 million homes in the United States, 80,000 of which are in Arizona (Leaks 1994). As a local example, the City of Scottsdale now prohibits the use of PE and PB in any water system installation (MAG 2010). Proposed projects to address this issue are discussed in Section 6.3 below.

With approximately 1,500 leaks recorded across the PVSA, the areas needing water main and service line replacements were prioritized. Table 6-2 below shows the sections of the distribution system with the largest number of recorded leaks.

Table 6-2 PVSA Largest Number of Leaks by Section

PVSA LARGEST NUMBER OF LEAKS BY SECTION				
LOCATION	MAP	MAIN LEAKS	SERVICE LEAKS	TOTAL LEAKS
Downtown Casa Grande	A	87	140	227
Downtown Casa Grande	B	55	104	159
Old Town Coolidge	C	25	110	135
Old Town Coolidge	D	53	224	277
Old Town Coolidge	E	28	85	113
North Casa Grande	F	9	45	54
North Casa Grande	G	7	62	69

The first geographic area to be addressed is the Old Town Coolidge area which corresponds to Maps C, D, and E in Appendix 9.2. This area has shown a history of significant service line and water main leaks and breaks. The majority of the water mains in this area are CA water mains installed in the 1930s and 1940s. There are more than 500 recorded leaks repaired in the last five years in the Old Town Coolidge area per Table 6-2 above. Because of the large number of water main and service line leaks and breaks repaired in this area, the proposed replacement program will include the replacement of both water mains and service lines. Individual replacement projects for this area are listed in Section 6.3 below.

The next geographic area to be addressed is the Downtown Casa Grande area which corresponds to Maps A and B in Appendix 9.2. This is an area with the oldest water main still in service in the PVSA. The majority of the water mains are CI which were installed in the 1920s. The break and leak repair history for this CI water main shows that this water main has exceeded its useful life as similarly estimated in Section 4.2 above. This CI water main has shown signs of advanced aging and has resulted in problems such as leaks from corrosion. Significant rust and scale build up require extraordinary volumes of flushing to maintain water quality, resulting in significant non-billable deliveries. In addition to these water loss issues, the old CI water mains in this area provide inadequate fire flows as a result of new higher fire flow requirements, rust, and caused by the presence of scale build up restricting flows. The CI water mains in this area are included in the proposed replacement projects listed in Section 6.3 below.

The next geographic area to be addressed is the North Casa Grande area which corresponds to Maps F and G in Appendix 9.2. Water mains and services were installed in these areas during the 1970s. The break and repair history shows that there have been a significant number of service leak repairs on the plastic services in these areas. The proposed projects for replacing plastic services in these areas are listed in Section 6.3 below.

6.2 Distribution System Analysis

In order to evaluate the condition of the existing system, prioritize the water mains to be replaced, and specify the most appropriate replacement site, distribution system models were created for each area identified as having the most leaks. Distribution system models are effective tools used to troubleshoot the PVSA and identify areas of excessive pressure loss or flow restriction due to undersized water mains. Calibration of the models helps to identify water mains that are heavily corroded, causing flow restrictions and decreasing available pressure and

flow to meet peak system and fire flow demands. The Company used these models to determine the minimum system improvements necessary to meet current flow requirements, and to help identify water mains in need of replacement. These methods were used in conjunction with leak and break repair data to prioritize replacement of water mains and specify replacement water main size.

As noted in Section 6.1 above, areas with the greatest leak and break repair history were in the Downtown Casa Grande and Old Town Coolidge areas. Although the water distribution system is interconnected as part of the PVWS, these areas are hydraulically distinct, being separated by different pressure zones and distance. The Company's Engineers determined that covering both of these areas would be impractical due to modeling software limitations and that expending efforts to overcome such model limitations would not have achieved any significant additional benefits. Accordingly, two separate sub-regional models were created, the CGLZM and the CDSM. Maps of the CGLZM and CDSM are included in Appendices 9.4 and 9.5.

The CGLZM and CDSM were modeled using WaterCAD™ v8i. Foundations for the models were generated by importing data from the GIS mapping system. The GIS mapping system includes a complete record of all water facilities within the PVWS, based on as-built information and Company records. The GIS data was imported directly into the system models to ensure the accuracy of the water main size, length and location, as well as any other available as-built information contained within the database. With the model foundation complete, additional basic system information was added, such as pump curves, pressure zone, and system demand information. As standard industry practice, system demand data was calculated from Company water production and sales data and distributed throughout the model.

After the model foundations were built using the GIS data and Company records, the models were reviewed for accuracy and validated against typical data entry errors and modeling problems. Two issues immediately became apparent. First, not all of the data contained elevation information, which is critical to calculating system pressures. Second, the CGLZM model was too large for the modeling software to evaluate. In order to address missing elevation data, a TRex was used to import DEM containing the necessary elevation data. After importing the DEM information, the elevation data was verified against known elevation data points to confirm accuracy. Before the CGLZM could be evaluated, the size of the model had to be reduced. For this reduction, the downtown areas were excluded to ensure that none of the candidate replacement water mains were modified or removed. Two different reduction methods were used: branch trimming and series pipe merging. The model size was first reduced by branch trimming. This included removing some large branch systems including the Arizona City and Francisco Grande areas. These areas are both on long, single-feed branch lines. The system demands for these areas were relocated to the trunk of the branch feed upon deletion of the branch. The branch trimming also included removal of all small branch systems of five pipes or less outside of the downtown areas. Next, the model size was reduced through a series pipe merging. Pipes of the same diameter, in series, outside of downtown areas were merged into single equivalent pipes with evenly distributed demands.

The final step in the model building process was calibration and optimization. Darwin Calibrator was used to calibrate and optimize the model. Multiple fire hydrants were selected within the downtown areas to use as calibration data points. Pressure test points were identified for each hydrant and monitored during hydrant testing. Pressure and flow data generated from

the fire hydrant testing were entered into the models for calibration purposes. Pipe material and roughness groups were generated as the basis for the calibration. WaterCAD™ uses the Hazen-Williams equation to calculate pressure losses within the system due to friction losses in the pipes. Each pipe material has a different internal surface roughness and corresponding C-Factor. C-Factors for new materials typically range between 135 and 150. The rougher the material surface, the lower its C-Factor will be. C-Factors also change with age and condition of pipe, typically decreasing with age as pipe corrodes or as deposits build up on the internal surfaces. Darwin Calibrator uses a genetic algorithm process to adjust the C-Factors for each different pipe group within specified ranges to match the fire hydrant pressure and flow test data. The process is optimized by calculating multiple possible solutions and using the current best solution to seed the next set of optimization calculations.

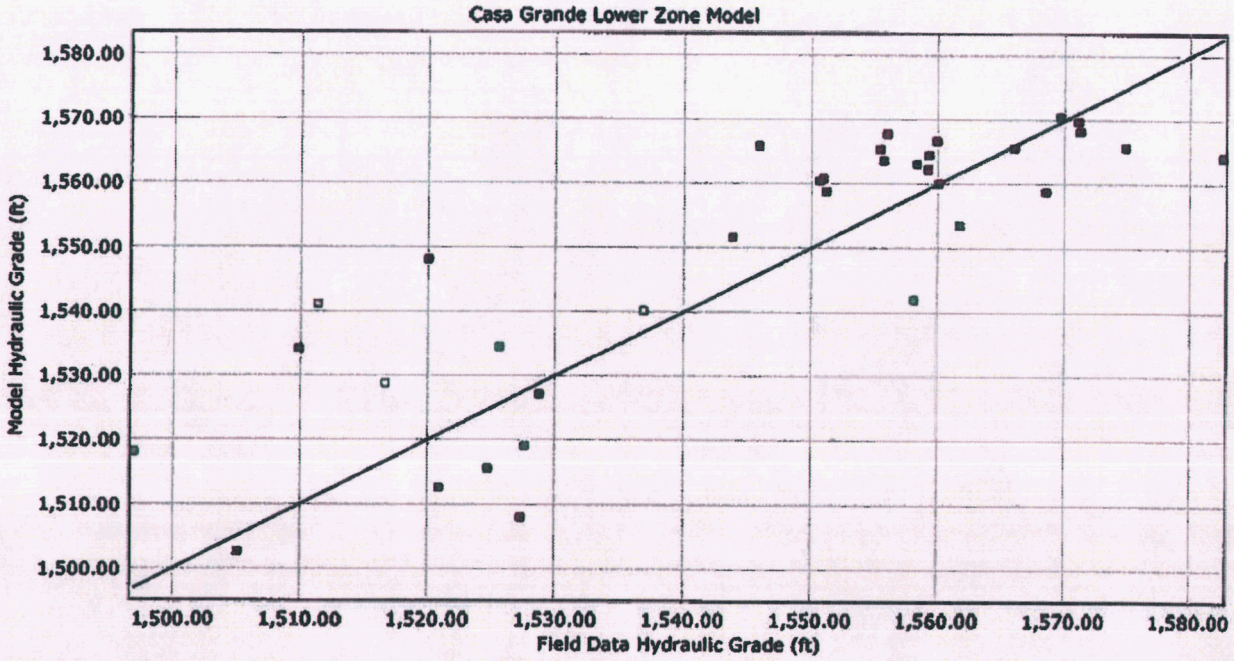
Table 6-3 lists the C-Factors generated from the optimized calibration for both systems. The minor differences between the roughness coefficients for CGLZM and CDSM are believed to be due, in large part, to the difference in water quality and average age of the two systems. The calibrated C-Factors for the CI and steel water main are very low due to their age, but are within expected levels for the average age of these water mains. This shows that the model was able to be accurately calibrated to reflect real system performance. Published C-Factors for CI and GS decrease by approximately thirty percent within the first twenty years of service with nonaggressive water (Mays 2005).

Table 6-3 Calibrated Roughness Coefficients

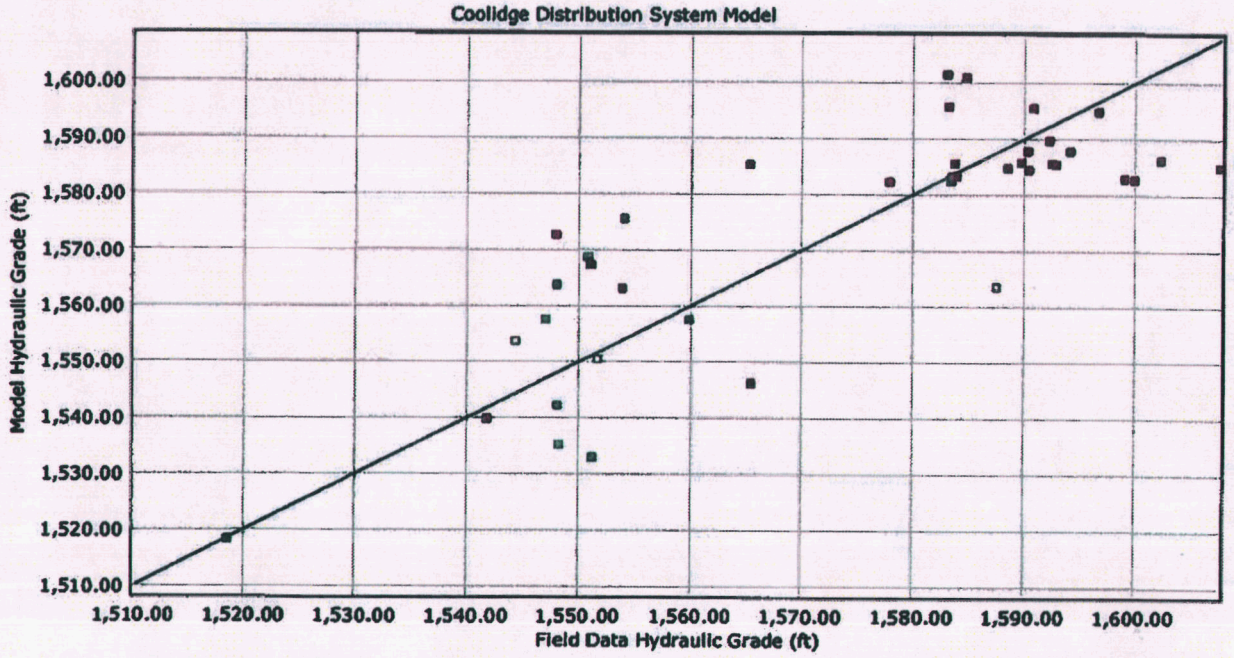
CALIBRATED ROUGHNESS COEFFICIENTS		
MATERIAL	CGLZM C-FACTOR	CDSM C-FACTOR
CI	42	42
DI	98	98
CA	126	130
GS	42	42
PVC	126	143
CLC	98	N/A

Graph 6-2 and 6-3 below illustrate the correlation between the simulated and observed pressures at the calibration test points. Each point on the Graph indicates a calibration point within the model, the line indicates a 1:1 correlation between the calibrated model and the field test data. The average difference between the simulated and observed pressures for CGLZM and CDSM are 1.5 and 1.8 psi, respectively which is within acceptable limits. Appendices 9.4 and 9.5 reference output summaries for CGLZM and CDSM models.

Graph 6-2 Casa Grande Lower Zone Model Calibration



Graph 6-3 Coolidge Distribution System Model Calibration



The first design criteria evaluated when replacing a water main is determining the correct size of the new water main. The proposed water main replacements have been modeled to ensure that the proposed water main replacements, as a whole, meet current system flow requirements. Where model results determined a larger diameter water main was required, the water main replacement was sized in accordance with the model recommendations. Master planning also helped to identify any undersized water mains in the distribution systems that could be increased in size in conjunction with water main replacements to achieve maximum distribution system improvement benefits and improve cost efficiencies.

On October 28 and November 2, 2010 the Company met with City of Casa Grande and City of Coolidge employees to determine general planning and fire flow requirements. Appendix 9.6 shows the City of Casa Grande's General Plan 2020 - Land Use. The City of Coolidge's General Plan is shown in Appendix 9.7. Both cities also provided the Company with minimum fire flow requirements for general development categories. The minimum fire flow requirements have been summarized in Table 6-4 below. Copies of the minimum fire flow requirement letters from the City of Casa Grande and City of Coolidge are attached in Appendices 9.8 and 9.9, respectively.

Table 6-4 Fire Flow Requirements

MINIMUM FIRE FLOW REQUIREMENTS		
DEVELOPMENT CATEGORY	CASA GRANDE FLOW (GPM)	COOLIDGE FLOW (GPM)
RESIDENTIAL	1,000	1,200
COMMERCIAL	1,500	2,000
INDUSTRIAL	2,000	2,750

The models were analyzed using the minimum fire flow requirements of each city. The fire flow results for several key fire hydrants in the CGLZM and CDSM are shown in Tables 6-5 and Table 6-6, respectively. As shown in the fire flow reports, a large portion of the existing fire hydrants do not meet current fire flow requirements. This is not surprising because, in large part, fire flow requirements have changed and increased since the original installation dates for most water mains but also reductions in available flow have resulted from scale build-up inside these aging water mains, As a starting point for the WaterCAD™ model, all water mains with diameters less than six inches were replaced with new six-inch water mains. This diameter was chosen in accordance with the Company's established minimum design standards and the Commission's rules (R14-2-406.H.2). Small diameter water mains represent some of the oldest pipes in the PVSA which, are or soon will be identified for replacement. Small water mains less than six inches in diameter also have more leaks and breaks as described in Section 4.1, decreasing their useful life relative to larger diameter water mains.

Table 6-5 Casa Grande Fire Flow Comparison

CASA GRANDE FIRE FLOW COMPARISON			
FIRE HYDRANTS	REQUIRED FLOW	EXISTING AVAILABLE FLOW	POST IMPROVEMENT AVAILABLE FLOW
FH-1	1,500	815	2,058
FH-8	2,000	1,933	2,019
FH-15	1,500	1,175	2,411
FH-19	1,500	1,443	2,463
FH-27	1,500	764	3,500
FH-42	1,000	445	2,657
FH-75	1,000	499	2,720
FH-278	1,000	487	3,500
FH-115	1,000	811	2,387
FH-369	1,000	954	2,313

Table 6-6 Coolidge Fire Flow Comparison

COOLIDGE FIRE FLOW COMPARISON			
FIRE HYDRANTS	REQUIRED FLOW	EXISTING AVAILABLE FLOW	POST IMPROVEMENT AVAILABLE FLOW
FH-30	1,200	1,138	2,429
FH-36	2,000	972	2,389
FH-37	1,200	1,108	2,459
FH-44	2,000	1,809	2,701
FH-64	1,200	1,094	2,460
FH-101	2,000	1,575	2,432
FH-132	1,200	803	2,009
FH-171	1,200	1,067	2,339
FH-5000	1,200	1,076	2,450
FH-5001	2,000	1,614	2,674

Results from the WaterCAD™ model for the CGLZM and CDSM models, including fire flow reports, are referenced in Appendices 9.4 and 9.5. Results of the analysis indicate that a minimum 6-inch water main replacement size is sufficient to increase the existing system capacity to meet current flow requirements. These models will continue to be used to analyze each specific water main replacement project on a case-by-case basis. In situations where parallel pipe is installed, or where a separate Company or developer constructed project calls for additional pipe installation, it may be more cost effective to install a single larger water main rather than multiple six inch or other smaller water mains. Any water main replacement or increase in water main size resulting from developer-constructed projects will be funded through advances in aid of construction or contributions in aid of construction.

6.3 Three-Year Plan of Recommended Projects

The Company determined that a water main and service line replacement program, as summarized in Table 6-7, is needed, based on analysis of the available data shown in Appendix 9.1.

Table 6-7 Three Year Project Summary

PROJECT NUMBER	STREET NAME	NEW PIPE LENGTH (LF)	NEW PIPE DIAMETER (IN)	NEW PIPE MATERIAL	# OF SERVICES TO BE REPLACED	REPLACED PIPE DIAMETER (IN)	REPLACED PIPE MATERIAL	RECORDED MAIN LEAKS	RECORDED SERVICE LEAKS	TOTAL LEAKS	ESTIMATED TOTAL COST
1	HESS AVE.	1,600	6	PVC	51	4	CA	4	27	31	$230,332
2	WALTON AVE.	1,600	6	PVC	43	4	CA	3	23	26	$206,923
3	BEALEY AVE.	1,600	6	PVC	40	4	CA	5	22	27	$198,581
4	KENNEDY AVE.	1,600	6	PVC	50	4, 6	CA	4	21	25	$227,373
5	BYRD AVE.	1,600	6	PVC	49	4, 6	CA	-	15	15	$224,682
6	LINDBERGH AVE.	1,600	6	PVC	47	4	CA	2	17	19	$219,031
7	NORTHERN AVE.	1,000	12	PVC	35	4,10	CA	2	21	23	$180,553
8	ALLEY (MAIN/1ST)	700	8	PVC	19	8	CA	2	4	6	$85,433
9	1ST ST.	3,500	6,8	DIP	64	4	CI,CA	12	9	21	$406,580
10	RACINE PL.	-	-	-	33	-	-	-	4	4	$84,491
11	JUDI DR.	-	-	-	29	-	-	-	2	2	$73,728
12	SILVER REEF RD.	-	-	-	26	-	-	-	1	1	$66,463
13	JAHNS DR.	-	-	-	27	-	-	-	2	2	$68,884
14	BARRUS PL.	-	-	-	27	-	-	1	6	7	$68,884
15	VEKOL RD.	-	-	-	25	-	-	-	2	2	$64,041
16	GABRILLA ST./VIOLA DR.	-	-	-	21	-	-	1	-	1	$52,740
17	ALLEY (EIGHTH/FLORENCE)	800	6	DIP	14	2	CA	2	4	6	$75,342
18	WEST PIMA AVE.	2,500	6	PVC	60	4	CA	6	28	34	$304,599
19	WEST PINKLEY AVE.	2,400	6	PVC	58	4	CA	3	23	26	$293,028
20	ALLEY (CENTRAL/ROOSEVELT)	1,200	6	PVC	28	4	CA	3	8	11	$121,086
21	2ND ST.	3,700	8	DIP	49	8	CI	5	9	14	$423,263
22	PIMA AVE.	1,600	6	PVC	43	4	CA	3	13	16	$195,621
23	PINKLEY AVE.	2,000	6	PVC	32	4	CA	5	16	21	$196,697
24	CENTRAL AVE.	1,700	6	PVC	39	4	CA	4	18	22	$199,926
25	ROOSEVELT AVE.	1,700	6	PVC	28	4	CA	8	22	30	$170,328
26	WILSON AVE.	1,700	6	PVC	34	4	CA	6	20	26	$187,280
27	VIOLA DR./IRENE ST.	-	-	-	21	-	-	1	1	2	$53,547
28	ELAINE ST./MORRISON AVE./ BROWN AVE.	-	-	-	34	-	-	-	4	4	$87,451
29	CAMERON AVE.	-	-	-	19	-	-	2	11	13	$48,973
30	KADOTA AVE.	-	-	-	36	-	-	1	5	6	$93,102
31	PALM PARKE UNIT 1 SUB.	-	-	-	51	-	-	-	8	8	$129,427
32	PALM PARKE TERRACE SUB.	-	-	-	43	-	-	-	3	3	$106,287
33	HARDING AVE.	1,700	6	PVC	24	4	CA	1	13	14	$156,066
34	ALLEY (HARDING/COOLIDGE)	1,700	6	PVC	46	4	CA	3	11	14	$184,320
35	ALLEY (ARIZONA BLVD.)	2,200	6	PVC	20	3,4	CA	3	6	9	$158,757
36	1ST ST.	1,100	6	PVC	5	4	CA	2	3	5	$71,575
37	ROOSEVELT AVE./RR	1,100	6	PVC	16	6	CI	-	2	2	$202,483
38	ALLEYS (ROOSEVELT/COOLIDGE)	-	-	-	28	-	-	2	8	10	$56,507
39	ASH AVE.	1,300	8	DIP	26	3,4	CA	4	2	6	$180,822
40	BEECH AVE.	1,600	6	DIP	52	3,4	CA	6	11	17	$254,819
41	CEDAR AVE.	1,600	6	DIP	51	2,3,4	CA	5	17	22	$252,397
42	DATE AVE.	1,600	6	DIP	25	2	CA	3	7	10	$174,902
43	AVENIDA KINO AVE.	-	-	-	46	-	-	-	10	10	$117,050
44	AVENIDA FRESCA/ AVENIDA GRANDE	-	-	-	51	-	-	-	10	10	$124,853
45	ALLEY (AVENIDA FRESCA /AVENIDA ELLENA)	-	-	-	30	-	-	-	5	5	$60,543
46	ALLEY (CORDOVA/BARCELONA)	-	-	-	29	-	-	-	8	8	$58,525
47	EIGHTH ST.	-	-	-	24	-	-	-	5	5	$62,696
48	CENTER AVE.	-	-	-	30	-	-	1	4	5	$76,688
49	ALLEY (CASA GRANDE/CAMERON)	900	6	DIP	14	2,4	CA	-	5	5	$88,796
50	ALLEY (CAMERON/MORRISON)	800	6	DIP	14	3	CA	1	7	8	$82,069
										Total	$7,508,543

An initial three-year replacement program was developed for the PVSA with a $2.5 million annual capital expenditure. Out of the 232 square mile service area, the replacement programs were prioritized and narrowed down to the sections shown on Maps A through G in Appendix 9.2. Analyzing the available data showed three prominent issues that should be addressed in the PVSA with these expenditures. First, the Old Town Coolidge area has a significant number of old and failing water main and service line repairs. To remedy this problem, a water main and service line replacement program was developed for the areas in Maps C, D and E in Appendix 9.10. Second, the Downtown Casa Grande area has a large amount of old and failing CI and CA water mains dating back to 1921, with a long repair history. A water main replacement program was developed for the areas in Maps A and B in Appendix 9.10. The third issue is the phenomenon of plastic service line failures, which are predominant in the Casa Grande area. A service line replacement program was developed for the areas in Maps F and G in Appendix 9.10.

As directed in Commission Decision No. 71845, the Company identified and developed an initial list of fifty priority projects to remedy these serious water main and service line leaks by constructing new water main and service line replacements, as shown in Table 6-7 above. This replacement program includes a combination of water main replacements and service line replacements to properly remedy worsening water loss and aging water infrastructure. The projects are numbered in order of phasing, based on project location. Phasing the projects in this manner will result in an organized and systematic approach to installing the replacements, which should result in construction cost savings. The water main and service line replacement projects in the Old Town Coolidge area will begin at the north end of the problem area and progress south with one phase per year over the initial three-year schedule. The replacement projects in Downtown Casa Grande will be grouped into phases, along with the service line replacements north of the Downtown Casa Grande area.

As directed in Commission Decision No. 71845, the Company has started construction on several replacement projects in the PVSA prior to the submittal of this report. The first project is the replacement of three water lines currently located in alleyways in Coolidge between Coolidge and Elm Avenues and from Main Street to Arizona Boulevard (State Highway 87). This project provides for the replacement of approximately 6,200 LF of three- and four-inch CA pipe, with 200 LF of six-inch C-900 PVC pipe and 2,200 LF of twelve-inch C-900 PVC pipe. The second project is the replacement of a water line located in the Valley Farms portion of the Coolidge water system along Vah Ki Inn Road from Rhodes Court to McGee Road and along Moore Circle from Vah Ki Inn Road to McGee Road. A major portion of this water line was installed in the 1930s. This project provides for the replacement of approximately 2,000 LF of six-inch CA water main with 1,300 LF of twelve-inch C-900 PVC pipe and 700 LF of six-inch C-900 PVC pipe. For the third project, the Company determined that a significant portion of a six-inch water line dating back to the 1930s was failing and needed to be replaced in the Coolidge Municipal Airport water system. The Company made several water line repairs in 2008, 2009 and 2010, and believes that there are several leaks in this water system that are not surfacing due to the sandy soil. This project provides for the replacement of approximately 3,680 LF of six-inch water main with 3,300 LF of twelve-inch C-900 PVC water main. The remaining proposed projects, as shown in Table 6-7, are discussed in detail immediately below.

Project 1

Install approximately 1,600 LF of 6-inch PVC and install 51 services along Hess Avenue from Arizona Boulevard to Main Street. This project will replace approximately 1,400 LF of 4-inch CA water main installed in 1941 and 1956 in the alley south of Hess Avenue and approximately 1,400 LF of 4-inch CA water main installed in 1951 and 1956 in the alley north of Hess Avenue. The existing water mains to be replaced have 27 recorded service line leaks and 4 water main leaks. The cost to complete this project is estimated to be $230,332. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

Project 2

Install approximately 1,600 LF of 6-inch PVC and install 43 services along Walton Avenue from Arizona Boulevard to Main Street. This project will replace approximately 1,400 LF of 4-inch CA water main installed in 1941 and 1956 in the alley north of Walton Avenue and approximately 1,600 LF of 4-inch CA water main installed in 1956 and 1962 in the alley south of Walton Avenue. The existing water mains to be replaced have 23 recorded service line leaks and 3 water main leaks. The cost to complete this project is estimated to be $206,923. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

Project 3

Install approximately 1,600 LF of 6-inch PVC and install 40 services along Bealey Avenue from Arizona Boulevard to Main Street. This project will replace approximately 1,500 LF of 4-inch CA water main installed in 1945 and 1956 in the alley south of Bealey Avenue and approximately 1,600 LF of 4-inch CA water main installed in 1956 and 1962 in the alley north of Bealey Avenue. The existing water mains to be replaced have 22 recorded service line leaks and 5 water main leaks. The cost to complete this project is estimated to be $198,581. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

Project 4

Install approximately 1,600 LF of 6-inch PVC and install 50 services along Kennedy Avenue from Arizona Boulevard to Main Street. This project will replace approximately 1,500 LF of 4-inch CA water main installed in 1945 and 1956 in the alley north of Kennedy Avenue and approximately 1,500 LF of 6-inch CA water main installed in 1981 and 1982 in the alley south of Kennedy Avenue. The existing water mains to be replaced have 21 recorded service line leaks and 4 water main leaks. The cost to complete this project is estimated to be $227,373. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

Project 5

Install approximately 1,600 LF of 6-inch PVC and install 49 services along Byrd Avenue from Arizona Boulevard to Main Street. This project will replace approximately 1,500 LF of 4-inch CA water main installed in 1945 in the alley south of Byrd Avenue and approximately 1,500 LF of 6-inch CA water main installed in 1981 and 1982 in the alley north of Byrd Avenue. The existing water mains to be replaced have 15 recorded service line leaks. The cost to complete this project is estimated to be $224,682. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

Project 6

Install approximately 1,600 LF of 6-inch PVC and install 47 services along Lindbergh Avenue from Arizona Boulevard to Main Street. This project will replace approximately 1,500 LF of 4-inch CA water main installed in 1942 in the alley south of Lindbergh Avenue and approximately 1,500 LF of 4-inch CA water main installed in 1945 in the alley north of Lindbergh Avenue. The existing water mains to be replaced have 17 recorded service line leaks and 2 water main leaks. The cost to complete this project is estimated to be $219,031. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

Project 7

Install approximately 1,000 LF of 12-inch PVC and install 35 services along Northern Avenue from Fourth Street to Main Street. This project will replace approximately 1,500 LF of 4-inch CA water main installed in 1942 in the alley to the north of Northern Avenue and approximately 1,400 LF of 10-inch CA water main installed in 1957 in the alley to the south of Northern Avenue. The existing water mains to be replaced have 21 recorded service line leaks and 2 main leaks. The cost to complete this project is estimated to be $180,553. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

Project 8

Install approximately 700 LF of 8-inch PVC and install 19 services in the alley between Main Street and First Street from Byrd Avenue to Northern Avenue. This project will replace approximately 700 LF of 8-inch CA water main installed in 1954 in the alley between Main Street and First Street from Byrd Avenue to Northern Avenue. The existing water main to be replaced has 4 recorded service line leaks and 2 water main leaks. The cost to complete this project is estimated to be $85,433. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

Project 9

Install approximately 300 LF of 8-inch DI pipe with polywrap and 3,200 LF of 6-inch DI pipe with polywrap and install 65 services along First Street and CG Avenue from State Highway 84 to Pinal Avenue. This project will replace approximately 3,400 LF of 4-inch CI water main installed in 1921 and 4-inch CA water main installed in 1964. The existing water main to be replaced has 9 recorded service line leaks and 12 water main leaks. The cost to complete this project is estimated to be $406,580. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

Project 10

Install 33 services along Racine Place from Casa Grande Avenue to Kadota Avenue. The existing water main has 4 recorded service line leaks. The cost to complete this project is estimated to be $84,491. See Appendix 9.10 f for the map depicting the project limits and the detailed cost estimate.

Project 11

Install 29 services along Judi Drive from Casa Grande Avenue to Kadota Avenue. The existing water main has 2 recorded service line leaks. The cost to complete this project is estimated to be $73,728. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

Project 12

Install 26 services along Silver Reef Road from Casa Grande Avenue to Kadota Avenue. The existing water main has 1 recorded service line leak. The cost to complete this project is estimated to be $66,463. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

Project 13

Install 27 services along Jahns Drive from Casa Grande Avenue to Kadota Avenue. The existing water main has 2 recorded service line leaks. The cost to complete this project is estimated to be $68,884. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

Project 14

Install 27 services along Barrus Place from Casa Grande Avenue to Kadota Avenue. The existing water main has 6 recorded service line leaks. The cost to complete this project is estimated to be $68,884. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

Project 15

Install 25 services along Vekol Road from Casa Grande Avenue to Kadota Avenue. The existing water main has 2 recorded service line leaks. The cost to complete this project is estimated to be $64,041. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

Project 16

Install 21 services along Gabrilla Street and Viola Street from Casa Grande Avenue to Palm Parke Boulevard. The cost to complete this project is estimated to be $52,740. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

Project 17

Install approximately 700 LF of 6-inch DI pipe with polywrap and install 14 services in the alley between Eighth Street and Florence Boulevard from Walnut Avenue to Picacho Avenue. This project will replace approximately 800 LF of 2-inch CA water main installed in 1941 in the alley between Eighth Street and Florence Boulevard from Walnut Avenue to Picacho Avenue. The existing water main to be replaced has 4 recorded service line leaks and 2 water main leaks. The cost to complete this project is estimated to be $75,342. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

Project 18

Install approximately 2,500 LF of 6-inch PVC and install 60 services along West Pima Avenue from Ninth Street to Arizona Boulevard. This project will replace approximately 2,500 LF of 4-inch CA water main installed in 1948 and 1952 in the alley north of West Pima Avenue and approximately 2,500 LF of 4-inch CA water main installed in 1948, 1949, 1953, and 1961 in the alley south of West Pima Avenue. The existing water mains to be replaced have 28 recorded service line leaks and 6 water main leaks. The cost to complete this project is estimated to be $304,599. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

Project 19

Install approximately 2,400 LF of 6-inch PVC and install 58 services along West Pinkley Avenue from Ninth Street to Arizona Boulevard. This project will replace approximately 2,500 LF of 4-inch CA water main installed in 1948, 1949, 1953, and 1961 in the alley north of Pinkley Avenue and approximately 2,500 LF of 4-inch CA water main installed in 1950, 1951, and 1953 in the alley south of Pinkley Avenue. The existing water mains to be replaced have 23 recorded service line leaks and 3 water main leaks. The cost to complete this project is estimated to be $293,028. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

Project 20

Install approximately 1,200 LF of 6-inch PVC and install 28 services in the alley between Central Avenue and Roosevelt Avenue from Seventh Street to Arizona Boulevard. This project will replace approximately 1,200 LF of 4-inch CA water main installed in 1942 in the alley between Central Avenue and Roosevelt Avenue from Seventh Street to Arizona Boulevard. The existing water main to be replaced has 8 recorded service line leaks and 3 water main leaks. The cost to complete this project is estimated to be $121,086. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

Project 21

Install approximately 3,700 LF of 8-inch DI pipe with polywrap and install 49 services along Second Street from Florence Street to Casa Grande Avenue. This project will replace approximately 3,800 LF of 8-inch CI water main installed in 1921. The existing water main to be replaced has 9 recorded service line leaks and 5 water main leaks. The cost to complete this project is estimated to be $423,263. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

Project 22

Install approximately 1,600 LF of 6-inch PVC and install 43 services along Pima Avenue from Fourth Street to First Street. This project will replace approximately 1,600 LF of 4-inch CA water main installed in 1941 in the alley to the south of Pima Avenue. The existing water main to be replaced has 13 recorded service line leaks and 3 water main leaks. The cost to complete this project is estimated to be $195,621. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

Project 23

Install approximately 2,000 LF of 6-inch PVC and install 32 services along Pinkley Avenue from Arizona Boulevard to First Street. This project will replace approximately 1,900 LF of 4-inch CA water main installed in 1941 in the alley to the north of Pinkley Avenue and approximately 700 LF of 4-inch CA water main installed in 1948 and 1957 crossing Pinkley Avenue and in the alley south of Pinkley Avenue. The existing water mains to be replaced have 16 recorded service line leaks and 5 water main leaks. The cost to complete this project is estimated to be $196,697. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

Project 24

Install approximately 1,700 LF of six-inch PVC and install 39 services along Central Avenue from Arizona Boulevard to Main Street. This project will replace approximately 1,700 LF of 4-inch CA water main installed in 1936 and 1979 in the alley to the south of Central Avenue and approximately 700 LF of 4-inch CA water main installed in 1948 and 1957 in the alley north of Central Avenue. The existing water mains to be replaced have 18 recorded service line leaks and 4 water main leaks. The cost to complete this project is estimated to be $199,926. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

Project 25

Install approximately 1,700 LF of 6-inch PVC and install 28 services along Roosevelt Avenue from Arizona Boulevard to Main Street. This project will replace approximately 1,700 LF of 4-inch CA water main installed in 1936 and 1979 in the alley to the north of Roosevelt Avenue and approximately 800 LF of 4-inch CA water main installed in 1960 and 1961 in the alley south of Roosevelt Avenue. The existing water mains to be replaced have 22 recorded service line leaks and 8 water main leaks. The cost to complete this project is estimated to be $170,328. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

Project 26

Install approximately 1,700 LF of 6-inch PVC and install 34 services along Wilson Avenue from Arizona Boulevard to Main Street. This project will replace approximately 1,500 LF of 4-inch CA water main installed in 1940 in the alley to the south of Wilson Avenue and approximately 800 LF of 4-inch CA water main installed in 1960 and 1961 in the alley north of Wilson Avenue. The existing water mains to be replaced have 20 recorded service line leaks and 6 water main leaks. The cost to complete this project is estimated to be $187,280. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

Project 27

Install 21 services along Viola Drive and Irene Street from Casa Grande Avenue to Cameron Avenue. The existing water mains have 1 recorded service line leak and 1 water main leak. The cost to complete this project is estimated to be $53,547. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

Project 28

Install 34 services along Elaine Street, Morrison Avenue, and Brown Avenue. The existing water mains have 4 recorded service line leaks. The cost to complete this project is estimated to be $87,451. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

Project 29

Install 19 services along Cameron Avenue in the Cabana East Subdivision. The existing water mains have 11 recorded service line leaks. The cost to complete this project is estimated to be $48,973. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

Project 30

Install 36 services along Kadota Avenue from Judi Drive to Palm Parke Boulevard. The existing water main has 5 recorded service line leaks. The cost to complete this project is estimated to be $93,102. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

Project 31

Install 51 in the Palm Park Unit 1 AMD subdivision. The existing water mains have 8 recorded service line leaks. The cost to complete this project is estimated to be $129,427. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

Project 32

Install 43 services in the Palm Parke Terrace subdivision. The existing water mains have 3 recorded service line leaks. The cost to complete this project is estimated to be $106,287. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

Project 33

Install approximately 1,700 LF of 6-inch PVC and install 24 services along Harding Avenue from Arizona Boulevard to Main Street. This project will replace approximately 1,500 LF of 4-inch CA water main installed in 1940 in the alley to the north of Harding Avenue. The existing water main to be replaced has 13 recorded service line leaks and 1 water main leak. The cost to complete this project is estimated to be $156,066. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

Project 34

Install approximately 1,700 LF of 6-inch PVC and install 46 services in the alley between Harding Avenue and Coolidge Avenue from Arizona Boulevard to Main Street. This project will replace approximately 1,700 LF of 4-inch CA water main installed in 1940 and 1947 in the alley to the south of Harding Avenue. The existing water main to be replaced has 11 recorded service line leaks and 3 water main leaks. The cost to complete this project is estimated to be $184,320. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

Project 35

Install approximately 2,200 LF of 6-inch PVC and install 20 services in the alley between Arizona Boulevard and Fourth Street from Pima Avenue to Coolidge Avenue. This project will replace approximately 2,200 LF of 3-inch CA water main installed in 1951 and 4-inch CA water main installed in 1938, 1940, and 1963 in the alley between Arizona Boulevard and Fourth Street from Pima Avenue to Coolidge Avenue. The existing water main to be replaced has 6 recorded service line leaks and 3 water main leaks. The cost to complete this project is estimated to be $158,757. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

Project 36

Install approximately 1,100 LF of 6-inch PVC and install 5 services along First Street from Roosevelt Avenue to Coolidge Avenue. This project will replace approximately 1,100 LF of 4-inch CA water main installed in 1940 along First Street from Roosevelt Avenue to Coolidge

Avenue. The existing water main to be replaced has 3 recorded service line leaks and 2 water main leaks. The cost to complete this project is estimated to be $71,575. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

Project 37

Install approximately 1,100 LF of 6-inch PVC and install 17 services in an alley between Central Avenue and Burke Avenue crossing the Union Pacific Railroad. This project will replace approximately 1,100 LF of 6-inch CI water main installed in 1936 in an alley between Central Avenue and Burke Avenue crossing the Union Pacific Railroad. The existing water main to be replaced has 2 recorded service line leak. The cost to complete this project is estimated to be $202,483. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

Project 38

Install 28 services in the alleys between Roosevelt Avenue and Coolidge Avenue from Main Street to First Street. The existing water mains have 8 recorded service line leaks. The cost to complete this project is estimated to be $56,507. See Appendix 9.10 f for the map depicting the project limits and the detailed cost estimate.

Project 39

Install approximately 1,300 LF of 8-inch DI pipe with polywrap and install 26 services along Ash Avenue from Florence Street to Green Avenue. This project will replace approximately 1, 500 LF of 2-inch CA water main installed in 1946 and 1947, 3-inch CA water main installed in 1951, and 4-inch CA water main installed in 1979. The existing water main to be replaced has 2 recorded service line leaks and 4 water main leaks. The cost to complete this project is estimated to be $180,822. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

Project 40

Install approximately 1,600 LF of 6-inch DI pipe with polywrap and install 52 services along Beech Avenue from Florence Street to Green Avenue. This project will replace approximately 1,500 LF of 3-inch CA water main installed in 1951 and 4-inch CA water main installed in 1941 and 1944 and approximately 1,500 LF of 3-inch CA water main installed in 1951 and 4-inch CA water main installed in 1946, 1947, and 1979. The existing water mains to be replaced have 11 recorded service line leaks and 6 water main leaks. The cost to complete this project is estimated to be $254,819. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

Project 41

Install approximately 1,600 LF of 6-inch DI pipe with polywrap and install 51 services along Cedar Avenue from Florence Street to Green Avenue. This project will replace approximately 1,500 LF of 2-inch CA water main installed in 1938 and 1947 in the alley between Date Avenue and Cedar Avenue from Florence Street to Green Avenue and approximately 1,500 LF of 3-inch CA water main installed in 1951 and 4-inch CA water main installed in 1941 and 1944. The existing water mains to be replaced have 17 recorded service line leaks and 5 water main leaks. The cost to complete this project is estimated to be $252,397. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

Project 42

Install approximately 1,600 LF of 6-inch DI pipe with polywrap and install 25 services along Date Avenue from Florence Street to Green Avenue. This project will replace approximately 1,500 LF of 2-inch CA water main installed in 1938 and 1947 in the alley between Date Avenue and Cedar Avenue from Florence Street to Green Avenue. The existing water main to be replaced has 7 recorded service line leaks and 3 water main leaks. The cost to complete this project is estimated to be $174,902. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

Project 43

Install 46 services along Avenida Kino from Colorado Street to Avenida Isabella. The existing water mains have 10 recorded service line leaks. The cost to complete this project is estimated to be $117,050. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

Project 44

Install 51 services along Avenida Grande and Avenida Fresca from Trekell Road to Pueblo Street and in La Escondido Subdivision. The existing water mains have 10 recorded service line leaks. The cost to complete this project is estimated to be $124,853. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

Project 45

Install 30 services in the alley between Avenida Fresca and Avenida Ellena from Pueblo Street to Colorado Street. The existing water mains have 5 recorded service line leaks. The cost to complete this project is estimated to be $60,543. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

Project 46

Install 29 services in the alley between Cordova Avenue and Barcelona Avenue from Pueblo Street to Colorado Street. The existing water mains have 8 recorded service line leaks. The cost to complete this project is estimated to be $58,525. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

Project 47

Install 24 services along Eighth Street from Pinal Avenue to Center Avenue. The existing water main has 5 recorded service line leaks. The cost to complete this project is estimated to be $62,696. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

Project 48

Install 30 services along Center Avenue from Tenth Street to Florence Boulevard. The existing water main has 4 recorded service line leaks. The cost to complete this project is estimated to be $76,688. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

Project 49

Install approximately 900 LF of 6-inch DI pipe with polywrap and install 14 services in the alley between Casa Grande Avenue and North Cameron Avenue from Ninth Street to Tenth Street. This project will replace approximately 900 LF of 2-inch CA water main and 4-inch CA water main installed in 1946 and 1949 in the alley between Casa Grande Avenue and North Cameron Avenue from Ninth Street to Tenth Street. The existing water main to be replaced has 5 recorded service line leaks. The cost to complete this project is estimated to be $88,796. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

Project 50

Install approximately 800 LF of 6-inch DI pipe with polywrap and install 14 services in the alley between North Cameron Avenue and North Morrison Avenue from Ninth Street to Tenth Street. This project will replace approximately 800 LF of 3-inch CA water main installed in 1950 in the alley between North Cameron Avenue and North Morrison Avenue from Ninth Street to Tenth Street. The existing water main to be replaced has 7 recorded service line leaks and 1 water main leak. The cost to complete this project is estimated to be $82,069. See Appendix 9.10 for the map depicting the project limits and the detailed cost estimate.

7.0 CONCLUSIONS

In conclusion, water loss within the PVSA has been well managed by the Company, and detailed records of leak and break repairs to reduce water losses are well documented. The purchase and use of various types of leak detection equipment have been effectively used to reduce water loss. However, many miles of water main have reached or are approaching the end of their useful service lives. In addition, plastic service lines are failing and need to be replaced. Detecting, locating and repairing leaks and breaks will continue to be a high priority for the Company's water system operators. At the historic rate of replacement, however, it will take 633 years to replace all existing infrastructure. This timeline is insufficient to keep up with necessary replacements as the maximum useful service lives is less than 75 years for water mains and much less for service lines. A comprehensive water main and service line replacement program is required to reduce water loss in the PVSA.

An assessment of the PVSA and available data show three critical areas that need to be addressed in the PVWS. The first area is the water distribution system in the Old Town Coolidge area, which has shown significant numbers of water main and service line leaks and breaks. The second area is the water distribution system in the Downtown Casa Grande area, which has similarly shown significant numbers of water main and service line leaks and breaks with mains dating back to 1921. The third critical area contains failing plastic service lines, which are predominantly present in the Casa Grande area. Specific replacement programs have been developed to resolve each of these critical replacement needs. Over the next three years, 50 projects were identified to reduce water loss in these critical areas by replacing aging water mains and failing service lines to comply with the Commission directive in Decision No. 71845. The Company estimates the annual cost of this replacing program to be $2.5 million.

Within a month of Decision No. 71845, the Company started the design and construction of several replacement projects in the PVSA, to reduce water loss as the Commission directed

the Company to do. These projects included the installation of 9,210 LF of 6-inch C-900 PVC, 6,800 LF of 12-inch C-900 PVC and 178 service lines at a total estimated cost of $1,300,000. The Company cannot fund this replacement program on an ongoing basis without additional revenues to recover the costs. Accordingly, the Company will seek Commission authority to implement a DSIC as part of its next general rate cases.

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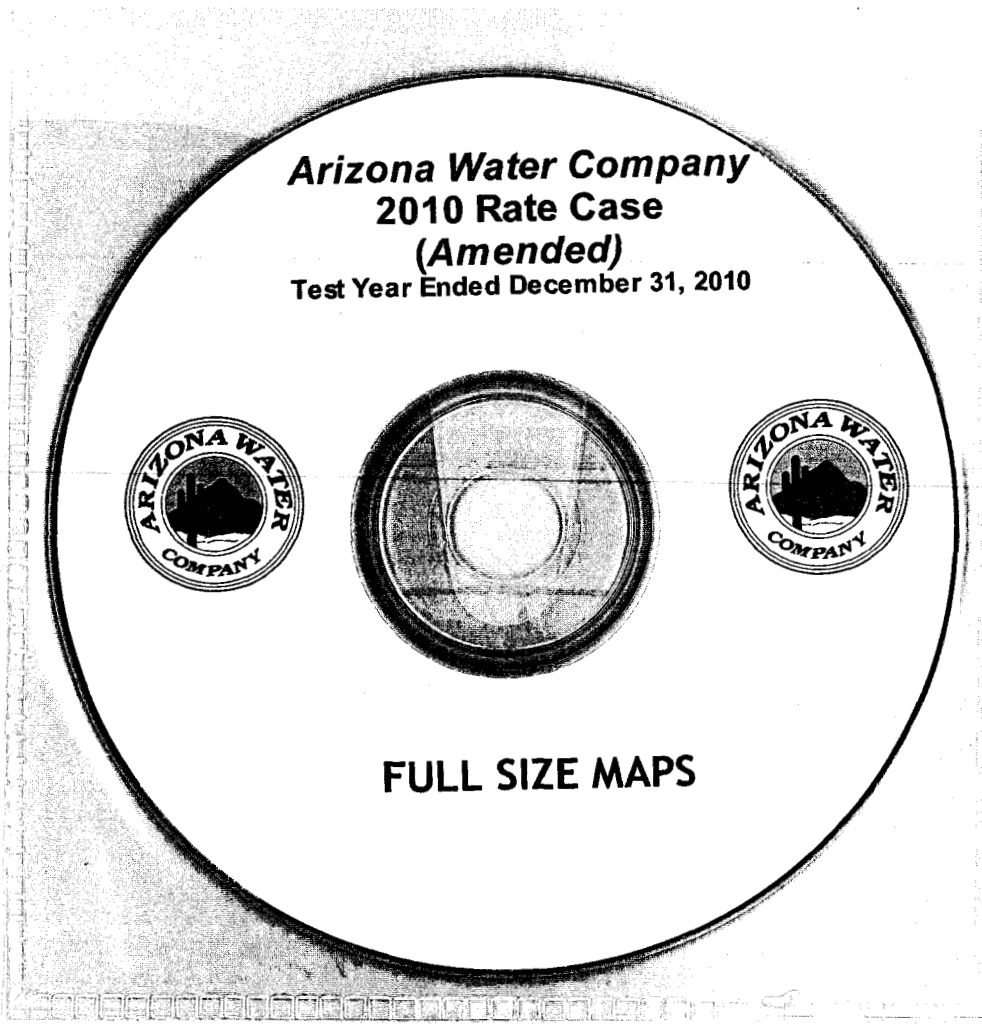
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2010 Rate Case
(Amended)
Test Year Ended December 31, 2010
ARIZONA WATER COMPANY
ARIZONA WATER COMPANY
FULL SIZE MAPS

9.0 APPENDICES

9.1 Leak and Break Repair History

LEAK NO.	ADDRESS	SECTION	DATE	TYPE	BLUE STAKE	ONION SKIN	FIELD	NO. OF SVCS.	L.F. OF MAIN	SERVICE MAT'L RETIRED
1	38128 W Highway 84	SW 1/4 Sec 19 T6S R4E	6/11/2008	Service Replacement		X		1	-	Plastic
2	307 W 1st Street	SW 1/4 Sec 19 T6S R4E	10/12/2007	Service Replacement		X		1	-	Plastic
3	308 W 1st Street	SW 1/4 Sec 19 T6S R4E	9/13/2006	Service Replacement		X		1	-	-
4	309 W 1st Street	SW 1/4 Sec 19 T6S R4E	7/21/2008	Service Replacement		X		1	-	Plastic
5	310 W 1st Street	SW 1/4 Sec 19 T6S R4E	11/12/2009	Service Replacement		X		1	-	Other
6	311 W 1st Street	SW 1/4 Sec 19 T6S R4E	5/10/2007	Main Replacement		X		1	27	-
7	15076 W Waverly Drive	SW 1/4 Sec 15 T5S R6E	6/15/2007	Service Replacement		X		1	-	Copper
8	14530 W Belmont Drive	SE 1/4 Sec 15 T5S R6E	11/30/2009	Service Replacement	X			1	-	-
9	11186 N Faldale Road	NW 1/4 Sec 19 T5S R6E	11/4/2008	Service Replacement			X	1	-	-
10	10685 N Ottawa Drive	NE 1/4 Sec 19 T5S R6E	6/21/2010	Service Replacement	X			1	-	-
11	10015 N Scott Drive	SE 1/4 Sec 19 T5S R6E	11/9/2009	Service Repair	X			-	-	-
12	10700 N Kit Carson Drive	NW 1/4 Sec 20 T5S R6E	12/1/2009	Service Replacement		X		1	-	Plastic
13	10901 N Hualapai Drive	NW 1/4 Sec 20 T5S R6E	11/18/2009	Service Replacement		X		1	-	Plastic
14	10901 N Hualapai Drive	NW 1/4 Sec 20 T5S R6E	11/18/2009	Main Repair	X			-	-	-
15	10900 N Kit Carson Drive	NW 1/4 Sec 20 T5S R6E	6/8/2010	Main Repair	X			-	-	-
16	10626 N Kit Carson Drive	NW 1/4 Sec 20 T5S R6E	11/9/2007	Service Replacement		X		1	-	Plastic
17	10700 N Kit Carson Drive	NW 1/4 Sec 20 T5S R6E	3/9/2009	Main Repair	X			-	-	-
18	10690 N Little Oak Drive	NW 1/4 Sec 20 T5S R6E	4/25/2008	Service Replacement			X	1	-	-
19	10629 N Little Oak Drive	NW 1/4 Sec 20 T5S R6E	11/13/2007	Service Replacement			X	1	-	-
20	10547 N Hualapai Drive	NW 1/4 Sec 20 T5S R6E	9/18/2007	Service Replacement			X	1	-	-
21	10400 Block of N Grand Canyon Road	NW 1/4 Sec 20 T5S R6E	2/19/2008	Service Replacement		X		1	-	Plastic
22	10499 N Grand Canyon Road	NW 1/4 Sec 20 T5S R6E	2/13/2008	Service Replacement			X	1	-	-
23	10451 N Grand Canyon Road	NW 1/4 Sec 20 T5S R6E	8/31/2006	Service Replacement		X		1	-	Copper
24	10668 N Kit Carson Drive	NW 1/4 Sec 20 T5S R6E	7/22/2010	Service Replacement	X			1	-	-
25	10500 Block of N Kit Carson Drive	NW 1/4 Sec 20 T5S R6E	7/24/2009	Service Replacement	X			1	-	-
26	10500 Block of N Kit Carson Drive	NW 1/4 Sec 20 T5S R6E	4/30/2010	Service Replacement	X			1	-	-
27	10572 N Kit Carson Drive	NW 1/4 Sec 20 T5S R6E	5/11/2010	Service Replacement		X		1	-	Plastic
28	10572 N Battleford Drive	NW 1/4 Sec 20 T5S R6E	9/27/2006	Service Replacement		X		1	-	Copper
29	10629 N Little Oak Drive	NW 1/4 Sec 20 T5S R6E	11/13/2007	Service Replacement		X		1	-	Plastic
30	19090 W Calgary Drive	SW 1/4 Sec 20 T5S R6E	10/18/2009	Main Repair	X			-	-	-
31	19030 W Calgary Drive	SW 1/4 Sec 20 T5S R6E	4/8/2009	Service Replacement	X			1	-	-
32	10306 W Calgary Drive	SW 1/4 Sec 20 T5S R6E	9/9/2008	Service Replacement		X		1	-	Copper
33	W Mascalero Drive Lot 217	SW 1/4 Sec 20 T5S R6E	9/18/2006	Service Replacement		X		1	-	Copper
34	19010 W Mescalero Drive	SW 1/4 Sec 20 T5S R6E	9/25/2000	Main Repair			X	-	-	-
35	19010 W Mescalero Drive	SW 1/4 Sec 20 T5S R6E	6/11/2008	Main Repair			X	-	-	-
36	19155 W Havasupai Drive	SW 1/4 Sec 20 T5S R6E	2/12/2010	Main Repair	X			-	-	-
37	9839 N Hualapai Drive	SW 1/4 Sec 20 T5S R6E	8/31/2010	Service Replacement	X			1	-	-
38	10245 N Pinal Avenue	NW 1/4 Sec 21 T5S R6E	11/13/2008	Main Repair			X	-	-	-
39	Hopi Drive & Pinal Avenue	NW 1/4 Sec 21 T5S R6E	2/3/2009	Service Repair	X			-	-	-
40	17301 W Hopi Drive	SW 1/4 Sec 21 T5S R6E	2/5/2010	Service Replacement	X			1	-	-
41	10156 N Baltimore Drive	SE 1/4 Sec 21 T5S R6E	1/20/2010	Service Replacement	X			1	-	-
42	10156 N Baltimore Drive	SE 1/4 Sec 21 T5S R6E	2/2/2009	Main Repair	X			-	-	-
43	Val Vista Road & Avalon Street	SE 1/4 Sec 22 T5S R6E	11/19/2009	Main Repair	X			-	-	-
44	10759 S Henness Road	NW 1/4 Sec 24 T5S R6E	6/18/2010	Service Repair	X			-	-	-
45	11251 N Cox Road	SE 1/4 Sec 24 T5S R6E	7/21/2008	Service Replacement		X		1	-	Plastic
46	9386 N Linnet Drive	NE 1/4 Sec 25 T5S R6E	5/12/2010	Service Repair	X			-	-	-
47	10180 W Pasadena Drive	NE 1/4 Sec 31 T5S R7E	1/21/2009	Main Repair	X			-	-	-
48	7100 N Overfield Road	SE 1/4 Sec 32 T5S R7E	8/16/2010	Main Repair	X			-	-	-
49	Overfield Road & McCartney Road	SE 1/4 Sec 32 T5S R7E	9/8/2010	Main Repair	X			-	-	-
50	Overfield Road & McCartney Road	SW 1/4 Sec 33 T5S R7E	9/8/2009	Main Repair	X			-	-	-

LEAK NO.	ADDRESS	SECTION	DATE	TYPE	BLUE STAKE	ONION SKIN	FIELD	NO. OF SVCS.	L.F. OF MAIN	SERVICE MAT'L RETIRED
51	7473 W McCartney Road	SW 1/4 Sec 33 T5S R7E	1/26/2009	Main Repair	X			-	-	-
52	7317 W McCartney Road	SW 1/4 Sec 33 T5S R7E	2/18/2010	Main Repair	X			-	-	-
53	7317 W McCartney Road	SW 1/4 Sec 33 T5S R7E	1/15/2007	Main Repair		X		-	-	-
54	7473 W McCartney Road	NW 1/4 Sec 5 T6S R7E	9/21/2010	Main Repair	X			-	-	-
55	7473 W McCartney Road	NW 1/4 Sec 5 T6S R7E	7/13/2010	Main Repair	X			-	-	-
56	25398 W Marana Drive	SW 1/4 Sec 9 T6S R5E	6/16/2008	Service Replacement		X		1	-	Plastic
57	NW Corner of N Bianco Road and W Kortsen Road	SE 1/4 Sec 9 T5E R6E	6/26/2007	Main Repair			X	-	-	-
58	1508 N VIP Boulevard	NW 1/4 Sec 24 T6S R5E	7/18/2007	Service Replacement		X		1	-	-
59	1463 N VIP Boulevard	NW 1/4 Sec 24 T6S R5E	8/13/2007	Service Replacement		X		1	-	Plastic
60	1201 N VIP Boulevard	SW 1/4 Sec 24 T6S R5E	4/20/2008	Main Repair			X	-	-	-
61	1373 W Tulip Place	SW 1/4 Sec 24 T6S R5E	5/9/2008	Main Repair			X	-	-	-
62	1300 Block of Rose Place	SW 1/4 Sec 24 T6S R5E	6/28/2008	Main Replacement		X		-	6	-
63	1214 W Gila Bend Highway	SE 1/4 Sec 24 T6S R5E	7/30/2009	Main Repair		X		-	-	-
64	1214 W Highway 84	SE 1/4 Sec 24 T6S R5E	7/28/2009	Main Repair	X			-	-	-
65	25270 W Clayton Road	NW 1/4 Sec 21 T6S R5E	8/12/2009	Main Repair	X			-	-	-
66	25193 W Boone Drive	NW 1/4 Sec 21 T6S R5E	8/10/2010	Service Replacement	X			1	-	-
67	25025 W Boone Drive	NW 1/4 Sec 21 T6S R5E	8/13/2007	Service Replacement		X		1	-	Plastic
68	25050 W Boone Drive	NW 1/4 Sec 21 T6S R5E	8/19/2010	Main Repair	X			-	-	-
69	24929 W Boone Drive	NW 1/4 Sec 21 T6S R5E	4/24/2006	Service Replacement		X		1	-	Plastic
70	24906 W Boone Drive	NW 1/4 Sec 21 T6S R6E	4/2007	Service Replacement			X	1	-	-
71	924 N Bradbury Drive	NW 1/4 Sec 21 T6S R5E	8/12/2010	Main Repair	X			-	-	-
72	848 N Bradbury Drive	NW 1/4 Sec 21 T6S R5E	8/16/2007	Service Replacement			X	1	-	-
73	712 & 810 N Bradbury Drive	NW 1/4 Sec 21 T6S R5E	8/29/2007	Service Replacement		X		1	-	Copper
74	712 W Bradbury Drive	NW 1/4 Sec 21 T6S R5E	8/28/2007	Main Repair			X	-	-	-
75	Candlestick Road Lot 153	SW 1/4 Sec 21 T6S R5E	1/24/2006	Service Replacement		X		1	-	-
76	Bradbury Drive & Candlestick Road	SW 1/4 Sec 21 T6S R5E	5/27/2009	Main Repair	X			-	-	-
77	350 N Candlestick Road	SW 1/4 Sec 21 T6S R5E	11/4/2009	Service Replacement	X			1	-	-
78	Montgomery Road & Selma Highway	SW 1/4 Sec 21 T6S R5E	5/27/2009	Service Replacement			X	1	-	-
79	1145 E Avenida Kino	SW 1/4 Sec 4 T6S R6E	2003	Service Replacement			X	1	-	-
80	1165 E Avenida Kino	SW 1/4 Sec 4 T6S R6E	2002	Service Replacement			X	1	-	-
81	1198 E Avenida Kino	SW 1/4 Sec 4 T6S R6E	2002	Service Replacement			X	1	-	-
82	1174 E Avenida Kino	SW 1/4 Sec 4 T6S R6E	2002	Service Replacement			X	1	-	-
83	1198 E Avenida Kino	SW 1/4 Sec 4 T6S R6E	2002	Service Replacement			X	1	-	-
84	1202 E Avenida Kino	SW 1/4 Sec 4 T6S R6E	2002	Service Replacement			X	1	-	-
85	1214 E Avenida Kino	SW 1/4 Sec 4 T6S R6E	2002	Service Replacement			X	1	-	-
86	1226 E Avenida Kino	SW 1/4 Sec 4 T6S R6E	2002	Service Replacement			X	1	-	-
87	1238 E Avenida Kino	SW 1/4 Sec 4 T6S R6E	2002	Service Replacement			X	1	-	-
88	1250 E Avenida Kino	SW 1/4 Sec 4 T6S R6E	2003	Service Replacement			X	1	-	-
89	1267 E Avenida Kino	SW 1/4 Sec 4 T6S R6E	2002	Service Replacement			X	1	-	-
90	1274 E Avenida Grande	SE 1/4 Sec 4 T6S R6E	9/3/2009	Service Replacement	X			1	-	-
91	2545 N La Escondida Circle	SW 1/4 Sec 4 T6S R6E	2003	Service Replacement			X	1	-	-
92	2543 N La Escondida Circle	SW 1/4 Sec 4 T6S R6E	2002	Service Replacement			X	1	-	-
93	2538 N La Escondida Circle	SW 1/4 Sec 4 T6S R6E	1/2001	Service Replacement			X	1	-	-
94	1132 E Avenida Grande	SW 1/4 Sec 4 T6S R6E	2/13/2008	Service Replacement		X		1	-	Plastic
95	1131 E Avenida Fresca	SW 1/4 Sec 4 T6S R6E	1/2004	Service Replacement			X	1	-	-
96	1157 E Avenida Fresca	SW 1/4 Sec 4 T6S R6E	12/20/2007	Service Replacement		X		1	-	Plastic
97	1180 E Avenida Grande	SW 1/4 Sec 4 T6S R6E	5/1/2009	Service Replacement		X		1	-	-
98	1100 Block of E Avenida Grande	SW 1/4 Sec 4 T6S R6E	4/30/2009	Service Replacement	X			1	-	-
99	1191 E Avenida Grande	SW 1/4 Sec 4 T6S R6E	10/5/2007	Service Replacement		X		1	-	Plastic
100	1198 E Avenida Fresca	SW 1/4 Sec 4 T6S R6E	1/2005	Service Replacement			X	1	-	-

LEAK NO.	ADDRESS	SECTION	DATE	TYPE	BLUE STAKE	ONION SKIN	FIELD	NO. OF SVCS.	L.F. OF MAIN	SERVICE MAT'L RETIRED
101	E Avenida Elena Lots 32 and 33	SW 1/4 Sec 4 T6S R6E	2/1/2007	Service Replacement		X		1	-	Plastic
102	E Avenida Grande Lot 3	SW 1/4 Sec 4 T6S R6E	2/1/2007	Service Replacement		X		1	-	Plastic
103	E Avenida Grande Lot 4	SW 1/4 Sec 4 T6S R6E	2/1/2007	Service Replacement		X		1	-	Plastic
104	E Avenida Fresca Lot 5	SW 1/4 Sec 4 T6S R6E	2/1/2007	Service Replacement		X		1	-	Plastic
105	1242 E Avenida Fresca Lots 10 & 11	SW 1/4 Sec 4 T6S R6E	10/25/2007	Service Replacement		X		1	-	Plastic
106	E Avenida Fresca Lot 9	SW 1/4 Sec 4 T6S R6E	2/1/2007	Service Replacement		X		1	-	Plastic
107	E Avenida Fresca Lot 12	SW 1/4 Sec 4 T6S R6E	2/1/2007	Service Replacement		X		1	-	Plastic
108	1196 E Delano Drive	SW 1/4 Sec 4 T6S R6E	7/29/2010	Service Replacement		X		1	-	Plastic
109	1196 E Delano Drive	SW 1/4 Sec 4 T6S R6E	7/27/2010	Service Replacement	X			1	-	-
110	1232 E Cordova Avenue	SW 1/4 Sec 4 T6S R6E	9/3/2010	Service Replacement	X			1	-	-
111	1206 E Barcelona Avenue	SW 1/4 Sec 4 T6S R6E	2000	Main Repair			X	-	-	-
112	1187 E Barcelona Avenue	SW 1/4 Sec 4 T6S R6E	2/26/2009	Service Replacement	X			1	-	-
113	1197 E Cardova Avenue	SW 1/4 Sec 4 T6S R6E	1/2006	Service Replacement			X	1	-	-
114	1202 E Barcelona Avenue Lot 123	SW 1/4 Sec 4 T6S R6E	7/2/2007	Service Replacement		X		1	-	Plastic
115	1201 E Cordova Avenue	SW 1/4 Sec 4 T6S R6E	7/2/2007	Service Replacement		X		1	-	Plastic
116	1213 E Cordova Avenue	SW 1/4 Sec 4 T6S R6E	6/2/2007	Service Replacement		X		1	-	Plastic
117	1237 E Cordova Avenue	SW 1/4 Sec 4 T6S R6E	7/2/2007	Service Replacement		X		1	-	Plastic
118	1261 E Barcelona Avenue	SE 1/4 Sec 4 T6S R6E	7/28/2009	Service Repair	X			-	-	-
119	1274 E Barcelona Avenue Lot 136	SW 1/4 Sec 4 T6S R6E	7/2/2007	Service Replacement		X		1	-	Plastic
120	1273 E Cordova Avenue Lot 143	SW 1/4 Sec 4 T6S R6E	7/2/2007	Service Replacement		X		1	-	Plastic
121	1291 E Cordova Avenue Lot 141	SW 1/4 Sec 4 T6S R6E	7/2/2007	Service Replacement		X		1	-	Plastic
122	2437 N Amarillo Street	SW 1/4 Sec 4 T6S R6E	2002	Service Replacement			X	1	-	-
123	1167 E Barcelona Avenue	SW 1/4 Sec 4 T6S R6E	1/2004	Main Repair			X	-	-	-
124	2431 N Amarillo Street	SW 1/4 Sec 4 T6S R6E	1/2001	Service Replacement			X	1	-	-
125	1168 E Rodeo Road	SW 1/4 Sec 4 T6S R6E	1/2005	Main Repair			X	-	-	-
126	1206 E Rodeo Road	SW 1/4 Sec 4 T6S R6E	1/2005	Service Replacement			X	1	-	-
127	1261 E Barcelona Avenue	SW 1/4 Sec 4 T6S R6E	7/30/2009	Main Repair		X		-	-	-
128	1297 E Barcelona Avenue	SW 1/4 Sec 4 T6S R6E	10/14/2010	Main Replacement	X			-	12	-
129	2547 N Franz Lane	SE 1/4 Sec 4 T6S R6E	8/27/2009	Main Repair	X			-	-	-
130	1372 E Rosemary Trail	SE 1/4 Sec 4 T6S R6E	1/2008	Main Repair			X	-	-	-
131	1330 E Autumn Sage Trail	SE 1/4 Sec 4 T6S R6E	6/26/2009	Main Repair	X			-	-	-
132	1354 E Autumn Safe Trail	SE 1/4 Sec 4 T6S R6E	4/21/2010	Main Repair	X			-	-	-
133	958 E Rodeo Road	SE 1/4 Sec 5 T6S R6E	3/24/2010	Main Repair	X			-	-	-
134	958 E Rodeo Road	SE 1/4 Sec 5 T6S R6E	5/10/2008	Main Repair			X	-	-	-
135	18811 W Palm Avenue	NW 1/4 Sec 6 T6S R6E	4/29/2009	Service Replacement	X			1	-	-
136	18593 W Palm Avenue	NE 1/4 Sec 6 T6S R6E	8/8/2008	Service Replacement		X		1	-	Plastic
137	18830 W Palm Avenue	NW 1/4 Sec 6 T6S R6E	10/8/2009	Service Replacement	X			1	-	-
138	18811 W Palm Avenue	NW 1/4 Sec 6 T6S R6E	4/30/2009	Service Replacement		X		1	-	Plastic
139	18774 W Palm Avenue	NE 1/4 Sec 6 T6S R6E	9/2/2008	Service Replacement		X		1	-	Plastic
140	5797 N Snapdragon Lane	NW 1/4 Sec 6 T6S R6E	4/22/2009	Service Repair	X			-	-	-
141	18592 W Palm Avenue	NW 1/4 Sec 6 T6S R6E	8/7/2008	Service Replacement			X	1	-	-
142	5683 N Snapdragon Lane	NW 1/4 Sec 6 T6S R6E	8/22/2007	Service Replacement			X	1	-	-
143	18668 W Camino Grande	NW 1/4 Sec 6 T6S R6E	9/18/2010	Service Replacement	X			1	-	-
144	5595 N Camdric Lane	NE 1/4 Sec 6 T6S R6E	4/16/2008	Service Replacement			X	1	-	-
145	5595 N Cambrie Lane Lots 1 and 2	NE 1/4 Sec 6 T6S R6E	4/17/2008	Service Replacement		X		1	-	-
146	18014 W Carol Avenue	NE 1/4 Sec 6 T6S R6E	5/21/2008	Service Replacement			X	1	-	-
147	5866 N Azalia Street	NW 1/4 Sec 6 T6S R6E	5/2007	Service Replacement			X	1	-	-
148	5812 N Azalia Street	NE 1/4 Sec 6 T6S R6E	5/27/2008	Service Replacement			X	1	-	-
149	5798 N Azalia Street	NE 1/4 Sec 6 T6S R6E	6/3/2008	Service Replacement		X		1	-	Plastic
150	5797 N Azalia Street	NE 1/4 Sec 6 T6S R6E	6/3/2008	Service Replacement		X		1	-	Plastic

LEAK NO.	ADDRESS	SECTION	DATE	TYPE	BLUE STAKE	ONION SKIN	FIELD	NO. OF SVCS.	L.F. OF MAIN	SERVICE MAT'L RETIRED
151	5739 N Fuchsia Street	NE 1/4 Sec 6 T6S R6E	5/13/2008	Service Replacement			X	1	-	-
152	W Palm Avenue between N Fairoak Lane & N Tally-Ho Street	NE 1/4 Sec 6 T6S R6E	3/11/2008	Service Replacement			X	1	-	-
153	5738 N Azalia Street	NE 1/4 Sec 6 T6S R6E	10/2/2009	Service Repair	X			-	-	-
154	5633 N Begonia Street	NE 1/4 Sec 6 T6S R6E	8/18/2008	Service Replacement			X	1	-	-
155	5588 N Toro Street	NE 1/4 Sec 6 T6S R6E	8/19/2008	Main Repair			X	-	-	-
156	5586 N Fairoak Lane	NE 1/4 Sec 6 T6S R6E	3/9/2010	Service Replacement		X		1	-	Plastic
157	Rodeo Road - Rodeo Grounds	SE 1/4 Sec 6 T6S R6E	6/22/2006	Service Replacement		X		1	-	Copper
158	556 W Lakeshore Drive	SE 1/4 Sec 7 T6S R6E	6/24/2008	Service Replacement			X	1	-	-
159	2079 N Sweetwater Drive	SE 1/4 Sec 7 T6S R6E	7/9/2008	Service Replacement		X		1	-	Copper
160	Casa Grande Avenue & Rodeo Road	NE 1/4 Sec 8 T6S R6E	9/9/2009	Main Repair		X		-	-	-
161	101 W Bisnaga Street	NW 1/4 Sec 8 T6S R6E	6/16/2010	Main Repair		X		-	-	-
162	Casa Grande Avenue & Kortsen Road	NE 1/4 Sec 17 T6S R6E	6/24/2009	Main Repair		X		-	-	-
163	1120 E Yucca Street	NW 1/4 Sec 9 T6S R6E	9/3/2010	Service Replacement		X		1	-	-
164	2142 N Trekell Road	SW 1/4 Sec 9 T6S R6E	7/17/2008	Service Replacement		X		1	-	Plastic
165	1492 E Cottonwood Lane	SW 1/4 Sec 16 T6S R6E	5/19/2009	Service Repair	X			-	-	-
166	1492 E Cottonwood Lane	SE 1/4 Sec 16 T6S R6E	6/2009	Service Replacement			X	1	-	-
167	984 N Paseo Del Oro	NE 1/4 Sec 17 T6S R6E	5/25/2010	Service Repair		X		-	-	-
168	501 E Racine Place	NE 1/4 Sec 17 T5S R6E	7/17/2008	Service Replacement			X	1	-	-
169	619 E Racine Place	NE 1/4 Sec 17 T6S R6E	3/24/2010	Service Replacement		X		1	-	-
170	601 E Racine Place	NE 1/4 Sec 17 T6E R6E	2003	Service Replacement			X	1	-	-
171	600 Block of E Racine Place	NE 1/4 Sec 17 T6S R6E	3/22/2010	Service Replacement	X			1	-	-
172	514 E Judi Drive	NE 1/4 Sec 17 T6S R6E	4/19/2010	Service Replacement		X		1	-	-
173	500 Block of E Judi Drive	NE 1/4 Sec 17 T6S R6E	4/14/2010	Service Replacement	X			1	-	-
174	1875 N Kadota Avenue	NE 1/4 Sec 17 T6S R6E	2/1/2008	Main Repair			X	-	-	-
175	537 E Silver Reef Road	NE 1/4 Sec 17 T5S R6E	7/17/2008	Service Replacement			X	1	-	-
176	502 E Jahns Place	NE 1/4 Sec 17 T6E R6E	1/2004	Service Replacement			X	1	-	-
177	544 E Jahns Place	NE 1/4 Sec 17 T5S R6E	7/17/2008	Service Replacement			X	1	-	-
178	1844 N Kadota Avenue	NE 1/4 Sec 17 T6S R6E	5/9/2008	Service Repair			X	-	-	-
179	1844 N Kadota Avenue	NE 1/4 Sec 17 T6E R6E	1/2008	Service Replacement			X	1	-	-
180	1805 N Princeton Avenue	NW 1/4 Sec 17 T6S R6E	3/28/2008	Service Replacement			X	1	-	-
181	508 E Barrus Place	NE 1/4 Sec 17 T5S R6E	7/17/2008	Service Replacement			X	1	-	-
182	520 E Barrus Place	NE 1/4 Sec 17 T6E R6E	1/2006	Service Replacement			X	1	-	-
183	515 E Barrus Place	NE 1/4 Sec 17 T6E R6E	2003	Service Replacement			X	1	-	-
184	538 E Barrus Place	NE 1/4 Sec 17 T6E R6E	1/2004	Main Repair			X	-	-	-
185	535 E Barrus Place	NE 1/4 Sec 17 T6E R6E	1/2004	Service Replacement			X	1	-	-
186	543 E Barrus Place	NE 1/4 Sec 17 T6E R6E	1/2004	Service Replacement			X	1	-	-
187	631 E Barrus Place	NE 1/4 Sec 17 T6E R6E	2002	Service Replacement			X	1	-	-
188	1835 N Kadota Avenue	NE 1/4 Sec 17 T5S R6E	7/17/2008	Service Replacement			X	1	-	-
189	1814 N Kadota Avenue	NE 1/4 Sec 17 T6S R6E	2/28/2010	Service Replacement	X			1	-	-
190	1890 N Racine Court	NE 1/4 Sec 17 T6S R6E	4/21/2010	Service Replacement	X			1	-	-
191	857 E Shadow Lane	NE 1/4 Sec 17 T6S R6E	4/8/2008	Service Replacement			X	1	-	-
192	601 E Vekol Road	SE 1/4 Sec 17 T6S R6E	12/15/2009	Service Replacement		X		1	-	Plastic
193	600 Block of E Vekol Road	SE 1/4 Sec 17 T6S R6E	12/18/2009	Service Replacement		X		1	-	-
194	514 E Viola Street	SE 1/4 Sec 17 T6S R6E	7/2/2009	Service Repair	X			-	-	-
195	1769 N Kadota Avenue	SE 1/4 Sec 17 T6S R6E	9/10/2008	Service Replacement		X		1	-	Plastic
196	525 E Irene Street	SE 1/4 Sec 17 T6S R6E	2002	Service Replacement			X	1	-	-
197	501 E Elaine Street	SE 1/4 Sec 17 T6S R6E	7/13/2006	Service Replacement		X		1	-	Other
198	1821 N Cameron Avenue	SE 1/4 Sec 17 T6S R6E	11/30/2006	Service Replacement		X		1	-	-
199	1663 N Cameron Avenue	SE 1/4 Sec 17 T6S R6E	10/2/2009	Main Repair	X			-	-	-
200	526 E Elaine Street	SE 1/4 Sec 17 T6S R6E	5/10/2010	Service Replacement		X		1	-	-

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201	1720 N Morrison Avenue	SE 1/4 Sec 17 T6S R6E	5/1/2008	Service Replacement			X	1	-	-
202	1725 N Brown Avenue	SE 1/4 Sec 17 T6S R6E	2003	Service Replacement			X	1	-	-
203	1725 N Kadota Avenue	SE 1/4 Sec 17 T6S R6E	7/20/2009	Main Repair	X			-	-	-
204	1698 N Cameron Street	SE 1/4 Sec 17 T6S R6E	1/21/2010	Service Replacement		X		1	-	-
205	1698 N Cameron Street	SE 1/4 Sec 17 T6S R6E	1/11/2007	Service Replacement		X		1	-	Plastic
206	1692 N Cameron Street	SE 1/4 Sec 17 T6S R6E	1/2010	Main Repair			X	-	-	-
207	1679 N Cameron Street	SE 1/4 Sec 17 T6S R6E	1/2008	Main Repair			X	-	-	-
208	1684 N Cameron Street	SE 1/4 Sec 17 T6S R6E	1/2004	Service Replacement			X	1	-	-
209	1667 N Cameron Street	SE 1/4 Sec 17 T6S R6E	1/2009	Service Replacement			X	1	-	-
210	1663 N Cameron Street	SE 1/4 Sec 17 T6S R6E	9/30/2009	Service Replacement		X		1	-	Plastic
211	1652 N Casa Grande Avenue	SE 1/4 Sec 17 T6S R6E	1/2005	Service Replacement			X	1	-	-
212	1648 N Cameron Street	SE 1/4 Sec 17 T6S R6E	8/31/2010	Service Replacement		X		1	-	-
213	1600 Block of N Cameron Street	SE 1/4 Sec 17 T6S R6E	8/30/2010	Service Replacement	X			1	-	-
214	1640 N Cameron Street	SE 1/4 Sec 17 T6S R6E	8/30/2010	Main Repair	X			-	-	-
215	1632 N Cameron Street	SE 1/4 Sec 17 T6S R6E	2002	Service Replacement			X	1	-	-
216	812 E Gabrilla Drive	SE 1/4 Sec 17 T6S R6E	1/1999	Service Replacement			X	1	-	-
217	842 E Gabrilla Drive	SW 1/4 Sec 17 T6S R6E	6/12/2008	Service Replacement		X		1	-	Copper
218	1777 N Lehmburg Avenue	SE 1/4 Sec 17 T6S R6E	10/5/2009	Service Replacement	X			1	-	-
219	843 E Gabrilla Drive	SE 1/4 Sec 17 T6S R6E	1/2001	Service Replacement			X	1	-	-
220	1765 & 1777 N Lehmberg Avenue	SE 1/4 Sec 17 T6S R6E	9/30/2009	Service Replacement		X		1	-	Plastic
221	812 E Viola Drive	SE 1/4 Sec 17 T6S R6E	7/26/2010	Service Replacement		X		1	-	-
222	1700 Block of N Terrace Circle	SE 1/4 Sec 17 T6S R6E	10/9/2009	Service Replacement		X		1	-	-
223	1751 N Terrace Circle	SE 1/4 Sec 17 T6S R6E	1/2005	Service Replacement			X	1	-	-
224	1741 N Gilbert Avenue	SE 1/4 Sec 17 T6S R6E	4/1/2007	Service Replacement		X		1	-	Copper
225	824 E Palm Park Circle	SE 1/4 Sec 17 T6S R6E	1/2000	Service Replacement			X	1	-	-
226	1764 N Terrace Circle	SE 1/4 Sec 17 T6S R6E	9/2/2009	Service Replacement	X			1	-	-
227	964 E Cottonwood Lane	SE 1/4 Sec 17 T6S R6E	9/1/2010	Service Repair		X		-	-	-
228	240 W Cottonwood Lane	SW 1/4 Sec 17 T6S R6E	4/30/2008	Main Repair			X	-	-	-
229	French Street South of Melrose Drive	NE 1/4 Sec 19 T6S R6E	3/1/2007	Main Replacement		X		-	6	-
230	687 N 7th Place	NE 1/4 Sec 21 T5S R8E	2001	Service Repair			X	-	-	-
231	SE Corner N Greenway Lane & W Barrus Drive	NE 1/4 Sec 18 T6S R6E	5/25/2010	Main Repair		X		-	-	-
232	1801 N Pinal Avenue	NE 1/5 Sec 18 T6S R6E	4/1/2009	Main Repair	X			-	-	-
233	1680 N Casa Grande Avenue	SW 1/4 Sec 17 T6S R6E	1/19/2010	Service Replacement	X			1	-	-
234	1767 N Harvard Avenue	SW 1/4 Sec 17 T6S R6E	10/31/2005	Service Replacement		X		1	-	Copper
235	1786 N Princeton Avenue	SW 1/4 Sec 17 T6S R6E	4/5/2006	Service Replacement		X		1	-	Copper
236	208 E Evelyn Street	SW 1/4 Sec 17 T6S R6E	6/11/2008	Service Replacement		X		1	-	Plastic
237	426 W Cottonwood Lane	SE 1/4 Sec 18 T6S R6E	1/21/2008	Service Replacement			X	1	-	-
238	NW Corner of Pinal Avenue and Cottonwood Lane	SE 1/4 Sec 18 T6S R6E	5/1/2008	Main Repair			X	-	-	-
239	Kortsen Road East of Thornton Road	NW 1/4 Sec 18 T6S R6E	1/2008	Main Repair			X	-	-	-
240	714 W Melrose Drive	NE 1/4 Sec 19 T6S R6E	7/13/2007	Service Replacement		X		1	-	Plastic
241	718 W Melrose Drive	NE 1/4 Sec 19 T6S R6E	2/19/2008	Main Repair			X	-	-	-
242	644 W Melrose Drive	NE 1/4 Sec 19 T6S R6E	9/3/2008	Main Repair			X	-	-	-
243	Wood Street and Ramos Drive	NE 1/4 Sec 19 T6S R6E	2/20/2008	Main Repair			X	-	-	-
244	1586 N French Street	NE 1/4 Sec 19 T6S R6E	9/25/2006	Service Replacement		X		1	-	Copper
245	NW Corner of Pinal Avenue & Saguaro Street	NE 1/4 Sec 19 T6S R6E	9/25/2008	Service Repair			X	-	-	-
246	505 W Cholla Street	NE 1/4 Sec 19 T6S R6E	7/11/2009	Service Replacement	X			1	-	-
247	510 W Ocotilla Street	NE 1/4 Sec 19 T6S R6E	12/4/2007	Service Replacement			X	1	-	-
248	N French Street & W Meloros Drive	NE 1/4 Sec 19 T6S R6E	5/7/2007	Main Replacement		X		-	20	-
249	N French Street between W Manor Drive & W Melrose Drive	NE 1/4 Sec 19 T6S R6E	2/8/2007	Main Replacement		X		-	6	-
250	N French Street between W Manor Drive & Ramos Drive	NE 1/4 Sec 19 T6S R6E	2/8/2007	Main Replacement		X		-	8	-

LEAK NO.	ADDRESS	SECTION	DATE	TYPE	BLUE STAKE	ONION SKIN	FIELD	NO. OF SVCS.	L.F. OF MAIN	SERVICE MAT'L RETIRED
251	1441 N French Street	NE 1/4 Sec 19 T6S R6E	1/23/2009	Service Replacement		X		1	-	-
252	1410 N French Street	NE 1/4 Sec 19 T6S R6E	8/25/2009	Main Repair	X			-	-	-
253	1459 N Pinal Avenue	NE 1/4 Sec 19 T6S R6E	12/22/2008	Service Replacement		X		1	-	-
254	1407 N Pinal Avenue	NE 1/4 Sec 19 T6S R6E	6/2/2009	Main Repair		X		-	-	-
255	1429 N Pinal Avenue	NE 1/4 Sec 19 T6S R6E	12/17/2008	Main Repair			X	-	-	-
256	962 W Gila Bend Highway	SW 1/4 Sec 19 T6S R6E	6/17/2009	Service Replacement		X		1	-	-
257	962 W Highway 84	SW 1/4 Sec 19 T6S R6E	6/16/2009	Main Repair	X			-	-	-
258	962 W Highway 84	SW 1/4 Sec 19 T6S R6E	12/7/2009	Main Repair	X			-	-	-
259	858 W Highway 84	NW 1/4 Sec 30 T6S R6E	11/18/2009	Service Replacement	X			1	-	-
260	1343 N Crane Street	NE 1/4 Sec 19 T6S R6E	10/16/2008	Main Repair			X	-	-	-
261	550 W McMurray Boulevard	NE 1/4 Sec 19 T6S R6E	2/23/2010	Service Replacement	X			1	-	-
262	544 W McMurray Boulevard	NE 1/4 Sec 19 T6S R6E	9/10/2007	Service Replacement			X	1	-	-
263	544 W McMurray Boulevard	SE 1/4 Sec 19 T6S R6E	9/11/2007	Main Replacement		X		-	13	-
264	1409 N French Street	NE 1/4 Sec 19 T6S R6E	3/13/2008	Service Repair			X	-	-	-
265	1001 N Pinal Avenue	SE 1/4 Sec 19 T6S R6E	2/11/2008	Service Replacement		X		1	-	Copper
266	407 W 9th Street	SE 1/4 Sec 19 T6S R6E	3/19/2010	Service Replacement		X		1	-	Plastic
267	201 W Cottonwood Lane	NW 1/4 Sec 20 T6S R6E	9/20/2008	Service Replacement			X	1	-	-
268	Saguaro Street Lots 23 and 24	NW 1/4 Sec 20 T6S R6E	1/2005	Service Replacement			X	1	-	-
269	Saguaro Street Lots 25 and 26	NW 1/4 Sec 20 T6S R6E	1/2005	Service Replacement			X	1	-	-
270	Saguaro Street Lot 27	NW 1/4 Sec 20 T6S R6E	1/2005	Service Replacement			X	1	-	-
271	107 W Saguaro Street Lots 34 and 35	NW 1/4 Sec 20 T6S R6E	10/24/2007	Service Replacement		X		1	-	Plastic
272	200 Block of W Cholla Street	NW 1/4 Sec 20 T6S R6E	2/10/2010	Service Replacement	X			1	-	-
273	213 W Cholla Street	NW 1/4 Sec 20 T6S R6E	2/11/2010	Service Replacement		X		1	-	-
274	101 W Saguaro Street	NW 1/4 Sec 20 T6S R6E	1/2007	Service Replacement			X	1	-	-
275	Saguaro Street Lots 91 and 92	NW 1/4 Sec 20 T6S R6E	1/2005	Service Replacement			X	1	-	-
276	Saguaro Street Lots 89 and 90	NW 1/4 Sec 20 T6S R6E	1/2005	Service Replacement			X	1	-	-
277	Saguaro Street Lot 88	NW 1/4 Sec 20 T6S R6E	1/2005	Service Replacement			X	1	-	-
278	Saguaro Street Lot 87	NW 1/4 Sec 20 T6S R6E	1/2005	Service Replacement			X	1	-	-
279	Saguaro Street Lots 85 and 86	NW 1/4 Sec 20 T6S R6E	1/2005	Service Replacement			X	1	-	-
280	Saguaro Street Lots 84 and 83	NW 1/4 Sec 20 T6S R6E	1/2005	Service Replacement			X	1	-	-
281	Saguaro Street Lot 82	NW 1/4 Sec 20 T6S R6E	1/2005	Service Replacement			X	1	-	-
282	402 E Saguaro Street	NW 1/4 Sec 20 T6S R6E	9/2/2010	Main Repair	X			-	-	-
283	Saguaro Street Lots 79 and 78	NW 1/4 Sec 20 T6S R6E	1/2005	Service Replacement			X	1	-	-
284	Saguaro Street Lot 77	NW 1/4 Sec 20 T6S R6E	1/2005	Service Replacement			X	1	-	-
285	400 Block of E Saguaro Street	NW 1/4 Sec 20 T6S R6E	9/3/2010	Main Repair		X		-	-	-
286	Saguaro Street Lot 75	NW 1/4 Sec 20 T6S R6E	1/2005	Service Replacement			X	1	-	-
287	Saguaro Street Lots 74 and 73	NW 1/4 Sec 20 T6S R6E	1/2005	Service Replacement			X	1	-	-
288	Saguaro School	NW 1/4 Sec 20 T6S R6E	3/28/2003	Service Replacement		X		1	-	Other
289	115 E Melrose Drive	NW 1/4 Sec 20 T6S R6E	3/16/2009	Main Repair	X			-	-	-
290	202 E Melrose Drive	NW 1/4 Sec 20 T6S R6E	1/2008	Service Replacement			X	1	-	-
291	101 Brenda Circle	NW 1/4 Sec 20 T6S R6E	1/2004	Service Replacement			X	1	-	-
292	118 Laurel Circle	NW 1/4 Sec 20 T6S R6E	1/2007	Main Repair			X	-	-	-
293	1431 N Koening Drive	NW 1/4 Sec 20 T6S R6E	1/2006	Service Replacement			X	1	-	-
294	399 E Paseo de Paula	NW 1/4 Sec 20 T6S R6E	8/31/2006	Service Replacement		X		1	-	Copper
295	404 E Paseo de Paula	NW 1/4 Sec 20 T6S R6E	6/13/2008	Service Replacement		X		1	-	Plastic
296	300 Block of E Paseo De Paula	NW 1/4 Sec 20 T6S R6E	1/4/2010	Service Replacement		X		1	-	-
297	317 E Paseo De Paula	NW 1/4 Sec 20 T6S R6E	12/23/2009	Service Replacement		X		1	-	Plastic
298	Pinal Avenue - Jr High School	NW 1/4 Sec 20 T6S R6E	8/7/2007	Service Replacement		X		1	-	Copper
299	675 E Cottonwood Lane	SE 1/4 Sec 17 T6S R6E	5/18/2010	Main Repair		X		-	-	-
300	695 E Cottonwood Lane	SE 1/4 Sec 17 T6S R6E	8/6/2009	Service Repair	X			-	-	-

LEAK NO.	ADDRESS	SECTION	DATE	TYPE	BLUE STAKE	ONION SKIN	FIELD	NO. OF SVCS.	L.F. OF MAIN	SERVICE MAT'L RETIRED
301	719 E Cottonwood Lane	NE 1/4 Sec 20 T6S R6E	6/15/2004	Main Repair		X		-	-	-
302	907 E Cottonwood Lane	NE 1/4 Sec 20 T6S R6E	9/1/2010	Service Replacement	X			1	-	-
303	1508 N Kadota Avenue	NE 1/4 Sec 20 T6S R6E	11/8/2007	Service Replacement			X	1	-	-
304	1555 N Lehmberg Avenue	NE 1/4 Sec 20 T6S R6E	3/25/2008	Service Replacement			X	1	-	-
305	1550 N Lehmberg Avenue	NE 1/4 Sec 20 T6S R6E	4/6/2010	Service Replacement	X			1	-	-
306	1556 N Lehmberg Avenue	NE 1/4 Sec 20 T6S R6E	1/2009	Service Replacement			X	1	-	-
307	907 E Sunset Drive	NE 1/4 Sec 20 T6S R6E	1/2005	Service Replacement			X	1	-	-
308	709 E Melrose Drive	NE 1/4 Sec 20 T6S R6E	6/1/2010	Main Repair	X			-	-	-
309	812 E Melrose Drive	NE 1/4 Sec 20 T6S R6E	5/2007	Main Repair			X	-	-	-
310	500 E Mannor Drive	NE 1/4 Sec 20 T6S R6E	1/2008	Service Replacement			X	1	-	-
311	515 E Melrose Drive	NE 1/4 Sec 20 T6S R6E	1/22/2009	Service Replacement	X			1	-	-
312	632 E Manor Drive	NE 1/4 Sec 20 T6S R6E	1/2005	Service Replacement			X	1	-	-
313	640 E Manor Drive	NE 1/4 Sec 20 T6S R6E	9/6/2007	Service Replacement		X		1	-	Plastic
314	715 E Manor Drive	NE 1/4 Sec 20 T6S R6E	1/2007	Service Replacement			X	1	-	-
315	723 E Manor Drive	NE 1/4 Sec 20 T6S R6E	1/2008	Service Replacement			X	1	-	-
316	1442 N Casa Grande Avenue	NE 1/4 Sec 20 T6S R6E	12/15/2009	Main Repair		X		-	-	-
317	1430 N Casa Grande Avenue	NE 1/4 Sec 20 T6S R6E	1/2008	Service Replacement			X	1	-	-
318	540 E Manor Drive	NE 1/4 Sec 20 T6S R6E	1/2005	Service Replacement			X	1	-	-
319	1427 N Morrison Avenue	NE 1/4 Sec 20 T6S R6E	1/2004	Main Repair			X	-	-	-
320	1438 N Morrison Avenue	NE 1/4 Sec 20 T6S R6E	12/11/2007	Main Repair			X	-	-	-
321	1421 N Kadota Avenue	NE 1/4 Sec 20 T6S R6E	6/26/2008	Service Replacement			X	1	-	-
322	702 E Brenda Drive	NE 1/4 Sec 20 T6S R6E	2/25/2010	Service Replacement		X		1	-	Plastic
323	728 E Brenda Drive	NE 1/4 Sec 20 T6S R6E	8/5/2008	Service Replacement			X	1	-	-
324	755 E Brenda Drive	NE 1/4 Sec 20 T6S R6E	7/19/2006	Service Replacement		X		1	-	Copper
325	788 E Brenda Drive	NE 1/4 Sec 20 T6S R6E	7/6/2009	Main Repair	X			-	-	-
326	711 E Laurel Drive	NE 1/4 Sec 20 T6S R6E	5/30/2009	Service Replacement	X			1	-	-
327	1431 N Gilbert Avenue	NE 1/4 Sec 20 T6S R6E	2/18/2009	Main Repair	X			-	-	-
328	1409 N Cameron Avenue	NE 1/4 Sec 20 T6S R6E	1/26/2009	Main Repair	X			-	-	-
329	1409 W Cameron Avenue	NE 1/4 Sec 20 T6S R6E	1/27/2009	Service Replacement		X		1	-	Copper
330	531 E Laurel Drive	NE 1/4 Sec 20 T6S R6E	4/18/2007	Service Replacement		X		1	-	Plastic
331	531 E Laurel Drive	NE 1/4 Sec 20 T6S R6E	2003	Main Repair			X	-	-	-
332	Laurel Drive & Morrison Avenue	NE 1/4 Sec 20 T6S R6E	6/30/2010	Main Repair	X			-	-	-
333	1406 N Morrison Avenue	NE 1/4 Sec 20 T6S R6E	9/3/2009	Main Repair			X	-	-	-
334	1405 N Morrison Avenue	NE 1/4 Sec 20 T6S R6E	1/2006	Service Replacement			X	1	-	-
335	1219 E Park Avenue	SW 1/4 Sec 20 T6S R6E	1/2004	Service Replacement			X	1	-	-
336	1108 N Arbor Avenue	SW 1/4 Sec 20 T6S R6E	9/13/2007	Main Repair			X	-	-	-
337	1100 E Arbor Avenue	SW 1/4 Sec 20 T6S R6E	1/2007	Service Replacement			X	1	-	-
338	1100 E Pinal Avenue	SW 1/4 Sec 20 T6S R6E	1/2005	Main Repair			X	-	-	-
339	1101 E Park Avenue	SW 1/4 Sec 20 T6S R6E	12/21/2009	Main Repair		X		-	-	-
340	1101 E Park Avenue	SW 1/4 Sec 20 T6S R6E	1/2006	Service Replacement			X	1	-	-
341	1105 N Center Avenue	SW 1/4 Sec 20 T6S R6E	3/2005	Service Replacement			X	1	-	-
342	1132 N Walnut Place	SW 1/4 Sec 20 T6S R6E	8/31/2007	Service Replacement		X		1	-	Plastic
343	1100 Block of N Walnut Place	SW 1/4 Sec 20 T6S R6E	9/25/2007	Service Replacement		X		1	-	Plastic
344	1116 N Walnut Place	SW 1/4 Sec 20 T6S R6E	10/4/2010	Main Repair		X		-	-	-
345	108 E 11th Street	SW 1/4 Sec 20 T6S R6E	1/2010	Main Repair			X	-	-	-
346	1117 N Walnut Road	SW 1/4 Sec 20 T6S R6E	3/29/2010	Service Replacement	X			1	-	-
347	215 W 11th Street	SW 1/4 Sec 20 T6S R6E	11/2005	Service Repair			X	-	-	-
348	204 W 10th Street	SW 1/4 Sec 20 T6S R6E	3/30/2010	Main Repair		X		-	-	-
349	1011 N Park Avenue	SW 1/4 Sec 20 T6S R6E	6/2005	Main Repair			X	-	-	-
350	1011 N Park Avenue	SW 1/4 Sec 20 T6S R6E	4/2005	Service Replacement			X	1	-	-

LEAK NO.	ADDRESS	SECTION	DATE	TYPE	BLUE STAKE	ONION SKIN	FIELD	NO. OF SVCS.	L.F. OF MAIN	SERVICE MAT'L RETIRED
351	116½ W 10th Street	SW 1/4 Sec 20 T6S R6E	10/2005	Service Replacement			X	1	-	-
352	10th Street & Park Avenue Lot 171	SW 1/4 Sec 20 T6S R6E	3/17/2008	Service Replacement		X		1	-	Plastic
353	116 W 10th Street	SW 1/4 Sec 20 T6S R6E	8/31/2006	Service Replacement		X		1	-	Copper
354	1012 N Center Avenue	SW 1/4 Sec 20 T6S R6E	6/2006	Service Replacement			X	1	-	-
355	104 E 10th Street	SW 1/4 Sec 20 T6S R6E	8/2003	Main Repair			X	-	-	-
356	204 W 10th Street	SW 1/4 Sec 20 T6S R6E	3/30/2010	Main Repair	X			-	-	-
357	1005 N Olive Avenue	SW 1/4 Sec 20 T6S R6E	9/2003	Service Replacement			X	1	-	-
358	1001 N Olive Avenue	SW 1/4 Sec 20 T6S R6E	12/2004	Service Replacement			X	1	-	-
359	215 W 11th Street	SW 1/4 Sec 20 T6S R6E	1/12/2007	Service Replacement		X		1	-	Copper
360	913 N Center Avenue	SW 1/4 Sec 20 T6S R6E	1/2008	Service Replacement			X	1	-	-
361	816 N Olive Avenue	SW 1/4 Sec 20 T6S R6E	12/18/2007	Main Repair			X	-	-	-
362	304 W 9th Street	NE 1/4 Sec 20 T6S R6E	3/5/2010	Service Replacement		X		1	-	Plastic
363	214 W 9th Street	SW 1/4 Sec 20 T6S R6E	5/7/2010	Main Repair	X			-	-	-
364	214½ W 9th Street	SW 1/4 Sec 20 T6S R6E	5/10/2010	Service Replacement		X		1	-	-
365	906 N Walnut Place	SW 1/4 Sec 20 T6S R6E	8/2004	Service Replacement			X	1	-	-
366	819 N Center Avenue	SW 1/4 Sec 20 T6S R6E	2/22/2007	Service Replacement		X		1	-	Plastic
367	807 N Olive Avenue	SW 1/4 Sec 20 T6S R6E	4/8/2008	Service Replacement		X		1	-	Plastic
368	300 E 8th Street	SW 1/4 Sec 20 T6S R6E	4/2006	Service Replacement			X	1	-	-
369	307 E 9th Street	SW 1/4 Sec 20 T6S R6E	1/2010	Service Replacement			X	1	-	-
370	Picacho Avenue between 8th & 9th Streets	SW 1/4 Sec 20 T6S R6E	4/28/2009	Main Repair		X		-	-	-
371	714 N Pinal Avenue	SW 1/4 Sec 20 T6S R6E	11/3/2010	Main Repair			X	-	-	-
372	304 W 9th Street	SW 1/4 Sec 20 T6S R6E	3/2/2010	Service Replacement		X		1	-	-
373	220 W 8th Street	SW 1/4 Sec 20 T6S R6E	11/2004	Service Replacement			X	1	-	-
374	218 W 8th Street	SW 1/4 Sec 20 T6S R6E	3/25/2008	Service Replacement			X	1	-	-
375	800 N Park Avenue	SW 1/4 Sec 20 T6S R6E	1/2010	Service Replacement			X	1	-	-
376	108 E 8th Street	SW 1/4 Sec 20 T6S R6E	12/2006	Service Replacement			X	1	-	-
377	810 W Center Avenue	SW 1/4 Sec 20 T6S R6E	4/2000	Service Replacement			X	1	-	-
378	766 N Park Avenue	SW 1/4 Sec 20 T6S R6E	1/2005	Service Replacement			X	1	-	-
379	717 N Center Avenue	SW 1/4 Sec 20 T6S R6E	3/4/2009	Service Repair	X			-	-	-
380	719 N Center Avenue	SW 1/4 Sec 20 T6S R6E	4/2007	Main Repair			X	-	-	-
381	715 N Center Avenue	SW 1/4 Sec 20 T6S R6E	4/2003	Service Replacement			X	1	-	-
382	200 E Florence Boulevard	SW 1/4 Sec 20 T6S R6E	6/2002	Service Replacement			X	1	-	-
383	210 E Florence Boulevard	SW 1/4 Sec 20 T6S R6E	4/21/2008	Main Repair			X	-	-	-
384	214 E Florence Boulevard	SW 1/4 Sec 20 T6S R6E	9/2003	Service Replacement			X	1	-	-
385	705 N Olive Avenue	SW 1/4 Sec 20 T6S R6E	3/2001	Service Replacement			X	1	-	-
386	317 E 8th Street	SW 1/4 Sec 20 T6S R6E	8/2002	Service Replacement			X	1	-	-
387	320 W Florence Boulevard	SW 1/4 Sec 20 T6S R6E	12/29/2009	Main Repair	X			-	-	-
388	675 E Cottonwood Lane	NE 1/4 Sec 20 T6S R6E	5/13/2010	Service Replacement	X			1	-	-
389	W 8th Street & N Picacho Street	SW 1/4 Sec 20 T6S R6E	2000	Main Repair		X		-	-	-
390	Along Casa Grande Avenue between Florence Boulevard and 9th Street	SW 1/4 Sec 20 T6S R6E	3/3/1998	Main Replacement		X		-	13	-
391	921 N Cameron Avenue	SE 1/4 Sec 20 T6S R6E	2/6/2008	Service Replacement			X	1	-	-
392	921 N Cameron Avenue	SE 1/4 Sec 20 T6S R6E	2/6/2008	Service Replacement		X		1	-	Copper
393	914 N Casa Grande Avenue	SE 1/4 Sec 20 T6S R6E	9/8/2008	Service Replacement			X	1	-	-
394	914 E Cameron Avenue	SE 1/4 Sec 20 T6S R6E	7/11/2008	Service Replacement			X	1	-	-
395	905 N Cameron Avenue	SE 1/4 Sec 20 T6S R6E	2/6/2008	Service Replacement		X		1	-	Plastic
396	402 Couger Stadium	SE 1/4 Sec 20 T6S R6E	11/2004	Service Replacement			X	1	-	-
397	922 N Cameron Avenue	SE 1/4 Sec 20 T6S R6E	4/2005	Service Replacement			X	1	-	-
398	918 N Cameron Avenue	SE 1/4 Sec 20 T6S R6E	4/2005	Service Replacement			X	1	-	-
399	916 N Cameron Avenue	SE 1/4 Sec 20 T6S R6E	3/2003	Service Replacement			X	1	-	-
400	913 N Morrison Avenue	SE 1/4 Sec 20 T6S R6E	5/21/2009	Main Repair	X			-	-	-

LEAK NO.	ADDRESS	SECTION	DATE	TYPE	BLUE STAKE	ONION SKIN	FIELD	NO. OF SVCS.	L.F. OF MAIN	SERVICE MAT'L RETIRED
401	914 N Cameron Avenue	SE 1/4 Sec 20 T6S R6E	1/2010	Service Replacement			X	1	-	-
402	901 N Morrison Avenue	SE 1/4 Sec 20 T6S R6E	2/9/2008	Service Replacement			X	1	-	-
403	900 N Cameron Avenue	SE 1/4 Sec 20 T6S R6E	11/1/2008	Service Replacement			X	1	-	-
404	N Morrison Avenue Lot 8	SE 1/4 Sec 20 T6S R6E	12/10/2007	Service Replacement		X		1	-	Plastic
405	810 N Morrison Road	SE 1/4 Sec 20 T6S R6E	7/1/2007	Service Replacement			X	1	-	-
406	804 N Brown Avenue	SE 1/4 Sec 20 T6S R6E	4/21/2010	Service Replacement	X			1	-	-
407	608 E 8th Street	SE 1/4 Sec 20 T6S R6E	4/2006	Service Replacement			X	1	-	-
408	956 N Kadota Avenue	SE 1/4 Sec 20 T6S R6E	8/2005	Service Replacement			X	1	-	-
409	1128 N Brown Avenue	SE 1/4 Sec 20 T6S R6E	1/4/2010	Service Replacement		X		1	-	-
410	1117 N Kadota Avenue	SE 1/4 Sec 20 T6S R6E	11/5/2007	Service Replacement		X		1	-	Plastic
411	1035 N Kadota Avenue	SE 1/4 Sec 20 T6S R6E	2/2006	Service Replacement			X	1	-	-
412	1028 N Kadota Avenue	SE 1/4 Sec 20 T6S R6E	6/2003	Main Repair			X	-	-	-
413	1128 N Kadota Avenue	SE 1/4 Sec 20 T6S R6E	6/2003	Service Replacement			X	1	-	-
414	1108 N Kadota Avenue	SE 1/4 Sec 20 T6S R6E	2/2007	Service Replacement			X	1	-	-
415	1029 N Lehmberg Avenue	SE 1/4 Sec 20 T6S R6E	8/2000	Service Replacement			X	1	-	-
416	1026 N Kadota Avenue	SE 1/4 Sec 20 T6S R6E	1/2003	Service Replacement			X	1	-	-
417	1015 N Lehmberg Avenue	SE 1/4 Sec 20 T6S R6E	3/2006	Service Replacement			X	1	-	-
418	McMurray Boulevard & N Lehmberg Avenue	SE 1/4 Sec 20 T6S R6E	8/11/2010	Main Repair		X		-	-	-
419	McMurray Boulevard & N Lehmberg Avenue	SE 1/4 Sec 20 T6S R6E	9/11/2010	Service Replacement		X		1	-	-
420	1127 N Gilbert Avenue	SE 1/4 Sec 20 T6S R6E	6/2007	Main Repair			X	-	-	-
421	1127 N Gilbert Avenue	SE 1/4 Sec 20 T6S R6E	6/2007	Service Repair			X	-	-	-
422	1115 N Gilbert Avenue	SE 1/4 Sec 20 T6S R6E	4/2009	Main Repair			X	-	-	-
423	1027 N Gilbert Avenue	SE 1/4 Sec 20 T6S R6E	3/2007	Service Replacement			X	1	-	-
424	1018 N Lehmberg Avenue	SE 1/4 Sec 20 T6S R6E	1/15/2008	Service Replacement		X		1	-	Plastic
425	1007 N Gilbert Avenue	SE 1/4 Sec 20 T6S R6E	12/17/2007	Service Replacement			X	1	-	-
426	922 N Lehmberg Avenue	SE 1/4 Sec 20 T6S R6E	2/2005	Service Replacement			X	1	-	-
427	1326 N Arbor Avenue	SW 1/4 Sec 20 T6S R6E	3/3/2010	Main Repair	X			-	-	-
428	1115 N Gilbert Avenue	SE 1/4 Sec 20 T6S R6E	1/16/2009	Main Repair		X		-	-	-
429	1023 N Coolidge Avenue	SE 1/4 Sec 20 T6S R6E	1/2009	Service Replacement			X	1	-	-
430	1028 N Gilbert Avenue	SE 1/4 Sec 20 T6S R6E	12/7/2007	Service Replacement			X	1	-	-
431	1009 N Coolidge Avenue	SE 1/4 Sec 20 T6S R6E	4/15/2009	Service Replacement		X		1	-	-
432	1004 N Gilbert Avenue	SE 1/4 Sec 20 T6S R6E	8/30/2010	Service Replacement		X		1	-	-
433	1324 N Park Avenue	SW 1/4 Sec 20 T6S R6E	2003	Main Repair			X	-	-	-
434	916 N Gilbert Avenue	SE 1/4 Sec 20 T6S R6E	2002	Service Replacement			X	1	-	-
435	908 N Gilbert Avenue	SE 1/4 Sec 20 T6S R6E	6/2006	Service Replacement			X	1	-	-
436	800 N Gilbert Avenue	SE 1/4 Sec 20 T6S R6E	12/2009	Service Replacement			X	1	-	-
437	741 N Coolidge Avenue	SE 1/4 Sec 20 T6S R6E	4/16/2010	Service Replacement	X			1	-	-
438	1000 E Florence Boulevard	SE 1/4 Sec 20 T6S R6E	6/2007	Service Replacement			X	1	-	-
439	809 N Trekell Road	SE 1/4 Sec 20 T6S R6E	7/2006	Service Replacement			X	1	-	-
440	901 N Trekell Road	SE 1/4 Sec 20 T6S R6E	4/2006	Main Repair			X	-	-	-
441	1014 E 10th Street	SE 1/4 Sec 20 T6S R6E	11/2009	Service Replacement			X	1	-	-
442	1025 N Trekell Road	SE 1/4 Sec 20 T6S R6E	7/2009	Service Replacement			X	1	-	-
443	1028 N Coolidge Avenue	SE 1/4 Sec 20 T6S R6E	7/2009	Service Replacement			X	1	-	-
444	1100 N Coolidge Avenue	SE 1/4 Sec 20 T6S R6E	6/2007	Service Replacement			X	1	-	-
445	1100 N Coolidge Avenue	SE 1/4 Sec 20 T6S R6E	1/2006	Main Repair			X	-	-	-
446	1120 N Coolidge Avenue	SE 1/4 Sec 20 T6S R6E	5/4/2010	Main Repair		X		-	-	-
447	1128 N Coolidge Avenue	SE 1/4 Sec 20 T6S R6E	2/27/2008	Main Repair			X	-	-	-
448	1100 N Casa Grande Avenue	SE 1/4 Sec 20 T6S R6E	8/21/2008	Main Repair			X	-	-	-
449	1119 E Cottonwood Lane	NW 1/4 Sec 21 T6S R6E	2/5/2009	Service Repair			X	-	-	-
450	1225 E Cottonwood Lane	NW 1/4 Sec 21 T6S R6E	9/13/2007	Main Replacement		X		-	16	-

LEAK NO.	ADDRESS	SECTION	DATE	TYPE	BLUE STAKE	ONION SKIN	FIELD	NO. OF SVCS.	L.F. OF MAIN	SERVICE MAT'L RETIRED
451	E 6th Street Lot 12	NE 1/4 Sec 29 T6S R6E	4/17/2008	Service Replacement		X		1	-	Copper
452	Trekell Road & Brenda Drive	NW 1/4 Sec 21 T6S R6E	5/9/2008	Service Repair			X	-	-	-
453	1101 & 1107 E Brenda Drive	NW 1/4 Sec 21 T6S R6E	8/28/2007	Service Replacement		X		1	-	Plastic
454	Amarillo Avenue Lot 16	NW 1/4 Sec 21 T6S R6E	10/29/2007	Service Replacement		X		1	-	Plastic
455	1174 E Bonita Place	NW 1/4 Sec 21 T6S R6E	3/2/2006	Service Replacement		X		1	-	Other
456	1174 E Brenda Drive	NW 1/4 Sec 21 T6S R6E	5/8/2008	Service Replacement			X	1	-	-
457	1179 E Brenda Drive	NW 1/4 Sec 21 T6S R6E	11/20/2007	Service Replacement		X		1	-	Plastic
458	1179 E Brenda Drive	NW 1/4 Sec 21 T6S R6E	11/19/2007	Service Repair			X	-	-	-
459	1110 E Sunset Drive	NW 1/4 Sec 21 T6S R6E	3/2/2006	Service Replacement		X		1	-	Other
460	1119 E 9th Place	SW 1/4 Sec 21 T6S R6E	2/17/2010	Service Replacement		X		1	-	-
461	1156 E Florence Boulevard	SW 1/4 Sec 21 T6S R6E	5/18/2009	Service Repair	X			-	-	-
462	Behind 1236 E Florence Boulevard	SW 1/4 Sec 21 T6S R6E	1/5/2007	Main Replacement		X		-	6	-
463	1220 E Florence Boulevard	SW 1/4 Sec 21 T6S R6E	4/3/2008	Service Replacement			X	1	-	-
464	1278 E Florence Boulevard	SE 1/4 Sec 21 T6S R6E	11/18/2008	Service Replacement			X	1	-	-
465	1346 E Florence Boulevard	SE 1/4 Sec 21 T6S R6E	8/25/2008	Service Replacement		X		1	-	Plastic
466	11th St between Colorado Street & Maria Lane	SE 1/4 Sec 21 T6S R6E	6/23/2010	Main Repair		X		-	-	-
467	Old Co-Op Florence Boulevard & Peart Drive	SE 1/4 Sec 21 T6S R6E	10/1/2007	Main Repair		X		-	-	-
468	1031 N Hubbard Street	SW 1/4 Sec 21 T6S R6E	9/29/2009	Service Replacement		X		1	-	Copper
469	925 N Colorado Street	SW 1/4 Sec 21 T6S R6E	5/13/2008	Service Replacement			X	1	-	-
470	N Agave Street & E Melrose Drive Lot #245	NW 1/4 Sec 22 T6S R6E	5/2007	Service Replacement			X	1	-	-
471	1596 E Melorose Drive	NW 1/4 Sec 22 T6S R6E	4/8/2010	Service Replacement			X	1	-	-
472	1503 N Arizola Road	NW 1/4 Sec 22 T6S R6E	2/19/2009	Service Repair			X	-	-	-
473	1546 E Florence Boulevard	SW 1/4 Sec 22 T6S R6E	7/10/2009	Main Replacement		X		-	8	-
474	1659 E Florence Boulevard	SW 1/4 Sec 22 T6S R6E	7/23/2008	Service Replacement			X	1	-	-
475	2082 E Florence Boulevard	SE 1/4 Sec 23 T6S R6E	11/19/2009	Main Repair	X			-	-	-
476	Fiesta Grande RV Park	NW 1/4 Sec 27 T6S R6E	8/30/2007	Service Replacement		X		1	-	-
477	1737 E Shasta Street	NE 1/4 Sec 27 T6S R6E	1/26/2009	Service Repair	X			-	-	-
478	1767 E Catalina Street	NW 1/4 Sec 27 T6S R6E	6/3/2010	Service Replacement	X			1	-	-
479	Florence Boulevard & Amarillo Avenue	NW 1/4 Sec 28 T6S R6E	1/2009	Main Repair			X	-	-	-
480	1136 E Love Street	NW 1/4 Sec 28 T6S R6E	1/2005	Service Replacement			X	1	-	-
481	1146 E Love Street	NW 1/4 Sec 28 T6S R6E	11/13/2008	Service Replacement			X	1	-	-
482	1134 E 6th Street	NW 1/4 Sec 28 T6S R6E	5/12/2008	Service Replacement			X	1	-	-
483	1137 E Love Street	NW 1/4 Sec 28 T6S R6E	6/29/2009	Service Replacement	X			1	-	-
484	1106 E 5th Street	NW 1/4 Sec 28 T6S R6E	9/12/2009	Service Replacement		X		1	-	Plastic
485	1116 E 5th Street	NW 1/4 Sec 28 T6S R6E	1/2010	Service Replacement			X	1	-	-
486	1130 E 5th Street	NW 1/4 Sec 28 T6S R6E	9/5/2008	Service Replacement			X	1	-	-
487	1135 E 6th Street	NW 1/4 Sec 28 T6S R6E	1/2006	Service Replacement			X	1	-	-
488	1147 E 5th Street	NW 1/4 Sec 28 T6S R6E	2/5/2009	Service Replacement		X		1	-	-
489	502 N Avenue A	NW 1/4 Sec 28 T6S R6E	1/12/2007	Service Replacement		X		1	-	-
490	500 N Avenue A	NW 1/4 Sec 28 T6S R6E	1/2005	Service Replacement			X	1	-	-
491	480 N Avenue A	NW 1/4 Sec 28 T6S R6E	2003	Service Replacement			X	1	-	-
492	1114 E 4th Street	NW 1/4 Sec 28 T6S R6E	1/2004	Service Replacement			X	1	-	-
493	1120 E 3rd Street	NW 1/4 Sec 28 T6S R6E	2003	Service Replacement			X	1	-	-
494	1110 E 2nd Street	NW 1/4 Sec 28 T6S R6E	12/31/2009	Service Replacement	X			1	-	-
495	1123 E 3rd Street	NW 1/4 Sec 28 T6S R6E	1/2006	Service Replacement			X	1	-	-
496	1145 E 3rd Street	NW 1/4 Sec 28 T6S R6E	1/2007	Service Replacement			X	1	-	-
497	271 N Pueblo Drive	NW 1/4 Sec 28 T6S R6E	1/2005	Service Replacement			X	1	-	-
498	320 N Colorado Street	NW 1/4 Sec 28 T6S R6E	1/4/2010	Service Replacement	X			1	-	-
499	Alley Between 1st Street & 2nd Street along Trekell Road	NE 1/4 Sec 29 T6S R6E	3/20/2008	Main Replacement		X		-	6	-
500	1105 E 2nd Street	NW 1/4 Sec 28 T6S R6E	1/2001	Service Replacement			X	1	-	-

LEAK NO.	ADDRESS	SECTION	DATE	TYPE	BLUE STAKE	ONION SKIN	FIELD	NO. OF SVCS.	L.F. OF MAIN	SERVICE MAT'L RETIRED
501	1111 E 2nd Street	NW 1/4 Sec 28 T6S R6E	2002	Service Replacement			X	1	-	-
502	1113 E 2nd Street	NW 1/4 Sec 28 T6S R6E	2003	Service Replacement			X	1	-	-
503	1115 E 2nd Street	NW 1/4 Sec 28 T6S R6E	1/2004	Service Replacement			X	1	-	-
504	1117 E 2nd Street	NW 1/4 Sec 28 T6S R6E	1/2007	Service Replacement			X	1	-	-
505	1119 E 2nd Street	NW 1/4 Sec 28 T6S R6E	2003	Service Replacement			X	1	-	-
506	1124 E 1st Street	NW 1/4 Sec 28 T6S R6E	2003	Service Replacement			X	1	-	-
507	114 N Amarillo Street	NW 1/4 Sec 28 T6S R6E	1/2005	Service Replacement			X	1	-	-
508	1138 & 1140 E 1st Street	NW 1/4 Sec 28 T6S R6E	6/2/2006	Service Replacement		X		1	-	Copper
509	E 2nd Street Lot 4	NW 1/4 Sec 28 T6S R6E	4/25/2007	Service Replacement		X		1	-	Plastic
510	79 N Vista Avenue	NW 1/4 Sec 28 T6S R6E	8/13/2010	Service Replacement		X		1	-	-
511	1355 E Florence Boulevard	NW 1/4 Sec 28 T6S R6E	1/2007	Service Replacement			X	1	-	-
512	N/E Corner Trekell Road & Jimmie Kerr Boulevard	SW 1/4 Sec 28 T6S R6E	7/2/2009	Main Repair		X		-	-	-
513	Alley Between E Ash Avenue and E Cedar Avenue	SW 1/4 Sec 29 T6S R6E	2/27/2007	Main Replacement		X		-	12	-
514	655 N Pinal Avenue	NW 1/4 Sec 29 T6S R6E	8/19/2010	Main Repair	X			-	-	-
515	425 W 2nd Street	NW 1/4 Sec 29 T6S R6E	9/18/2007	Main Repair			X	-	-	-
516	413 W 2nd Street	NW 1/4 Sec 29 T6S R6E	1/2008	Main Repair			X	-	-	-
517	301 W 2nd Street	NW 1/4 Sec 29 T6S R6E	8/15/2007	Service Replacement		X		1	-	Plastic
518	310 W 2nd Street	NW 1/4 Sec 29 T6S R6E	2009	Service Replacement			X	1	-	-
519	301 W 3rd Street	NW 1/4 Sec 29 T6S R6E	2/1986	Service Replacement			X	1	-	-
520	315 N Florence Street	NW 1/4 Sec 29 T6S R6E	8/1985	Service Replacement			X	1	-	-
521	318 N Florence Street	NW 1/4 Sec 29 T6S R6E	6/2000	Main Repair			X	-	-	-
522	N Florence Street Lot 134	NW 1/4 Sec 29 T6S R6E	4/18/2007	Service Replacement		X		1	-	Copper
523	501 N Florence Street	NW 1/4 Sec 29 T6S R6E	4/1985	Service Replacement			X	1	-	-
524	550 N Florence Street	NW 1/4 Sec 29 T6S R6E	3/1985	Service Replacement			X	1	-	-
525	119 E Florence Boulevard	NW 1/4 Sec 29 T6S R6E	1/23/2008	Service Replacement			X	1	-	-
526	Peart Center	NW 1/4 Sec 29 T6S R6E	6/2006	Service Replacement			X	1	-	-
527	307 N Casa Grande Avenue	NW 1/4 Sec 29 T6S R6E	5/29/2008	Service Replacement		X		1	-	Plastic
528	306 W 1st Street	NW 1/4 Sec 29 T6S R6E	9/23/2008	Service Replacement		X		1	-	Copper
529	209 W 1st Street	NW 1/4 Sec 29 T6S R6E	1/2008	Service Replacement			X	1	-	-
530	209 W 1st Street	NW 1/4 Sec 29 T6S R6E	1/2007	Main Repair			X	-	-	-
531	208 W Main Street	NW 1/4 Sec 29 T6S R6E	7/1999	Service Replacement			X	1	-	-
532	209 W 1st Street	NW 1/4 Sec 29 T6S R6E	1/2007	Main Repair			X	-	-	-
533	209 W 1st Street	NW 1/4 Sec 29 T6S R6E	1/2007	Service Replacement			X	1	-	-
534	SE Corner of N Washington Street and W 2nd Street	NW 1/4 Sec 29 T6S R6E	6/26/2008	Service Replacement			X	1	-	-
535	113 E 2nd Street	NW 1/4 Sec 29 T6S R6E	3/19/2010	Service Replacement	X			1	-	-
536	113 E 2nd Street	NW 1/4 Sec 29 T6S R6E	3/22/2010	Service Repair		X		-	-	-
537	200 E 1st Street	NW 1/4 Sec 29 T6S R6E	2002	Service Replacement			X	1	-	-
538	216 E 1st Street	NW 1/4 Sec 29 T6S R6E	1/2003	Service Replacement			X	1	-	-
539	1st Avenue & Florence Boulevard	NW 1/4 Sec 29 T6S R6E	3/2009	Service Replacement			X	1	-	-
540	300 S Florence Boulevard	NW 1/4 Sec 29 T6S R6E	1/2006	Service Replacement			X	1	-	-
541	Nutt Family Park	NW 1/4 Sec 29 T6S R6E	6/1985	Service Replacement			X	1	-	-
542	W 2nd Street & N Picacho Street	NW 1/4 Sec 29 T6S R6E	1/2006	Main Repair			X	-	-	-
543	301 E 1st Street	NW 1/4 Sec 29 T6S R6E	1/2007	Service Replacement			X	1	-	-
544	217 E 1st Street	NW 1/4 Sec 29 T6S R6E	1/2004	Main Repair			X	-	-	-
545	217 E 1st Street	NW 1/4 Sec 29 T6S R6E	1/2006	Service Replacement			X	1	-	-
546	317 E 3rd Street	NW 1/4 Sec 29 T6S R6E	1/2005	Main Repair			X	-	-	-
547	317 E 3rd Street	NW 1/4 Sec 29 T6S R6E	1/2005	Service Replacement			X	1	-	-
548	411 E 4th Street	NW 1/4 Sec 29 T6S R6E	5/2006	Service Replacement			X	1	-	-
549	415 E 4th Street	NW 1/4 Sec 29 T6S R6E	5/2006	Service Replacement			X	1	-	-
550	300 Block of E 2nd Street	NW 1/4 Sec 29 T6S R6E	1/2005	Service Replacement			X	1	-	-

LEAK NO.	ADDRESS	SECTION	DATE	TYPE	BLUE STAKE	ONION SKIN	FIELD	NO. OF SVCS.	L.F. OF MAIN	SERVICE MAT'L RETIRED
551	405 E 2nd Street	NW 1/4 Sec 29 T6S R6E	5/2007	Service Replacement			X	1	-	-
552	2nd Street & Toltec Drive Lot 209	NW 1/4 Sec 29 T6S R6E	4/14/2010	Main Repair	X			-	-	-
553	475 E 2nd Street	NW 1/4 Sec 29 T6S R6E	1/2005	Main Repair			X	-	-	-
554	515 S 3rd Street	NW 1/4 Sec 29 T6S R6E	2003	Main Replacement			X	-	-	-
555	501 E 2nd Street	NW 1/4 Sec 29 T6S R6E	4/1986	Service Replacement			X	1	-	-
556	475 E 2nd Street	NW 1/4 Sec 29 T6S R6E	1/2006	Main Repair			X	-	-	-
557	N Drylake Street & E 1st Street	NW 1/4 Sec 29 T6S R6E	1/2008	Main Repair			X	-	-	-
558	N Drylake Street & E 1st Street	NW 1/4 Sec 29 T6S R6E	1/2008	Main Repair			X	-	-	-
559	N Drylake Street & E 1st Street	NW 1/4 Sec 29 T6S R6E	1/2007	Main Repair			X	-	-	-
560	439 E 1st Street	NW 1/4 Sec 29 T6S R6E	1/2005	Service Replacement			X	1	-	-
561	404 E 1st Street	NW 1/4 Sec 29 T6S R6E	1/2006	Service Replacement			X	1	-	-
562	412 E Main Street	NW 1/4 Sec 29 T6S R6E	10/6/2010	Main Repair	X			-	-	-
563	453 E 1st Street	NW 1/4 Sec 29 T6S R6E	1/2005	Main Repair			X	-	-	-
564	500 E 1st Street	NW 1/4 Sec 29 T6S R6E	1/2006	Main Repair			X	-	-	-
565	E 1st Street East of N Drylake Street	NW 1/4 Sec 29 T6S R6E	1/16/2008	Main Replacement		X		-	6	-
566	511 E 1st Street	NW 1/4 Sec 29 T6S R6E	1/2007	Main Repair			X	-	-	-
567	511 E 1st Street	NW 1/4 Sec 29 T6S R6E	1/2004	Main Repair			X	-	-	-
568	601 E 1st Street	NW 1/4 Sec 29 T6S R6E	1/2005	Main Repair			X	-	-	-
569	601 E 1st Street	NW 1/4 Sec 29 T6S R6E	1/2004	Service Replacement			X	1	-	-
570	116 N Casa Grande Avenue	NW 1/4 Sec 29 T6S R6E	1/2008	Main Repair			X	-	-	-
571	506 E 6th Street Lot 8	NE 1/4 Sec 29 T6S R6E	4/17/2008	Service Replacement		X		1	-	Plastic
572	1137 E 10th Street	SW 1/4 Sec 21 T6S R6E	7/14/2006	Service Replacement		X		1	-	Other
573	Alley East of N Brown Avenue on E 6th Street	NE 1/4 Sec 29 T6S R6E	11/2004	Main Repair			X	-	-	-
574	Elk's Lodge	NE 1/4 Sec 29 T6S R6E	3/2008	Main Repair			X	-	-	-
575	1011 E Florence Boulevard	NE 1/4 Sec 29 T6S R6E	11/22/2007	Service Replacement		X		1	-	Plastic
576	Trekell Road & Florence Boulevard	NW 1/4 Sec 28 T6S R6E	6/23/2010	Main Repair		X		-	-	-
577	640 N 5th Street	NE 1/4 Sec 21 T5S R8E	8/13/2008	Service Replacement		X		1	-	Plastic
578	West of Morrison Avenue on 6th Street	NE 1/4 Sec 29 T6S R6E	3/2006	Main Repair			X	-	-	-
579	East of Dorothy Powell Center	NE 1/4 Sec 29 T6S R6E	3/2005	Main Repair			X	-	-	-
580	505 N Morrison Avenue	NE 1/4 Sec 29 T6S R6E	6/1984	Service Replacement			X	1	-	-
581	509 W Brown Avenue	NE 1/4 Sec 29 T6S R6E	8/13/2010	Service Replacement		X		1	-	-
582	516 N Roosevelt Avenue	NE 1/4 Sec 29 T6S R6E	8/1983	Service Replacement			X	1	-	-
583	Coolidge Avenue Lot #6	NE 1/4 Sec 29 T6S R6E	2/2005	Main Repair			X	-	-	-
584	504 N Roosevelt Avenue	NE 1/4 Sec 29 T6S R6E	8/2000	Service Replacement			X	1	-	-
585	504 N Coolidge Avenue	NE 1/4 Sec 29 T6S R6E	7/2006	Service Replacement			X	1	-	-
586	504 N 4th Street	NE 1/4 Sec 29 T6S R6E	2/2006	Service Replacement			X	1	-	-
587	500-510 N 4th Street	NE 1/4 Sec 29 T6S R6E	2003	Service Replacement			X	1	-	-
588	615 N 5th Street	NE 1/4 Sec 29 T6S R6E	2007	Service Replacement			X	1	-	-
589	413 N Brown Avenue	NE 1/4 Sec 29 T6S R6E	12/14/2009	Service Repair	X			-	-	-
590	409 N Brown Avenue	NE 1/4 Sec 29 T6S R6E	12/29/2009	Service Replacement	X			1	-	-
591	412 N Lincoln Avenue Lot 90	NE 1/4 Sec 29 T6S R6E	10/25/2007	Service Replacement		X		1	-	Plastic
592	98 E 5th Street	NE 1/4 Sec 29 T6S R6E	8/2005	Service Replacement			X	3	-	-
593	405 N Coolidge Avenue	NE 1/4 Sec 29 T6S R6E	9/22/2010	Service Replacement		X		1	-	-
594	Brown Avenue & 4th Street	NE 1/4 Sec 29 T6S R6E	2/24/2009	Main Repair	X			-	-	-
595	951 N 4th Street	NE 1/4 Sec 29 T6S R6E	5/2006	Main Repair			X	-	-	-
596	903½ E 4th Street	NE 1/4 Sec 29 T6S R6E	1/13/2009	Main Repair	X			-	-	-
597	951 N 4th Street	NE 1/4 Sec 29 T6S R6E	6/2006	Main Repair			X	-	-	-
598	1001 N 4th Street	NE 1/4 Sec 29 T6S R6E	7/2007	Service Replacement			X	1	-	-
599	405 N Coolidge Avenue	NE 1/4 Sec 29 T6S R6E	9/22/2010	Service Replacement	X			1	-	-
600	307 N Trekell Road	NE 1/4 Sec 29 T6S R6E	6/2004	Service Replacement			X	1	-	-

LEAK NO.	ADDRESS	SECTION	DATE	TYPE	BLUE STAKE	ONION SKIN	FIELD	NO. OF SVCS.	L.F. OF MAIN	SERVICE MAT'L RETIRED
601	209 N Trekell Road	NE 1/4 Sec 29 T6S R6E	11/2006	Main Repair			X	-	-	-
602	210 N Coolidge Avenue	NE 1/4 Sec 29 T6S R6E	2/2003	Service Replacement			X	1	-	-
603	214 N Coolidge Avenue	NE 1/4 Sec 29 T6S R6E	9/2008	Service Replacement			X	1	-	-
604	217 N Roosevelt Avenue	NE 1/4 Sec 29 T6S R6E	6/1983	Service Replacement			X	1	-	-
605	305 N Morrison Avenue	NE 1/4 Sec 29 T6S R6E	7/17/2008	Service Replacement		X		1	-	Plastic
606	300 N Morrison Avenue	NE 1/4 Sec 29 T6S R6E	3/4/2010	Main Repair	X			-	-	-
607	223 N Brown Avenue	NE 1/4 Sec 29 T6S R6E	3/9/2010	Service Replacement	X			1	-	-
608	217 N Brown Avenue	NE 1/4 Sec 29 T6S R6E	4/2/2010	Main Repair	X			-	-	-
609	209 N Cameron Avenue	NE 1/4 Sec 29 T6S R6E	12/1983	Service Replacement			X	1	-	-
610	616 E 2nd Street	NE 1/4 Sec 29 T6S R6E	12/1985	Service Replacement			X	1	-	-
611	112 N Casa Grande Avenue	NE 1/4 Sec 29 T6S R6E	1/2006	Service Repair			X	-	-	-
612	806 E 2nd Street	NE 1/4 Sec 29 T6S R6E	9/22/2008	Service Replacement		X		1	-	Plastic
613	801 E 2nd Street	NE 1/4 Sec 29 T6S R6E	11/28/2007	Service Replacement			X	1	-	-
614	852 E 2nd Street	NE 1/4 Sec 29 T6S R6E	12/1985	Service Replacement			X	1	-	-
615	118 S Morrison Avenue	NE 1/4 Sec 29 T6S R6E	7/8/2010	Service Replacement	X			1	-	-
616	907 E 2nd Street	NE 1/4 Sec 29 T6S R6E	10/2006	Service Repair			X	-	-	-
617	N Brown Avenue & E 2nd Street	NE 1/4 Sec 29 T6S R6E	5/15/2008	Main Replacement		X		-	13	-
618	913 E 1st Street	NE 1/4 Sec 29 T6S R6E	3/2007	Main Repair			X	-	-	-
619	910 E 1st Street	NE 1/4 Sec 29 T6S R6E	6/1984	Service Replacement			X	1	-	-
620	87 N Brown Avenue	NE 1/4 Sec 29 T6S R6E	1985	Service Replacement			X	1	-	-
621	51 N Brown Avenue	NE 1/4 Sec 29 T6S R6E	2/26/2010	Service Replacement	X			1	-	-
622	44 N Brown Avenue	NE 1/4 Sec 29 T6S R6E	8/21/2009	Main Repair	X			-	-	-
623	927 E 1st Street	NE 1/4 Sec 29 T6S R6E	2/2001	Service Replacement			X	1	-	-
624	1015 E 1st Street	NE 1/4 Sec 29 T6S R6E	6/28/2010	Service Replacement	X			1	-	-
625	1010 E Doan Street	NE 1/4 Sec 29 T6S R6E	4/2004	Main Repair			X	-	-	-
626	Doan Street and Roosevelt	NE 1/4 Sec 29 T6S R6E	4/2005	Main Repair			X	-	-	-
627	1000 Block of E Doan Street	NE 1/4 Sec 29 T6S R6E	2/17/2010	Service Replacement		X		1	-	-
628	1013 E Doan Street	SE 1/4 Sec 29 T6S R6E	2/16/2010	Service Replacement	X			1	-	-
629	103 E Ash Avenue	SW 1/4 Sec 29 T6S R6E	10/12/2007	Service Replacement		X		1	-	Plastic
630	123 E Ash Avenue	SW 1/4 Sec 29 T6S R6E	10/12/2007	Service Replacement		X		1	-	Plastic
631	237 E Ash Avenue	SW 1/4 Sec 29 T6S R6E	2/8/2010	Main Repair	X			-	-	-
632	245½ E Ash Avenue	SW 1/4 Sec 29 T6S R6E	3/6/2009	Main Repair		X		-	-	-
633	301 S Elliot Avenue	SW 1/4 Sec 29 T6S R6E	2/5/2009	Main Repair		X		-	-	-
634	301 E Ash Street	NW 1/4 Sec 29 T6S R6E	2/3/2009	Main Repair	X			-	-	-
635	606 S Florence Boulevard	SW 1/4 Sec 29 T6S R6E	1/2007	Service Replacement			X	1	-	-
636	124 E Cedar Avenue	SW 1/4 Sec 29 T6S R6E	1/2004	Service Replacement			X	1	-	-
637	613 E Burgess Avenue	SW 1/4 Sec 29 T6S R6E	2003	Service Replacement			X	1	-	-
638	232 E Cedar Avenue	SW 1/4 Sec 29 T6S R6E	8/2/2010	Service Replacement	X			1	-	-
639	200 Block of E Cedar Avenue	SW 1/4 Sec 29 T6S R6E	8/7/2009	Service Replacement	X			1	-	-
640	341 E Beech Avenue	SW 1/4 Sec 29 T6S R6E	1/2006	Main Repair			X	-	-	-
641	341 E Beech Avenue	SW 1/4 Sec 29 T6S R6E	1/2007	Service Replacement			X	1	-	-
642	300 Block of E Beech Avenue	SW 1/4 Sec 29 T6S R6E	1/2006	Main Repair			X	-	-	-
643	596 S Elliot Avenue	SW 1/4 Sec 29 T6S R6E	1/2004	Service Replacement			X	1	-	-
644	252 E Cedar Avenue	SW 1/4 Sec 29 T6S R6E	8/5/2010	Service Replacement		X		1	-	Copper
645	240 E Cedar Avenue	SW 1/4 Sec 29 T6S R6E	1986	Service Replacement			X	1	-	-
646	103 E Cedar Avenue	SW 1/4 Sec 29 T6S R6E	6/1985	Service Replacement			X	1	-	-
647	113 E Cedar Avenue	SW 1/4 Sec 29 T6S R6E	9/3/2010	Service Replacement		X		1	-	-
648	113 E Cedar Avenue	SW 1/4 Sec 29 T6S R6E	8/31/2010	Main Repair	X			-	-	-
649	215 E Cedar Avenue	SW 1/4 Sec 29 T6S R6E	8/4/2010	Main Repair	X			-	-	-
650	141 E Cedar Avenue	SW 1/4 Sec 29 T6S R6E	2/15/2008	Service Replacement			X	1	-	-

LEAK NO.	ADDRESS	SECTION	DATE	TYPE	BLUE STAKE	ONION SKIN	FIELD	NO. OF SVCS.	L.F. OF MAIN	SERVICE MAT'L RETIRED
651	209 E Cedar Avenue	SW 1/4 Sec 29 T6S R6E	1/30/2009	Main Repair		X		-	-	-
652	215 E Cedar Avenue	SW 1/4 Sec 29 T6S R6E	8/4/2010	Service Replacement			X	1	-	-
653	236 E Date Street	SW 1/4 Sec 29 T6S R6E	1/2007	Service Replacement			X	1	-	-
654	300 E Date Street	SW 1/4 Sec 29 T6S R6E	1/2005	Service Replacement			X	1	-	-
655	306 E Date Street	SW 1/4 Sec 29 T6S R6E	1/2004	Service Replacement			X	1	-	-
656	308 E Date Street	SW 1/4 Sec 29 T6S R6E	9/25/2007	Service Replacement		X		1	-	Plastic
657	800 S Florence Boulevard	SW 1/4 Sec 29 T6S R6E	1/2006	Service Replacement			X	1	-	-
658	8520 S Florence Street	SW 1/4 Sec 29 T6S R6E	6/2000	Main Repair			X	-	-	-
659	211 E Date Street	SW 1/4 Sec 29 T6S R6E	1/2007	Service Replacement			X	1	-	-
660	233 E Date Avenue	SW 1/4 Sec 29 T6S R6E	9/2010	Service Repair			X	-	-	-
661	Elliot Avenue & Elm Street	SW 1/4 Sec 29 T6S R6E	2/11/2008	Service Replacement		X		1	-	Plastic
662	Elliot Avenue & Elm Street Alley	SW 1/4 Sec 29 T6S R6E	2/11/2008	Main Replacement		X		-	11	-
663	321 E Date Street	SW 1/4 Sec 29 T6S R6E	1/2006	Service Replacement			X	1	-	-
664	864 E Jimmie Kerr Boulevard	SE 1/4 Sec 29 T6S R6E	9/23/2009	Service Repair	X			-	-	-
665	702 E Main Avenue	SE 1/4 Sec 29 T6S R6E	3/4/2008	Service Replacement		X		1	-	Plastic
666	137 S Brown Avenue	SE 1/4 Sec 29 T6S R6E	2010	Service Replacement			X	1	-	-
667	44 N Brown Avenue	SE 1/4 Sec 29 T6S R6E	8/25/2009	Service Replacement			X	1	-	-
668	1032 N Campbell Avenue	SE 1/4 Sec 29 T6S R6E	6/2004	Service Replacement			X	1	-	-
669	1000 N Campbell Avenue	SE 1/4 Sec 29 T6S R6E	6/2003	Service Replacement			X	1	-	-
670	1013 S Campbell Avenue	SE 1/4 Sec 29 T6S R6E	3/2006	Service Replacement			X	1	-	-
671	1033 S Campbell Avenue	SE 1/4 Sec 29 T6S R6E	9/2003	Service Replacement			X	1	-	-
672	1041 S Campbell Avenue	SE 1/4 Sec 29 T6S R6E	7/2007	Service Replacement			X	1	-	-
673	555 W Main Avenue	NE 1/4 Sec 30 T6S R6E	11/19/2003	Main Replacement		X		-	6	-
674	401 W 1st Avenue	NE 1/4 Sec 30 T6S R6E	2/10/2010	Service Replacement	X			1	-	-
675	447 W 1st Street	NE 1/4 Sec 30 T6S R6E	10/4/2010	Service Replacement	X			1	-	-
676	2600 Block of S Hinkle Street	SE 1/4 Sec 33 T6S R6E	6/15/2009	Main Repair	X			-	-	-
677	2676 S Hinkle Street	SE 1/4 Sec 33 T6S R6E	6/15/2009	Main Repair	X			-	-	-
678	2600 Block of S Hinkle Street	SE 1/4 Sec 33 T6S R6E	6/15/2009	Main Repair	X			-	-	-
679	2600 Block of S Hinkle Street	SE 1/4 Sec 33 T6S R6E	6/15/2009	Main Repair	X			-	-	-
680	Peart Road Lot 9	NW 1/4 Sec 33 T6S R6E	6/18/2008	Main Replacement		X		-	20	-
681	709 N 9th Street	SW 1/4 Sec 20 T6S R6E	2/2001	Service Replacement			X	1	-	-
682	2518 S Noble Street	SW 1/4 Sec 34 T6S R6E	1/2004	Service Replacement			X	1	-	-
683	25568 S Noble Street	SW 1/4 Sec 34 T6S R6E	1/2004	Service Replacement			X	1	-	-
684	14114 W Noble Circle	SW 1/4 Sec 34 T6S R6E	1/2005	Service Replacement			X	1	-	-
685	14115 W Noble Circle	SW 1/4 Sec 34 T6S R6E	1/2005	Service Replacement			X	1	-	-
686	13864 W Noble Circle	SW 1/4 Sec 34 T6S R6E	8/1/2007	Service Replacement			X	1	-	-
687	14035 W Noble Circle	SW 1/4 Sec 34 T6S R6E	1/2004	Service Replacement			X	1	-	-
688	14035 W Noble Circle	SW 1/4 Sec 34 T6S R6E	9/28/2010	Service Replacement	X			1	-	-
689	14014 W Noble Circle	SW 1/4 Sec 34 T6S R6E	1/15/2009	Service Replacement	X			1	-	-
690	14005 W Noble Circle	SW 1/4 Sec 34 T6S R6E	1/2004	Service Replacement			X	1	-	-
691	E of 13984 W Noble Circle	SW 1/4 Sec 34 T6S R6E	1/2004	Service Replacement			X	1	-	-
692	13984 W Noble Circle	SW 1/4 Sec 34 T6S R6E	1/2005	Service Replacement			X	1	-	-
693	S Arizola Road & W Holiday Street	SW 1/4 Sec 34 T6S R6E	2003	Service Replacement			X	1	-	-
694	13790 E Thomas Street	SW 1/4 Sec 34 T6S R6E	2002	Service Replacement			X	1	-	-
695	13746 W Thomas Street	SW 1/4 Sec 34 T6S R6E	2/5/2008	Service Repair			X	-	-	-
696	Arizola Road & Jimmie Kerr Boulevard	SW 1/4 Sec 34 T6S R6E	1/29/2009	Main Repair	X			-	-	-
697	13560 Highway 84	SE 1/4 Sec 34 T6S R6E	8/6/2007	Main Repair			X	-	-	-
698	13442 W Selma Highway	SE 1/4 Sec 34 T6S R6E	9/10/2007	Main Repair			X	-	-	-
699	13333 N Selma Highway	SE 1/4 Sec 34 T6S R6E	4/28/2008	Main Repair			X	-	-	-
700	13070 W Selma Highway	SE 1/4 Sec 34 T6S R6E	8/12/2008	Service Replacement			X	1	-	-

LEAK NO.	ADDRESS	SECTION	DATE	TYPE	BLUE STAKE	ONION SKIN	FIELD	NO. OF SVCS.	L.F. OF MAIN	SERVICE MAT'L RETIRED
701	7682 W Lake Michigan Drive	NW 1/4 Sec 5 T6S R7E	10/2/2010	Service Replacement	X			1	-	-
702	6119 N Lakeshore Drive	NW 1/4 Sec 5 T6S R7E	9/17/2009	Service Replacement		X		1	-	Plastic
703	5431 N Lakeshore Drive	NW 1/4 Sec 5 T6S R7E	9/30/2009	Service Repair	X			-	-	-
704	Evans Road & Lakeview Drive	NW 1/4 Sec 5 T6S R7E	1/27/2009	Main Repair	X			-	-	-
705	7525 W Lake Erie Drive	SW 1/4 Sec 5 T6S R7E	3/30/2009	Main Repair	X			-	-	-
706	Lot 129 Lakeshore Drive	SW 1/4 Sec 5 T6S R7E	5/5/2008	Service Replacement		X		1	-	Plastic
707	Lot 141 Overfield Road	SW 1/4 Sec 5 T6S R7E	5/5/2008	Service Replacement		X		1	-	Plastic
708	Lot 128 Lakeshore Drive	SW 1/4 Sec 5 T6S R7E	5/5/2008	Service Replacement		X		1	-	Plastic
709	1400 N 11 Mile Corner Road	NE 1/4 Sec 24 T6S R7E	9/2/2009	Main Repair	X			-	-	-
710	1273 W Calle Tuberia	NW 1/4 Sec 36 T6S R7E	7/1/2009	Service Repair	X			-	-	-
711	975 W Calle Tuberia	NW 1/4 Sec 36 T6S R7E	8/28/2009	Service Replacement		X		1	-	Plastic
712	975 W Calle Tuberia	NW 1/4 Sec 36 T6S R7E	8/27/2009	Service Replacement	X			1	-	-
713	2150 Calle Del Marco	NE 1/4 Sec 36 T6S R7E	2/18/2009	Service Replacement	X			1	-	-
714	27703 W Comman Road	NE 1/4 Sec 7 T7S R5E	11/14/2007	Service Replacement		X		1	-	Plastic
715	27703 S Whispering Sands Drive	NE 1/4 Sec 7 T7S R5E	8/9/2010	Service Replacement			X	1	-	-
716	5338 S Whispering Sands Drive	NE 1/4 Sec 7 T7S R5E	7/29/2009	Main Repair	X			-	-	-
717	13190 W Via Verde	NE 1/4 Sec 3 T7S R6E	8/21/2007	Service Replacement		X		1	-	Plastic
718	Interstate I-8 & Chui Chu Road	NW 1/4 Sec 8 T7S R6E	5/29/2009	Main Repair	X			-	-	-
719	Chui Chu Road Lot 4K	SW 1/4 Sec 8 T7S R6E	2/14/2007	Service Replacement		X		1	-	Plastic
720	10948 W Arica Road	SW 1/4 Sec 13 T7S R6E	9/18/2009	Main Repair	X			-	-	-
721	10505 W Arica Road	SW 1/4 Sec 13 T7S R6E	6/27/2008	Service Replacement			X	1	-	-
722	10801 W Quartz Drive	NW 1/4 Sec 24 T7S R6E	5/12/2010	Service Replacement	X			1	-	-
723	8549 S Valley Vista Drive	NW 1/4 Sec 24 T7S R6E	6/16/2010	Service Replacement	X			1	-	-
724	8673 S Valley Vista Drive	NW 1/4 Sec 24 T7S R6E	7/7/2010	Main Repair	X			-	-	-
725	Arica Road Lot 15	NE 1/4 Sec 23 T7S R6E	7/26/2010	Service Replacement		X		1	-	Plastic
726	Arica Road & Mountain Shadows Drive	NE 1/4 Sec 23 T7S R6E	8/3/2009	Service Replacement	X			1	-	-
727	S Kashmir Road & W Arvada Drive	NW 1/4 Sec 1 T8S R6E	12/23/1998	Main Replacement		X		-	8	-
728	13463 S Huntington Road	NW 1/4 Sec 1 T8S R6E	10/26/2009	Main Repair	X			-	-	-
729	13463 S Huntington Road	NW 1/4 Sec 1 T8S R6E	9/13/2010	Main Repair	X			-	-	-
730	11094 W Benito Drive	NW 1/4 Sec 1 T8S R6E	11/13/2009	Main Repair	X			-	-	-
731	S Capastrano Road Lots 52 and 53	NW 1/4 Sec 1 T8S R6E	12/1/1998	Main Replacement		X		-	3	-
732	9843 W Concordia Drive	NE 1/4 Sec 1 T8S R6E	8/14/2009	Service Replacement		X		1	-	Plastic
733	9843 W Concordia Drive	NE 1/4 Sec 1 T8S R6E	8/11/2009	Main Repair	X			-	-	-
734	13607 S Laredo Road	NE 1/4 Sec 1 T8S R7E	10/28/2008	Service Replacement		X		1	-	Plastic
735	10209 W Santa Cruz Boulevard	NE 1/4 Sec 1 T8S R6E	7/27/2010	Main Repair	X			-	-	-
736	S Amado Boulevard & W Sunbird Drive	SE 1/4 Sec 1 T8S R6E	8/9/2010	Main Repair	X			-	-	-
737	11177 W Sacata Drive	SW 1/4 Sec 1 T8S R6E	8/9/2010	Service Replacement	X			1	-	-
738	14472 S Padres Road	SW 1/4 Sec 1 T8S R6E	8/17/2009	Service Replacement	X			1	-	-
739	14472 S Padres Road	SW 1/4 Sec 1 T8S R6E	6/20/2007	Service Replacement		X		1	-	Plastic
740	14291 S Diablo Road	SW 1/4 Sec 1 T8S R6E	10/25/2007	Service Replacement		X		1	-	Plastic
741	14456 S Vera Cruz Road	SE 1/4 Sec 1 T8S R6E	7/1/2010	Service Replacement	X			1	-	-
742	14147 S Tampico Road	SE 1/4 Sec 1 T8S R6E	7/13/2007	Service Replacement		X		1	-	Plastic
743	12135 W Delwood Drive	NE 1/4 Sec 2 T8S R6E	8/5/2008	Service Replacement			X	1	-	-
744	11578 W Lobo Drive	NE 1/4 Sec 2 T8S R6E	9/2/2008	Main Repair			X	-	-	-
745	11429 W Lobo Drive	NE 1/4 Sec 2 T8S R6E	8/8/2008	Main Repair			X	-	-	-
746	11306 W Cabrillo Drive	NE 1/4 Sec 2 T8S R6E	9/29/2008	Main Repair			X	-	-	-
747	15109 S Lamb Road	NW 1/4 Sec 12 T8S R6E	6/18/2007	Main Repair			X	-	-	-
748	15707 S Lamb Road	NW 1/4 Sec 12 T8S R6E	7/18/2008	Main Repair			X	-	-	-
749	15205 S Lamb Road	NW 1/4 Sec 12 T8S R6E	9/6/2007	Main Repair			X	-	-	-
750	S Reef Road & Magdalena Drive	SW 1/4 Sec 12 T8S R6E	5/2007	Main Repair			X	-	-	-

LEAK NO.	ADDRESS	SECTION	DATE	TYPE	BLUE STAKE	ONION SKIN	FIELD	NO. OF SVCS.	L.F. OF MAIN	SERVICE MAT'L RETIRED
751	14710 S Vera Cruz	NE 1/4 Sec 12 T8S R6E	5/5/2008	Service Replacement		X		1	-	Plastic
752	10259 W Tampico Circle	NE 1/4 Sec 12 T8S R6E	2/26/2010	Main Repair	X			-	-	-
753	10139 W Durango Place	NE 1/4 Sec 12 T8S R6E	5/23/2007	Service Replacement		X		1	-	Copper
754	10565 W Fernando Drive	NE 1/4 Sec 12 T8S R6E	9/26/2006	Service Replacement		X		1	-	-
755	15159 S Patagonia Road	NE 1/4 Sec 12 T8S R6E	6/19/2009	Main Repair	X			-	-	-
756	10331 W Monaco Boulevard	SE 1/4 Sec 12 T8S R6E	8/4/2009	Service Replacement	X			1	-	-
757	10241 W Monico Boulevard	SE 1/4 Sec 12 T8S R6E	10/16/2007	Service Replacement		X		1	-	Plastic
758	15758 S Maui Circle	SE 1/4 Sec 12 T8S R6E	3/17/2010	Main Repair	X			-	-	-
759	Coral Drive Lots 511 and 510	SE 1/4 Sec 12 T8S R6E	10/25/2007	Service Replacement		X		1	-	Plastic
760	9435 W Oneida Drive	NW 1/4 Sec 6 T8S R7E	8/7/2009	Service Replacement	X			1	-	-
761	9290 W Raven Drive	NW 1/4 Sec 6 T8S R7E	4/12/2010	Service Replacement	X			1	-	-
762	9530 W Coronado Drive Lot 333	NW 1/4 Sec 6 T8S R6E	11/12/2008	Service Replacement		X		1	-	Plastic
763	W Santa Cruz Boulevard & S Sunland Gin Road	SW 1/4 Sec 6 T8S R7E	10/26/2010	Main Repair	X			-	-	-
764	9236 W Coronado Drive	NW 1/4 Sec 6 T8S R7E	8/29/2006	Service Replacement		X		1	-	Copper
765	9051 W Santa Cruz Boulevard	SW 1/4 Sec 6 T8S R7E	8/30/2006	Service Replacement		X		1	-	Copper
766	14025 N Rosemont Road	SW 1/4 Sec 6 T8S R7E	5/7/2008	Service Replacement		X		1	-	Plastic
767	9520 W Valeview Place	SW 1/4 Sec 6 T8S R7E	11/24/2009	Main Repair	X			-	-	-
768	9191 W Vickie Place	SW 1/4 Sec 6 T8S R7E	8/30/2010	Main Repair	X			-	-	-
769	Clubhouse AZ City Golf Course	SW 1/4 Sec 6 T8S R7E	9/18/2001	Main Replacement		X		-	8	-
770	Battaglia Drive Lot 2991	NE 1/4 Sec 6 T8S R7E	7/3/2006	Service Replacement		X		1	-	Copper
771	13021 S Tacna Road	NE 1/4 Sec 6 T8S R7E	5/6/2010	Service Replacement	X			1	-	-
772	8924 W Troy Drive	NE 1/4 Sec 6 T8S R7E	9/22/2008	Service Replacement			X	1	-	-
773	13420 S Overfield Road	NE 1/4 Sec 6 T8S R7E	8/28/2007	Main Repair			X	-	-	-
774	8497 W Swansea Drive	NE 1/4 Sec 6 T8S R7E	9/22/2009	Service Replacement	X			1	-	-
775	8776 W Santa Cruz Boulevard	SE 1/4 Sec 6 T8S R7E	4/3/2010	Service Replacement	X			1	-	-
776	8627 W Santa Cruz Boulevard	SE 1/4 Sec 6 T8S R7E	5/2007	Service Replacement			X	1	-	-
777	8369 W Santa Cruz Boulevard	SE 1/4 Sec 6 T8S R7E	10/13/2010	Service Replacement	X			1	-	-
778	8287 W Coronado Drive	SE 1/4 Sec 6 T8S R7E	9/9/2010	Service Replacement	X			1	-	-
779	14180 S Prestwick Lane	SE 1/4 Sec 6 T8S R7E	8/3/2007	Service Replacement			X	1	-	-
780	14223 S Gleneagle Lane	SE 1/4 Sec 6 T8S R7E	7/24/2009	Service Replacement	X			1	-	-
781	14670 S Rory Calhoun Road	NW 1/4 Sec 7 T8S R7E	6/13/2007	Service Replacement		X		1	-	Copper
782	8251 W Newport Circle	NE 1/4 Sec 7 T8S R7E	9/11/2007	Service Replacement		X		1	-	Plastic
783	8351 W Encanto Lane	NE 1/4 Sec 7 T8S R7E	11/16/2007	Main Repair			X	-	-	-
784	9044 W Torreon Drive	SW 1/4 Sec 7 T8S R7E	1/27/2009	Service Replacement		X		1	-	Plastic
785	9217 W Rafael Drive	SW 1/4 Sec 7 T8S R7E	9/21/2009	Service Replacement		X		1	-	Plastic
786	9319 W Reventon Drive	SW 1/4 Sec 7 T8S R7E	10/26/2009	Service Repair	X			-	-	-
787	9317 W Reventon Drive	SW 1/4 Sec 7 T8S R7E	11/10/2009	Service Replacement		X		1	-	Plastic
788	7925 W Caballero Circle Lot 72	NW 1/4 Sec 8 T8S R7E	5/29/2008	Service Replacement		X		1	-	Plastic
789	7905 W Caballero Circle	NW 1/4 Sec 8 T8S R7E	5/29/2008	Service Replacement		X		1	-	Plastic
790	7835 W Caballero Circle	NW 1/4 Sec 8 T8S R7E	5/29/2008	Service Replacement		X		1	-	Plastic
791	14456 W Silla Lane Lot 82	NW 1/4 Sec 8 T8S R7E	5/28/2008	Service Replacement		X		1	-	Plastic
792	S Vaquero Circle Lot 84	NW 1/4 Sec 8 T8S R7E	9/19/2007	Service Replacement		X		1	-	Plastic
793	15215 S Vaquero Circle Lot 86	NW 1/4 Sec 8 T8S R7E	1/25/2008	Service Replacement		X		1	-	Plastic
794	15189 S Vaquero Circle Lot 87	NW 1/4 Sec 8 T8S R7E	1/25/2008	Service Replacement		X		1	-	Plastic
795	8014 W Reata Lane Lot 4	NW 1/4 Sec 8 T8S R7E	1/11/2008	Service Replacement		X		1	-	Plastic
796	7996 W Reata Lane	NW 1/4 Sec 8 T8S R7E	1/16/2008	Service Replacement		X		1	-	Plastic
797	7903 W Reata Lane	NW 1/4 Sec 8 T8S R7E	1/10/2008	Service Replacement		X		1	-	Plastic
798	8003 W Caballo Circle Lot 13	NW 1/4 Sec 8 T8S R7E	1/23/2008	Service Replacement		X		1	-	Plastic
799	7973 W Caballo Circle Lot 14	NW 1/4 Sec 8 T8S R7E	1/22/2008	Service Replacement		X		1	-	Plastic
800	7973 W Caballo Circle Lot 10	NW 1/4 Sec 8 T8S R7E	10/12/2007	Service Replacement		X		1	-	Copper

LEAK NO.	ADDRESS	SECTION	DATE	TYPE	BLUE STAKE	ONION SKIN	FIELD	NO. OF SVCS.	L.F. OF MAIN	SERVICE MAT'L RETIRED
801	7922 W Caballo Circle	NW 1/4 Sec 8 T8S R7E	1/15/2008	Service Replacement		X		1	-	Plastic
802	7863 W Caballo Circle	NW 1/4 Sec 8 T8S R7E	1/16/2008	Service Replacement		X		1	-	Plastic
803	15120 S Vaquero Circle	NW 1/4 Sec 8 T8S R7E	1/16/2008	Service Replacement		X		1	-	Plastic
804	7835 W Caballo Circle	NW 1/4 Sec 8 T8S R7E	1/9/2008	Service Replacement		X		1	-	Plastic
805	S Remuda Drive Lot 115	NW 1/4 Sec 8 T8S R7E	4/2/2008	Service Replacement		X		1	-	Plastic
806	S Remuda Drive Lot 114	NW 1/4 Sec 8 T8S R7E	4/2/2008	Service Replacement		X		1	-	Plastic
807	14918 S Remuda Drive Lot 113	NW 1/4 Sec 8 T8S R7E	4/7/2008	Service Replacement		X		1	-	Plastic
808	14700 S Remuda Drive Lot 111	NW 1/4 Sec 8 T8S R7E	5/30/2008	Service Replacement		X		1	-	Copper
809	14721 S Remuda Drive Lot 110	NW 1/4 Sec 8 T8S R7E	5/30/2008	Service Replacement		X		1	-	Copper
810	14766 S Remuda Drive	NW 1/4 Sec 8 T8S R7E	6/2/2008	Service Replacement		X		1	-	Plastic
811	14806 S Remuda Drive	NW 1/4 Sec 8 T8S R7E	6/3/2008	Service Replacement		X		1	-	Copper
812	14708 S Vaquero Circle	NW 1/4 Sec 8 T8S R7E	8/28/2007	Service Replacement			X	1	-	-
813	1333 E Arbor Avenue	SW 1/4 Sec 20 T6S R6E	1/2007	Main Repair			X	-	-	-
814	8927 W Cabello Circle	NW 1/4 Sec 8 T8S R7E	11/30/2006	Service Replacement		X		1	-	-
815	W Waverly Drive Lot 6	NE 1/4 Sec 24 T5S R6E	10/25/2007	Service Replacement		X		1	-	Copper
816	14514 S Capistrano Road	NW 1/4 Sec 12 T8S R6E	6/9/2010	Service Replacement	X			1	-	-
817	1956 N Camino Real	NE 1/4 Sec 17 T6S R6E	1/22/2007	Service Replacement		X		1	-	Plastic
818	1040-1052 N Arizona Boulevard	SW 1/4 Sec 15 T5S R8E	5/18/2009	Service Replacement	X			1	-	Other
819	Sundance Drive @ Pima Water Canal	SW 1/4 Sec 15 T5S R8E	5/7/2007	Main Replacement	X			-	-	-
820	204 W Palm Court	SW 1/4 Sec 15 T5S R8E	4/20/2009	Main Repair	X			-	-	-
821	E Vah Ki Inn Road & 200' W of RR Tracks	SW 1/4 Sec 15 T5S R8E	9/4/2007	Main Repair	X			-	-	-
822	E Vah Ki Inn Road & S Main Street	SW 1/4 Sec 15 T5S R8E	4/20/2009	Main Repair	X			-	-	-
823	811 & 831 Toltec Drive	SE 1/4 Sec 16 T5S R8E	12/17/2007	Service Replacement	X	X		2	-	Plastic
824	1133 N Padre Kino Lane	SE 1/4 Sec 16 T5S R8E	2/2/2009	Service Repair	X			-	-	-
825	709 N Padre Kino Lane	SE 1/4 Sec 16 T5S R8E	10/1/2009	Service Replacement	X			1	-	Other
826	1227 N Mesquite Lane	SE 1/4 Sec 16 T5S R8E	10/1/2008	Main Repair	X			-	-	-
827	1175 N Palo Verde Lane	SE 1/4 Sec 16 T5S R8E	10/31/2007	Service Replacement	X	X		1	-	Plastic
828	1075 W Northern Avenue	NW 1/4 Sec 21 T5S R8E	1/23/2006	Service Replacement	X			1	-	-
829	1091 N 8th Place	NE 1/4 Sec 21 T5S R8E	2009	Service Repair			X	-	-	-
830	1090 N 8th Place	NE 1/4 Sec 21 T5S R8E	2008	Service Repair			X	-	-	-
831	1086 N Arizona Boulevard	NE 1/4 Sec 21 T5S R8E	7/2/2010	Service Repair	X			-	-	-
832	688 W Shannons Way	NE 1/4 Sec 21 T5S R8E	2008	Service Repair			X	-	-	-
833	1010 N Kevins Place	NE 1/4 Sec 21 T5S R8E	2007	Service Repair			X	-	-	-
834	1010 N 8th Place	NE 1/4 Sec 21 T5S R8E	2007	Service Repair			X	-	-	-
835	261 W Byrd Avenue	NW 1/4 Sec 22 T5S R8E	2008	Service Repair			X	-	-	-
836	672 W Caroline Street	NE 1/4 Sec 21 T5S R8E	2008	Service Repair			X	-	-	-
837	654 W Caroline Street	NE 1/4 Sec 21 T5S R8E	3/9/2006	Service Repair	X			-	-	-
838	900 N Arizona Boulevard	NE 1/4 Sec 21 T5S R8E	2005	Service Repair			X	-	-	-
839	654 W Raymond Street	NE 1/4 Sec 21 T5S R8E	2006	Service Repair			X	-	-	-
840	667 W Caroline Street	NE 1/4 Sec 21 T5S R8E	2006	Service Repair			X	-	-	-
841	642 W Raymond Street	NE 1/4 Sec 21 T5S R8E	2004	Service Repair			X	-	-	-
842	608 W Raymond Street	NE 1/4 Sec 21 T5S R8E	2008	Service Repair			X	-	-	-
843	551 W Caroline Street	NE 1/4 Sec 21 T5S R8E	2008	Service Repair			X	-	-	-
844	511 W Caroline Street	NE 1/4 Sec 21 T5S R8E	2006	Service Repair			X	-	-	-
845	818 N Arizona Boulevard	NE 1/4 Sec 21 T5S R8E	2003	Service Repair			X	-	-	-
846	740 N 8th Place	NE 1/4 Sec 21 T5S R8E	2002	Service Repair			X	-	-	-
847	753 W Raymond Street	NE 1/4 Sec 21 T5S R8E	1999	Service Repair			X	-	-	-
848	623 W Raymond Street	NE 1/4 Sec 21 T5S R8E	2002	Service Repair			X	-	-	-
849	685 N 6th Place	NE 1/4 Sec 21 T5S R8E	2007	Service Replacement			X	1	-	-
850	583 W Raymond Street	NE 1/4 Sec 21 T5S R8E	2001	Service Replacement			X	1	-	-

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851	583 W Raymond Street	NE 1/4 Sec 21 T5S R8E	8/18/2008	Service Repair	X			-	-	-
852	2403 S Peart Road	SW 1/4 Sec 34 T6S R6E	8/11/2008	Service Replacement			X	1	-	-
853	15100 S Redondo Road	NW 1/4 Sec 12 T8S R6E	10/1/2007	Service Replacement		X		1	-	Plastic
854	689 N 8th Place	NW 1/4 Sec 21 T5S R8E	2005	Service Repair			X	-	-	-
855	W Kenworthy Avenue & N 7th Place	NW 1/4 Sec 21 T5S R8E	2000	Main Repair			X	-	-	-
856	619 N 7th Place	NE 1/4 Sec 21 T5S R8E	2002	Main Repair			X	-	-	-
857	619 N 7th Place	NE 1/4 Sec 21 T5S R8E	2002	Service Repair			X	-	-	-
858	651 W 6th Place	NE 1/4 Sec 21 T5S R8E	10/24/2008	Main Repair	X			-	-	-
859	N 6th Place & W Kenworthy Avenue	NE 1/4 Sec 21 T5S R8E	2010	Main Repair			X	-	-	-
860	800 W Northern Avenue	NE 1/4 Sec 21 T5S R8E	8/19/2010	Main Replacement	X			-	-	-
861	800 W Northern Avenue (High School)	NE 1/4 Sec 21 T5S R8E	9/3/2008	Service Replacement	X			1	-	-
862	Northern Avenue W of Arizona Boulevard	SE 1/4 Sec 21 T5S R8E	1/2008	Main Replacement			X	-	-	-
863	885 W Northern Avenue	SE 1/4 Sec 21 T5S R8E	2008	Main Repair			X	-	-	-
864	844 W Pima Avenue	SE 1/4 Sec 21 T5S R8E	2004	Service Replacement			X	1	-	-
865	801 W Northern Avenue	SE 1/4 Sec 21 T5S R8E	2010	Service Repair			X	-	-	-
866	808 W Pima Avenue	SE 1/4 Sec 21 T5S R8E	2010	Service Repair			X	-	-	-
867	375 N 8th Street	SE 1/4 Sec 21 T5S R8E	10/28/2009	Main Repair	X			-	-	-
868	777 W Northern Avenue	SE 1/4 Sec 21 T5S R8E	4/16/2008	Main Repair	X			-	-	-
869	737 W Northern Avenue	SE 1/4 Sec 21 T5S R8E	2008	Service Replacement			X	1	-	-
870	737 W Northern Avenue	SE 1/4 Sec 21 T5S R8E	2009	Service Repair			X	-	-	-
871	745 W Northern Avenue	SE 1/4 Sec 21 T5S R8E	11/23/2009	Main Repair	X			-	-	-
872	735 W Northern Avenue	SE 1/4 Sec 21 T5S R8E	2009	Service Replacement			X	1	-	-
873	W Pima Avenue Lot 144B	SE 1/4 Sec 21 T5S R8E	2009	Service Replacement			X	1	-	-
874	653 W Northern Avenue	SE 1/4 Sec 21 T5S R8E	2009	Service Repair			X	-	-	-
875	667 W Northern Avenue	SE 1/4 Sec 21 T5S R8E	2006	Main Repair			X	-	-	-
876	653 W Northern Avenue	SE 1/4 Sec 21 T5S R8E	2007	Service Replacement			X	1	-	-
877	36 N 6th Street	SE 1/4 Sec 21 T5S R8E	2002	Service Repair			X	-	-	-
878	340 N 6th Street	SE 1/4 Sec 21 T5S R8E	2004	Service Repair			X	-	-	-
879	582 W Pima Avenue	SE 1/4 Sec 21 T5S R8E	2009	Service Repair			X	-	-	-
880	557 W Northern Avenue	SE 1/4 Sec 21 T5S R8E	2000	Service Repair			X	-	-	-
881	547 W Northern Avenue	SE 1/4 Sec 21 T5S R8E	2010	Service Repair			X	-	-	-
882	501 W Northern Avenue	SE 1/4 Sec 21 T5S R8E	8/27/2007	Service Replacement	X	X		1	-	Copper
883	887 W Pima Avenue	SE 1/4 Sec 21 T5S R8E	2005	Service Replacement			X	1	-	-
884	880 W Pinkley Avenue	SE 1/4 Sec 21 T5S R8E	2008	Service Repair			X	-	-	-
885	853 W Pima Avenue	SE 1/4 Sec 21 T5S R8E	2008	Service Repair			X	-	-	-
886	850 W Pinkley Avenue	SE 1/4 Sec 21 T5S R8E	2007	Service Repair			X	-	-	-
887	839 W Pima Avenue	SE 1/4 Sec 21 T5S R8E	2008	Service Replacement			X	1	-	-
888	755 W Pinkley Avenue	SE 1/4 Sec 21 T5S R8E	2008	Service Repair			X	-	-	-
889	754 W Pinkley Avenue	SE 1/4 Sec 21 T5S R8E	1/8/2008	Service Replacement	X	X		1	-	Plastic
890	731 W Pinkley Avenue	SE 1/4 Sec 21 T5S R8E	2008	Service Replacement			X	1	-	-
891	701 W Pinkley Avenue	SE 1/4 Sec 21 T5S R8E	2010	Service Repair			X	-	-	-
892	202 N 7th Street	SE 1/4 Sec 21 T5S R8E	2009	Main Repair			X	-	-	-
893	658 W Pinkley Avenue	SE 1/4 Sec 21 T5S R8E	2008	Service Replacement			X	1	-	-
894	644 W Pinkley Avenue	SE 1/4 Sec 21 T5S R8E	2/9/2006	Service Replacement	X			1	-	-
895	621 W Pima Avenue	SE 1/4 Sec 21 T5S R8E	6/11/2010	Service Replacement	X			1	-	Other
896	528 W Pinkley Avenue	SE 1/4 Sec 21 T5S R8E	2009	Service Replacement			X	1	-	-
897	7375 E Caballero Court	NW 1/4 Sec 8 T8S R7E	1/16/2008	Service Replacement			X	1	-	-
898	Garnets Lot 20	SE 1/4 Sec 21 T5S R8E	2008	Service Repair			X	-	-	-
899	880 W Central Avenue	SE 1/4 Sec 21 T5S R8E	2009	Service Replacement			X	1	-	-
900	865 W Pinkley Avenue	SE 1/4 Sec 21 T5S R8E	2009	Service Repair			X	-	-	-

LEAK NO.	ADDRESS	SECTION	DATE	TYPE	BLUE STAKE	ONION SKIN	FIELD	NO. OF SVCS.	L.F. OF MAIN	SERVICE MAT'L RETIRED
901	853 W Pinkley Avenue	SE 1/4 Sec 21 T5S R8E	2008	Service Repair			X	-	-	-
902	783 W Pima Avenue	SE 1/4 Sec 21 T5S R8E	2008	Main Repair			X	-	-	-
903	712 W Pinkley Avenue	SE 1/4 Sec 21 T5S R8E	2007	Service Replacement			X	1	-	-
904	722 W Pinkley Avenue	SE 1/4 Sec 21 T5S R8E	2008	Service Repair			X	-	-	-
905	708 W Pinkley Avenue	SE 1/4 Sec 21 T5S R8E	2008	Service Replacement			X	1	-	-
906	629 W Pinkley Avenue	SE 1/4 Sec 21 T5S R8E	2007	Service Replacement			X	1	-	-
907	196 N 6th Street	SE 1/4 Sec 21 T5S R8E	2010	Service Repair			X	-	-	-
908	580 W Central Avenue	SE 1/4 Sec 21 T5S R8E	7/10/2008	Service Repair	X			-	-	-
909	589 W Pinkley Avenue	SE 1/4 Sec 21 T5S R8E	7/9/2008	Main Repair		X		-	-	-
910	591 W Pinkley Avenue	SE 1/4 Sec 21 T5S R8E	2008	Service Replacement			X	1	-	-
911	881 W Central Avenue	SE 1/4 Sec 21 T5S R8E	2008	Service Replacement			X	1	-	-
912	852 W Roosevelt Avenue	SE 1/4 Sec 21 T5S R8E	2004	Service Replacement			X	1	-	-
913	803 W Central Avenue	SE 1/4 Sec 21 T5S R8E	2008	Service Replacement			X	1	-	-
914	743 W Central Avenue	SE 1/4 Sec 21 T5S R8E	3/9/2006	Service Repair	X			-	-	-
915	684 W Roosevelt Avenue	SE 1/4 Sec 21 T5S R8E	2009	Main Repair			X	-	-	-
916	783 W Roosevelt Avenue	SE 1/4 Sec 21 T5S R8E	9/29/2006	Service Replacement	X			1	-	-
917	673 W Central Avenue	SE 1/4 Sec 21 T5S R8E	2009	Service Repair			X	-	-	-
918	653 W Central Avenue	SE 1/4 Sec 21 T5S R8E	2009	Service Repair			X	-	-	-
919	642 W Roosevelt Avenue	SE 1/4 Sec 21 T5S R8E	2009	Main Repair			X	-	-	-
920	608 W Roosevelt Avenue	SE 1/4 Sec 21 T5S R8E	2009	Service Replacement			X	1	-	-
921	147 S 6th Street	SE 1/4 Sec 21 T5S R8E	2009	Main Repair			X	-	-	-
922	579 W Central Avenue	SE 1/4 Sec 21 T5S R8E	2009	Service Replacement			X	1	-	-
923	551 W Central Avenue	SE 1/4 Sec 21 T5S R8E	2009	Service Repair			X	-	-	-
924	552 W Roosevelt Avenue	SE 1/4 Sec 21 T5S R8E	2009	Service Repair			X	-	-	-
925	540 W Roosevelt Avenue	SE 1/4 Sec 21 T5S R8E	2009	Service Repair			X	-	-	-
926	188 S Arizona Boulevard	SE 1/4 Sec 21 T5S R8E	2008	Service Replacement			X	1	-	-
927	807 W Central Avenue	SE 1/4 Sec 21 T5S R8E	2008	Service Repair			X	-	-	-
928	782 W Roosevelt Avenue	SE 1/4 Sec 21 T5S R8E	2008	Service Replacement			X	1	-	-
929	769 W Central Avenue	SE 1/4 Sec 21 T5S R8E	2008	Service Replacement			X	1	-	-
930	740 W Roosevelt Avenue	SE 1/4 Sec 21 T5S R8E	2009	Service Repair			X	-	-	-
931	714 W Roosevelt Avenue	SE 1/4 Sec 21 T5S R8E	2007	Service Replacement			X	1	-	-
932	180 S 7th Street	SE 1/4 Sec 21 T5S R8E	2004	Main Repair			X	-	-	-
933	680 W Roosevelt Avenue	SE 1/4 Sec 21 T5S R8E	2010	Service Repair			X	-	-	-
934	604 S 6th Street	SE 1/4 Sec 21 T5S R8E	2010	Service Repair			X	-	-	-
935	594 W Wilson Avenue	SE 1/4 Sec 21 T5S R8E	2009	Service Repair			X	-	-	-
936	585 W Roosevelt Avenue	SE 1/4 Sec 21 T5S R8E	2006	Service Replacement			X	1	-	-
937	568 W Wilson Avenue	SE 1/4 Sec 21 T5S R8E	2008	Main Repair			X	-	-	-
938	560 W Wilson Avenue	SE 1/4 Sec 21 T5S R8E	2009	Service Repair			X	-	-	-
939	250 S Arizona Boulevard	SE 1/4 Sec 21 T5S R8E	2009	Service Replacement			X	1	-	-
940	294 S Arizona Boulevard	SE 1/4 Sec 21 T5S R8E	2009	Service Repair			X	-	-	-
941	842 E Gabrilla Drive	SE 1/4 Sec 17 T6S R6E	1/2001	Service Replacement			X	1	-	-
942	800 N 9th Street	SE 1/4 Sec 21 T5S R8E	2008	Service Replacement			X	1	-	-
943	681 W Wilson Avenue	SE 1/4 Sec 21 T5S R8E	2010	Service Repair			X	-	-	-
944	666 W Wilson Avenue	SE 1/4 Sec 21 T5S R8E	2007	Service Repair			X	-	-	-
945	667 W Wilson Avenue	SE 1/4 Sec 21 T5S R8E	2008	Service Replacement			X	1	-	-
946	624 W Wilson Avenue	SE 1/4 Sec 21 T5S R8E	2009	Service Repair			X	-	-	-
947	596 W Harding Avenue	SE 1/4 Sec 21 T5S R8E	10/9/2009	Service Repair	X			-	-	-
948	483 W Wilson Avenue	SE 1/4 Sec 21 T5S R8E	2009	Service Replacement			X	1	-	-
949	580-596 W Harding Avenue	SE 1/4 Sec 21 T5S R8E	12/1/2009	Service Repair	X			-	-	-
950	420 S Arizona Boulevard	SE 1/4 Sec 21 T5S R8E	2005	Main Repair			X	-	-	-

LEAK NO.	ADDRESS	SECTION	DATE	TYPE	BLUE STAKE	ONION SKIN	FIELD	NO. OF SVCS.	L.F. OF MAIN	SERVICE MAT'L RETIRED
951	360 S Arizona Boulevard	SE 1/4 Sec 21 T5S R8E	2008	Service Repair			X	-	-	-
952	380 S Arizona Boulevard	SE 1/4 Sec 21 T5S R8E	2009	Service Repair			X	-	-	-
953	617 W Wilson Avenue	SE 1/4 Sec 21 T5S R8E	2006	Service Replacement			X	1	-	-
954	616 W Coolidge Avenue	SE 1/4 Sec 21 T5S R8E	2006	Service Replacement			X	1	-	-
955	680 W Wilson Place	SE 1/4 Sec 21 T5S R8E	7/6/2009	Service Repair	X			-	-	-
956	SE Corner 400 S 7th Street	SE 1/4 Sec 21 T5S R8E	2007	Main Repair			X	-	-	-
957	470 S Arizona Boulevard	SE 1/4 Sec 21 T5S R8E	2008	Service Repair			X	-	-	-
958	474 S Arizona Boulevard	SE 1/4 Sec 21 T5S R8E	2004	Service Replacement			X	1	-	-
959	474 S Arizona Boulevard	SE 1/4 Sec 21 T5S R8E	2009	Main Repair			X	-	-	-
960	1087 N Arizona Boulevard	NW 1/4 Sec 22 T5S R8E	2007	Service Replacement			X	1	-	-
961	1011 N Arizona Boulevard	NW 1/4 Sec 22 T5S R8E	2007	Service Repair			X	-	-	-
962	1041 N Arizona Boulevard	NW 1/4 Sec 22 T5S R8E	2005	Service Replacement			X	1	-	-
963	1041 N Arizona Boulevard	NW 1/4 Sec 22 T5S R8E	2005	Main Repair			X	-	-	-
964	459 W Vah Ki Inn Road	NW 1/4 Sec 22 T5S R8E	2005	Main Repair			X	-	-	-
965	459 W Vah Ki Inn Road	NW 1/4 Sec 22 T5S R8E	1/9/2006	Service Replacement	X			1	-	-
966	404 W Hess Avenue	NW 1/4 Sec 22 T5S R8E	6/13/2007	Service Replacement	X	X		1	-	Plastic
967	393 W Vah Ki Inn Road	NW 1/4 Sec 22 T5S R8E	2006	Service Replacement			X	1	-	-
968	362 W Hess Avenue	NW 1/4 Sec 22 T5S R8E	10/22/2009	Main Repair	X			-	-	-
969	347 W Vah Ki Inn Road	NW 1/4 Sec 22 T5S R8E	2008	Service Replacement			X	1	-	-
970	320 W Hess Avenue	NW 1/4 Sec 22 T5S R8E	5/7/2010	Service Replacement		X		1	-	Copper
971	1060 N 3rd Street	NW 1/4 Sec 22 T5S R8E	2009	Service Repair			X	-	-	-
972	312 N Hess Avenue	NW 1/4 Sec 22 T5S R8E	5/3/2010	Service Repair	X			-	-	-
973	1087 N 3rd Street	NW 1/4 Sec 22 T5S R8E	2008	Service Replacement			X	1	-	-
974	270 W Hess Avenue	NW 1/4 Sec 22 T5S R8E	2003	Service Replacement			X	1	-	-
975	249 W Vah Ki Inn Road	NW 1/4 Sec 22 T5S R8E	2005	Service Replacement			X	1	-	-
976	243 W Vah Ki Inn Road	NW 1/4 Sec 22 T5S R8E	8/24/2006	Service Replacement	X			1	-	-
977	234 W Hess Avenue	NW 1/4 Sec 22 T5S R8E	7/6/2007	Service Replacement	X			1	-	-
978	217 W Vah Ki Inn Road	NW 1/4 Sec 22 T5S R8E	2008	Service Repair			X	-	-	-
979	223 W Vah Ki Inn Road	NW 1/4 Sec 22 T5S R8E	2007	Service Replacement			X	1	-	-
980	1060 N Main Street	NW 1/4 Sec 22 T5S R8E	2006	Service Replacement			X	1	-	-
981	1038 N Main Street	NW 1/4 Sec 22 T5S R8E	2006	Service Repair			X	-	-	-
982	985 N Arizona Boulevard	NW 1/4 Sec 22 T5S R8E	2004	Service Replacement			X	1	-	-
983	909 N Arizona Boulevard	NW 1/4 Sec 22 T5S R8E	2001	Service Replacement			X	1	-	-
984	441 W Hess Avenue	NW 1/4 Sec 22 T5S R8E	2008	Service Repair			X	-	-	-
985	420 W Hess Avenue	NW 1/4 Sec 22 T5S R8E	2003	Service Repair			X	-	-	-
986	405 W Hess Avenue	NW 1/4 Sec 22 T5S R8E	2006	Service Replacement			X	1	-	-
987	405 W Hess Avenue	NW 1/4 Sec 22 T5S R8E	11/20/2008	Service Replacement	X			1	-	-
988	393 W Hess Avenue	NW 1/4 Sec 22 T5S R8E	2001	Service Replacement			X	1	-	-
989	959 N 4th Street	NW 1/4 Sec 22 T5S R8E	4/21/2008	Service Replacement	X			1	-	-
990	369 W Hess Avenue	NW 1/4 Sec 22 T5S R8E	2003	Service Replacement			X	1	-	-
991	336 W Walton Avenue	NW 1/4 Sec 22 T5S R8E	2007	Service Repair			X	-	-	-
992	346 W Walton Avenue	NW 1/4 Sec 22 T5S R8E	3/31/2006	Service Repair	X			-	-	-
993	335 W Hess Avenue	NW 1/4 Sec 22 T5S R8E	2004	Service Replacement			X	1	-	-
994	325 W Hess Avenue	NW 1/4 Sec 22 T5S R8E	2001	Service Replacement			X	1	-	-
995	303 W Hess Avenue	NW 1/4 Sec 22 T5S R8E	2010	Main Repair			X	-	-	-
996	987 N 3rd Street	NW 1/4 Sec 22 T5S R8E	2002	Service Replacement			X	1	-	-
997	244 W Walton Avenue	NW 1/4 Sec 22 T5S R8E	2003	Service Replacement			X	1	-	-
998	229 W Hess Avenue	NW 1/4 Sec 22 T5S R8E	2000	Service Replacement			X	1	-	-
999	303 W Hess Avenue	NW 1/4 Sec 22 T5S R8E	5/6/2010	Main Repair	X			-	-	-
1000	956 N Main Street	NW 1/4 Sec 22 T5S R8E	2008	Service Replacement			X	1	-	-

LEAK NO.	ADDRESS	SECTION	DATE	TYPE	BLUE STAKE	ONION SKIN	FIELD	NO. OF SVCS.	L.F. OF MAIN	SERVICE MAT'L RETIRED
1001	908 N Main Street	NW 1/4 Sec 22 T5S R8E	2009	Service Repair			X	-	-	-
1002	909 N Arizona Boulevard	NW 1/4 Sec 22 T5S R8E	1/13/2010	Main Repair	X			-	-	-
1003	803 N Arizona Boulevard	NW 1/4 Sec 22 T5S R8E	2009	Service Replacement			X	1	-	-
1004	463 W Walton Avenue	NW 1/4 Sec 22 T5S R8E	2/12/2008	Service Replacement		X		1	-	Plastic
1005	W Walton Avenue Lot 5	NW 1/4 Sec 22 T5S R8E	2009	Service Repair			X	-	-	-
1006	438 W Bealey Avenue	NW 1/4 Sec 22 T5S R8E	2009	Service Repair			X	-	-	-
1007	360 W Bealey Avenue	NW 1/4 Sec 22 T5S R8E	5/10/2007	Service Repair	X			-	-	-
1008	360 W Bealey Avenue	NW 1/4 Sec 22 T5S R8E	2009	Service Repair			X	-	-	-
1009	360 W Bealey Avenue	NW 1/4 Sec 22 T5S R8E	2009	Main Repair			X	-	-	-
1010	North Park & N 3rd Street	NW 1/4 Sec 22 T5S R8E	2010	Main Repair			X	-	-	-
1011	272 W Bealey Avenue	NW 1/4 Sec 22 T5S R8E	2001	Service Repair			X	-	-	-
1012	265 W Walton Avenue	NW 1/4 Sec 22 T5S R8E	2000	Service Repair			X	-	-	-
1013	233 W Walton Avenue	NW 1/4 Sec 22 T5S R8E	2008	Service Repair			X	-	-	-
1014	876 N Main Street	NW 1/4 Sec 22 T5S R8E	2009	Main Repair			X	-	-	-
1015	892 N Main Street	NW 1/4 Sec 22 T5S R8E	2000	Service Repair			X	-	-	-
1016	250 W Bealey Avenue	NW 1/4 Sec 22 T5S R8E	2009	Service Repair			X	-	-	-
1017	808 N Main Street	NW 1/4 Sec 22 T5S R8E	2009	Main Repair			X	-	-	-
1018	466 W Kennedy Avenue	NW 1/4 Sec 22 T5S R8E	2009	Main Repair			X	-	-	-
1019	465 W Bealey Avenue	NW 1/4 Sec 22 T5S R8E	2009	Service Repair			X	-	-	-
1020	446 W Kennedy Avenue	NW 1/4 Sec 22 T5S R8E	2009	Service Repair			X	-	-	-
1021	446 W Kennedy Avenue	NW 1/4 Sec 22 T5S R8E	12/4/2009	Service Repair	X			-	-	-
1022	421 W Bealey Avenue	NW 1/4 Sec 22 T5S R8E	2008	Service Replacement			X	1	-	-
1023	414 W Kennedy Avenue	NW 1/4 Sec 22 T5S R8E	2010	Service Repair			X	-	-	-
1024	772 N 3rd Street	NW 1/4 Sec 22 T5S R8E	2007	Service Repair			X	-	-	-
1025	388 W Kennedy Avenue	NW 1/4 Sec 22 T5S R8E	2002	Main Repair			X	-	-	-
1026	388 W Kennedy Avenue	NW 1/4 Sec 22 T5S R8E	2006	Service Replacement			X	1	-	-
1027	367 W Bealey Avenue	NW 1/4 Sec 22 T5S R8E	2004	Service Replacement			X	1	-	-
1028	370 W Kennedy Avenue	NW 1/4 Sec 22 T5S R8E	2009	Main Repair			X	-	-	-
1029	340 W Kennedy Avenue	NW 1/4 Sec 22 T5S R8E	2009	Service Repair			X	-	-	-
1030	318 W Kennedy Avenue	NW 1/4 Sec 22 T5S R8E	3/3/2008	Service Replacement	X			1	-	-
1031	316 W Kennedy Avenue	NW 1/4 Sec 22 T5S R8E	2009	Service Repair			X	-	-	-
1032	314 W Kennedy Avenue	NW 1/4 Sec 22 T5S R8E	2009	Main Repair			X	-	-	-
1033	229 W Bealey Avenue	NW 1/4 Sec 22 T5S R8E	2009	Service Repair			X	-	-	-
1034	828 N Main Street	NW 1/4 Sec 22 T5S R8E	1/26/2010	Main Repair	X			-	-	-
1035	230 W Kennedy Avenue	NW 1/4 Sec 22 T5S R8E	2008	Service Replacement			X	1	-	-
1036	828 N Main Street	NW 1/4 Sec 22 T5S R8E	1/26/2010	Main Repair	X			-	-	-
1037	627 N Arizona Boulevard	NW 1/4 Sec 22 T5S R8E	5/8/2007	Main Repair	X			-	-	-
1038	631 N Arizona Boulevard	NW 1/4 Sec 22 T5S R8E	4/15/2010	Service Repair	X			-	-	-
1039	427 W Kennedy Avenue	NW 1/4 Sec 22 T5S R8E	2/9/2007	Service Replacement	X	X		1	-	Plastic
1040	421 W Kennedy Avenue	NW 1/4 Sec 22 T5S R8E	8/7/2006	Service Replacement	X			1	-	-
1041	394 & 384 W Byrd Avenue	NW 1/4 Sec 22 T5S R8E	1/16/2008	Service Replacement	X	X		1	-	Plastic
1042	400 Block of W Kennedy Avenue	NW 1/4 Sec 22 T5S R8E	2007	Service Replacement			X	1	-	-
1043	336 W Byrd Avenue	NW 1/4 Sec 22 T5S R8E	4/24/2008	Service Repair	X			-	-	-
1044	337 W Kennedy Avenue	NW 1/4 Sec 22 T5S R8E	4/23/2007	Service Replacement	X			1	-	-
1045	317 & 321 Kennedy Avenue	NW 1/4 Sec 22 T5S R8E	10/16/2007	Service Replacement	X	X		1	-	Plastic
1046	250 W Byrd Avenue	NW 1/4 Sec 22 T5S R8E	2008	Service Replacement			X	1	-	-
1047	680 N Main Street	NW 1/4 Sec 22 T5S R8E	2004	Main Repair			X	-	-	-
1048	624 N Main Street	NW 1/4 Sec 22 T5S R8E	2009	Service Replacement			X	1	-	-
1049	NW Corner of S Noble Street & Hwy 84	SW 1/4 Sec 34 T6S R6E	2003	Service Replacement			X	1	-	-
1050	501 S Arizona Boulevard	NW 1/4 Sec 22 T5S R8E	12/10/2009	Main Repair	X			-	-	-

LEAK NO.	ADDRESS	SECTION	DATE	TYPE	BLUE STAKE	ONION SKIN	FIELD	NO. OF SVCS.	L.F. OF MAIN	SERVICE MAT'L RETIRED
1051	505 N Arizona Boulevard	NW 1/4 Sec 22 T5S R8E	3/15/2007	Service Replacement		X		1	-	Plastic
1052	429 W Byrd Avenue	NW 1/4 Sec 22 T5S R8E	4/10/2010	Service Repair	X			-	-	-
1053	377 W Byrd Avenue	NW 1/4 Sec 22 T5S R8E	10/7/2009	Service Replacement	X			1	-	-
1054	365 W Byrd Avenue	NW 1/4 Sec 22 T5S R8E	9/22/2008	Service Replacement		X		1	-	Copper
1055	301 W Byrd Avenue	NW 1/4 Sec 22 T5S R8E	12/12/2008	Service Replacement	X	X		1	-	Copper
1056	291 W Byrd Avenue	NW 1/4 Sec 22 T5S R8E	2007	Service Replacement			X	1	-	-
1057	245 W Byrd Avenue	NW 1/4 Sec 22 T5S R8E	2008	Service Replacement			X	1	-	-
1058	557 N Main Street	NW 1/4 Sec 22 T5S R8E	2008	Main Repair			X	-	-	-
1059	527 N Main Street	NW 1/4 Sec 22 T5S R8E	2008	Service Replacement			X	1	-	-
1060	523 N Main Street	NW 1/4 Sec 22 T5S R8E	2007	Service Repair			X	-	-	-
1061	475 N Arizona Boulevard	NW 1/4 Sec 22 T5S R8E	2005	Service Replacement			X	1	-	-
1062	430 W Northern Avenue	NW 1/4 Sec 22 T5S R8E	2001	Service Replacement			X	1	-	-
1063	444 N 4th Street	NW 1/4 Sec 22 T5S R8E	12/5/2006	Service Replacement		X		1	-	Plastic
1064	406 W Northern Avenue	NW 1/4 Sec 22 T5S R8E	12/1/2006	Service Replacement	X			1	-	-
1065	360 W Northern Avenue	NW 1/4 Sec 22 T5S R8E	9/19/2008	Service Replacement	X			1	-	-
1066	338 W Northern Avenue	NW 1/4 Sec 22 T5S R8E	6/14/2006	Service Replacement	X			1	-	-
1067	341 W Lindbergh Avenue	NW 1/4 Sec 22 T5S R8E	8/25/2008	Service Replacement		X		1	-	Plastic
1068	331 W Lindbergh Avenue	NW 1/4 Sec 22 T5S R8E	7/15/2008	Service Replacement		X		1	-	Copper
1069	404 N 3rd Street	NW 1/4 Sec 22 T5S R8E	6/11/2007	Service Replacement	X			1	-	-
1070	267 W Lindbergh Avenue	NW 1/4 Sec 22 T5S R8E	2/13/2007	Main Repair	X			-	-	-
1071	261 W Lindbergh Avenue	NW 1/4 Sec 22 T5S R8E	1/8/2007	Main Replacement	X			-	3	-
1072	428 N 3rd Street	NW 1/4 Sec 22 T5S R8E	4/15/2009	Service Replacement	X			1	-	Other
1073	236 W Northern Avenue	NW 1/4 Sec 22 T5S R8E	7/9/2008	Service Replacement	X	X		1	-	Copper
1074	131 W Lindbergh Avenue	NW 1/4 Sec 22 T5S R8E	2006	Service Repair			X	-	-	-
1075	406 W 1st Street	NW 1/4 Sec 22 T5S R8E	2009	Main Repair			X	-	-	-
1076	427 N Main Street	NW 1/4 Sec 22 T5S R8E	2008	Service Replacement			X	1	-	-
1077	392 W Pima Avenue	SW 1/4 Sec 22 T5S R8E	9/19/2008	Service Replacement	X			1	-	-
1078	392 W Pima Avenue	SW 1/4 Sec 22 T5S R8E	2004	Service Replacement			X	1	-	-
1079	351 W Northern Avenue	SW 1/4 Sec 22 T5S R8E	2009	Service Replacement			X	1	-	-
1080	349 W Northern Avenue	SW 1/4 Sec 22 T5S R8E	2001	Service Replacement			X	1	-	-
1081	350 W Pima Avenue	SW 1/4 Sec 22 T5S R8E	2005	Service Replacement			X	1	-	-
1082	332 W Pima Avenue	SW 1/4 Sec 22 T5S R8E	2008	Service Repair			X	-	-	-
1083	313 W Northern Avenue	SW 1/4 Sec 22 T5S R8E	2005	Service Repair			X	-	-	-
1084	211 N 3rd Street	SW 1/4 Sec 22 T5S R8E	2002	Service Replacement			X	1	-	-
1085	294 W Pima Avenue	SW 1/4 Sec 22 T5S R8E	2000	Service Replacement			X	1	-	-
1086	253 W Northern Avenue	SW 1/4 Sec 22 T5S R8E	2007	Service Repair			X	-	-	-
1087	219 W Northern Avenue	SW 1/4 Sec 22 T5S R8E	2006	Service Repair			X	-	-	-
1088	188 W Pima Avenue	SW 1/4 Sec 22 T5S R8E	2005	Service Replacement			X	1	-	-
1089	130 W Pima Avenue	SW 1/4 Sec 22 T5S R8E	2010	Service Repair			X	-	-	-
1090	124 W Pima Avenue	SW 1/4 Sec 22 T5S R8E	2007	Service Replacement			X	1	-	-
1091	295 N Arizona Boulevard	SW 1/4 Sec 22 T5S R8E	2010	Main Repair			X	-	-	-
1092	454 W Pinkley Avenue	SW 1/4 Sec 22 T5S R8E	2010	Service Replacement			X	1	-	-
1093	441 W Pima Avenue	SW 1/4 Sec 22 T5S R8E	8/20/2009	Service Replacement	X			1	-	Other
1094	420 W Pinkley Avenue	SW 1/4 Sec 22 T5S R8E	2010	Service Replacement			X	1	-	-
1095	411 W Pima Avenue	SW 1/4 Sec 22 T5S R8E	2005	Service Replacement			X	1	-	-
1096	410 W Pinkley Avenue	SW 1/4 Sec 22 T5S R8E	2010	Service Replacement			X	1	-	-
1097	391 W Pima Avenue	SW 1/4 Sec 22 T5S R8E	2001	Service Replacement			X	1	-	-
1098	372 W Pinkley Avenue	SW 1/4 Sec 22 T5S R8E	2002	Service Replacement			X	1	-	-
1099	361 W Pima Avenue	SW 1/4 Sec 22 T5S R8E	2007	Service Replacement			X	1	-	-
1100	346 W Pinkley Avenue	SW 1/4 Sec 22 T5S R8E	2004	Service Replacement			X	1	-	-

LEAK NO.	ADDRESS	SECTION	DATE	TYPE	BLUE STAKE	ONION SKIN	FIELD	NO. OF SVCS.	L.F. OF MAIN	SERVICE MAT'L RETIRED
1101	1300 N Park Avenue	SW 1/4 Sec 20 T6S R6E	1/2005	Main Repair			X	-	-	-
1102	300 W Pinkley Avenue	SW 1/4 Sec 22 T5S R8E	2001	Service Replacement			X	1	-	-
1103	260 N 3rd Street	SW 1/4 Sec 22 T5S R8E	2007	Service Replacement			X	1	-	-
1104	280 W Pinkley Avenue	SW 1/4 Sec 22 T5S R8E	2010	Service Repair			X	-	-	-
1105	250 W Pinkley Avenue	SW 1/4 Sec 22 T5S R8E	2010	Main Repair			X	-	-	-
1106	233 W Pima Avenue	SW 1/4 Sec 22 T5S R8E	2001	Service Replacement			X	1	-	-
1107	234 W Pinkley Avenue	SW 1/4 Sec 22 T5S R8E	2010	Main Repair			X	-	-	-
1108	297 N Main Street	SW 1/4 Sec 22 T5S R8E	2008	Service Replacement			X	1	-	-
1109	143 W Pima Avenue	SW 1/4 Sec 22 T5S R8E	2010	Service Repair			X	-	-	-
1110	140 W Pinkley Avenue	SW 1/4 Sec 22 T5S R8E	2001	Service Replacement			X	1	-	-
1111	122 W Pinkley Avenue	SW 1/4 Sec 22 T5S R8E	2009	Service Repair			X	-	-	-
1112	260 N 1st Street	SW 1/4 Sec 22 T5S R8E	2003	Service Replacement			X	1	-	-
1113	240 N 1st Street	SW 1/4 Sec 22 T5S R8E	2010	Service Repair			X	-	-	-
1114	300 N 1st Street	SW 1/4 Sec 22 T5S R8E	2006	Service Repair			X	-	-	-
1115	201 N 1st Street	SW 1/4 Sec 22 T5S R8E	2008	Service Repair			X	-	-	-
1116	466 W Central Avenue	SW 1/4 Sec 22 T5S R8E	2001	Main Repair			X	-	-	-
1117	438 W Central Avenue	SW 1/4 Sec 22 T5S R8E	2009	Service Repair			X	-	-	-
1118	417 W Pinkley Avenue	SW 1/4 Sec 22 T5S R8E	2000	Service Replacement			X	1	-	-
1119	405 W Pinkley Avenue	SW 1/4 Sec 22 T5S R8E	2009	Service Repair			X	-	-	-
1120	4th Street & Pinkley Avenue	SW 1/4 Sec 22 T5S R8E	9/26/2007	Service Replacement		X		1	-	Plastic
1121	260 W Central Avenue	SW 1/4 Sec 22 T5S R8E	2000	Main Repair			X	-	-	-
1122	232 W Central Avenue	SW 1/4 Sec 22 T5S R8E	2002	Service Repair			X	-	-	-
1123	204 W Central Avenue	SW 1/4 Sec 22 T5S R8E	2004	Service Replacement			X	1	-	-
1124	103 W Pinkley Avenue	SW 1/4 Sec 22 T5S R8E	3/3/2008	Main Repair	X			-	-	-
1125	115 W Central Avenue	SW 1/4 Sec 22 T5S R8E	2009	Service Repair			X	-	-	-
1126	489 W Central Avenue	SW 1/4 Sec 22 T5S R8E	2008	Service Repair			X	-	-	-
1127	185 S Arizona Boulevard	SW 1/4 Sec 22 T5S R8E	2000	Service Replacement			X	1	-	-
1128	469 W Central Avenue	SW 1/4 Sec 22 T5S R8E	2005	Service Repair			X	-	-	-
1129	433 W Central Avenue	SW 1/4 Sec 22 T5S R8E	2007	Service Replacement			X	1	-	-
1130	428 W Roosevelt Avenue	SW 1/4 Sec 22 T5S R8E	2005	Service Repair			X	-	-	-
1131	420 W Roosevelt Avenue	SW 1/4 Sec 22 T5S R8E	2006	Service Replacement			X	1	-	-
1132	403 W Central Avenue	SW 1/4 Sec 22 T5S R8E	2006	Main Repair			X	-	-	-
1133	381 W Central Avenue	SW 1/4 Sec 22 T5S R8E	12/12/2008	Main Repair	X			-	-	-
1134	381 W Central Avenue	SW 1/4 Sec 22 T5S R8E	2005	Service Replacement			X	1	-	-
1135	371 W Central Avenue	SW 1/4 Sec 22 T5S R8E	2006	Service Replacement			X	1	-	-
1136	344 W Roosevelt Avenue	SW 1/4 Sec 22 T5S R8E	2008	Service Repair			X	-	-	-
1137	349 W Central Avenue	SW 1/4 Sec 22 T5S R8E	2008	Service Repair			X	-	-	-
1138	321 W Central Avenue	SW 1/4 Sec 22 T5S R8E	11/4/2008	Service Repair	X			-	-	-
1139	120 S 3rd Street	SW 1/4 Sec 22 T5S R8E	2009	Service Repair			X	-	-	-
1140	310 W Roosevelt Avenue	SW 1/4 Sec 22 T5S R8E	2008	Service Replacement			X	1	-	-
1141	155 S 3rd Street	SW 1/4 Sec 22 T5S R8E	2000	Main Repair			X	-	-	-
1142	299 W Central Avenue	SW 1/4 Sec 22 T5S R8E	2006	Service Replacement			X	1	-	-
1143	297 W Central Avenue	SW 1/4 Sec 22 T5S R8E	2007	Service Replacement			X	1	-	-
1144	229 W Central Avenue	SW 1/4 Sec 22 T5S R8E	2007	Service Replacement			X	1	-	-
1145	203 W Central Avenue	SW 1/4 Sec 22 T5S R8E	2009	Service Repair			X	-	-	-
1146	188 S Main Street	SW 1/4 Sec 22 T5S R8E	2008	Service Repair			X	-	-	-
1147	Central Avenue & 1st Street	SW 1/4 Sec 22 T5S R8E	2000	Service Repair			X	-	-	-
1148	109 S 1st Street	SW 1/4 Sec 22 T5S R8E	2010	Service Repair			X	-	-	-
1149	207 S 1st Street	SW 1/4 Sec 22 T5S R8E	4/25/2007	Service Replacement	X	X		1	-	Other
1150	295 S Arizona Boulevard	SW 1/4 Sec 22 T5S R8E	5/12/2008	Service Replacement	X			1	-	-

LEAK NO.	ADDRESS	SECTION	DATE	TYPE	BLUE STAKE	ONION SKIN	FIELD	NO. OF SVCS.	L.F. OF MAIN	SERVICE MAT'L RETIRED
1151	465 W Roosevelt Avenue	SW 1/4 Sec 22 T5S R8E	2007	Service Replacement			X	1	-	-
1152	452 W Wilson Avenue	SW 1/4 Sec 22 T5S R8E	2002	Service Repair			X	-	-	-
1153	487 W Roosevelt Avenue	SW 1/4 Sec 22 T5S R8E	2003	Service Replacement			X	1	-	-
1154	424 W Wilson Avenue	SW 1/4 Sec 22 T5S R8E	2005	Main Repair			X	-	-	-
1155	431 W Roosevelt Avenue	SW 1/4 Sec 22 T5S R8E	2001	Service Replacement			X	1	-	-
1156	290 S 4th Street	SW 1/4 Sec 22 T5S R8E	2004	Service Replacement			X	1	-	-
1157	290 S 4th Street	SW 1/4 Sec 22 T5S R8E	10/29/2008	Service Replacement	X			1	-	-
1158	W Wilson Avenue & 4th Street	SW 1/4 Sec 22 T5S R8E	7/24/2009	Service Repair	X			-	-	-
1159	290 S 3rd Street	SW 1/4 Sec 22 T5S R8E	12/1/2006	Main Repair	X			-	-	-
1160	270 W Wilson Avenue	SW 1/4 Sec 22 T5S R8E	2001	Main Repair			X	-	-	-
1161	255 W Roosevelt Avenue	SW 1/4 Sec 22 T5S R8E	2007	Service Repair			X	-	-	-
1162	246 W Wilson Avenue	SW 1/4 Sec 22 T5S R8E	2001	Main Repair			X	-	-	-
1163	228 W Wilson Avenue	SW 1/4 Sec 22 T5S R8E	2003	Main Repair			X	-	-	-
1164	220 S Main Street	SW 1/4 Sec 22 T5S R8E	9/29/2008	Service Replacement	X	X		1	-	Copper
1165	230 S Main Street	SW 1/4 Sec 22 T5S R8E	2005	Service Replacement			X	1	-	-
1166	Jack S Main Street	SW 1/4 Sec 22 T5S R8E	2004	Service Replacement			X	1	-	-
1167	143 W Roosevelt Avenue	SW 1/4 Sec 22 T5S R8E	4/29/2010	Service Repair	X			-	-	-
1168	221 S Main Street	SW 1/4 Sec 22 T5S R8E	2007	Service Replacement			X	1	-	-
1169	129 1/2 W Roosevelt Avenue	SW 1/4 Sec 22 T5S R8E	2007	Service Replacement			X	1	-	-
1170	251 S Main Street	SW 1/4 Sec 22 T5S R8E	2000	Service Replacement			X	1	-	-
1171	160 W Wilson Avenue	SW 1/4 Sec 22 T5S R8E	2005	Service Replacement			X	1	-	-
1172	209 S 1st Street	SW 1/4 Sec 22 T5S R8E	2008	Service Repair			X	-	-	-
1173	S 1st Street & W Harding Avenue	SW 1/4 Sec 22 T5S R8E	10/24/2008	Service Replacement	X			1	-	-
1174	305 S Arizona Boulevard	SW 1/4 Sec 22 T5S R8E	2009	Service Repair			X	-	-	-
1175	381 S Arizona Boulevard	SW 1/4 Sec 22 T5S R8E	2004	Service Replacement			X	1	-	-
1176	381 S Arizona Boulevard	SW 1/4 Sec 22 T5S R8E	2003	Main Repair			X	-	-	-
1177	426 S Harding Avenue	SW 1/4 Sec 22 T5S R8E	2001	Service Replacement			X	1	-	-
1178	401 W Wilson Avenue	SW 1/4 Sec 22 T5S R8E	2007	Service Replacement			X	1	-	-
1179	402 W Harding Avenue	SW 1/4 Sec 22 T5S R8E	2004	Service Replacement			X	1	-	-
1180	381 W Wilson Avenue	SW 1/4 Sec 22 T5S R8E	2007	Main Repair			X	-	-	-
1181	368 W Harding Avenue	SW 1/4 Sec 22 T5S R8E	2007	Service Replacement			X	1	-	-
1182	360 W Harding Avenue	SW 1/4 Sec 22 T5S R8E	2004	Service Replacement			X	1	-	-
1183	351 W Wilson Avenue	SW 1/4 Sec 22 T5S R8E	2006	Service Replacement			X	1	-	-
1184	204 E Thomas Street	SW 1/4 Sec 17 T6S R6E	11/3/2008	Service Replacement			X	1	-	-
1185	333 W Wilson Avenue	SW 1/4 Sec 22 T5S R8E	7/20/2006	Service Replacement	X			1	-	-
1186	300 W Harding Avenue	SW 1/4 Sec 22 T5S R8E	2006	Service Replacement			X	1	-	-
1187	390 S 3rd Street	SW 1/4 Sec 22 T5S R8E	9/18/2006	Service Replacement	X			1	-	-
1188	280 W Harding Avenue	SW 1/4 Sec 22 T5S R8E	2004	Service Replacement			X	1	-	-
1189	253 W Wilson Avenue	SW 1/4 Sec 22 T5S R8E	2005	Service Replacement			X	1	-	-
1190	245 W Wilson Avenue	SW 1/4 Sec 22 T5S R8E	2003	Service Repair			X	-	-	-
1191	308 S Main Street	SW 1/4 Sec 22 T5S R8E	2010	Service Repair			X	-	-	-
1192	340 S Main Street	SW 1/4 Sec 22 T5S R8E	2009	Service Repair			X	-	-	-
1193	392 S Main Street	SW 1/4 Sec 22 T5S R8E	9/28/2006	Service Replacement	X	X		1	-	Copper
1194	316 S Main Street	SW 1/4 Sec 22 T5S R8E	2006	Service Replacement			X	1	-	-
1195	345 S Main Street	SW 1/4 Sec 22 T5S R8E	2006	Service Replacement			X	1	-	-
1196	333 S Main Street	SW 1/4 Sec 22 T5S R8E	2005	Main Repair			X	-	-	-
1197	127 W Wilson Avenue	SW 1/4 Sec 22 T5S R8E	2005	Service Replacement			X	1	-	-
1198	120 W Harding Avenue	SW 1/4 Sec 22 T5S R8E	2005	Service Replacement			X	1	-	-
1199	355 S 1st Street	SW 1/4 Sec 22 T5S R8E	2004	Main Repair			X	-	-	-
1200	355 S 1st Street	SW 1/4 Sec 22 T5S R8E	2006	Main Repair			X	-	-	-

LEAK NO.	ADDRESS	SECTION	DATE	TYPE	BLUE STAKE	ONION SKIN	FIELD	NO. OF SVCS.	L.F. OF MAIN	SERVICE MAT'L RETIRED
1201	355 S 1st Street	SW 1/4 Sec 22 T5S R8E	2010	Service Repair			X	-	-	-
1202	481 W Harding Avenue	SW 1/4 Sec 22 T5S R8E	2006	Service Repair			X	-	-	-
1203	474 S Arizona Boulevard	SW 1/4 Sec 22 T5S R8E	5/18/2009	Main Repair	X			-	-	-
1204	1219 N Park Avenue	SW 1/4 Sec 20 T6S R6E	6/2007	Main Repair			X	-	-	-
1205	431 W Harding Avenue	SW 1/4 Sec 22 T5S R8E	4/30/2007	Main Repair	X			-	-	-
1206	410 W Coolidge Avenue	SW 1/4 Sec 22 T5S R8E	7/7/2010	Service Replacement		X		1	-	Plastic
1207	415 W Harding Avenue	SW 1/4 Sec 22 T5S R8E	7/6/2010	Service Replacement	X			1	-	Other
1208	451 S 3rd Street	SW 1/4 Sec 22 T5S R8E	2002	Service Replacement			X	1	-	-
1209	371 W Harding Avenue	SW 1/4 Sec 22 T5S R8E	2008	Main Repair			X	-	-	-
1210	351 & 359 W Harding Avenue	SW 1/4 Sec 22 T5S R8E	9/22/2006	Service Replacement	X			1	-	-
1211	337 W Harding Avenue	SW 1/4 Sec 22 T5S R8E	2009	Service Repair			X	-	-	-
1212	404 S 3rd Street	SW 1/4 Sec 22 T5S R8E	2010	Service Repair			X	-	-	-
1213	1305 N Center Avenue	SW 1/4 Sec 20 T6S R6E	1/2006	Service Replacement			X	1	-	-
1214	241 W Harding Avenue	SW 1/4 Sec 22 T5S R8E	2000	Service Replacement			X	1	-	-
1215	231 W Harding Avenue	SW 1/4 Sec 22 T5S R8E	2008	Service Repair			X	-	-	-
1216	231 W Harding Avenue	SW 1/4 Sec 22 T5S R8E	2009	Main Repair			X	-	-	-
1217	236 W Coolidge Avenue	SW 1/4 Sec 22 T5S R8E	2000	Main Repair			X	-	-	-
1218	428 S Main Street	SW 1/4 Sec 22 T5S R8E	2007	Service Replacement			X	1	-	-
1219	428 S Main Street	SW 1/4 Sec 22 T5S R8E	5/16/2008	Service Replacement	X			1	-	-
1220	429 S Main Street	SW 1/4 Sec 22 T5S R8E	2002	Service Replacement			X	1	-	-
1221	425 S Main Street	SW 1/4 Sec 22 T5S R8E	2003	Service Replacement			X	1	-	-
1222	161 W Harding Avenue	SW 1/4 Sec 22 T5S R8E	2005	Main Repair			X	-	-	-
1223	131 W Harding Avenue	SW 1/4 Sec 22 T5S R8E	2003	Service Replacement			X	1	-	-
1224	120 W Coolidge Avenue	SW 1/4 Sec 22 T5S R8E	2007	Service Replacement			X	1	-	-
1225	Burke Avenue Lot 157B	SE 1/4 Sec 22 T5S R8E	3/20/2009	Service Replacement	X			1	-	Other
1226	242 S Washington Street	SE 1/4 Sec 22 T5S R8E	1/8/2010	Service Replacement	X			1	-	Other
1227	219 S Washington Street	SE 1/4 Sec 22 T5S R8E	6/28/2008	Service Replacement	X			1	-	-
1228	330 E Dirkley Avenue	SE 1/4 Sec 22 T5S R8E	8/21/2007	Service Replacement	X			1	-	-
1229	367 & 383 E Dirkley Avenue	SE 1/4 Sec 22 T5S R8E	12/12/2006	Service Replacement	X			1	-	-
1230	376 S Washington Street	SE 1/4 Sec 22 T5S R8E	9/15/2009	Main Repair	X			-	-	-
1231	413 S Washington Street	SE 1/4 Sec 22 T5S R8E	12/23/2008	Main Repair	X			-	-	-
1232	1333 E Arbor Avenue	SW 1/4 Sec 20 T6S R6E	2002	Main Repair			X	-	-	-
1233	375 W Coolidge Avenue	NW 1/4 Sec 27 T5S R8E	7/15/2009	Main Repair	X			-	-	-
1234	453 W Coolidge Avenue	NW 1/4 Sec 27 T5S R8E	6/27/2008	Service Replacement	X	X		1	-	Copper
1235	453 W Coolidge Avenue	NW 1/4 Sec 27 T5S R8E	2000	Service Replacement			X	1	-	-
1236	348 W Lincoln Avenue	NW 1/4 Sec 27 T5S R8E	5/3/2010	Service Repair	X			-	-	-
1237	413 W Coolidge Avenue	NW 1/4 Sec 27 T5S R8E	4/15/2010	Main Repair	X			-	-	-
1238	401 W Coolidge Avenue	NW 1/4 Sec 27 T5S R8E	12/18/2008	Main Repair	X			-	-	-
1239	393 W Coolidge Avenue	NW 1/4 Sec 27 T5S R8E	2009	Main Repair			X	-	-	-
1240	300 Block of W Coolidge Avenue	NW 1/4 Sec 27 T5S R8E	2009	Main Repair			X	-	-	-
1241	375 W Coolidge Avenue	NW 1/4 Sec 27 T5S R8E	2010	Main Repair			X	-	-	-
1242	367 W Coolidge Avenue	NW 1/4 Sec 27 T5S R8E	4/22/2010	Main Repair	X			-	-	-
1243	321 W Coolidge Avenue	NW 1/4 Sec 27 T5S R8E	2009	Service Replacement			X	1	-	-
1244	318½ W Lincoln Avenue	NW 1/4 Sec 27 T5S R8E	2008	Service Repair			X	-	-	-
1245	300 Block of W Coolidge Avenue	NW 1/4 Sec 27 T5S R8E	3/5/2010	Main Repair	X			-	-	-
1246	339 W Coolidge Avenue	NW 1/4 Sec 27 T5S R8E	3/5/2010	Main Repair	X			-	-	-
1247	300 Block of W Coolidge Avenue	NW 1/4 Sec 27 T5S R8E	3/9/2010	Main Repair	X			-	-	-
1248	300 Block of W Coolidge Avenue	NW 1/4 Sec 27 T5S R8E	3/15/2010	Main Repair	X			-	-	-
1249	312½ W Lincoln Avenue	NW 1/4 Sec 27 T5S R8E	2007	Service Repair			X	-	-	-
1250	265 W Coolidge Avenue	NW 1/4 Sec 27 T5S R8E	2008	Main Repair			X	-	-	-

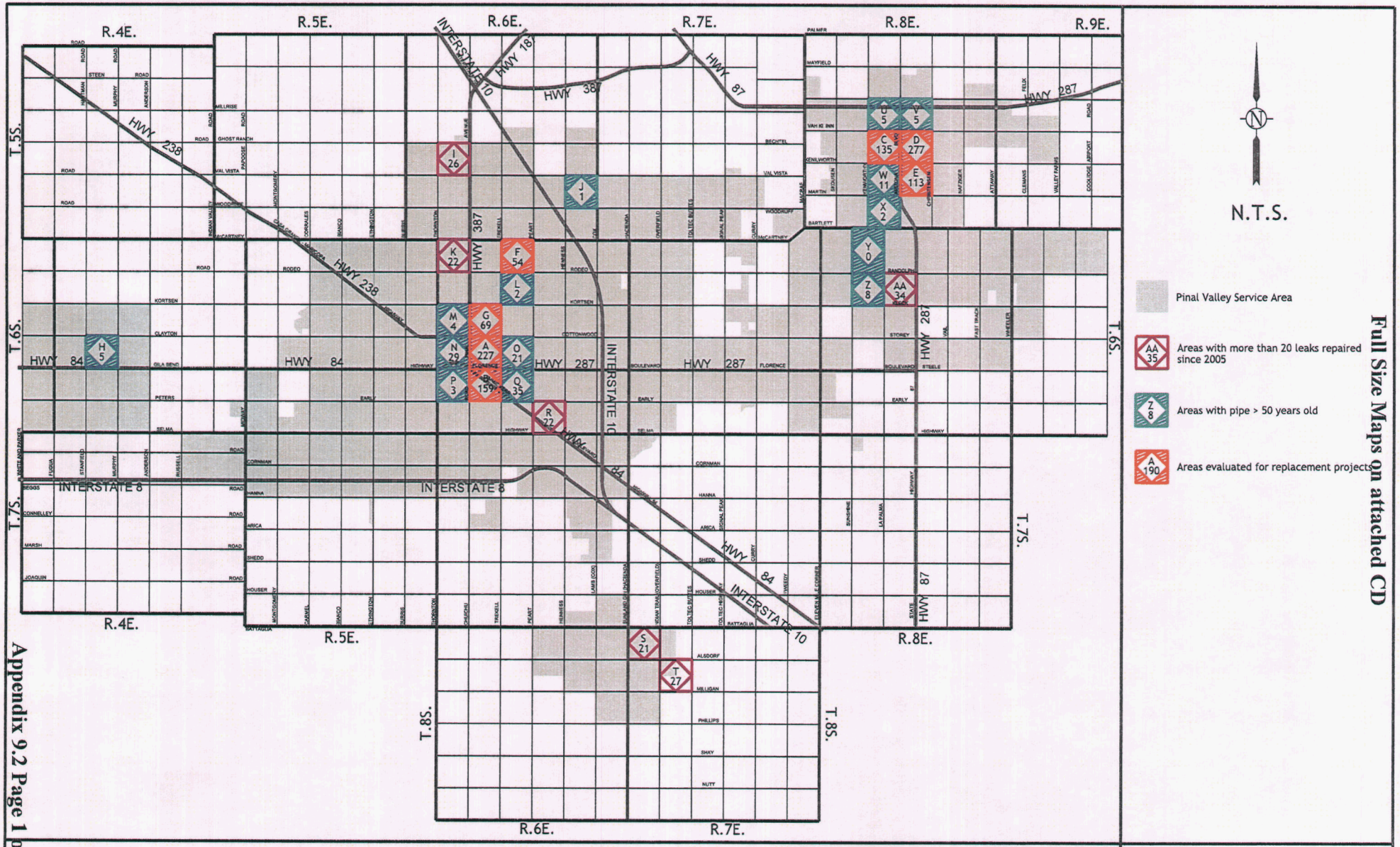
LEAK NO.	ADDRESS	SECTION	DATE	TYPE	BLUE STAKE	ONION SKIN	FIELD	NO. OF SVCS.	L.F. OF MAIN	SERVICE MAT'L RETIRED
1251	225 W Coolidge Avenue	NW 1/4 Sec 27 T5S R8E	6/14/2006	Service Replacement	X			1	-	-
1252	141 W Coolidge Avenue	NW 1/4 Sec 27 T5S R8E	2/13/2008	Service Replacement		X		1	-	Plastic
1253	151 W Coolidge Avenue	NW 1/4 Sec 27 T5S R8E	12/10/2007	Service Replacement	X	X		1	-	Plastic
1254	144 W Lincoln Avenue	NW 1/4 Sec 27 T5S R8E	2/8/2008	Service Replacement	X			1	-	-
1255	737 S Picacho Street	NE 1/4 Sec 27 T5S R8E	2002	Main Repair			X	-	-	-
1256	W Lincoln Avenue & S Arizona Boulevard	NW 1/4 Sec 27 T5S R8E	6/14/2010	Main Repair	X			-	-	-
1257	643 S Arizona Boulevard	NW 1/4 Sec 27 T5S R8E	2004	Main Repair			X	-	-	-
1258	457 W Lincoln Avenue	NW 1/4 Sec 27 T5S R8E	2007	Main Repair			X	-	-	-
1259	444 W Seagoe Avenue	NW 1/4 Sec 27 T5S R8E	2004	Service Replacement			X	1	-	-
1260	441 W Lincoln Avenue	NW 1/4 Sec 27 T5S R8E	2010	Service Repair			X	-	-	-
1261	408 W Seagoe Avenue	NW 1/4 Sec 27 T5S R8E	2010	Service Repair			X	-	-	-
1262	411 W Lincoln Avenue	NW 1/4 Sec 27 T5S R8E	5/3/2010	Service Repair	X			-	-	-
1263	663 S 4th Street	NW 1/4 Sec 27 T5S R8E	2007	Service Replacement			X	1	-	-
1264	376 W Seagoe Avenue	NW 1/4 Sec 27 T5S R8E	2010	Service Replacement			X	1	-	-
1265	365 W Lincoln Avenue	NW 1/4 Sec 27 T5S R8E	2010	Service Repair			X	-	-	-
1266	357 W Lincoln Avenue	NW 1/4 Sec 27 T5S R8E	2005	Main Repair			X	-	-	-
1267	306 W Seagoe Avenue	NW 1/4 Sec 27 T5S R8E	1/29/2007	Service Replacement	X	X		2	-	Plastic
1268	280 W Seagoe Avenue	NW 1/4 Sec 27 T5S R8E	2010	Service Repair			X	-	-	-
1269	660 S Main Street	NW 1/4 Sec 27 T5S R8E	8/16/2010	Service Replacement	X			1	-	-
1270	145 W Lincoln Avenue	NW 1/4 Sec 27 T5S R8E	2009	Service Replacement			X	1	-	-
1271	150 W Seagoe Avenue	NW 1/4 Sec 27 T5S R8E	9/13/2006	Service Replacement	X	X		1	-	Plastic
1272	S 1st Street & E Lincoln Avenue	NW 1/4 Sec 27 T5S R8E	4/1/2009	Main Repair	X			-	-	-
1273	104 W Seagoe Avenue	NW 1/4 Sec 27 T5S R8E	2010	Service Repair			X	-	-	-
1274	50 W Seagoe Avenue	NW 1/4 Sec 27 T5S R8E	12/1/2006	Service Replacement	X			1	-	-
1275	924 N Gilbert Avenue	SE 1/4 Sec 20 T6S R6E	10/7/2009	Service Repair	X			-	-	-
1276	716 S Arizona Boulevard	NW 1/4 Sec 27 T5S R8E	1/4/2008	Service Replacement	X	X		1	-	Plastic
1277	1121 2nd Street	NW 1/4 Sec 28 T6S R6E	2002	Service Replacement			X	1	-	-
1278	801 S Arizona Boulevard	NW 1/4 Sec 27 T5S R8E	9/26/2007	Service Repair	X			-	-	-
1279	400 Block of W Elm Avenue	NW 1/4 Sec 27 T5S R8E	9/22/2009	Main Repair	X			-	-	-
1280	464 W Elm Avenue	NW 1/4 Sec 27 T5S R8E	9/25/2009	Main Repair	X			-	-	-
1281	400 Block of W Elm Avenue	NW 1/4 Sec 27 T5S R8E	9/29/2009	Main Repair	X			-	-	-
1282	438 W Elm Avenue	NW 1/4 Sec 27 T5S R8E	2006	Main Repair			X	-	-	-
1283	431 W Seagoe Avenue	NW 1/4 Sec 27 T5S R8E	2006	Main Repair			X	-	-	-
1284	447 W Seagoe Avenue	NW 1/4 Sec 27 T5S R8E	2/23/2006	Service Replacement	X			1	-	-
1285	401 W Seagoe Avenue	NW 1/4 Sec 27 T5S R8E	2005	Service Repair			X	-	-	-
1286	775 S 4th Street	NW 1/4 Sec 27 T5S R8E	2008	Service Repair			X	-	-	-
1287	361 W Seagoe Avenue	NW 1/4 Sec 27 T5S R8E	2009	Service Repair			X	-	-	-
1288	309-315 W Seagoe Avenue	NW 1/4 Sec 27 T5S R8E	2007	Service Replacement			X	1	-	-
1289	760 S 3rd Street	NW 1/4 Sec 27 T5S R8E	2007	Service Repair			X	-	-	-
1290	229 W Seagoe Avenue	NW 1/4 Sec 27 T5S R8E	2007	Service Replacement			X	1	-	-
1291	753 S Main Street	NW 1/4 Sec 27 T5S R8E	2006	Main Repair			X	-	-	-
1292	753 S Main Street	NW 1/4 Sec 27 T5S R8E	2008	Service Repair			X	-	-	-
1293	146½ W Elm Avenue	NW 1/4 Sec 27 T5S R8E	2008	Service Replacement			X	1	-	-
1294	139 W Seagoe Avenue	NW 1/4 Sec 27 T5S R8E	2006	Service Repair			X	-	-	-
1295	137 W Seagoe Avenue	NW 1/4 Sec 27 T5S R8E	9/19/2007	Service Replacement	X			1	-	-
1296	110 W Elm Avenue	NW 1/4 Sec 27 T5S R8E	4/20/2010	Service Repair	X			-	-	-
1297	781 S 1st Street	NW 1/4 Sec 27 T5S R8E	2006	Main Repair			X	-	-	-
1298	290 W Palo Verde Avenue	NW 1/4 Sec 27 T5S R8E	2004	Service Replacement			X	1	-	-
1299	280 W Palo Verde Avenue	NW 1/4 Sec 27 T5S R8E	2001	Service Repair			X	-	-	-
1300	251½ W Elm Avenue	NW 1/4 Sec 27 T5S R8E	2000	Service Repair			X	-	-	-

LEAK NO.	ADDRESS	SECTION	DATE	TYPE	BLUE STAKE	ONION SKIN	FIELD	NO. OF SVCS.	L.F. OF MAIN	SERVICE MAT'L RETIRED
1301	752 S Main Street	NW 1/4 Sec 27 T5S R8E	9/29/2008	Main Replacement	X			-	13	-
1302	226½ N Palo Verde Avenue	NW 1/4 Sec 27 T5S R8E	2005	Service Repair			X	-	-	-
1303	752 S Main Street	NW 1/4 Sec 27 T5S R8E	6/25/2009	Service Replacement	X			1	-	Other
1304	118 W Palo Verde Avenue	NW 1/4 Sec 27 T5S R8E	2010	Service Repair			X	-	-	-
1305	824 S 1st Street	NW 1/4 Sec 27 T5S R8E	2010	Main Repair			X	-	-	-
1306	803 S 1st Street	NW 1/4 Sec 27 T5S R8E	2001	Service Repair			X	-	-	-
1307	699 S Picacho Street	NE 1/4 Sec 27 T5S R8E	2007	Service Repair			X	-	-	-
1308	905 S Palo Verde Avenue	NW 1/4 Sec 27 T5S R8E	2000	Service Replacement			X	1	-	-
1309	1048 S 4th Street	NW 1/4 Sec 27 T5S R8E	12/1/2006	Service Replacement	X			1	-	-
1310	1041 S 4th Street	SW 1/4 Sec 27 T5S R8E	5/6/2009	Service Replacement	X			1	-	Other
1311	1047 S 4th Street	NW 1/4 Sec 27 T5S R8E	8/13/2008	Service Replacement	X	X		1	-	Plastic
1312	1055 S 4th Street	NW 1/4 Sec 27 T5S R8E	2010	Service Repair			X	-	-	-
1313	1026 S 3rd Street	NW 1/4 Sec 27 T5S R8E	2006	Service Replacement			X	1	-	-
1314	1080 S 3rd Street	NW 1/4 Sec 27 T5S R8E	2005	Service Replacement			X	1	-	-
1315	1054 S 3rd Street	NW 1/4 Sec 27 T5S R8E	2002	Service Replacement			X	2	-	-
1316	1053 S 3rd Street	NW 1/4 Sec 27 T5S R8E	2005	Service Repair			X	-	-	-
1317	1049 S 3rd Street	NW 1/4 Sec 27 T5S R8E	2005	Service Replacement			X	1	-	-
1318	1025 S 3rd Street	NW 1/4 Sec 27 T5S R8E	2004	Service Repair			X	-	-	-
1319	1023 S 3rd Street	NW 1/4 Sec 27 T5S R8E	2004	Service Repair			X	-	-	-
1320	1007 S Main Street	NW 1/4 Sec 27 T5S R8E	3/6/2008	Service Replacement	X	X		1	-	Copper
1321	1008 S Main Street	NW 1/4 Sec 27 T5S R8E	12/16/2009	Service Repair	X			-	-	-
1322	1035 S Main Street	NW 1/4 Sec 27 T5S R8E	2004	Service Replacement			X	1	-	-
1323	1056 S Main Street	NW 1/4 Sec 27 T5S R8E	2003	Service Repair			X	-	-	-
1324	1055 S Main Street	NW 1/4 Sec 27 T5S R8E	2006	Service Repair			X	-	-	-
1325	930 S Picacho Street	NE 1/4 Sec 27 T5S R8E	2001	Service Replacement			X	1	-	-
1326	950 S Picacho Street	NE 1/4 Sec 27 T5S R8E	2001	Service Replacement			X	1	-	-
1327	1016 S Picacho Street	NE 1/4 Sec 27 T5S R8E	2007	Service Repair			X	-	-	-
1328	540 E Lincoln Avenue	NE 1/4 Sec 27 T5S R8E	2006	Service Replacement			X	1	-	-
1329	502 S Jefferson Street	NE 1/4 Sec 27 T5S R8E	2004	Service Replacement			X	1	-	-
1330	555 E Lincoln Avenue	NE 1/4 Sec 27 T5S R8E	2000	Service Replacement			X	1	-	-
1331	515 E Lincoln Avenue	NE 1/4 Sec 27 T5S R8E	2007	Service Replacement			X	1	-	-
1332	503 E Lincoln Avenue	NE 1/4 Sec 27 T5S R8E	2004	Service Replacement			X	1	-	-
1333	521 E Lincoln Avenue	NE 1/4 Sec 27 T5S R8E	2004	Service Replacement			X	1	-	-
1334	705 S Jefferson Street	NE 1/4 Sec 27 T5S R8E	2006	Service Repair			X	-	-	-
1335	696 S Jefferson Street	NE 1/4 Sec 27 T5S R8E	2007	Service Replacement			X	1	-	-
1336	780 S Jefferson Street	NE 1/4 Sec 27 T5S R8E	2007	Service Replacement			X	1	-	-
1337	788 S Jefferson Street	NE 1/4 Sec 27 T5S R8E	2007	Service Replacement			X	1	-	-
1338	9896 N Christensen Road	NE 1/4 Sec 27 T5S R8E	2006	Service Replacement			X	1	-	-
1339	South End of Jefferson Street	NE 1/4 Sec 27 T5S R8E	2001	Service Replacement			X	1	-	-
1340	493 W Sunset Avenue	SW 1/4 Sec 27 T5S R8E	1/4/2008	Service Replacement	X	X		1	-	Other
1341	409/437 W Spruell Avenue	SW 1/4 Sec 27 T5S R8E	10/23/2007	Service Replacement		X		1	-	Plastic
1342	417 W Spruell Avenue	SW 1/4 Sec 27 T5S R8E	10/13/2006	Service Replacement		X		1	-	Plastic
1343	1101 W Coolidge Avenue	NW 1/4 Sec 28 T5S R8E	10/30/2006	Main Repair	X			-	-	-
1344	515 & 525 S Amolds Way	NE 1/4 Sec 28 T5S R8E	6/9/2006	Service Replacement	X	X		1	-	Plastic
1345	618 W Sunset Avenue	SE 1/4 Sec 28 T5S R8E	8/20/2008	Service Replacement		X		1	-	Plastic
1346	605 W Sunset Avenue	SE 1/4 Sec 28 T5S R8E	8/19/2008	Service Repair	X			-	-	-
1347	W Taylor Avenue & 9th Street	SE 1/4 Sec 28 T5S R8E	9/30/2009	Service Replacement	X			1	-	Other
1348	N 9th Street & W Taylor Avenue	SE 1/4 Sec 28 T5S R8E	6/11/2009	Service Repair	X			-	-	-
1349	W Denney Avenue & S 9th Street	SE 1/4 Sec 28 T5S R8E	8/11/2009	Main Replacement	X			-	-	-
1350	810 W Taylor Avenue	SE 1/4 Sec 28 T5S R8E	4/13/2010	Main Repair	X			-	-	-

LEAK NO.	ADDRESS	SECTION	DATE	TYPE	BLUE STAKE	ONION SKIN	FIELD	NO. OF SVCS.	L.F. OF MAIN	SERVICE MAT'L RETIRED
1351	735 W Dewey Avenue	SE 1/4 Sec 28 T5S R8E	8/21/2007	Service Repair	X			-	-	-
1352	720 W Patton Avenue	SE 1/4 Sec 28 T5S R8E	8/19/2008	Service Replacement	X	X		1	-	Plastic
1353	550 W Taylor Avenue	SE 1/4 Sec 28 T5S R8E	2/1/2006	Service Replacement	X			1	-	Other
1354	1301 W Coolidge Avenue	NW 1/4 Sec 29 T5S R8E	1/24/2007	Service Replacement		X		1	-	-
1355	919 E Arizona Street	SW 1/4 Sec 29 T5S R8E	4/30/2007	Service Replacement	X			1	-	-
1356	9th Street & Martin Road	NE 1/4 Sec 33 T5S R8E	8/6/2009	Main Replacement	X			-	-	-
1357	2309 E Randolph Road	NW 1/4 Sec 8 T6S R8E	1/6/2009	Service Replacement	X			1	-	Other
1358	East Randolph Road & Sierra Road	NW 1/4 Sec 8 T6S R8E	6/17/2008	Main Repair	X			-	-	-
1359	4775 N Bonanza Drive	NE 1/4 Sec 8 T6S R8E	9/3/2006	Service Replacement		X		1	-	Plastic
1360	2783 E Randolph Road	NE 1/4 Sec 8 T6S R8E	11/15/2006	Service Replacement	X	X		1	-	Plastic
1361	2903 E Bonita Drive	NE 1/4 Sec 8 T6S R8E	9/27/2007	Service Replacement		X		1	-	Plastic
1362	2903 E Bonita Drive	NE 1/4 Sec 8 T6S R8E	9/25/2007	Service Repair	X			-	-	-
1363	2963-2983 E Ocotillo Drive	NE 1/4 Sec 8 T6S R8E	10/2/2009	Main Repair	X			-	-	-
1364	N La Palma Road & E Turquoise Trail	NE 1/4 Sec 8 T6S R8E	1/25/2006	Main Repair	X			-	-	-
1365	4352 E Turquoise Trail	NE 1/4 Sec 9 T6S R8E	1996	Main Repair			X	-	-	-
1366	4352 E Turquoise Trail	NE 1/4 Sec 9 T6S R8E	2006	Service Replacement			X	1	-	-
1367	4305 N Hudson Road	NE 1/4 Sec 9 T6S R8E	1999	Service Replacement			X	1	-	-
1368	4342 E Turquoise Trail	NE 1/4 Sec 9 T6S R8E	1997	Service Replacement			X	1	-	-
1369	4248 N Highway 87	NE 1/4 Sec 9 T6S R8E	8/7/2007	Main Repair	X			-	-	-
1370	4248 N Highway 87/Shop	NE 1/4 Sec 9 T6S R8E	1999	Service Replacement			X	1	-	-
1371	4248 N Highway 87/Shop	NE 1/4 Sec 9 T6S R8E	2000	Service Replacement			X	1	-	-
1372	4228 N Highway 87	NE 1/4 Sec 9 T6S R8E	9/20/2007	Main Repair	X			-	-	-
1373	4725 E Tucker Street	NE 1/4 Sec 9 T6S R8E	1998	Service Replacement			X	1	-	-
1374	4228 N Highway 87/Office	NE 1/4 Sec 9 T6S R8E	2008	Service Repair			X	-	-	-
1375	N Bateman Street Lots 1 & 3	NE 1/4 Sec 9 T6S R8E	2008	Service Repair			X	-	-	-
1376	Hudson Road & Bateman Street	NE 1/4 Sec 9 T6S R8E	10/16/2009	Main Replacement	X			-	-	-
1377	4661 E Bateman Street	NE 1/4 Sec 9 T6S R8E	1997	Service Replacement			X	1	-	-
1378	Hudson Road & Bateman Street	NE 1/4 Sec 9 T6S R8E	10/19/2009	Main Replacement	X			-	-	-
1379	4605 E Bateman Street	NE 1/4 Sec 9 T6S R8E	1998	Service Replacement			X	1	-	-
1380	4048 N Hudson Road	NE 1/4 Sec 9 T6S R8E	1996	Service Replacement			X	1	-	-
1381	4030 N Highway 87	NE 1/4 Sec 9 T6S R8E	2007	Main Repair			X	-	-	-
1382	4042 N Hudson Road	NE 1/4 Sec 9 T6S R8E	2000	Service Repair			X	-	-	-
1383	Bateman Street & Hudson Road	NE 1/4 Sec 9 T6S R8E	2008	Service Repair			X	-	-	-
1384	Bateman Street & Hudson Road	NE 1/4 Sec 9 T6S R8E	2007	Main Repair			X	-	-	-
1385	4748 E Carmichael Street	NE 1/4 Sec 9 T6S R8E	2005	Service Replacement			X	1	-	-
1386	4748 E Carmichael Street	NE 1/4 Sec 9 T6S R8E	12/11/2006	Main Repair	X			-	-	-
1387	4086 N Highway 87	NE 1/4 Sec 9 T6S R8E	2008	Service Replacement			X	1	-	-
1388	4748 E Carmichael Street	NE 1/4 Sec 9 T6S R8E	1/4/2007	Main Repair	X			-	-	-
1389	4030 N Highway 87	NE 1/4 Sec 9 T6S R8E	2007	Service Replacement			X	1	-	-
1390	4086 N Highway 87	NE 1/4 Sec 9 T6S R8E	2007	Main Repair			X	-	-	-
1391	E Carmichael Street Lot 17	NE 1/4 Sec 9 T6S R8E	1998	Service Replacement			X	1	-	-
1392	4730 E Carmichael Street	NE 1/4 Sec 9 T6S R8E	2001	Service Repair			X	-	-	-
1393	4030 N Highway 87	NE 1/4 Sec 9 T6S R8E	2000	Service Replacement			X	1	-	-
1394	4716 E Carmichael Street	NE 1/4 Sec 9 T6S R8E	2000	Service Repair			X	-	-	-
1395	4700 Block of E Carmichael Street	NE 1/4 Sec 9 T6S R8E	12/11/2006	Main Repair	X			-	-	-
1396	4737 E Bateman Street	NE 1/4 Sec 9 T6S R8E	2007	Main Repair			X	-	-	-
1397	4716 E Carmichael Street	NE 1/4 Sec 9 T6S R8E	1998	Main Repair			X	-	-	-
1398	4716 E Carmichael Street	NE 1/4 Sec 9 T6S R8E	2003	Service Repair			X	-	-	-
1399	King Street & Bateman Street	NW 1/4 Sec 10 T6S R8E	11/7/2008	Main Replacement	X			-	18	-
1400	Bateman Street & N Hudson Road	NW 1/4 Sec 10 T6S R8E	3/4/2009	Main Repair	X			-	-	-

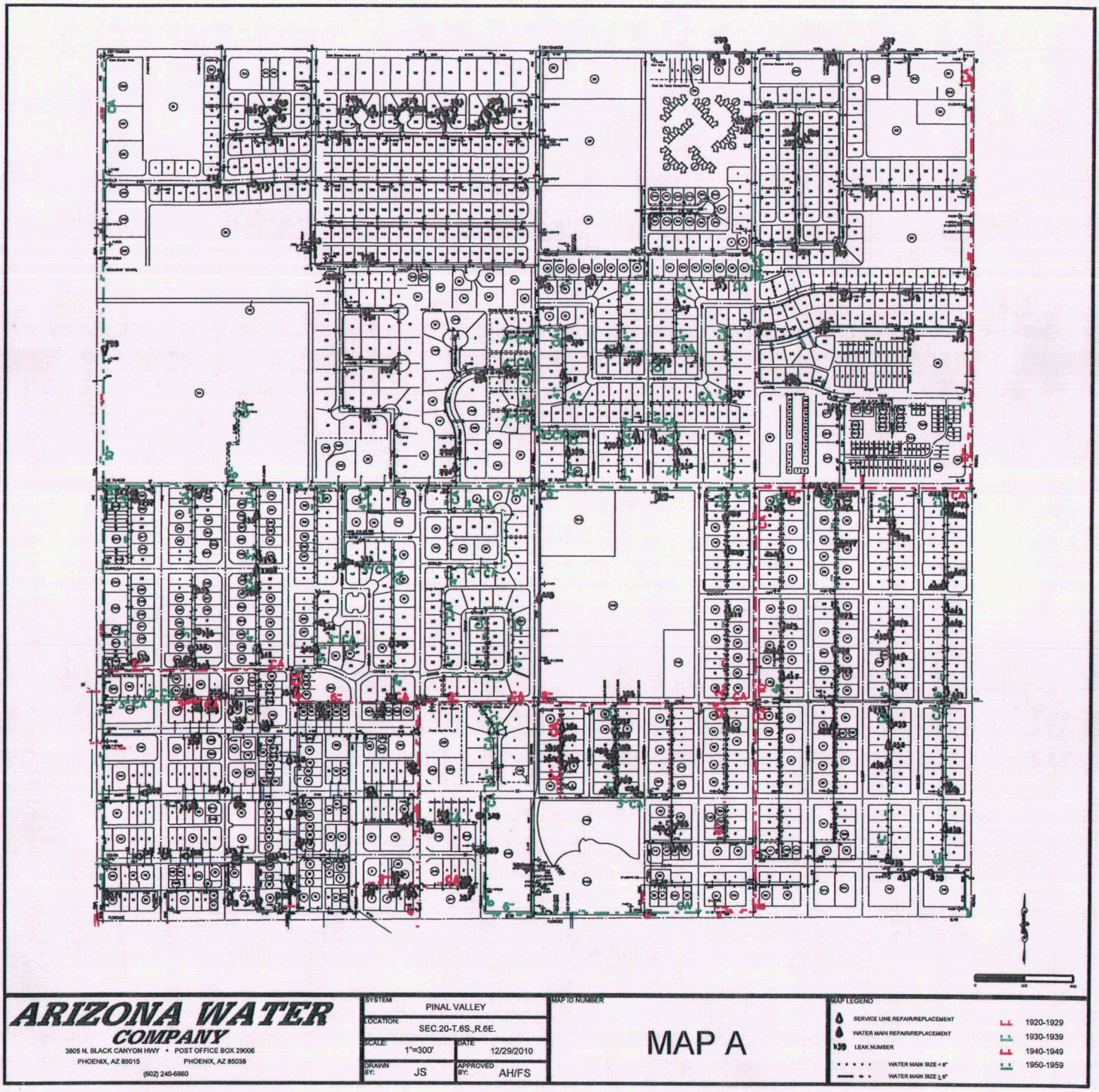
LEAK NO.	ADDRESS	SECTION	DATE	TYPE	BLUE STAKE	ONION SKIN	FIELD	NO. OF SVCS.	L.F. OF MAIN	SERVICE MAT'L RETIRED
1401	King Street & Bateman Street	NW 1/4 Sec 10 T6S R8E	11/7/2008	Main Replacement	X			-	18	-
1402	King Street & Bateman Street	NW 1/4 Sec 10 T6S R8E	11/14/2008	Main Replacement	X			-	18	-
1403	4077 N Highway 87	NE 1/4 Sec 9 T6S R8E	2001	Main Repair			X	-	-	-
1404	3685 N Highway 87	SW 1/4 Sec 10 T6S R8E	3/1/2007	Service Replacement	X	X		1	-	Plastic
1405	10576 E Graythorne Street	SW 1/4 Sec 20 T5S R9E	12/1/2006	Service Repair	X			-	-	-
1406	11877 Moore Road	NW 1/4 Sec 20 T5S R9E	9/26/2008	Service Repair	X			-	-	-
1407	11983 Moore Road	NW 1/4 Sec 20 T5S R8E	8/14/2009	Main Repair	X			-	-	-
1408	11983 Moore Road	NW 1/4 Sec 20 T5S R9E	6/30/2009	Main Repair	X			-	-	-
1409	Moore Road & Vah Ki Inn Road	SW 1/4 Sec 17 T5S R9E	8/31/2009	Main Repair	X			-	-	-
1410	1021 E Coolidge Avenue	SE 1/4 SEC 20 T6S R6E	6/2009	Service Replacement			X	1	-	-
1411	SW Corner Vah Ki Inn Road & McGee Road	SW 1/4 Sec 17 T5S R9E	5/15/2009	Service Repair	X			-	-	-
1412	11133 E Vah Ki Inn Road	SW 1/4 Sec 17 T5S R9E	10/2/2009	Main Repair	X			-	-	-
1413	McGee Road Lot 72A	SW 1/4 Sec 17 T5S R9E	7/29/2009	Main Repair	X			-	-	-
1414	Bartlett Road & 9th Street	SE 1/4 Sec 33 T5S R8E	2/23/2006	Service Replacement	X			1	-	-
1415	670 W Pima Avenue	SE 1/4 Sec 21 T5S R8E	11/8/2007	Main Replacement	X	X		-	27	-
1416	330 W Byrd Avenue	NW 1/4 Sec 22 T5S R8E	4/28/2008	Service Replacement	X			1	-	-
1417	595 W Kenworthy Avenue	NW 1/4 Sec 21 T5S R8E	2002	Service Repair			X	-	-	-
1418	800 N Northern Avenue (School)	NW 1/4 Sec 21 T5S R8E	1999	Main Repair			X	-	-	-
1419	458 W Palo Verde Avenue	NW 1/4 Sec 27 T5S R8E	2004	Service Repair			X	-	-	-
1420	454 W Palo Verde Avenue	NW 1/4 Sec 27 T5S R8E	2004	Service Repair			X	-	-	-
1421	450 W Palo Verde Avenue	NW 1/4 Sec 27 T5S R8E	2005	Service Repair			X	-	-	-
1422	Hess Avenue Lot 21	NW 1/4 Sec 22 T5S R8E	2005	Service Replacement			X	1	-	-
1423	Hess Avenue Lot 20	NW 1/4 Sec 22 T5S R8E	2009	Service Repair			X	-	-	-
1424	Hess Avenue Lot 19	NW 1/4 Sec 22 T5S R8E	2007	Service Replacement			X	1	-	-
1425	1128 E Coolidge Avenue	SE 1/4 SEC 20 T6S R6E	1/2007	Main Repair			X	-	-	-

9.2 Leak and Break Repair Maps



Water Loss Reduction Program for the Pinal Valley Service Area Index Map

Full Size Maps on attached CD



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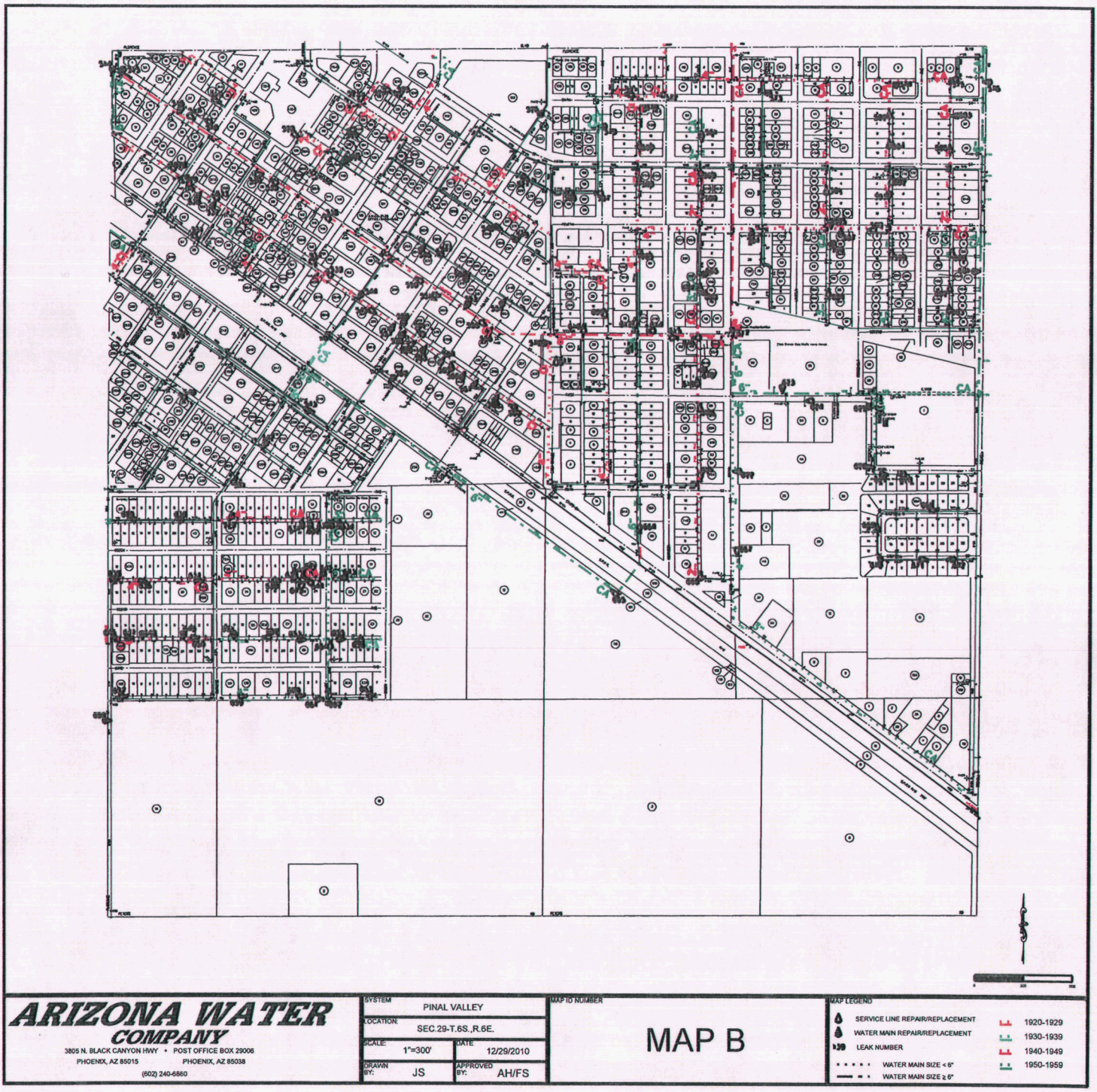


ARIZONA WATER COMPANY

3805 N. BLACK CANYON HWY • POST OFFICE BOX 29006
PHOENIX, AZ 85015 PHOENIX, AZ 85038
(602) 240-6860

SYSTEM	PINAL VALLEY
LOCATION	SEC.29-T.6S.,R.6E.
SCALE	1"=300'
DATE	12/29/2010
DRAWN BY	JS
APPROVED BY	AH/FS

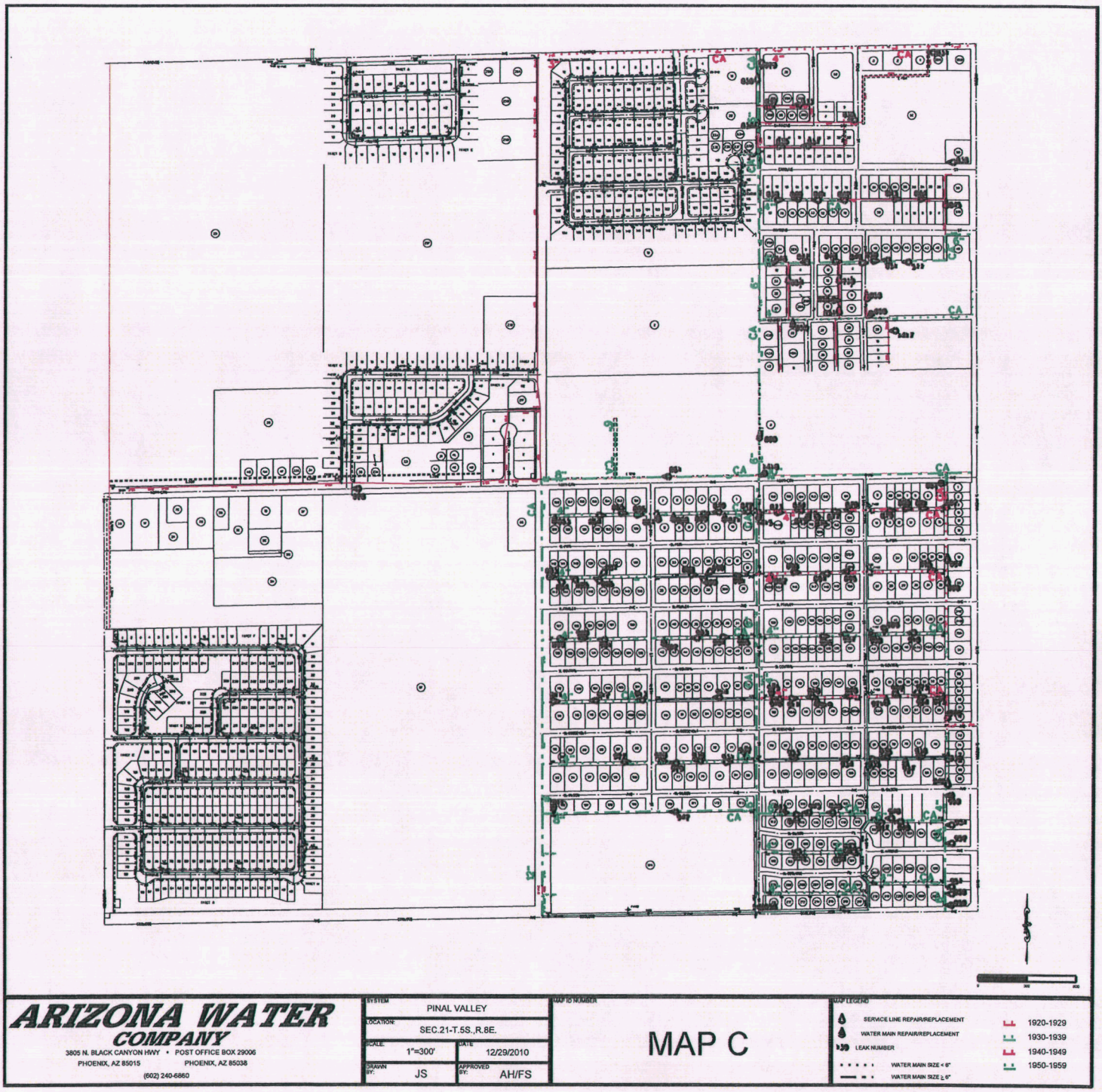
MAP ID NUMBER

MAP B

MAP LEGEND

- SERVICE LINE REPAIR/REPLACEMENT
- WATER MAIN REPAIR/REPLACEMENT
- LEAK NUMBER
- WATER MAIN SIZE < 6"
- WATER MAIN SIZE ≥ 6"
- 1920-1929
- 1930-1939
- 1940-1949
- 1950-1959

Full Size Maps on attached CD



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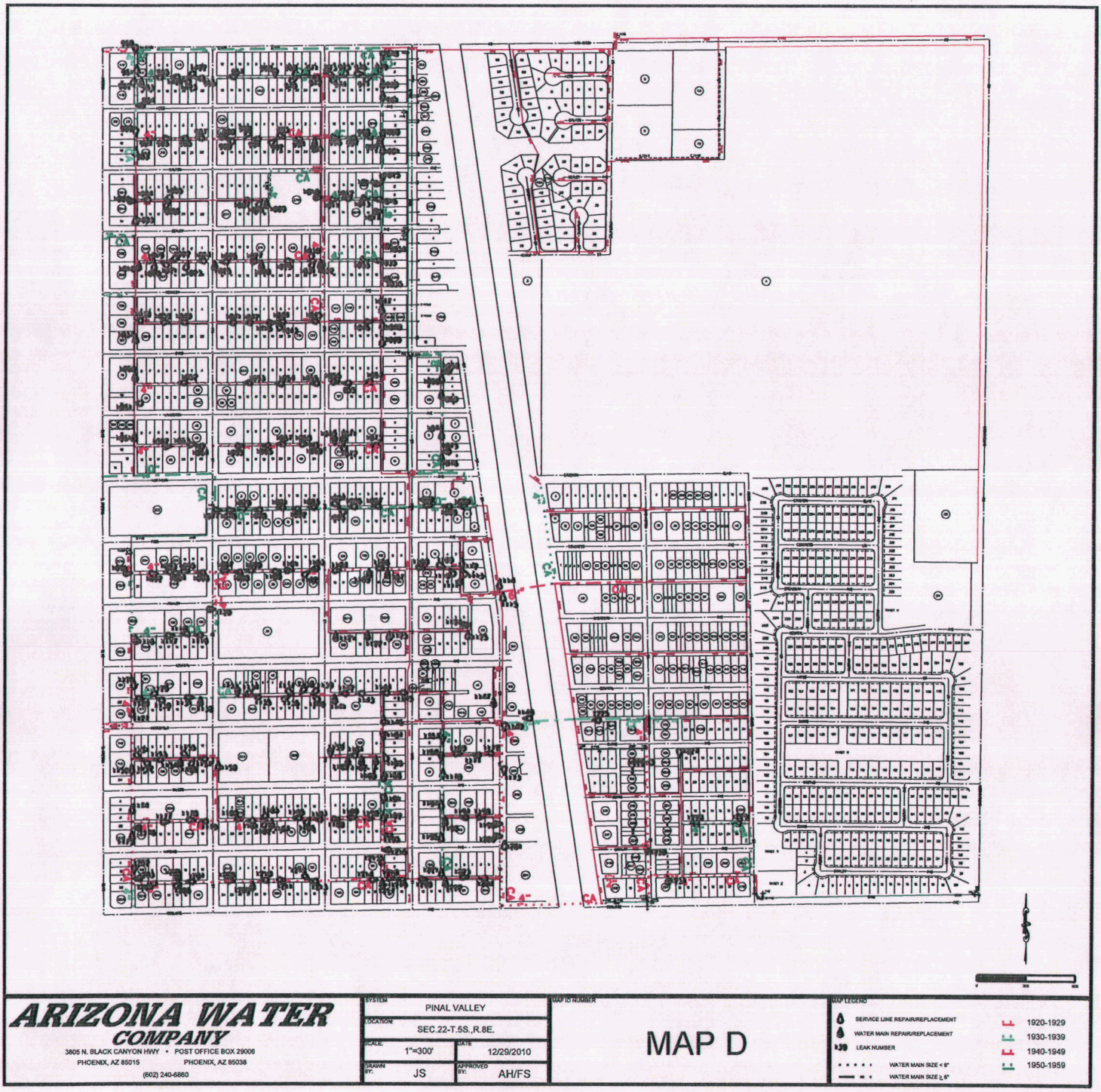
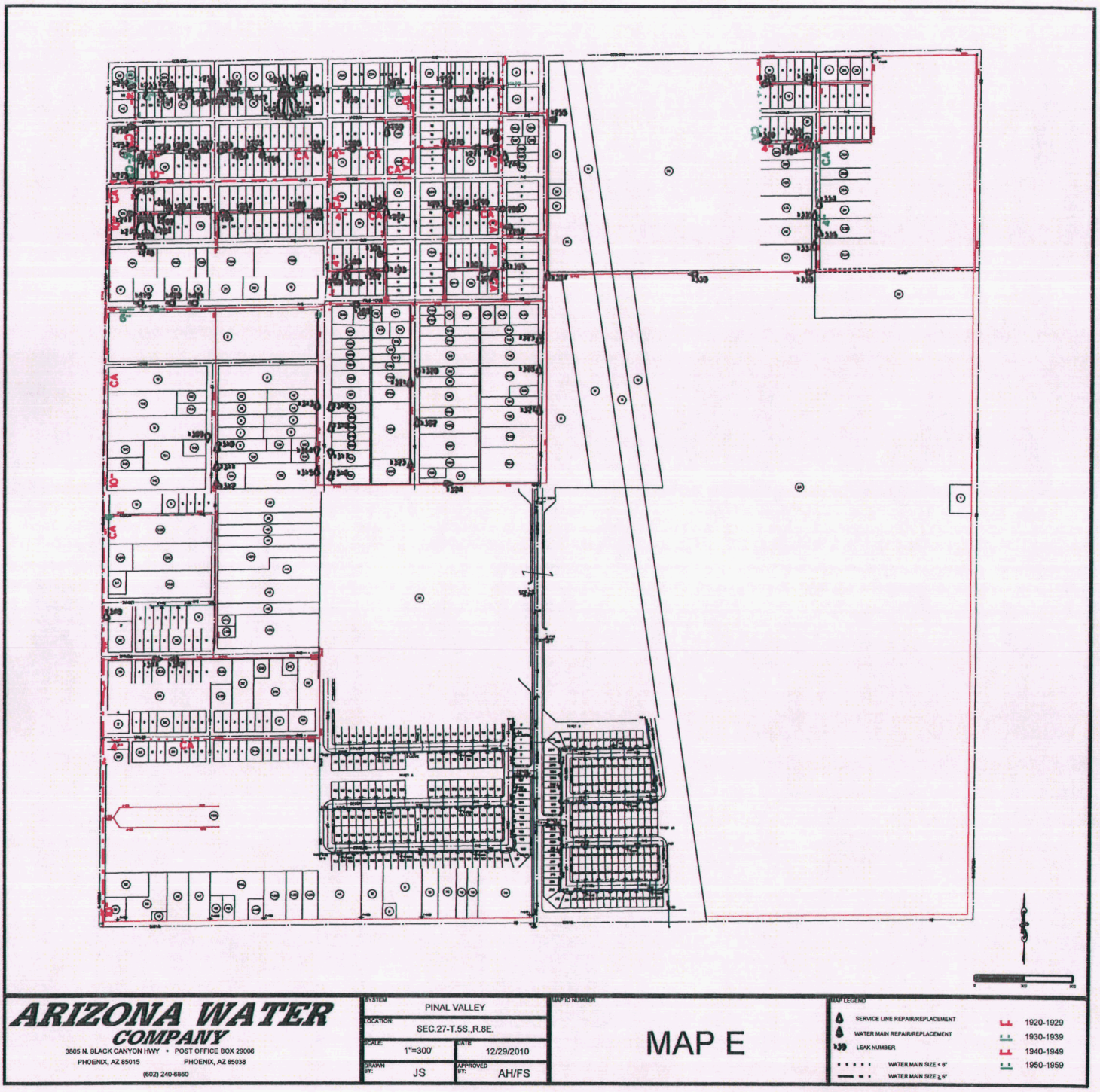


Full Size Maps on attached CD



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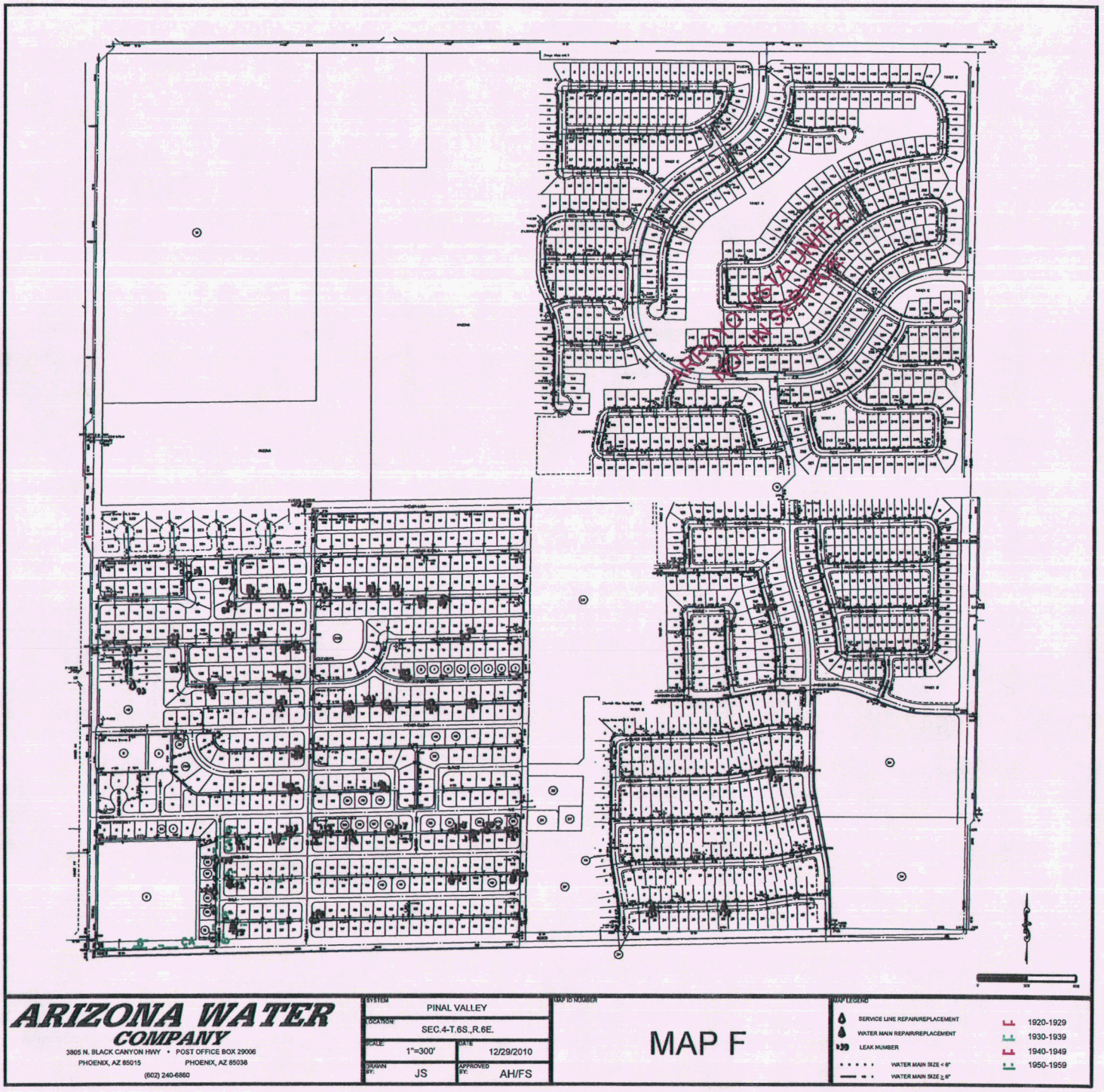

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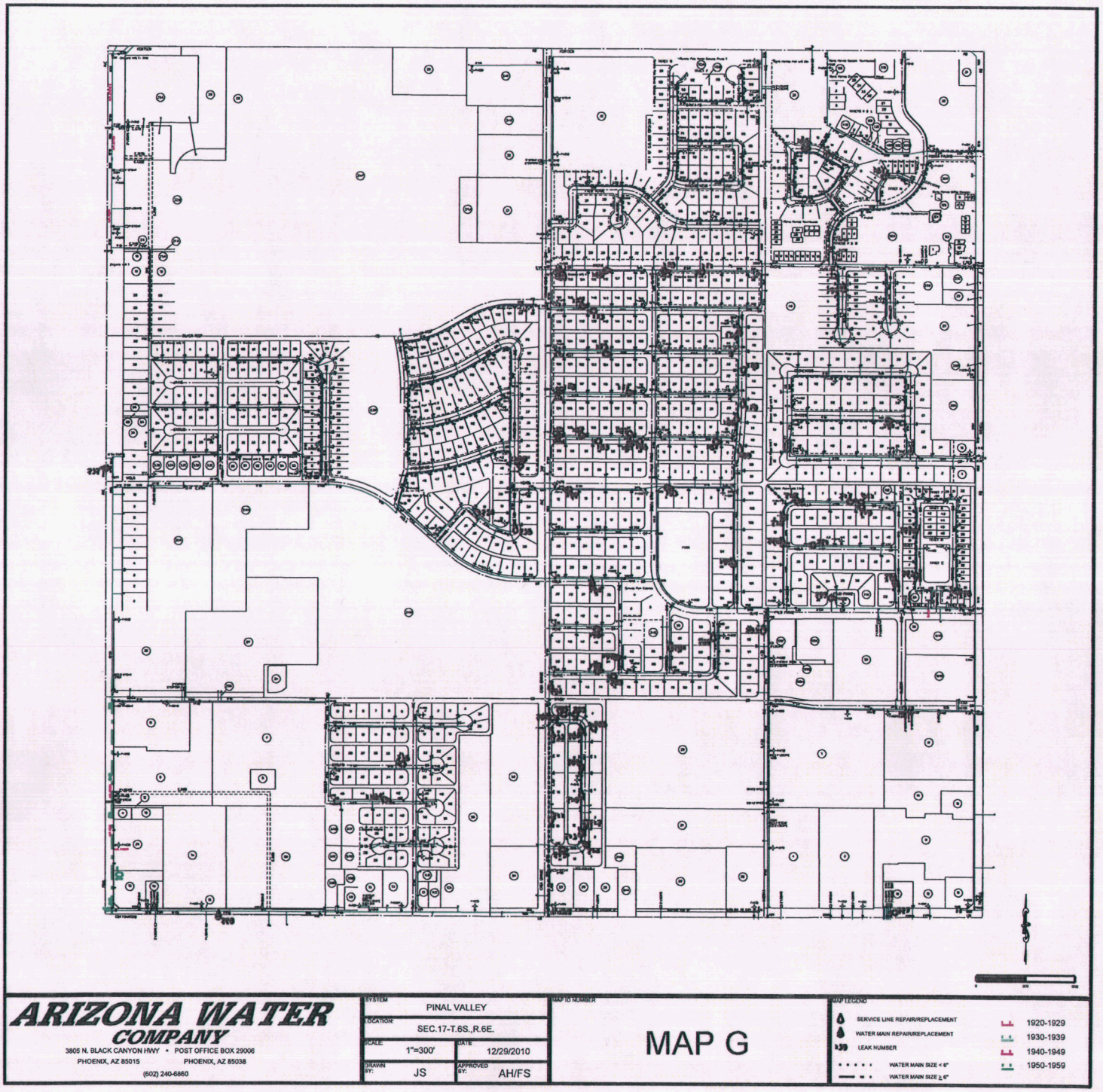

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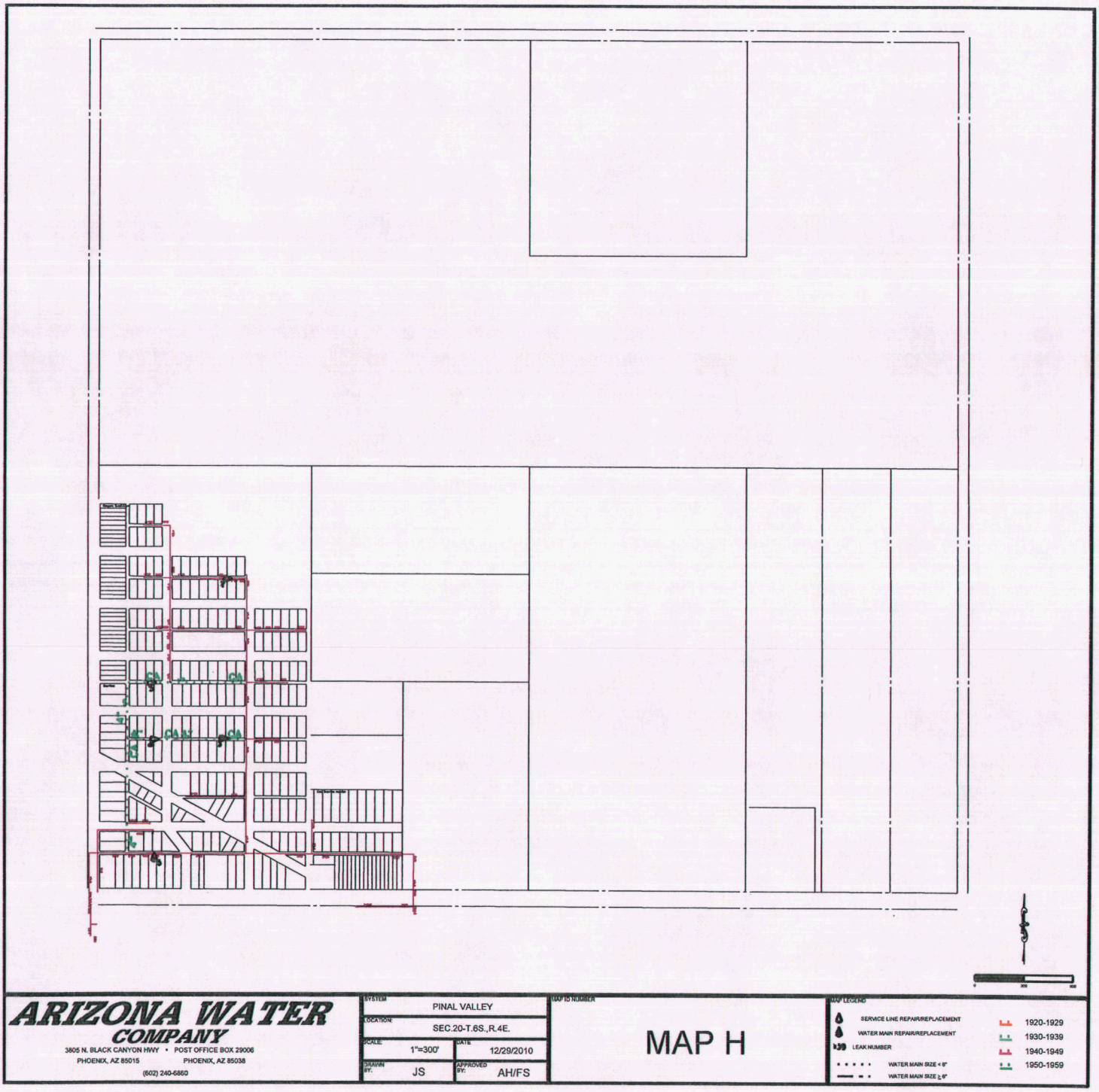

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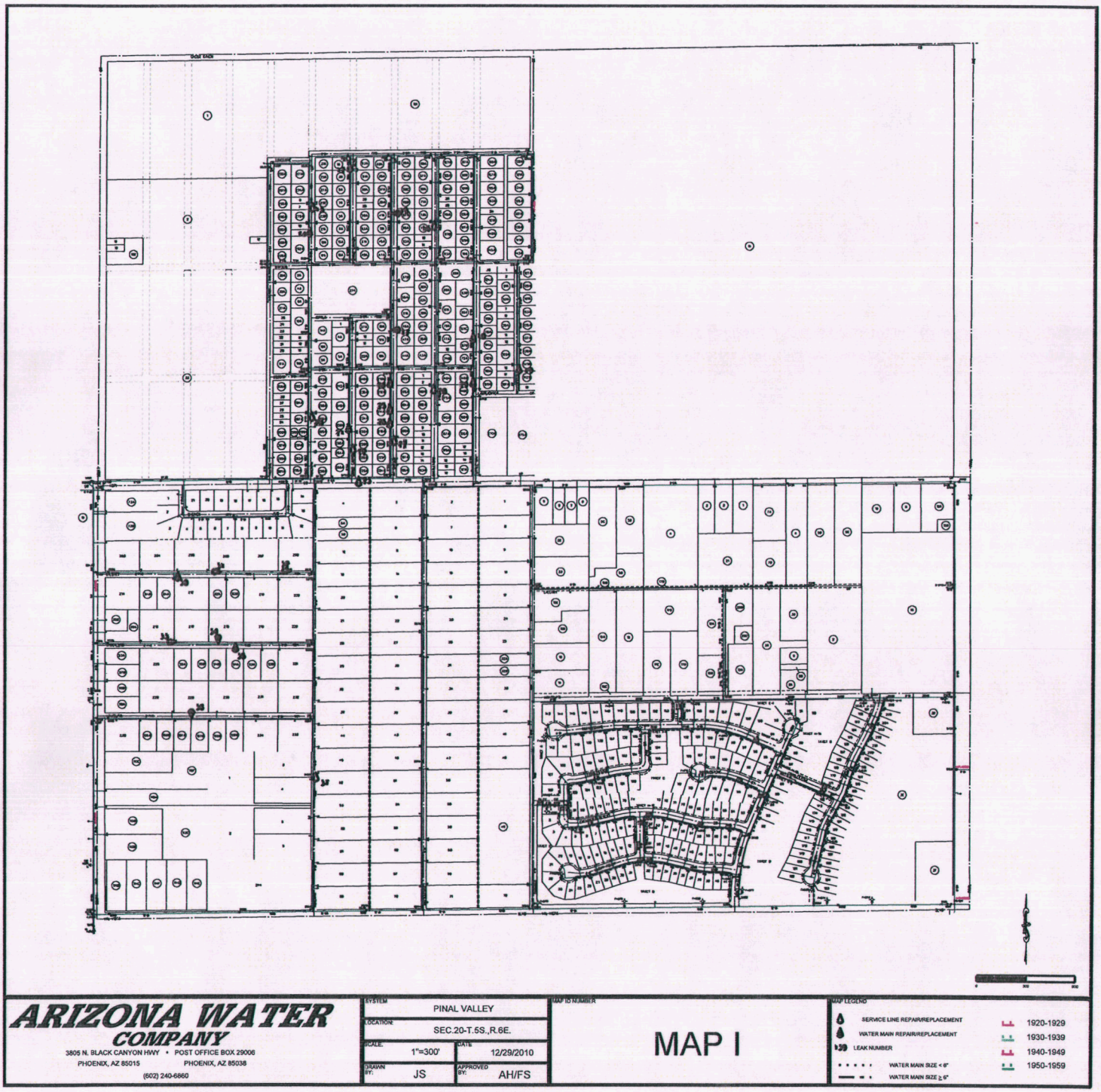


ARIZONA WATER COMPANY

3805 N. BLACK CANYON HWY • POST OFFICE BOX 29006
PHOENIX, AZ 85015 PHOENIX, AZ 85038
(602) 240-6860

SYSTEM	PINAL VALLEY
LOCATION	SEC.20-T.5S.,R.6E.
SCALE	1"=300'
DATE	12/29/2010
DRAWN BY:	JS
APPROVED BY:	AH/FS

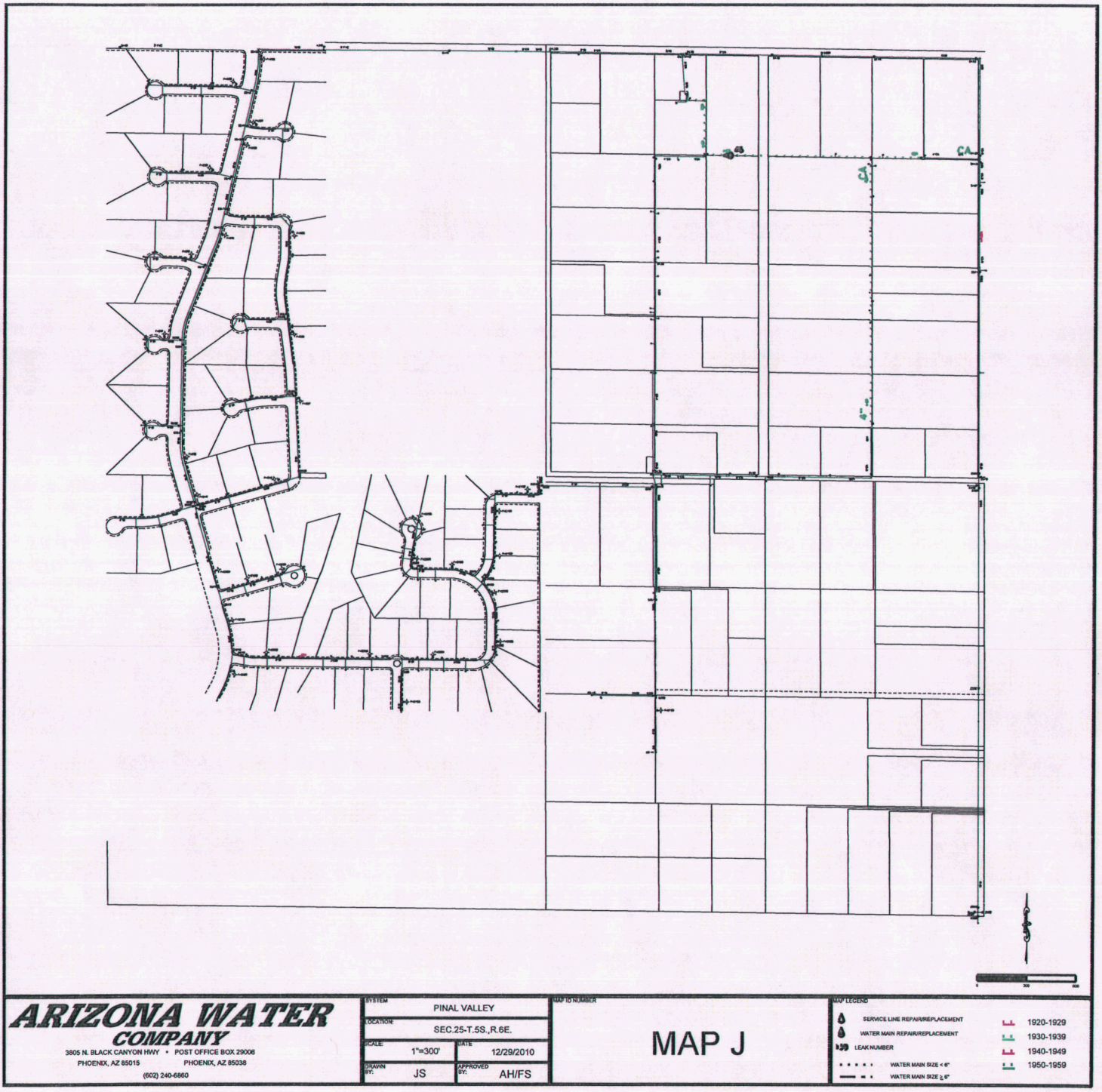
MAP ID NUMBER

MAP I

MAP LEGEND

- SERVICE LINE REPAIR/REPLACEMENT
- WATER MAIN REPAIR/REPLACEMENT
- 39 LEAK NUMBER
- WATER MAIN SIZE < 6"
- WATER MAIN SIZE ≥ 6"
- 1920-1929
- 1930-1939
- 1940-1949
- 1950-1959

Full Size Maps on attached CD



ARIZONA WATER COMPANY

3805 N. BLACK CANYON HWY • POST OFFICE BOX 29006
PHOENIX, AZ 85015 PHOENIX, AZ 85038
(602) 240-6860

SYSTEM	PINAL VALLEY
LOCATION	SEC.25-T.5S.,R.6E.
SCALE	1"=300'
DATE	12/29/2010
DRAWN BY:	JS
APPROVED BY:	AH/FS

MAP ID NUMBER

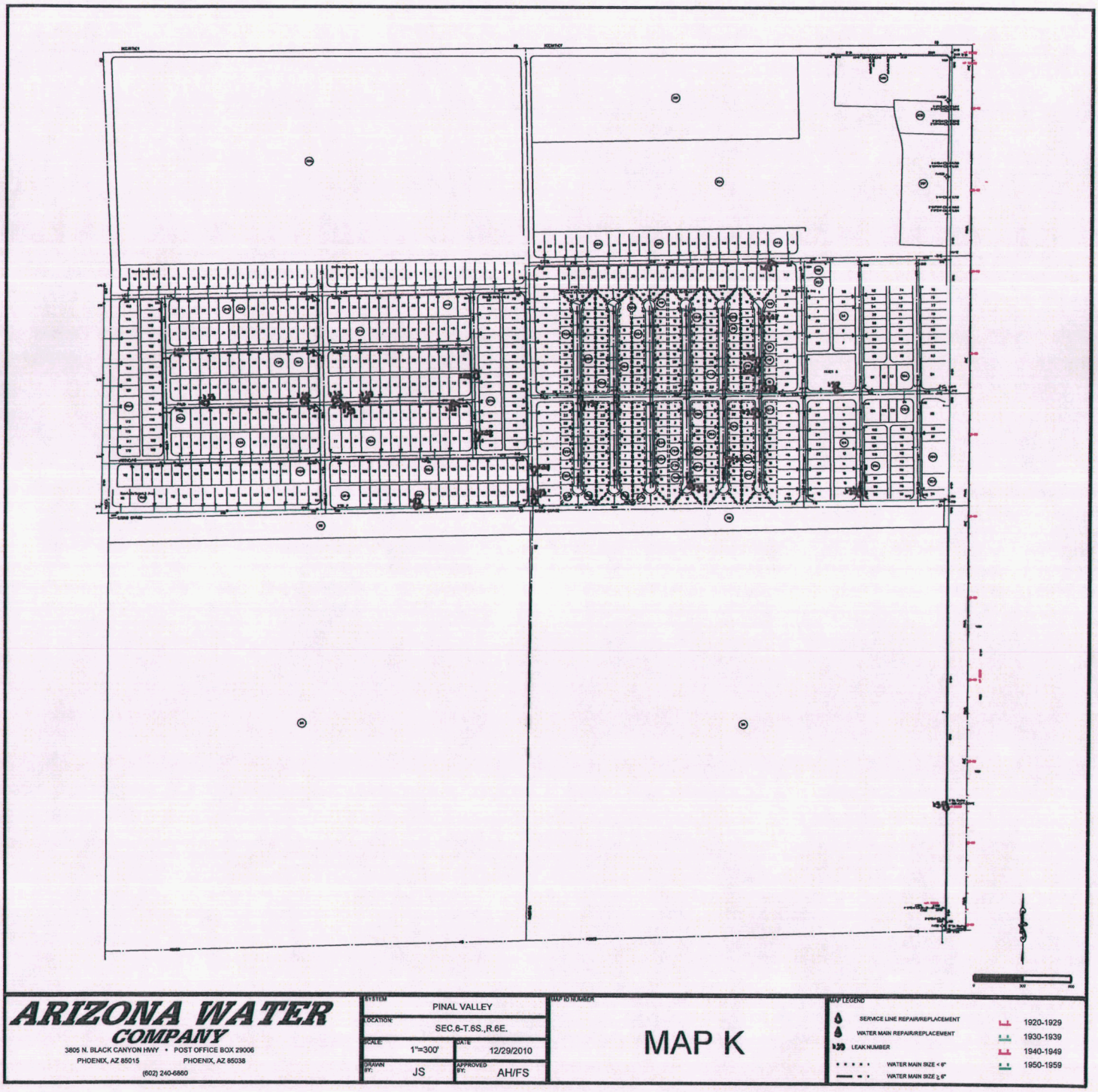
MAP J

MAP LEGEND

- SERVICE LINE REPAIR/REPLACEMENT
- WATER MAIN REPAIR/REPLACEMENT
- LEAK NUMBER
- WATER MAIN SIZE < 6"
- WATER MAIN SIZE ≥ 6"

- 1920-1929
- 1930-1939
- 1940-1949
- 1950-1959

Full Size Maps on attached CD



ARIZONA WATER COMPANY

3805 N. BLACK CANYON HWY • POST OFFICE BOX 29006
PHOENIX, AZ 85015 PHOENIX, AZ 85038
(602) 240-6860

SYSTEM	PINAL VALLEY
LOCATION	SEC.6-T.6S.,R.6E.
SCALE	1"=300'
DATE	12/29/2010
DRAWN BY	JS
APPROVED BY	AH/FS

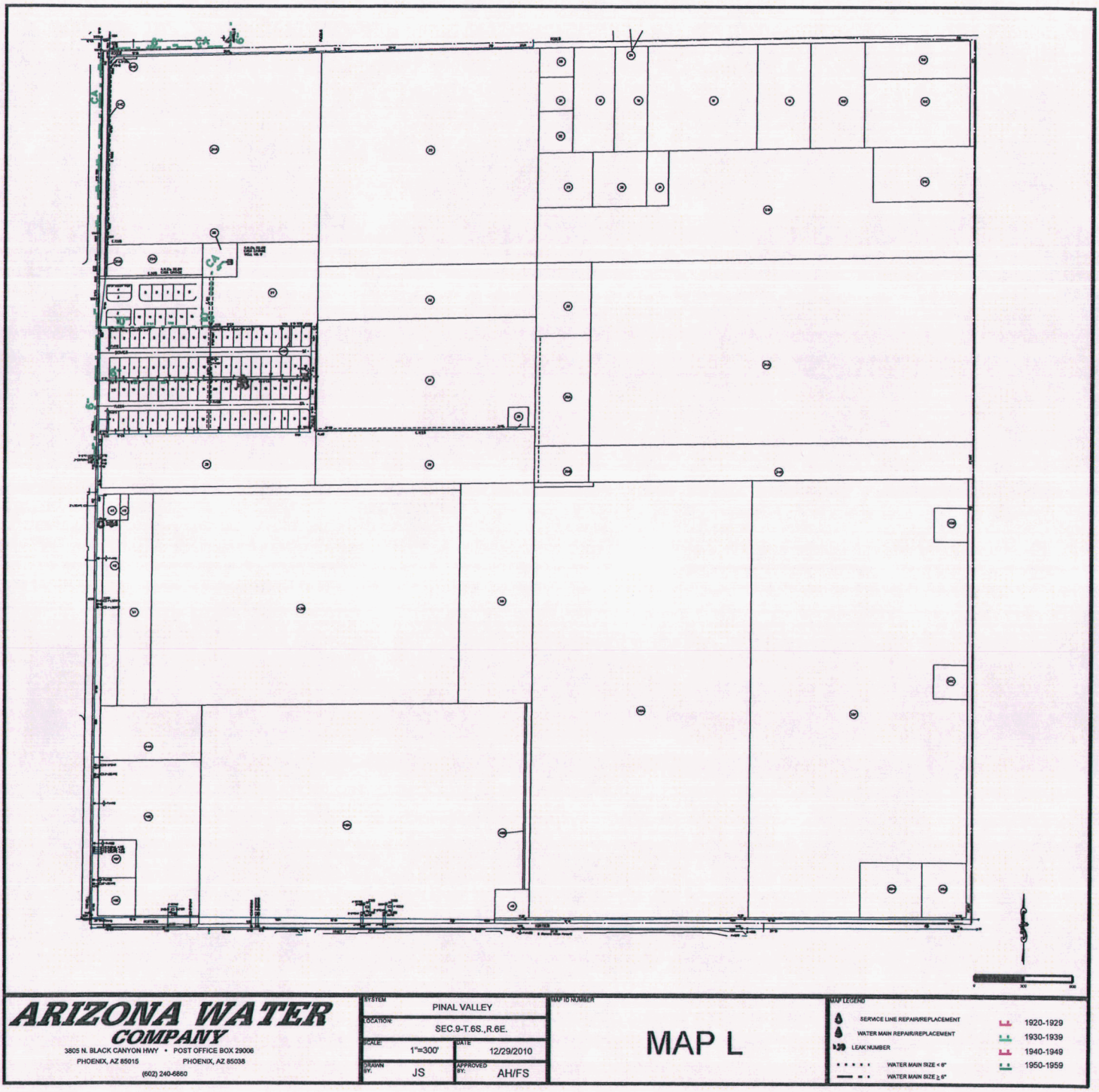
MAP ID NUMBER

MAP K

MAP LEGEND

- SERVICE LINE REPAIR/REPLACEMENT
- WATER MAIN REPAIR/REPLACEMENT
- LEAK NUMBER
- WATER MAIN SIZE < 6"
- WATER MAIN SIZE ≥ 6"
- 1920-1929
- 1930-1939
- 1940-1949
- 1950-1959

Full Size Maps on attached CD



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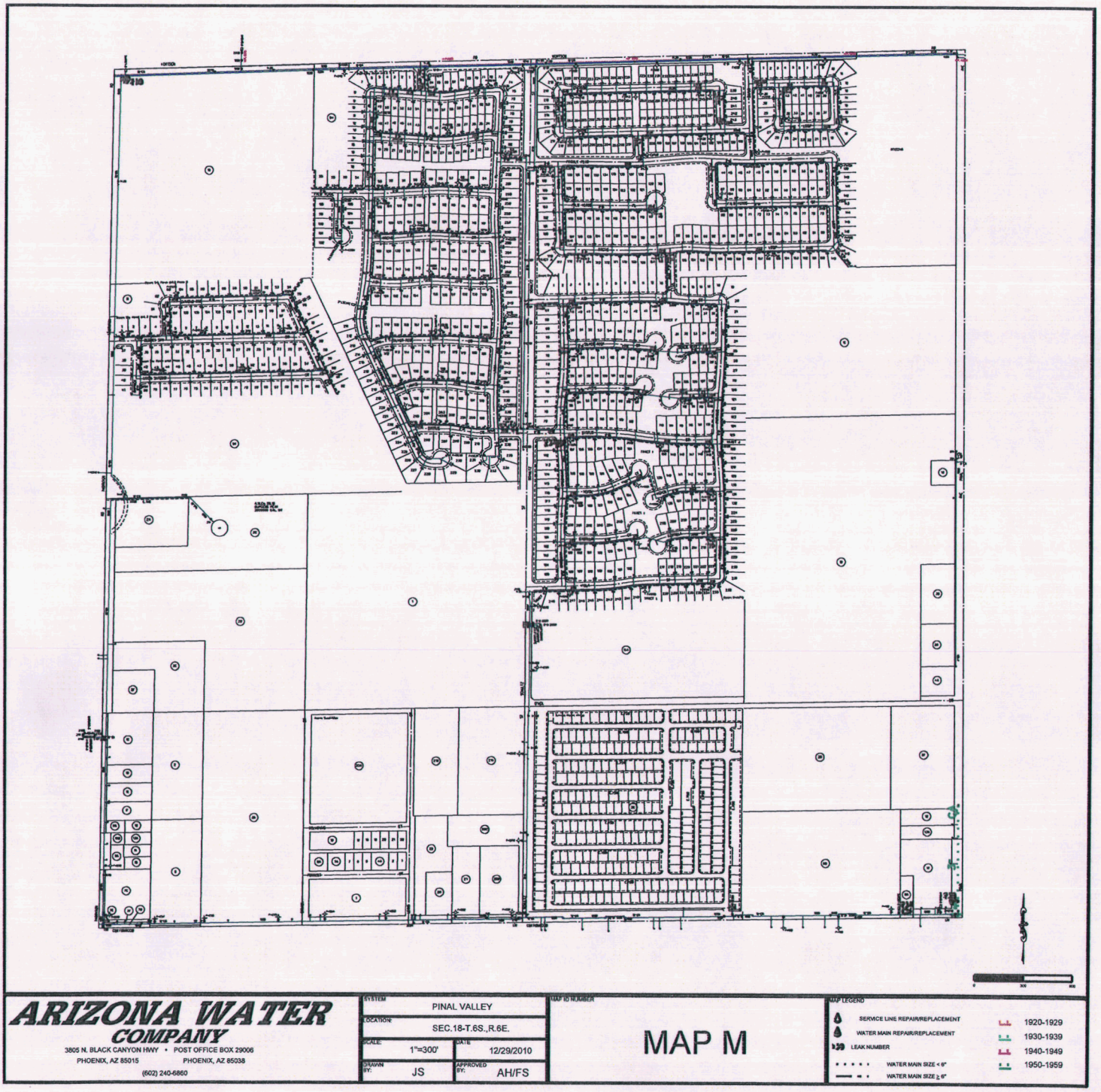

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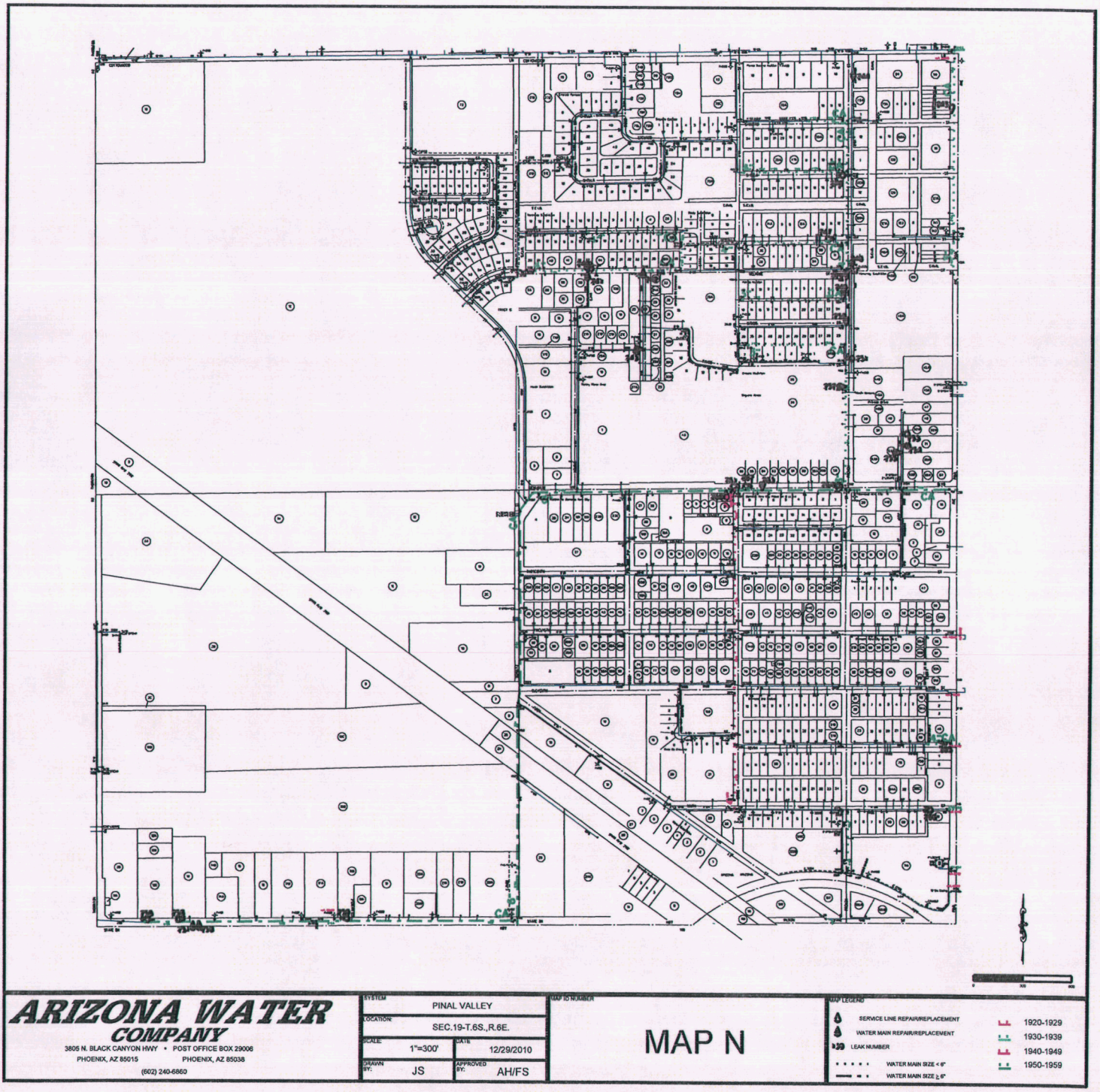

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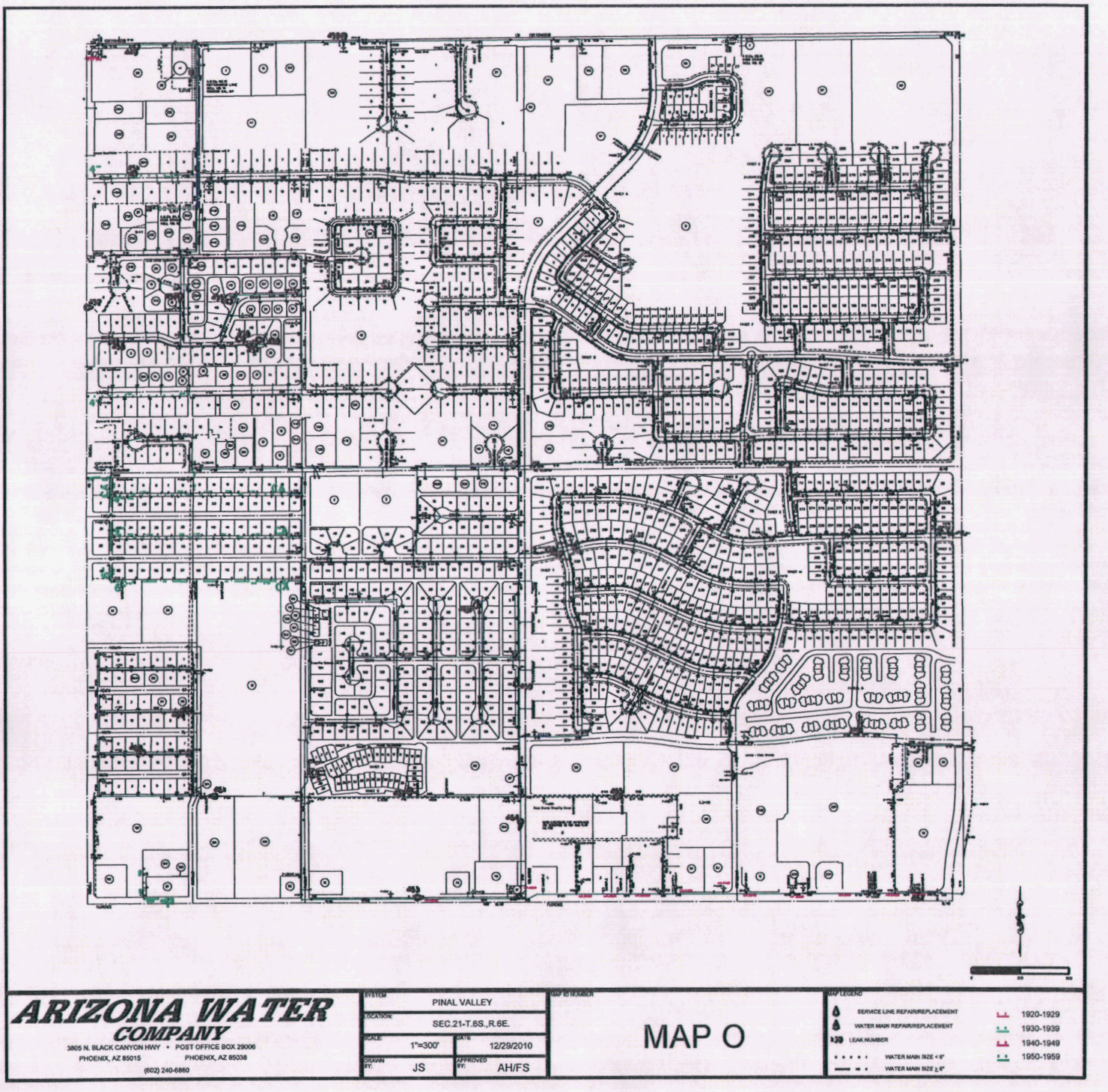


ARIZONA WATER COMPANY

3805 N. BLACK CANYON HWY • POST OFFICE BOX 29006
PHOENIX, AZ 85015 PHOENIX, AZ 85038
(602) 240-6860

SYSTEM	PINAL VALLEY
LOCATION	SEC.21-T.6S.,R.6E.
SCALE	1"=300'
DATE	12/29/2010
DRAWN BY	JS
APPROVED BY	AH/FS

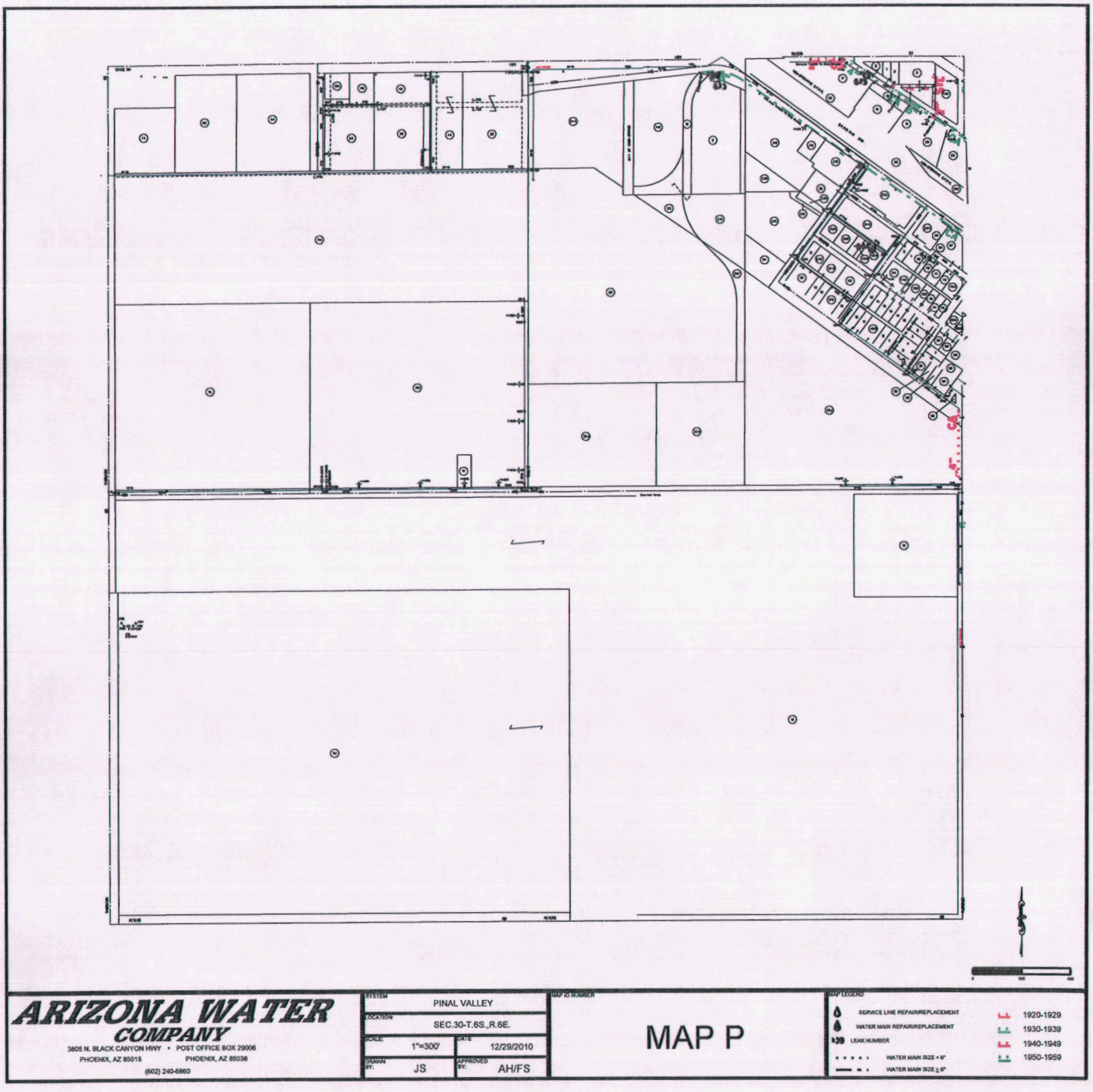
MAP ID NUMBER

MAP O

MAP LEGEND

- SERVICE LINE REPAIR/REPLACEMENT
- WATER MAIN REPAIR/REPLACEMENT
- LEAK NUMBER
- WATER MAIN SIZE < 6"
- WATER MAIN SIZE ≥ 6"
- 1920-1929
- 1930-1939
- 1940-1949
- 1950-1959

Full Size Maps on attached CD



ARIZONA WATER COMPANY

3805 N. BLACK CANYON HWY • POST OFFICE BOX 29006
PHOENIX, AZ 85015 PHOENIX, AZ 85038
(602) 240-6860

SYSTEM	PINAL VALLEY
LOCATION	SEC.30-T.6S.,R.6E.
SCALE	1"=300'
DATE	12/29/2010
DRAWN BY:	JS
APPROVED BY:	AH/FS

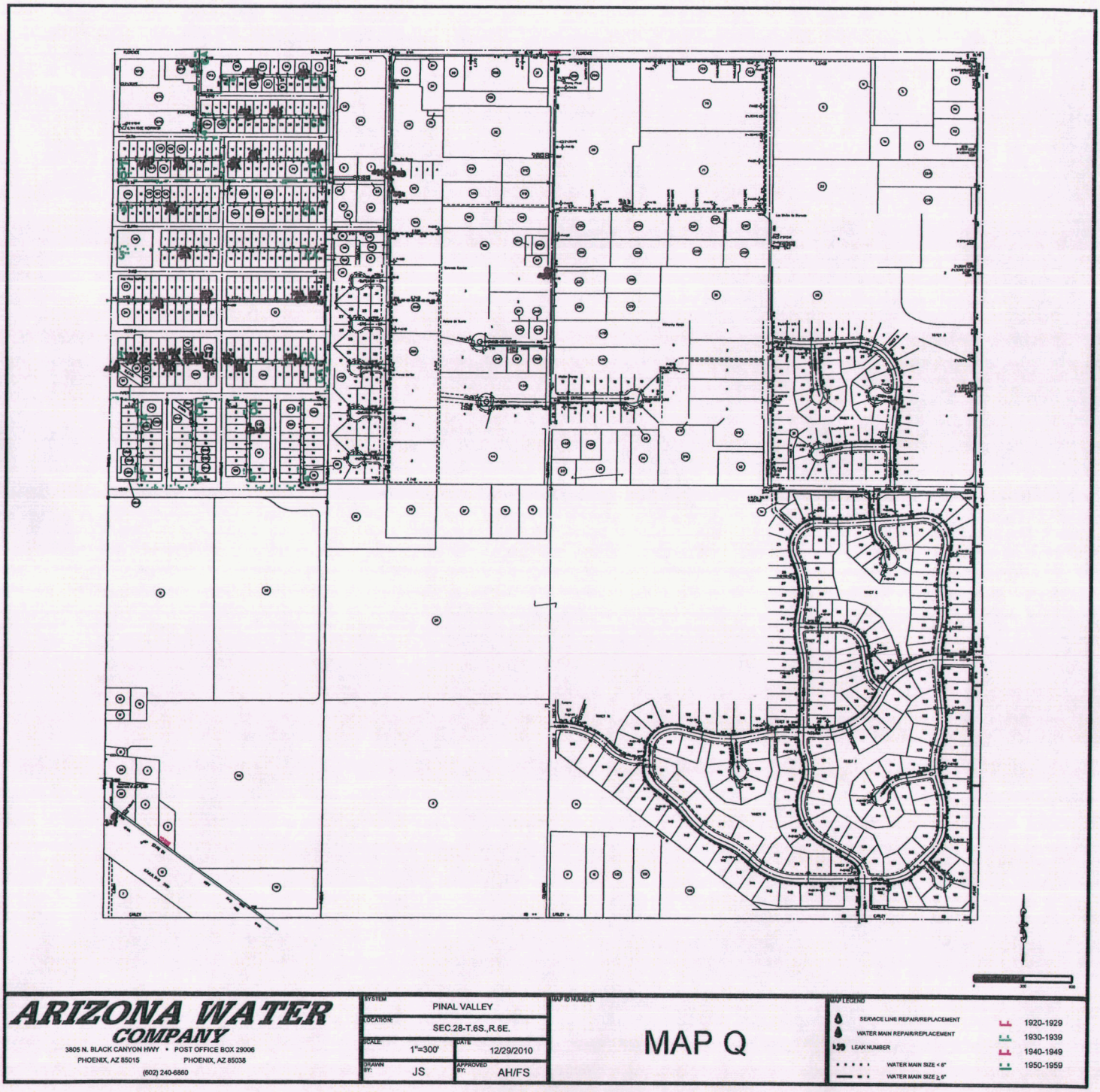
MAP TO NUMBER

MAP P

MAP LEGEND

- SERVICE LINE REPAIR/REPLACEMENT
- WATER MAIN REPAIR/REPLACEMENT
- 39 LEAK NUMBER
- WATER MAIN SIZE < 6"
- WATER MAIN SIZE ≥ 6"
- 1920-1929
- 1930-1939
- 1940-1949
- 1950-1959

Full Size Maps on attached CD



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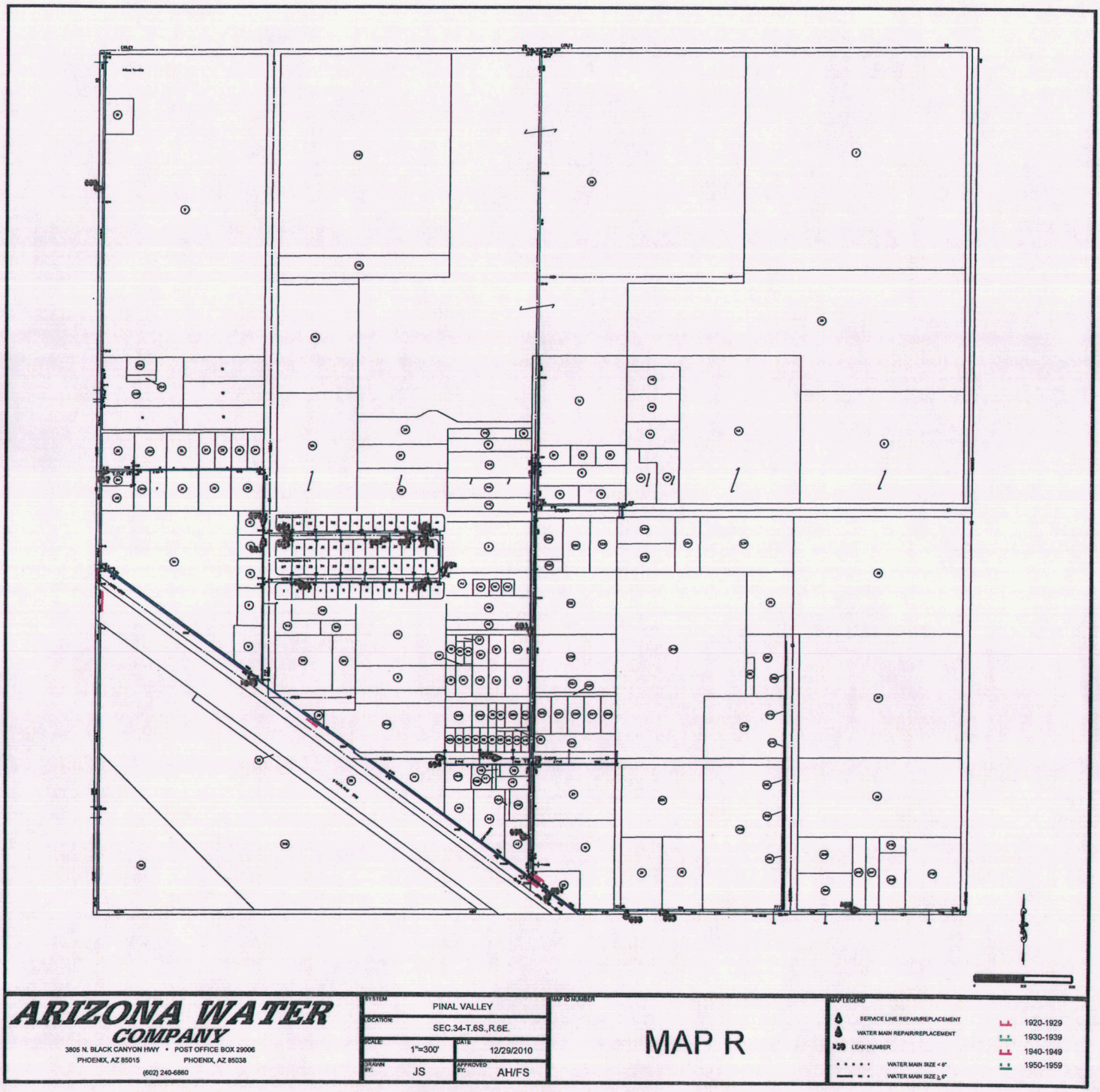

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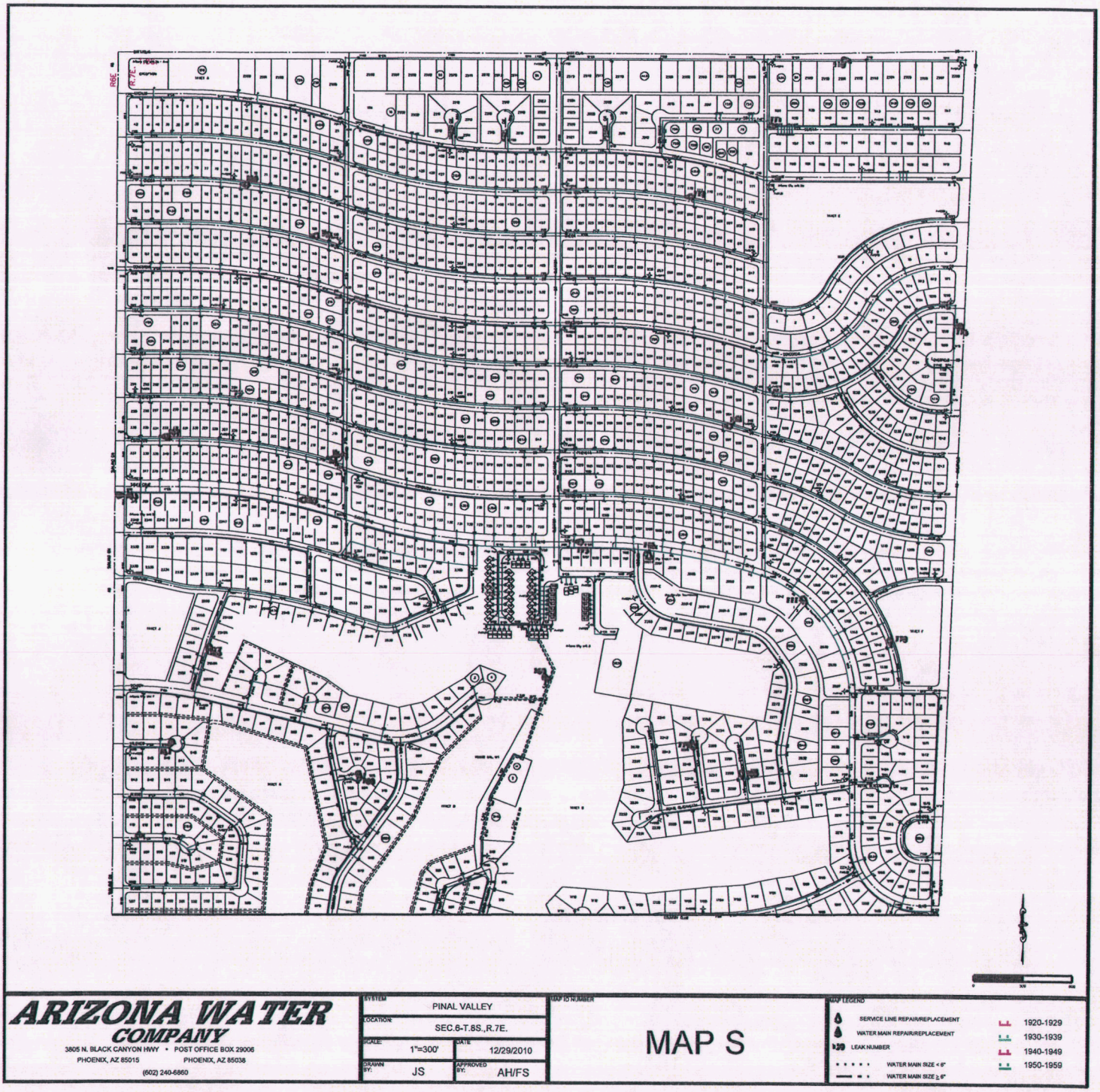
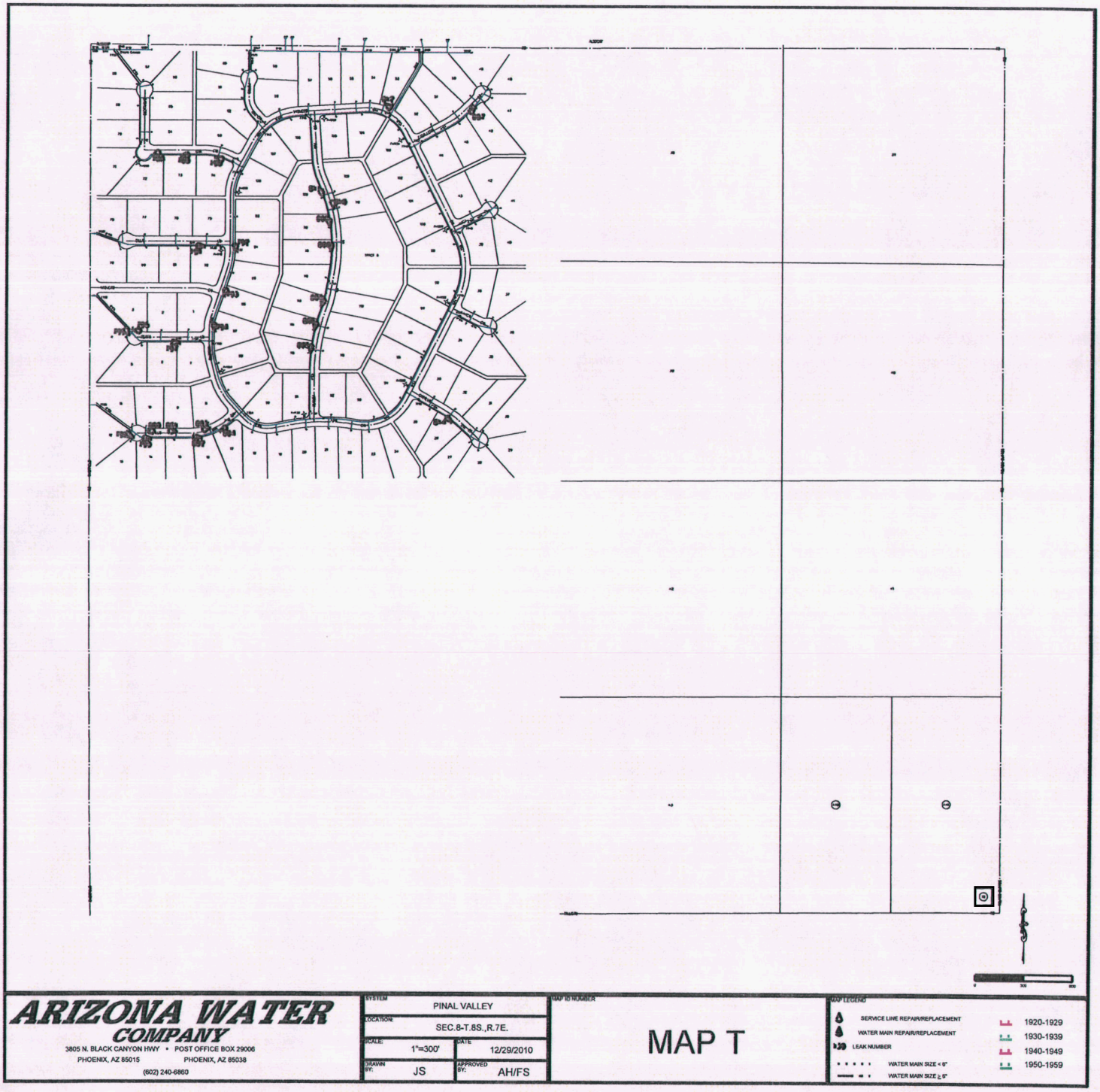
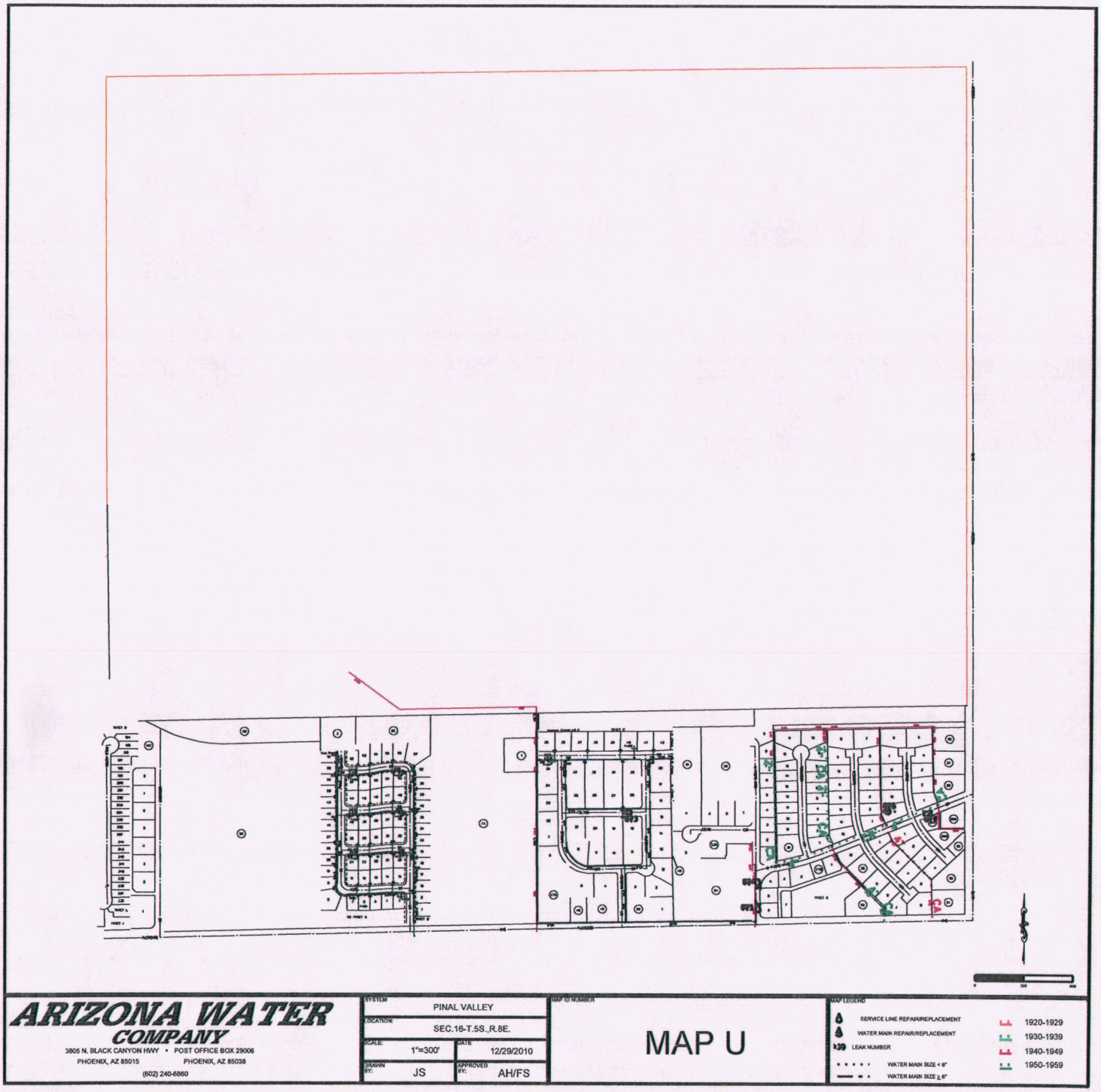


ARIZONA WATER COMPANY 3805 N. BLACK CANYON HWY • POST OFFICE BOX 29006 PHOENIX, AZ 85015 PHOENIX, AZ 85038 (602) 240-6860	SYSTEM: PINAL VALLEY LOCATION: SEC.6-T.8S.,R.7E. SCALE: 1"=300' DATE: 12/29/2010 DRAWN BY: JS APPROVED BY: AH/FS	MAP ID NUMBER MAP S	MAP LEGEND SERVICE LINE REPAIR/REPLACEMENT WATER MAIN REPAIR/REPLACEMENT LEAK NUMBER WATER MAIN SIZE < 6" WATER MAIN SIZE ≥ 6" 1920-1929 1930-1939 1940-1949 1950-1959

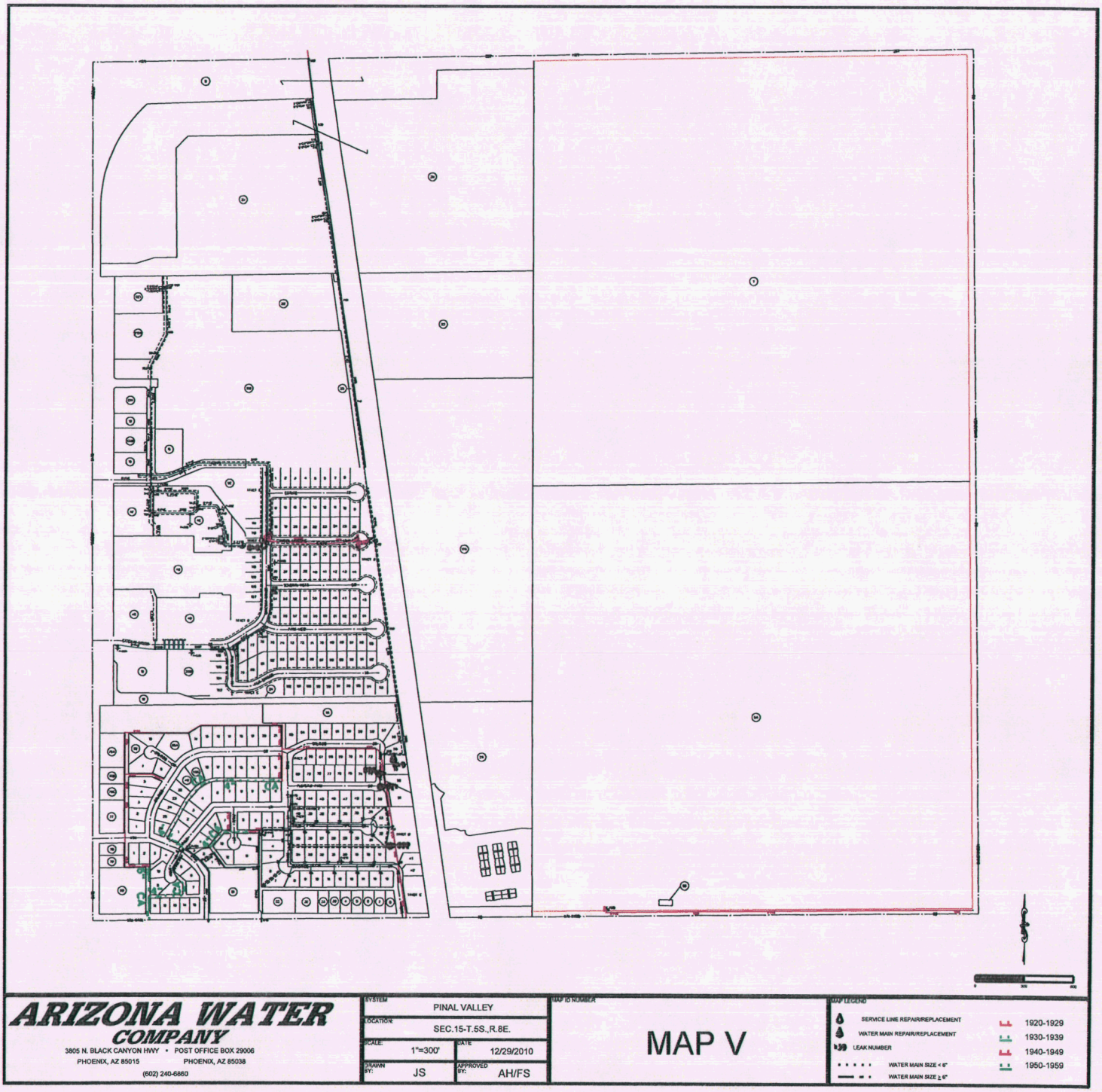
Full Size Maps on attached CD



Full Size Maps on attached CD



Full Size Maps on attached CD

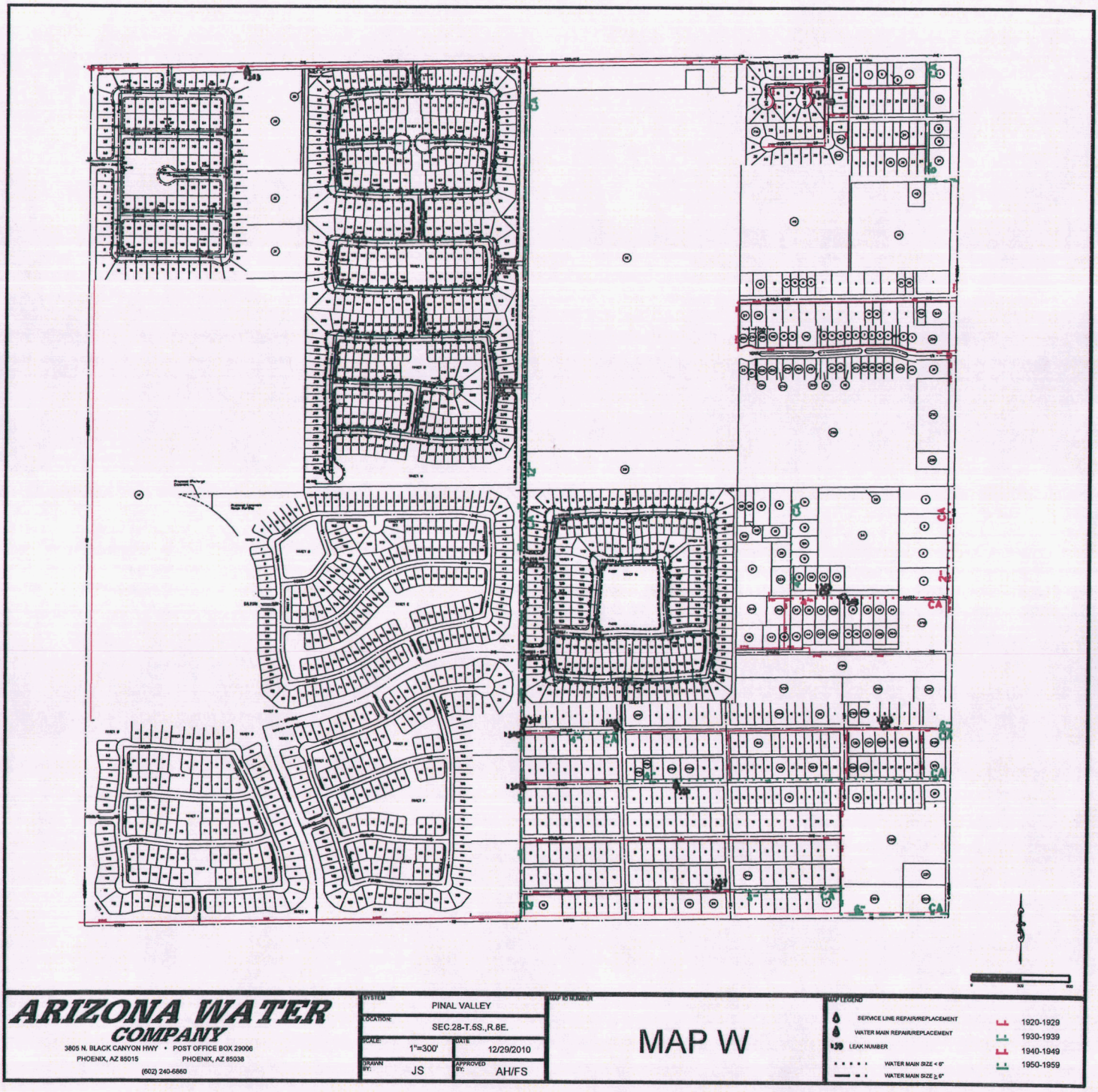


ARIZONA WATER COMPANY	
3805 N. BLACK CANYON HWY • POST OFFICE BOX 29006	
PHOENIX, AZ 85015 PHOENIX, AZ 85038	
(602) 240-6860	
SYSTEM	PINAL VALLEY
LOCATION	SEC.15-T.5S.,R.8E.
SCALE	1"=300'
DATE	12/29/2010
DRAWN BY:	JS
APPROVED BY:	AH/FS
MAP ID NUMBER	MAP V

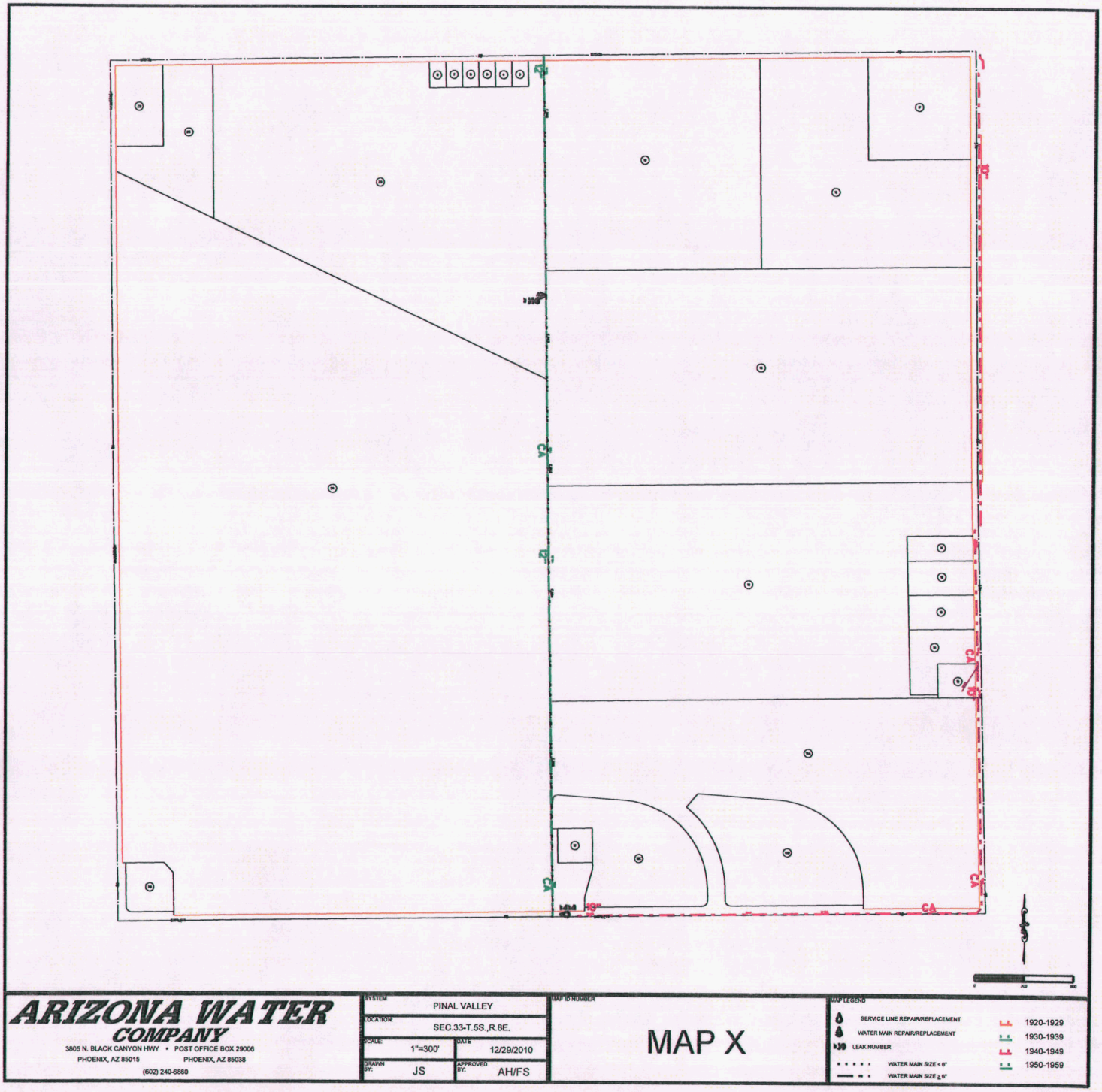
LOOP LEGEND

- SERVICE LINE REPAIR/REPLACEMENT
- WATER MAIN REPAIR/REPLACEMENT
- LEAK NUMBER
- WATER MAIN SIZE < 6"
- WATER MAIN SIZE ≥ 6"
- 1920-1929
- 1930-1939
- 1940-1949
- 1950-1959

Full Size Maps on attached CD



Full Size Maps on attached CD



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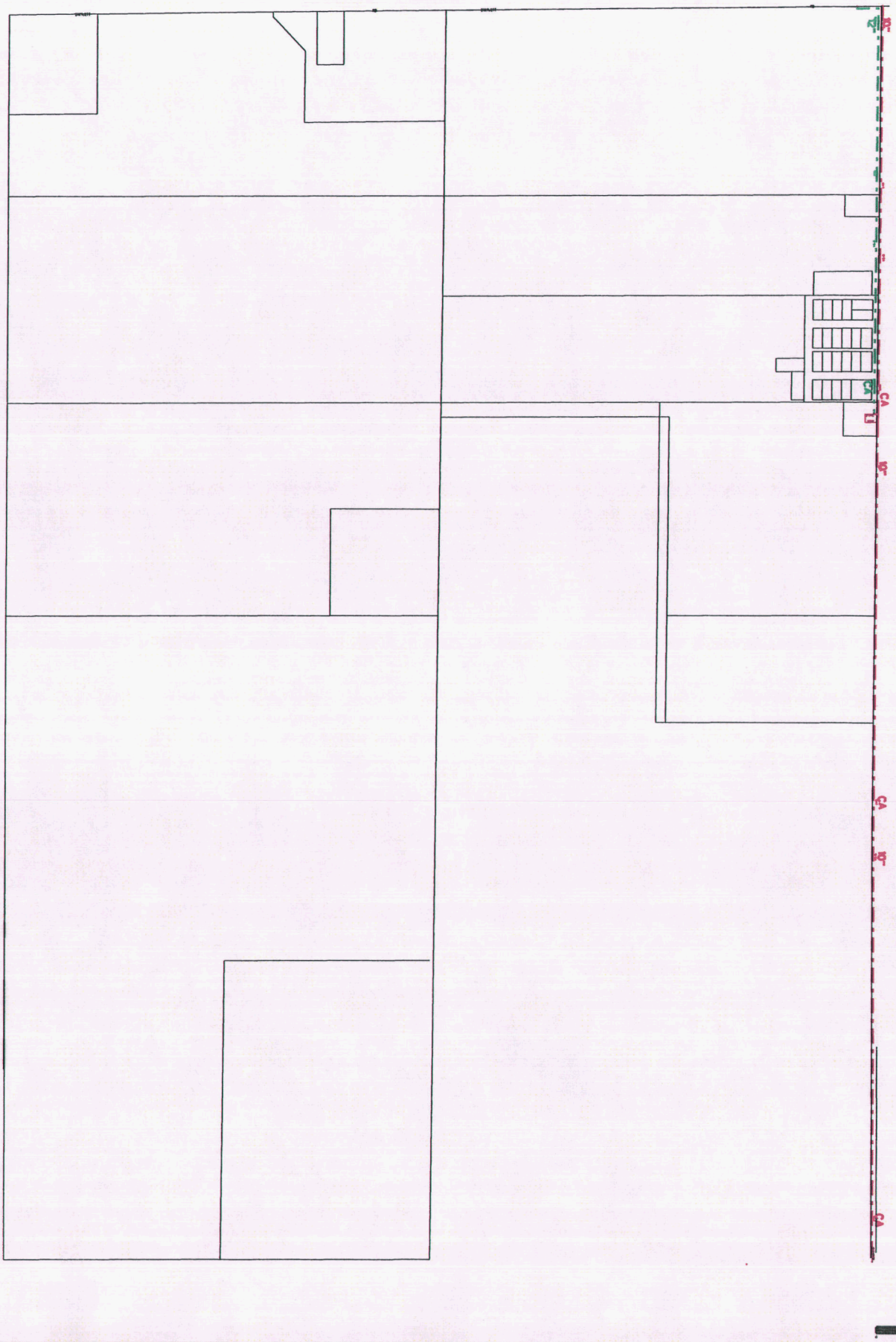
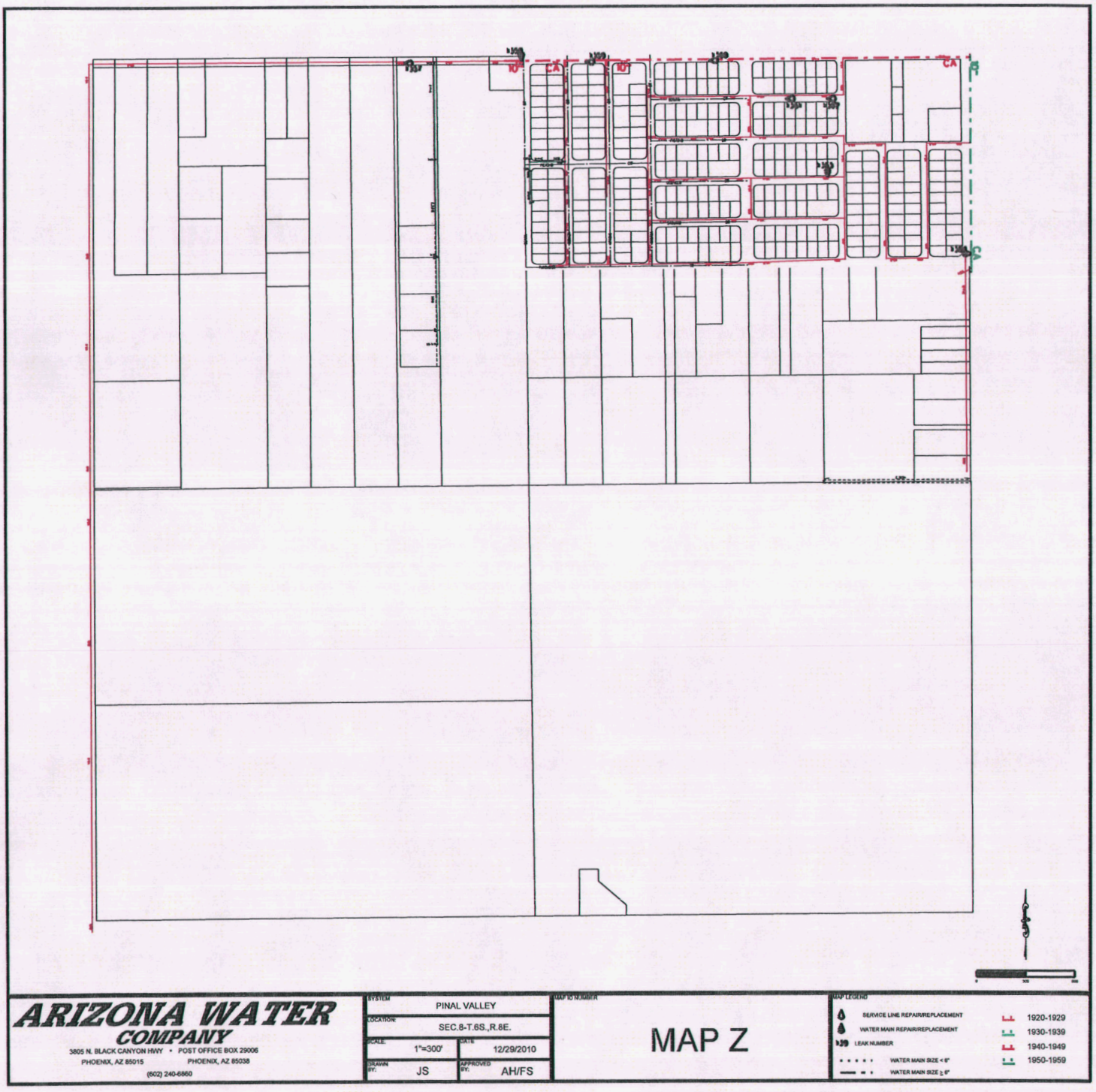


ARIZONA WATER COMPANY 3805 N. BLACK CANYON HWY • POST OFFICE BOX 29006 PHOENIX, AZ 85015 PHOENIX, AZ 85038 (602) 240-6860	SYSTEM: PINAL VALLEY LOCATION: SEC.5-T.6S.,R.8E.	MAP ID NUMBER: MAP Y	MAP LEGEND SERVICE LINE REPAIR/REPLACEMENT WATER MAIN REPAIR/REPLACEMENT LEAK NUMBER WATER MAIN SIZE ≥ 6" 1920-1929 1930-1939 1940-1949 1950-1959
	SCALE: 1"=300' DATE: 12/29/2010 DRAWN BY: JS APPROVED BY: AH/FS		

Full Size Maps on attached CD



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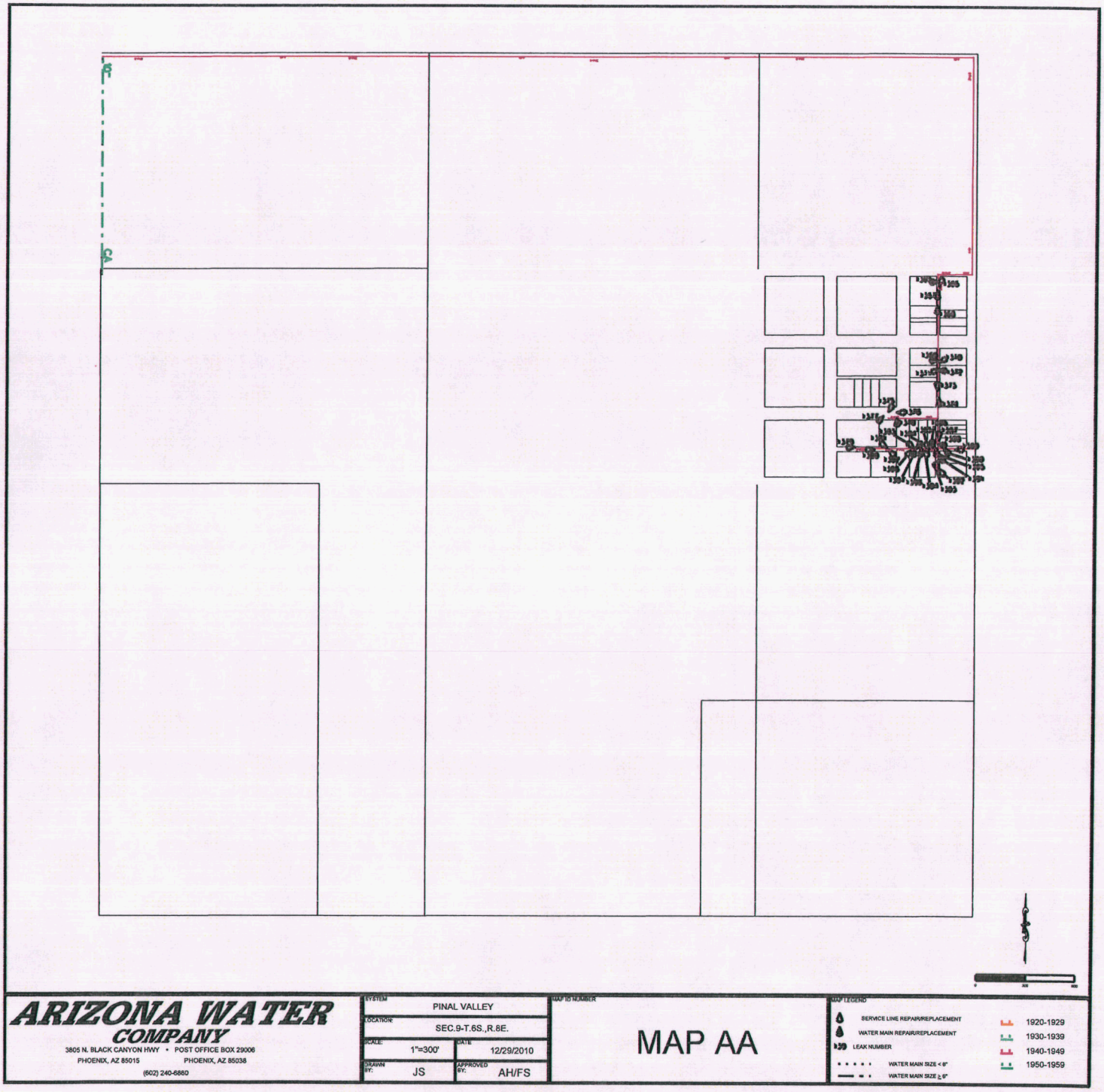


9.3 Arizona Department of Water Resources Third Management Plan Excerpts Related to Water Losses

THIRD MANAGEMENT PLAN

FOR

PHOENIX
ACTIVE MANAGEMENT AREA

2000-2010

ARIZONA DEPARTMENT OF WATER RESOURCES

In addition to these individual user requirements, the Third Management Plan contains an individual user requirement that was not included in the Second Management Plan. This additional requirement prohibits the use of groundwater to maintain a water feature installed in a publicly owned right-of-way after January 1, 2002.

Either the individual user or the municipal provider serving the individual user is responsible for complying with the individual user requirement. See section 5-112 for determining responsibility for compliance with the individual user requirements.

5.7.6.2 Distribution System Requirements

Lost and unaccounted for water is defined as the total water from any source, except direct use effluent, withdrawn, diverted, or received in a year minus the total amount of authorized deliveries made by the municipal provider in that year. Lost and unaccounted for water includes line leakage, meter under-registration, evaporation or leakage from storage ponds or tanks, system and hydrant leaks or breaks, and illegal connections.

All municipal providers are required to meet an efficient lost and unaccounted for water standard in their service areas. Lost and unaccounted for water will be determined for each municipal provider based on the total quantity of metered and unmetered water deliveries and the total water pumped, received, or diverted by the municipal provider for each calendar year, excluding direct use effluent. Small municipal providers must maintain lost and unaccounted for water at or below 15 percent. Large municipal providers are required to maintain their system not to exceed 10 percent lost and unaccounted for water. Large untreated water providers are required to either line all canals used to deliver untreated water to the provider's delivery points with a material that allows no more lost water than a well-maintained concrete lining, or operate and maintain its distribution system to limit lost and unaccounted for water at or below 10 percent.

For the third management period, the Department will allow providers to exclude water from the lost and unaccounted for water calculation that is either metered or estimated using approved estimating procedures and that is used pursuant to other regulatory requirements such as well purging and line flushing. Providers may also exclude estimated water uses such as construction (truck loads for dust control) or fire services, but all other uses of water within a distribution system must be metered. Appendix 5-M provides a complete list of uses that are considered in the lost and unaccounted for water calculation and those uses that can be estimated to determine the volume.

5.7.6.3 Monitoring and Reporting Requirements

All municipal providers are required to annually: (1) report to the Department information on the total quantity of water used within the service area and the total volume of water delivered for various municipal purposes, (2) calculate the volume of lost and unaccounted for water within the service area, and (3) report the total number of housing units, by unit type, added to the water service area from July 1 of the previous calendar year to July 1 of the reporting year.

Large municipal providers are required to separately measure and report the amount of water delivered each month for: irrigation uses; residential uses, separated by single family and multifamily; and non-residential uses, separated by water use categories, including turf-related facility use, commercial use, industrial use, government use, construction use, surface water treatment, and other uses.

All municipal providers are required to submit to the Department, on an annual basis, an updated service area and distribution system map delineating all potable and non-potable distribution lines greater than four inches, all potable treatment facilities, all well sites, and all non-potable treatment.

untreated water to a user, and that provided a copy of that agreement to the director by June 22, 1992, is a large untreated water provider upon serving untreated water to at least 500 persons pursuant to the service agreement or upon supplying 100 acre-feet of untreated water during a calendar year pursuant to the agreement.

26. *"Lost and unaccounted for water" means:*

    a. *With respect to a distribution system other than an untreated water municipal distribution system, the total quantity of water from any source, except direct use effluent, withdrawn, diverted or received by a municipal provider during a calendar year for non-irrigation use less the total quantity of authorized deliveries of water from any source, except direct use effluent, made by the municipal provider during the calendar year for non-irrigation use that are metered deliveries or deliveries that the municipal provider accounts for by a method of estimating water use approved by the director.*

    b. *With respect to an untreated water municipal distribution system, the total quantity of untreated water from any source, withdrawn, diverted or received by a large untreated water provider during a calendar year for non-irrigation use less the total quantity of authorized deliveries of untreated water from any source made by the provider during the calendar year for non-irrigation use that are metered deliveries or deliveries that the provider accounts for by a method of estimating water use approved by the director.*

27. *"Lost water" means untreated water from any source that enters an untreated water distribution system and is lost from the system during transportation or distribution due to seepage, evaporation, leaks, breaks, phreatophyte use or other similar or dissimilar causes.*

28. *"Mined groundwater" has the definition prescribed by A.R.S. § 45-561(9).*

29. *"Multifamily housing unit" means a mobile home in a mobile home park and any permanent housing unit having one or more common walls with another housing unit located in a multifamily residential structure, and includes a unit in a duplex, triplex, fourplex, condominium development, town home development, or apartment complex.*

30. *"Municipal distribution system" means a system of pipes, canals or other works within a municipal provider's service area that are owned and operated by the provider to collect, store, treat or deliver water for non-irrigation use.*

31. *"Municipal provider" means a city, town, private water company or irrigation district that supplies water for non-irrigation use.*

32. *"New individual user" means an individual user that begins receiving water from a municipal provider after adoption of the Third Management Plan.*

33. *"New large municipal provider" means a municipal provider that begins serving more than 250 acre-feet of water for non-irrigation use during a calendar year after January 1, 2000, not including untreated water served by a municipal provider that qualifies as a large untreated water provider.*

requirements by the date specified by the director, but not later than January 1 of the year following the year in which the provider's application is approved, and shall remain in compliance with those requirements until the first compliance date for any substitute requirements in the Fourth Management Plan.

5-109. Consolidation of Municipal Provider Service Areas; Acquisition of a Portion of Another Municipal Provider's Service Area

A. Notification

1. If two or more municipal providers consolidate their service areas into one service area, the consolidated provider shall notify the Department of the consolidation within 30 days after the consolidation becomes effective.

2. If a municipal provider acquires a portion of another municipal provider's existing service area, both the acquiring provider and the conveying provider shall notify the Department of the acquisition within 30 days after the acquisition becomes effective.

B. Regulation of Consolidated Provider

1. Upon consolidation, a consolidated provider that qualifies as a large municipal provider shall be regulated under the Total GPCD Program described in section 5-103, unless the consolidated provider applies for and is accepted for regulation under the Non-Per Capita Conservation Program described in section 5-104 or the Alternative Conservation Program described in section 5-105.

2. If the consolidated provider is regulated under the Total GPCD Program, the director shall establish a total GPCD requirement for the consolidated provider consistent with the methodology used by the director to establish the consolidating providers' total GPCD requirements as set forth in Appendix 5-C.1. The director shall also establish and maintain a flexibility account for the consolidated provider in accordance with section 5-106, subsection A, with a beginning balance to be established by the director based on the ending balances in the flexibility accounts of the consolidating providers.

3. If the consolidated provider is accepted for regulation under the Alternative Conservation Program, the director shall establish a residential GPCD requirement for the consolidated provider consistent with the methodology used by the director to establish the consolidating providers' residential GPCD requirements as set forth in Appendix 5-K. The director shall also establish and maintain a flexibility account for the consolidated provider in accordance with section 5-106, subsection B, with a beginning balance to be established by the director based on the ending balances in the flexibility accounts of the consolidating providers.

4. If the consolidated provider applies for regulation under the Non-Per Capita Conservation Program or the Alternative Conservation Program and one of the consolidating providers was regulated under that program immediately prior to consolidation, the consolidated provider's application for regulation under the program shall include only the information required by section 5-104 or section 5-105 that has changed since the consolidating provider filed its application for the program.

APPENDIX 5-M
THIRD MANAGEMENT PLAN
LOST & UNACCOUNTED FOR WATER REQUIREMENTS

Lost & Unaccounted For Water Includes:

Leaks:
- Distribution Lines
- Sewer Lines
- Storage Tanks
- Storage Ponds
- Hydrants
- Other

Breaks:
- Distribution Lines
- Sewer Lines
- Mains
- Hydrants
- Other

Measurement Errors:
- Meter Under/Over-Registration
- Source Meter Errors
- Flumes/Weirs Errors

Evaporation

Illegal Connections/Water Theft

Phreatophyte Uses

****

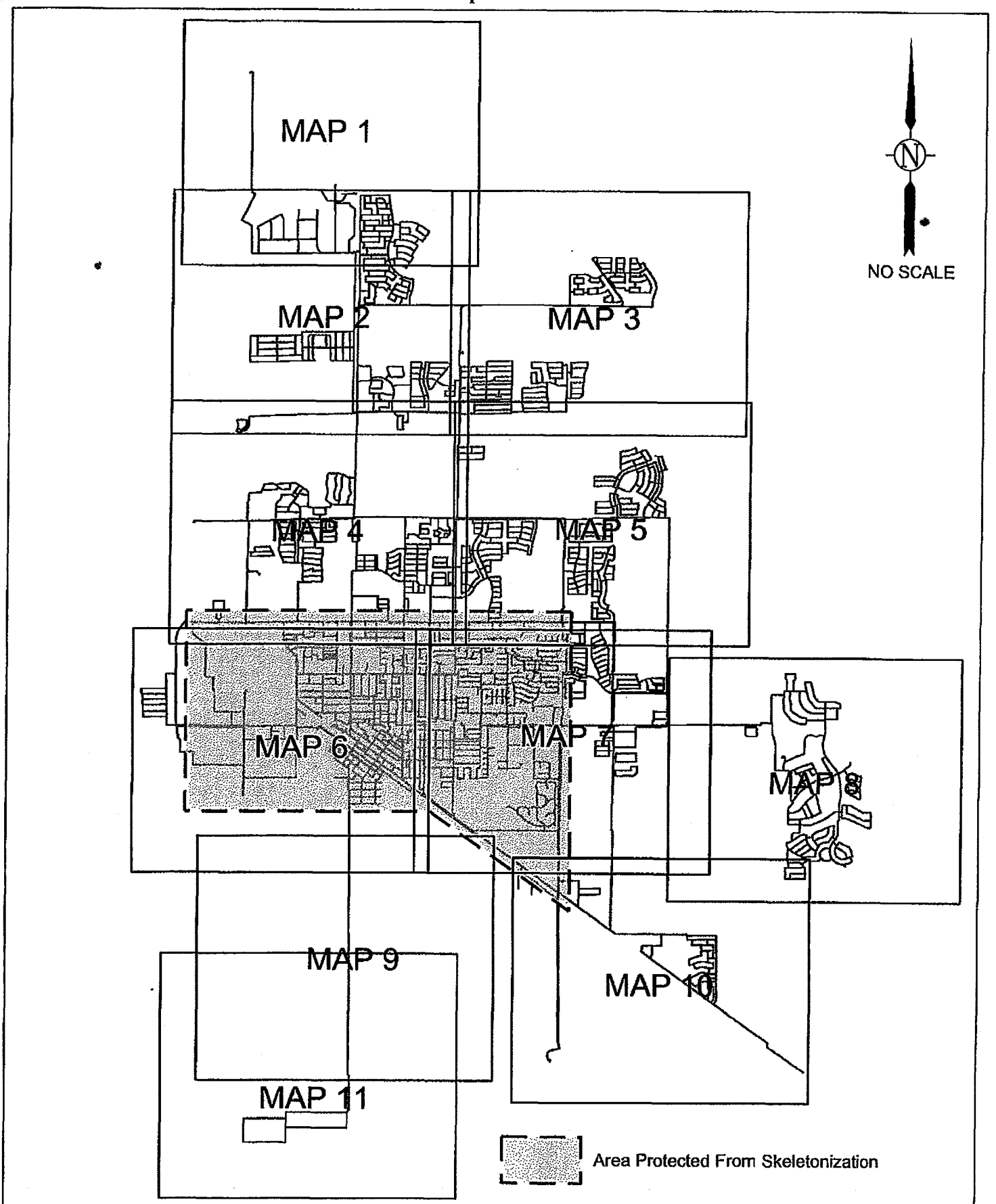
Water System Uses Include:

- Residential Metered Deliveries
- Non-Residential Metered Deliveries
- Standpipe Uses
- Fire Flow [1]
- Hydrant Meter Reading
- Hydrant Flow Tests [1]
- Fire Sprinkler System Flow Tests [1]
- Construction [1]
- Dust Control [1]
- Line Flushing (distribution, sewer, or treatment facility) [1]
- Street Cleaning [1]
- Storm Drain Flushing [1]
- Water Tests & Pressure Tests [1]
- Well Purging

[1] Estimates can be provided, using a method approved by the director. Documentation must be submitted with annual report.

9.4 Casa Grande Lower Zone WaterCAD™ Model Output Summaries

Full Size Maps on attached CD



ARIZONA WATER COMPANY

3805 N. BLACK CANYON HWY • POST OFFICE BOX 29006
PHOENIX, AZ 85015 PHOENIX, AZ 85038
(602) 240-6860

SYSTEM: PINAL VALLEY

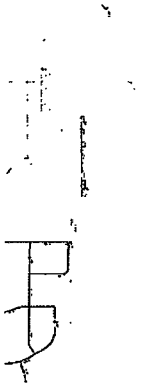
APPROVED BY: JW FS

DRAWN BY: CB DATE: 12/19/2019

MAP ID NUMBER:

CGLZM INDEX MAP

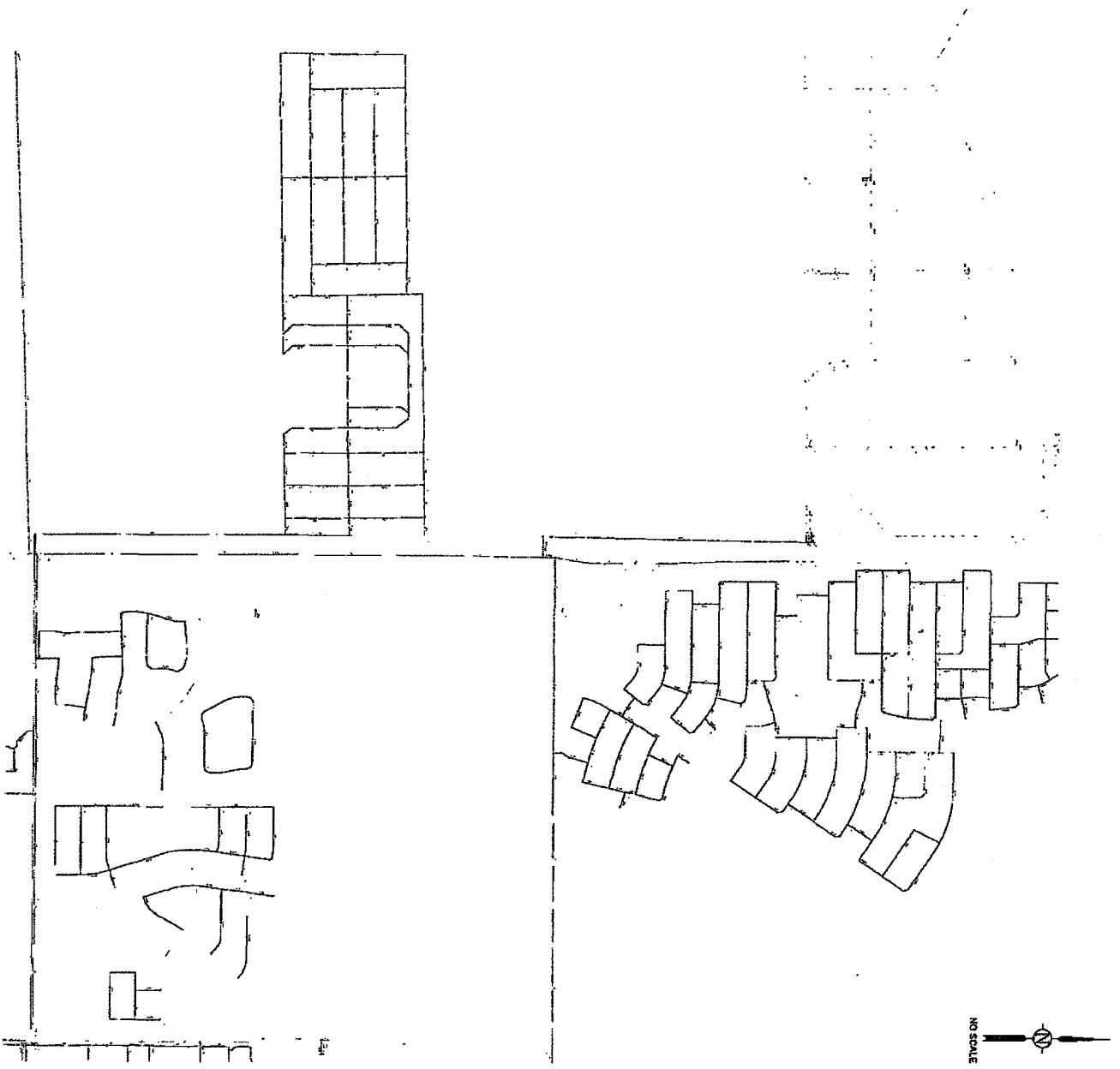
Full Size Maps on attached CD



NO SCALE

ARIZONA WATER COMPANY 3805 N. BLACK CANYON HWY • POST OFFICE BOX 29006 PHOENIX, AZ 85015 PHOENIX, AZ 85038 (602) 240-5860	SYSTEM: PINAL VALLEY APPROVED BY: JW FS DRAWN BY: CB DATE: 12-28-2010	MAP ID NUMBER: CGLZM - MAP 1	MAP LEGEND ≤ 6" ≤ 8" ≤ 12" ≤ 16" ≤ 24"

Full Size Maps on attached CD



ARIZONA WATER COMPANY

3805 N. BLACK CANYON HWY • POST OFFICE BOX 29006
PHOENIX, AZ 85015 PHOENIX, AZ 85038
(602) 240-5550

SYSTEM: PINAL VALLEY

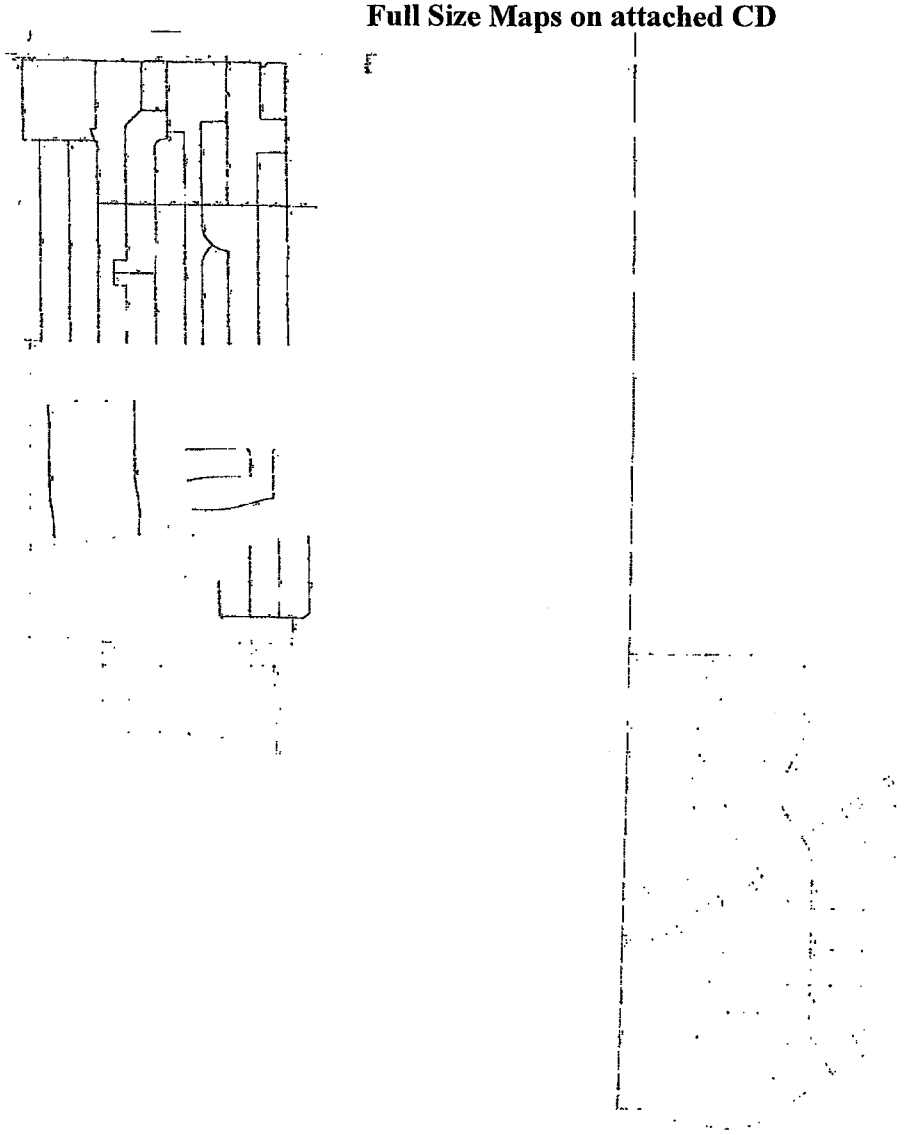
APPROVED BY: JW FS

DRAWN BY: CB DATE: 12-29-2010

MAP ID NUMBER: CGLZM - MAP 2

MAP LEGEND:
- ≤ 6"
- ≤ 8"
- ≤ 12"
- ≤ 16"
- ≤ 24"

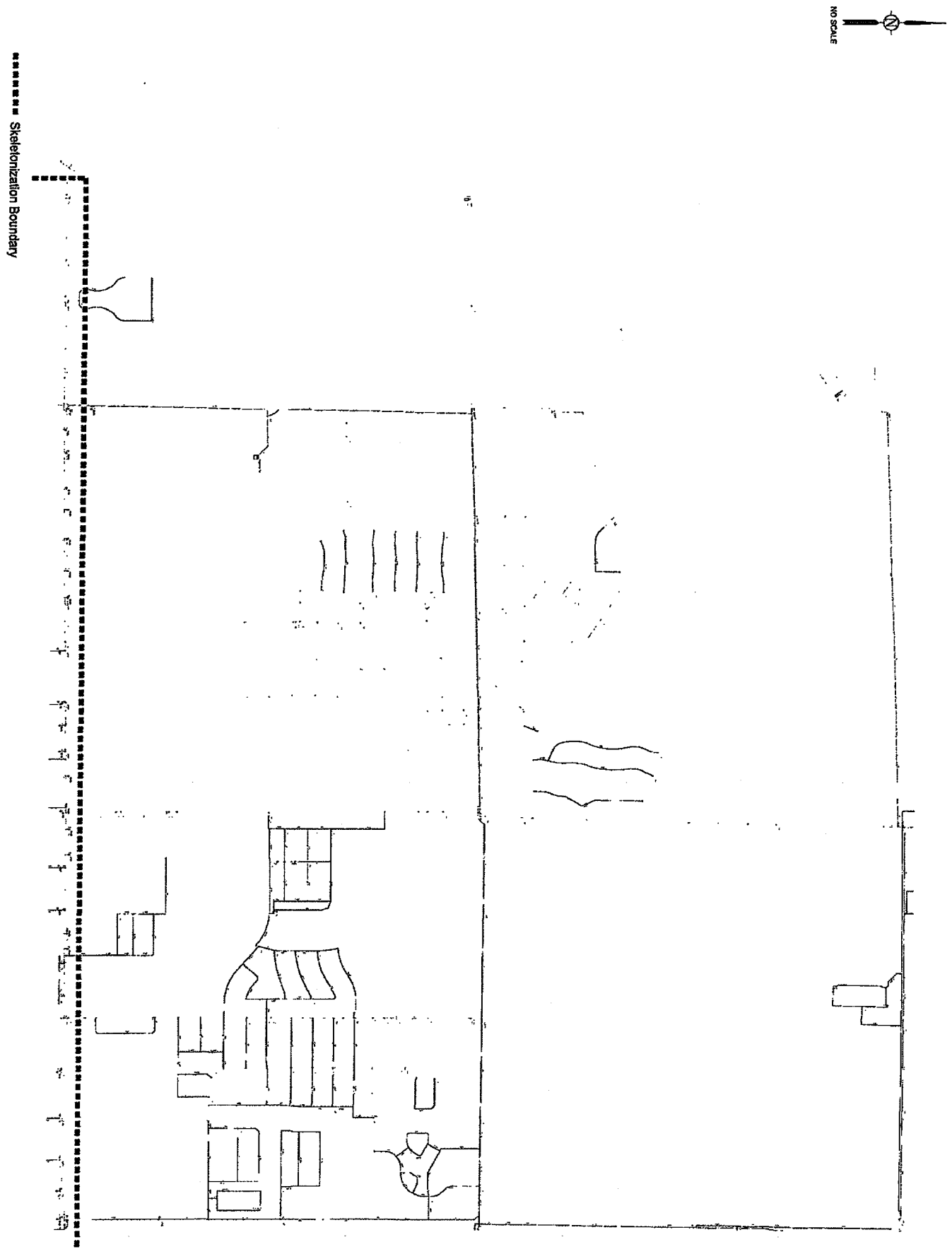
Full Size Maps on attached CD



NO SCALE

ARIZONA WATER COMPANY 3805 N. BLACK CANYON HWY • POST OFFICE BOX 29006 PHOENIX, AZ 85015 PHOENIX, AZ 85038 (602) 240-5860	SYSTEM: PINAL VALLEY APPROVED BY: JW FS DRAWN BY: CB DATE: 12-20-2010	MAP ID NUMBER: CGLZM - MAP 3	MAP LEGEND: ≤ 6" ≤ 8" ≤ 12" ≤ 16" ≤ 24"

Full Size Maps on attached CD



ARIZONA WATER COMPANY

3805 N. BLACK CANYON HWY • POST OFFICE BOX 29006
PHOENIX, AZ 85015 PHOENIX, AZ 85038
(602) 240-5650

SYSTEM: PINAL VALLEY

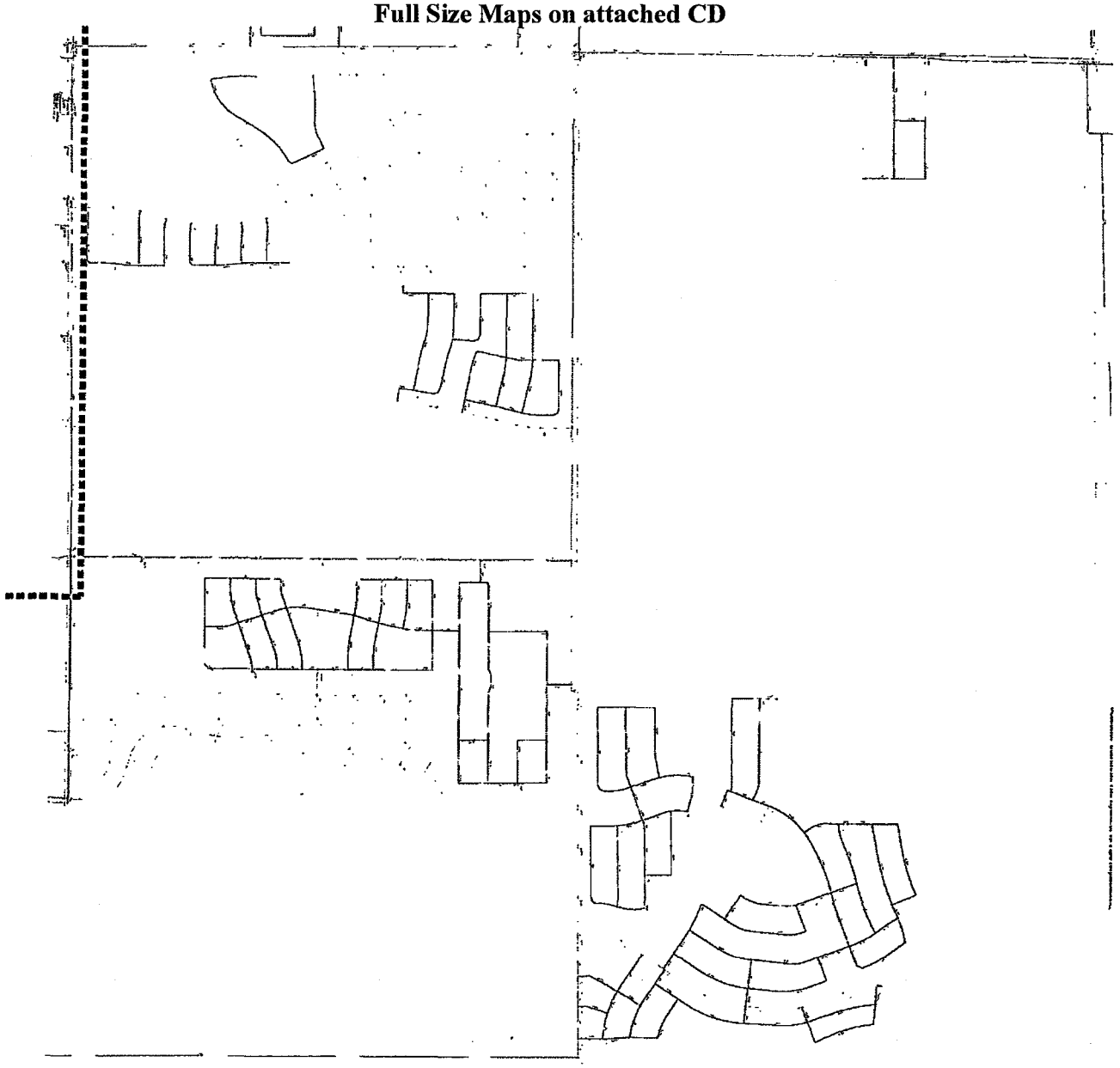
APPROVED BY: JW FS

DRAWN BY: CB DATE: 12-29-2010

MAP ID NUMBER: CGLZM - MAP 4

MAP LEGEND:
- ≤ 6"
- ≤ 8"
- ≤ 12"
- ≤ 16"
- ≤ 24"

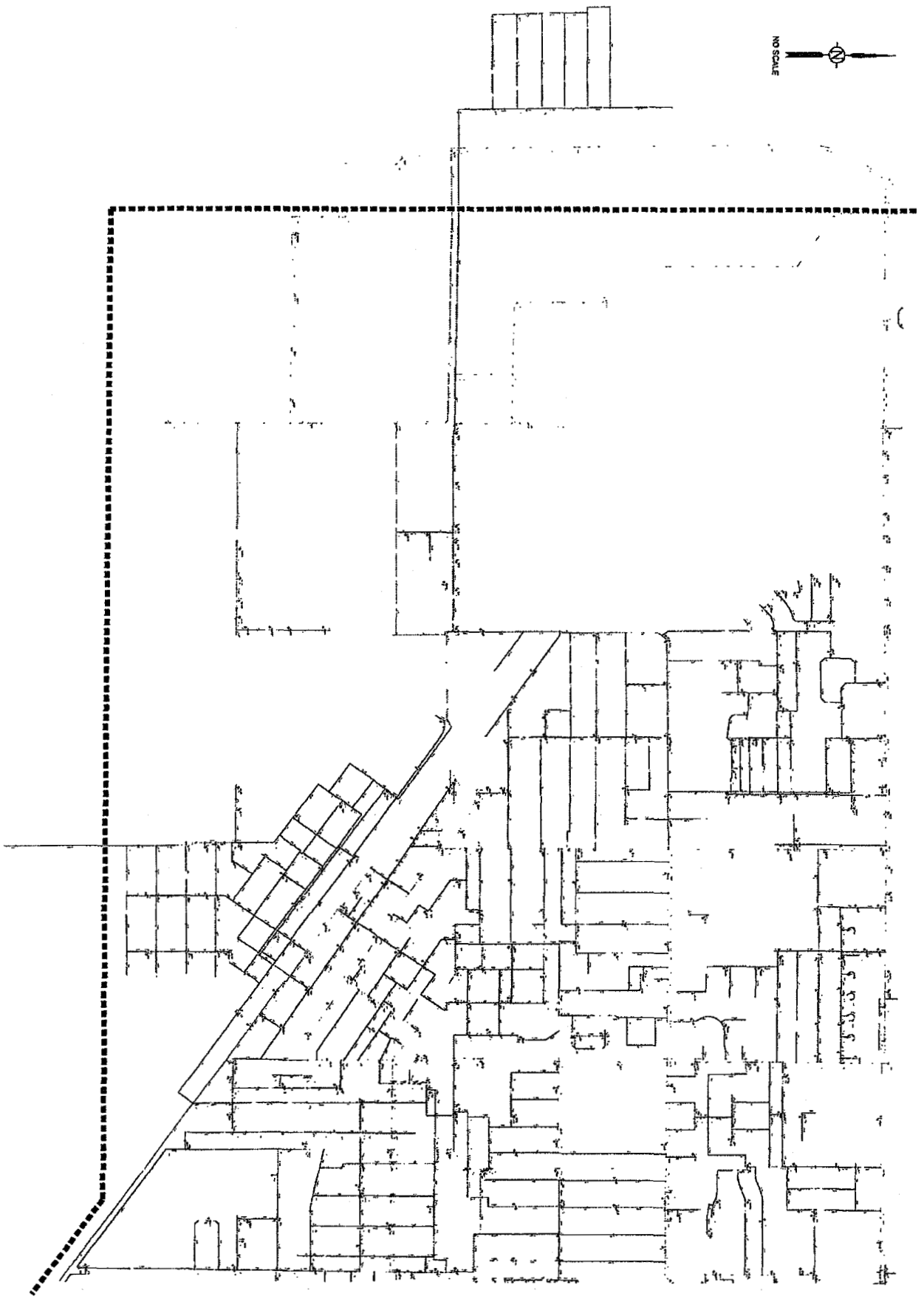
Full Size Maps on attached CD



NO SCALE

ARIZONA WATER COMPANY 3805 N. BLACK CANYON HWY • POST OFFICE BOX 29006 PHOENIX, AZ 85016 PHOENIX, AZ 85038 (602) 240-6860	SYSTEM: PINAL VALLEY APPROVED BY: JIV FS DRAWN BY: CB DATE: 12-28-2010	MAP ID NUMBER: CGLZM - MAP 5	MAP LEGEND: ≤ 6" ≤ 8" ≤ 12" ≤ 16" ≤ 24"

Full Size Maps on attached CD



ARIZONA WATER COMPANY

3805 N. BLACK CANYON HWY • POST OFFICE BOX 29006
PHOENIX, AZ 85015 PHOENIX, AZ 85038
(602) 240-6860

SYSTEM: PINAL VALLEY

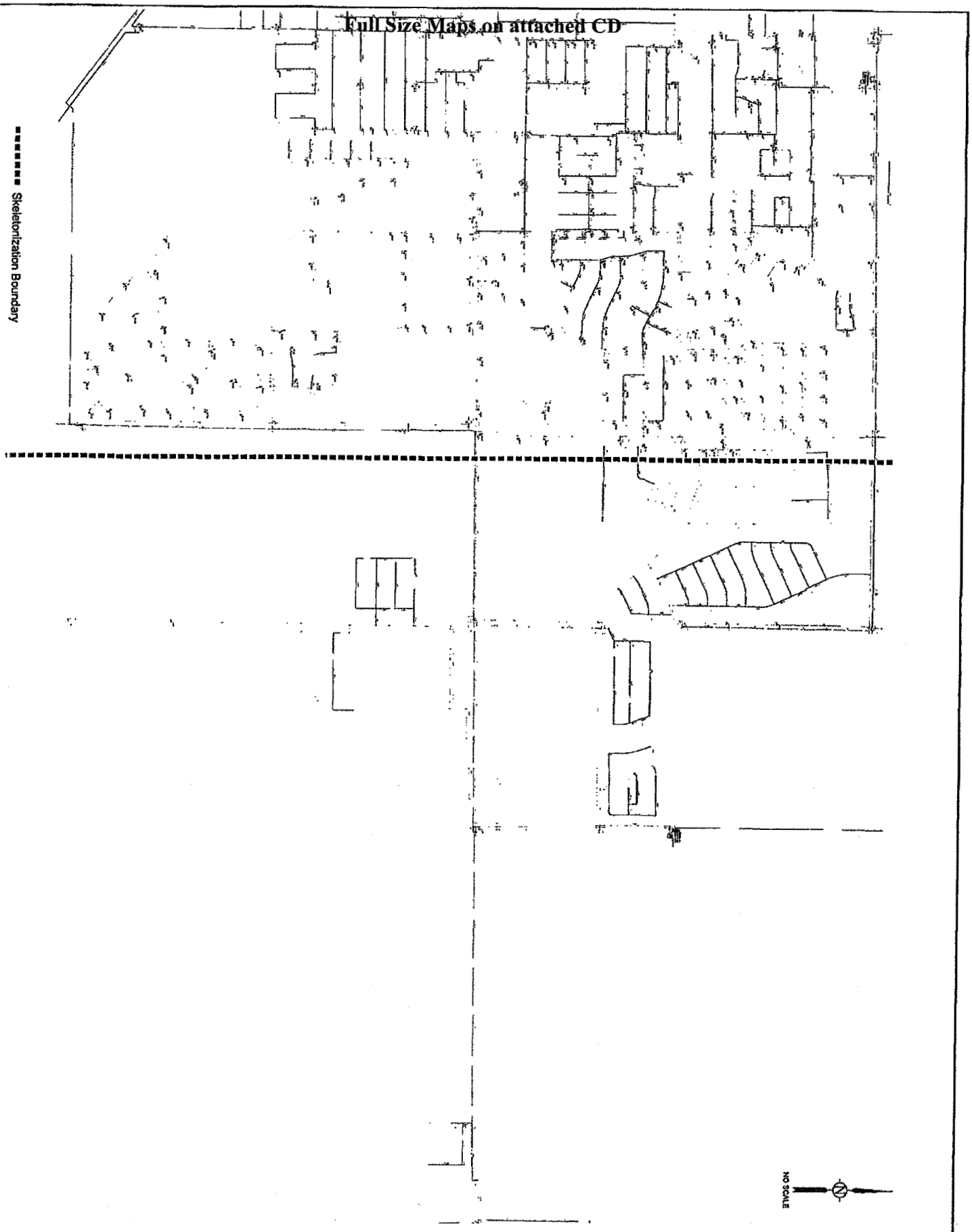
APPROVED BY: JW FS

DRAWN BY: CB DATE: 12-29-2010

MAP ID NUMBER: CGLZM - MAP 6

MAP LEGEND: ≤ 6" ≤ 8" ≤ 12" ≤ 16" ≤ 24"

Full Size Maps on attached CD



ARIZONA WATER COMPANY

3805 N. BLACK CANYON HWY • POST OFFICE BOX 29006
PHOENIX, AZ 85015 PHOENIX, AZ 85038
(602) 240-6860

SYSTEM: PINAL VALLEY

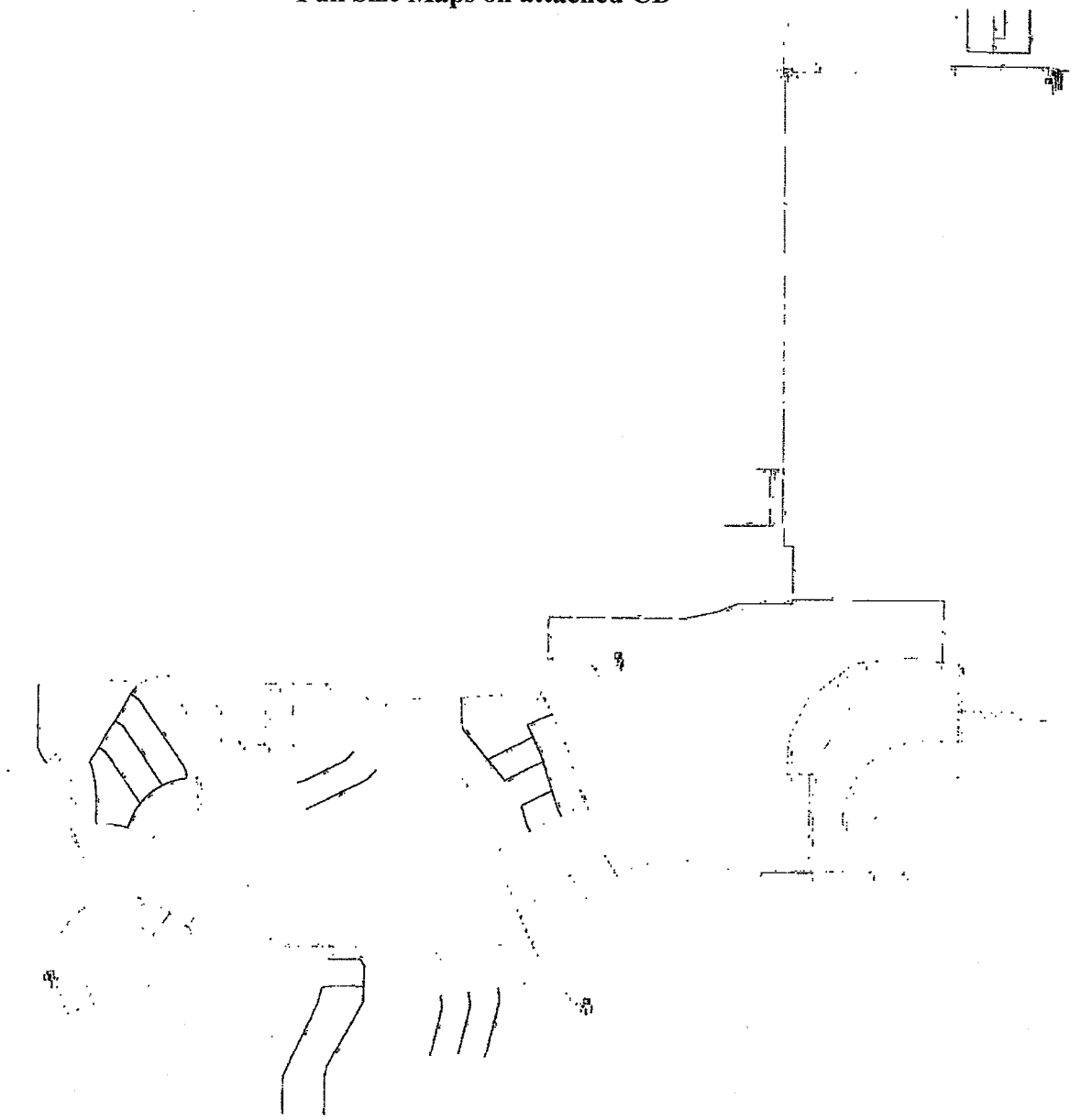
APPROVED BY: JW FS

DRAWN BY: CB DATE: 12-23-10/0

MAP ID NUMBER: CGLZM - MAP 7

MAP LEGEND:
- ≤ 6"
- ≤ 8"
- ≤ 12"
- ≤ 16"
- ≤ 24"

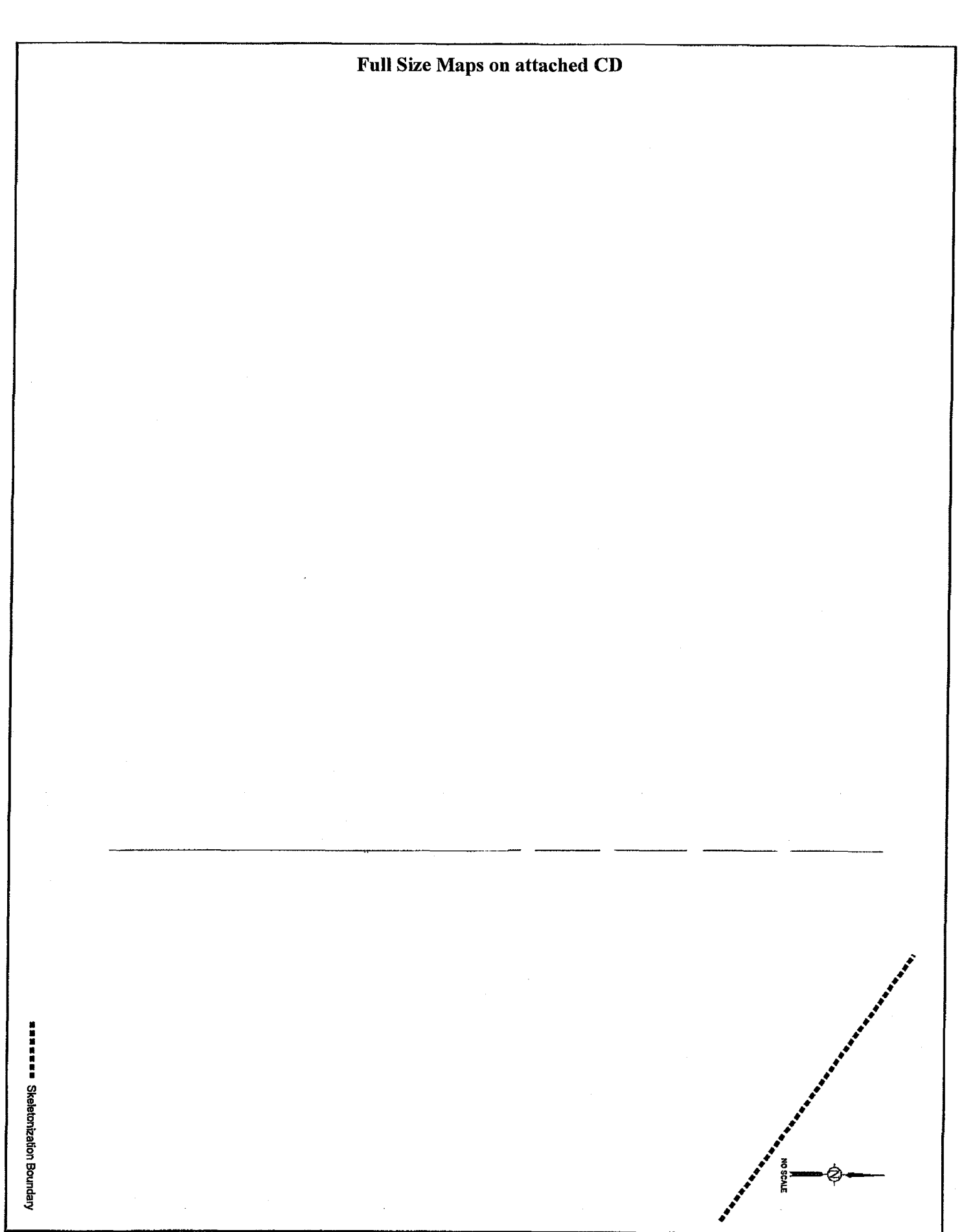
Full Size Maps on attached CD



NO SCALE

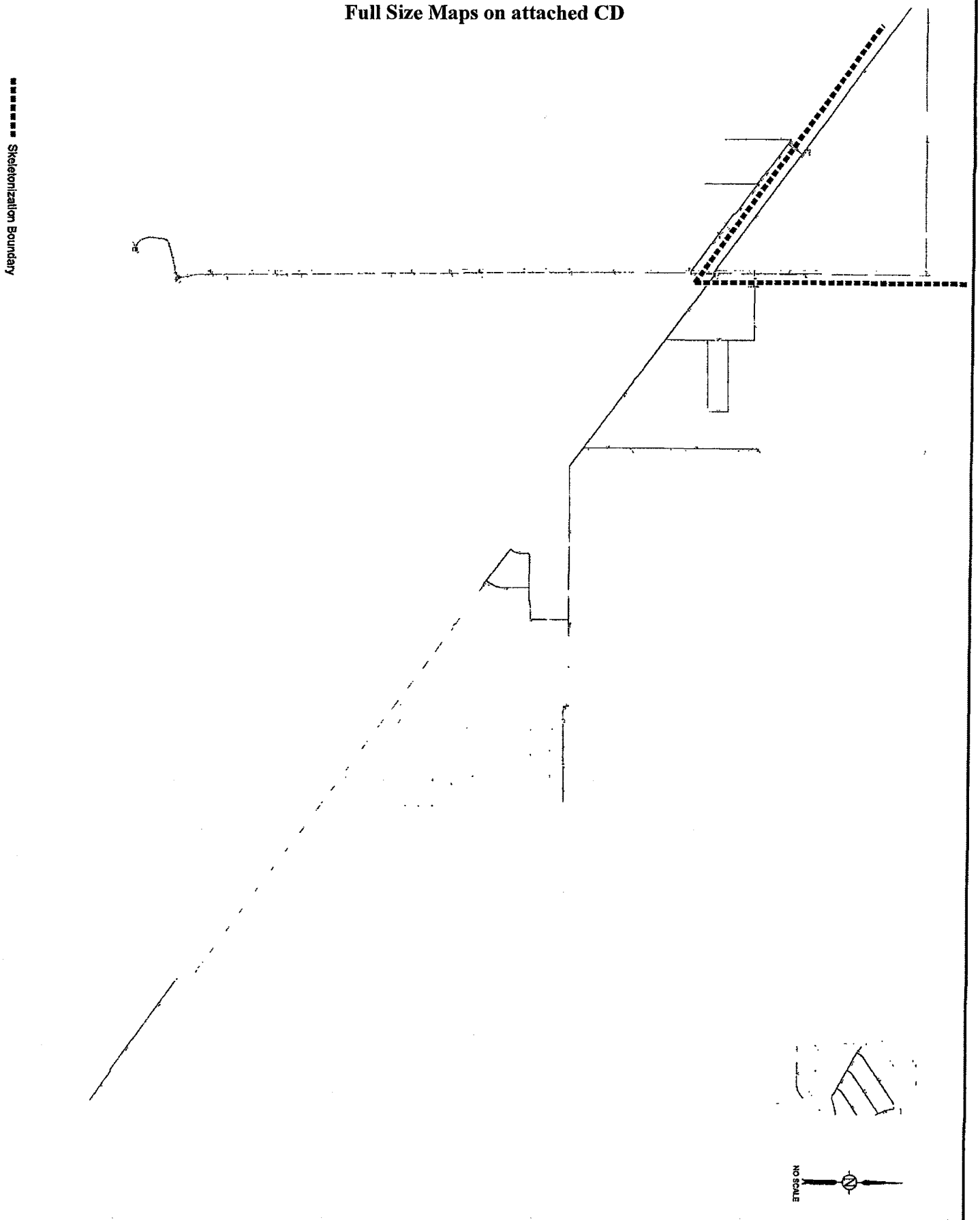
ARIZONA WATER COMPANY	SYSTEM	MAP ID NUMBER	MAP LEGEND:
3805 N. BLACK CANYON HWY • POST OFFICE BOX 29006 PHOENIX, AZ 85015 PHOENIX, AZ 85038 (602) 240-6860	PINAL VALLEY	CGLZM - MAP 8	≤ 6" ≤ 8" ≤ 12" ≤ 16" ≤ 24"
	APPROVED BY: JW FS		
	DRAWN BY: CB DATE: 12-29-2016		

Full Size Maps on attached CD



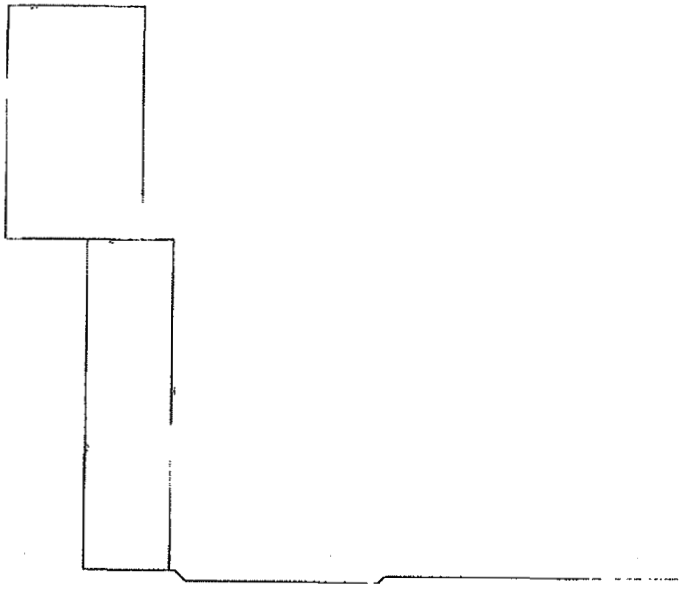
ARIZONA WATER COMPANY 3805 N. BLACK CANYON HWY • POST OFFICE BOX 29006 PHOENIX, AZ 85015 PHOENIX, AZ 85038 (602) 240-6860	SYSTEM: PINAL VALLEY APPROVED BY: JW FS DRAWN BY: CB DATE: 12-29-2010	MAP ID NUMBER: CGLZM - MAP 9	MAP LEGEND: ≤ 6" ≤ 8" ≤ 12" ≤ 16" ≤ 24"

Full Size Maps on attached CD



ARIZONA WATER COMPANY 3805 N. BLACK CANYON HWY • POSY OFFICE BOX 29006 PHOENIX, AZ 85015 PHOENIX, AZ 85038 (602) 240-6860	SYSTEM: PINAL VALLEY APPROVED BY: JW FS DRAWN BY: CB DATE: 12-28-2010	MAP ID NUMBER: CGLZM - MAP 10	MAP LEGEND: ≤ 6" ≤ 8" ≤ 12" ≤ 16" ≤ 24"

Full Size Maps on attached CD



NO SCALE

ARIZONA WATER COMPANY 3805 N. BLACK CANYON HWY • POST OFFICE BOX 29006 PHOENIX, AZ 85015 PHOENIX, AZ 85038 (602) 240-5860	SYSTEM: PINAL VALLEY APPROVED BY: JW FS DRAWN BY: CS DATE: 12-28-2010	MAP ID NUMBER: CGLZM - MAP 11	MAP LEGEND: ≤ 6" ≤ 8" ≤ 12" ≤ 16" ≤ 24"

Project Inventory: Casa Grande Lower Zone Model.wtg

Title	
Engineer	
Company	
Date	10/28/2010
Notes	

Scenario Summary

ID	32555
Label	CGLZM With Pipe Replacment Master Plan
Notes	
Active Topology	Pipe Replacement
Physical	Pipe Replacement
Demand	<I> Average Day Peak Month
Initial Settings	<I> Base Initial Settings
Operational	<I> Base Operational
Age	<I> Base Age
Constituent	<I> Base Constituent
Trace	<I> Base Trace
Fire Flow	<I> Downtown Fire Flows
Flushing	<I> Base Flushing
Energy Cost	<I> Base Energy Cost
Transient	<I> Base Transient
Pressure Dependent Demand	<I> Base Pressure Dependent Demand
User Data Extensions	<I> Base User Data Extensions
Steady State/EPS Solver Calculation Options	<I> Base Calculation Options
Transient Solver Calculation Options	<I> Base Calculation Options

Network Inventory

Pipes	4946	-Constant Speed - No Pump Curve	9
Junctions	3591	-Constant Speed - Pump Curve	0
Hydrants	495	-Shut Down After Time Delay	0
Tanks	8	-Variable Speed/Torque	0
-Circular	8	-Pump Start - Variable Speed/Torque	0
-Non-Circular	0	Variable Speed Pump Batteries	0
-Variable Area	0	PRV's	0
Reservoirs	0	PSV's	0
Pumps	9	PBV's	0
-Constant Power	0	FCV's	0
-Design Point (1 Point)	0	TCV's	0
-Standard (3 Point)	9	GPV's	0
-Standard Extended	0	Isolation Valves	0
-Custom Extended	0	Spot Elevations	0
-Multiple Point	0		

Transient Network Inventory

Air Valves	0	Rupture Disks	0

Project Inventory: Casa Grande Lower Zone Model.wtg

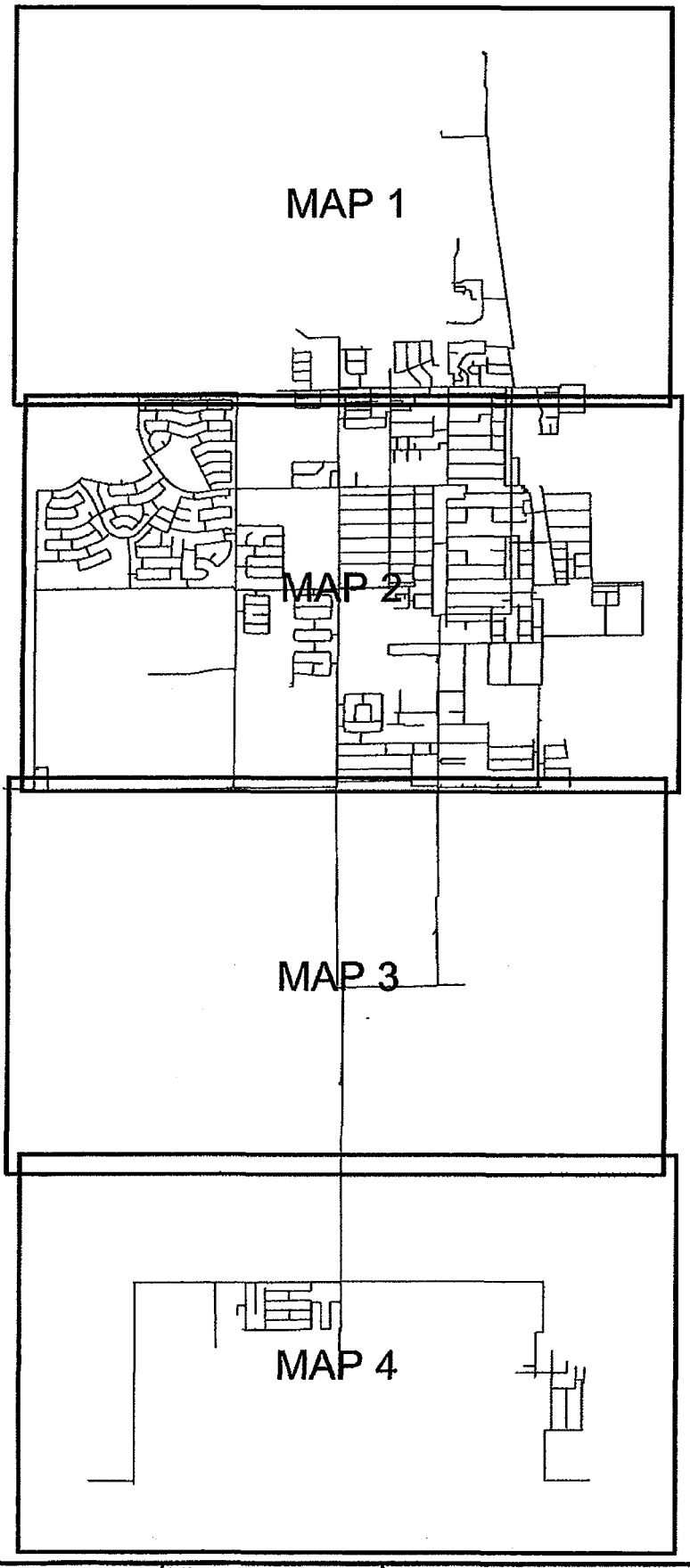
Transient Network Inventory			
-Double Acting	0	Surge Valves	0
-Slow Closing	0	Surge Tanks	0
-Triple Acting	0	-Simple	0
-Vacuum Breaker	0	-Differential	0
Discharges to Atmosphere	0	-Variable Area	0
Orifice	0	Turbines	0
Rating Curve	0	Valves With Linear Area Change	0
Valve	0	Periodic Head-Flows	0
Check Valves	0	-Sinusoidal (Head)	0
-Towards Wye	0	-Not Sinusoidal (Head)	0
-Away from Wye	0	-Sinusoidal (Flow)	0
Hydropneumatic Tanks	0	-Not Sinusoidal (Flow)	0
Orifices Between Pipes	0		

Pressure Pipes Inventory			
6.0 (in)	742,729.27 ft	16.0 (in)	113,777.76 ft
8.0 (in)	409,799.27 ft	24.0 (in)	43,836.68 ft
10.0 (in)	19,175.32 ft	36.0 (in)	1,576.03 ft
12.0 (in)	268,238.36 ft	All Diameters	1,602,682.11 ft
14.0 (in)	3,549.40 ft		

Casa Grande Lower Zone WaterCAD Model
Output Summaries are Available in Work Papers

9.5 Coolidge Distribution System WaterCAD™ Model Output Summaries

Full Size Maps on attached CD



NO SCALE

ARIZONA WATER COMPANY

3805 N. BLACK CANYON HWY · POST OFFICE BOX 29006
PHOENIX, AZ 85015 PHOENIX, AZ 85038
(602) 240-6860

SYSTEM: PINAL VALLEY

APPROVED BY: JW FS

DRAWN BY: CS DATE: 12-28-2010

MAP ID NUMBER

CDSM INDEX MAP

Full Size Maps on attached CD

ARIZONA WATER COMPANY 3805 N. BLACK CANYON HWY • POST OFFICE BOX 29006 PHOENIX, AZ 85015 PHOENIX, AZ 85038 (602) 240-6860	SYSTEM: PINAL VALLEY APPROVED BY: JW FS DRAWN BY: CB DATE: 12-29-2010	MAP ID NUMBER: CDSM - MAP 1	MAP LEGEND: ≤ 6" ≤ 8" ≤ 12" ≤ 16"

Full Size Maps on attached CD

ARIZONA WATER COMPANY

3805 N. BLACK CANYON HWY · POST OFFICE BOX 29006
PHOENIX, AZ 85015 PHOENIX, AZ 85038
(602) 240-6860

SYSTEM: PINAL VALLEY

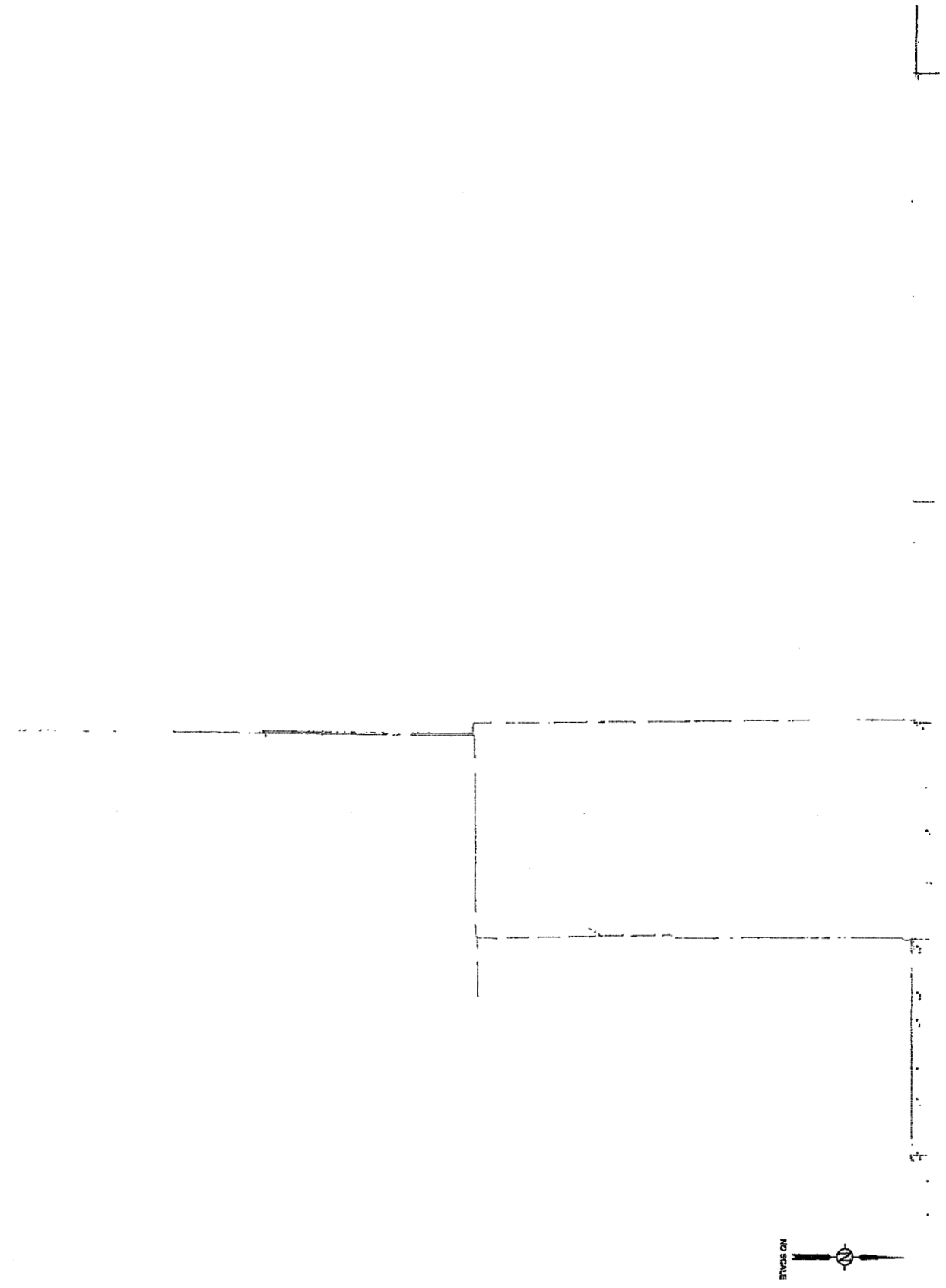
APPROVED BY: JW FS

DRAWN BY: CB DATE: 12-29-2016

MAP ID NUMBER: CDSM - MAP 2

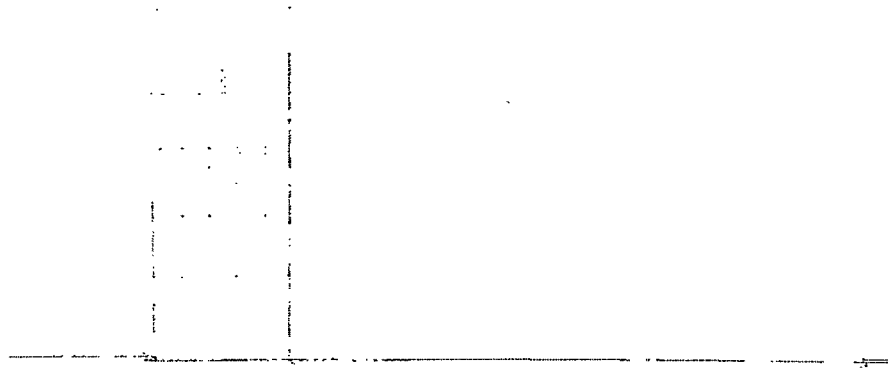
MAP LEGEND:
- ≤ 6"
- ≤ 8"
- ≤ 12"
- ≤ 16"

Full Size Maps on attached CD



ARIZONA WATER COMPANY 3805 N. BLACK CANYON HWY • POST OFFICE BOX 29006 PHOENIX, AZ 85015 PHOENIX, AZ 85038 (602) 240-6860	SYSTEM: PINAL VALLEY APPROVED BY: JW FS DRAWN BY: CB DATE: 12-29-2010	MAP ID NUMBER: CDSM - MAP 3	MAP LEGEND: ≤ 6" ≤ 8" ≤ 12" ≤ 16"

Full Size Maps on attached CD



NO SCALE

ARIZONA WATER COMPANY 3805 N. BLACK CANYON HWY • POST OFFICE BOX 29006 PHOENIX, AZ 85015 PHOENIX, AZ 85038 (602) 240-6860	SYSTEM: PINAL VALLEY APPROVED BY: JW FS DRAWN BY: CB DATE: 12-30-2010	MAP ID NUMBER: CDSM - MAP 4	MAP LEGEND ≤ 6" ≤ 8" ≤ 12" ≤ 16"

Project Inventory: Coolidge.wtg

Title	
Engineer	
Company	
Date	11/3/2010
Notes	

Scenario Summary

ID	5935
Label	Master Plan Pipe Replacement
Notes	
Active Topology	Master Plan Pipe Diameters
Physical	Master Plan Pipe Diameters
Demand	<I> Average Day Peak Month
Initial Settings	<I> Base Initial Settings
Operational	<I> Base Operational
Age	<I> Base Age
Constituent	<I> Base Constituent
Trace	<I> Base Trace
Fire Flow	<I> Down Town Fire Flows Base
Flushing	<I> Base Flushing
Energy Cost	<I> Base Energy Cost
Transient	<I> Base Transient
Pressure Dependent Demand	<I> Base Pressure Dependent Demand
User Data Extensions	<I> Base User Data Extensions
Steady State/EPS Solver Calculation Options	<I> Base Calculation Options
Transient Solver Calculation Options	<I> Base Calculation Options

Network Inventory

Pipes	2246	-Constant Speed - No Pump Curve	4
Junctions	1517	-Constant Speed - Pump Curve	0
Hydrants	466	-Shut Down After Time Delay	0
Tanks	3	-Variable Speed/Torque	0
-Circular	3	-Pump Start - Variable Speed/Torque	0
-Non-Circular	0	Variable Speed Pump Batteries	0
-Variable Area	0	PRV's	0
Reservoirs	0	PSV's	1
Pumps	4	PBV's	0
-Constant Power	0	FCV's	0
-Design Point (1 Point)	0	TCV's	0
-Standard (3 Point)	4	GPV's	0
-Standard Extended	0	Isolation Valves	632
-Custom Extended	0	Spot Elevations	0
-Multiple Point	0		

Transient Network Inventory

Air Valves	0	Rupture Disks	0

Project Inventory: Coolidge.wtg

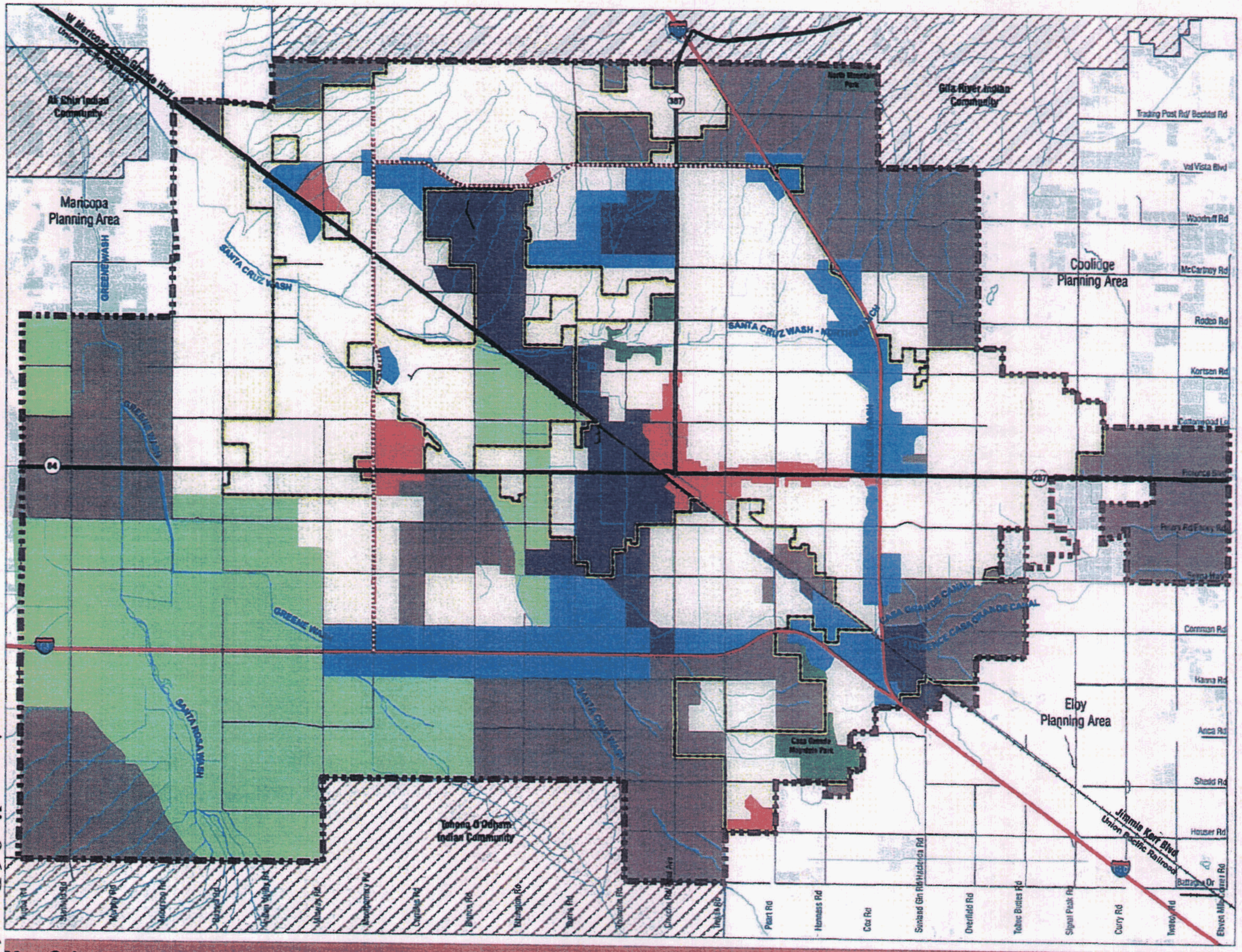
Transient Network Inventory			
-Double Acting	0	Surge Valves	0
-Slow Closing	0	Surge Tanks	0
-Triple Acting	0	-Simple	0
-Vacuum Breaker	0	-Differential	0
Discharges to Atmosphere	0	-Variable Area	0
Orifice	0	Turbines	0
Rating Curve	0	Valves With Linear Area Change	0
Valve	0	Periodic Head-Flows	0
Check Valves	0	-Sinusoidal (Head)	0
-Towards Wye	0	-Not Sinusoidal (Head)	0
-Away from Wye	0	-Sinusoidal (Flow)	0
Hydropneumatic Tanks	0	-Not Sinusoidal (Flow)	0
Orifices Between Pipes	0		

Pressure Pipes Inventory			
6.0 (in)	274,114.09 ft	16.0 (in)	10,672.99 ft
8.0 (in)	135,450.55 ft	24.0 (in)	141.22 ft
10.0 (in)	31,176.35 ft	All Diameters	524,468.70 ft
12.0 (in)	72,913.50 ft		

Coolidge Distribution System WaterCAD Model Output Summaries are Available in Work Papers

9.6 City of Casa Grande General Plan 2020 – Land Use

EDAW | AECOM



LEGEND

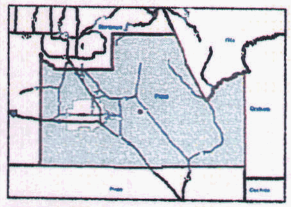
- Planning Area Boundary
- Incorporated City Limits
- Indian Lands
- Rivers/Washes/Canals
- Railroads
- Interstates
- State Highways
- Arterial Streets
- Future Expressways

General Plan 2020 Land Use Categories

- Agriculture
- Rural
- Neighborhoods
- Community Center
- Commerce and Business
- Manufacturing/Industry
- Open Space

Notes:

The land use map of the general plan 2020 is visually a very different map to the previous general plan 2010 and should not to be mistaken for a detailed zoning map. The land use map intentionally avoids being unduly prescriptive with regards to where small-scale commercial areas or traditional residential densities should be located. Instead, the map designates the location of the six land use categories within which a series of appropriate uses and zoning will be applicable. For example, in the Neighborhoods category, the principle uses will be a mix of residential densities, supported by an appropriate mix and level of commercial and employment uses. The land use map is to be read in conjunction with the land use category sub-section where further details are provided.



City of Casa Grande

General Plan 2020

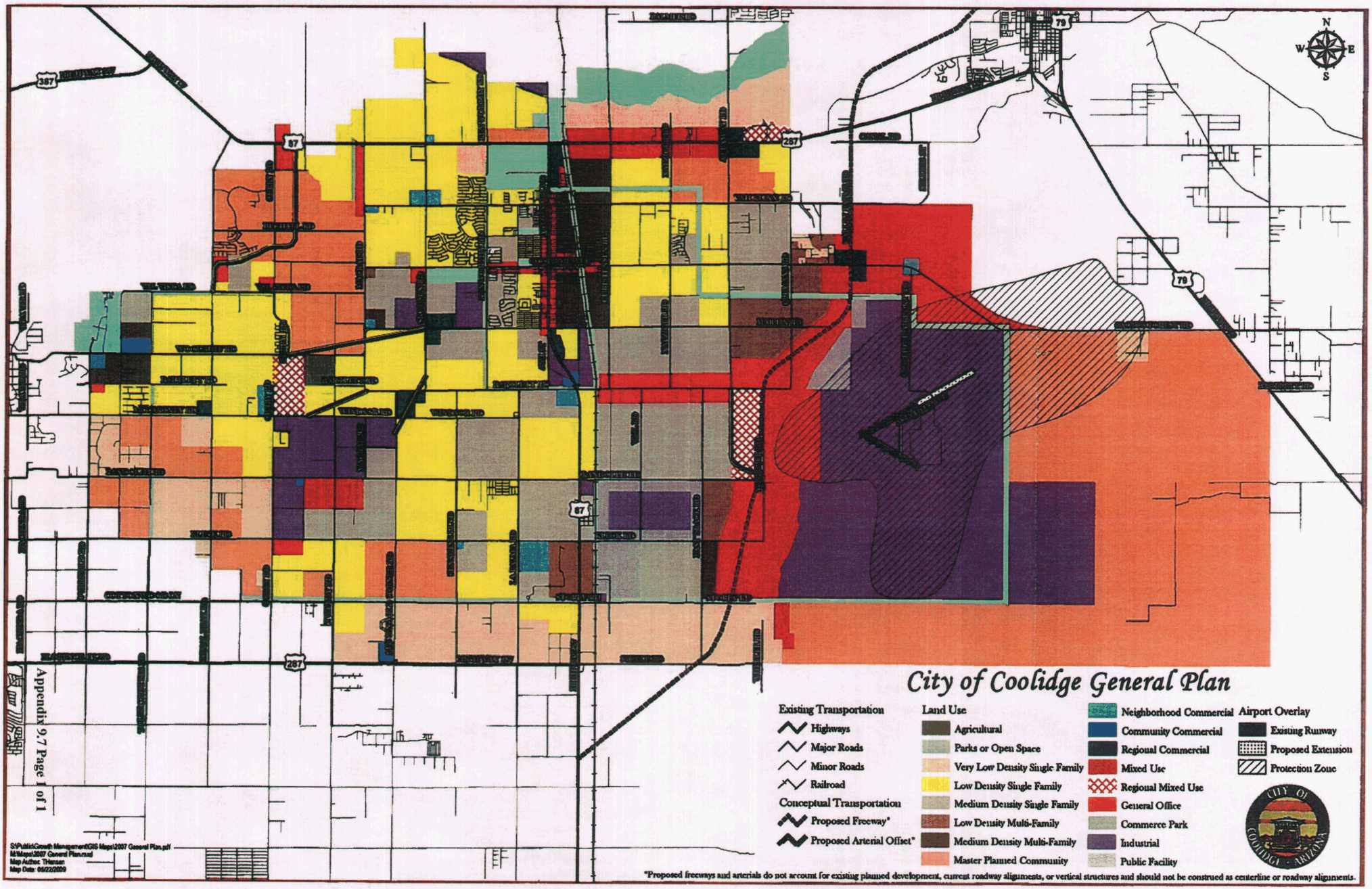
June 2009

SOURCE:

Map C-1

GENERAL PLAN 2020 - LAND USE

9.7 City of Coolidge General Plan


N
W
E
S
387
87
287
79
City of Coolidge General Plan
Existing Transportation
Highways
Major Roads
Minor Roads
Railroad
Conceptual Transportation
Proposed Freeway*
Proposed Arterial Offset*
Land Use
Agricultural
Parks or Open Space
Very Low Density Single Family
Low Density Single Family
Medium Density Single Family
Low Density Multi-Family
Medium Density Multi-Family
Master Planned Community
Neighborhood Commercial
Community Commercial
Regional Commercial
Mixed Use
Regional Mixed Use
General Office
Commerce Park
Industrial
Public Facility
Airport Overlay
Existing Runway
Proposed Extension
Protection Zone
CITY OF COOLIDGE · ARIZONA
*Proposed freeways and arterials do not account for existing planned development, current roadway alignments, or vertical structures and should not be construed as centerline or roadway alignments.
S:\Public\Growth Management\GIS Maps\2007 General Plan.pdf
M:\Maps\2007 General Plan.mxd
Map Author: THensen
Map Date: 05/22/2009

9.8 City of Casa Grande Fire Flow Letter

City of Casa Grande
Fire Department

Scott R. Miller, Fire Chief

Ray Murrieta
220 East 2nd St.
Casa Grande, Az 85122

Ray: The following information should help you in designing the water system for future growth in the City of Casa Grande.

According to the 2009 IFC (International Fire Code) the required fire flows for industrial areas would require a minimum fire flow of 2000 GPM for a minimum 2 hrs in duration.

Commercial developments would require a minimum fire flow of 1500 GPM for a minimum of 2 hrs in duration.

One and two family dwellings having a fire flow calculation area that does not exceed 3600 square feet shall require a 1000 GPM fire flow for a minimum of 1hr in duration.

Yours in a Fire Safe Community

Paul Zalewski

Paul Zalewski
Fire Marshal City of Casa Grande

Telephone: (520) 421-8777 - Telefacsimile: (520) 836-1129
Administration: 3181 North Lear Avenue - Casa Grande, Arizona 85222

9.9 City of Coolidge Fire Flow Letter

CITY OF COOLIDGE FIRE DEPARTMENT

Mailing Address: 130 W. Central Avenue Coolidge, AZ. 85128
Station 1-103 W. Pinkley Avenue / Station 2-1299 S.Signal Peak Road
Phone: 520-723-5311 Fax: 520-723-6018

Fire Chief *Mickey McHugh*
Assistant Chief *Andy Hernandez*

November 9, 2010

Arizona Water Company
448 W. Central Ave.
Coolidge, AZ 85128

Ray Murietta,

The following Fire Flow rates, which are only estimates and subject to change, are provided As a guideline for water line upgrade development in the City of Coolidge.

Residential:	1,200 GPM
Commercial:	2,000 GPM
Industrial:	2,750 GPM

The Fire Flow Rates of the water supply is measured at 20 PSI residual pressure that is available For firefighting. This is per the International Fire Code and NFPA

If there should be any querstions or further information needed please give me a call.

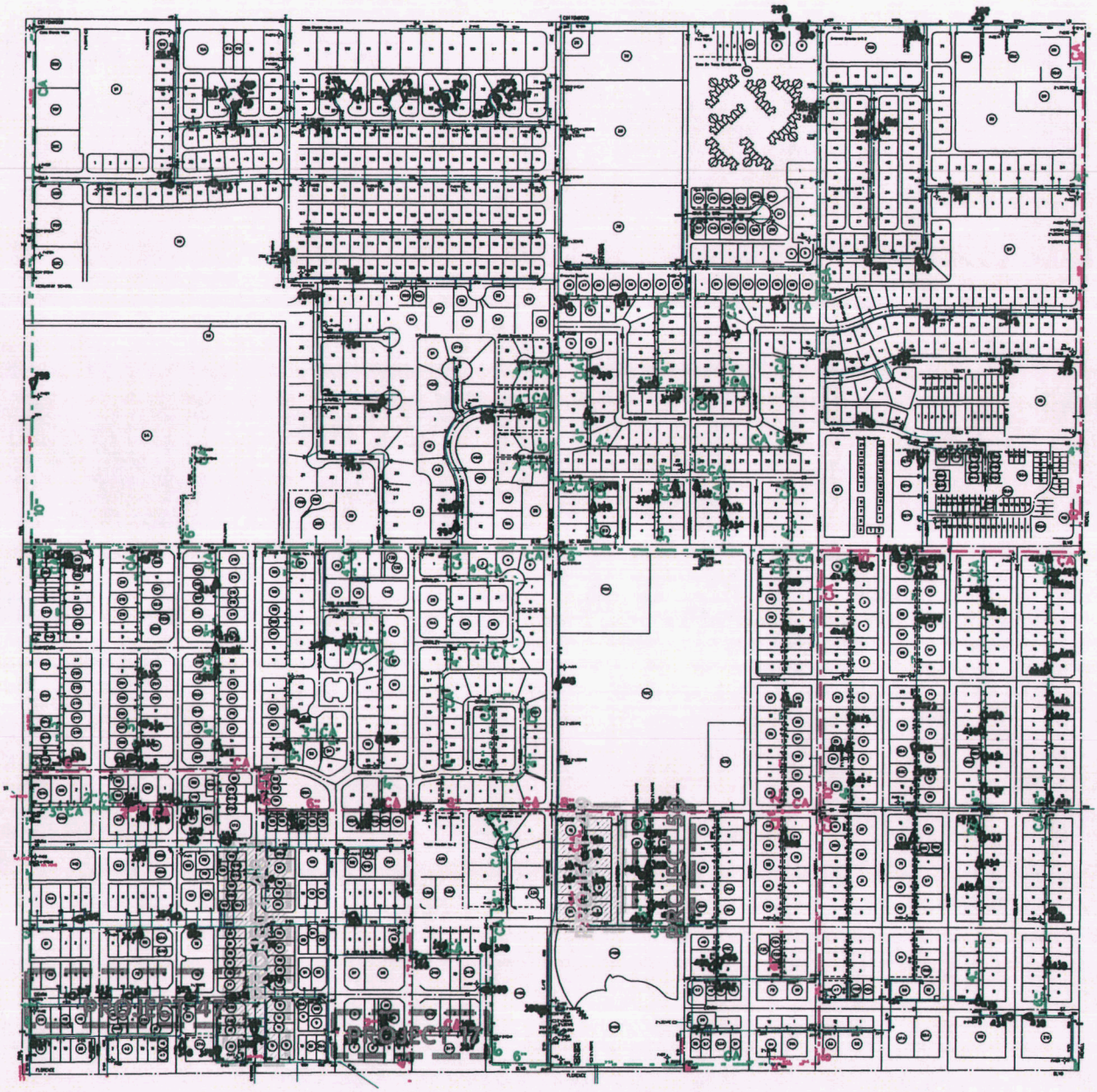
Mickey McHugh

Mickey McHugh
Fire Chief
130 W.Central Ave.
Coolidge, AZ 85228
(520) 723-6015 (OFFICE)
(520) 723-6018 (FAX)
mickeym@coolidgeaz.com

xc: Robert F. Flatley, City Manager
James Myers, Building Official
file

9.10 Recommended Projects and Preliminary Cost Estimates

Full Size Maps on attached CD



PROJECTS 17 AND 47-50

ARIZONA WATER COMPANY

3805 N. BLACK CANYON HWY • POST OFFICE BOX 29006
PHOENIX, AZ 85015 PHOENIX, AZ 85038
(602) 240-6860

SYSTEM	PINAL VALLEY
LOCATION	SEC.20-T.6S.,R.6E.
SCALE	1"=300'
DATE	12/29/2010
DRAWN BY	JS
APPROVED BY	AH/FS

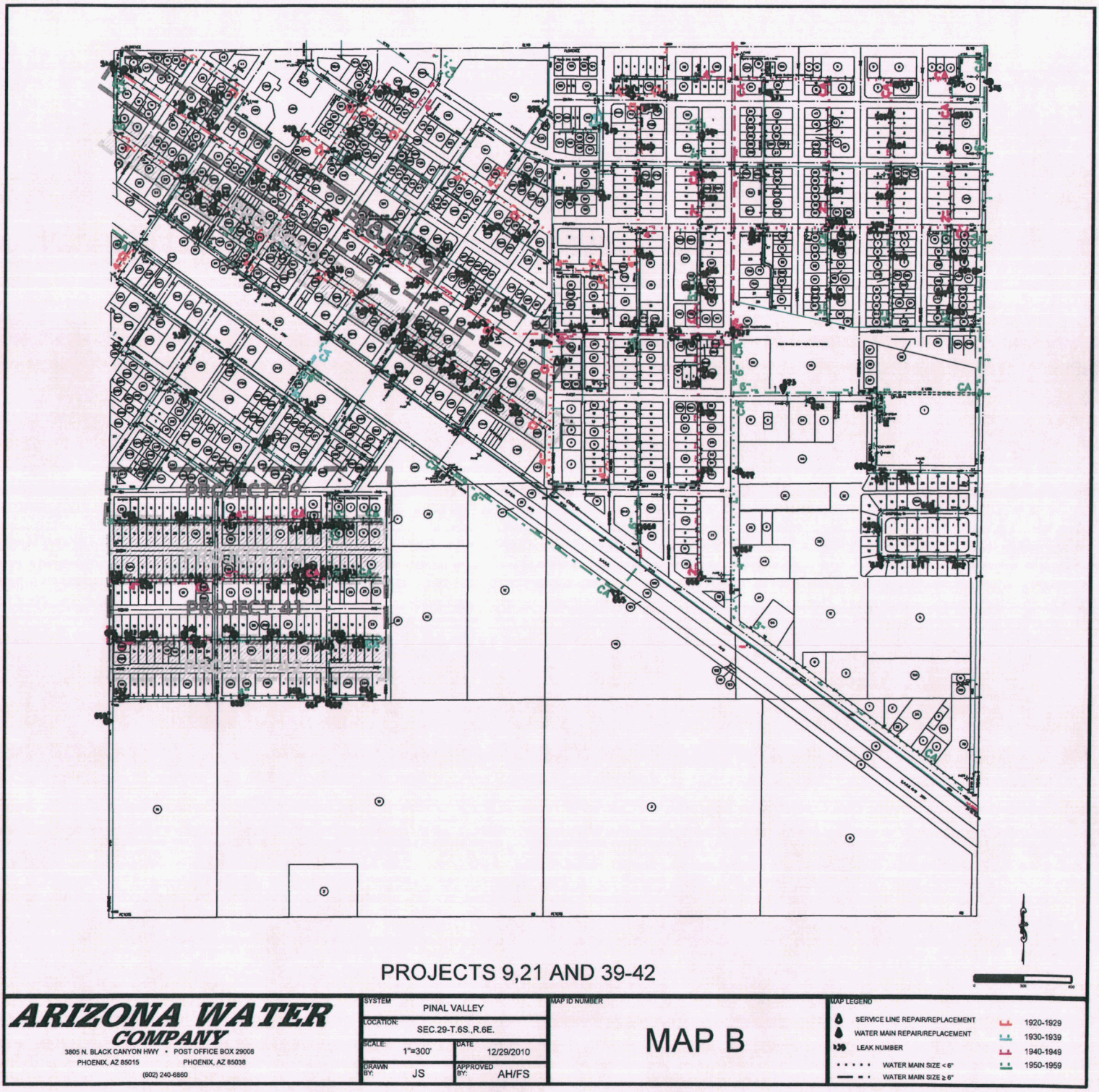
MAP ID NUMBER

MAP A

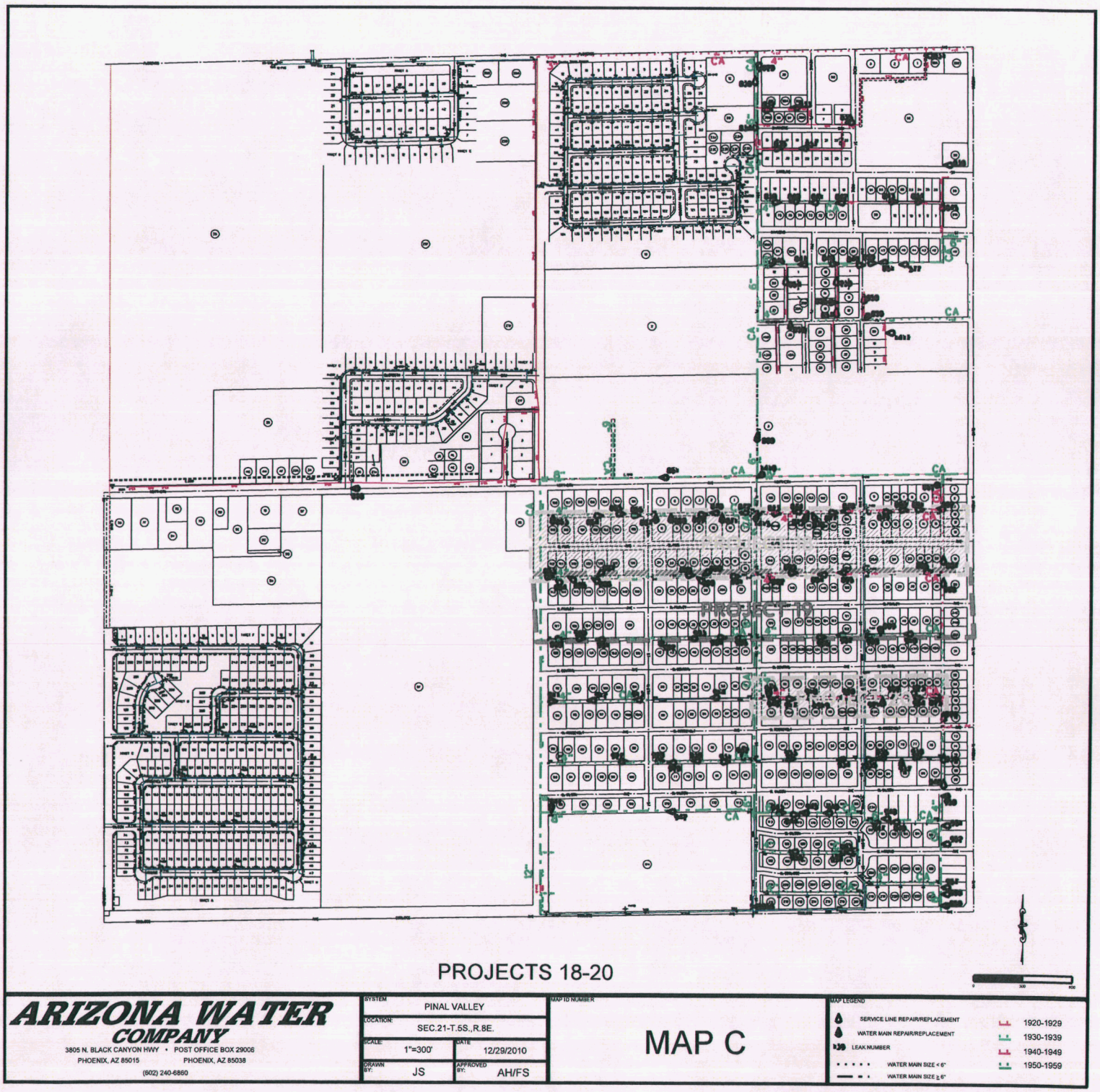
MAP LEGEND

- SERVICE LINE REPAIR/REPLACEMENT
- WATER MAIN REPAIR/REPLACEMENT
- LEAK NUMBER
- WATER MAIN SIZE < 6"
- WATER MAIN SIZE ≥ 6"
- 1920-1929
- 1930-1939
- 1940-1949
- 1950-1959

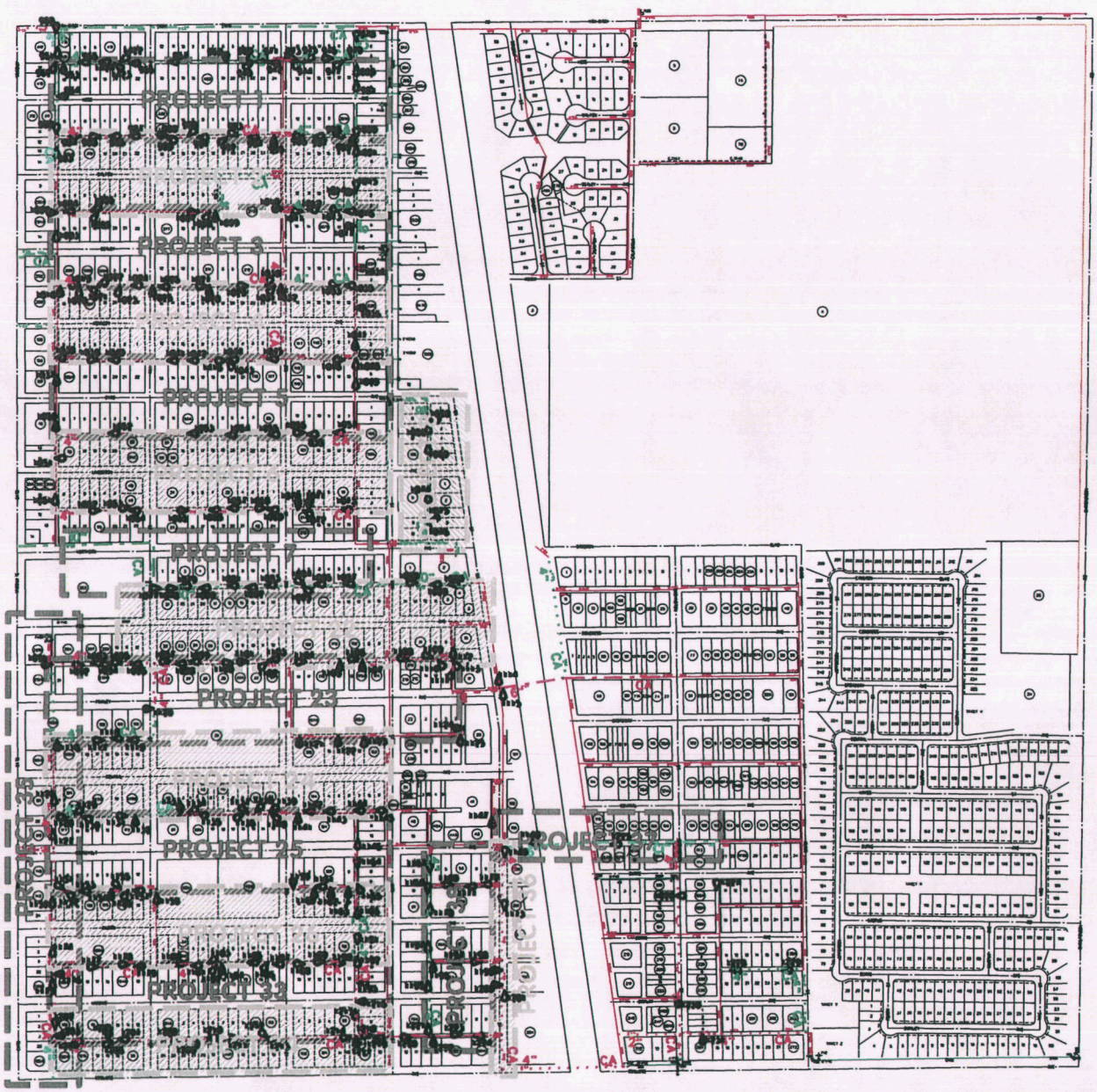
Full Size Maps on attached CD



Full Size Maps on attached CD



Full Size Maps on attached CD



PROJECTS 1-8, 22-26 AND 33-38

ARIZONA WATER COMPANY

3805 N. BLACK CANYON HWY • POST OFFICE BOX 29006
PHOENIX, AZ 85015 PHOENIX, AZ 85038
(602) 240-6860

SYSTEM	PINAL VALLEY
LOCATION	SEC.22-T.5S.,R.8E.
SCALE	1"=300'
DATE	12/29/2010
DRAWN BY	JS
APPROVED BY	AH/FS

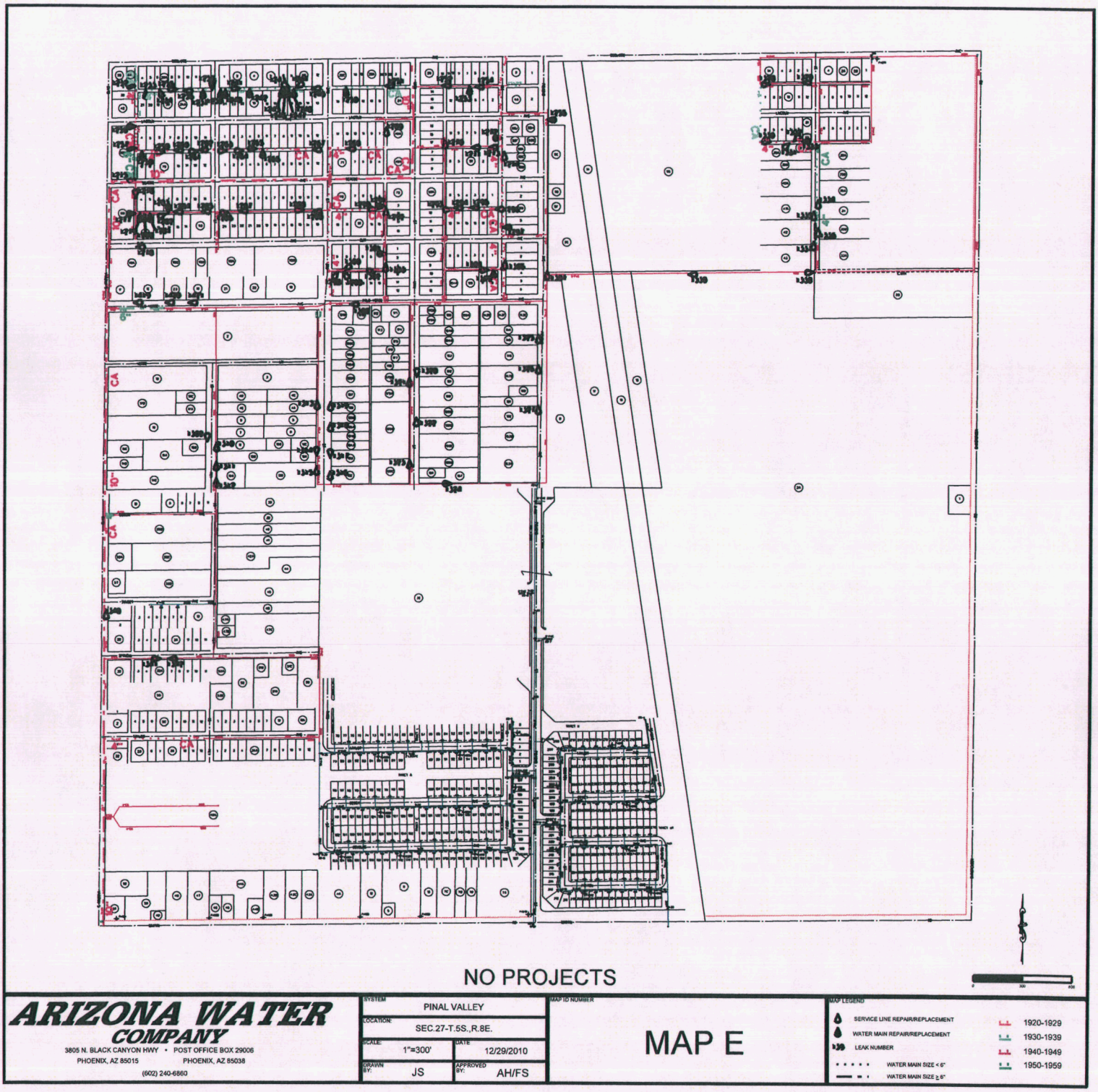
MAP ID NUMBER

MAP D

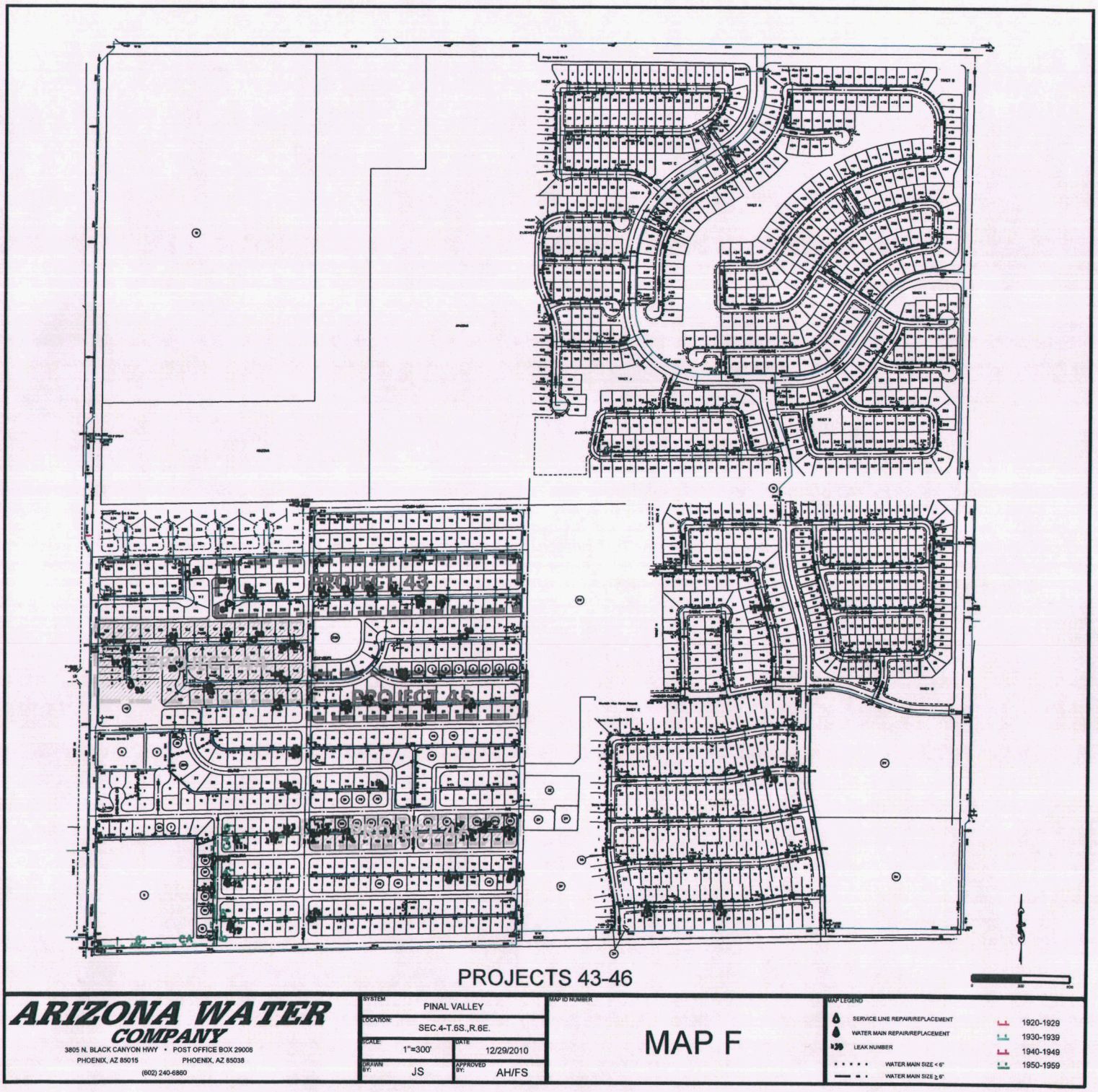
MAP LEGEND

- SERVICE LINE REPAIR/REPLACEMENT
- WATER MAIN REPAIR/REPLACEMENT
- LEAK NUMBER
- WATER MAIN SIZE < 6"
- WATER MAIN SIZE ≥ 6"
- 1920-1929
- 1930-1939
- 1940-1949
- 1950-1959

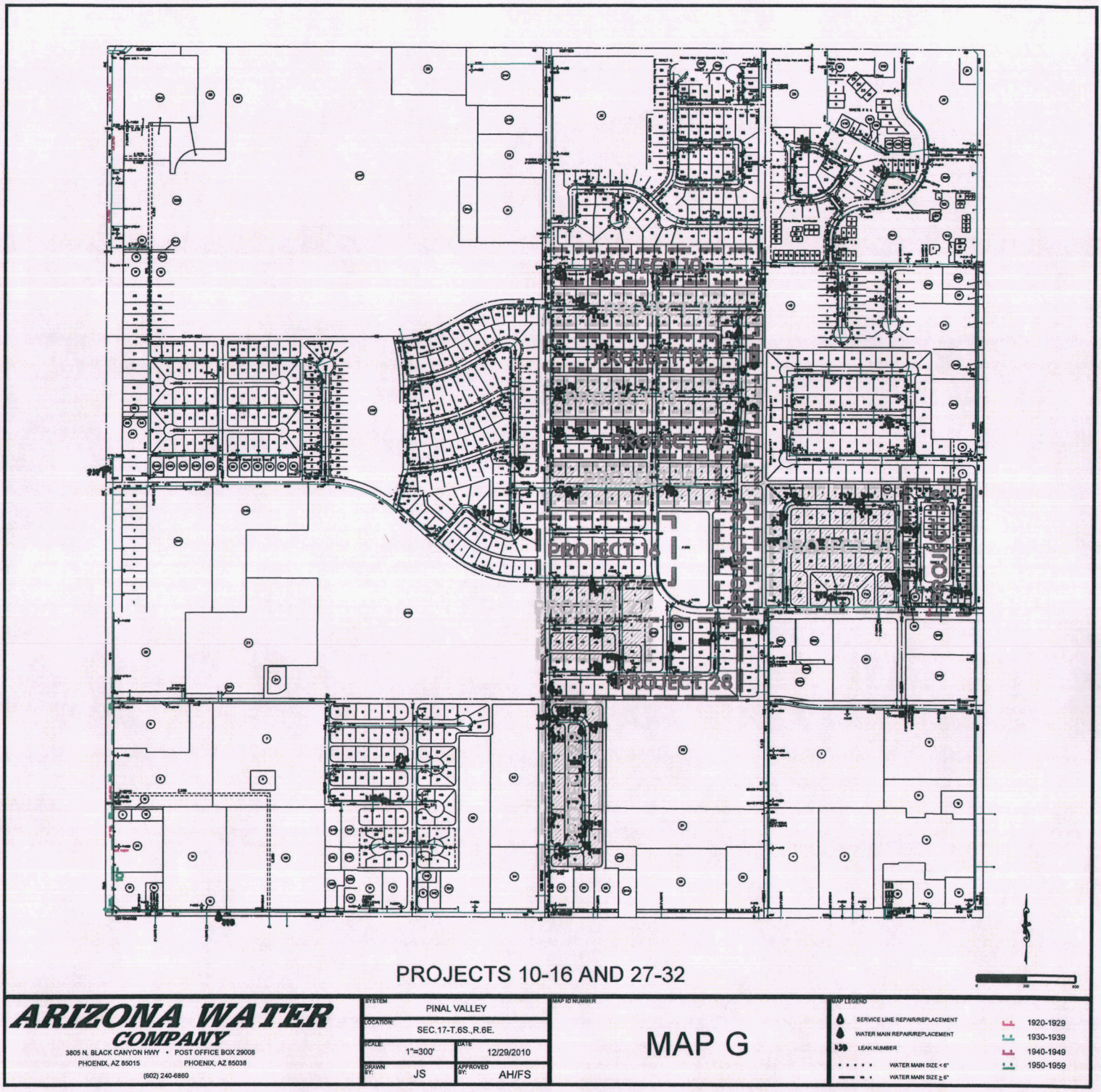
Full Size Maps on attached CD



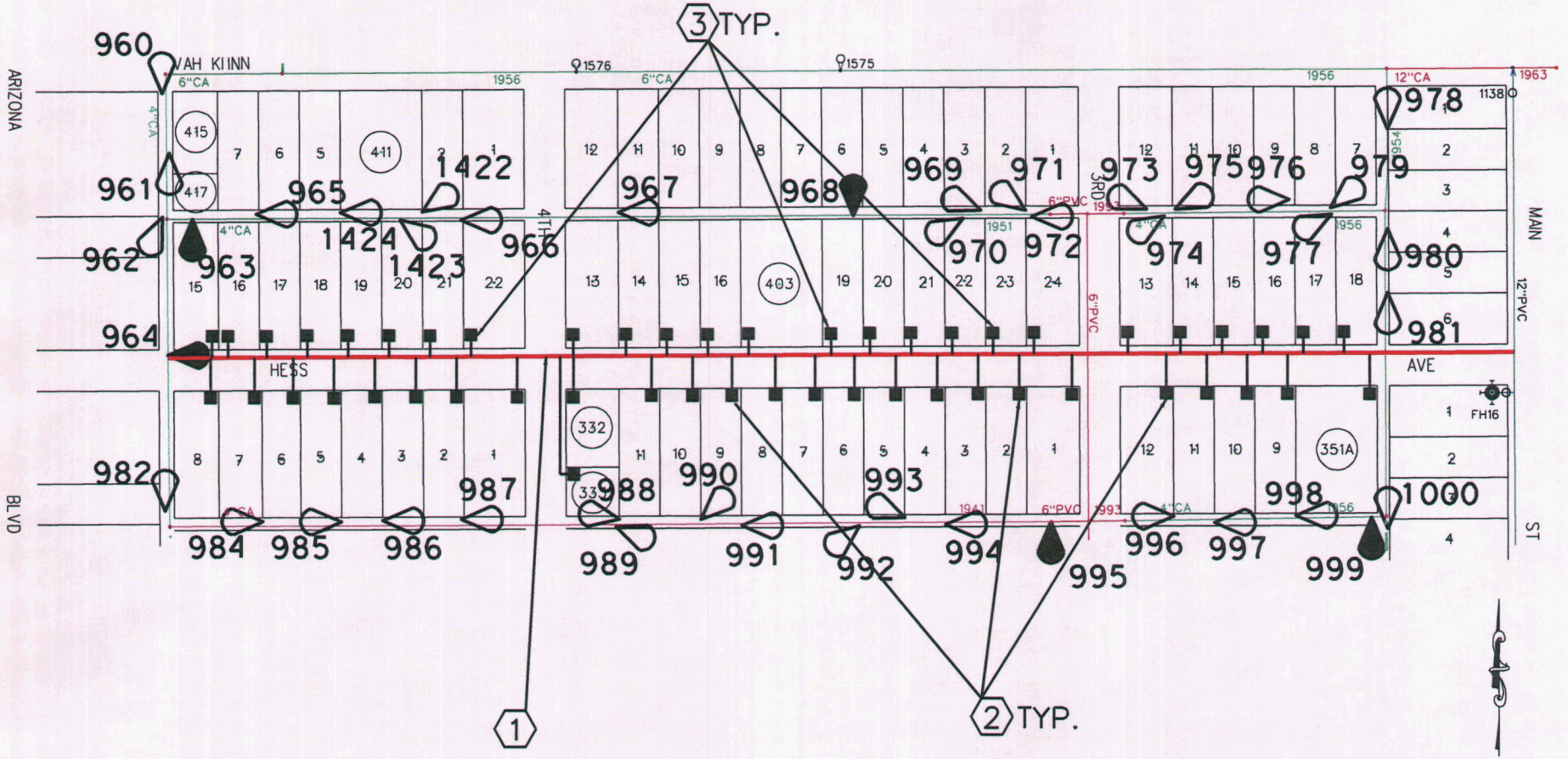
Full Size Maps on attached CD



Full Size Maps on attached CD



PROJECT 1



QUANTITIES LIST

ITEM		QTY.
1	INSTALL 6" PVC	1,600 LF
2	RELOCATE LONG SERVICE	26 EA.
3	RELOCATE SHORT SERVICE	25 EA.

PRELIMINARY DRAWING
VALVE AND FIRE HYDRANT LOCATION
TO BE DETERMINED IN PROJECT DESIGN

WATER SERVICES TO BE DOUBLE SERVICES
WHERE POSSIBLE

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

ARIZONA WATER COMPANY

PROJECT DESCRIPTION

INSTALL 1,600 LF OF 6" PVC AND 51 SERVICE CONNECTIONS
ALONG HESS AVENUE FROM ARIZONA BOULEVARD TO MAIN STREET.

PROJECT LOCATION

NW 1/4 SEC. 22–T.5S., R.8E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP D

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
NW 1/4 SEC. 22-T.5S., R.8E.	1	MAP D

PROJECT DESCRIPTION:

INSTALL 1,600 LF OF 6" PVC AND 51 SERVICE CONNECTIONS ALONG HESS AVENUE FROM ARIZONA BOULEVARD TO MAIN STREET.

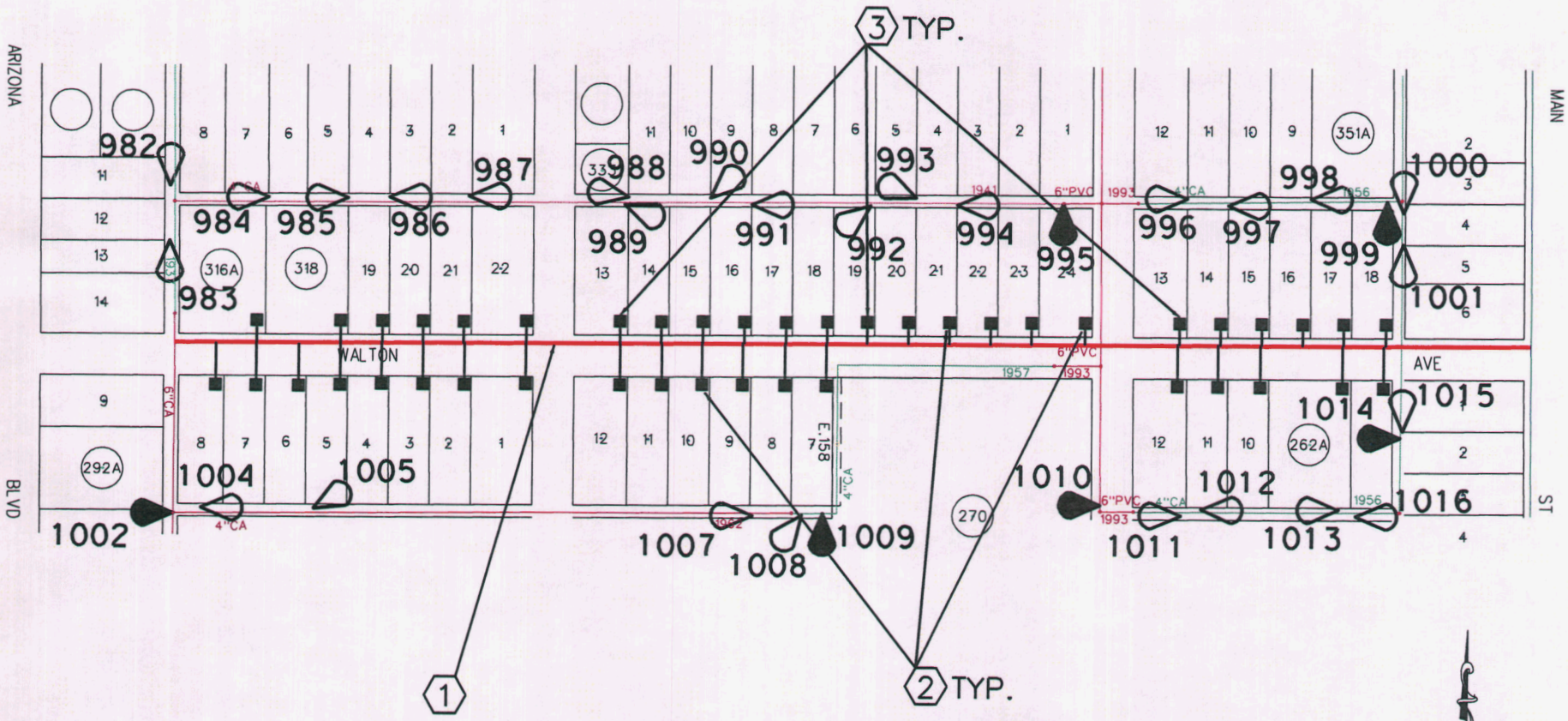
MATERIALS AND LABOR

QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
1,600	LF	40	6" PVC	64,000
26	EA	2,200	RELOCATE LONG SERVICE	57,200
25	EA	2,000	RELOCATE SHORT SERVICE	50,000
				-
				-
				-
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**171,200**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	2,568
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	11,984
(4) SUBTOTAL - LINES (1), (2) AND (3)	**185,752**
(5) OVERHEAD - 15% OF LINE (4)	27,863
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	16,718
SUBTOTAL - LINES (4), (5) AND (6)	**230,332**
ESTIMATED COST OF CONSTRUCTION	**$ 230,332**

AFH

PROJECT 2



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QUANTITIES LIST

ITEM		QTY.
1	INSTALL 6" PVC	1,600 LF
2	RELOCATE LONG SERVICE	19 EA.
3	RELOCATE SHORT SERVICE	24 EA.

PRELIMINARY DRAWING
VALVE AND FIRE HYDRANT LOCATION
TO BE DETERMINED IN PROJECT DESIGN

WATER SERVICES TO BE DOUBLE SERVICES
WHERE POSSIBLE

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

ARIZONA WATER COMPANY

PROJECT DESCRIPTION

INSTALL 1,600 LF OF 6" PVC AND 43 SERVICE CONNECTIONS
ALONG WALTON AVENUE FROM ARIZONA BOULEVARD TO MAIN STREET.

PROJECT LOCATION

NW 1/4 SEC. 22–T.5S., R.8E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP D

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
NW 1/4 SEC. 22-T.5S., R.8E.	2	MAP D

PROJECT DESCRIPTION:

INSTALL 1,600 LF OF 6" PVC AND 43 SERVICE CONNECTIONS ALONG WALTON AVENUE FROM ARIZONA BOULEVARD TO MAIN STREET.

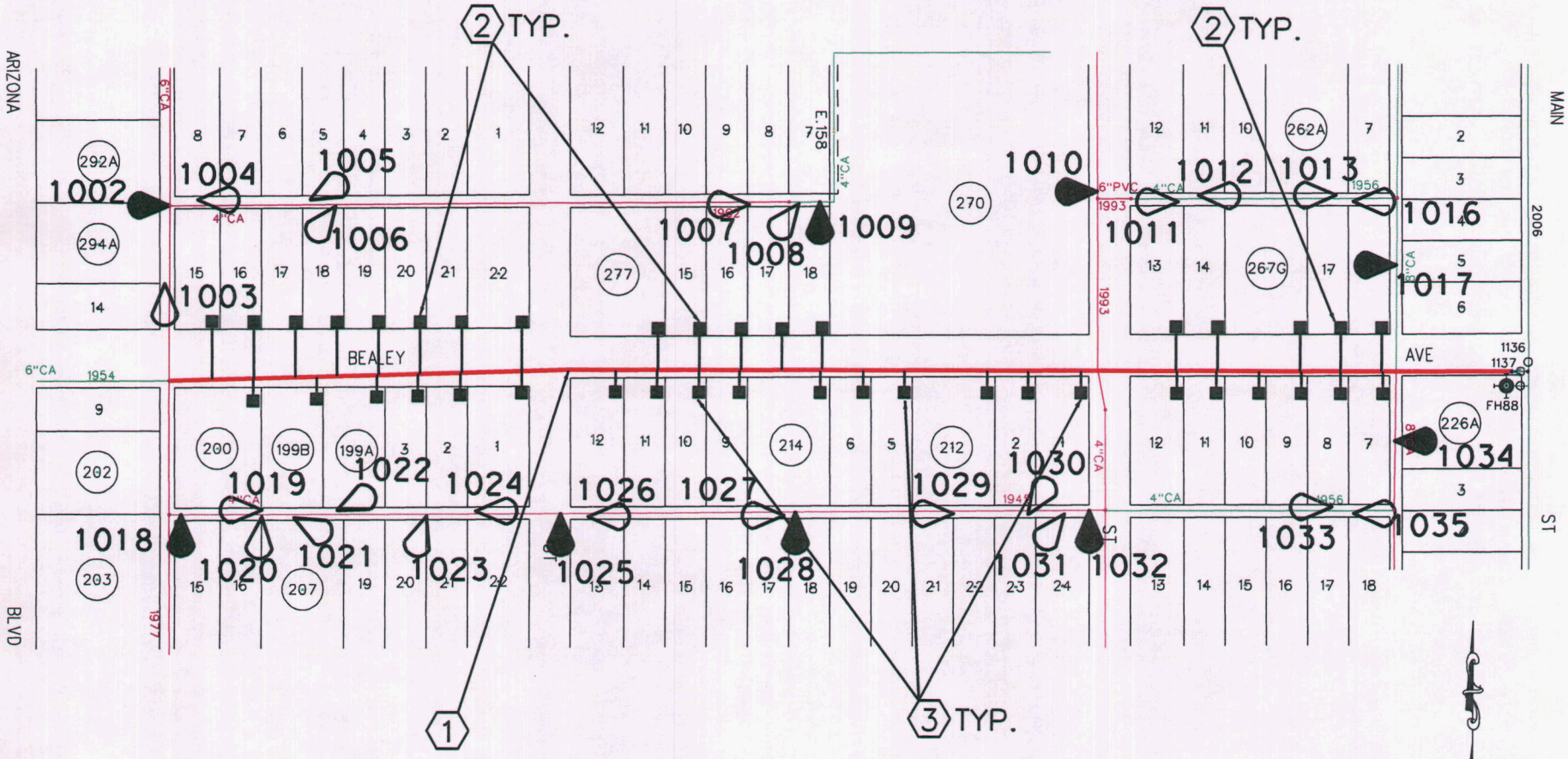
MATERIALS AND LABOR

QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
1,600	LF	40	6" PVC	64,000
19	EA	2,200	RELOCATE LONG SERVICE	41,800
24	EA	2,000	RELOCATE SHORT SERVICE	48,000
				-
				-
				-
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**153,800**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	2,307
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	10,766
(4) SUBTOTAL - LINES (1), (2) AND (3)	**166,873**
(5) OVERHEAD - 15% OF LINE (4)	25,031
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	15,019
SUBTOTAL - LINES (4), (5) AND (6)	**206,923**
ESTIMATED COST OF CONSTRUCTION	**$ 206,923**

AFH

PROJECT 3



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QUANTITIES LIST

ITEM		QTY.
1	INSTALL 6" PVC	1,600 LF
2	RELOCATE LONG SERVICE	18 EA.
3	RELOCATE SHORT SERVICE	22 EA.

PRELIMINARY DRAWING
VALVE AND FIRE HYDRANT LOCATION
TO BE DETERMINED IN PROJECT DESIGN

WATER SERVICES TO BE DOUBLE SERVICES
WHERE POSSIBLE

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

ARIZONA WATER COMPANY

PROJECT DESCRIPTION

INSTALL 1,600 LF OF 6" PVC AND 40 SERVICE CONNECTIONS
ALONG BEALEY AVENUE FROM ARIZONA BOULEVARD TO MAIN STREET.

PROJECT LOCATION

NW 1/4 SEC. 22–T.5S., R.8E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP D

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
NW 1/4 SEC. 22-T.5S., R.8E.	3	MAP D

PROJECT DESCRIPTION:

INSTALL 1,600 LF OF 6" PVC AND 40 SERVICE CONNECTIONS ALONG BEALEY AVENUE FROM ARIZONA BOULEVARD TO MAIN STREET.

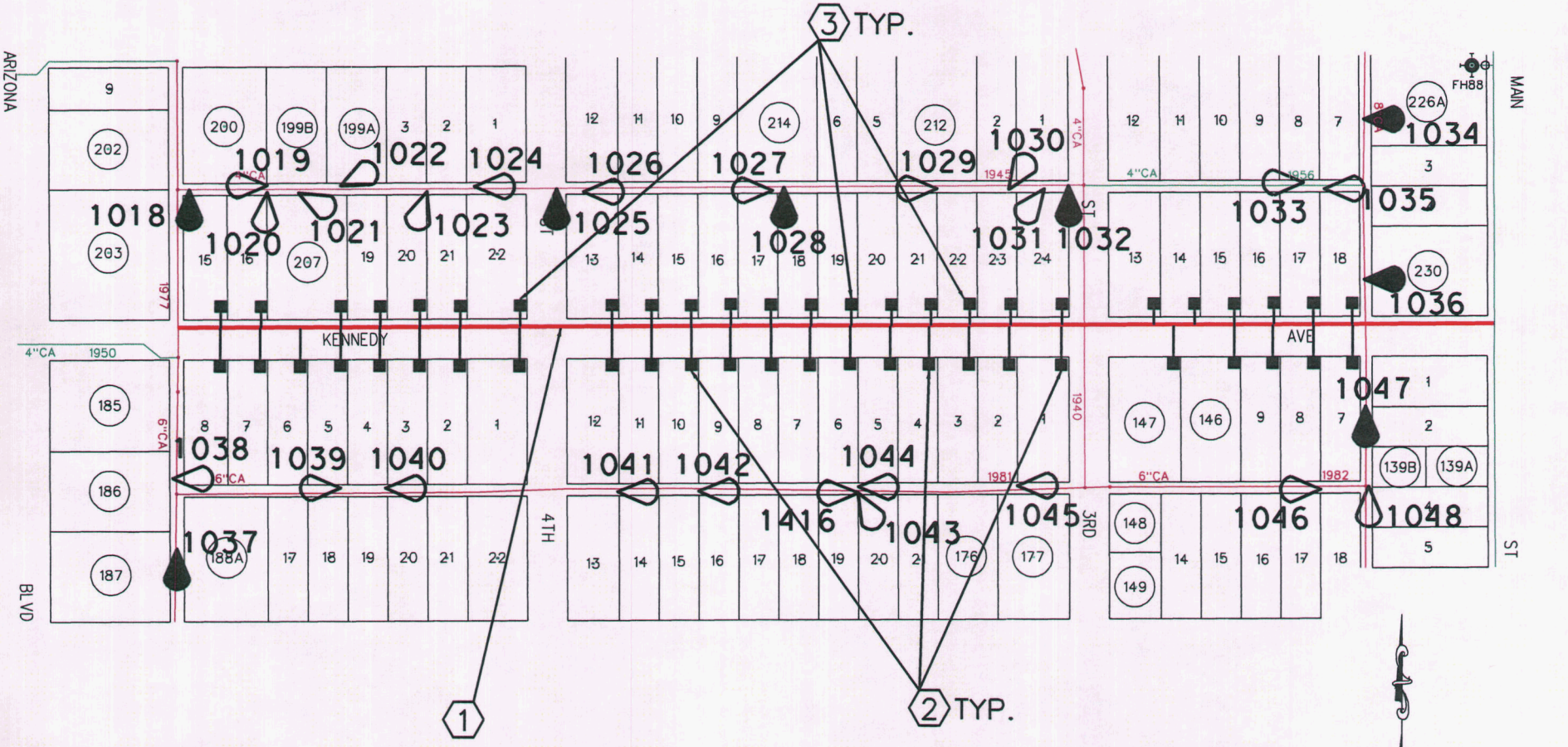
MATERIALS AND LABOR

QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
1,600	LF	40	6" PVC	64,000
18	EA	2,200	RELOCATE LONG SERVICE	39,600
22	EA	2,000	RELOCATE SHORT SERVICE	44,000
				-
				-
				-
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**147,600**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	2,214
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	10,332
(4) SUBTOTAL - LINES (1), (2) AND (3)	**160,146**
(5) OVERHEAD - 15% OF LINE (4)	24,022
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	14,413
SUBTOTAL - LINES (4), (5) AND (6)	**198,581**
ESTIMATED COST OF CONSTRUCTION	**$ 198,581**

AFH

PROJECT 4



PRELIMINARY DRAWING
VALVE AND FIRE HYDRANT LOCATION
TO BE DETERMINED IN PROJECT DESIGN

WATER SERVICES TO BE DOUBLE SERVICES
WHERE POSSIBLE

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

QUANTITIES LIST

ITEM		QTY.
1	INSTALL 6" PVC	1,600 LF
2	RELOCATE LONG SERVICE	25 EA.
3	RELOCATE SHORT SERVICE	25 EA.

ARIZONA WATER COMPANY

PROJECT DESCRIPTION

INSTALL 1,600 LF OF 6" PVC AND 50 SERVICE CONNECTIONS
ALONG KENNEDY AVENUE FROM ARIZONA BOULEVARD TO MAIN STREET.

PROJECT LOCATION

NW 1/4 SEC. 22–T.5S., R.8E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP D

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
NW 1/4 SEC. 22-T.5S., R.8E.	4	MAP D

PROJECT DESCRIPTION:

INSTALL 1,600 LF OF 6" PVC AND 50 SERVICE CONNECTIONS ALONG KENNEDY AVENUE FROM ARIZONA BOULEVARD TO MAIN STREET.

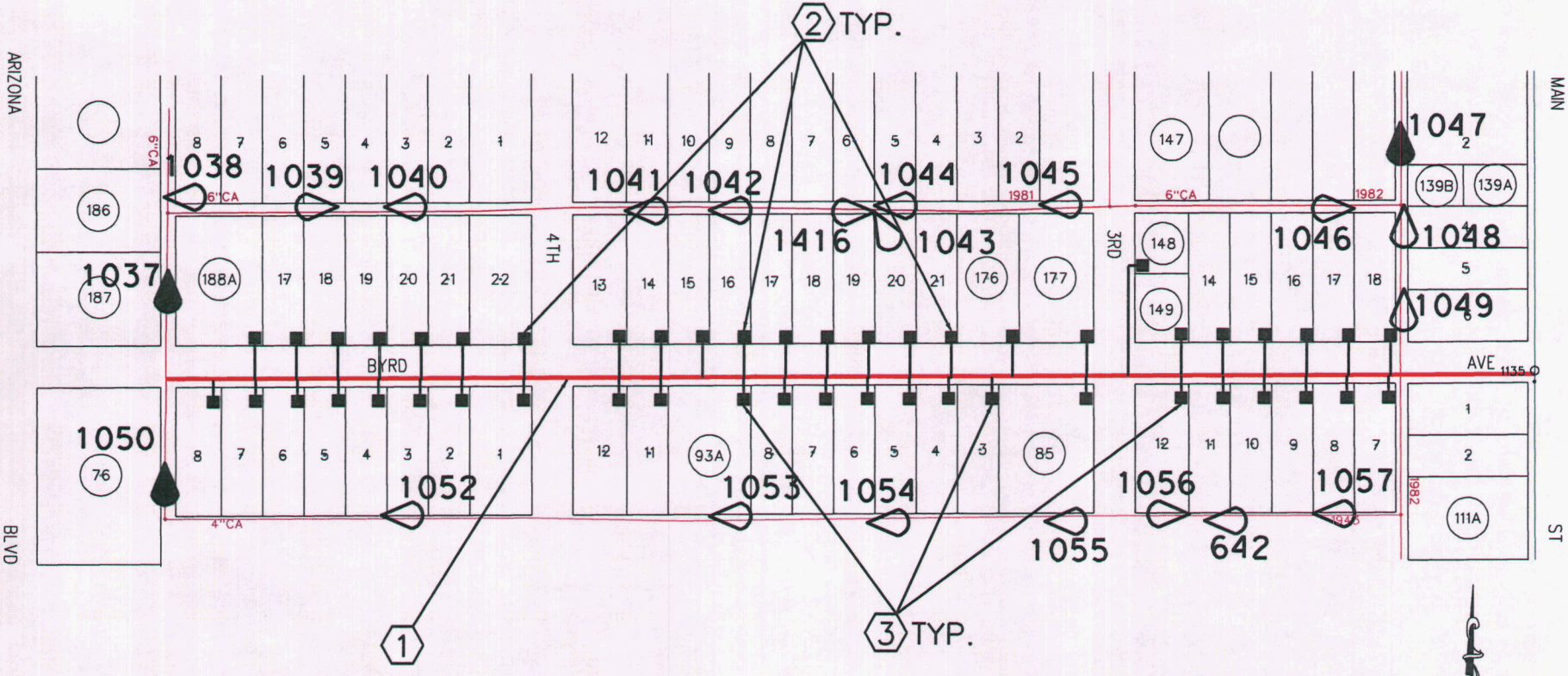
MATERIALS AND LABOR

QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
1,600	LF	40	6" PVC	64,000
25	EA	2,200	RELOCATE LONG SERVICE	55,000
25	EA	2,000	RELOCATE SHORT SERVICE	50,000
				-
				-
				-
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**169,000**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	2,535
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	11,830
(4) SUBTOTAL - LINES (1), (2) AND (3)	**183,365**
(5) OVERHEAD - 15% OF LINE (4)	27,505
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	16,503
SUBTOTAL - LINES (4), (5) AND (6)	**227,373**
ESTIMATED COST OF CONSTRUCTION	**$ 227,373**

AFH

PROJECT 5



QUANTITIES LIST

ITEM		QTY.
1	INSTALL 6" PVC	1,600 LF
2	RELOCATE LONG SERVICE	25 EA.
3	RELOCATE SHORT SERVICE	24 EA.

PRELIMINARY DRAWING
VALVE AND FIRE HYDRANT LOCATION
TO BE DETERMINED IN PROJECT DESIGN

WATER SERVICES TO BE DOUBLE SERVICES
WHERE POSSIBLE

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

ARIZONA WATER COMPANY

PROJECT DESCRIPTION

INSTALL 1,600 LF OF 6" PVC AND 49 SERVICE CONNECTIONS ALONG BYRD AVENUE FROM ARIZONA BOULEVARD TO MAIN STREET.

PROJECT LOCATION

NW 1/4 SEC. 22–T.5S., R.8E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP D

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
NW 1/4 SEC. 22-T.5S., R.8E.	5	MAP D

PROJECT DESCRIPTION:

INSTALL 1,600 LF OF 6" PVC AND 49 SERVICE CONNECTIONS ALONG BYRD AVENUE FROM ARIZONA BOULEVARD TO MAIN.

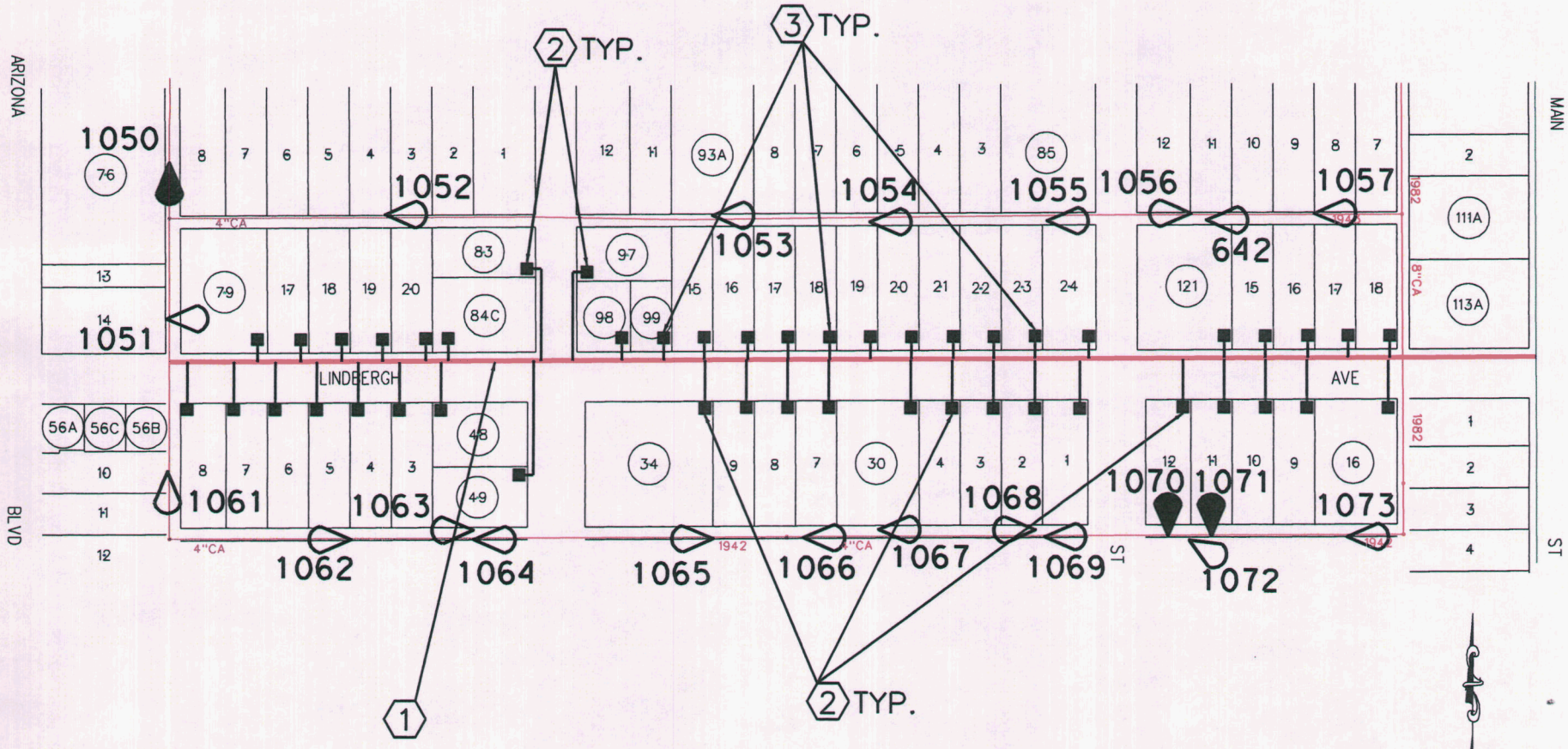
MATERIALS AND LABOR

QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
1,600	LF	40	6" PVC	64,000
25	EA	2,200	RELOCATE LONG SERVICE	55,000
24	EA	2,000	RELOCATE SHORT SERVICE	48,000
				-
				-
				-
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**167,000**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	2,505
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	11,690
(4) SUBTOTAL - LINES (1), (2) AND (3)	**181,195**
(5) OVERHEAD - 15% OF LINE (4)	27,179
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	16,308
SUBTOTAL - LINES (4), (5) AND (6)	**224,682**
ESTIMATED COST OF CONSTRUCTION	**$ 224,682**

AFH

PROJECT 6



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PRELIMINARY DRAWING
VALVE AND FIRE HYDRANT LOCATION
TO BE DETERMINED IN PROJECT DESIGN

WATER SERVICES TO BE DOUBLE SERVICES
WHERE POSSIBLE

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

QUANTITIES LIST

ITEM		QTY.
1	INSTALL 6" PVC	1,600 LF
2	RELOCATE LONG SERVICE	24 EA.
3	RELOCATE SHORT SERVICE	23 EA.

ARIZONA WATER COMPANY

PROJECT DESCRIPTION

INSTALL 1,600 LF OF 6" PVC AND 47 SERVICE CONNECTIONS
ALONG LINDBERGH AVENUE FROM ARIZONA BOULEVARD TO MAIN STREET.

PROJECT LOCATION

NW 1/4 SEC. 22-T.5S., R.8E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP D

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
NW 1/4 SEC. 22-T.5S., R.8E.	6	MAP D

PROJECT DESCRIPTION:

INSTALL 1,600 LF OF 6" PVC AND 47 SERVICE CONNECTIONS ALONG LINDBERGH AVENUE FROM ARIZONA BOULEVARD TO MAIN STREET.

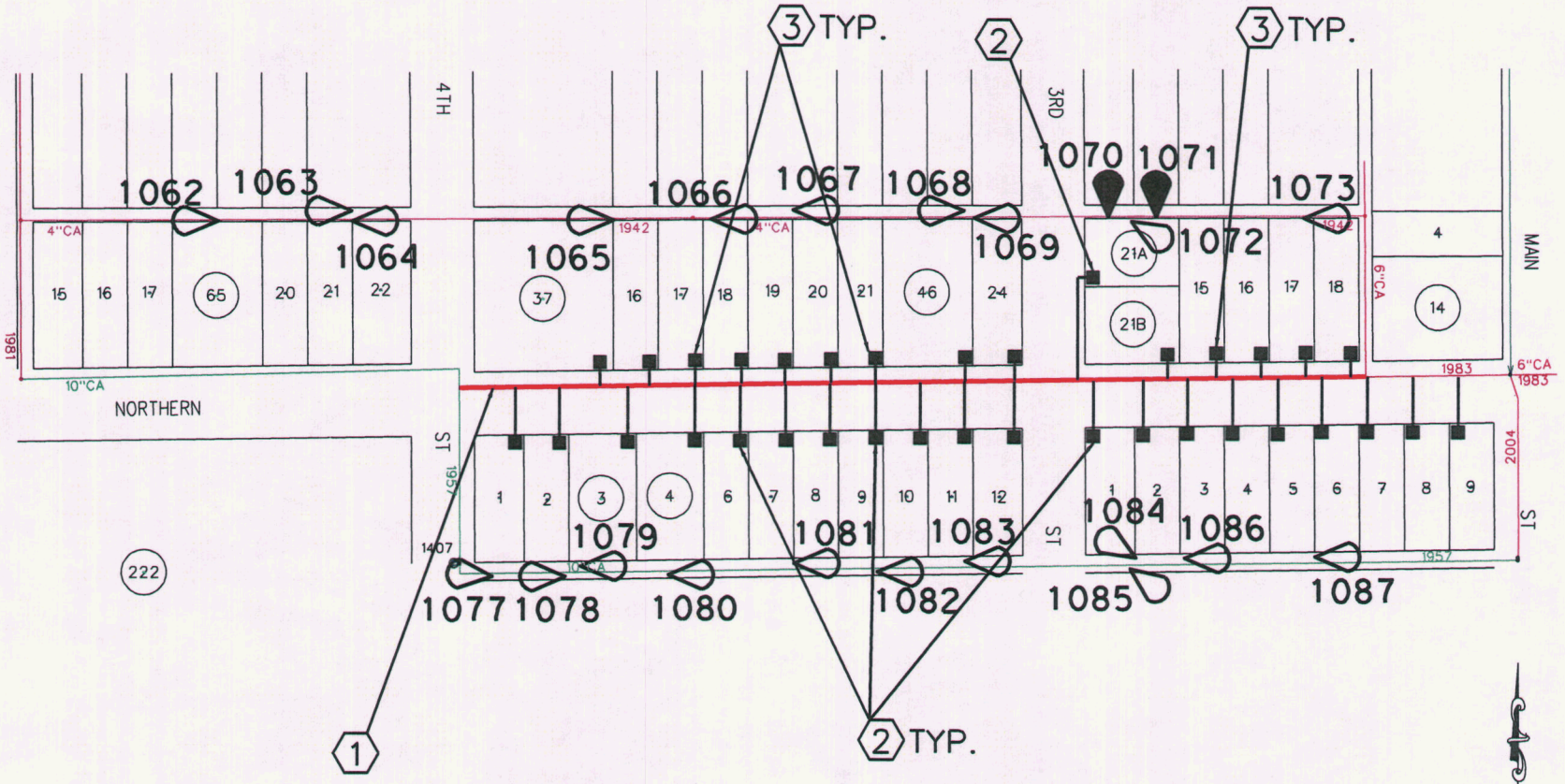
MATERIALS AND LABOR

QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
1,600	LF	40	6" PVC	64,000
24	EA	2,200	RELOCATE LONG SERVICE	52,800
23	EA	2,000	RELOCATE SHORT SERVICE	46,000
				-
				-
				-
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**162,800**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	2,442
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	11,396
(4) SUBTOTAL - LINES (1), (2) AND (3)	**176,638**
(5) OVERHEAD - 15% OF LINE (4)	26,496
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	15,897
SUBTOTAL - LINES (4), (5) AND (6)	**219,031**
ESTIMATED COST OF CONSTRUCTION	**$ 219,031**

AFH

PROJECT 7



QUANTITIES LIST		
ITEM		QTY.
1	INSTALL 12" PVC	1,000 LF
2	RELOCATE LONG SERVICE	21 EA.
3	RELOCATE SHORT SERVICE	14 EA.

PRELIMINARY DRAWING
VALVE AND FIRE HYDRANT LOCATION
TO BE DETERMINED IN PROJECT DESIGN

WATER SERVICES TO BE DOUBLE SERVICES
WHERE POSSIBLE

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

ARIZONA WATER COMPANY

PROJECT DESCRIPTION

INSTALL 1,000 LF OF 12" PVC AND 35 SERVICE CONNECTIONS ALONG NORTHERN AVENUE FROM 4TH STREET TO MAIN STREET.

PROJECT LOCATION

NW 1/4 SEC. 22–T.5S., R.8E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP D

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED:
12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
NW 1/4 SEC. 22-T.5S., R.8E.	7	MAP D

PROJECT DESCRIPTION:

INSTALL 1,000 LF OF 12" PVC AND 35 SERVICE CONNECTIONS ALONG NORTHERN AVENUE FROM FOURTH STREET TO MAIN STREET.

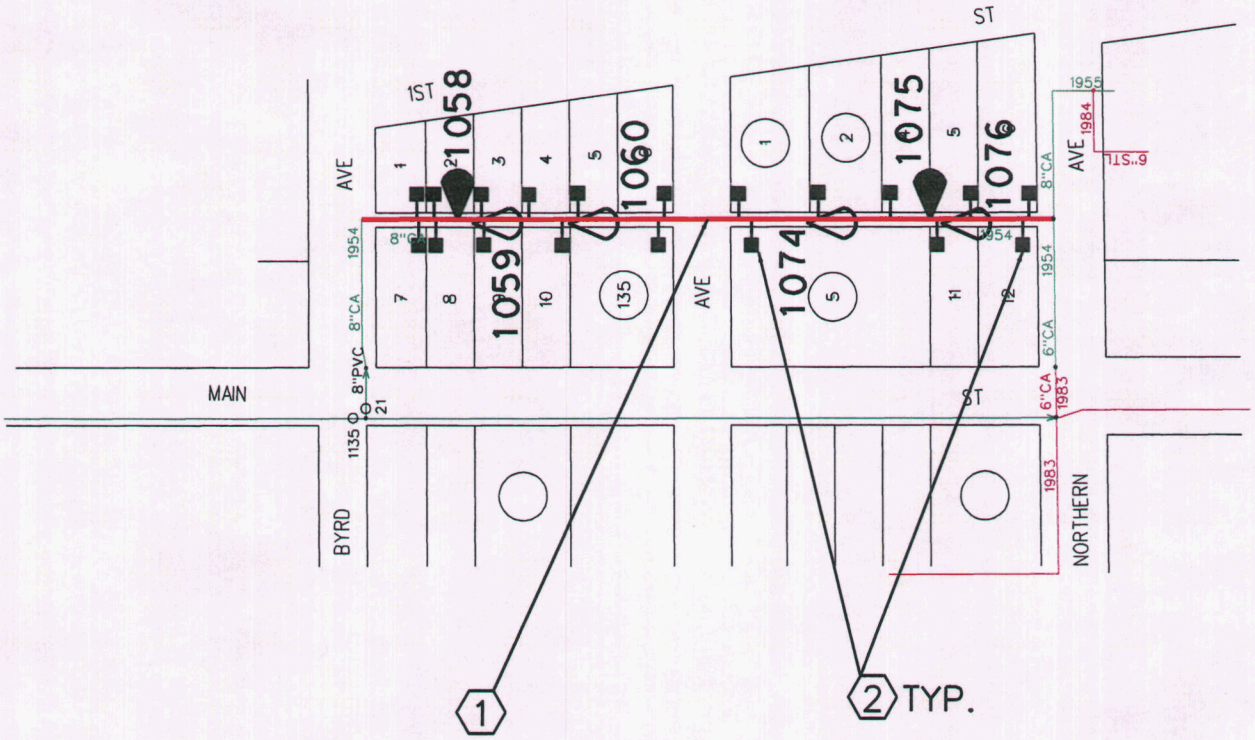
MATERIALS AND LABOR

QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
1,000	LF	60	12" PVC	60,000
21	EA	2,200	RELOCATE LONG SERVICE	46,200
14	EA	2,000	RELOCATE SHORT SERVICE	28,000
				-
				-
				-
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**134,200**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	2,013
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	9,394
(4) SUBTOTAL - LINES (1), (2) AND (3)	**145,607**
(5) OVERHEAD - 15% OF LINE (4)	21,841
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	13,105
SUBTOTAL - LINES (4), (5) AND (6)	**180,553**
ESTIMATED COST OF CONSTRUCTION	**$ 180,553**

AFH

PROJECT 8



PRELIMINARY DRAWING
VALVE AND FIRE HYDRANT LOCATION
TO BE DETERMINED IN PROJECT DESIGN

WATER SERVICES TO BE DOUBLE SERVICES
WHERE POSSIBLE

0 200 400

QUANTITIES LIST

ITEM		QTY.
1	INSTALL 8" PVC	700 LF
2	INSTALL SERVICE	19 EA.

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

ARIZONA WATER COMPANY

PROJECT DESCRIPTION

INSTALL 700 LF OF 8" PVC AND 19 SERVICE CONNECTIONS IN AN ALLEY BETWEEN MAIN STREET AND FIRST STREET FROM BYRD AVENUE TO NORTHERN AVENUE.

PROJECT LOCATION

SW 1/4 SEC. 22–T.5S., R.8E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP D

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
SE 1/4 SEC. 21-T.5S., R.8E.	8	MAP C

PROJECT DESCRIPTION:

INSTALL 700 LF OF 8" PVC AND 19 SERVICE CONNECTIONS IN AN ALLEY BETWEEN MAIN STREET AND FIRST STREET FROM BYRD TO NORTHERN AVENUE.

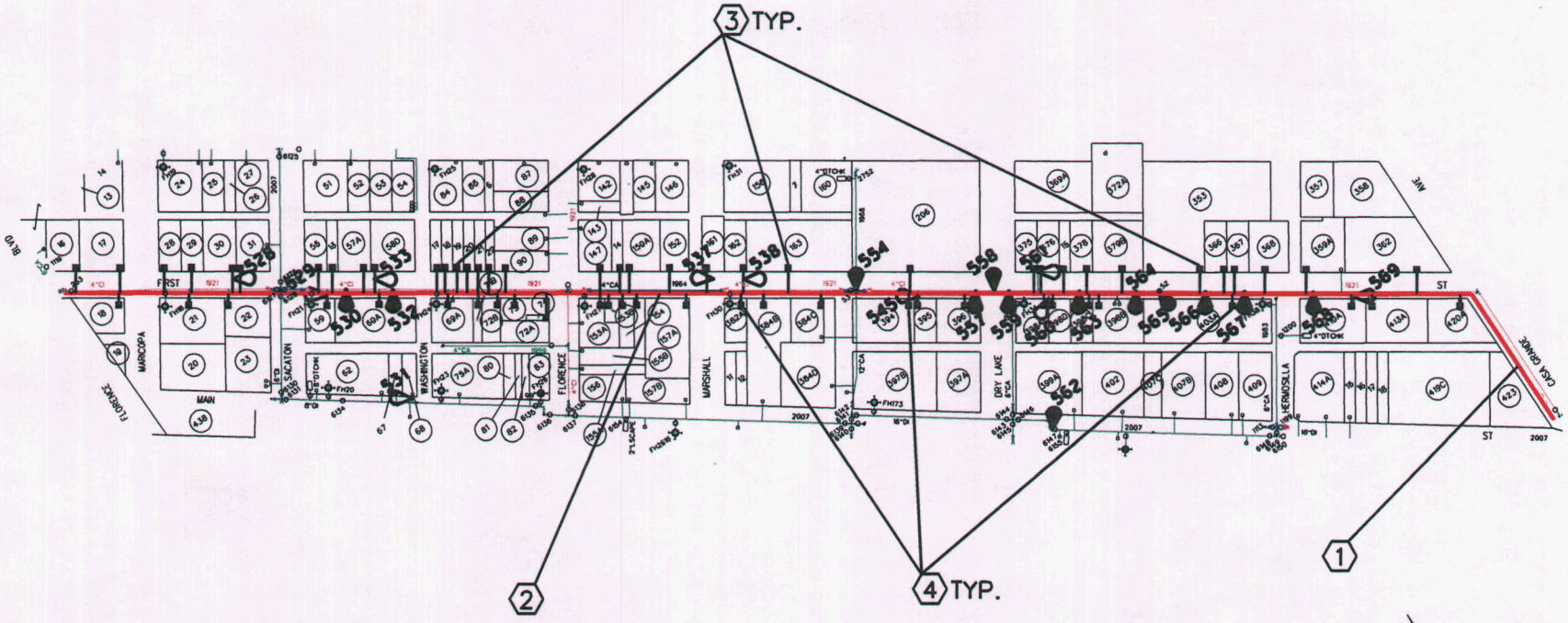
MATERIALS AND LABOR

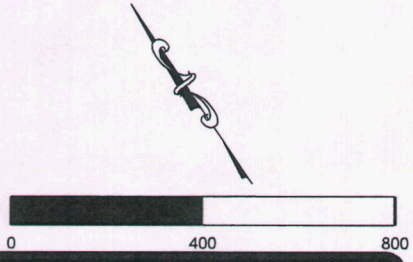
QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
700	LF	50	8" PVC	35,000
19	EA	1,500	INSTALL SERVICE	28,500
				-
				-
				-
				-
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**63,500**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	953
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	4,445
(4) SUBTOTAL - LINES (1), (2) AND (3)	**68,898**
(5) OVERHEAD - 15% OF LINE (4)	10,335
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	6,201
SUBTOTAL - LINES (4), (5) AND (6)	**85,433**
ESTIMATED COST OF CONSTRUCTION	**$ 85,433**

AFH

PROJECT 9





QUANTITIES LIST

ITEM		QTY.
1	INSTALL 8" DIP w/POLYWRAP	300 LF
2	INSTALL 6" DIP w/POLYWRAP	3,200 LF
3	INSTALL LONG SERVICE	36 EA.
4	INSTALL SHORT SERVICE	29 EA.

PRELIMINARY DRAWING
VALVE AND FIRE HYDRANT LOCATION
TO BE DETERMINED IN PROJECT DESIGN

WATER SERVICES TO BE DOUBLE SERVICES
WHERE POSSIBLE

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

ARIZONA WATER COMPANY

PROJECT DESCRIPTION
INSTALL 300 LF OF 8" DIP w/POLYWRAP, 3,200 LF OF 6" DIP w/POLYWRAP AND 65 SERVICE CONNECTIONS ALONG FIRST STREET FROM FLORENCE STREET TO CASA GRANDE AVENUE.

PROJECT LOCATION
NW 1/4 SEC. 29–T.6S., R.6E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP B

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
NW 1/4 SEC. 29-T.6S., R.6E.	9	MAP B

PROJECT DESCRIPTION:

INSTALL 300 LF OF 8" DIP w/POLYWRAP, 3,200 LF OF 6" DIP w/PLOYWRAP AND 65 SERVICE CONNECTIONS ALONG FIRST STREET FROM FLORENCE STREET TO CASA GRANDE AVENUE.

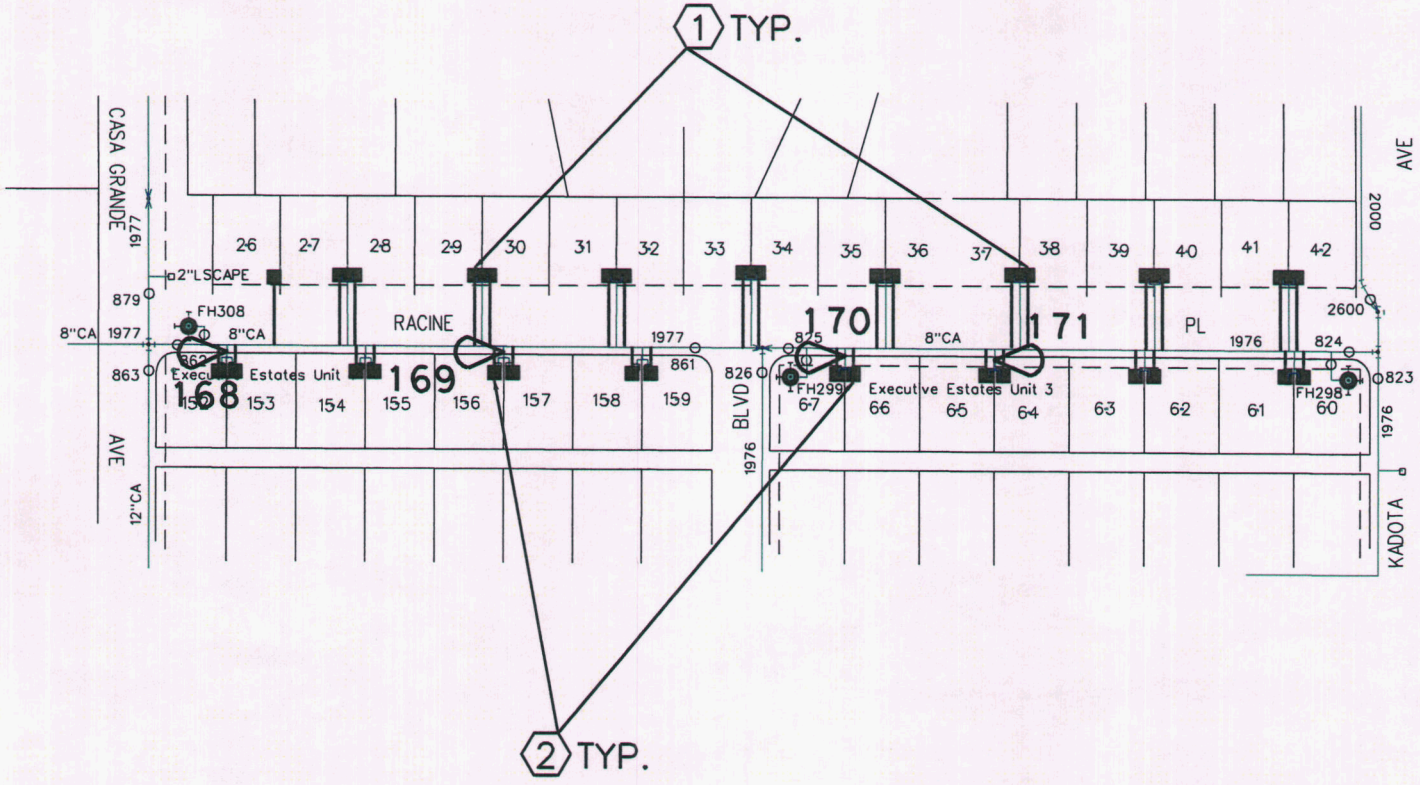
MATERIALS AND LABOR

QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
300	LF	60	8" DIP w/POLYWRAP	18,000
3,200	LF	50	6" DIP w/POLYWRAP	160,000
36	EA	2,000	INSTALL LONG SERVICE	72,000
29	EA	1,800	INSTALL SHORT SERVICE	52,200
				-
				-
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**302,200**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	4,533
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	21,154
(4) SUBTOTAL - LINES (1), (2) AND (3)	**327,887**
(5) OVERHEAD - 15% OF LINE (4)	49,183
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	29,510
SUBTOTAL - LINES (4), (5) AND (6)	**406,580**
ESTIMATED COST OF CONSTRUCTION	**$ 406,580**

AFH

PROJECT 10



0 200 400

QUANTITIES LIST		
ITEM		QTY.
1	INSTALL LONG SERVICE	17 EA.
2	INSTALL SHORT SERVICE	16 EA.

WATER SERVICES TO BE DOUBLE SERVICES WHERE POSSIBLE

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

ARIZONA WATER COMPANY

PROJECT DESCRIPTION

INSTALL 33 SERVICE CONNECTIONS ALONG RACINE PLACE FROM CASA GRANDE AVENUE TO KADOTA AVENUE.

PROJECT LOCATION

NE 1/4 SEC. 17–T.6S., R.6E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP G

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
NE 1/4 SEC. 17-T.6S., R.6E.	10	MAP G

PROJECT DESCRIPTION:

INSTALL 33 SERVICE CONNECTIONS ALONG RACINE PLACE FROM CASA GRANDE AVENUE TO KADOTA AVENUE.

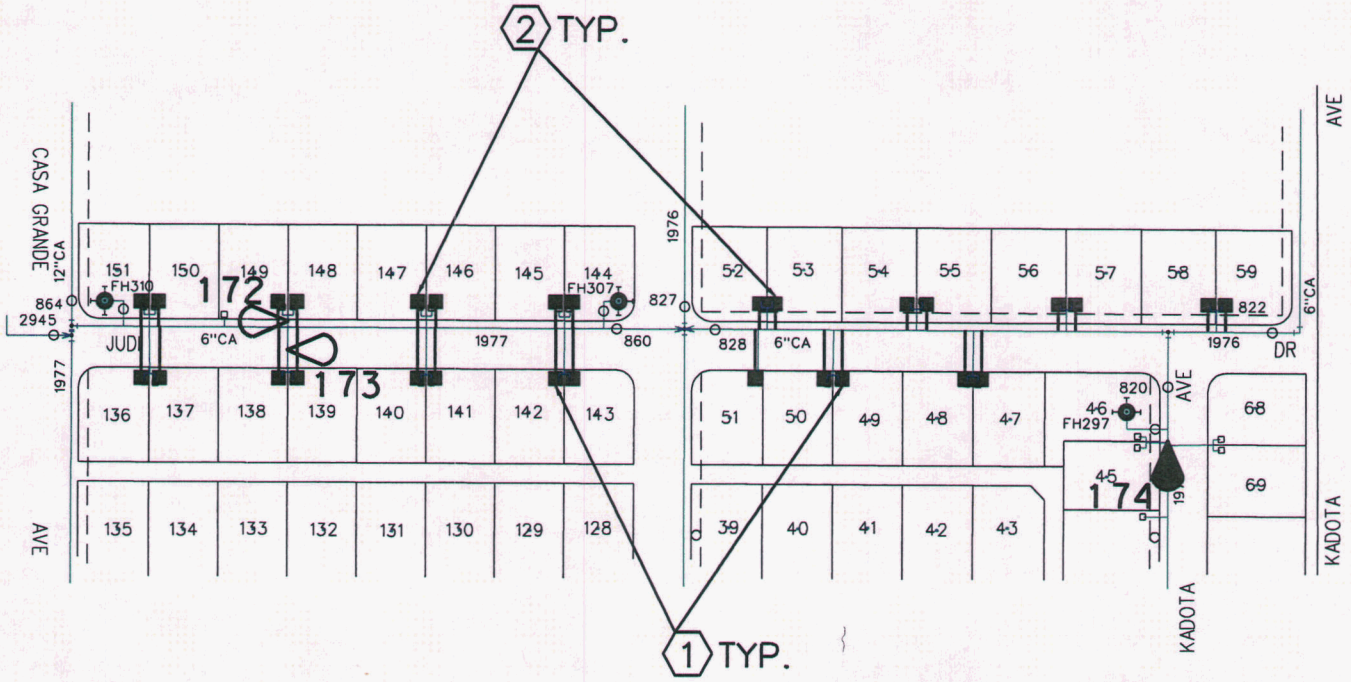
MATERIALS AND LABOR

QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
17	EA	2,000	INSTALL LONG SERVICE	34,000
16	EA	1,800	INSTALL SHORT SERVICE	28,800
				-
				-
				-
				-
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**62,800**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	942
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	4,396
(4) SUBTOTAL - LINES (1), (2) AND (3)	**68,138**
(5) OVERHEAD - 15% OF LINE (4)	10,221
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	6,132
SUBTOTAL - LINES (4), (5) AND (6)	**84,491**
ESTIMATED COST OF CONSTRUCTION	**$ 84,491**

AFH

PROJECT 11



0 200 400

QUANTITIES LIST

ITEM		QTY.
1	INSTALL LONG SERVICE	13 EA.
2	INSTALL SHORT SERVICE	16 EA.

WATER SERVICES TO BE DOUBLE SERVICES WHERE POSSIBLE

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

ARIZONA WATER COMPANY

PROJECT DESCRIPTION

INSTALL 29 SERVICE CONNECTIONS ALONG JUDI DRIVE FROM CASA GRANDE AVENUE TO KADOTA AVENUE.

PROJECT LOCATION

NE 1/4 SEC. 17–T.6S., R.6E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP G

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
NE 1/4 SEC. 17-T.6S., R.6E.	11	MAP G

PROJECT DESCRIPTION:

INSTALL 29 SERVICE CONNECTIONS ALONG JUDI DRIVE FROM CASA GRANDE AVENUE TO KADOTA AVENUE.

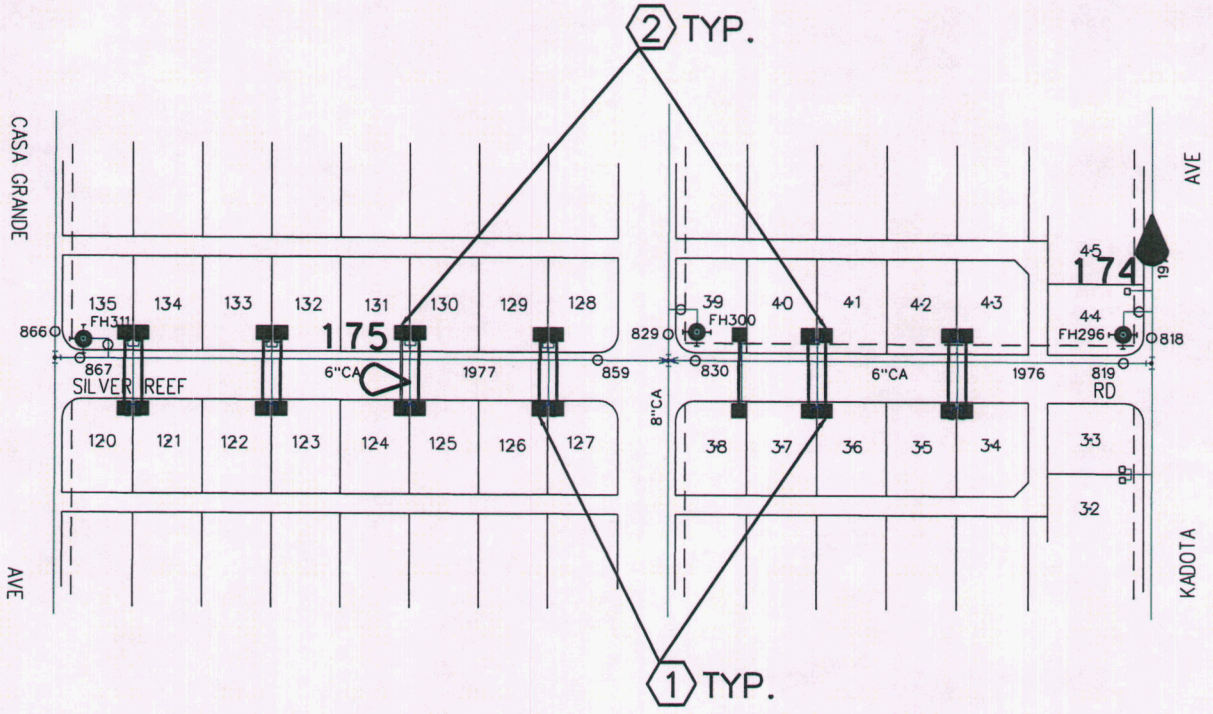
MATERIALS AND LABOR

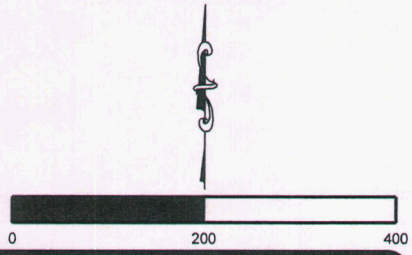
QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
13	EA	2,000	INSTALL LONG SERVICE	26,000
16	EA	1,800	INSTALL SHORT SERVICE	28,800
				-
				-
				-
				-
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**54,800**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	822
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	3,836
(4) SUBTOTAL - LINES (1), (2) AND (3)	**59,458**
(5) OVERHEAD - 15% OF LINE (4)	8,919
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	5,351
SUBTOTAL - LINES (4), (5) AND (6)	**73,728**
ESTIMATED COST OF CONSTRUCTION	**$ 73,728**

AFH

PROJECT 12





QUANTITIES LIST

ITEM		QTY.
1	INSTALL LONG SERVICE	13 EA.
2	INSTALL SHORT SERVICE	13 EA.

WATER SERVICES TO BE DOUBLE SERVICES WHERE POSSIBLE

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

ARIZONA WATER COMPANY

PROJECT DESCRIPTION

INSTALL 26 SERVICE CONNECTIONS ALONG SILVER REEF ROAD FROM CASA GRANDE AVENUE TO KADOTA AVENUE.

PROJECT LOCATION

NE 1/4 SEC. 17–T.6S., R.6E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP G

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
NE 1/4 SEC. 17-T.6S., R.6E.	12	MAP G

PROJECT DESCRIPTION:

INSTALL 26 SERVICE CONNECTIONS ON SILVER REEF ROAD FROM CASA GRANDE AVENUE TO KADOTA AVENUE.

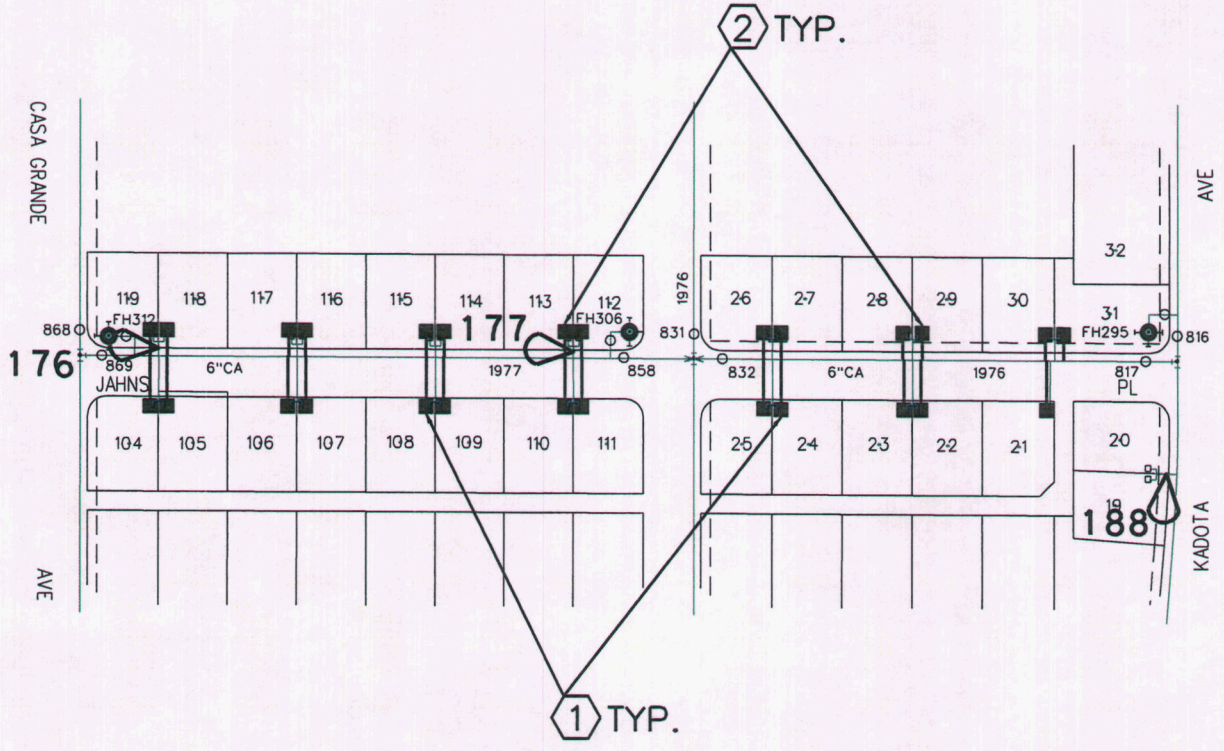
MATERIALS AND LABOR

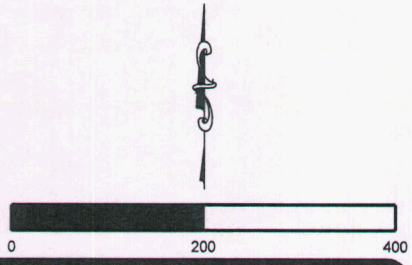
QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
13	EA	2,000	INSTALL LONG SERVICE	26,000
13	EA	1,800	INSTALL SHORT SERVICE	23,400
				-
				-
				-
				-
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**49,400**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	741
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	3,458
(4) SUBTOTAL - LINES (1), (2) AND (3)	**53,599**
(5) OVERHEAD - 15% OF LINE (4)	8,040
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	4,824
SUBTOTAL - LINES (4), (5) AND (6)	**66,463**
ESTIMATED COST OF CONSTRUCTION	**$ 66,463**

AFH

PROJECT 13





QUANTITIES LIST

ITEM		QTY.
1	INSTALL LONG SERVICE	13 EA.
2	INSTALL SHORT SERVICE	14 EA.

WATER SERVICES TO BE DOUBLE SERVICES WHERE POSSIBLE

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

ARIZONA WATER COMPANY

PROJECT DESCRIPTION

INSTALL 27 SERVICE CONNECTIONS ALONG JAHNS DRIVE FROM CASA GRANDE AVENUE TO KADOTA AVENUE.

PROJECT LOCATION

NE 1/4 SEC. 17–T.6S., R.6E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP G

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
NE 1/4 SEC. 17-T.6S., R.6E.	13	MAP G

PROJECT DESCRIPTION:

INSTALL 27 SERVICE CONNECTIONS ON JAHNS DRIVE FROM CASA GRANDE AVENUE TO KADOTA AVENUE.

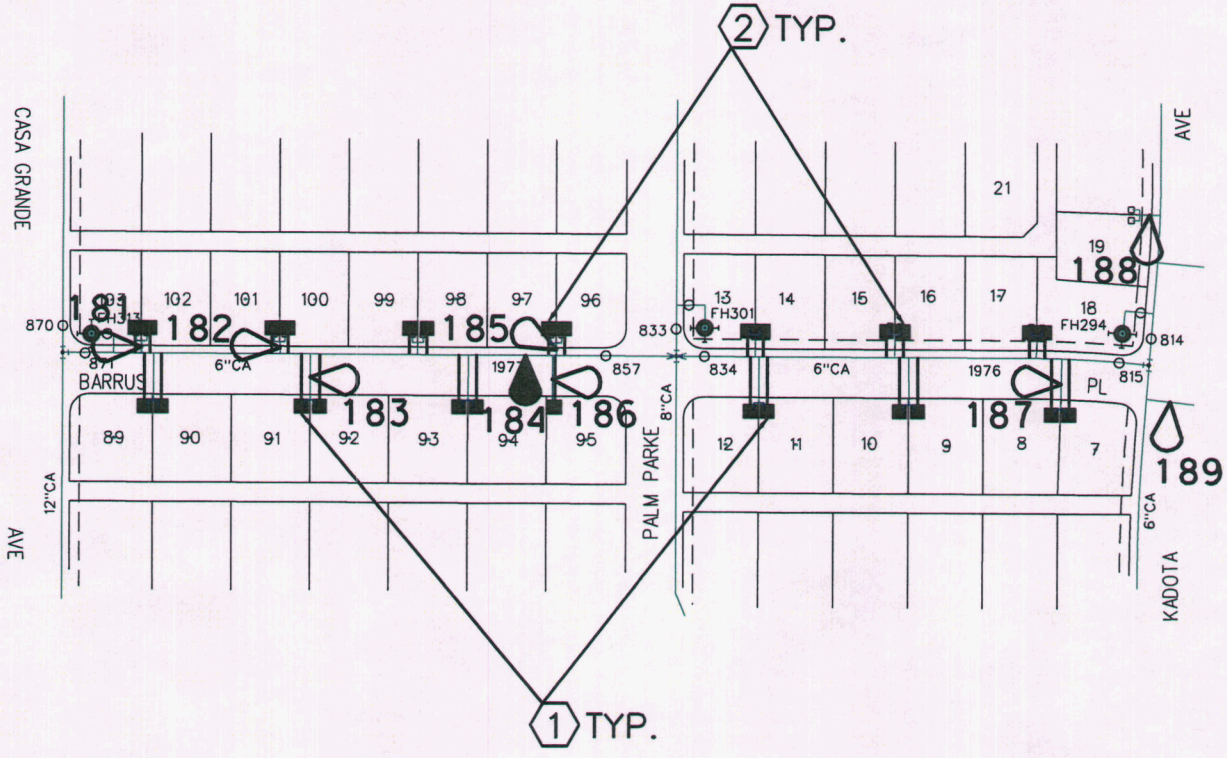
MATERIALS AND LABOR

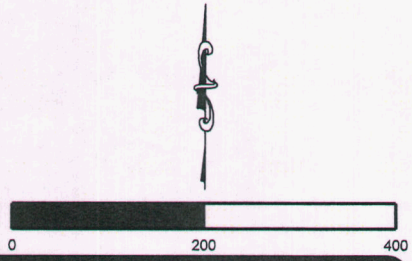
QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
13	EA	2,000	INSTALL LONG SERVICE	26,000
14	EA	1,800	INSTALL SHORT SERVICE	25,200
				-
				-
				-
				-
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**51,200**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	768
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	3,584
(4) SUBTOTAL - LINES (1), (2) AND (3)	**55,552**
(5) OVERHEAD - 15% OF LINE (4)	8,333
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	5,000
SUBTOTAL - LINES (4), (5) AND (6)	**68,884**
ESTIMATED COST OF CONSTRUCTION	**$ 68,884**

AFH

PROJECT 14





QUANTITIES LIST

ITEM		QTY.
1	INSTALL LONG SERVICE	13 EA.
2	INSTALL SHORT SERVICE	14 EA.

WATER SERVICES TO BE DOUBLE SERVICES WHERE POSSIBLE

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

ARIZONA WATER COMPANY

PROJECT DESCRIPTION

INSTALL 27 SERVICE CONNECTIONS ALONG BARRUS PLACE FROM CASA GRANDE AVENUE TO KADOTA AVENUE.

PROJECT LOCATION

SE 1/4 SEC. 17–T.6S., R.6E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP G

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
SE 1/4 SEC. 17-T.6S., R.6E.	14	MAP G

PROJECT DESCRIPTION:

INSTALL 27 SERVICE CONNECTIONS ALONG BARRUS PLACE FROM CASA GRANDE AVENUE TO KADOTA AVENUE.

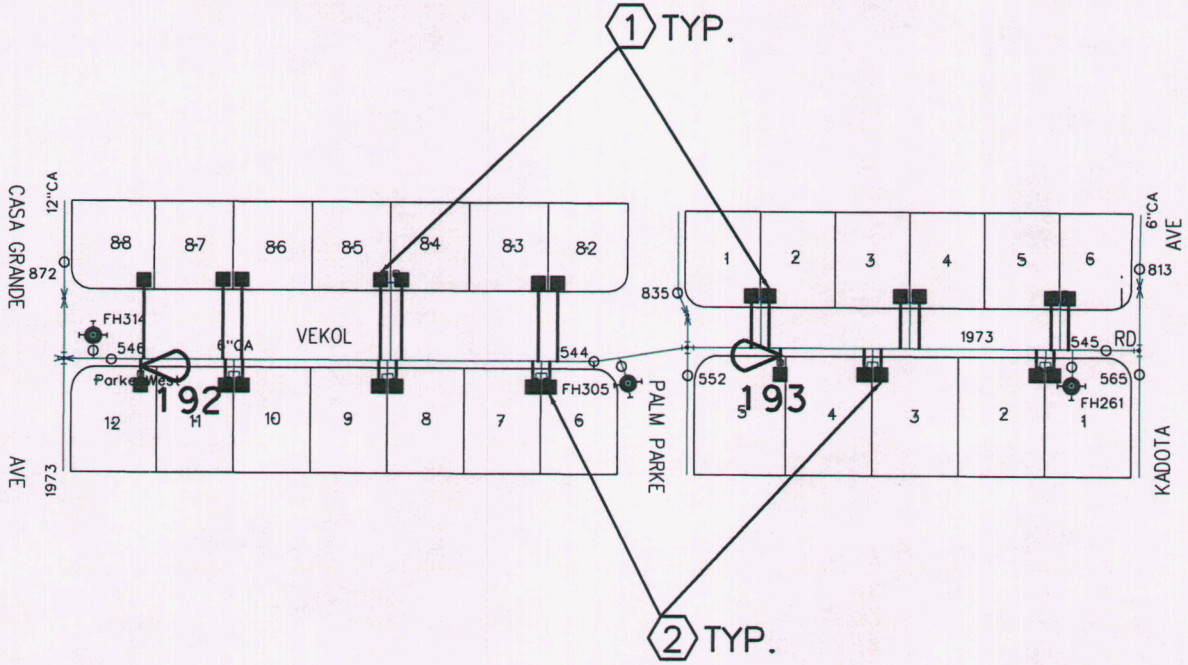
MATERIALS AND LABOR

QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
13	EA	2,000	INSTALL LONG SERVICE	26,000
14	EA	1,800	INSTALL SHORT SERVICE	25,200
				-
				-
				-
				-
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**51,200**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	768
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	3,584
(4) SUBTOTAL - LINES (1), (2) AND (3)	**55,552**
(5) OVERHEAD - 15% OF LINE (4)	8,333
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	5,000
SUBTOTAL - LINES (4), (5) AND (6)	**68,884**
ESTIMATED COST OF CONSTRUCTION	**$ 68,884**

AFH

PROJECT 15



QUANTITIES LIST		
ITEM		QTY.
1	INSTALL LONG SERVICE	13 EA.
2	INSTALL SHORT SERVICE	12 EA.

WATER SERVICES TO BE DOUBLE SERVICES WHERE POSSIBLE

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

0 200 400

ARIZONA WATER COMPANY

PROJECT DESCRIPTION

INSTALL 25 SERVICE CONNECTIONS ALONG VEKOL ROAD FROM CASA GRANDE AVENUE TO KADOTA AVENUE.

PROJECT LOCATION

SE 1/4 SEC. 17–T.6S., R.6E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP G

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
SE 1/4 SEC. 17-T.6S., R.6E.	15	MAP G

PROJECT DESCRIPTION:

INSTALL 25 SERVICE CONNECTIONS ON VEKOL ROAD FROM CASA GRANDE AVENUE TO KADOTA AVENUE.

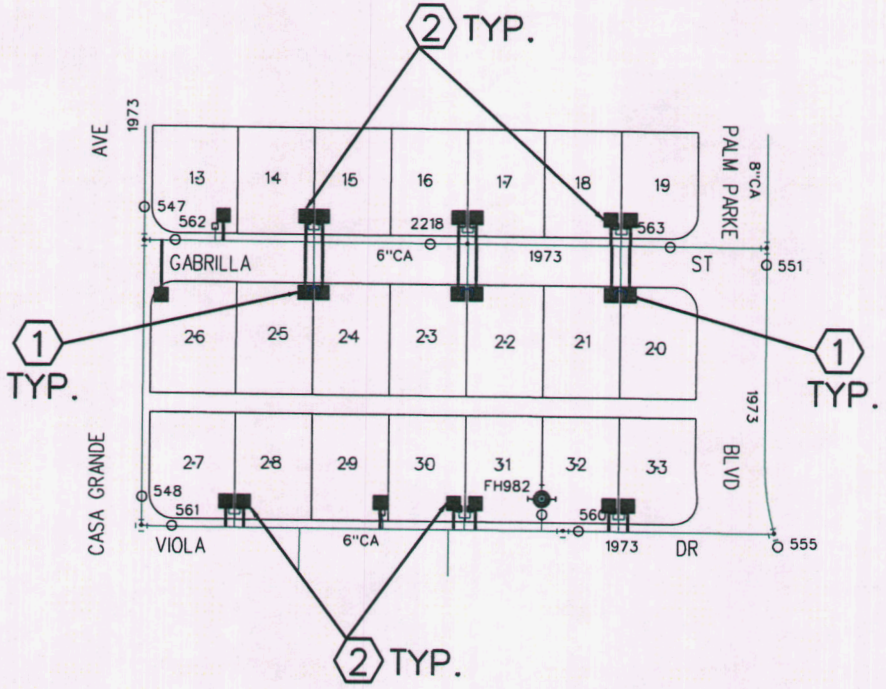
MATERIALS AND LABOR

QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
13	EA	2,000	INSTALL LONG SERVICE	26,000
12	EA	1,800	INSTALL SHORT SERVICE	21,600
				-
				-
				-
				-
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**47,600**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	714
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	3,332
(4) SUBTOTAL - LINES (1), (2) AND (3)	**51,646**
(5) OVERHEAD - 15% OF LINE (4)	7,747
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	4,648
SUBTOTAL - LINES (4), (5) AND (6)	**64,041**
ESTIMATED COST OF CONSTRUCTION	**$ 64,041**

AFH

PROJECT 16



QUANTITIES LIST		
ITEM		QTY.
1	INSTALL LONG SERVICE	7 EA.
2	INSTALL SHORT SERVICE	14 EA.

WATER SERVICES TO BE DOUBLE SERVICES WHERE POSSIBLE

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

0 200 400

ARIZONA WATER COMPANY

PROJECT DESCRIPTION

INSTALL 21 SERVICE CONNECTIONS ALONG GABRILLA STREET AND VIOLA STREET FROM CASA GRANDE AVENUE TO PALM PARKE BOULEVARD.

PROJECT LOCATION

SE 1/4 SEC. 17–T.6S., R.6E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP G

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
SE 1/4 SEC. 17-T.6S., R.6E.	16	MAP G

PROJECT DESCRIPTION:

INSTALL 21 SERVICE CONNECTIONS ON GABRILLA STREET AND VIOLA STREET FROM CASA GRANDE AVENUE TO PALM PARKE BOULEVARD.

MATERIALS AND LABOR

QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
7	EA	2,000	INSTALL LONG SERVICE	14,000
14	EA	1,800	INSTALL SHORT SERVICE	25,200
				-
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				-
				-
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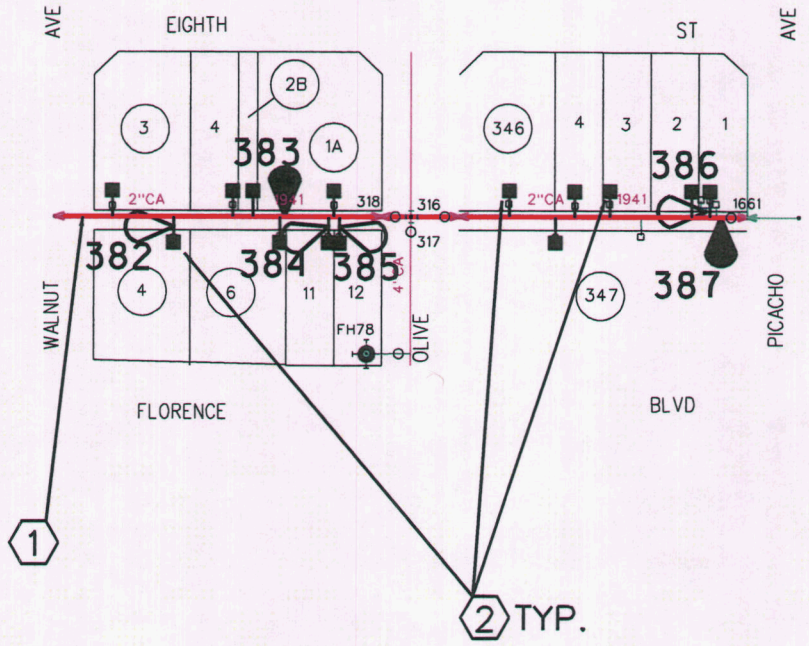
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**39,200**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	588
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	2,744
(4) SUBTOTAL - LINES (1), (2) AND (3)	**42,532**
(5) OVERHEAD - 15% OF LINE (4)	6,380
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	3,828
SUBTOTAL - LINES (4), (5) AND (6)	**52,740**
ESTIMATED COST OF CONSTRUCTION	**$ 52,740**

AFH

PROJECT 17



0 200 400

QUANTITIES LIST

ITEM		QTY.
1	INSTALL 6" DIP W/POLYWRAP	700 LF
2	INSTALL SERVICE	14 EA.

PRELIMINARY DRAWING
VALVE AND FIRE HYDRANT LOCATION
TO BE DETERMINED IN PROJECT DESIGN

WATER SERVICES TO BE DOUBLE SERVICES
WHERE POSSIBLE

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

ARIZONA WATER COMPANY

PROJECT DESCRIPTION
INSTALL 700 LF OF 6" DIP w/POLYWRAP AND 14 SERVICE CONNECTIONS IN AN ALLEY BETWEEN EIGHTH STREET AND FLORENCE BOULEVARD FROM WALNUT AVENUE TO PICACHO AVENUE.

PROJECT LOCATION
SW 1/4 SEC. 20–T.6S., R.6E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP A

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
SW 1/4 SEC. 20 - T.6S., R.6E.	17	MAP A

PROJECT DESCRIPTION:
INSTALL 700 LF OF 6" DIP w/POLYWRAP AND 14 SERVICE CONNECTIONS IN THE ALLEY BETWEEN EIGHTH STREET AND FLORENCE BOULEVARD FROM WALNUT AVENUE TO PICACHO AVENUE.

MATERIALS AND LABOR

QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
700	LF	50	6" DIP w/POLYWRAP	35,000
14	EA	1,500	INSTALL SERVICE	21,000
				-
				-
				-
				-
				-
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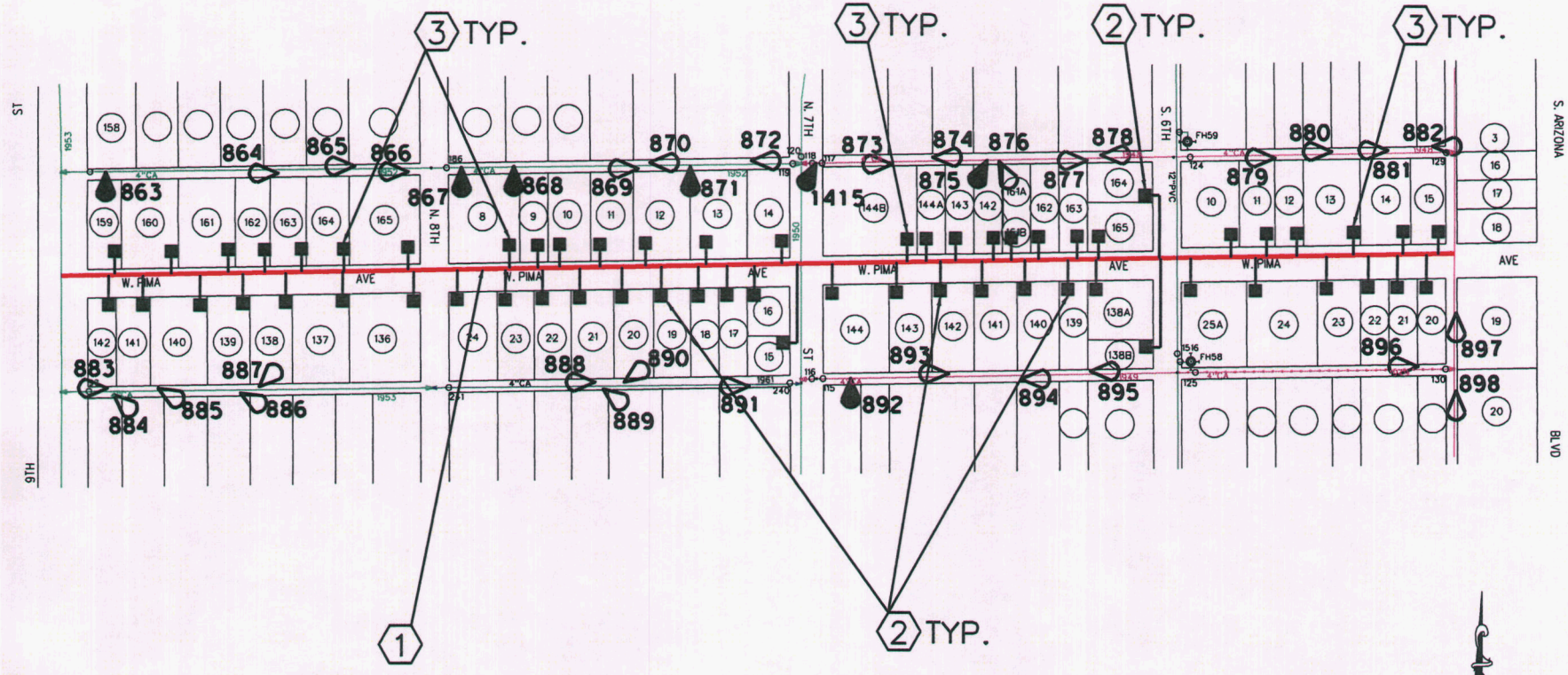
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**56,000**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	840
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	3,920
(4) SUBTOTAL - LINES (1), (2) AND (3)	**60,760**
(5) OVERHEAD - 15% OF LINE (4)	9,114
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	5,468
SUBTOTAL - LINES (4), (5) AND (6)	**75,342**
ESTIMATED COST OF CONSTRUCTION	**$ 75,342**

AFH

PROJECT 18



QUANTITIES LIST

ITEM		QTY.
1	INSTALL 6" PVC	2,500 LF
2	RELOCATE LONG SERVICE	32 EA.
3	RELOCATE SHORT SERVICE	28 EA.

PRELIMINARY DRAWING
VALVE AND FIRE HYDRANT LOCATION
TO BE DETERMINED IN PROJECT DESIGN

WATER SERVICES TO BE DOUBLE SERVICES
WHERE POSSIBLE

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

ARIZONA WATER COMPANY

PROJECT DESCRIPTION

INSTALL 2,500 LF OF 6" PVC AND 60 SERVICE CONNECTIONS
ALONG PIMA AVENUE FROM NINTH STREET TO ARIZONA BOULEVARD.

PROJECT LOCATION

SE 1/4 SEC. 21–T.5S., R.8E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP C

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
SE 1/4 SEC. 21-T.5S., R.8E.	18	MAP C

PROJECT DESCRIPTION:

INSTALL 2,500 LF OF 6" PVC AND 60 SERVICE CONNECTIONS ALONG PIMA AVENUE FROM NINTH STREET TO ARIZONA BOULEVARD.

MATERIALS AND LABOR

QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
2,500	LF	40	6" PVC	100,000
32	EA	2,200	RELOCATE LONG SERVICE	70,400
28	EA	2,000	RELOCATE SHORT SERVICE	56,000
				-
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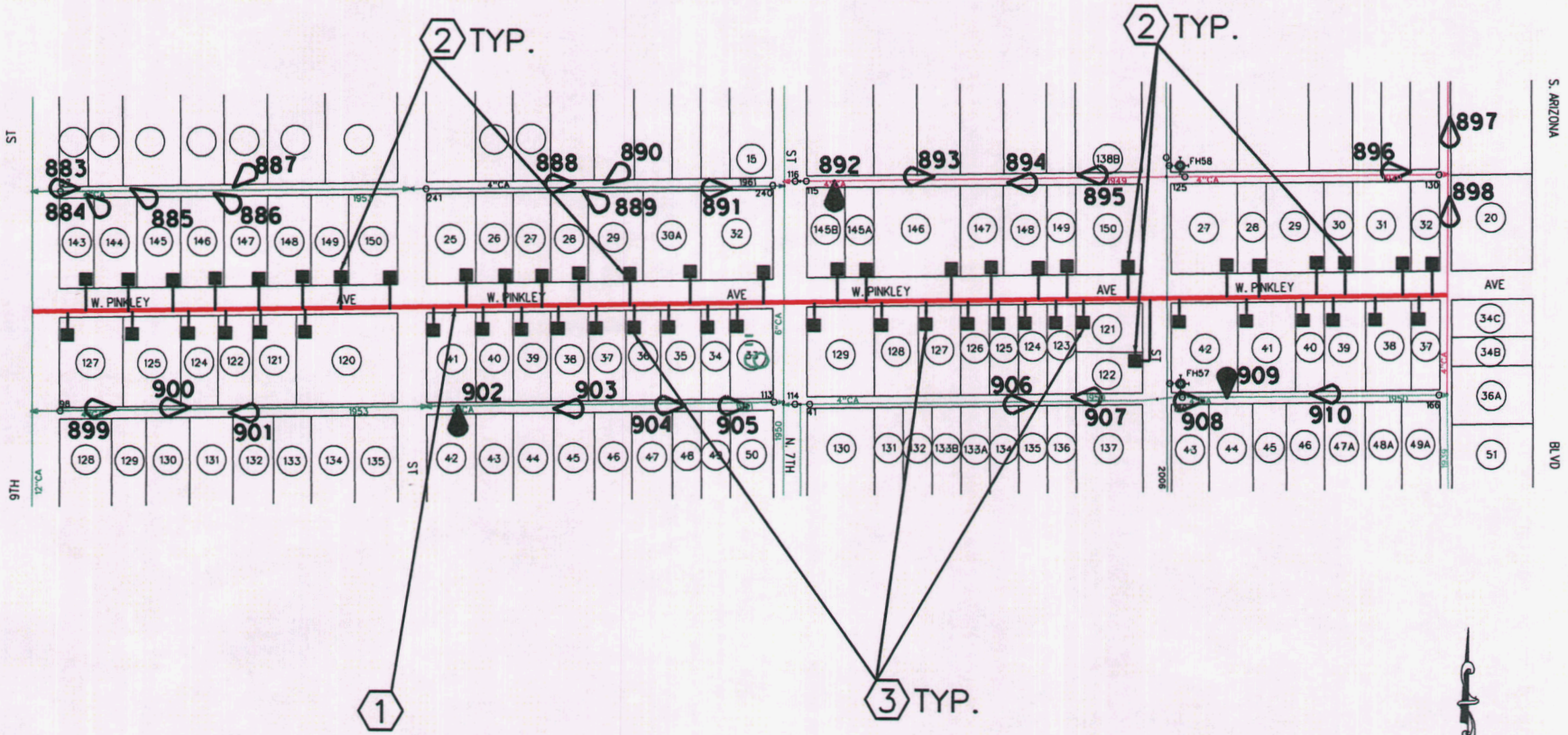
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**226,400**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	3,396
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	15,848
(4) SUBTOTAL - LINES (1), (2) AND (3)	**245,644**
(5) OVERHEAD - 15% OF LINE (4)	36,847
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	22,108
SUBTOTAL - LINES (4), (5) AND (6)	**304,599**
ESTIMATED COST OF CONSTRUCTION	**$ 304,599**

AFH

PROJECT 19



QUANTITIES LIST

ITEM		QTY.
1	INSTALL 6" PVC	2,400 LF
2	RELOCATE LONG SERVICE	29 EA.
3	RELOCATE SHORT SERVICE	29 EA.

PRELIMINARY DRAWING
VALVE AND FIRE HYDRANT LOCATION
TO BE DETERMINED IN PROJECT DESIGN

WATER SERVICES TO BE DOUBLE SERVICES
WHERE POSSIBLE

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

0 300 600

ARIZONA WATER COMPANY

PROJECT DESCRIPTION

INSTALL 2,400 LF OF 6" PVC AND 58 SERVICE CONNECTIONS
ALONG PINKLEY AVENUE FROM NINTH STREET TO ARIZONA BOULEVARD.

PROJECT LOCATION

SE 1/4 SEC. 21–T.5S., R.8E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP C

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
SE 1/4 SEC. 21-T.5S., R.8E.	19	MAP C

PROJECT DESCRIPTION:

INSTALL 2,400 LF OF 6" PVC AND 58 SERVICE CONNECTIONS ALONG PINKLEY AVENUE FROM NINTH STREET TO ARIZONA BOULEVARD.

MATERIALS AND LABOR

QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
2,400	LF	40	6" PVC	96,000
29	EA	2,200	RELOCATE LONG SERVICE	63,800
29	EA	2,000	RELOCATE SHORT SERVICE	58,000
				-
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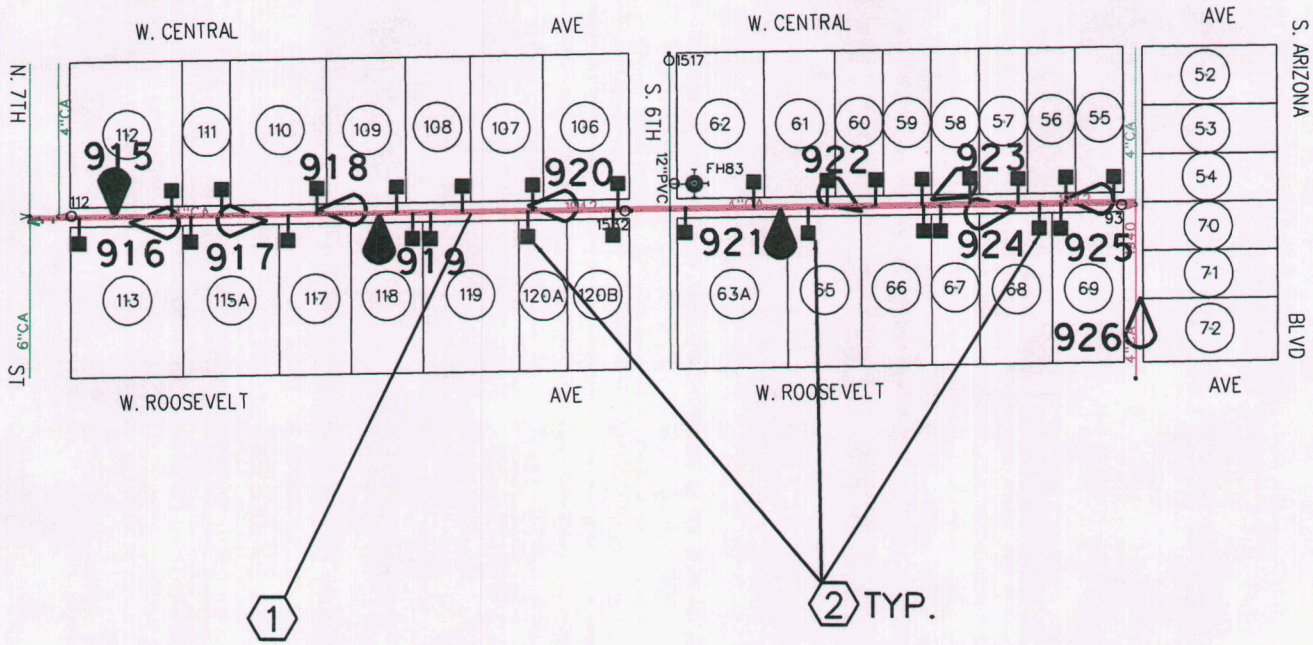
				-
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**217,800**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	3,267
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	15,246
(4) SUBTOTAL - LINES (1), (2) AND (3)	**236,313**
(5) OVERHEAD - 15% OF LINE (4)	35,447
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	21,268
SUBTOTAL - LINES (4), (5) AND (6)	**293,028**
ESTIMATED COST OF CONSTRUCTION	**$ 293,028**

AFH

PROJECT 20



PRELIMINARY DRAWING
VALVE AND FIRE HYDRANT LOCATION
TO BE DETERMINED IN PROJECT DESIGN

WATER SERVICES TO BE DOUBLE SERVICES
WHERE POSSIBLE

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

0 200 400

QUANTITIES LIST

ITEM		QTY.
1	INSTALL 6" PVC	1,200 LF
2	INSTALL SERVICE	28 EA.

ARIZONA WATER COMPANY

PROJECT DESCRIPTION
INSTALL 1,200 LF OF 6" PVC AND 28 SERVICE CONNECTIONS IN AN ALLEY BETWEEN CENTRAL AVENUE AND ROOSEVELT AVENUE FROM 7TH STREET TO ARIZONA BOULEVARD.

PROJECT LOCATION
SE 1/4 SEC. 21–T.5S., R.8E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP C

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
SE 1/4 SEC. 21-T.5S., R.8E.	20	MAP C

PROJECT DESCRIPTION:

INSTALL 1,200 LF OF 6" PVC AND 28 SERVICE CONNECTIONS IN AN ALLEY BETWEEN CENTRAL AVENUE AND ROOSEVELT AVENUE FROM 7TH STREET TO ARIZONA BOULEVARD.

MATERIALS AND LABOR

QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
1,200	LF	40	6" PVC	48,000
28	EA	1,500	INSTALL SERVICE	42,000
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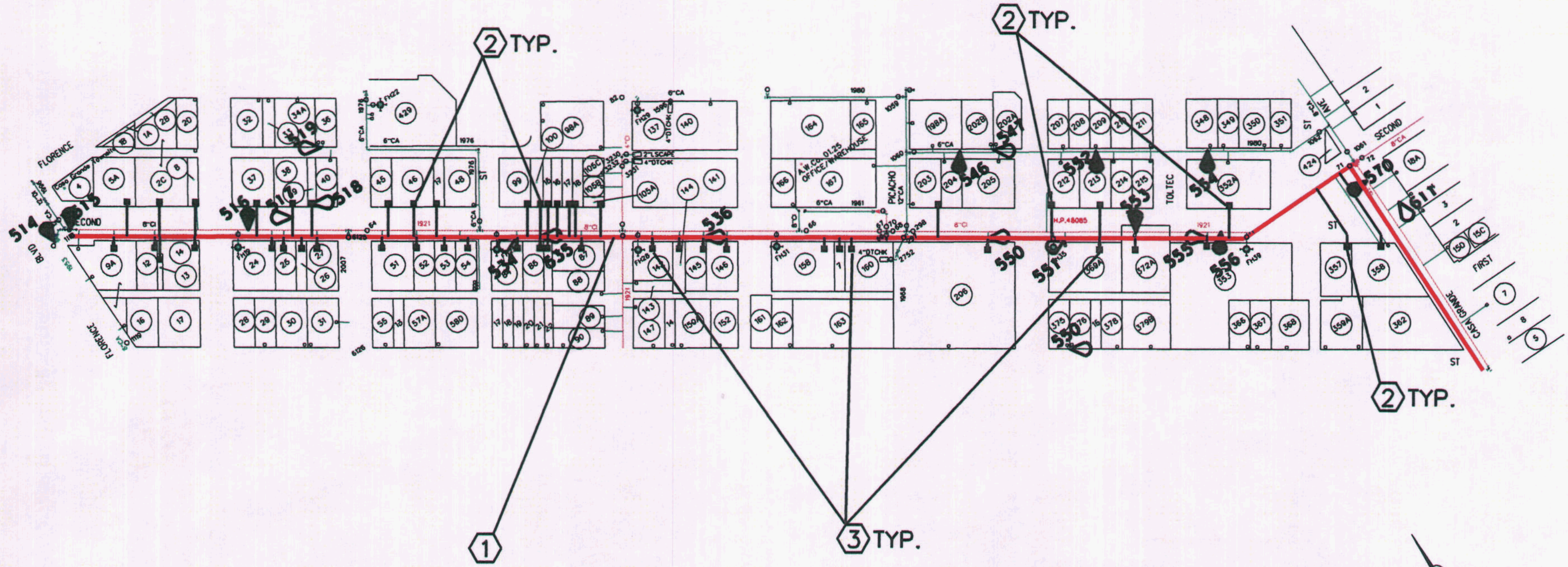
				-
				-
				-
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**90,000**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	1,350
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	6,300
(4) SUBTOTAL - LINES (1), (2) AND (3)	**97,650**
(5) OVERHEAD - 15% OF LINE (4)	14,648
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	8,789
SUBTOTAL - LINES (4), (5) AND (6)	**121,086**
ESTIMATED COST OF CONSTRUCTION	**$ 121,086**

AFH

PROJECT 21



QUANTITIES LIST

ITEM		QTY.
1	INSTALL 8" DIP w/POLYWRAP	3,700 LF
2	INSTALL LONG SERVICE	22 EA.
3	INSTALL SHORT SERVICE	27 EA.

PRELIMINARY DRAWING
VALVE AND FIRE HYDRANT LOCATION
TO BE DETERMINED IN PROJECT DESIGN

WATER SERVICES TO BE DOUBLE SERVICES
WHERE POSSIBLE

- WATER MAIN REPAIR/REPLACEMENT (filled drop symbol)
- SERVICE LINE REPAIR/REPLACEMENT (open drop symbol)
- **139** LEAK NUMBER

0 400 800

ARIZONA WATER COMPANY

PROJECT DESCRIPTION

INSTALL 3,700 LF OF 8" DIP w/POLYWRAP AND 49 SERVICE CONNECTIONS ALONG SECOND STREET FROM FLORENCE STREET TO CASA GRANDE AVENUE.

PROJECT LOCATION

NW 1/4 SEC. 29-T.6S., R.6E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP B

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
NW 1/4 SEC. 29-T.6S., R.6E.	21	MAP B

PROJECT DESCRIPTION:

INSTALL 3,700 LF OF 8" DIP w/POLYWRAP AND 49 SERVICE CONNECTIONS ALONG SECOND STREET FROM FLORENCE STREET TO CASA GRANDE AVENUE.

MATERIALS AND LABOR

QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
3,700	LF	60	8" DIP w/POLYWRAP	222,000
22	EA	2,000	INSTALL LONG SERVICE	44,000
27	EA	1,800	INSTALL SHORT SERVICE	48,600
				-
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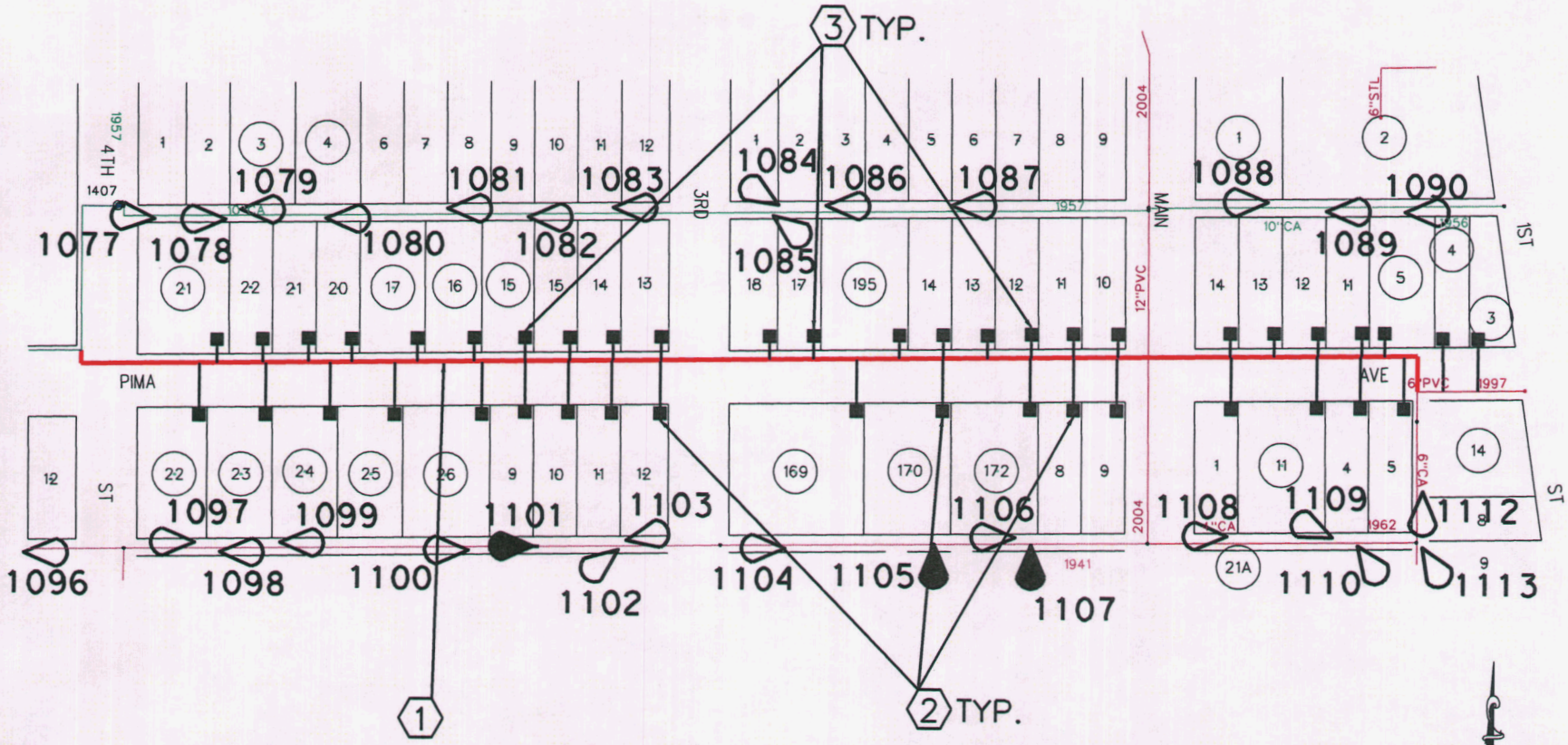
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**314,600**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	4,719
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	22,022
(4) SUBTOTAL - LINES (1), (2) AND (3)	**341,341**
(5) OVERHEAD - 15% OF LINE (4)	51,201
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	30,721
SUBTOTAL - LINES (4), (5) AND (6)	**423,263**
ESTIMATED COST OF CONSTRUCTION	**$ 423,263**

AFH

PROJECT 22



0 200 400

QUANTITIES LIST

ITEM		QTY.
1	INSTALL 6" PVC	1,600 LF
2	INSTALL LONG SERVICE	20 EA.
3	INSTALL SHORT SERVICE	23 EA.

PRELIMINARY DRAWING
VALVE AND FIRE HYDRANT LOCATION
TO BE DETERMINED IN PROJECT DESIGN

WATER SERVICES TO BE DOUBLE SERVICES
WHERE POSSIBLE

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

ARIZONA WATER COMPANY

PROJECT DESCRIPTION

INSTALL 1,600 LF OF 6" PVC AND 43 SERVICE CONNECTIONS ALONG PIMA AVENUE FROM 4TH STREET 1ST STREET.

PROJECT LOCATION

SW 1/4 SEC. 22–T.5S., R.8E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP D

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
SW 1/4 SEC. 22-T.5S., R.8E.	22	MAP D

PROJECT DESCRIPTION:

INSTALL 1,600 LF OF 6" PVC AND 43 SERVICE CONNECTIONS ALONG PIMA AVENUE FROM FOURTH STREET TO FIRST STREET.

MATERIALS AND LABOR

QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
1,600	LF	40	6" PVC	$ 64,000
20	EA	2,000	INSTALL LONG SERVICE	40,000
23	EA	1,800	INSTALL SHORT SERVICE	41,400
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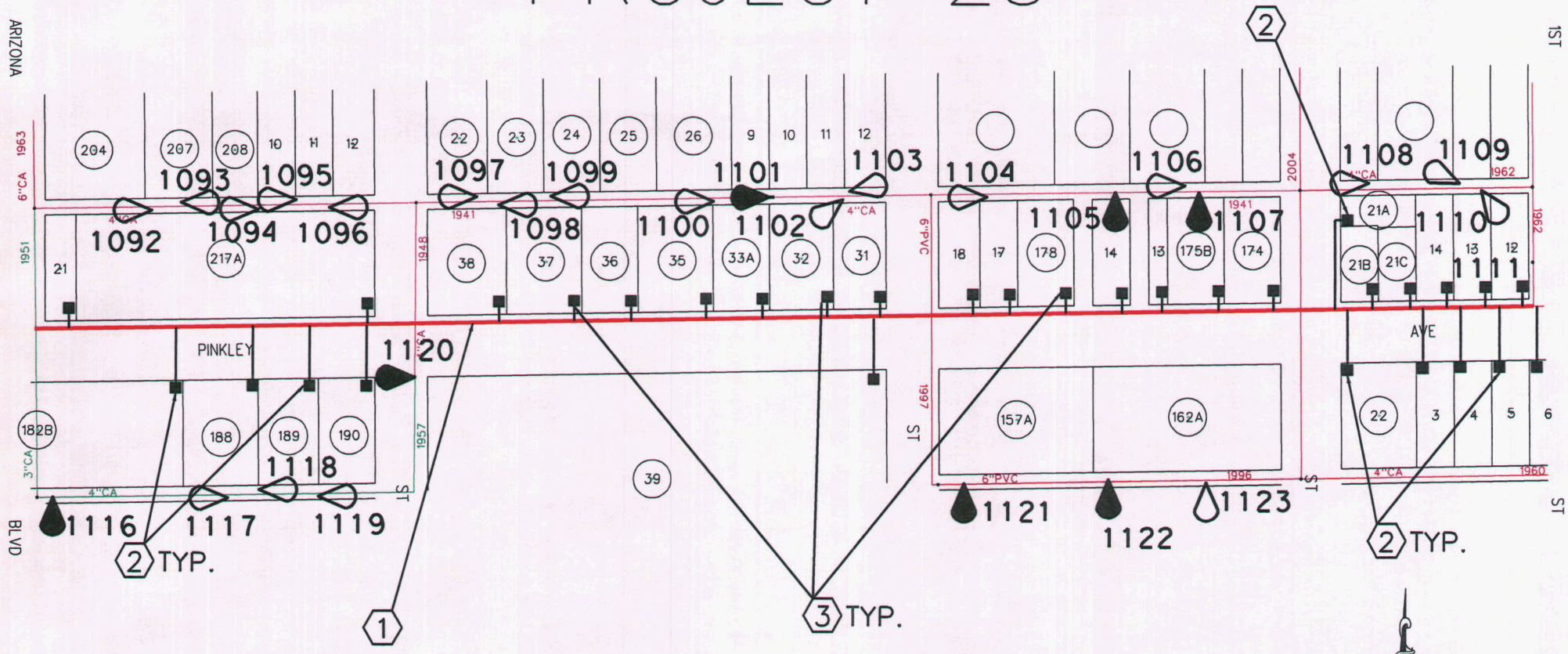
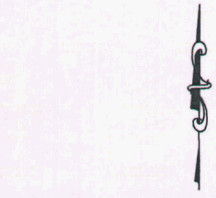
				-
				-
				-
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**145,400**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	2,181
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	10,178
(4) SUBTOTAL - LINES (1), (2) AND (3)	**157,759**
(5) OVERHEAD - 15% OF LINE (4)	23,664
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	14,198
SUBTOTAL - LINES (4), (5) AND (6)	**195,621**
ESTIMATED COST OF CONSTRUCTION	**$ 195,621**

AFH

PROJECT 23





0 200 400

QUANTITIES LIST

ITEM		QTY.
1	INSTALL 6" PVC	2,000 LF
2	RELOCATE LONG SERVICE	11 EA.
3	RELOCATE SHORT SERVICE	21 EA.

PRELIMINARY DRAWING
VALVE AND FIRE HYDRANT LOCATION
TO BE DETERMINED IN PROJECT DESIGN

WATER SERVICES TO BE DOUBLE SERVICES
WHERE POSSIBLE

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

ARIZONA WATER COMPANY

PROJECT DESCRIPTION

INSTALL 2,000 LF OF 6" PVC AND 32 SERVICE CONNECTIONS ALONG PINKLEY AVENUE FROM ARIZONA BOULEVARD TO 1ST SREET.

PROJECT LOCATION

SW 1/4 SEC. 22–T.5S., R.8E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP D

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
SW 1/4 SEC. 22-T.5S., R.8E.	23	MAP D

PROJECT DESCRIPTION:

INSTALL 2,000 LF OF 6" PVC AND 32 SERVICE CONNECTIONS ALONG PINKLEY AVENUE FROM ARIZONA BOULEVARD TO FIRST STREET.

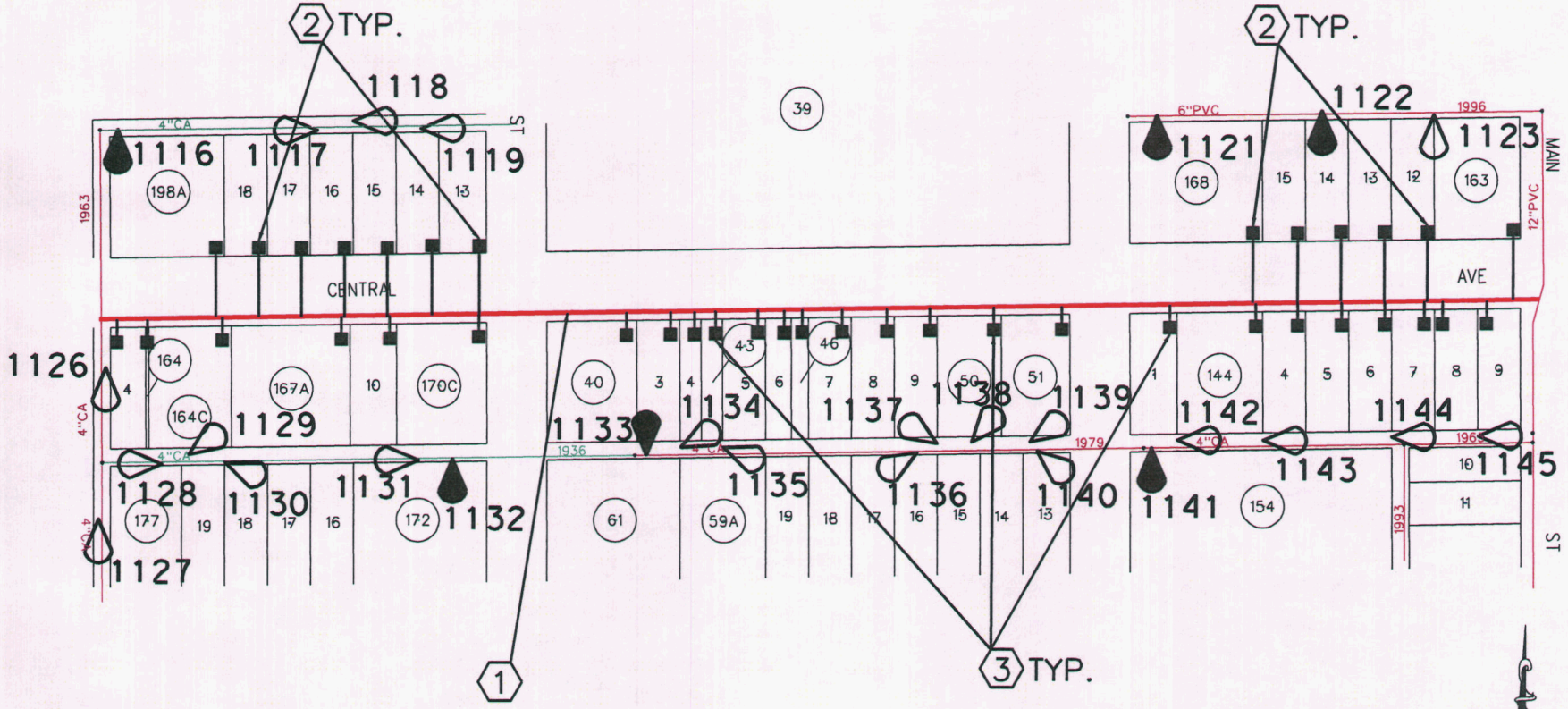
MATERIALS AND LABOR

QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
2,000	LF	40	6" PVC	$ 80,000
11	EA	2,200	RELOCATE LONG SERVICE	24,200
21	EA	2,000	RELOCATE SHORT SERVICE	42,000
				-
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**146,200**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	2,193
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	10,234
(4) SUBTOTAL - LINES (1), (2) AND (3)	**158,627**
(5) OVERHEAD - 15% OF LINE (4)	23,794
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	14,276
SUBTOTAL - LINES (4), (5) AND (6)	**196,697**
ESTIMATED COST OF CONSTRUCTION	**$ 196,697**

AFH

PROJECT 24



PRELIMINARY DRAWING
VALVE AND FIRE HYDRANT LOCATION
TO BE DETERMINED IN PROJECT DESIGN

WATER SERVICES TO BE DOUBLE SERVICES
WHERE POSSIBLE

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

QUANTITIES LIST

ITEM		QTY.
1	INSTALL 6" PVC	1,700 LF
2	RELOCATE LONG SERVICE	13 EA.
3	RELOCATE SHORT SERVICE	26 EA.

ARIZONA WATER COMPANY

PROJECT DESCRIPTION

INSTALL 1,700 LF OF 6" PVC AND 39 SERVICE CONNECTIONS
ALONG CENTRAL AVENUE FROM ARIZONA BOULEVARD TO MAIN STREET.

PROJECT LOCATION

SW 1/4 SEC. 22–T.5S., R.8E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP D

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
SW 1/4 SEC. 22-T.5S., R.8E.	24	MAP D

PROJECT DESCRIPTION:

INSTALL 1,700 LF OF 6" PVC AND 39 SERVICE CONNECTIONS ALONG CENTRAL AVENUE FROM ARIZONA BOULEVARD TO MAIN STREET.

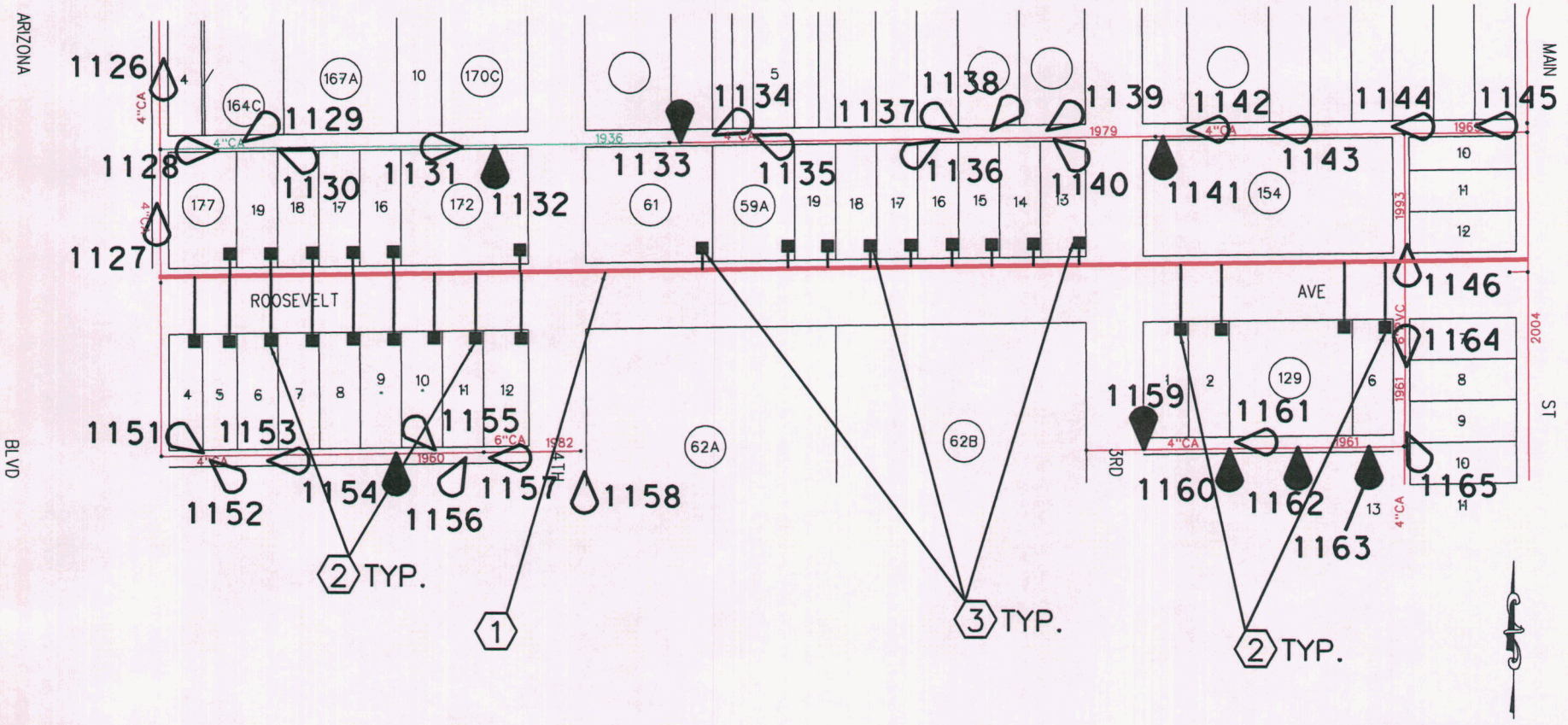
MATERIALS AND LABOR

QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
1,700	LF	40	6" PVC	68,000
13	EA	2,200	RELOCATE LONG SERVICE	28,600
26	EA	2,000	RELOCATE SHORT SERVICE	52,000
				-
				-
				-
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**148,600**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	2,229
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	10,402
(4) SUBTOTAL - LINES (1), (2) AND (3)	**161,231**
(5) OVERHEAD - 15% OF LINE (4)	24,185
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	14,511
SUBTOTAL - LINES (4), (5) AND (6)	**199,926**
ESTIMATED COST OF CONSTRUCTION	**$ 199,926**

AFH

PROJECT 25



QUANTITIES LIST

ITEM		QTY.
1	INSTALL 6" PVC	1,700 LF
2	RELOCATE LONG SERVICE	13 EA.
3	RELOCATE SHORT SERVICE	15 EA.

PRELIMINARY DRAWING
VALVE AND FIRE HYDRANT LOCATION
TO BE DETERMINED IN PROJECT DESIGN

WATER SERVICES TO BE DOUBLE SERVICES
WHERE POSSIBLE

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

0 200 400

ARIZONA WATER COMPANY

PROJECT DESCRIPTION

INSTALL 1,700 LF OF 6" PVC AND 28 SERVICE CONNECTIONS
ALONG ROOSEVELT AVENUE FROM ARIZONA BOULEVARD TO MAIN STREET.

PROJECT LOCATION

SW 1/4 SEC. 22–T.5S., R.8E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP D

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
SW 1/4 SEC. 22-T.5S., R.8E.	25	MAP D

PROJECT DESCRIPTION:

INSTALL 1,700 LF OF 6" PVC AND 28 SERVICE CONNECTIONS ALONG ROOSEVELT AVENUE FROM ARIZONA BOULEVARD TO MAIN STREET.

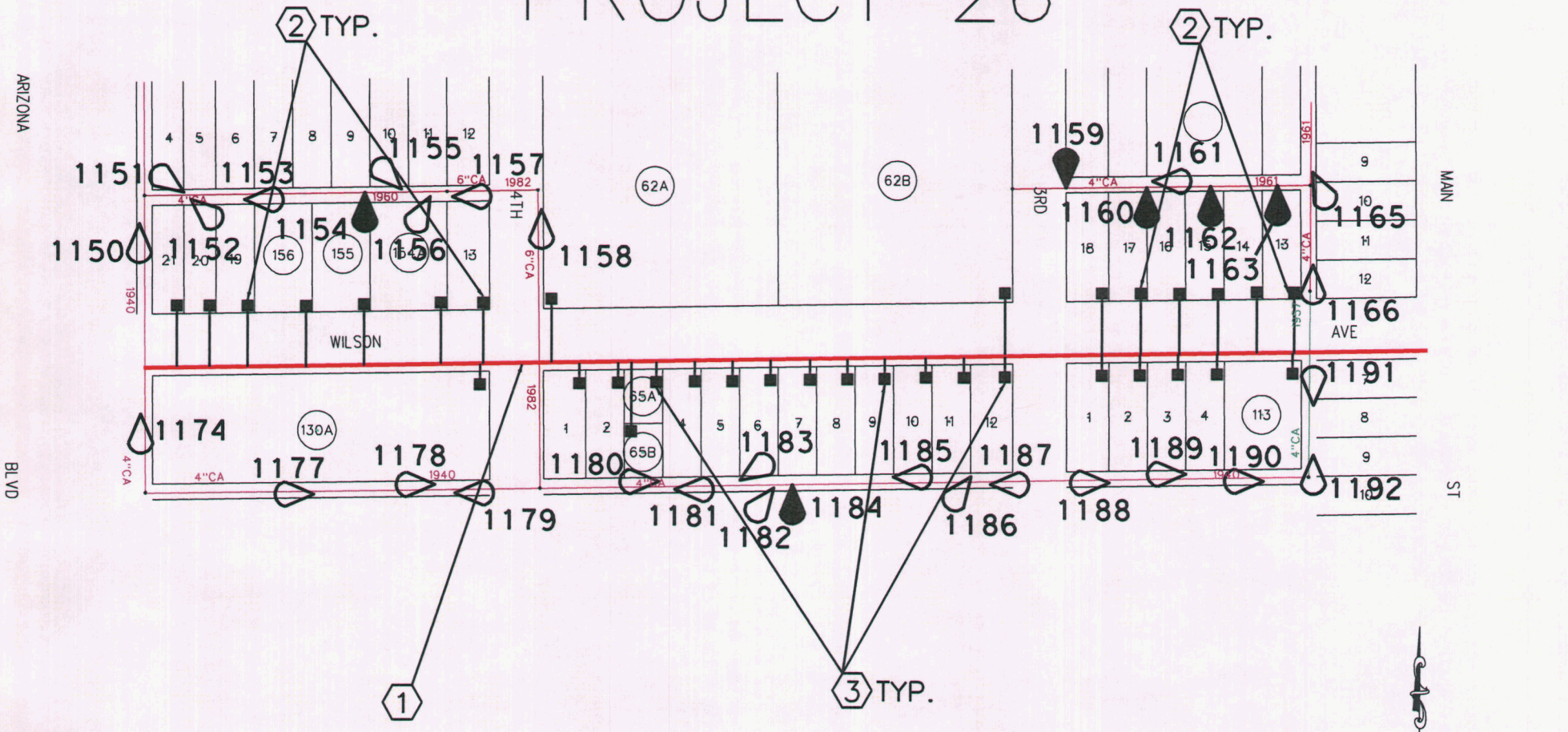
MATERIALS AND LABOR

QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
1,700	LF	40	6" PVC	68,000
13	EA	2,200	RELOCATE LONG SERVICE	28,600
15	EA	2,000	RELOCATE SHORT SERVICE	30,000
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**126,600**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	1,899
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	8,862
(4) SUBTOTAL - LINES (1), (2) AND (3)	**137,361**
(5) OVERHEAD - 15% OF LINE (4)	20,604
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	12,362
SUBTOTAL - LINES (4), (5) AND (6)	**170,328**
ESTIMATED COST OF CONSTRUCTION	**$ 170,328**

AFH

PROJECT 26



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PRELIMINARY DRAWING
VALVE AND FIRE HYDRANT LOCATION
TO BE DETERMINED IN PROJECT DESIGN

WATER SERVICES TO BE DOUBLE SERVICES
WHERE POSSIBLE

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

QUANTITIES LIST

ITEM		QTY.
1	INSTALL 6" PVC	1,700 LF
2	RELOCATE LONG SERVICE	16 EA.
3	RELOCATE SHORT SERVICE	18 EA.

ARIZONA WATER COMPANY

PROJECT DESCRIPTION

INSTALL 1,700 LF OF 6" PVC AND 34 SERVICE CONNECTIONS
ALONG WILSON AVENUE FROM ARIZONA BOULEVARD TO MAIN STREET.

PROJECT LOCATION

SW 1/4 SEC. 22–T.5S., R.8E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP D

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
SW 1/4 SEC. 22-T.5S., R.8E.	26	MAP D

PROJECT DESCRIPTION:

INSTALL 1,700 LF OF 6" PVC AND 34 SERVICE CONNECTIONS ALONG WILSON AVENUE FROM ARIZONA BOULEVARD TO MAIN STREET.

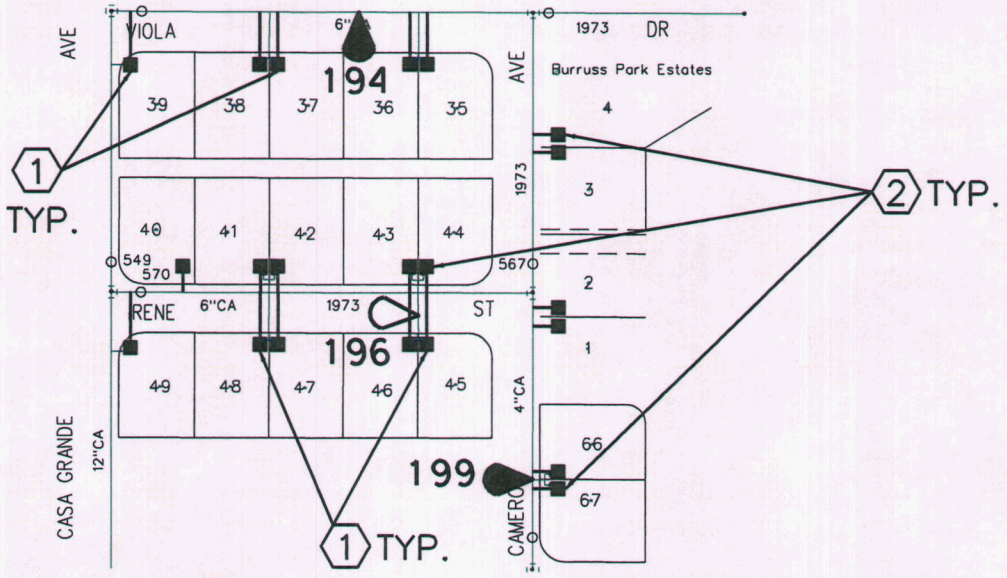
MATERIALS AND LABOR

QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
1,700	LF	40	6" PVC	68,000
16	EA	2,200	RELOCATE LONG SERVICE	35,200
18	EA	2,000	RELOCATE SHORT SERVICE	36,000
				-
				-
				-
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**139,200**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	2,088
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	9,744
(4) SUBTOTAL - LINES (1), (2) AND (3)	**151,032**
(5) OVERHEAD - 15% OF LINE (4)	22,655
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	13,593
SUBTOTAL - LINES (4), (5) AND (6)	**187,280**
ESTIMATED COST OF CONSTRUCTION	**$ 187,280**

AFH

PROJECT 27



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QUANTITIES LIST

ITEM		QTY.
1	INSTALL LONG SERVICE	10 EA.
2	INSTALL SHORT SERVICE	11 EA.

WATER SERVICES TO BE DOUBLE SERVICES WHERE POSSIBLE

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

ARIZONA WATER COMPANY

PROJECT DESCRIPTION

INSTALL 21 SERVICE CONNECTIONS ALONG VIOLA DRIVE AND IRENE STREET FROM CASA GRANDE AVENUE TO CAMERON AVENUE.

PROJECT LOCATION

SE 1/4 SEC. 17–T.6S., R.6E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP G

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
SE 1/4 SEC. 17-T.6S., R.6E.	27	MAP G

PROJECT DESCRIPTION:

INSTALL 21 SERVICE CONNECTIONS ON VIOLA DRIVE AND IRENE STREET FROM CASA GRANDE AVENUE TO CAMERON AVENUE.

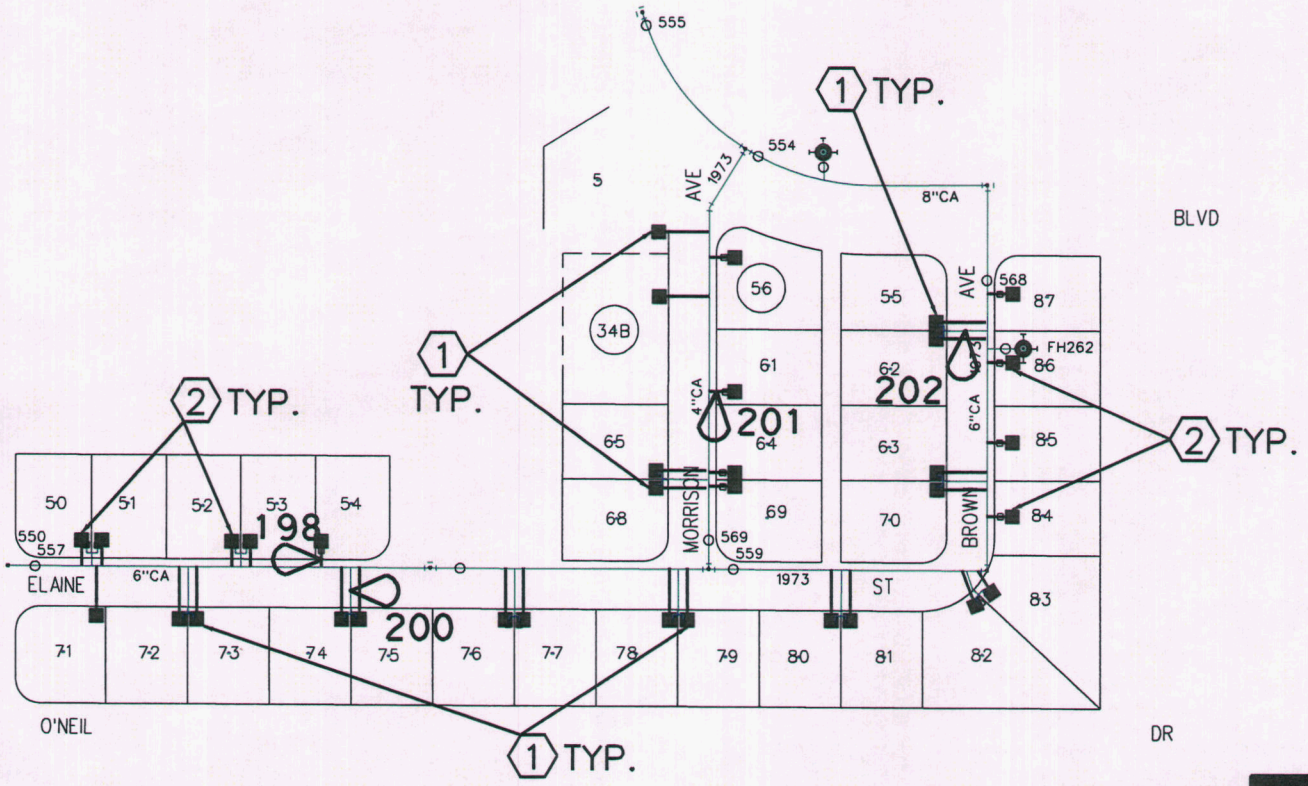
MATERIALS AND LABOR

QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
10	EA	2,000	INSTALL LONG SERVICE	20,000
11	EA	1,800	INSTALL SHORT SERVICE	19,800
				-
				-
				-
				-
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**39,800**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	597
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	2,786
(4) SUBTOTAL - LINES (1), (2) AND (3)	**43,183**
(5) OVERHEAD - 15% OF LINE (4)	6,477
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	3,886
SUBTOTAL - LINES (4), (5) AND (6)	**53,547**
ESTIMATED COST OF CONSTRUCTION	**$ 53,547**

AFH

PROJECT 28



QUANTITIES LIST

ITEM		QTY.
1	INSTALL LONG SERVICE	19 EA.
2	INSTALL SHORT SERVICE	15 EA.

WATER SERVICES TO BE DOUBLE SERVICES WHERE POSSIBLE

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

ARIZONA WATER COMPANY

PROJECT DESCRIPTION

INSTALL 34 SERVICE CONNECTIONS ALONG ELAINE STREET, MORISON AVENUE AND BROWN AVENUE.

PROJECT LOCATION

SE 1/4 SEC. 17–T.6S., R.6E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP G

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
SE 1/4 SEC. 17-T.6S., R.6E.	28	MAP G

PROJECT DESCRIPTION:

INSTALL 34 SERVICE CONNECTIONS ALONG ELAINE STREET, MORRISON AVENUE AND BROWN AVENUE.

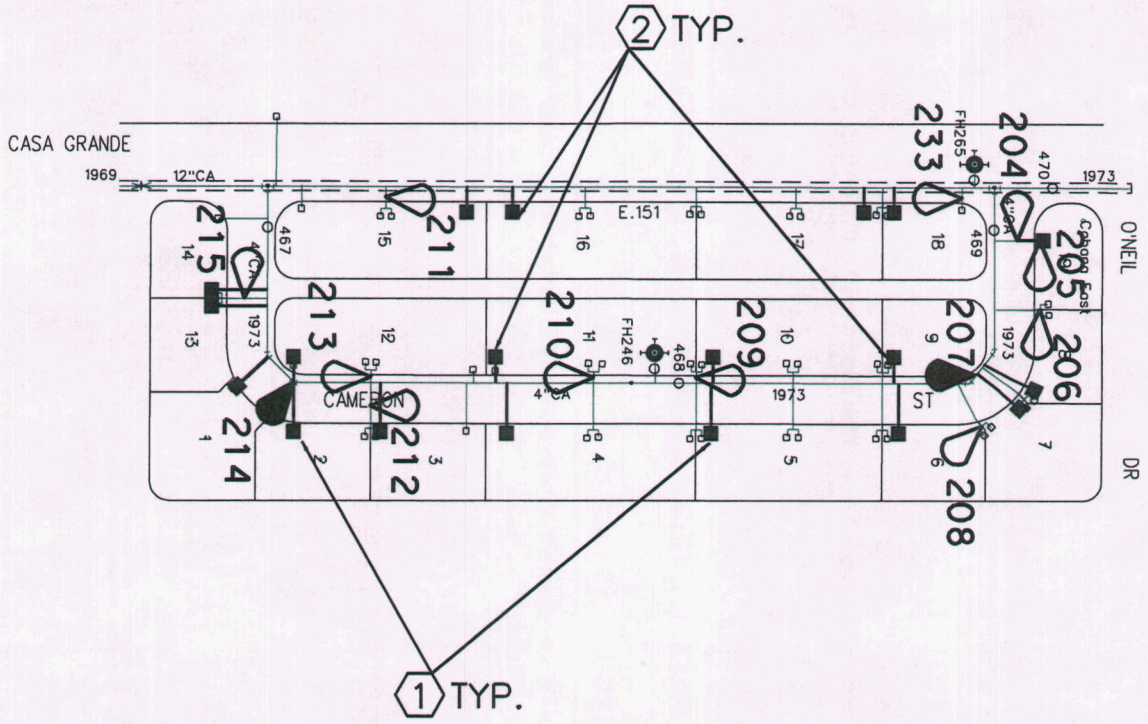
MATERIALS AND LABOR

QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
19	EA	2,000	INSTALL LONG SERVICE	38,000
15	EA	1,800	INSTALL SHORT SERVICE	27,000
				-
				-
				-
				-
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**65,000**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	975
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	4,550
(4) SUBTOTAL - LINES (1), (2) AND (3)	**70,525**
(5) OVERHEAD - 15% OF LINE (4)	10,579
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	6,347
SUBTOTAL - LINES (4), (5) AND (6)	**87,451**
ESTIMATED COST OF CONSTRUCTION	**$ 87,451**

AFH

PROJECT 29



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QUANTITIES LIST

ITEM		QTY.
1	INSTALL LONG SERVICE	11 EA.
2	INSTALL SHORT SERVICE	8 EA.

WATER SERVICES TO BE DOUBLE SERVICES WHERE POSSIBLE

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

ARIZONA WATER COMPANY

PROJECT DESCRIPTION

INSTALL 19 SERVICE CONNECTIONS ALONG CAMERON AVENUE IN THE CABANA EAST SUBDIVISION.

PROJECT LOCATION

SE 1/4 SEC. 17–T.6S., R.6E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP G

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
SE 1/4 SEC. 17-T.6S., R.6E.	29	MAP G

PROJECT DESCRIPTION:

INSTALL 19 SERVICE CONNECTIONS ALONG CAMERON AVENUE IN THE CABANA EAST SUBDIVISION.

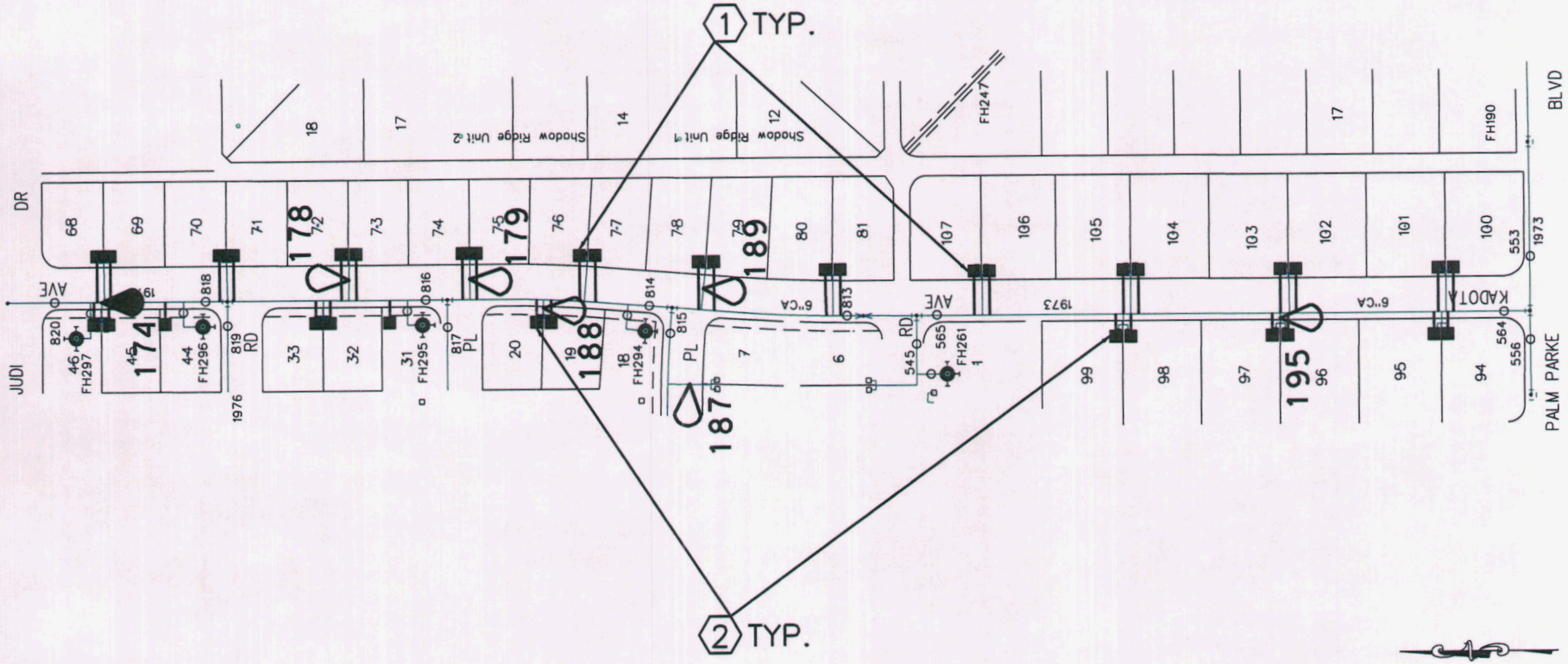
MATERIALS AND LABOR

QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
11	EA	2,000	INSTALL LONG SERVICE	22,000
8	EA	1,800	INSTALL SHORT SERVICE	14,400
				-
				-
				-
				-
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**36,400**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	546
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	2,548
(4) SUBTOTAL - LINES (1), (2) AND (3)	**39,494**
(5) OVERHEAD - 15% OF LINE (4)	5,924
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	3,554
SUBTOTAL - LINES (4), (5) AND (6)	**48,973**
ESTIMATED COST OF CONSTRUCTION	**$ 48,973**

AFH

PROJECT 30



QUANTITIES LIST

ITEM		QTY.
1	INSTALL LONG SERVICE	22 EA.
2	INSTALL SHORT SERVICE	14 EA.

WATER SERVICES TO BE DOUBLE SERVICES WHERE POSSIBLE

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

0 200 400

ARIZONA WATER COMPANY

PROJECT DESCRIPTION

INSTALL 36 SERVICE CONNECTIONS ALONG KADOTA AVENUE FROM JUDI DRIVE TO PALM PARKE BOULEVARD.

PROJECT LOCATION

E 1/2 SEC. 17–T.6S., R.6E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP G

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
E 1/2 SEC. 17-T.6S., R.6E.	30	MAP G

PROJECT DESCRIPTION:

INSTALL 36 SERVICE CONNECTIONS ALONG KADOTA AVENUE FROM JUDI DRIVE TO PALM PARKE BOULEVARD.

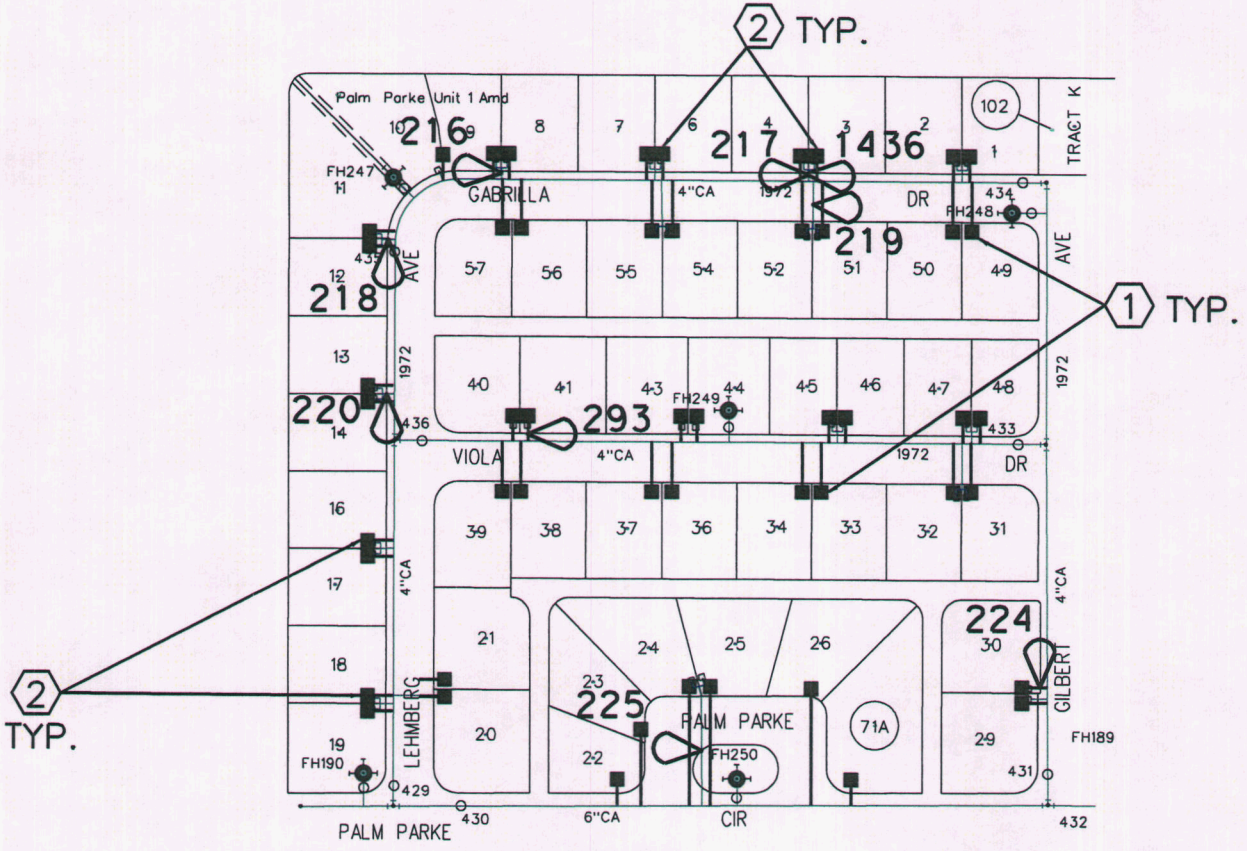
MATERIALS AND LABOR

QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
22	EA	2,000	INSTALL LONG SERVICE	44,000
14	EA	1,800	INSTALL SHORT SERVICE	25,200
				-
				-
				-
				-
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**69,200**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	1,038
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	4,844
(4) SUBTOTAL - LINES (1), (2) AND (3)	**75,082**
(5) OVERHEAD - 15% OF LINE (4)	11,262
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	6,757
SUBTOTAL - LINES (4), (5) AND (6)	**93,102**
ESTIMATED COST OF CONSTRUCTION	**$ 93,102**

AFH

PROJECT 31



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QUANTITIES LIST

ITEM		QTY.
1	INSTALL LONG SERVICE	22 EA.
2	INSTALL SHORT SERVICE	29 EA.

WATER SERVICES TO BE DOUBLE SERVICES WHERE POSSIBLE

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

ARIZONA WATER COMPANY

PROJECT DESCRIPTION

INSTALL 51 SERVICE CONNECTIONS
IN THE PALM PARK UNIT 1 AMD SUBDIVISION.

PROJECT LOCATION

SE 1/4 SEC. 17–T.6S., R.6E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP G

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
SE 1/4 SEC. 17-T.6S., R.6E.	31	MAP G

PROJECT DESCRIPTION:

INSTALL 51 SERVICE CONNECTIONS IN THE PALM PARK UNIT 1 AMD SUBDIVISION.

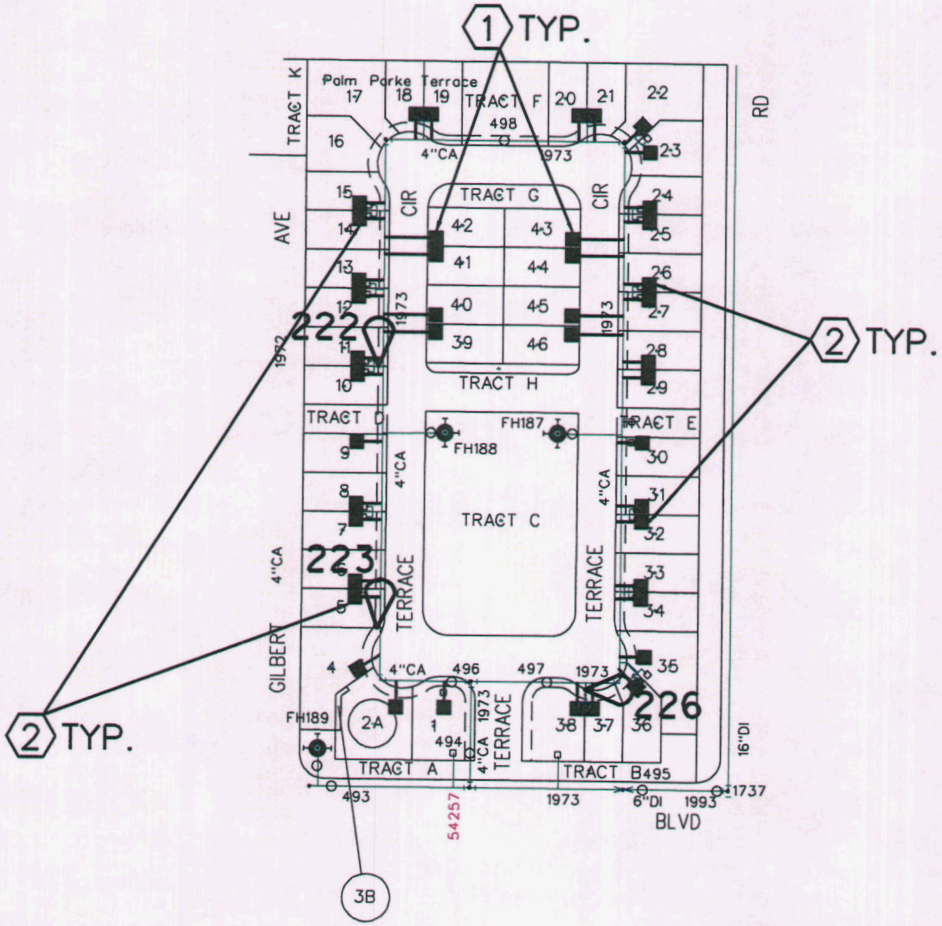
MATERIALS AND LABOR

QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
22	EA	2,000	INSTALL LONG SERVICE	44,000
29	EA	1,800	INSTALL SHORT SERVICE	52,200
				-
				-
				-
				-
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**96,200**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	1,443
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	6,734
(4) SUBTOTAL - LINES (1), (2) AND (3)	**104,377**
(5) OVERHEAD - 15% OF LINE (4)	15,657
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	9,394
SUBTOTAL - LINES (4), (5) AND (6)	**129,427**
ESTIMATED COST OF CONSTRUCTION	**$ 129,427**

AFH

PROJECT 32



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QUANTITIES LIST

ITEM		QTY.
1	INSTALL LONG SERVICE	8 EA.
2	INSTALL SHORT SERVICE	35 EA.

WATER SERVICES TO BE DOUBLE SERVICES WHERE POSSIBLE

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

0 200 400

ARIZONA WATER COMPANY

PROJECT DESCRIPTION

INSTALL 43 SERVICE CONNECTIONS IN THE PALM PARKE TERRACE SUBDIVISION.

PROJECT LOCATION

SE 1/4 SEC. 17–T.6S., R.6E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP G

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
SE 1/4 SEC. 17-T.6S., R.6E.	32	MAP G

PROJECT DESCRIPTION:

INSTALL 43 SERVICE CONNECTIONS IN IN THE PALM PARKE TERRACE SUBDIVISION.

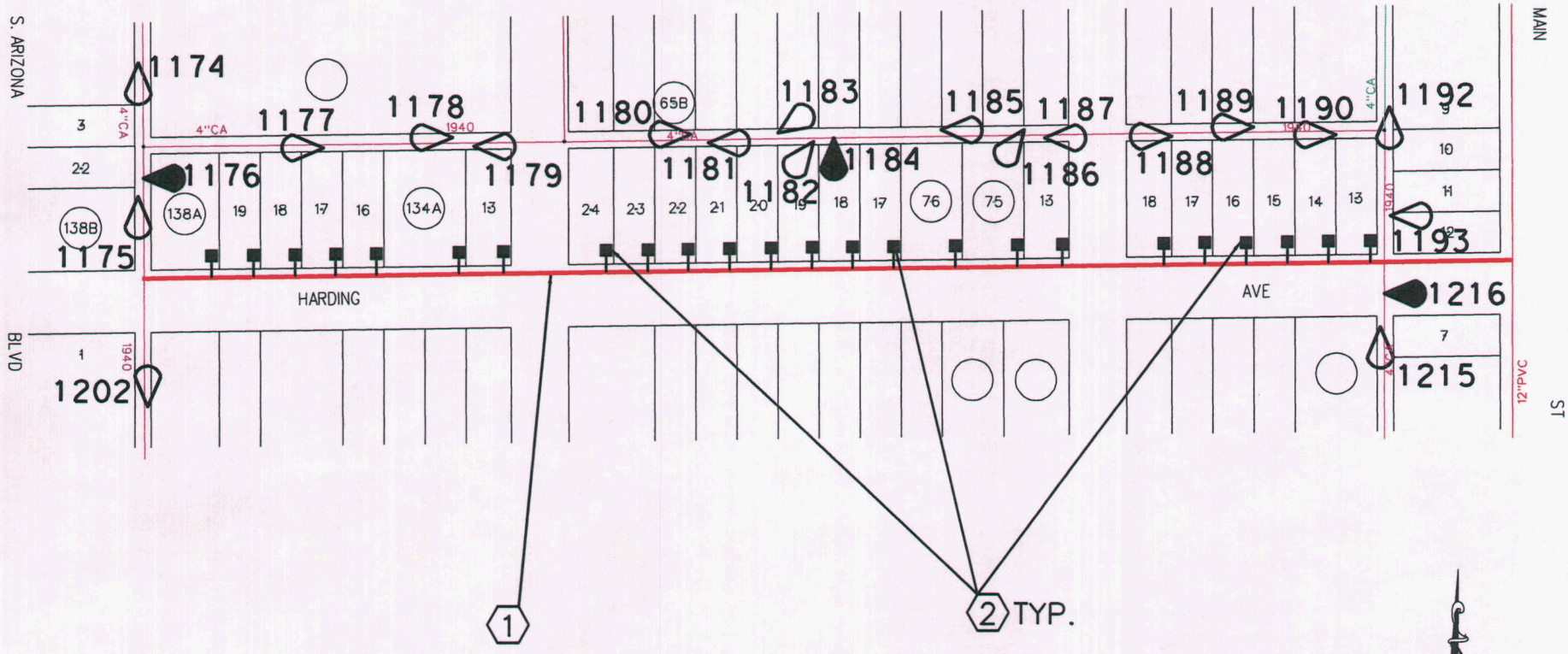
MATERIALS AND LABOR

QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
8	EA	2,000	INSTALL LONG SERVICE	16,000
35	EA	1,800	INSTALL SHORT SERVICE	63,000
				-
				-
				-
				-
				-
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**79,000**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	1,185
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	5,530
(4) SUBTOTAL - LINES (1), (2) AND (3)	**85,715**
(5) OVERHEAD - 15% OF LINE (4)	12,857
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	7,714
SUBTOTAL - LINES (4), (5) AND (6)	**106,287**
ESTIMATED COST OF CONSTRUCTION	**$ 106,287**

AFH

PROJECT 33



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PRELIMINARY DRAWING
VALVE AND FIRE HYDRANT LOCATION
TO BE DETERMINED IN PROJECT DESIGN

WATER SERVICES TO BE DOUBLE SERVICES
WHERE POSSIBLE

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

QUANTITIES LIST

ITEM		QTY.
1	INSTALL 6" PVC	1,700 LF
2	RELOCATE SHORT SERVICE	24 EA.

ARIZONA WATER COMPANY

PROJECT DESCRIPTION

INSTALL 1,700 LF OF 6" PVC AND 24 SERVICE CONNECTIONS ALONG HARDING AVENUE FROM ARIZONA BOULEVARD TO MAIN STREET.

PROJECT LOCATION

SW 1/4 SEC. 22–T.5S., R.8E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP D

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
SW 1/4 SEC. 22-T.5S., R.8E.	33	MAP D

PROJECT DESCRIPTION:

INSTALL 1,700 LF OF 6" PVC AND 24 SERVICE CONNECTIONS ALONG HARDING AVENUE FROM ARIZONA BOULEVARD TO MAIN STREET.

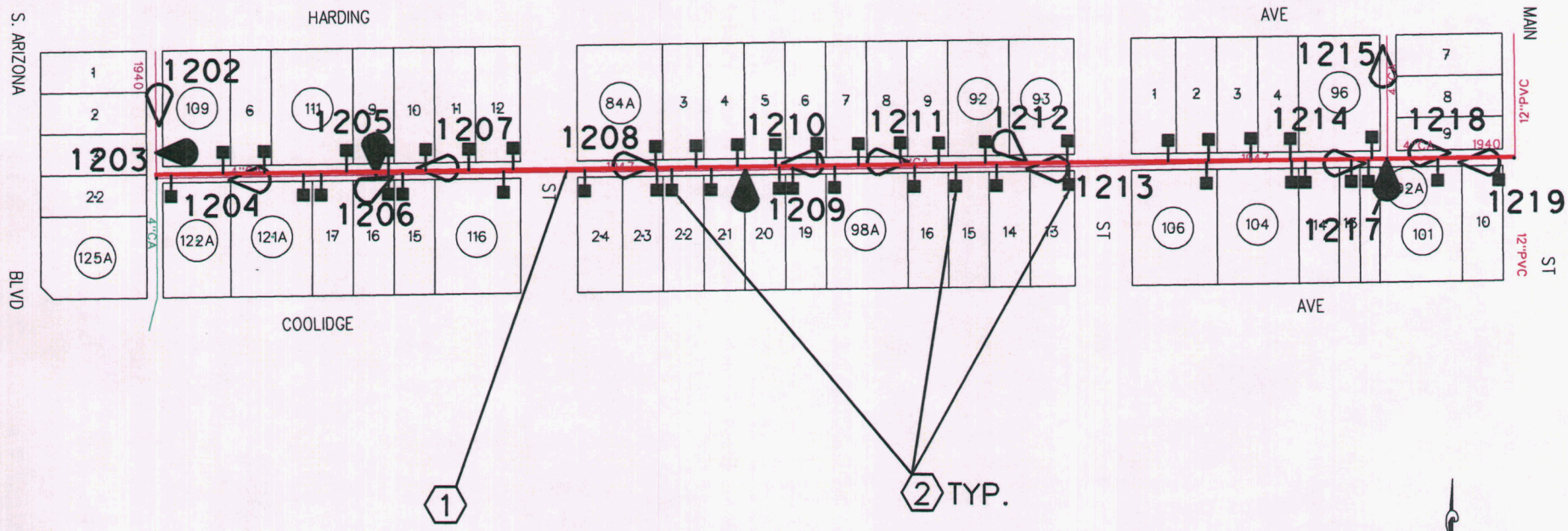
MATERIALS AND LABOR

QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
1,700	LF	40	6" PVC	68,000
24	EA	2,000	RELOCATE SHORT SERVICE	48,000
				-
				-
				-
				-
				-
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**116,000**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	1,740
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	8,120
(4) SUBTOTAL - LINES (1), (2) AND (3)	**125,860**
(5) OVERHEAD - 15% OF LINE (4)	18,879
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	11,327
SUBTOTAL - LINES (4), (5) AND (6)	**156,066**
ESTIMATED COST OF CONSTRUCTION	**$ 156,066**

AFH

PROJECT 34



QUANTITIES LIST

ITEM		QTY.
1	INSTALL 6" PVC	1,700 LF
2	INSTALL SERVICE	46 EA.

PRELIMINARY DRAWING
VALVE AND FIRE HYDRANT LOCATION
TO BE DETERMINED IN PROJECT DESIGN

WATER SERVICES TO BE DOUBLE SERVICES
WHERE POSSIBLE

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

ARIZONA WATER COMPANY

PROJECT DESCRIPTION
INSTALL 1,700 LF OF 6" PVC AND 46 SERVICE CONNECTIONS
IN AN ALLEY BETWEEN HARDING AVENUE AND COOLIDGE AVENUE
FROM ARIZONA BOULEVARD TO MAIN STREET.

PROJECT LOCATION
SW 1/4 SEC. 22–T.5S., R.8E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP D

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
SW 1/4 SEC. 22-T.5S., R.8E.	34	MAP D

PROJECT DESCRIPTION:
INSTALL 1,700 LF OF 6" PVC AND 46 SERVICE CONNECTIONS IN AN ALLEY BETWEEN HARDING AVENUE AND COOLIDGE AVENUE FROM ARIZONA BOULEVARD TO MAIN STREET.

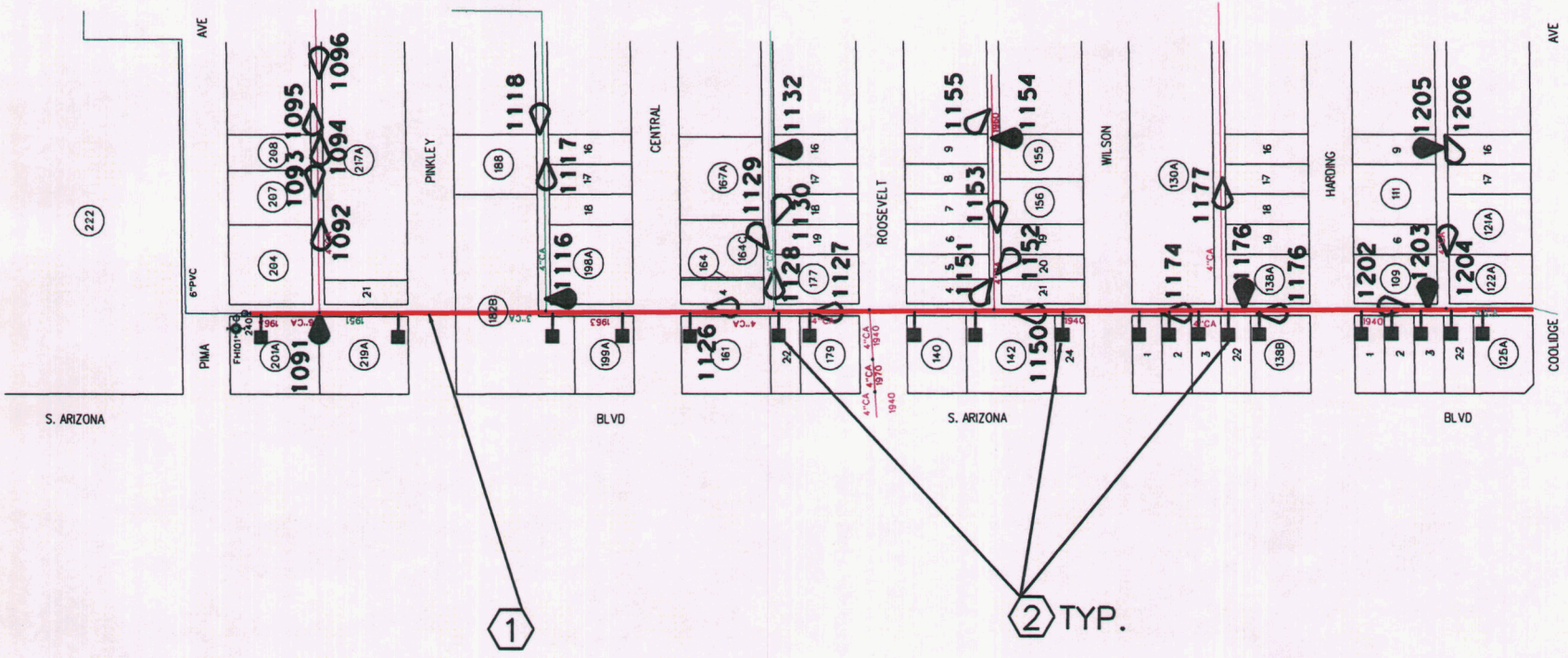
MATERIALS AND LABOR

QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
1,700	LF	40	6" PVC	68,000
46	EA	1,500	INSTALL SERVICE	69,000
				-
				-
				-
				-
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**137,000**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	2,055
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	9,590
(4) SUBTOTAL - LINES (1), (2) AND (3)	**148,645**
(5) OVERHEAD - 15% OF LINE (4)	22,297
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	13,378
SUBTOTAL - LINES (4), (5) AND (6)	**184,320**
ESTIMATED COST OF CONSTRUCTION	**$ 184,320**

AFH

PROJECT 35



QUANTITIES LIST

ITEM		QTY.
1	INSTALL 6" PVC	2,200 LF
2	INSTALL SERVICE	20 EA.

PRELIMINARY DRAWING
VALVE AND FIRE HYDRANT LOCATION
TO BE DETERMINED IN PROJECT DESIGN

WATER SERVICES TO BE DOUBLE SERVICES
WHERE POSSIBLE

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

0 300 600

ARIZONA WATER COMPANY

PROJECT DESCRIPTION

INSTALL 2,200 LF OF 6" PVC AND 20 SERVICE CONNECTIONS
IN AN ALLEY EAST OF ARIZONA BOULEVARD.

PROJECT LOCATION

SW 1/4 SEC. 22–T.5S., R.8E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP D

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
SW 1/4 SEC. 22-T.5S., R.8E.	35	MAP D

PROJECT DESCRIPTION:
INSTALL 2,200 LF OF 6" PVC AND 20 SERVICE CONNECTIONS IN AN ALLEY BETWEEN ARIZONA BOULEVARD AND FOURTH STREET FROM PINAM AVENUE TO COOLIDGE AVENUE

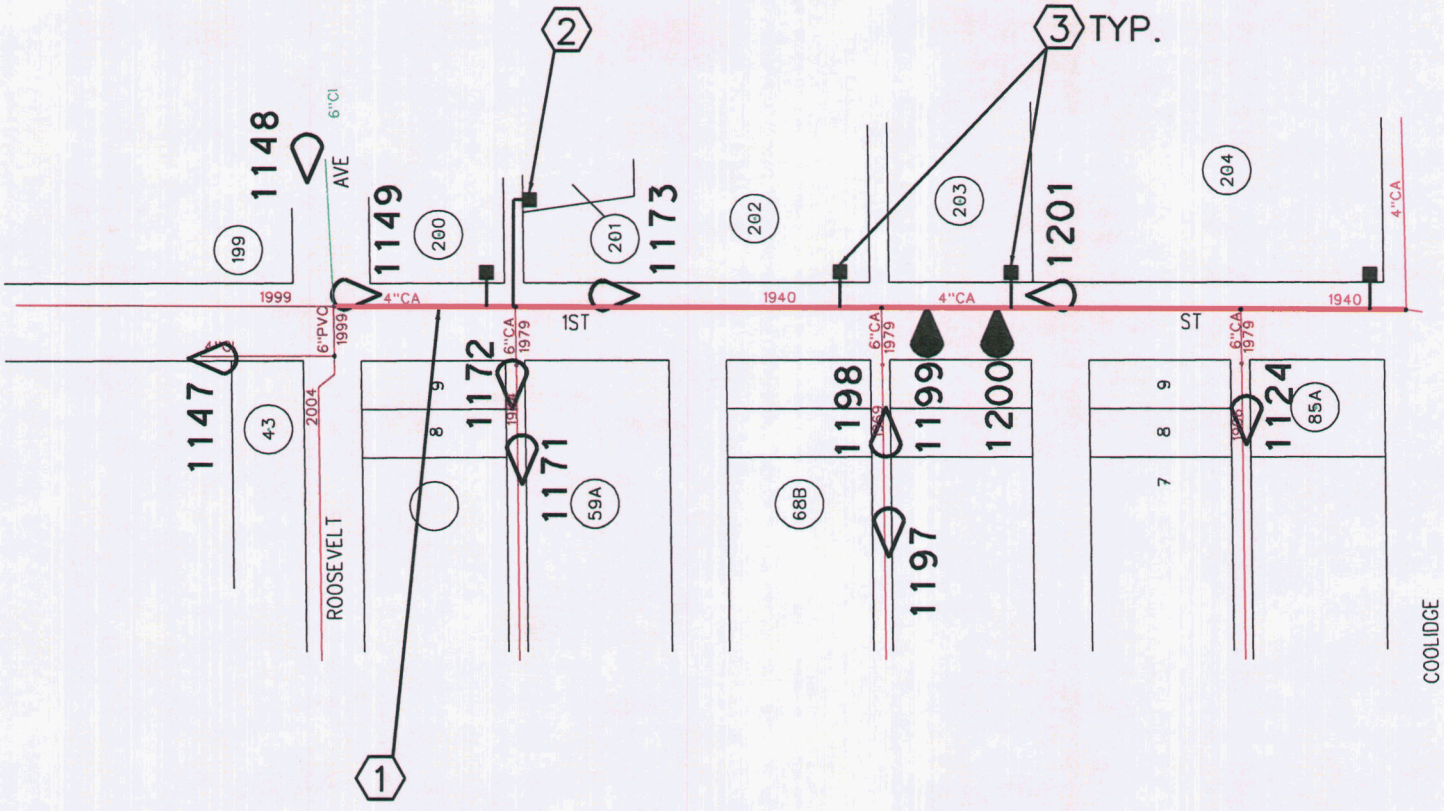
MATERIALS AND LABOR

QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
2,200	LF	40	6" PVC	88,000
20	EA	1,500	INSTALL SERVICE	30,000
				-
				-
				-
				-
				-
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**118,000**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	1,770
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	8,260
(4) SUBTOTAL - LINES (1), (2) AND (3)	**128,030**
(5) OVERHEAD - 15% OF LINE (4)	19,205
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	11,523
SUBTOTAL - LINES (4), (5) AND (6)	**158,757**
ESTIMATED COST OF CONSTRUCTION	**$ 158,757**

AFH

PROJECT 36



0 200 400

QUANTITIES LIST

ITEM		QTY.
1	INSTALL 6" PVC	1,100 LF
2	INSTALL LONG SERVICE	1 EA.
3	INSTALL SHORT SERVICE	4 EA.

PRELIMINARY DRAWING
VALVE AND FIRE HYDRANT LOCATION
TO BE DETERMINED IN PROJECT DESIGN

WATER SERVICES TO BE DOUBLE SERVICES
WHERE POSSIBLE

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

ARIZONA WATER COMPANY

PROJECT DESCRIPTION

INSTALL 1,100 LF OF 6" PVC AND 5 SERVICE CONNECTIONS
ALONG 1ST STREET FROM ROOSEVELT AVENUE TO COOLIDGE AVENUE.

PROJECT LOCATION

SE 1/4 SEC. 21–T.5S., R.8E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP C

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
SE 1/4 SEC. 21-T.5S., R.8E.	36	MAP C

PROJECT DESCRIPTION:

INSTALL 1,100 LF OF 6" PVC AND INSTALL 5 SERVICE CONNECTIONS ALONG FIRST STREET FROM ROOSEVELT AVENUE TO COOLIDGE AVENUE.

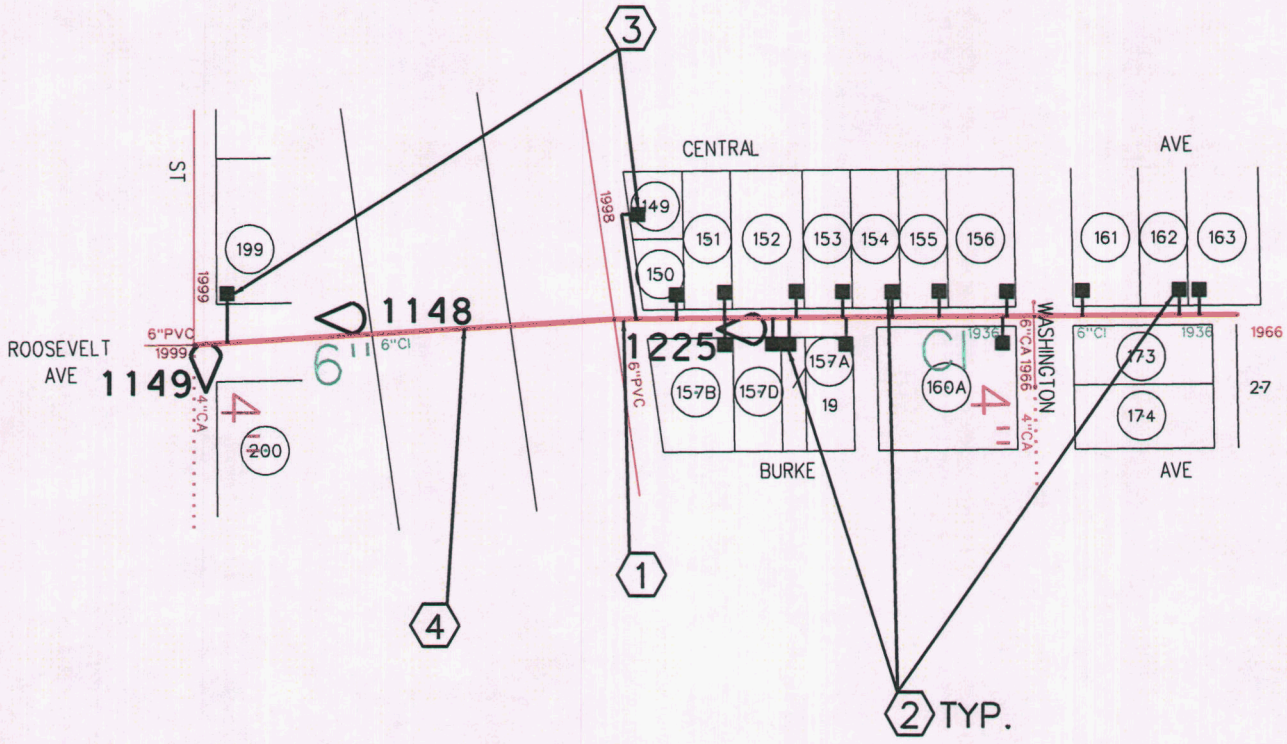
MATERIALS AND LABOR

QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
1,100	LF	40	6" PVC	44,000
1	EA	2,000	INSTALL LONG SERVICE	2,000
4	EA	1,800	INSTALL SHORT SERVICE	7,200
				-
				-
				-
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**53,200**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	798
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	3,724
(4) SUBTOTAL - LINES (1), (2) AND (3)	**57,722**
(5) OVERHEAD - 15% OF LINE (4)	8,658
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	5,195
SUBTOTAL - LINES (4), (5) AND (6)	**71,575**
ESTIMATED COST OF CONSTRUCTION	**$ 71,575**

AFH

PROJECT 37



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PRELIMINARY DRAWING
VALVE AND FIRE HYDRANT LOCATION
TO BE DETERMINED IN PROJECT DESIGN

WATER SERVICES TO BE DOUBLE SERVICES
WHERE POSSIBLE

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

QUANTITIES LIST

ITEM		QTY.
1	INSTALL 6" PVC	1,100 LF
2	INSTALL SERVICE	15 EA.
3	INSTALL LONG SERVICE	2 EA.
4	BORE UNDER UNION PACIFIC RAILROAD	200 LF

ARIZONA WATER COMPANY

PROJECT DESCRIPTION

INSTALL 1,100 LF OF 6" PVC AND 17 SERVICE CONNECTIONS IN AN ALLEY BETWEEN CENTRAL AVENUE AND BURKE AVENUE CROSSING THE UNION PACIFIC RAILROAD.

PROJECT LOCATION

SE 1/4 SEC. 22-T.5S., R.8E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP D

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
SE 1/4 SEC. 22-T.5S., R.8E.	37	MAP D

PROJECT DESCRIPTION:

INSTALL 1,100 LF OF 6" PVC AND 17 SERVICE CONNECTIONS IN AN ALLEY BETWEEN CENTRAL AVENUE AND BURKE AVENUE CROSSING THE UNION PACIFIC RAILROAD.

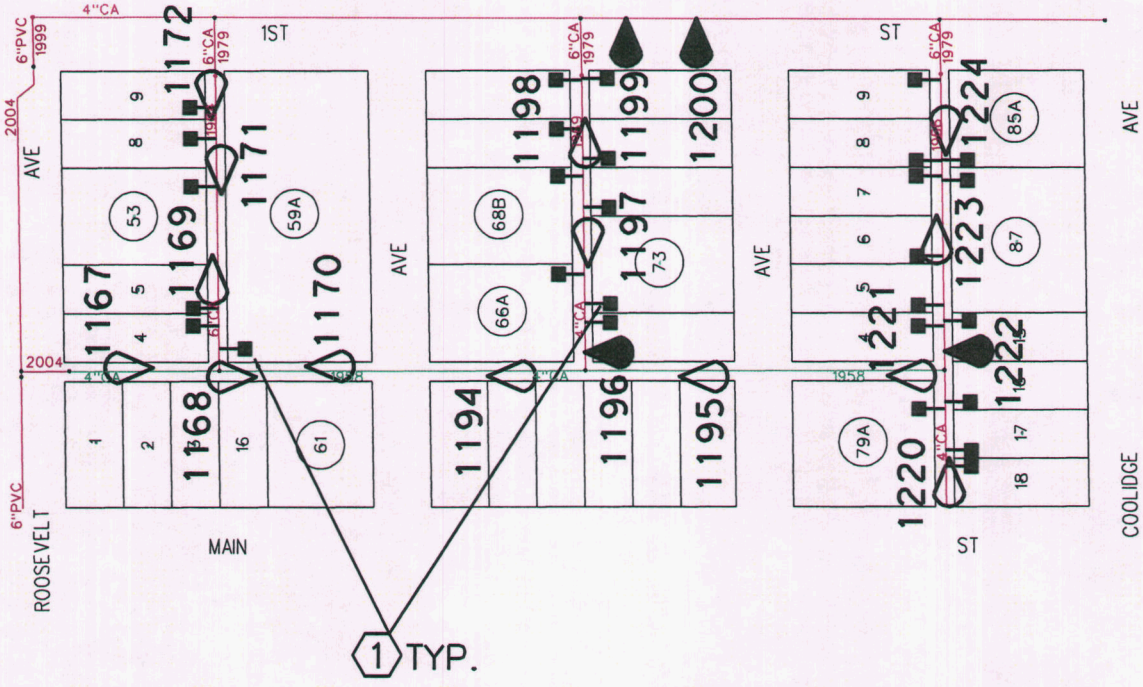
MATERIALS AND LABOR

QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
1,100	LF	40	6" PVC	44,000
15	EA	1,500	INSTALL SERVICE	22,500
2	EA	2,000	INSTALL LONG SERVICE	4,000
200	LF	400	BORE UNDER UNION PACIFIC RAILROAD	80,000
				-
				-
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**150,500**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	2,258
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	10,535
(4) SUBTOTAL - LINES (1), (2) AND (3)	**163,293**
(5) OVERHEAD - 15% OF LINE (4)	24,494
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	14,696
SUBTOTAL - LINES (4), (5) AND (6)	**202,483**
ESTIMATED COST OF CONSTRUCTION	**$ 202,483**

AFH

PROJECT 38



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QUANTITIES LIST

ITEM		QTY.
1	INSTALL SERVICE	28 EA.

WATER SERVICES TO BE DOUBLE SERVICES WHERE POSSIBLE

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

ARIZONA WATER COMPANY

PROJECT DESCRIPTION

INSTALL 28 SERVICE CONNECTIONS IN ALLEYS BETWEEN ROOSEVELT AVENUE AND COOLIDGE AVENUE FROM MAIN STREET TO FIRST STREET.

PROJECT LOCATION

SE 1/4 SEC. 21–T.5S., R.8E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP C

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
SE 1/4 SEC. 21-T.5S., R.8E.	38	MAP C

PROJECT DESCRIPTION:

INSTALL 28 SERVICE CONNECTIONS IN ALLEYS BETWEEN ROOSEVELT AVENUE AND COOLIDGE AVENUE FROM MAIN STREET TO FIRST STREET.

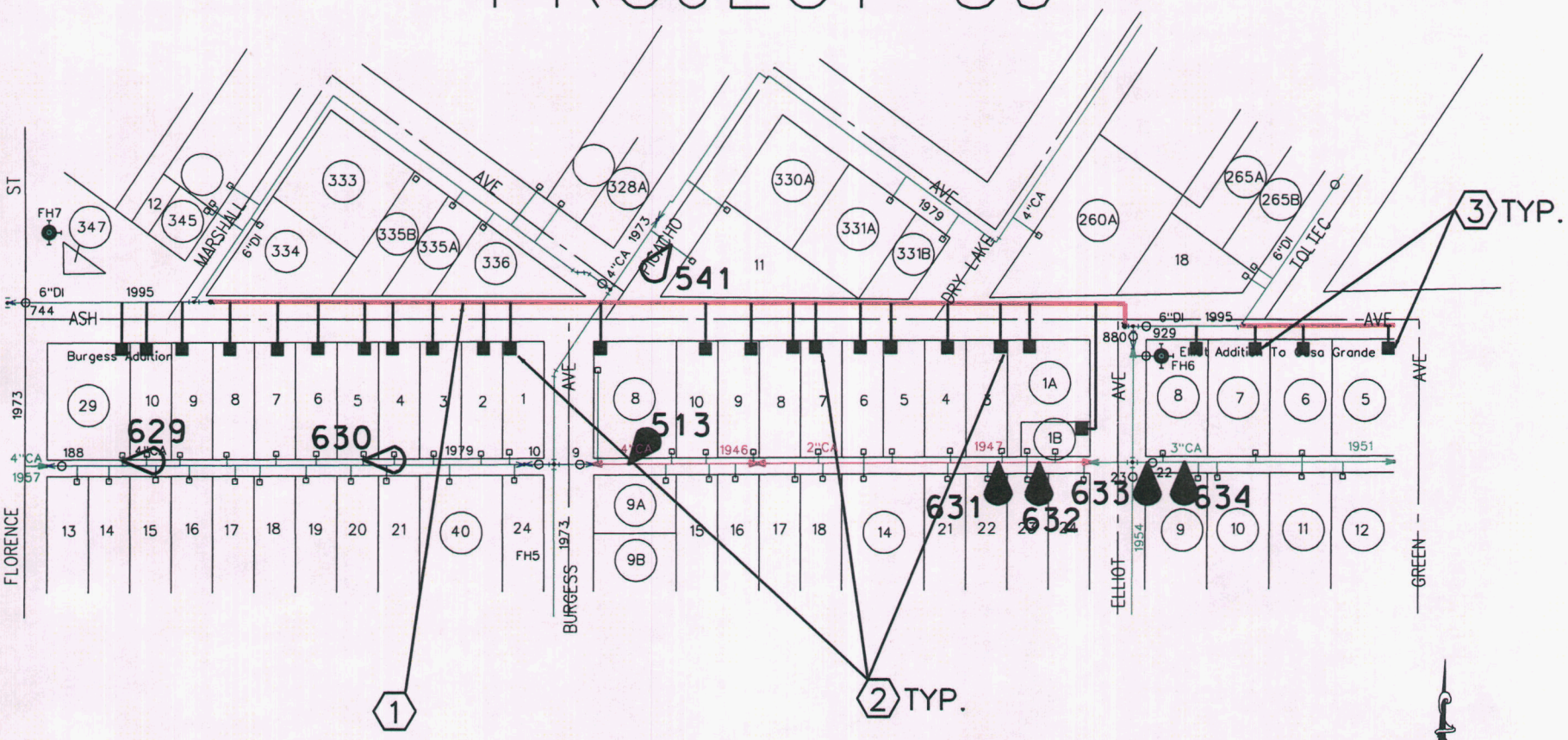
MATERIALS AND LABOR

QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
28	EA	1,500	INSTALL SERVICE	42,000
				-
				-
				-
				-
				-
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**42,000**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	630
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	2,940
(4) SUBTOTAL - LINES (1), (2) AND (3)	**45,570**
(5) OVERHEAD - 15% OF LINE (4)	6,836
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	4,101
SUBTOTAL - LINES (4), (5) AND (6)	**56,507**
ESTIMATED COST OF CONSTRUCTION	**$ 56,507**

AFH

PROJECT 39



QUANTITIES LIST

ITEM		QTY.
1	INSTALL 8" DIP w/POLYWRAP	1,300 LF
2	RELOCATE LONG SERVICE	22 EA.
3	RELOCATE SHORT SERVICE	4 EA.

PRELIMINARY DRAWING
VALVE AND FIRE HYDRANT LOCATION
TO BE DETERMINED IN PROJECT DESIGN

WATER SERVICES TO BE DOUBLE SERVICES
WHERE POSSIBLE

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

ARIZONA WATER COMPANY

PROJECT DESCRIPTION

INSTALL 1,300 LF OF 8" DIP w/POLYWRAP AND 26 SERVICE CONNECTIONS ALONG ASH AVENUE FROM FLORENCE STREET TO GREEN AVENUE.

PROJECT LOCATION

SW 1/4 SEC. 29–T.6S., R.6E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP B

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
SW 1/4 SEC. 29-T.6S., R.6E.	39	MAP B

PROJECT DESCRIPTION:

INSTALL 1,300 LF OF 8" DIP w/POLYWRAP AND 26 SERVICE CONNECTIONS ALONG ASH AVENUE FROM FLORENCE STREET TO GREEN AVENUE.

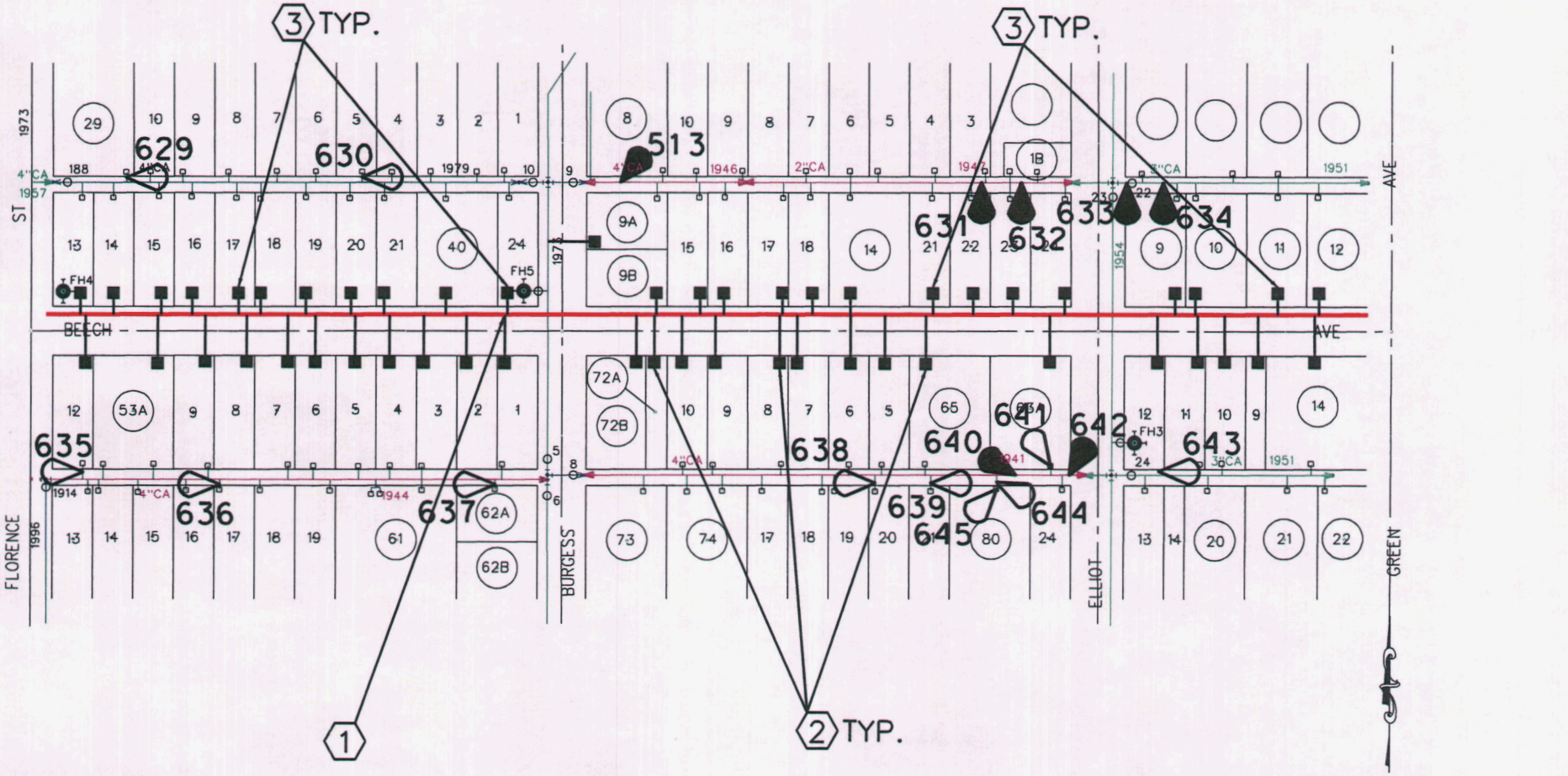
MATERIALS AND LABOR

QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
1,300	LF	60	8" DIP w/POLYWRAP	78,000
22	EA	2,200	RELOCATE LONG SERVICE	48,400
4	EA	2,000	RELOCATE SHORT SERVICE	8,000
				-
				-
				-
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**134,400**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	2,016
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	9,408
(4) SUBTOTAL - LINES (1), (2) AND (3)	**145,824**
(5) OVERHEAD - 15% OF LINE (4)	21,874
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	13,124
SUBTOTAL - LINES (4), (5) AND (6)	**180,822**
ESTIMATED COST OF CONSTRUCTION	**$ 180,822**

AFH

PROJECT 40



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QUANTITIES LIST

ITEM		QTY.
1	INSTALL 6" DIP w/POLYWRAP	1,600 LF
2	RELOCATE LONG SERVICE	27 EA.
3	RELOCATE SHORT SERVICE	25 EA.

PRELIMINARY DRAWING
VALVE AND FIRE HYDRANT LOCATION
TO BE DETERMINED IN PROJECT DESIGN

WATER SERVICES TO BE DOUBLE SERVICES
WHERE POSSIBLE

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

ARIZONA WATER COMPANY

PROJECT DESCRIPTION

INSTALL 1,600 LF OF 6" DIP w/POLYWRAP AND 52 SERVICE CONNECTIONS ALONG BEECH AVENUE FROM FLORENCE STREET TO GREEN AVENUE.

PROJECT LOCATION

SW 1/4 SEC. 29–T.6S., R.6E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP B

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
SW 1/4 SEC. 29-T.6S., R.6E.	40	MAP B

PROJECT DESCRIPTION:

INSTALL 1,600 LF OF 6" DIP w/POLYWRAP AND 52 SERVICE CONNECTIONS ALONG BEECH AVENUE FROM FLORENCE STREET TO GREEN AVENUE.

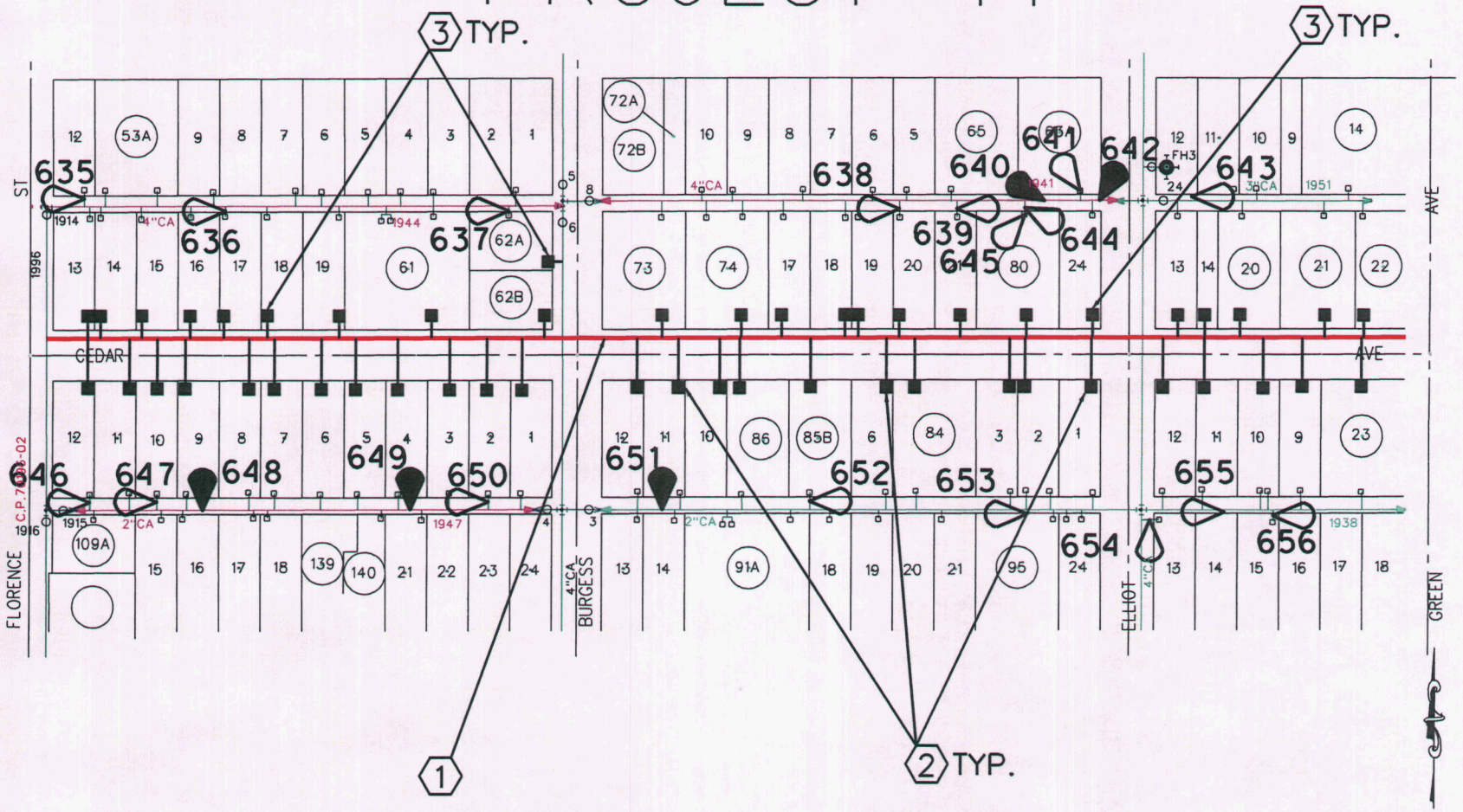
MATERIALS AND LABOR

QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
1,600	LF	50	6" DIP w/POLYWRAP	80,000
27	EA	2,200	RELOCATE LONG SERVICE	59,400
25	EA	2,000	RELOCATE SHORT SERVICE	50,000
				-
				-
				-
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**189,400**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	2,841
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	13,258
(4) SUBTOTAL - LINES (1), (2) AND (3)	**205,499**
(5) OVERHEAD - 15% OF LINE (4)	30,825
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	18,495
SUBTOTAL - LINES (4), (5) AND (6)	**254,819**
ESTIMATED COST OF CONSTRUCTION	**$ 254,819**

AFH

PROJECT 41



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QUANTITIES LIST

ITEM		QTY.
1	INSTALL 6" DIP w/POLYWRAP	1,600 LF
2	RELOCATE LONG SERVICE	28 EA.
3	RELOCATE SHORT SERVICE	23 EA.

PRELIMINARY DRAWING
VALVE AND FIRE HYDRANT LOCATION
TO BE DETERMINED IN PROJECT DESIGN

WATER SERVICES TO BE DOUBLE SERVICES
WHERE POSSIBLE

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

ARIZONA WATER COMPANY

PROJECT DESCRIPTION

INSTALL 1,600 LF OF 6" DIP w/POLYWRAP AND 51 SERVICE CONNECTIONS ALONG CEDAR AVENUE FROM FLORENCE STREET TO GREEN AVENUE.

PROJECT LOCATION

SW 1/4 SEC. 29–T.6S., R.6E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP B

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
SW 1/4 SEC. 29-T.6S., R.6E.	41	MAP B

PROJECT DESCRIPTION:

INSTALL 1,600 LF OF 6" DIP w/POLYWRAP AND 51 SERVICE CONNECTIONS ALONG CEDAR AVENUE FROM FLORENCE STREET TO GREEN AVENUE.

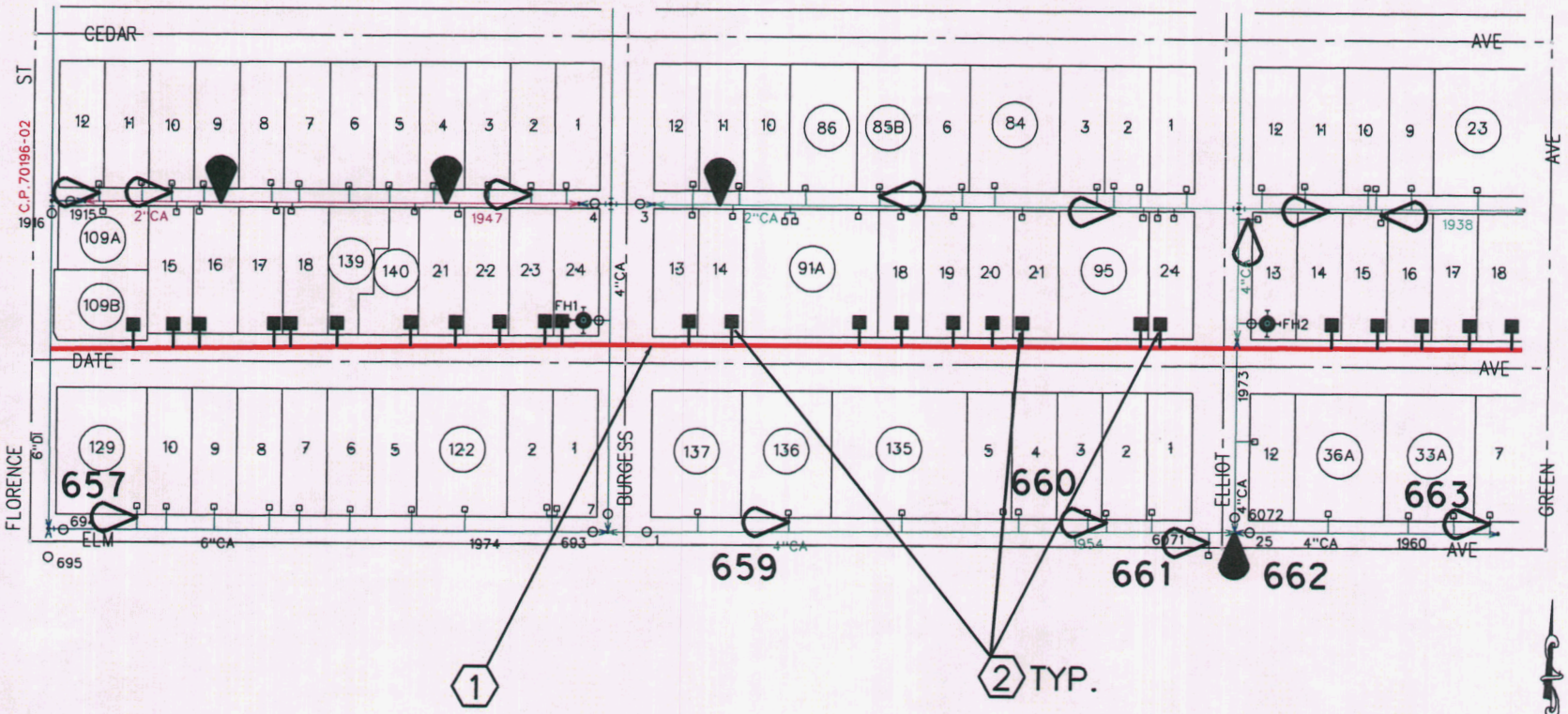
MATERIALS AND LABOR

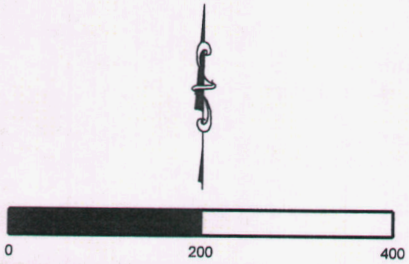
QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
1,600	LF	50	6" DIP w/POLYWRAP	80,000
28	EA	2,200	RELOCATE LONG SERVICE	61,600
23	EA	2,000	RELOCATE SHORT SERVICE	46,000
				-
				-
				-
				-
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**187,600**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	2,814
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	13,132
(4) SUBTOTAL - LINES (1), (2) AND (3)	**203,546**
(5) OVERHEAD - 15% OF LINE (4)	30,532
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	18,319
SUBTOTAL - LINES (4), (5) AND (6)	**252,397**
ESTIMATED COST OF CONSTRUCTION	**$ 252,397**

AFH

PROJECT 42





QUANTITIES LIST

ITEM		QTY.
1	INSTALL 6" DIP w/POLYWRAP	1,600 LF
2	RELOCATE SHORT SERVICE	25 EA.

PRELIMINARY DRAWING
VALVE AND FIRE HYDRANT LOCATION
TO BE DETERMINED IN PROJECT DESIGN

WATER SERVICES TO BE DOUBLE SERVICES
WHERE POSSIBLE

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

ARIZONA WATER COMPANY

PROJECT DESCRIPTION

INSTALL 1,600 LF OF 6" DIP w/POLYWRAP AND 25 SERVICE CONNECTIONS ALONG DATE AVENUE FROM FLORENCE STREET TO GREEN AVENUE.

PROJECT LOCATION

SW 1/4 SEC. 29–T.6S., R.6E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP B

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
SW 1/4 SEC. 29-T.6S., R.6E.	42	MAP B

PROJECT DESCRIPTION:

INSTALL 1,600 LF OF 6" DIP w/POLYWRAP AND 25 SERVICE CONNECTIONS ALONG DATE AVENUE FROM FLORENCE STREET TO GREEN AVENUE.

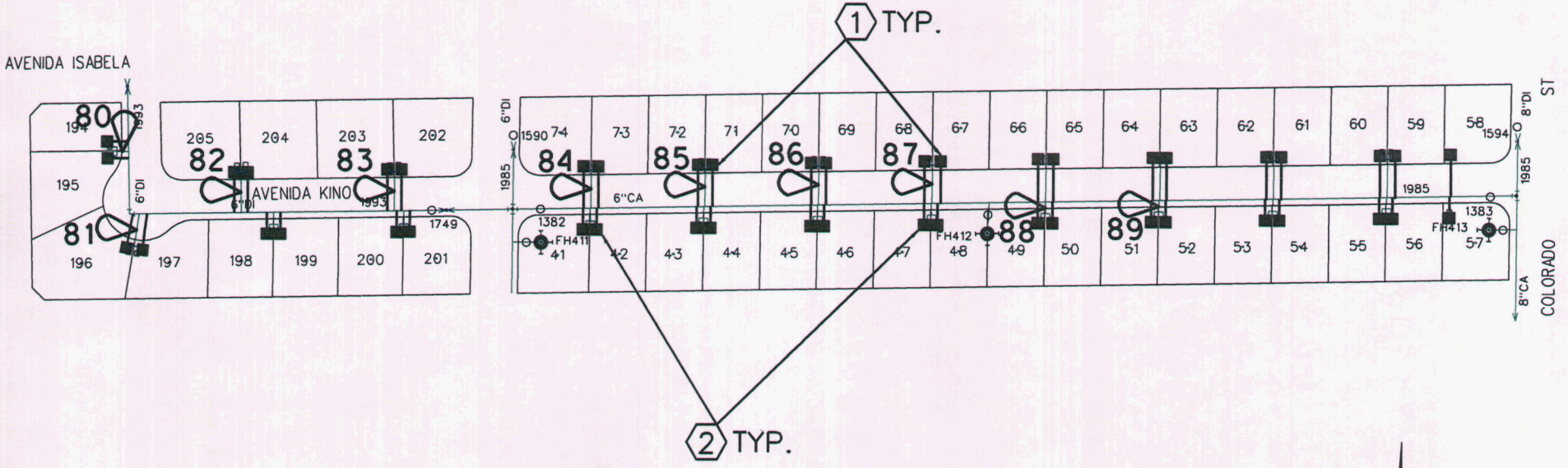
MATERIALS AND LABOR

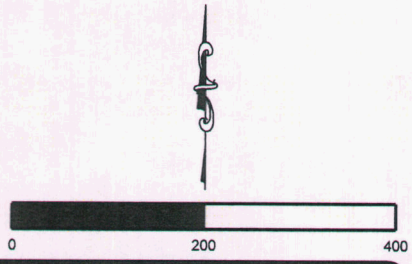
QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
1,600	LF	50	6" DIP w/POLYWRAP	80,000
25	EA	2,000	RELOCATE SHORT SERVICE	50,000
				-
				-
				-
				-
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**130,000**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	1,950
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	9,100
(4) SUBTOTAL - LINES (1), (2) AND (3)	**141,050**
(5) OVERHEAD - 15% OF LINE (4)	21,158
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	12,695
SUBTOTAL - LINES (4), (5) AND (6)	**174,902**
ESTIMATED COST OF CONSTRUCTION	**$ 174,902**

AFH

PROJECT 43





QUANTITIES LIST

ITEM		QTY.
1	INSTALL LONG SERVICE	21 EA.
2	INSTALL SHORT SERVICE	25 EA.

WATER SERVICES TO BE DOUBLE SERVICES WHERE POSSIBLE

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

ARIZONA WATER COMPANY

PROJECT DESCRIPTION

INSTALL 46 SERVICE CONNECTIONS ALONG AVENIDA KINO AVE FROM COLORADO STREET TO AVENIDA ISABELLA.

PROJECT LOCATION

SW 1/4 SEC. 4-T.6S., R.6E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP F

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
SW 1/4 SEC. 4-T.6S., R.6E.	43	MAP F

PROJECT DESCRIPTION:

INSTALL 46 SERVICE CONNECTIONS ALONG AVENIDA KINO AVENUE FROM COLORADO STREET TO AVENIDA ISABELLA.

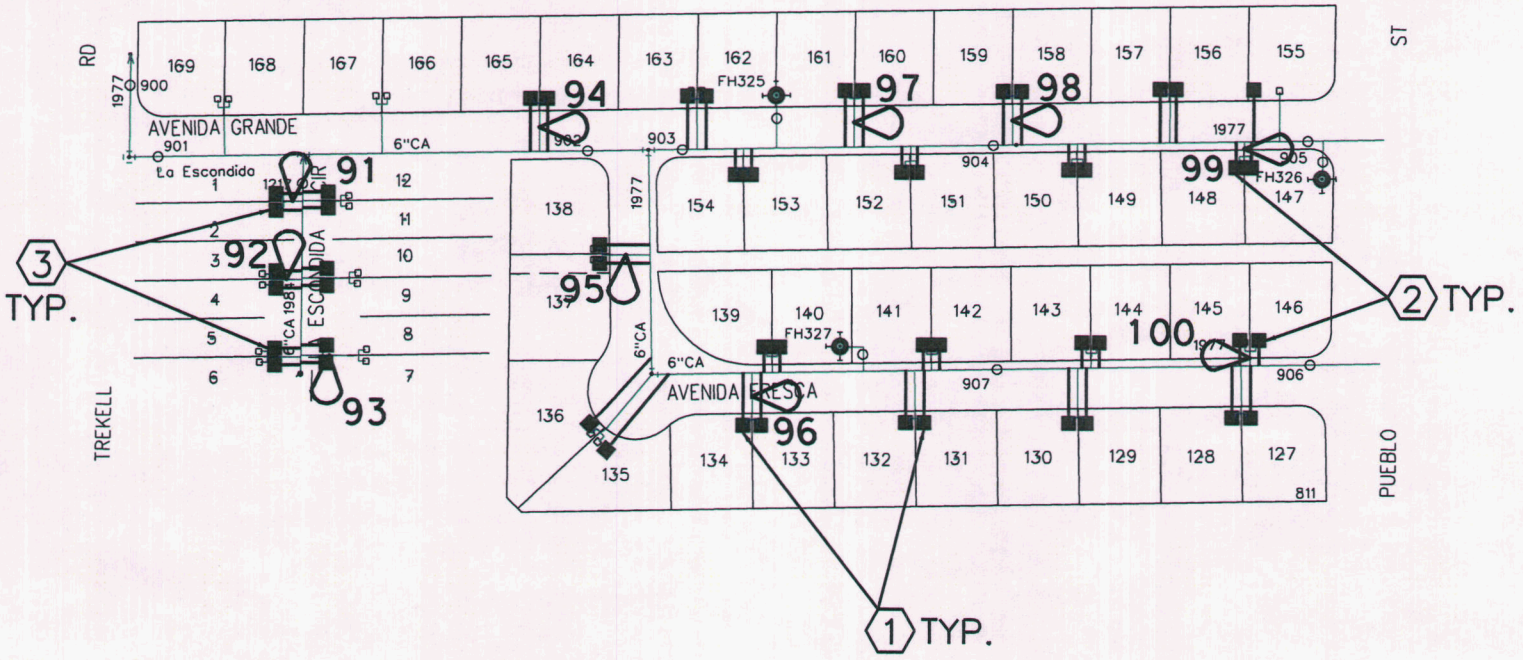
MATERIALS AND LABOR

QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
21	EA	2,000	INSTALL LONG SERVICE	42,000
25	EA	1,800	INSTALL SHORT SERVICE	45,000
				-
				-
				-
				-
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**87,000**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	1,305
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	6,090
(4) SUBTOTAL - LINES (1), (2) AND (3)	**94,395**
(5) OVERHEAD - 15% OF LINE (4)	14,159
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	8,496
SUBTOTAL - LINES (4), (5) AND (6)	**117,050**
ESTIMATED COST OF CONSTRUCTION	**$ 117,050**

AFH

PROJECT 44



Appendix 9.10 Page 94 of 107

QUANTITIES LIST

ITEM		QTY.
1	INSTALL LONG SERVICE	23 EA.
2	INSTALL SHORT SERVICE	16 EA.
3	INSTALL SERVICE	12 EA.

WATER SERVICES TO BE DOUBLE SERVICES WHERE POSSIBLE

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

0 200 400

ARIZONA WATER COMPANY

PROJECT DESCRIPTION

INSTALL 51 SERVICE CONNECTIONS ALONG AVENIDA GRANDE AND AVENIDA FRESCA FROM TREKELL ROAD TO PUEBLO STREET AND IN LA ESCONDIDA SUBDIVISION.

PROJECT LOCATION

SW 1/4 SEC. 4–T.6S., R.6E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP F

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
SW 1/4 SEC. 4-T.6S., R.6E.	44	MAP F

PROJECT DESCRIPTION:

INSTALL 51 SERVICE CONNECTIONS ALONG AVENIDA GRANDE AND AVENIDA FRESCA FROM TREKELL ROAD TO PUEBLO STREET AND IN LA ESCONDIDO SUBDIVISION.

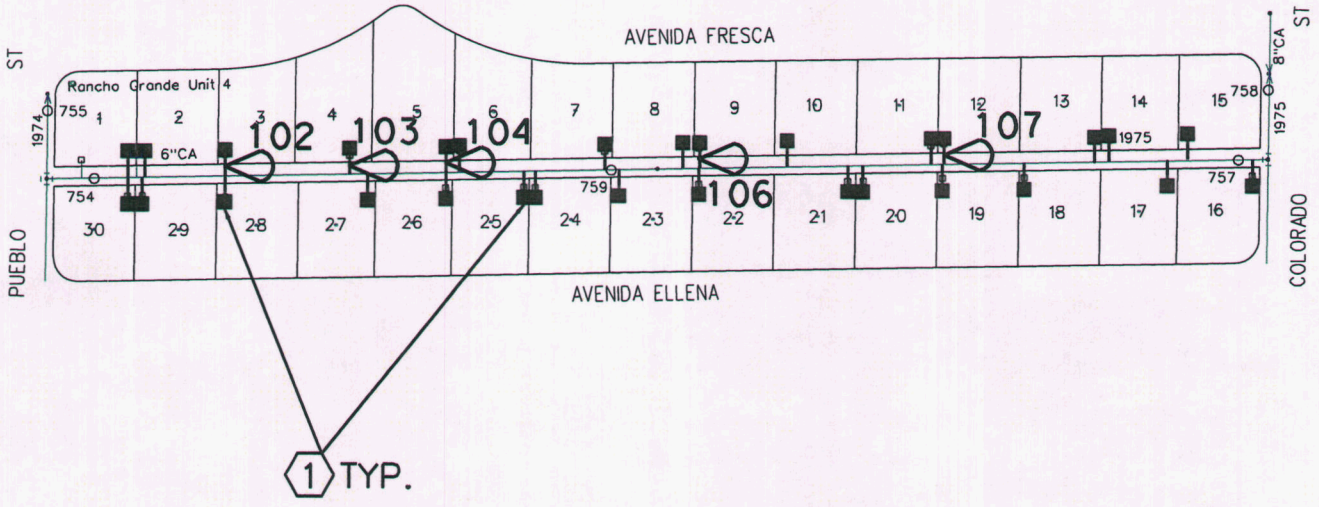
MATERIALS AND LABOR

QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
23	EA	2,000	INSTALL LONG SERVICE	46,000
16	EA	1,800	INSTALL SHORT SERVICE	28,800
12	EA	1,500	INSTALL SERVICE	18,000
				-
				-
				-
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**92,800**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	1,392
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	6,496
(4) SUBTOTAL - LINES (1), (2) AND (3)	**100,688**
(5) OVERHEAD - 15% OF LINE (4)	15,103
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	9,062
SUBTOTAL - LINES (4), (5) AND (6)	**124,853**
ESTIMATED COST OF CONSTRUCTION	**$ 124,853**

AFH

PROJECT 45



0 200 400

QUANTITIES LIST

ITEM		QTY.
1	INSTALL SERVICE	30 EA.

WATER SERVICES TO BE DOUBLE SERVICES WHERE POSSIBLE

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

ARIZONA WATER COMPANY

PROJECT DESCRIPTION

INSTALL 30 SERVICE CONNECTIONS IN AN ALLEY BETWEEN AVENIDA FRESCA AND AVENIDA ELLENA FROM PUEBLO STREET TO COLORADO STREET.

PROJECT LOCATION

SW 1/4 SEC. 4–T.6S., R.6E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP F

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
SW 1/4 SEC. 4-T.6S., R.6E.	45	MAP F

PROJECT DESCRIPTION:

INSTALL 30 SERVICE CONNECTIONS IN AN ALLEY BETWEEN AVENIDA FRESCA AND AVENIDA ELLENA FROM PUEBLO STREET TO COLORADO STREET.

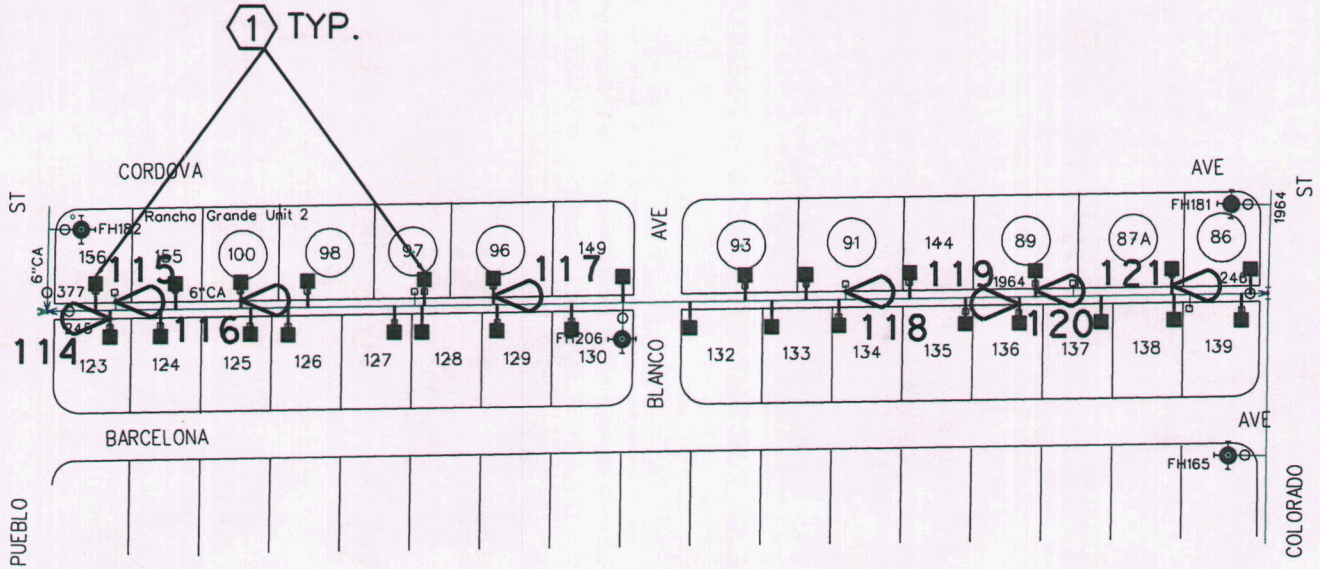
MATERIALS AND LABOR

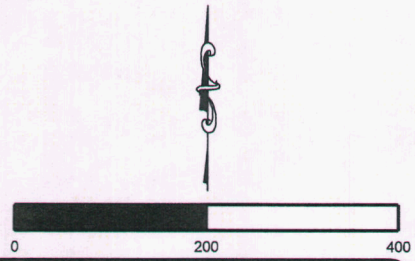
QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
30	EA	1,500	INSTALL SERVICE	45,000
				-
				-
				-
				-
				-
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**45,000**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	675
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	3,150
(4) SUBTOTAL - LINES (1), (2) AND (3)	**48,825**
(5) OVERHEAD - 15% OF LINE (4)	7,324
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	4,394
SUBTOTAL - LINES (4), (5) AND (6)	**60,543**
ESTIMATED COST OF CONSTRUCTION	**$ 60,543**

AFH

PROJECT 46





QUANTITIES LIST

ITEM		QTY.
1	INSTALL SERVICE	29 EA.

WATER SERVICES TO BE DOUBLE SERVICES WHERE POSSIBLE

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

ARIZONA WATER COMPANY

PROJECT DESCRIPTION

INSTALL 29 SERVICE CONNECTIONS IN AN ALLEY BETWEEN CORDOVA AVENUE AND BARCELONA AVENUE FROM PUEBLO STREET TO COLORADO STREET.

PROJECT LOCATION

SW 1/4 SEC. 4–T.6S., R.6E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP F

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
SW 1/4 SEC. 4-T.6S., R.6E.	46	MAP F

PROJECT DESCRIPTION:

INSTALL 29 SERVICE CONNECTIONS IN AN ALLEY BETWEEN CORDOVA AVENUE AND BARCELONA AVENUE FROM PUEBLO STREET TO COLORADO STREET.

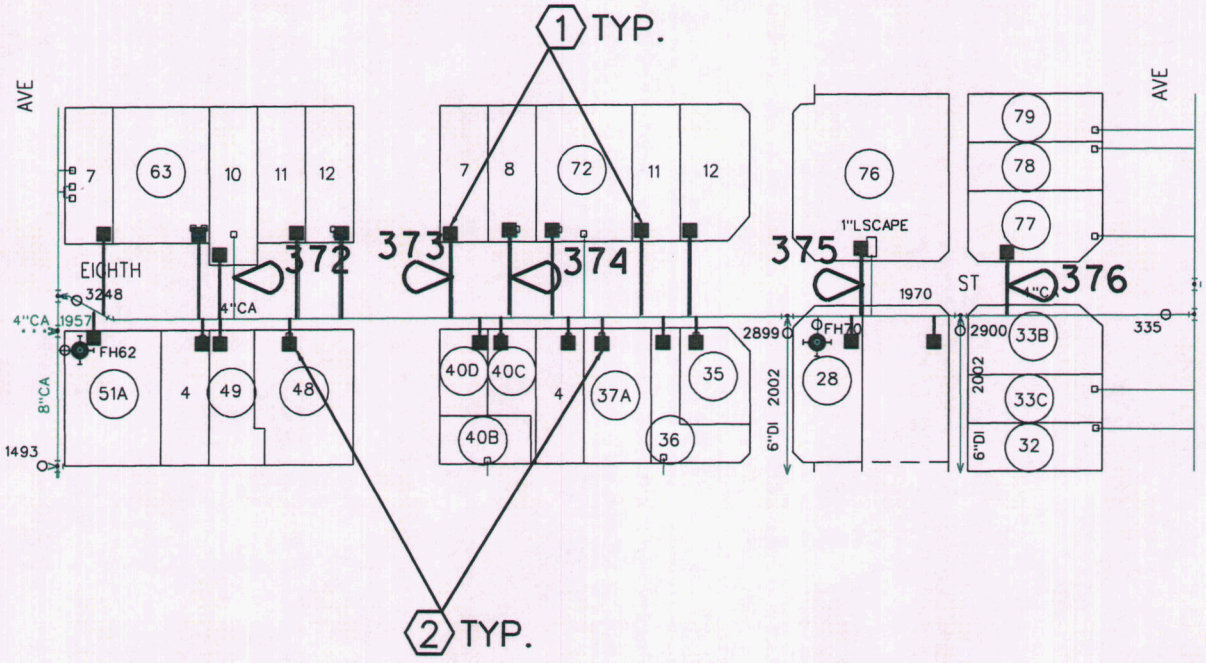
MATERIALS AND LABOR

QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
29	EA	1,500	INSTALL SERVICE	43,500
				-
				-
				-
				-
				-
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**43,500**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	653
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	3,045
(4) SUBTOTAL - LINES (1), (2) AND (3)	**47,198**
(5) OVERHEAD - 15% OF LINE (4)	7,080
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	4,248
SUBTOTAL - LINES (4), (5) AND (6)	**58,525**
ESTIMATED COST OF CONSTRUCTION	**$ 58,525**

AFH

PROJECT 47



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QUANTITIES LIST

ITEM		QTY.
1	INSTALL LONG SERVICE	17 EA.
2	INSTALL SHORT SERVICE	7 EA.

WATER SERVICES TO BE DOUBLE SERVICES WHERE POSSIBLE

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

ARIZONA WATER COMPANY

PROJECT DESCRIPTION

INSTALL 24 SERVICE CONNECTIONS
ON EIGHTH STREET FROM PINAL AVENUE TO CENTER AVENUE.

PROJECT LOCATION

SW 1/4 SEC. 20–T.6S., R.6E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP A

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
SW 1/4 SEC. 20-T.6S., R.6E.	47	MAP A

PROJECT DESCRIPTION:

INSTALL 24 SERVICE CONNECTIONS ON EIGHTH STREET FROM PINAL AVENUE TO CENTER AVENUE.

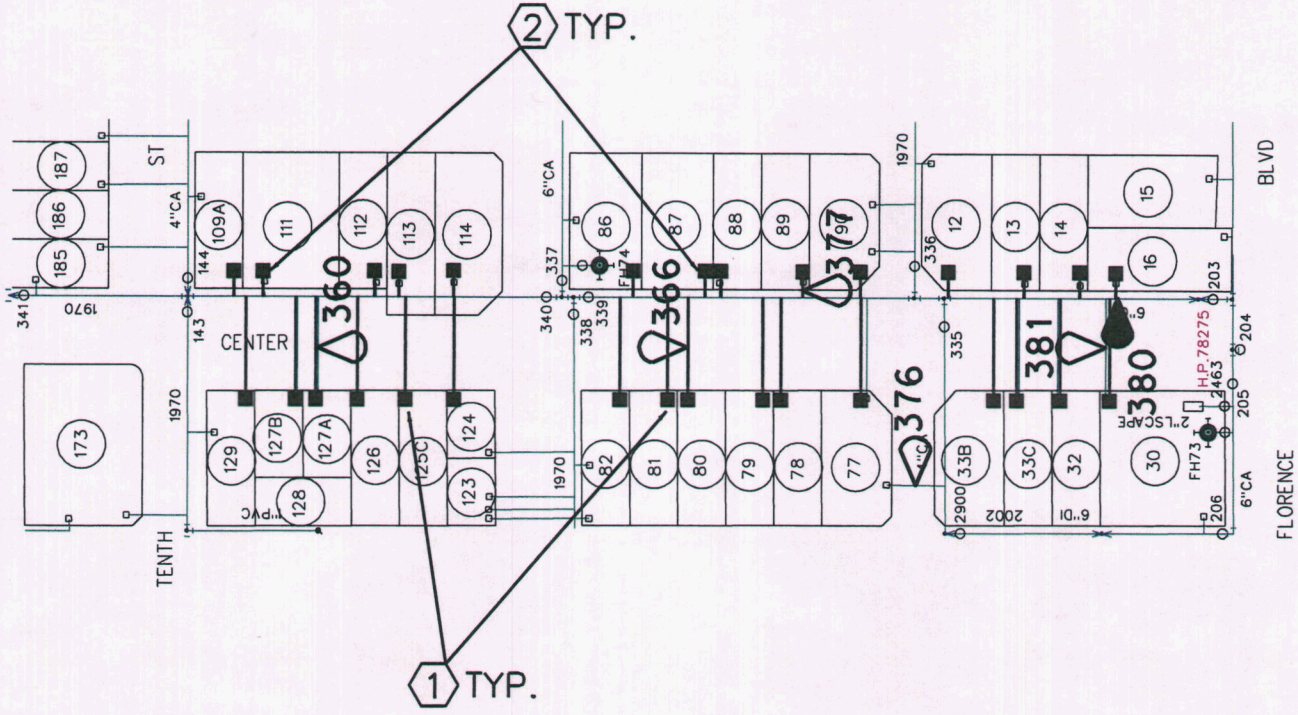
MATERIALS AND LABOR

QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
17	EA	2,000	INSTALL LONG SERVICE	34,000
7	EA	1,800	INSTALL SHORT SERVICE	12,600
				-
				-
				-
				-
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**46,600**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	699
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	3,262
(4) SUBTOTAL - LINES (1), (2) AND (3)	**50,561**
(5) OVERHEAD - 15% OF LINE (4)	7,584
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	4,550
SUBTOTAL - LINES (4), (5) AND (6)	**62,696**
ESTIMATED COST OF CONSTRUCTION	**$ 62,696**

AFH

PROJECT 48



QUANTITIES LIST

ITEM		QTY.
1	INSTALL LONG SERVICE	15 EA.
2	INSTALL SHORT SERVICE	15 EA.

WATER SERVICES TO BE DOUBLE SERVICES WHERE POSSIBLE

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

ARIZONA WATER COMPANY

PROJECT DESCRIPTION

INSTALL 30 SERVICE CONNECTIONS
ON CENTER AVENUE FROM 10TH STREET TO FLORENCE BOULEVARD.

PROJECT LOCATION

SW 1/4 SEC. 20–T.6S., R.6E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP A

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
SW 1/4 SEC. 20-T.6S., R.6E.	48	MAP A

PROJECT DESCRIPTION:

INSTALL 30 SERVICE CONNECTIONS ON CENTER AVENUE FROM TENTH STREET TO FLORENCE BOULEVARD.

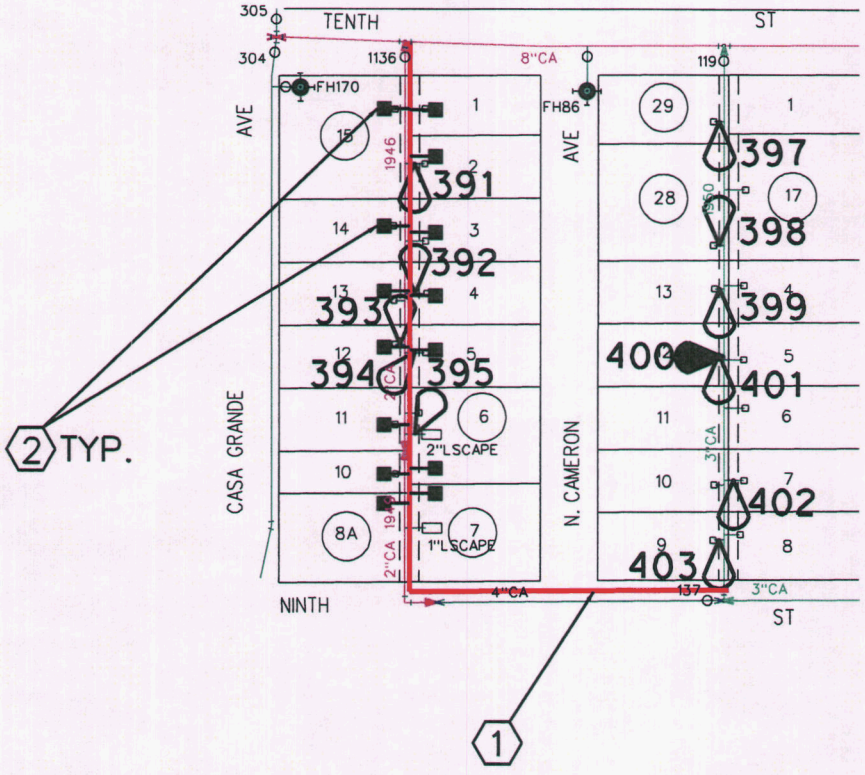
MATERIALS AND LABOR

QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
15	EA	2,000	INSTALL LONG SERVICE	30,000
15	EA	1,800	INSTALL SHORT SERVICE	27,000
				-
				-
				-
				-
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**57,000**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	855
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	3,990
(4) SUBTOTAL - LINES (1), (2) AND (3)	**61,845**
(5) OVERHEAD - 15% OF LINE (4)	9,277
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	5,566
SUBTOTAL - LINES (4), (5) AND (6)	**76,688**
ESTIMATED COST OF CONSTRUCTION	**$ 76,688**

AFH

PROJECT 49



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PRELIMINARY DRAWING
VALVE AND FIRE HYDRANT LOCATION
TO BE DETERMINED IN PROJECT DESIGN

WATER SERVICES TO BE DOUBLE SERVICES
WHERE POSSIBLE

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

QUANTITIES LIST

ITEM		QTY.
1	INSTALL 6" DIP W/ POLYWRAP	900 LF
2	INSTALL SERVICE	14 EA.

ARIZONA WATER COMPANY

PROJECT DESCRIPTION

INSTALL 900 LF OF 6" DIP AND 14 SERVICE CONNECTIONS
IN AN ALLEY BETWEEN CASA GRANDE AVENUE AND NORTH CAMERON AVENUE.

PROJECT LOCATION

SE 1/4 SEC. 20–T.6S., R.6E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP A

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
SE 1/4 SEC. 20-T.6S., R.6E.	49	MAP A

PROJECT DESCRIPTION:

INSTALL 900 LF OF 6" DIP w/POLYWRAP AND 14 SERVICE CONNECTIONS IN THE ALLEY BETWEEN CASA GRANDE AVENUE AND NORTH CAMERON AVENUE FROM NINTH STREET TO TENTH STREET.

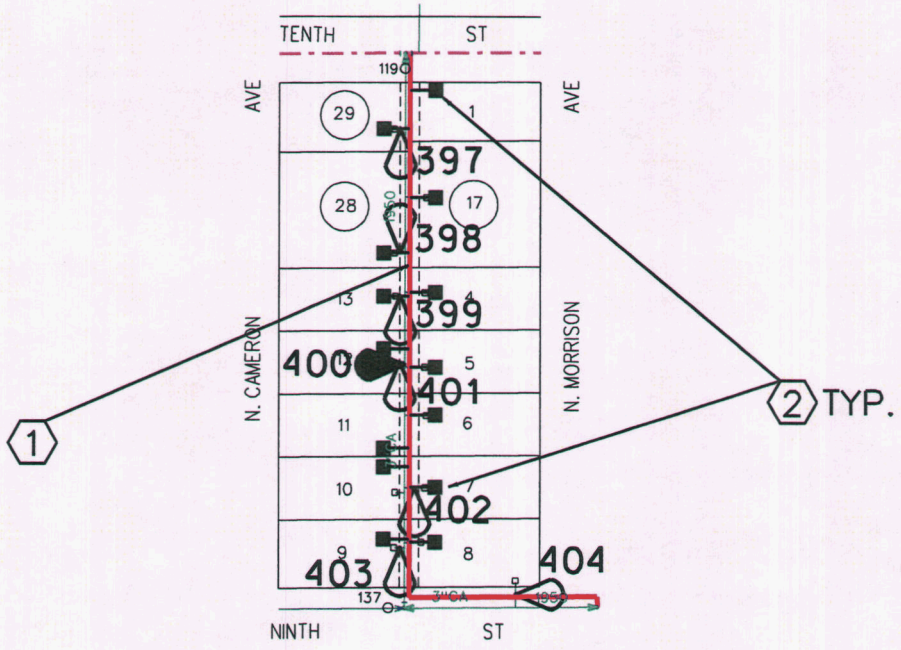
MATERIALS AND LABOR

QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
900	LF	50	6" DIP w/POLYWRAP	45,000
14	EA	1,500	INSTALL SERVICE	21,000
				-
				-
				-
				-
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**66,000**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	990
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	4,620
(4) SUBTOTAL - LINES (1), (2) AND (3)	**71,610**
(5) OVERHEAD - 15% OF LINE (4)	10,742
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	6,445
SUBTOTAL - LINES (4), (5) AND (6)	**88,796**
ESTIMATED COST OF CONSTRUCTION	**$ 88,796**

AFH

PROJECT 50



0 200 400

PRELIMINARY DRAWING
VALVE AND FIRE HYDRANT LOCATION
TO BE DETERMINED IN PROJECT DESIGN

WATER SERVICES TO BE DOUBLE SERVICES
WHERE POSSIBLE

QUANTITIES LIST

ITEM		QTY.
1	INSTALL 6" DIP W/ POLYWRAP	800 LF
2	INSTALL SERVICE	14 EA.

WATER MAIN REPAIR/REPLACEMENT

SERVICE LINE REPAIR/REPLACEMENT

139 LEAK NUMBER

ARIZONA WATER COMPANY

PROJECT DESCRIPTION
INSTALL 800 LF OF 6" DIP w/POLYWRAP
AND 14 SERVICE CONNECTIONS IN AN ALLEY BETWEEN NORTH CAMERON AVENUE AND NORTH MORRISON AVENUE FROM NINTH STREET TO TENTH STREET.

PROJECT LOCATION
SE 1/4 SEC. 20–T.6S., R.6E.

DRAWN BY:	APPROVED BY:	DATE:	REFERENCE MAP:
JS	AH/FS	12/29/2010	MAP A

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:
SE 1/4 SEC. 20-T.6S., R.6E.	50	MAP A

PROJECT DESCRIPTION:
INSTALL 800 LF OF 6" DIP w/POLYWRAP AND 14 SERVICE CONNECTIONS IN THE ALLEY BETWEEN NORTH CAMERON AVENUE AND NORHT MORRISON AVENUE FROM NINTH STREET TO TENTH STREET.

MATERIALS AND LABOR

QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
800	LF	50	6" DIP w/POLYWRAP	40,000
14	EA	1,500	INSTALL SERVICE	21,000
				-
				-
				-
				-
				-
				-
				-
				-
				-

(1) **SUBTOTAL - MATERIALS AND LABOR**	**61,000**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	915
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	4,270
(4) SUBTOTAL - LINES (1), (2) AND (3)	**66,185**
(5) OVERHEAD - 15% OF LINE (4)	9,928
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	5,957
SUBTOTAL - LINES (4), (5) AND (6)	**82,069**
ESTIMATED COST OF CONSTRUCTION	**$ 82,069**

AFH

9.11 Pinal Valley Infrastructure Replacement Cost Estimate

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:

PROJECT DESCRIPTION:

MATERIALS AND LABOR

QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
14,488	LF	$ 50	REPLACE 1920-1929 MAINS WITH 6" DIP	724,400
312	LF	40	REPLACE 1920-1929 MAINS WITH 6" PVC	12,480
1,683	LF	50	REPLACE 1930-1939 MAINS WITH 6" DIP	84,150
5,433	LF	40	REPLACE 1930-1939 MAINS WITH 6" PVC	217,320
31,378	LF	50	REPLACE 1940-1949 MAINS WITH 6" DIP	1,568,900
57,814	LF	40	REPLACE 1940-1949 MAINS WITH 6" PVC	2,312,560
104,545	LF	50	REPLACE PROBLEMATIC MAINS 1950&NEWER w/ 6"DIP	5,227,250
52,413	LF	40	REPLACE PROBLEMATIC MAINS 1950&NEWER w/ 6"PVC	2,096,520
17,754	LF	120	REPLACE PROBLEMATIC 24" CLC WITH DIP	2,130,480
1,550	LF	165	REPLACE PROBLEMATIC 36" CLC WITH DIP	255,750
3,500	EA	2,200	REPLACE SERVICES ON MAINS 1920-1949	7,700,000
3,700	EA	2,200	REPLACE POLY SERVICES	8,140,000

(1) **SUBTOTAL - MATERIALS AND LABOR**	**30,469,810**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	457,047
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	2,132,887
(4) SUBTOTAL - LINES (1), (2) AND (3)	**33,059,744**
(5) OVERHEAD - 15% OF LINE (4)	4,958,962
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	2,975,377
SUBTOTAL - LINES (4), (5) AND (6)	**40,994,082**
ESTIMATED COST OF CONSTRUCTION	**$ 40,994,082**

AFH

The Company's engineers developed a $41 million 10-year infrastructure replacement plan commencing in 2011 to replace aging, leaking, and failing water mains and service lines in the PVSA to reduce water loss, detailed cost estimate attached.

The oldest CI water mains in the PVSA were installed in the 1920s totaling approximately 15,000 LF, and are at the end of their useful lives. By 2020, these failing CI water mains must be replaced. These CI water mains show signs of failure such as build-up, corrosion, and breaks, as shown in Figure 4-1 of the Company's Water Loss Reduction Program for the Pinal Valley Service Area, and the common failure modes are discussed in Section 4.1 of same report. These CI mains will be replaced with DI or PVC water mains in the Casa Grande and Coolidge areas of the PVWS, respectively.

The next group of aging mains to be replaced are CI and CA water mains installed from 1930 to 1949, totaling approximately 95,000 LF. By 2020, these CI and CA water mains will also have reached the end of their useful lives and must be replaced. Section 4.1 of the Company's Water Loss Reduction Program for the Pinal Valley Service Area describes structural degradation of CA water mains caused by chemical and physical deterioration, resulting from properties of bedding materials leading to water main breaks and leaks in CA pipe.

Smaller diameter CA water mains are also increasingly prone to breaks and leaks due to thinner pipe walls and lower bending moment resistance, as discussed in Section 4.1 of the Company's Water Loss Reduction Program for the Pinal Valley Service Area. By 2020, CA water mains four-inches and smaller in diameter installed from 1950 to 1969, totaling approximately 155,000 LF, will also need to be replaced.

The water service lines installed on water mains between 1921 and 1949 were typically constructed of galvanized steel and have reached the end of their useful lives. By 2020, these water service lines, estimated at approximately 3,500 in number, must be replaced. The PVWS also contains other aging and failing water mains in addition to those discussed above, including those constructed of CLC. The Company has experienced numerous breaks, resulting in substantial water loss, from these large diameter CLC water mains. Approximately 19,000 LF of 24-inch and 36-inch diameter CLC water mains are proposed to be replaced with DI water mains.

Section 4.3 of the Company's Water Loss Reduction Program for the Pinal Valley Service Area also describes the typical failure modes of plastic services that represent a large source of water loss in the PVSA and, as a result, approximately 3,700 plastic services will be replaced by 2020.

ARIZONA WATER COMPANY

PRELIMINARY COST ESTIMATE

DATE PREPARED: 12/29/2010

PREPARED BY:	APPROVED BY:	SYSTEM:	DIVISION:
AJH	FKS	PINAL VALLEY	PINAL VALLEY

PROJECT LOCATION:	PROJECT NUMBER:	REFERENCE MAP:

PROJECT DESCRIPTION:

MATERIALS AND LABOR

QUANTITY	UNIT	$/UNIT	DESCRIPTION	ESTIMATED ITEM COST
14,488	LF	$ 50	REPLACE 1920-1929 MAINS WITH 6" DIP	724,400
312	LF	40	REPLACE 1920-1929 MAINS WITH 6" PVC	12,480
1,683	LF	50	REPLACE 1930-1939 MAINS WITH 6" DIP	84,150
5,433	LF	40	REPLACE 1930-1939 MAINS WITH 6" PVC	217,320
31,378	LF	50	REPLACE 1940-1949 MAINS WITH 6" DIP	1,568,900
57,814	LF	40	REPLACE 1940-1949 MAINS WITH 6" PVC	2,312,560
104,545	LF	50	REPLACE PROBLEMATIC MAINS 1950&NEWER w/ 6"DIP	5,227,250
52,413	LF	40	REPLACE PROBLEMATIC MAINS 1950&NEWER w/ 6"PVC	2,096,520
17,754	LF	120	REPLACE PROBLEMATIC 24" CLC WITH DIP	2,130,480
1,550	LF	165	REPLACE PROBLEMATIC 36" CLC WITH DIP	255,750
3,500	EA	2,200	REPLACE SERVICES ON MAINS 1920-1949	7,700,000
3,700	EA	2,200	REPLACE POLY SERVICES	8,140,000

(1) **SUBTOTAL - MATERIALS AND LABOR**	**30,469,810**
(2) PERFORMANCE BOND @ 1.5% OF LINE (1)	457,047
(3) SURVEY, R.O.W. PERMITTING, TESTING AND FIELD INSPECTION	2,132,887
(4) SUBTOTAL - LINES (1), (2) AND (3)	**33,059,744**
(5) OVERHEAD - 15% OF LINE (4)	4,958,962
(6) PREPARATION OF DETAILED PLANS, SPECIFICATIONS & BIDDING DOCUMENTS	2,975,377
SUBTOTAL - LINES (4), (5) AND (6)	**40,994,082**
ESTIMATED COST OF CONSTRUCTION	**$ 40,994,082**

AFH